

THE J. PAUL GETTY MUSEUM LIBRARY

ILLUSTRATED WORKS PLAZA

THE ILLUSTRATED WORKS PLAZA
IS A COLLECTION OF THE
FINEST ILLUSTRATIONS
FROM THE
WORKS OF THE
GREAT MASTERS OF THE
ART

THE ILLUSTRATED WORKS PLAZA
IS A COLLECTION OF THE
FINEST ILLUSTRATIONS
FROM THE
WORKS OF THE
GREAT MASTERS OF THE
ART

THE ILLUSTRATED WORKS PLAZA
IS A COLLECTION OF THE
FINEST ILLUSTRATIONS
FROM THE
WORKS OF THE
GREAT MASTERS OF THE
ART



AN

ILLUSTRATED WEEKLY MAGAZINE,

FOR THE

ARCHITECT, ENGINEER, ARCHÆOLOGIST, CONSTRUCTOR,
SANITARY REFORMER, AND ART-LOVER.

CONDUCTED BY

GEORGE GODWIN, F.R.S., F.S.A.

LATE VICE-PRESIDENT OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS;

*Honorary Member of various Societies; Author of "History in Ruins," "Town Swamps and Social Bridges,"
"Another Blow for Life," &c.*

"Every man's proper mansion-house, and home, being the theater of his hospitality, the seat of self-fruition, the comfortablest part of his own life, the noblest of his sonne's inheritance, a kinde of private principedome, nay, to the possessors thereof, an epitome of the whole world, may well deserve, by these attributes, according to the degree of the master, to be decently and delightfully adorned."

"Architecture can want no commendation, where there are noble men, or noble mindes."—SIR HENRY WOTTON.

"Our English word To BUILD is the Anglo-Saxon Bylðan, to confirm, to establish, to make firm and sure and fast, to consolidate, to strengthen; and is applicable to all other things as well as to dwelling-places."—DIVERIONS OF PURLEY.

"Art shows us man as he can by no other means be made known. Art gives us 'nobler loves and nobler cares,'—furnishing objects by the contemplation of which we are taught and exalted,—and so are ultimately led to seek beauty in its highest form, which is GOODNESS."

VOLUME FOR 1874.

OFFICE: No. 46, CATHERINE STREET, COVENT GARDEN, LONDON, W.C.



INDEX TO VOLUME XXXII.

- ABBEY: Dunfermline, and cathedral of
Dunblane, 908
Grey, county Down, 782
Mount St. Michel, France, 639
Tewkesbury, restoration of, 512
Westminster, protest ion of from fire, 422;
a flake for, 754
Abbey church, Bath, restoration, 58, 624
Abbey church, Waltham, 1056
Academy, Royal, 1445; Exhibition, 389, 410,
429; Architecture at, 386, 429; Causes
at, 453; Lectures at, by Prof. Barry,
215, 234; by Prof. Weeks, 263, 289;
Medals, 1063
Academy, Royal Scottish, exhibition, 159;
Architecture at, 172; Sir J. N. Paton's
address at, "Suppressed Genius," 1027
Accidents, 58, 89, 117, 120, 207, 217, 357,
466, 512, 575, 593, 714, 736, 776, 793, 836,
855, 874, 955, 991, 1039, 1079
Acoustics, imperfect, 8
Actions, &c.—
Accident on the road, 251
Accident, selling beer to builders, 448
Architect's difficulties in the north of
England, 57
Architects taking work out of contractors'
hands, 17
Articles breaking contracts, 528
Breach of contract, 914; Smart's v. Bate-
man, 1059
Builders' apprentices, 775
Builders' charges for estimates and quan-
tities, 674, 693
Builder's charge for plans, 974
Builder's fee, for libel, 251
Builder's ironmonger, against a, 228
Building bye-laws, 595
Caution to contractors and sureties, 694
Claims for dilapidations, 1039
Claim for wages, 974
Compensation system, 1013
Compensation for injury, 1039
Contract or no contract for sale of a
cottage, 402
Contracts, Morton v. Eastwood, 551
Contractors' liabilities, 182
Cost of a reredos, 693
Damage by smoke and soot, 914
Damage done in building, 1039
Diabest foremen, 139, 595
Disobedient workmen, 132
Dismissal without notice, 1051
Dismissal, alleged illegal, of a careless
workman, 97
Extras, 97
Factory, what is, 420
Foreman's privileges, 34
Foreman's time, 974
Grinding money, 180
Holidays on compulsion, 551
House agents and the public, 78
Infringement of a trade mark, 614
Infringement of the Bristol Improve-
ment Act 1847, 974
Judge's seizure on petty actions, 478
Liabilities of builders, companies, and
others to recoup rates lost through
denial of rateable property, 1020,
1080
Liabilities of landlords and not tenants
for insecure piping, 378
Liability of builders for accidents to their
journeymen, 446
Libelling an architect, 611
Libelling a surveyor, 693
Light and air, 182
Master and Servant Act, 1018
Oak-Scamplings, 1080
Opium-smoking shops, 207
Party walls, 40, 162
Payment of an architect's services, 914
Peasbody trustees, against the, 216
Pugin v. Molloy, 181, 251, 275
Question in the glass trade, 634
Railway compensation at Plymouth, 1059
Removal of thatched roofs, 535
Repairs, Pettigrew v. Stride, 97
Rights to light and air, 34
Robbery of builders, 284
Roking employers, 117
"Running foot" question of measure-
ment, 994
Sewage, pouring into rivers, 182
St. Agatha v. Randall, 575
Stealing from builders, 340
Surveyors' fees, Minney v. Symes, 583
Thorn v. Lord Mayor and Corporation of
London, 494
Title-deed, to recover a, 34
Unsafe buildings, 735
Unsafe machines, 163
Use of a well, 994
Walker and Elsom v. Metropolitan Board
of Works, 465
Ward v. Proctor, 593
Wear and tear, 684
Workmen's contracts, 294
Workmen, as to the right of, to leave off
minute's notice, 674
Aston, polluted water at, 994
Advance, the crab fishing, 180
Air, external, to firegrates, 273
Alexandra Palace, the new, 687; fatal ac-
cident at, 867
Alhambra, the, Granada and its illustrators,
585
Almshouses, Alley's, St. Luke's, 979
America, notes from: the St. Lawrence, 54
America, worth notice, out of, 18
American Institute of Architects, 4
American International Exhibition, 124
Anemometer, Lowe's ventilating, 993
Angkor, an ancient city, 125
Anthropological Society, London, 75
Prehistoric remains in Ictria, 180
Rude stone monument in Kent and Ox-
fordshire, 446
Antiquities, Easter Island, 26
Aqueduct, public, 626
Aquarium, proposed, for Birmingham, 475
Aquarium, the Brighton, 631, 671
Aquarium, Kelvin Museum and, 735
Archaeological, Manchester, 174, 219; opening
of, 467
Aquarium, Margate, 795
Aquarium, Rothsay, 692
Aquarium, Southport, and winter garden,
88, 793, 813
Arboretum in Walsall, 420
Archaeological, Berkshire, and Architec-
tural Society, 523
Archaeological, British, Association, 368,
447
Archaeological, Bristol, Congress, 624, 663,
680, 692, 711
Archaeological, Cambrian Association at
Wrexham, 766
Archaeological, Cumberland and Westmore-
land Institute, 748
Archaeological, Essex, Society, 707
Archaeological, Institute of Higon, 641, 693
Archaeological, Kent, Society, 694
Archaeological, Leicester, Association, 783
Archaeological, Norfolk and Norwich, So-
ciety, 453
Archaeological, Surrey, Society, 693
Archaeological, Sussex, Society, 707, 894
Archaeological, Wiltshire, Society, 783
Archaeological excursions, 694
Archaeological Institute and the Mayor of
Exeter, 833
Archaeological remains of Norsemen in
Scotland, 523
Archaeology in India, 947
Archaeology in Rome, 327
Arches, the South-Western Railway Com-
pany's, in Lambeth, 704
Architect, the position of the, 69
Architects and their liabilities, 177, 190, 226
Architects before the judge, 35
Architects' Benevolent Society, 249
Architects' difficulties in the North, 57
Architects, early training of, 731
Architects, English, present question, 24
Architects, modern art and, 66
Architects of buildings and authors of de-
signs illustrated:—
Abadie, M., competition design for the
Church of the Sacred Heart, Paris, 708
Barry, Professor, memorial pupil, Peter-
borough Cathedral, 350
Bell, Charles, new Wesleyan chapel,
Rotherhithe, 765
Chancellor, E., dwellings of the indus-
trial class—new buildings, Farring-
don-road, 1003
Chancellor, London and County Bank,
Islington, 29
Christie, E., Economic Life Assurance
Company's office, Bridge-street,
Blackfriars, 569
Cole, Lieut. H. H., National Training
School's office, Bridge-street,
Crepinet, M., competition design for the
Church of the Sacred Heart, Paris, 708
Cronk, E., hotel and shops, Holborn
Viaduct, 747
Davidson, M., competition design for the
Church of the Sacred Heart, Paris, 708
Davis, Emanuel & Co., School Board
school, Plymouth, 370
Donnill, M., competition design for
Church of Sacred Heart, Paris, 708
Devere, M., competition design for the
Church of the Sacred Heart, Paris, 708
Ellis, E., warehouse, Queen Victoria-
street, 414
Garnier, M., New Opera House, Paris,
414, 745
Gibson, J., Natfild Priory, 63; Nat-
ional Provincial Bank of England,
Middlesex, 154
Gibbs, J., Clement Memorial, Shrews-
bury, 886
Godwin, George, St. Mary Redcliff,
Bristol, 444
Goldie & Child, proposed Church of La
Vilette, Paris, 1061
Harris, T., Messrs. Foster's new ware-
house, 109
Hill, T. J., Alley's Almshouses, St.
Luke's, 980
Hine, J., St. Saviour's, Plymouth, 328
Horton & Bridgford, recent cemetery
monuments, 240
Hunt, H., New Provincial Bank, Buenos
Ayres, 328
Isaacs, L. H., baths and washhouses,
Paddington, 83; pianoforte manu-
factury, West Kensington, 1075
James, J., School Board schools, Ber-
mondsey, 478
Johnson, J., New Alexandra Palace, 687
Jones, J., New Billingsgate Market, 868
Knowles, J., Shakespeare Fountain, Le-
icester-square, 555
Lane, J., Police-court, Newcastle, 947
Lane, J., competition design for the
Church of the Sacred Heart, Paris, 708
Architects of buildings, &c., continued:—
Martin, E. J., Delhi Clock-tower, 130
Masters, H., warehouse, Bristol, 709
Miles & Francis, Bradford District
Bank, 831
Moyaux, M., competition design for the
Church of the Sacred Heart, Paris,
707
Norton, J., Melyn schools, Glamorgan-
shire, 193
Parris and Aldwinckle, Lambeth new
workhouse, 69
Pennington & Bridgen, Inland Revenue
offices, Manchester, 731
Perry & Hanson, new Altar Church of
the Augustinian Convent, Bruges, 350
Phipps, C. J., "Star and Garter," Rich-
mond, 635
Picton, Chambers & Bradley, "Elma-
leigh," 130
Porter, W. F., the London Foresters'
Asylum, Barclay's Head, 284
Pugin, W., Carlton Towers, Selby, York-
shire, 478
Reade, T. M., Liverpool School Board
school, 968
Robinson, J., memorial of the late
Duchess of Sutherland, Dunrobin,
328; tomb of Mrs. Waterlow, 666
Roumieu, R. L., street architecture,
Chapelais, 896
Sesnor, M., Manchester Asylum, 174
Scott, E. E., St. Bartholomew's Church,
Brighton, 608
Scott, Sir G. G., reredos, Eater Cathed-
ral, 8; reredos, Worcester Cathedral,
370; St. Andrew's Church, Walcott,
Bath, 384; New Home and Colonial
Office, Whitehall, 429
Worcester Cathedral, 688; St. Mary's
Cathedral, Edinburgh, 1030
Shook & Vale, Walker Art Gallery,
Liverpool, 539
Slater, late W., portal of Digby Mor-
tuary Chapel, 198
Smith, T. T., Street Architecture, Corn-
hill, 806
Snell, S., School Board School, Forest-
hill, 229; New Swimming Bath, St.
Marylebone, 381
Speakman, Son, & Hickson, Ware-
house, Manchester, 238
Stent, W. J., Southsea Congregational
Church, 928
Street, G. E., Reredos, Carlisle Cathed-
ral, 1013
Teece, J. M., St. Paul's Church, Burton,
Staffs, 254
Tilley, T., City Hall, Chicago, 828
Vernon, A., Lady Beaconsfield Monu-
ment, Hove, Sussex, 908
Walker and Horton & Bridgford, Man-
chester Conservative Club-house, 651
Ward, F. T., Imperial Buildings, Queen
Victoria-street, 429
Whichever, J., St. Stephen's Club,
Westminster, 311
Wilms, St. Clair, Public Works Offices,
Bombay, 457
Wimperis, Granville Hall, Ramsgate, 768
Wood & Turner, Ryls Town-hall, 1072
Wray, C. G., New Convent, School, and
Orphanage, South Hampstead, 687
Architects, the making of, 138
Architects, the treatment of, in America,
611
Architectural Association, Belfast—the
planning of ancient churches, 263, 1076
Architectural Association, Birmingham
District, 412
Architectural Association, Edinburgh—the
Indian architecture, and the manufacture
of glass, terra-cotta, and porcelain, 506;
the principles of drawing, geometry, and
colour as taught among the Hindus, 1003
Architectural Association, Ireland, 116
Architectural Association, London, Pro-
ceedings of:—
Application of wires to remedy acoustic
defects in public buildings, 477
Architectural drawing, 369
Architecture and landscape, 986, 1008
Church restoration, 261
Coloured decorations, 214
Condition of architecture, present, 95
Decorations, coloured, how to study from
existing materials, 245
Difficulties in architectural practice, 391
Excursion, fifth annual (France), 654,
693, 703, 721, 740, 763
Farmsteads and farmhouses, 473
Hints towards a clean house, 494
Influence of the Italian Cinque Cento on
the early French Renaissance, 620, 663
Iron construction, 45
President's address, 971
Prices, 765
Rambles in Normandy, 177
Report, 232
Sherris, Mr., paper on the late French
excursion, 1067
Soirée, 130
Transition in architectural style, 1038
Architectural and Historical Society, Ox-
ford—Waltham Abbey Church, 1065
Architectural Colleges, 665
Architectural designs, massiveness in, 301
Architectural dodges in Chicago, 198
Architectural improvements in Lodge-
circus and Bridge-street, 386
Architectural scraps, 788
Architecture, London, poetical essay, 307
Architecture at the Royal Academy, 386, 408
Architecture, British, and climate, 476
Architecture at Oxford, 593
Architecture, dictionary of, 475
Architecture, Greek, in Rome, 153
Architecture of the past, present, and the
future, 223
Architecture on Daisies, 101
Architecture, English, present questions, 24
Architecture, street, 806
Architecture, the hope of English, 679,
1044, 1058
Architecture, illustration of Scottish, 498
Arnott, Dr. Neill, 214
Arsenic in the atmosphere of rooms, 88
Art, a new era of, 15, 66
Art congresses, 825
Art, industrial, education in Massachusetts,
U.S., 401
Art, engineering, its effect upon, 334, 693
Art Gallery, Colonial, 812
Art Gallery, the Baker, Liverpool, 803,
920, 755, 853
Art masters, designers, and public taste, 113
Art must be studied, 713
Art publications of the month, 763
Art question from another point of view, 262
Art, the causes of, 453
Art, tour in Northern capitals, 1
Art, utility of, 38
Art-Union of London, 865, 455, 623;
engraving issued by, 1069
Art-work, some branches of ancient, 253
Arista, the eventful lives of, 805
Artists' houses in Dundee, 594
Athanase, building in, 192
Asphalte, a proposed improvement in lay-
ing, 618, 673
Asphalte and wood question, 323
Asphalte roads, maintenance of, 168
Asphalte, wood, or granite, for street
traffic, 27
Assessment, Ryde waterworks, 926
Association of Municipal and Sanitary Engi-
neers and Surveyors, 196, 377, 430, 706,
773, at Leicester, 249; Yorkshire
district, 840
Association, Liverpool Master Builders', 933
Association, the London Foresters', Bexley
Heath, 254
Aviary, a new, at Eaton Hall, 357
BALCONIES and stands, Metropolitan
Board of Works, 232
Baldacchino in Protestant churches, 14
Baldacchino, Gothic, Ratisbon Cathedral, 8
Balfie, memorial of, 510; at Drury-lane, 825
Baldard, M. Victor, architect, 95
Banks, Bradford District, 829
Bank, new, and post-office, Aspatira, near
Cardiff, 1011
Bank, new, Carlisle and Cumberland, 610
Bank, new, City, Ludgate-hill, 1056
Bank, new, Clydesdale, Glasgow, 409
Bank, the Hanley re-opening of the National
Provincial, 358
Bank, London and County, Islington, 29
Bank, London and Westminster, Temple
Lane, 171
Bank, National Provincial, of England,
Middlebrough, 154
Bank, new, Newnham, 934
Bank, new Provincial, Buenos Ayres, 928
Bank notes, new, printing buildings, 537
Barrack and camps, sanitary arrangements
in, 109, 265
Barrack, new, at Glasgow, 559
Bars, the street, and gates in the metro-
polis, 1027
Bars, steel, for bells, 182, 191, 646
Basingstoke, proposed drainage of, 74
Bath, St. Marylebone new swimming, 474
Baths, new, and public hall, Kennington, 371
Baths, the Steble-street, Liverpool, 409
Baths, proposed public, for Attercliffe,
Sheffield, 240
Baths, proposed public, at Dover, 443
Baths, public, for Wakefield, 398
Baths and washhouses, Camberwell, 804
Baths and washhouses, new, Farringdon,
93; opening of, 438
Baths and washhouses, Wrexham, 125
Baths and washhouses, proposed public, in
Clerkenwell, 953
Baths, washhouses, and laundry for Ply-
mouth, 865
Bathing, unsanitary, in Victoria Park, 613
Batley, scheme of sewage and other im-
provements at, 671
Belfast, odds and ends from, 724
Belfast, Ladies' Collegiate School, 28
Belfast, new Presbyterian Church at, 444
Bells and balling, 207
Bells, and modern improvements for
chiming and tolling, 201, 224, 238
Bells, steel bars for, 182, 191, 646
Benson, the late Sir John, 883
Bermondsey, deficiency of water in, 622
Bertha for intelligent workmen in mines, 57
Berwick, dedication of a new Masonic hall
at, 125

[illegible]

- Curriers Company, new hall for the, 1068
 Czar, the, in the City, 447
- DAMAGE** by lightning and hail, 613
 Decay of the British lion, 122
 Decaying, 485
 Decorative art: improvement of, 763; the study of, 287
 Design, proposed railway bridge over the river, 74
 Desideria, architecture on, 791
 Derby, Lord, and science for working men, 84; memorial to, 575, 613
 Diana, the temple of, Ephesus, 160
 Dictionary of artists, 97
 Difficulties, the labourers and farmers', 427
 Digby Mount, chapel, portal of the, 189
 Disclosures from the north of England, 291, 336
 District surveyors and the Metropolitan Board of Works, 203
 Dock, opening of new, at Cardiff, 672
 Dock, progress of Liverpool extension, 631
 Dock, new, east, on the Thames, for the Bermondsey vestry, 673
 Docks, proposed new, at Milford, 711
 Dockworks, new, at Bickenhead, 257
 Dockworks, the, at Alexandria, and bridges at Newport, 1069
 Domestic style, the Scottish, 785
 Doncaster new waterworks, 1079
 Dore, M. Vincent, and churchyard, 931
 Douglas, new street and promenade in, Isle of Man, 106; improvements at, 611, 1018
 Dover, proposed public baths, concert-hall, and aquarium, 442
 Drainage of Brighton, 475
 Drainage of Lake Lucerne, 894
 Drainage, proposed, of Basingstoke, 74
 Drainage of Reading, 307
 Drainage, revised Dublin scheme, 463, 911
 Drainage, the, of the artisans', labourers', and general dwellings company's houses, 973
 Drainage, pneumatic, 802
 Drapers' Company, *Kiss in Urbe* and the, 80
 Drawing, on the "Kinder-garten," or developing system of, 1075
 Drawing-classes, metropolitan, 693
 Drawing's poetical propensity of Edinburgh, 274
 Dublin, the plagues of, 587; co-operation in, 507; the revised main drainage scheme, 256, 463, 911; doings in, 357; water supply of, 193; notes from, 65, 161
 Dufaux's tomb, Paris, 313
 Duguid, J. M., Viscount, as an architect, 26, 733
 Dufrenoy, Constant, inauguration of the monument of, Paris, 108
 Dulwich College, the new scheme of the Endowed School Commissioners for, 194
 Dulwich College and the proposed building of new schools in St. Botolph's parish, 357
 Dulwich, East, the Rector Nursery Estate, Dunbarton, 441
 Dunblane Cathedral, 906
 Dundee Picture-gallery and Museum, 753
 Dunbar, memorial of the late Duchess of Sutherland, Scotland, 328
 Dutch workpeople, houses of, 437
 Dutch, the Committee of the Charity Organisation Society, 36
 Dwellings Company, Limited, the Improved Industrial, 674
 Dwellings, improved, for the working classes, 1059
 Dwellings, improvement of London poor, 414
 Dwellings of the industrial classes, new Buildings, Farringdon-road, 393, 1009, 1006
 Dwellings of the labouring classes in the metropolis, 983
 Dwellings of the labouring classes, efforts on the Continent for improving the, 927
 Eastern art, of the poor, 44; the destruction of, 675; in Liverpool,—"Life in Great Cities," 28
 Dwellings of Spanish artisans and houses in the West Indies, 691
 Dwellings of the working classes, 205; plans for, 476
- EARTHWORKS** of the English period: Binbury, 625; Barwick-in-Elmet, 686; Castle Hill in Breunby, Kent, 624; Castle Hill, Moxborough, 685; Warwick, 626; Loughton-en-le-Morthen, 685; Middleham, 624; Pickering, 685; Ribblesdale mounds, 686; Rotherham, 686
 Easily gained and well spent, 1070
 East and west, past and future, 443
 Easter island antiquities, 26
 Eastern art, by Dr. Dresser, 104, 138
 Ecclesiastical, and Church Estate Commissioners, and caputal estates, 573
 Edinburgh, 28, 77, 455, 792; in early times, 326
 Edinborough House, 827; Dryden's poetic prophecy of, 274; movements in, 349; explanatory aesthetics, 836; St. Andrew's Cathedral, 1080
 Education, on systematic, in art, 899
 Education, proportion in physical, 692
 Education, technical, 1023
 Egyptian art, 622
 Emslie, Leicestershire, 130
 Ely cathedral, 348; restorations, 469
 Embankment, Temple railings on, 282; the recent inundation and proposed extension of the Albert, 324
 Encasement tile works, Jackfield, 203
 Engraving, its effect upon art, 334
 Engineers, Amalgamated Society of, York, 225
 Engineers' prospects, 75
 Engineers' Society of, 105, 341, 707
 Engineers, the London foreman, at Mr. Penn's, 713
 Engineers v. Borough surveyors, 632
- England, changeable, 632
 Engraving, the Guillot process of, 726
 Ephesus, the discoveries at, 284
 Epitaphs, a lay sermon on churchyards and, 561
 Erasing, on, 894
 Exchange, new, Bedford, 389
 Exchange, the new corn, Cambridge, 508
 Exhibition, International, 95, 299; architectural and building contrivances at, 6; 44; and technical education, 291; sculpture at, 243; notes in the picture galleries, 312; Queenstown annex, 437; woodworking machinery, 451; furniture in the, 473, 840; building appliances at the, 539; sanitary and other appliances at the, 538; French picture gallery, 605; Historical monuments in France, 620, 640; French public works, 719; close of the, 919
 Exhibition, Dudley Gallery,—water-colour drawings, 102
 Exhibition, last autumn picture, Liverpool, 207
 Exhibition, Mr. Whistler's, 623
 Exhibition of sanitary appliances, 823, 854
 Exhibition, works in black and white, 680
 Exhibition, Institute of Painters in Water-Colours, 1087
 Exhibition, opening of Blackburn Free Library and, 528
 Exhibition, Open House, 600
 Exhibition, proposed, of art manufactures, Edinburgh, 953
 Exhibition, Royal Academy, 386, 408, 410, 429, 853
 Exhibition, Royal Scottish Academy, 159, 172
 Exhibition, Vienna,—Mr. Aitken's, Birmingham, report on the, 123
 Exhibition, water-colour, Fall-mall, 344, 388
 Exhibition, Whistly jet, 754
 Exhibition, Winter: Dudley Gallery, 901; at the French gallery, 920
 Exeter, 304; reared, cathedral, 5, 56, 322, 429
 Explosion, fatal, New Southgate, 1038
 Explosion, gas: Birmingham, 1079; New Swindon, 1079; Sunderland, 1079
 Explosion, the, at the, 1079
 Explosion on the Regent's Canal, 842, 883, 913
 Explosions: Bonnamme, 1019; Greenwich, 1019; Wakefield, 1019
- FACTORY**, new premises, Wallall, 27
 Fairbank, death of Sir W., bart, 734
 Farming commercial principles in, 125
 Farringdon-road, dwellings of the industrial classes, new buildings, 393, 1009, 1005
 Farringdon-road, Great Northern new Goods Depot in, 307
 Feejee Islands, house-building in the, 398
 Fernhouse, exotic, for Peel House, Manchester, 423
 Fever, how propagated, 1003; at Cambridge, 547; prevalence of, 993
 Fishbury Park, alleged depreciation of the building land, 383
 Fire-clay goods, manufacture of, 368, 484
 Fire-engine hose, mode of making water-tight, 908
 Fire, the value of, prevention arrangements, 445
 Fire, wood under, 168
 Fire, the, external air to, 473
 Fireproof building, on, 4, 28
 Fireproof construction, experiments, 507
 Fireproof warehouses, 181
 Fireless, 239
 Fires, 187, 274, 751, 904, 1019, 1037, 1068, 1079
 Fireworks factory, Messrs. Brock's, 921
 Elche for Westminster Abbey, 754
 Floor, 641 of, a, 188
 Florence, a note from, 902
 Foley, John Henry, sculptor, 941
 Fontaine, 683
 Fountain, crystal glass, 447
 Fox, the late Sir Charles, 570
 France, north of, on the ornamentation of the Romanesque, Transitional, and Lancet periods in the, 1067
 France ruined on the staircase, 722
 French artists, National Academy of, 106
 French Artists, Society of, 433
 French Gallery, the, 280
 Fuel, a new, the sewage problem, 444
 Fuel, economic use of, 26
 Fuel, on artificial, 369
 Furniture, ancient and modern, 739
 Furniture in the International Exhibition, 473, 840
 Furniture manufacture in Turkey, 802
- GALLERY**, notes in the International Picture, 473
 Gallery of the Society of Painters in Water Colours, 904
 Gamble Institute, Gonrook, 766
 Gardening, ornamental, 942, 959
 Gardens, house-top, 137
 Gas, 272, 284, 483, 654, 724, 824
 Gas, 311, 302
 Gas, extreme price of, 368
 Gas, metropolitan, question, 674
 Gas, new works at Dewsbury, 813
 Gas, the London, 369
 Gasworks, assessment of, 788
 Gazette des Beaux Arts, 412
 Geometry, descriptive, 73
 Glasgow, the, 279
 Gladstone, Mr., on English taste, 859
 Glasgow and its improvements, 839
 Glasgow as it was, 869; Glasgow now, 861
 Glasgow: From, 826
 Drainage of, 89
 Harbour improvements at, 666, 891
 Health and disease in, 335
 Improvements, 88
 Improvement Act, 267, 891
 New barracks at, 569
- GLASGOW—continued.**
 Glasgow, the, 279
 New Glasgow Bank in, 409
 New municipal buildings at, 414
 New public halls for, 623
 Projected railway operations in, 685
 Sanitary exhibition, 547, 754
 Glass painting, concerning, 905
 Glass trade, the English, and French duties, 189
 Glassbury, improvements at, 627
 Glebe, Bill for the sale of, 623
 Godalming, Surrey, 445
 Goldsmith, the early art of the, 659
 Goldsmith's art in Liverpool, 325
 Gothic comparisons, Pope and Blackstone's, 508
 Government, new, offices at Poplar, 168
 Grace, as a characteristic of architecture, sculpture, and painting, 659
 Granada, the Alhambra, and its illustrator, 388
 Grantham, the late Mr. John, 623
 Grate, Steer's patent, 126
 Greece, public works in, 67
 Guildhall, new window in the, 722
 Guildhall, new: Carnarvon, 16; Plymouth, 631; opening of, 713
 Guthrie, the late Mr. George, 1003
 Gymnasium, Berlin, school architecture, 451
- HACKNEY**, building in, 27
 Hackney District Board of Works, and the Builder, 57
 Hackney, proposed new hall for, 233
 Hackney, new infirmaries buildings, 76
 Halls:
 Conversion of hotels into working men's, 271
 First Hants Artillery, new drill, 332
 Granville, Ramsgate, 766
 New, for the Curriers' Company, 1068
 New baths and public, Kensington, 271
 New, Hayward's, 323
 Opening of the Bradley, Marlborough College, 33; of the Southport, Cambridge, 387
 Proposed city, Chicago, 628
 Proposed concert at, Dover, 442
 Proposed gift of a public, at Stafford, 269
 Proposed new public, and mechanics' Institute for Barnsley, 494
 Scarth memorial, at Slindrop, 1018
 Zettell, the working men's, Richmond, 404
 Harbour, new, at Aberdeen, 792
 Harbour, the new, at Dover, 1068
 Harbour, Madras, 1070
 Harrow, 393; progress in, 582
 Harvey Memorial at Folkestone, 334
 Heat, further uses of waste, from lime heating, 683
 Heating apparatus, the new, 481
 Health, a strike for, a poem, 793
 Health, early notes on, and sanitation, 584
 Health, the connection between public, and activity in the trades connected with building, 602
 Healthful life, open spaces and, 304
 Hepthorpe, a poem, 712
 Hertford sewage works, 1028
 Hoardings, builders', and bill-sticking, 1070
 Holborn memorial, Prince Consort, 44
 Holborn Viaduct and railway station, 211
 Holborn Viaduct, hotels and shops, 747
 Home, new, and refuge for shoeblacks, 302
 Homer, Iliad, metals, &c., 691, 732, 754
 Homes for Russian workpeople, 324
 Homes of Dutch workpeople, 437
 Homes of workpeople in European Turkey, 438
 Homes of the poor, association for improving the, 508
 Homes, the, of the labouring classes, 658
 "Hoop and Toy," Old Brompton, 828
 Horseshoeing and the pavement, 1019
 Houses, 683
 Hospital, proposed erection of, at Brompton, 574
 Hospital, proposed, for infectious diseases at Hampstead, 1089
 Hospital, the Darlington Fever, 952
 Hospitals, cottage, 205, 257, 1019
 Hospitals, large and small, 247
 Hospitals that kill, 786
 Hotel and shops, Holborn Viaduct, 747
 Hotel, the Metropolitan Grand, 307, 340
 Hotel, Tatton Arms, Northenden, 389
 House building in the Fudge Islands, 398
 House building and metropolitan statistics for 1873, 711
 House property in England and the Census Commissioners, 166
 House, the Rochdale system of removing, refuse and night soil, 313
 House of what is, 404, 914
 Houses, ancient, at Weobley, Herefordshire, 666
 Houses for the poorest, 485
 Houses in reference to sanitary and artistic requirements, 94
 Houses of Parliament, lighting of, 551
 Houses, suitable, 273
 Houses, the fall of, in Newgate-street, 378
 Hoxton and its history, 279
 Hunderfield, opening of Somerset Bridge, 509
 Huguenots, 466
 Hyde Park-corner, 283
 Hydraulics, our knowledge of, 165, 251
- ILLUMINATIONS**, 86
 Imperial, the procession, glanced at artistically, 255
 Improvement purposes, public loans for building and, 833
 Incombustible wood for ship and house building, 283
 India, archaeology in, the Temple of Bharat, 947; antiquities in, 832; public works in, 684; the floods and the bridges in Southern, 1055; Indian buildings, 633
 Industrial, the outlook of 1874, 101
 Infirmary, new, for Lambeth, 444; appointment of architect, 630; payment of the architect, 587
 Infirmary, new, Marylebone, 98
 Infirmary, proposed, Hackney, 75
 Inner circle, completion of the, 4-1
 Inner circle railway and the new proposed streets, 475
 Inner, metropolitan, circle completion railway Bill, 523
 Institute Royal, of British architects, proceedings of:—
 Construction of conical roofs, 333
 Dome, central, of the Vienna Exhibition, 122, 147, 167, 204
 Election of office-bearers, 421
 Government architecture in Bengal, 289, 294, 298
 Hall, old, and new assize court at Winchester, 345, 346
 Hope, the, of English architecture, 879, 1044, 1046, 1065
 Institute and the Metropolitan Buildings Bill, 439
 Institute, the, 923
 Medals and prizes, 232
 Opening meeting, 914, 924
 Orwell Park observatory, 960, 991
 Position of, 273, 384, 445, 672
 Presidential address, 839
 Report of Metropolitan Buildings and Management Bill, 347
 R.B.A., 377
 Royal gold medal, 125
 Sanitary aspect of house construction, 44, 157, 178
 Society, 101
 Study of Italian architecture, Sir W. Tite's legacy, 1028
 Subscription to, 232
 Town and country schools, 456
 Vaulting, 474, 496, 510, 785, 1035
 Water supply of country mansions, 107
 Water supply and the conference, 515
 Institute of Painters in Water Colours, 1057
 Institute, Royal Colonial, the forest of British Guiana, 413
 Institute, Royal, of Irish Architects: *Conversazione*, 18; presidential address, 53
 Institution, Royal, of Great Britain, conversion of circular motion, 109
 Institution, the recent, and proposed extension of the Albert Embankment, 324
 Inventions, by whom are made? 1055
 Iron, the smith, 989
 Ironwork, foreign competition in, 884
 Italy, 359
 Ivory, carving in, 194
- JAPAN**, how they manage things in, 65
 Japan, architectural education in, and progress of the country, 685
 Johnson, Dr., 293
 Joint, a new, 647
 Jones, Inigo, 792; and Sir C. Wren in Ireland, 831
 Jones, the late Owen, 383; memorial of, 412; works of, 422; exhibition, 600
- KAULBACH**, reminiscences of Wilhelm Von, 345
 Kelmarsh church, Northampton, 1076
 Kells, the book of, 967, 1019
 Kensington, the Scott monument, 89
 Kensington Park, the Boticulture of, 753
 "Kinder-garten," on the, or developing system of drawing, 1075
- LABOUR**, isolation and the organisation of, 965
 Labour, picturesque, and machinery, 42
 Labour, the problem, work or play, 630
 Laborers' cottages in Cheshire, 540
 Lace, 495
 Laid, 100
 Lambeth new workhouse, 69
 Lambeth Palace library, 133
 Lambeth, street improvements in, 397
 Lambeth Vestry and contract system, 203, 251
 Land reclamation, 88, 115
 Land tenure and inclosure, 1029
 Landing stage, Liverpool, 643, 664, 924
 Landseer, Sir E., from first to last, 43
 Landseer's, the late Sir E., mansion, 454
 Landseer's Lions, decay of, 205, 358
 Law Courts, reconstruction of the Lincoln's Inn, 993
 Law Courts, the, 35, 57, 358, 377; Temple Bar and, 1064
 Law of employer and employed, 1018
 Lecture on architecture, &c., 914
 Lectures at South Kensington, 373
 Leeds, opening of new School Boards, 72
 Leeds, sanitary state of, 544
 Leeds Town-hall, ventilation of, 574, 693
 Leicester, new municipal buildings, 694
 Letters, writers of:
 Addison, J., the Liffey, 994 (611)
 Banford, W., landing-stages, 715
 Barlow, H. C., Church of St. Mary, Newington, Surrey, 375
 Barrett, E., improvements in laying asphalt, 673 (613)
 Barry, E. M., competitions, 675
 Beattie, J. N. St. B., the rainfall, 873
 Bettridge, E., steam transit on canals, 139
 Blandford & Jones, builders' contracts, 162 (181)
 Bowen, J., Flaxman's works, 340
 Boyd, D. O., suggestions as to fireproof constructions, 292
 Brabazon, Esq., London Hospital Saturday fund, 995 (715)
 Brink, D. J. V., the word "Wyk," 139 (158, 205)
 Bucknall, B. M., Viollet-le-Duc as an architect, 26
 Butler, F., new dwellings in Farringdon-road, 1056

- Powder stores, construction of, near Liverpool, 623
 Prisms, Troy, treasure trove of, 124
 Prison, in statue, Birmingham, 664
 Prison, new convict, Rochester, 404
 Procession, the Imperial, glanced at architecturally, 621
 Promenade, and new street in Douglas, Isle of Man, 106
 Proportion and symmetry, 188
 Public health, a manual of, 103
 Public Health Act, 183
 Public works abroad, 973; in Paris, Marshal MacMahon on, 127
 Pugin travelling studentship, 225
 Pulpit, new memorial, — Peterborough Cathedral, 350
 Pulpit in Worcester Cathedral, 698
 Pumps, Meurs, Warner's, and windmills, 109
 Puzzolano, natural and artificial, 800, 833
- QUEBEC INSTITUTE, 1039**
 Question, the, from another view, 173
- RAFFLES, a Madonna by, 34**
 Railway: Bridge, proposed, over the River Dee, 74
 Bridge, the great, 272
 Bridge, the, 46
 Construction, expenditure on, 765
 East London, 726; under the London docks, 202; disaster at, 250
 Enlargement of the South Western station at Clapham Junction, 499
 Enlargement of the Waterloo station, 397
 Expenditure, statistics of, 554
 Finsbury Park and Highbury, 826
 Great Eastern Metropolitan Extension, 86
 Great Eastern, new goods depot in Farringdon-road, 397
 Great terminal station, &c., Glasgow, 833
 Investments, returns of, 18
 Lime, 914
 Lims and Place, 863
 Matters, 466, 714
 Metropolitan extension works and Moorfields R. C. church, 903
 Metropolitan District new, to Hammer-smith, 812
 Metropolitan of the United Kingdom, 1009
 New station at Maidstone, 475
 New station at Anerley, 350
 New Waverley station of the North London, 712
 North-East Lancashire to Scotland, from, 69
 Opening of a new station at Bolton, 827
 Operations in Glasgow, 695
 Projects, Commissioners of Sewers and the City new, 203
 Stations, rolling stock of the North Eastern, 69
 Station at York, the gigantic, 412
 Tramway, gas, and water Bill, 302
- Railways, aggregate mileage of Continental and foreign, 827**
 Railways in New Zealand, 827
 Rainfall, exports, 914
 Ranelagh, Vauxhall and, 323
 Rats, a plague of and hints for their destruction, 394
 Reading, drainage of, 314
 Record, a yearly, of science and art, 747
 Rectory Nether Estate, East Dulwich, 814
 Rectory, the new, Act, 733
 Rennie, the late Sir John, 773
 Reredos: Euter Cathedral, difficulty, 8, 58; design, 312, 357
 Reredos, the new, church, 553
 St. Chubb's, Darlington, 445
 St. Paul's church, Waltham, 6
 Worcester Cathedral, 228, 370
- Retrospect, 100, 109**
 Revue Générale de l'Architecture, 145
 Reynolds, Sir Joshua, and a glance at his work, 6
 Rosemont, North Wales, 782
 Rhy, reopening of children's convalescent home, 42
 Rhy-Town, hall, 172
 Richmond, "Star and Garter," 835
 Richmond water-supply, 95, 494
 Riot on Chelsea Bridge, 311
 Ritualism as an art influence, 848, 932
 Roads: adoption of, by local authorities, 804; width of, under Metropolitan Management Act, 210
 Roadside system of removing night soil and house refuse, 313; tub system, 226, 261
 Rochester, new convict prison, 404
 Roman, the, 250
 Roman exploration fund, 962
 Rome, archaeology in, 41, 327
 Rome, Taylor and Cray's, 670
 Ruffs, Desfer's leather board for covering, 331
 Rotherham Independent College, 399
 Ruins of Cambodge, Indo-China, 419
 Russian, the, and his way of work, 436
 Russian workpeople, homes for, 324
 Ryde, the public lighting of, 128
 Ryde waterworks assessment, 428
 St. Alban's, saving the tower of, 85
 St. James's Park, state of, 214
 St. Lawrence, the, from America, 54
 St. Michel, church of, Troy, 116
 St. Paner's, Kentish, Camden, and Somers Towns, 895
 St. Paul's Vestry-hall competition, 913
 Sale, monument to the late Dr., 445
 Sand, 547
 Sanitary Act, the new, 893
 Sanitary and artistic requirements, houses in reference to, 84
 Sanitary arrangements in barracks and hospitals, 84
 Sanitary and other improvements, the Chancellor of the Exchequer on, 378
- Sanitary and industrial question and the general election, 86**
 Sanitary and social, a partial look back, 3
 Sanitary, the statue, Birmingham, for the metropolis, 953
 Sanitary engineering, 510, 530
 Sanitary notes of One and Government, 491
 Sanitary, early notes of health and, 684
 Sanitary Engineers and Surveyors, Association of Municipal and, 186, 377, 430, 708, 773; at Leicester, 246; Yorkshire district, 340
 Sanitary inspectors of the Northamptonshire combination, 116
 Sanitary students in Birmingham, 684
 Sanitary Laws Amendment Bill, 613
 Sanitary laws, as to the actual state of, 780
 Sanitary matters, 161, 259, 624, 993, 994, 1020, 1023, 1058
 Sanitary matters in the country: Biggleswade, 854; Carlisle, 854; Cirencester, 854; Preston, 854; Sedgley, 854; stone, 854
 Sanitary prospects of 1874, 22
 Sanitary state of Newquay, Cornwall, 814
 Sanitary students in Birmingham, 684
 Sanitary work, 363; first principles in, 1023
 Sashes, getatable, 339
 Savings and leases, 732
 Scattered church work, 834
 School architecture, 461
 School Board instruction, the Kindergarten system, 184
 School Board Schools: Metropolitan.—Battersea, 65; Bernerside, 478; Commercial-road, 322; Chelsea, 322; Clarendon, 914, 1039; Clerkenwell, 973; Forest-hill, Grove-road, 322; Hampstead-road, 322; Islington, York-road, 65; Kentish-town, 322; Kensington, North, 322; Kensington (south), 322; King'sland, 74; London, 17, 116, 182, 233, 465, 466, 547; London (south), 653, 715, 721; Lambeth, 746; Notting-hill, 924; Waltham, 225, 284; Wandsworth, 322
 School Board Schools: Provincial.—Abbotts Bromley, 638; Aberystwyth, 734; Bradford, 303, 548, 761; Bristol, 624; 734; Broadford, 638; Brompton, 17; Chilton, 512; Crofton, 538; Cowpen, Northumberland, 734; Canmore, 1068; Driffield, 835; Dudley, 914; Derby, 1023; Edinburgh, 17, 456, 514; Evesham, 628; Ewe, 538; Foulham, 1068; Gateshead, 735; Goolie, 924; Gosnell, 975; Grimsby, 251; Hatching, 511; Halifax, 528; Ilkeston, 528; King'swinford, 914, 924; Leeds, 73, 82, 883, 984; Leicester, 271, 715, 1028; Lenton, 613; Liverpool, 467, 814, 869; Llanabhai, 182; Llangollen, 924; Llantrisant, 484; Long Buckley, 741; Long Laton, 1008; Luton, 875; Messall, 528; Aldridge-brough, 182; Morley, 475; Newcastle, 303; Norwich, 467; Nottingham, 379, 1058; Poringland, 1058; Portsmouth, 370; Radford, Lancashire, 538; Rugeley, 613; South Berstead, 467; Sharncliffe, 715; Sheffield, 704; Shields (north), 512; Shildon (south), 734; Stoke-upon-Trent, 467; Stourbridge, 1058; Tansburgh, 274; Tipton, 303; Walsham, 225; Walsworth, 185; Wetherham, 324, 973; Wolverhampton, 81, 528
 School-building news: see weekly Numbers
 School buildings and fittings, 144
 School commissioners for Dulwich College, the new scheme of the endowed, 194
 School, female, of art, 923
 School, ladies collegiate, Belfast, 38
 School of Practical Engineering, Crystal Palace, 367, 964
 School, opening of Norfolk county, 804
 School, the High, Newcastle, 771
 School, Wolverhampton new grammar, 338
 Schools of Art, 74, 675; Barnsley, 839; Bradford, 606; Carlisle, 1002; City, 1002; Dorchester, 874; Dublin, 180; Eitheldra, 975; Epsom, 881; Exeter, 881; Kildermaster, 88; Leeds, 934; Liverpool operative science classes, 883; London (North), 963; London (West), 78; Manchester, 836; Maidstone, 183; Manchester, 36, 75, 443; Newcastle College of Physicians, 883; Nottingham, 116; Oxford, 1022; Reading, 351, Ryde, 76; St. Albans, 931; Salisbury, 1058; Sheffield, 183; Tonbridge, 351; Warrington, 183, 1098; Watford, 924
 Schools, opening of new, at Griffith Town, Monmouthshire, 831
 Schools, Havercast-hill, 694
 Schools, health in, 218
 Schools, movable, 574
 Schools, Moly, 198
 Schools, St. Margaret's, Moss-side, Manchester, 904
 Science for working men, Lord Derby and, 84
 Scott-Monastion, 762
 Scotland, from, 77, 274, 294, 314, 446, 527, 644, 634, 651, 736, 812, 855, 935
 Sculpture in the Exhibition, 343
 Sculpture, individualised in London, 182
 Sculpture, Greco, Buddhist, 198
 Sewage farms, Crewe, and works, 571
 Sewage farming, 214
 Sewage of London, the Metropolitan Board and, 734
 Sewage of Solihull and Balsall Heath, Birmingham, 61
 Sewage of towns, London sewage and, 378
 Sewage of Hutton and Roy, 993
 Sewage, intermittent downward filtration of, 754 (891)
 Sewage irrigation at Leamington, 763
 Sewage manure, 1028
 Sewage, purification of, 693
 Sewage, scheme of, and other improvements at, 571
- Sewage problem, a new fuel, 444**
 Sewage, the Wimbledon, 466
 Sewage works: opening of the country, 404
 466, 447; Rectory, 1028
 Sewer gas and water traps, 973
 Sewers, choked, 855
 Shadow of Death, the, 53, 105
 Shaft, Messrs Gottling's, Northfield, 715
 Shaftesbury Park Estate, Battersea, 232; the drainage of, 775; workmen's chapel at, 693
 Shakespeare, the text of,—The Globe, 337
 Sheffield Manor, Mary Queen of Scots' prison, 29
 Sheffield, street improvement at, 404
 Ships: iron, 1038; Lloyd's and the strength of, 735; watertight compartments in iron, 951
 Shoreditch, improvements in, 793
 Simpson memorial, 784
 Site as it concerns the builder, 820
 Silica, 45
 Sinal, Mount, 173
 Skeletons, ancient, in Ramsgate, 904
 Skelemerdale, the shocking state of, 87
 Slag, utilisation of, as a building material, 63
 Slate quarries, the strike in, 785
 Slaughter-houses Act, 793, 835
 Slaughter-houses and legislation, 334
 Slaughter-houses, erection of new, at the Metropolitan Cattle Market, 605
 Slaughter-houses: Kensington, 873; London, 237, 30, 310; importance of a special organisation for the diffusion of sanitary knowledge, 342; conversational, 551; expediency of protection of inventions, 1065; science competition, 1061
 Society of British Artists, 306, 1057
 Society of French Artists, 432, 962
 Society of Lady Artists, 275
 Soldiers' cottages, overcrowding in the, on Woolwich-common, 1070
 Somersetshire history, 761
 South-East London, 81
 Spanish artizans, dwellings of the, and slaves in the West Indies, 691
 Spontaneous combustion from the use of oils, 185
 Spring lake, a tale of, a 555
 Square, Leicester, ninety years ago, 509; reform of, 96, 96; the ground work in, 656; new street between, and Oxford-street, 996
 Square, Sloane, the ruins of, 551
 Square, Trafalgar, 353, 999
 Square, Paris: of Art and Sciences, 1047; of the Tower of St. Jacques, 1047; of the Trinity, 1047
 Stage, early history of the, 305
 Stained glass, 78, 93, 298, 467, 574, 736, 772, 974, 1050
 Stand accident at Lincoln races, 163
 "Star and Garter," Richmond, 535
 Statuary and morals in the States, 680
 Statue of John Bunyan, 196
 Statue, Sir Titus Salt's, at Bradford, 673
 Steam cultivation by a Norfolk farmer, 632
 Steam, the utilisation of waste, 162
 Steam transit on canals and shallow waters, a new method of, 109, 139
 Stockwell Green, proposed building on, 817, 891, 963, 964, 1009, 1027, 1078
 Stone carvings, concentric circle, in Ireland, 74
 Stone, decay of, in buildings, 612, 591
 Stone-dressing machine, 158
 Stone-rubber, Wilkinson's vertical, 29
 Stoneware, some recent inventions and appliances of, Leamth, 39
 Storm, damage by the late, 902, 1037
 Storm disastrous effect of the late, in London, 633
 Street improvements in Lambeth, 397; Sheffield, 404; Swansea, 275
 Street pavements, 105
 Street traffic, asphalt, wood, or granite for, 87
 Streets, proposed expenditure on,—Birmingham, 404
 Strike, a righteous, 774
 Striving, the happiness in, 814, 855, 873, 884, 895, 913, 955
 Subsidence of the road and sewers in Kensington-square, 953
 Sub-contracts and piecework, 463
 Sunderland town-hall plans, 531
 Surveyor, a trap for the, 634
 Surveyors and engineers, 633
 Surveyors — engineers across borough, 632
 Surveyors, Institute of,—Land Clauses Act, 44, 129; agricultural geology, 430; Metropolitan Buildings Act, 600; land tenure and inclosure, 1029
- Surveyors, civil, employed on the Ordnance survey, 627**
 Surveyors, Institute of, Melbourne, 793
 Surveyors, working a scientific, 1065
 Surveyors, 96, 106, 136, 161, 226, 273, 313, 409, 421, 575, 704, 806
 Surveyors, practical ornament, 355
 Symmetry, proportion and, 188, 226
 Synagogue, new Jewish: Liverpool, 773; consecration of a, Middlebrough, 675; new, Paris, 749, 691
- TATTERSALL, 471**
 Telegraphic progress, 831
 Temple, the, 504, 802
 Temple Bar, 683, 733; demolition of, 673; stops the way, 914; and the new Law Courts, 1064
 Temple railings on the Embankment, 282
 Tewkesbury Abbey, restoration of, 512
 Thames: boats at the piers, 713; overflow of the, 303, 1051
 Thames-street, 819
 Thames, Wandsworth Board of Works and the, 1064
 Theatre, Globe, 303; the text of Shakespeare, 337
 Theatre: Haymarket, 468; new, Margate, 643; new, South London, 247; sale of Her Majesty's, and the Opera House, 447; the primitive, 234; the Wagner, Bayreuth, 527
 Thoroughfare, a much-needed, 75
 Thoroughfare, proposed improved, between Clapham Common and the West End, 271
 Ties, the quality and price of, 34
 Timber and deals, 103
 Timber, the American, question, 313
 Timber, the preservation of, 712
 Timber trade, depression in the, in the North, 1037
 Times, new buildings for the, 308, 403
 Ties, the W. W. Legacy,—study of Italian architecture, 1061
 Tomb, Duban's, Paris, 313
 Tooting Common, conversion of, 1057
 Tower, the, a National Museum, 803
 Tower, saving the, of St. Alban's, 85
 Towers, Carlton, Selby, Yorkshire, 478
 Town-halls — Markets and, on every terms, 74; market and, for Heywood, 801
 Leeds, ventilation of, 674, 683; new, proposed, for Maidenhead, 637; new, Huddersfield, 399, 359, 659; Rhy, 1072; Sunderland, plan, 531; new, for Woolwich, 357, 609
 Trade societies connected with building, and their progress, 1061
 Trade, stagnation of, through high wages, 554
 Trade-Union Congress at Sheffield, 55, 62
 Trade, the, connected with building and the numbers employed therein, 378
 Trades movement, 126, 227, 233, 284, 313, 340, 378, 421, 458, 531, 551, 676
 Trade-agencies, 855; and other spaces, 809
 Traffic, the West-End and Pimlico, 674
 Traffic Bill, 302
 Tramway companies and the paving of public thoroughfares, 813, 85
 Tramway Company, the London Street &c., The Newington Vestry, 654
 Tramway, Hughes's patent, 483
 Tramway, removal of the Double, in Camberwell, 712
 Tramways, assessment of, 894
 Tramways, Baitall, Birstall, and Dewsbury, 655
 Tramways, removal of Liverpool, 538
 Tramway-trove of Priam, at Troy, 124
 Tridion parish church, 190
 Troad, discoveries in the, 61, 96, 762
 Troilbridge, tale works, 139
 Troy, 248, 264
 Troy diving, the sale of, 399
 Troy, treasure-trove of Priam, at, 124
 Tub, the, 963
 Tunnel: the proposed Channel, 258; the St. Gothard, 261; the Hoosac, 54; new Thames, 692; the works at the, under the Newry, 553; the Pera and Galata, Constantinople, 833
 Turkey, homes of workpeople in European, 489
 Turner Company, and Sir G. Scott, 127
 Tweed, pollution of the, 1076
- UNIVERSAL Alliance, the, 692**
 VALUE of property in Glasgow, 903
 Vauxhall and Ranelagh, 323
 Ventilation, warm air, 1050, 1077
 Vestry, Chelsea, and unsightly spots, 612
 Vestry-hall, St. George's, 606
 Vestry-hall, difficulty at Kensington, 614
 Vibration of railway bridges, 361
 Victoria, from, 573
 Victorian Institute of Architects, 463
 Vienna Exhibition, Mr. Atten's Birmingham report on the, 129
- WAGES of Clyde shipbuilders, 1038**
 Wages, the, 107
 Wages, workmen's claim for, during illness, 593
 Walls and Straits of London, 662
 Walls, the, the, 107
 Wales, important works in, 107
 Wales, New South, the rising generation in, 1008
 Walls, previous, 293
 Walls, new factory premises at, 87
 Waltham, extensive new building projects in, 96
 Wandsworth Board of Works and the Thamesfrontage, 441; new buildings, 574
 Wandsworth district, 933
 War, a Biqu, 389
 Wards, vagrant, for Loughborough, 213

- Warehouse, a clothier's, Bristol, 707
Warehouse, new, Lisson-grove and Harewood-place, 102
Warehouse, Manchester, 298
Warehouse, Queen Victoria-street, 419
Warehouse, Liverpool, 151
Warming and ventilation, 103, 107
Warrington Art Gallery, 422
Water-colour drawings, Dudley Gallery, general exhibition of, 102
Water-colour Exhibition, Pall-mall, 344, 368
Water Company, Southwark and Vauxhall, new works at Nuneham, 173
Water—See Bad, 795
Well, 302
City supply, the, 714
Delicency of, in Bermondsey, 622
Metropolis, 68; supply and fires, 162
- Water:—Warwick, 707
Supply, waste: and constant service, 57; storage and, 896, 772
Supply: for country mansions, 107; impurity of the Lambeth Company's, 139; proposed new for Liverpool, 404; Maidenhead, 1057; Richmond, 60, 464; constant, in Whitechapel, 735; and river pollution, 873
Works: for Chichester, 558; Doncaster, 1078; Hyde, assessment, 626; Ripley, 784; Yeovil corporation, 213
Watering-places and summer resorts, 724
Waterloo Railway Station, enlargement of, 74, 307
Well, a wonderful old, 1017
Well, death in excavating a, 464
Wesleyan chapel and school-room, South Norw., 874
- Wellington Monument, 377
Westminster Abbey, protection of, from fire, 423
Westminster, old, 1010
Whitaker's, Mr., exhibition, 622
Whitehall, New Home and Colonial Offices, 523
Wholesale robbery, 161
Winchester, Bishop of, memorial cross, 57
Window gardening, 414
Wood carving in Italy, 611
Wood: incombustible, experiments at Bickenhead, 1078; preservation of, 673; under fire, 168; unflammable and indestructible, 356
Woodwork on machinery at the International Exhibition, 152
Worcester Cathedral, bell and carillon machine, 238; reredos, 228, 370
- Wolverhampton new grammar schools, 338
Workhouse: Alterations in the, of St. Pancras, 635; enlargement of St. Saviour's, 694; Lambeth, new, 69
Workhouses, metropolitan, 181
Workmen's houses, a gauge for speculative builders, 1002
Wrestling, baths and washhouses at, 125
YEOMIL corporation waterworks, 213
York, gigantic railway station at, 413
York Minster, restoration and reopening of, 963
York, Roman remains at, 65
York, St. Mary's Convent, 371
Yorkshire, new cottage buildings for colliers in, 724
ZEALAND, NEW, railways in, 927

ILLUSTRATIONS.

- ALEXANDRA PALACE, the New.—Mr. J. Johnson, Architect, Plan, 688; View, 689
Altar, new, Church of the Augustinian Convent, Bruges, Messrs. Perry & Hanson, Architects, 303
Almonshouses, Alley's, St. Luke's.—Mr. T. J. Hill, Architect.—Plan, 685; View, 1089
Aquarium, Manchester, 174
Architectural Seraps, 728
Architecture, Street, Cheapside.—Mr. E. L. Rounie, Architect, 80
Architecture, Street, Cornhill.—Mr. Thos. T. Smith, Architect, 808
Architecture, Street, Queen Victoria-street.—Mr. Edward Ellis, Architect, 417
Asylum, London Foresters', Bexley-heath, Kent.—Mr. W. J. Porter, Architect, 260
- BALDACCINO in Ratisbon Cathedral, 11
Bank, Bradford District, Messrs. Milnes & Francis, Architects, 529
Bank, London and County, Islington.—Mr. Chancellor, Architect, 31
Bank, National Provincial, of England, Middlesbrough.—Mr. J. Gibson, Architect, 155
Bank, New Provincial, Buenos Ayres.—Mr. Henry Hunt, Architect, 928
Bath, St. Andrew's Church, Walcot.—Sir G. G. Scott, R.A., Architect.—Plan, 304; View, 305
Baths and Washhouses, Paddington.—Mr. L. H. Isaacs, Architect.—Plan, 80; View, 61
Baths, New Swimming, St. Marylebone.—Mr. H. Saxon Snell, Architect, 801
Bells and the Carillon Machine, Worcester Cathedral, 242
Berlin, König Wilhelm Gymnasium, 457
Billingsgate Market, New.—Mr. H. Jones, Architect.—View, 698, 699; Plan, 695
Bomley, Public Works Offices.—Plan, 438; View, 439
Bradford District Bank, 829
Brighton, St. Bartholomew's, Architect, 608
Bristol, St. Mary Redcliffe Church, 646, 649
Brompton, Old, The Hoop and Toy, 828
Bruges, New Altar, Church of the Augustinian Convent, 353
Buenos Ayres, New Provincial Bank, 928
Buildings, Imperial, Queen Victoria-street.—Mr. F. J. Ward, Architect, 401
Burlington, St. Paul's Church.—Plan, 725; View, 728
- CARLTON TOWERS, Selby, Yorkshire.—Mr. W. Pugin, Architect, 181
Castle, Cokerenmouth.—Plan, 945
Castle, Helmsley, Plan, 67
Cathedral, Carlisle, the Reredos.—Mr. G. E. Street, R.A., Architect, 1011
Cathedral, Exeter, the Reredos.—Sir G. Scott, R.A., Architect, 10
Cathedral, Peterborough, Memorial Pulpit.—Professor Barry, Architect, 352
Cathedral, Ratisbon, Baldaccino in, 11
Cathedral, St. Mary's, Edinburgh.—Sir G. G. Scott, R.A., Architect, 1032, 1033
Cathedral, Tournay, the Choir, 789
Cathedral, Worcester, Bells and the Carillon Machine, 242; Reredos.—Sir G. G. Scott, Architect, 373; New Pulpit.—Sir G. G. Scott, Architect, 388
Chapel, New Wesleyan, Rotherhithe.—Mr. Chas. Bell, Architect, 768
Chapel, Portal of the Digby Mortuary.—the late Mr. W. Slater, Architect, 189
Chicago, Prop. and City Hall, Plan and View, 624
Church, All Saints, Plymouth.—J. Hine, Architect, 330
Church of the Augustinian Convent, Bruges.—Messrs. Perry & Hanson, Architects, 303
Church of the Sacred Heart, Montmartre, Paris.—Seven Desigs, 705, 707
Church of Wetzlar, Germany, 963
Church, Proposed, of La Villette, Paris.—Messrs. Goldie & Child, Architects, 1033
Church of St. Theogene, Finisterre, 267
Church, St. Andrew's, Walcot, Bath.—Sir G. G. Scott, Architect.—Plan, 304; Interior View, 305
Church, St. Bartholomew's, Brighton.—Mr. Edmund E. Scott, Architect, 609
Church, St. Mary Redcliffe, Bristol.—Mr. George Godwin, F.R.S., Architect, 646, 649
Church, St. Paul's, Burton.—Mr. J. M. Teale, Architect.—Plan, 725; View, 728
- Church, Southern Congregational.—Mr. W. J. Stent, Architect, 929
Club, St. Stephen's, Westminster.—Mr. J. Whitehead, Architect.—Plan, 379; View, 379
Club-house, Manchester, Conservative.—Messrs. Horton & Bridgford, Architects.—Plan, 849; View, 849
Convent, New, School and Orphanage, Bartrams, South Hampstead.—Mr. C. G. Wray, Architect.—Plan, 588; View, 589
- DULICH CLOCK TOWER, 133
Dunrobbin, Memorial of the late Duchess of Sutherland, 431
Dwellings of the Industrial Classes, New Buildings, Farringdon-road.—Mr. Fred. Chambers, Architect.—Plan, 1043
- EARTHWORKS.—Plans: Binbury, 625; Breconley, Kent, 625; Castle Hill, Moxborough, 685; Loughton-en-le-Morthen, 685; Middleham, 625; Pickering, 685
Edinburgh, St. Mary's Cathedral, 1032, 1033
Elmsleigh, Leicester.—Messrs. Picton & Co., Architects, 142
- FOUNTAIN, Shakespeare, Leicester-square.—Mr. James Knowles, Architect, 567
France, Abbey Mont St. Michel, 608
France, Squares in, 1049, 1052
- GALLERY, Art, Th. Walker, Liverpool.—Messrs. Sherlock & Vale, Architects, 592
Germany, the Church of Wetzlar, 963
Gymnasium, Imperial, Vienna, 460
Gymnasium, König Wilhelm, Berlin, 457
- HALL, the Granville, Ramsgate.—Mr. Wimperis, Architect, 704
Hall, Proposed City, Chicago.—Mr. Thos. Tilley, Architect.—Plan, 622; View, 629
Herefordshire, Ancient Houses at Weobley, 608
Holborn Viaduct, Hotel and Shops.—Mr. E. Cronk, Architect.—Plan, 748; View, 749
Hoop and Toy, Old Brighton, 828
Hotel and Shops, Holborn Viaduct.—Plan, 748; View, 749
Houses, Ancient, at Weobley, Herefordshire, 608
- ISLINGTON, London and County Rail, 31
- JOINT, a New.—Diagram, 547
Jones, the Late Mr. Owen.—Portrait, 363
- LAMBETH NEW WORKHOUSE.—Plan, 70; View, 71
Leicester, Elmsleigh, 132
Leicester Square, Shakespeare Fountain, 567
- MANCHESTER AQUARIUM, 174
Manchester Conservative Club.—Plan, 848; View, 849
Manchester Island Revenue Offices.—Messrs. Penniston & Hedges, Architects, 729
Manchester Warehouse, Chepstow-street.—Plan, 155; View, 249
Manufactory, Pianoforte, West Kensington.—Mr. Lewis H. Isaacs, Architect, 1073
Market, New Billingsgate.—View, 698, 699; Plan, 695
Melyn School, Glamorganshire.—Plan and View, 194
Memorial Cross, Bishop of Winchester's, 67
Memorial, the Clement Shrewsbury, Mr. John Gibbs, Architect, 411
Memorial of the late Duchess of Sutherland, Dunrobbin, 431
Mr. J. Robinson, Architect, 331
Middlesbrough, National Provincial Bank of England, 155
Mont St. Michel Abbey, France, 694
Monument to Lady Beauchamp, Hugbenden Church.—Mr. Arthur Vernon, Architect, 908
Monuments, recent Cemetery, 241
Mortuary Chapel, Portal of the Digby, 196
Music, National Training school of.—Plan, 590; View, 609
- NEWCASTLE, NEW POLICE COURTS.—Plan, 948; View, 949
Northumberland House, Strand.—the Glass Drawing-room, 574
Nutfield Priory, Surrey.—Mr. John Gibson, Architect, 171
- OFFICE, NEW COLONIAL, Parliament-street.—Sir G. G. Scott, R.A., Architect.—Plan, 524; View, 525
Offices, Economic Life Assurance, Bridge-street, Black-Town.—Mr. Ewan Christian, Architect, 260
Offices, Island Revenue, Manchester.—Messrs. Pennington & Bridges, Architects, 729
Offices, Public Works, Bombay.—Mr. St. Clair Wilkins, Architect.—Plan, 438; View, 439
Opera House, New Paris.—Mr. Garnier, Architect, 416; New Vase for, 745
Orphanage, New Convent School and, Bartrams, South Hampstead.—Plan, 588; View, 589
- PADDINGTON BATHS AND WASHHOUSES.—Plan, 91; View, 91
Paris, New Opera House, 416; new Vase for, 745
Paris, Church of the Sacred Heart, at Montmartre.—Seven Desigs, 705, 708
Paris, Proposed Church of La Villette, 1033
Paris: Square of Art and Sciences, 1049; Square of the Tower St. Jacques, 1049; Square of the Trinity, 1052
Plymouth, All Saints' Church, 330
Plymouth, School Board School, 372
Police Court, Newcastle.—Mr. John Lamb, Architect.—Plan, 548; View, 549
Pottery, Lambeth, 360
Prison, Queen Mary's State, at Sheffield Manor, 30
Pulpit, Memorial, Peterborough Cathedral, 352
Pulpit, New, Worcester Cathedral, 968
- RAMSGATE, the Granville Hall, 709
Reredos, Carlisle Cathedral, 1011
Reredos, Exeter Cathedral, 10
Reredos, Worcester Cathedral, 373
Rhyll Town Hall.—Messrs. Wood & Turner, Architects, 1072
- SCHOOLS: School Board, Bermondsey.—Mr. J. James, Architect, 480; Forest Hill.—Mr. Saxon Snell, Architect.—Plan, 220; View, 221; Liverpool: (Chatsworth-architect)—T. M. Roade, Architect, 388; Plymouth.—Messrs. Davis, Eummauel, & Co., Architects, 372
Schools, London-fields (West-street), 437
Schools, National Training, of Music.—Lieut. H. H. Cole, R.E., Plan, 694; View, 699
Schools, Melyn, Glamorganshire.—Mr. J. Norton, Architect, 181
Sheffield Manor, Queen Mary's State Prison at, 30
Shrewsbury, the Clement Memorial, 898
8 witnesses (congregational), Church, 101
Squares: of Art and Sciences, Paris, 1049; of the Tower St. Jacques, 1049; of the Trinity, 1052
Star and Garter Hotel, Richmond.—Mr. C. J. Phipps, Architect.—Plan, 541; View, 544; Interior View, 545
- TOMB of Mrs. W. B. Waterlow.—Mr. John Robinson, Architect, 469
Tournay Cathedral, the Choir, 789
Tower, Clock, Delhi.—Mr. E. J. Martin, Architect, 133
Town of the Protestant Church in Broda, Holland, 164
Town-Hall, Rhyll, 1072
- VASE for the New Opera House, Paris, 745
Vienna, Imperial Gymnasium, 46
- WALKER ART GALLERY, Liverpool, 502
Warehouse—a clothier's, Bristol.—Mr. H. Masters, Architect, 709
Warehouse, Manchester (Chepstow-street)—Messrs. Speakman, Hickson, & Co., Architects.—Plan, 289; View, 289
Warehouse, New, Lisson-grove and Harewood-place.—Mr. T. Harris, Architect, 110, 111
Warehouse, Queen Victoria-street.—Mr. E. Ellis, Architect, 417
Westminster, Old, 1010
Westminster, St. Stephen's Club.—Plans, 308; View, 309
Whitehall, New Home and Colonial Offices.—Plan, 524; Part Elevation, 525
Winchester's, Bishop of, Memorial Cross, 57
Window Gardening: Fern Cases, 434
Wilkinson's Vertical Stone Rubber, 30
Worcester Cathedral.—Bells and the Carillon Machine, 242; New Pulpit, 388; the Reredos, 373
Wrestling, New Washhouses, Messrs. Parns & Aldwinckle, Architects.—Plan, 70; View, 71
- YORKSHIRE, CARLTON TOWERS, Selby, 161

The Baltic



An Art Tour
in
Northern Capitals.

It was hinted, a season or two back, that the Alps were becoming *de trop* to the tourist, and that their place, as a region for feats of pedestrianism and mountain - scrambling, was likely to be taken by "the frosty Caucasus," to which some ardent holiday-makers had acted as pioneers. How far the prediction has yet been realised does not concern us here; but the movement in favour of a new "playground of Europe" has its counterpart among the seekers after recreation of a more æsthetic nature. The army of fine-art connoisseurs are growing over-familiar with the galleries of Italy; the valuable but somewhat limited treasures of Spain have been pretty well overhauled; and there is now a divergence towards the lands of the northern barbarians, in search of paintings or articles of *vertù* less familiar to the compiler or the reader of note-books. This tendency, however, is perhaps not merely due to a desire for change, but also to a perception of the gradual opening up of prospects for an artistic career for some of the northern nations which have entered more recently into the field of intellectual civilisation. The blossoms of the human intellect seem, in some degree, to depend on the same influences which call to life and luxuriance those of the inanimate world. Beautiful conceptions spring up and take form first and most luxuriantly under a southern sun. They lie dormant for generations longer, or appear but as rude imitations, for the most part, in less temperate climates. How far and in what manner the southern arts have influenced the most northern countries of Europe, and what is the chance for a new and original growth of art in some of these more inclement regions, which (like Russia) are rising in the scale of civilisation, are considerations suggested and partly answered in Mr. Beavington Atkinson's recently-published account of "An Art Tour to Northern Capitals," over territory "which, though not unexplored, has scarcely become beaten ground."

The line of exploration here adopted leads us through the capitals adjoining the Baltic, Copenhagen, Christiana, and Stockholm; thence to

the Finland towns bordering on the Gulf of Bothnia, Abo, Helsingfors, and Wiborg; and thence, southward, through St. Petersburg, Moscow, and Kief, the pre-eminently sacred city of Russia. The practical value of the book lies in the categorical information given as to the contents of museums and galleries of art in these places, some of them but little visited by Englishmen; a good deal of the interest of it lies in the descriptions of the material, social, and artistic aspects of the places visited, and the inferences suggested as to their future part in the development of the arts. In regard to the first point, the nature and extent of the treasures possessed by some of these northern capitals will probably surprise a good many readers. Denmark, to begin with, appears to have systematised the collection of the various kinds of ancient relics in metal work, &c., generally comprised under the vague term "antiquities," to a degree scarcely accomplished in any other country. "The Museum of Antiquities of the North," we are assured, "would alone excuse a pilgrimage to Copenhagen"; and the richness of this and other collections in Denmark is, in part, owing to the interest taken in the matter by the Government, who recommend the country people to preserve even the most poor and trivial specimens, the law providing, moreover, that all gold and silver ornaments found shall be forwarded at once to the royal collections, where the full value of the metal will be paid. The amount and size of the articles of ancient gold work in the museums of Copenhagen, Christiana, Stockholm, and St. Petersburg, would almost seem to indicate that the current value of the precious metal was much less than what it is now, at the time when these articles were fabricated, or that it was in much fewer hands; which latter certainly is probable enough. The collected old masters at Copenhagen are mostly of the Dutch school; not presenting the finest attributes of the school, but "sufficient to give an untraveller Dane a fair general idea" in regard to it, as well as other European schools more or less represented. National art seems to have produced no great results as yet in Denmark; and it is curious to find here, as in others of what may be called the outlying northern towns of Europe, where one might expect national individuality of style, uncontaminated to any great extent by foreign influence, such abundant evidence of the academical influence of the France and Italy of the latter half of the last century and the earlier part of the present. In these comparatively poor countries (Denmark, Sweden, and Norway), the first idea for a man who evinced any talent as an artist, seems to have been, to get away from his native town and study at Rome or in France, or, later, at Düsseldorf. A man of real genius might thus get rid of the "note" of provincialism, and assimilate himself to the leading

art progress and ideas of the age; but he thus also lost the individuality which the influence of his own country and its aspect and customs, somewhat apart from the general movement of European affairs, might have stamped on his works, and too often merely acquired the power of parroting a manner foreign to his own natural genius. Thus it is that, among the native art-products of the North we find some of the poorest and most *fade* classicities, presenting all the conventionality inherent in this particular manner of using painting, without the best of the merits of execution which may be illustrated in it. Thus, in more recent periods, we find the landscape schools of the North identified almost entirely with the manner of the German landscape-painters, more particularly the Düsseldorf school, with which accordingly a work by one of the best Russian landscape-painters, Ducker, was classed in the last International Exhibition at Kensington; the work having, artistically speaking, no possible claim to the title of Russian. While there are only a limited number of first-class art-schools in Europe, this fusing of nationalities will go on increasing, no doubt, as the readiness of inter-communication increases; but so soon as each of the countries which has hitherto sent out its artists to school, has achieved a first-class school of its own, more national individuality will be realised, in spite of the levelling influence of railways, and the confluence of styles at international exhibitions; for as long as a painter can find the means for study at his own doors, instead of going abroad for it, he cannot avoid the special influences of the climate and scenery, and society of his own country, of which the last item only (and that but partially), is modified by inter-communication. Let countries which desire an art of their own, then, hasten to bring their own art-schools to an efficient standard, so as not to leave their artists to be absorbed by more central European schools, to the detriment of variety and originality in the manner of looking at and interpreting nature. Provincialism is a bad thing, no doubt; but neither can we afford to have the art of all lands put, as it were, into central academical mills, and ground down to one standard. In regard to this point, it is noticeable that our author finds the artists who show most of originality and promise in the North to be those who (many of them being themselves of humble origin) have devoted their talents chiefly to painting scenes of the character of peasant life in their own lands, thus almost securing an individuality of subject and treatment. Among men of genius who, while betaking themselves to study at the great European centres of art work, have, nevertheless, retained their own idiosyncrasy, Thorvaldsen (to whom a large space is devoted here) is a notable and perhaps quite exceptional instance. Among the antique marbles of Rome and Greece, and while illus-

trating the mythology of the South, he still retained in nearly every work the characteristics of the North where he had been born and reared; and under his classic figures of Death and Sleep, of Mercury and Venus, we still seem to find something of the largeness of manner, the sternness of purpose, of the Northern artist. Part of the element of Thorwaldsen's peculiar and marked style, Mr. Atkinson, however, traces, and we think with reason, to a mechanical cause—to the fact that the sculptor first learnt and practised his art as a wood-carver, and the wood style of modelling and manipulation, with its peculiar touch of stiffness and irregularity, never, he thinks, wholly left the artist. Instances corroborative of this will occur to every one who is well acquainted with the Danish sculptor's works; though it is a singular consideration that an art so eminently ideal as sculpture should be influenced in some of its greatest examples by so practical and matter-of-fact a cause;—that the relation of the artist's style to his material should be so intimate, and so important in its effects, that the material in a sense seems to mould the artist almost as much as he moulds the material.

The architecture of the Northern capitals seems to be invaded by the academical spirit as much as the painting; and in Copenhagen our author notes that while some of the older buildings, though heavy, have a massive picturesque peculiar to themselves, there is nothing to distinguish the more modern streets from the standard of "commercial commonplace" of any other modern capital. We notice the observation that the castle of Elsinore is "not only interesting from its associations, but also from its structural analogy to the castles of Stirling and of Edinburgh, Heriot's Hospital, &c. During the Jacobean period it has been said that there was an almost perfect identity between the architectural styles of Denmark and of Scotland." Leaving Copenhagen and steaming up the estuary, sixteen miles in length, which forms the approach to Christiansia, we find here again architecture which "might suit equally well Paris or London," in a town of exceptionally beautiful and romantic site. The principal art collection here is in the gallery known as "Oscar's Hall," situated some way from the city, where Tidemand's works form the best part of the collection. Landscape, illustrated by Gude and other lesser painters, has had the largest share of attention by Norwegian artists, yet they go to Germany to learn to paint it, Gude himself being a professor at Düsseldorf. Figure-painting is at a low grade. Pleasant must have been the journey from Christiansia to Stockholm, with its night ride in the Northern twilight, and pleasantly it is described by our guide, who in his first walk about Stockholm found it to be "one of the most picturesque capitals I had ever entered. Again I found myself enfolded by inland waters and all but tideless seas. Stockholm is Queen of the Baltic, as Venice is Queen of the Adriatic; the sea is in her streets. . . . the town, in fact, floats on islands. . . . there is inland navigation all the way to the old university town of Upsala." Architecture is again, however, a disappointment. "The Royal Palace, of which Stockholm is justly proud, would look more at home on the shores of Genoa, while its handsome *vis-à-vis* across the water, the new Art Museum, comes from Berlin." Great efforts have been made, however, and not without result, to rear a native school of painting. The late king, who interested himself much in this matter, was a painter of landscapes, good in composition and defective in execution; but, as Mr. Atkinson puts it, "a king who even coquettes with the arts is likely to do more good than *harm*." Eminent among national portrait-painters was Breda, the pupil of Sir Joshua Reynolds, and called the "Swedish Vandick"; but, in fact, it is here as Lowell asserts it is in America, where, as he tells us,—

"I myself know six Titians (I think), one Apelles, A whole host of Scotts,—any number of Tennysons;—In short, if a man have the luck to have any sons, He may make pretty sure that some one of 'em train Will be some very great person *or* again."

So among the nations that are, as one may say, just coming to their painting, every other artist seems to be "the Russian Turner," or "the Danish Millais," or something equivalent. Some remarks upon the scope for the painter in Scandinavian landscape (p. 117 *et seq.*) are interesting and suggestive. Further on we meet the remark that Sweden is one of the few countries where there still remains a peasant life for the artist to depict, in its proper attri-

butes of picturesque homeliness and simplicity; and all who remember the charming picture by Amalia von Lindegren, in the International Exhibition of 1862, "Evening in a Dalecarlian Cottage," will be inclined to think the observation correct. Fresco-painting (to glance at an opposite extreme of art production) is an art one would scarcely expect to meet so far north; but the cathedral at Upsala is decorated with a series of wall-paintings of this class, on a large scale, illustrative of the life of Gustavus Vasa: these are about forty years old, and the work of a native artist, Professor Sandberg. Sculpture is not without its successes among the modern Swedes of the last generation or two; showing, however, the phenomenon remarked before in painting and architecture, the assumption of the quasi-antique style learnt at Rome, varied, however, sometimes by an outbreak of national feeling and character. In regard to the statues by Fogelberg of Odin and Thor, it is noted, that "while the subjects are Northern, the manner is wholly Southern; the chisel is Canova's, the hammer of the god Thor is not felt in the work"; a remark which may probably be taken as a summing up of the general relation between Southern schools and Northern work of this class.

Across the Gulf of Bothnia our tourist takes us to Abo and Helsingfors: the old capital of Finland, with its wide area only partially occupied by a shrunken population, being noticeable chiefly for its cathedral, a building "wearing that uncouth and anomalous aspect, which seems to tell how Gothic styles lost their way, and wandered far afield ere they reached their utmost confines. . . . The Cathedral at Abo is as a twin-sister to the Cathedral of Upsala; each stands on the foremost frontier of civilisation; each is the historic representation of piety, learning, rank; and each, too, in point of art, may be comparable to a huge antediluvian creature cast on a desert shore, or imprisoned in Siberian snows." The modern capital, Helsingfors, has assumed, architecturally, "that pomp in pediments, that array of lofty columns and granite steps, which constitute the inviolable resource of Imperial architects." The streets are all named in three languages, Finnish, Russian, and Swedish, the language having been, since the absorption of Finland into Russia, in a happy state of fluctuation. Wiborg, further east, is a summer resort of the wealthier Petersburgers, and likely to become more so as railway extension goes on in this part of the country. Finland has, however, scarcely as yet either produced or afforded subjects for painters; only Metschersky, the Russian artist, has painted Finland winter scenes with great fidelity. He again learned to paint snow and ice in Switzerland, and was pupil of Calame, who had been pupil of F. Daubigny.

To the Russian capital itself a large part of Mr. Atkinson's book is devoted, and those who are about to visit that seat of rising power will find much useful information as to what is best worth seeing there in the way of art. Architecturally, two things that strike the visitor especially are the domes (mostly gilt) and the granite monolithic columns, which form quite a characteristic feature of the modern architecture of the place. Much is done also in woodwork, and marquetry, constructively and decoratively. The collection of works of art at the "Hermitage" is probably the largest establishment of the kind in existence, taking the museum and the picture and sculpture galleries together; exhibiting that lavish purchase of objects of real or supposed artistic value so characteristic of the Government of a half-civilised country (until recently one might say, perhaps, of a half-civilised Government), where art is only one form of ostentation. For the description of the immense and varied contents of this museum we must refer readers to Mr. Atkinson's pages, merely mentioning as probably correct his surmise that many of the pictures with great names found here are not genuine. Reynolds's "Infant Hercules," painted for the Empress Catherine, is an item in the collection; as well as one or two other paintings executed by him for the same sovereign, who had read the "Discourses," and appreciated both the pen and pencil of the P.R.A. The antiquities of the Greek period from Kertch, in the Crimea, form one of the most valuable portions of the Hermitage collection, including numbers of elaborate works in gold, silver, bronze, and iron, found in the tombs at Kertch, and displaying "a mixture of styles pure and impure, a mingling of manners civilised and barbarous,"

peculiar to the locality in which they were found. Of some designs in outline engraved on plaques of wood and ivory, Mr. Atkinson remarks that "Plaxman and Stuchard would have rejoiced over designs that embodied the ideal which they strove for and attained."

The artists of Russia receive important assistance and encouragement from the Government, particularly through the intervention of "The Society for the Encouragement of the Fine Arts," which has been protected and sustained by three successive monarchs. Some particulars in regard to this society and its work the author learned from a director, whose ambition was to tread in the footsteps of "King Cole of Kensington." The chapters on "Russian Artists, their Lives and Works," have appeared in a periodical devoted to art, but they are quite worth reprinting in a more permanent form. As a typical example of the tendencies, and of the merits and shortcomings of Russian art at present, is mentioned the large painting of "The Butter Week (Carnival) at the Admiralty-place, St. Petersburg," which all visitors to the last International Exhibition will remember. While the colour, judged by our standard, is very crude, the picture also illustrates the fact that the Russian painter seldom fails in telling a story. The remarkable works of M. Vereshagin we have recently become pretty familiar with in England.

We must content ourselves with merely mentioning the interesting chapter on the Imperial manufacture of mosaics; from which it would appear that this branch of art is in very decay "a manufacture," and little else, in Russia at present; the utmost minute care being bestowed on the cutting of the cubes, and the whole process of putting the mosaic together, the designs being mostly of a type presenting little art power or invention, and servilely repeated by one workman after another. The price is considerably greater than the Venetian mosaic, probably in consequence of the delicate care taken in the manipulation; a questionable labour and expense, when it is considered that mosaics can only be adequately seen at a considerable distance from the eye. Our author's tour finishes with Moscow and Kiev (of each of which there is much to say), and a journey across the wild uncultivated plains of Southern Russia, till civilisation turns up again at Czernowitz, the frontier of Austrian Poland.

All who have any thoughts of visiting the same localities, will find much of Mr. Atkinson's book an excellent preliminary guide, and to those who have not the opportunity of doing so, such a careful and well-written account, containing much just and well-considered art-criticism, cannot but be of *ex*traordinary interest. It is not very long since we had the agreeable duty of summarising the contents of an excellent guide to some of the collections of Italian art, "The Ciccone for Italy." It is certainly with something very different from "the calm joy of soul" with which the art-treasures of Rome filled Dr. Burckhardt, that we lay down the work which has given so interesting a sketch of some of those of the northern regions of Europe. Instead of contemplating the remains of great and triumphant arts, the creations of some of the most gifted of the human race, we have been wandering among semi-uncouth attempts at art, beginnings of things, as it were, some of doubtful, some of no value, except as characteristic of national endeavour and national character. Yet, in these struggling into existence of half-formed and half-understood arts, there is a deep interest for us too, for it is from some of these nations that a good deal of the future elements of artistic production will probably proceed; and while we look back with love and admiration on the art of the past on the shores of the Adriatic, let us not forget that we or our descendants may possibly have to welcome a great part of the art of the future on the shores of the Baltic and its adjoining estuaries, or amid what are now the scarcely cultivated plains of Central Russia.

Wind-Indicators.—In a communication to the Académie des Sciences, M. Tany objects to vane as indicators of the wind, since they indicate a direction when there is no wind, and they do not indicate the force or velocity of the wind. He would substitute a little flag suspended by a cord from a metallic ring pulleyed on a vertical rod.

A PARTIAL LOOK-BACK: SOCIAL AND SANITARY.

THE year 1873, if not marked by events of the startling magnitude of some that occurred during several of its recent predecessors, has perhaps afforded more distinct proof than has become evident during any corresponding period of time, of the reality, the rapidity, and the thoroughness of that great revolution through which the human race is passing, in its social, moral, and physical development. From the points of view special to our own columns, the social, industrial, and sanitary history of the year has been more full of incident, and of interest, than either its architectural or its mechanical retrospect. But it would be an inadequate glance at even the most salient points in our industrial history which should fail to take into account some of those important political events, whether at home or abroad, which have exerted no slight influence on the relations between the employers and the labourers.

We had occasion, in the earliest weeks of the past year, to call attention to the extreme gravity of the situation of the colliery industry of South Wales (vol. xxxi., p. 38). *The Builder* was the first, or at all events one of the first, public journals that called attention to the fact that the contents of the collieries of this country had a definite limit; while the quantities of coal extracted from them were annually increasing in a very alarming ratio. After some effort on the part of those who were discontented with the policy of "hand to mouth," a commission was appointed to investigate the subject. That commission made a report, which has probably long been consigned to oblivion, although the publication of the "Geological and Statistical Maps, to accompany the three volumes of the report of the commissioners appointed to inquire into the several matters relating to coal in the United Kingdom," which formed almost the only valuable result of the inquiry, was not issued to Parliament until April, 1873 (435-iii. of "Hansard's Monthly List" for April). With the approach of the winter of 1872, occurred the advance in the price of coal which we had predicted, on engineering reasons, but which assumed the form of a coal panic. Coal then "rose to nearly double the ordinary price, taking the average of preceding years" (Whitaker's "Almanac," page 228). Later, a Parliamentary inquiry was set on foot. The report and evidence, "on dearth and scarcity of coal" (a bulky volume, costing 5s. 4d. at the low Parliamentary rates), was issued in the month of August. The attention of the committee, however, had been adroitly misdirected from that portion of the inquiry where practical results might have been obtained; and little came out from their investigation but general statements, as to the activity of the coal-consuming industries throughout the country.

Meanwhile the colliers thought the time opportune to assert their power to regulate the whole manufacturing and commercial system of the country. Some 10,000 colliers refused to work, in South Wales, except on terms which their leaders attempted to dictate to the masters. The hostile illdness of these men, kept from 50,000 to 60,000 ironworkers in enforced illdness, and thus the hunger of more than a quarter of a million of men, women, and children was deliberately caused, in order to forgo a weapon for coercing the employers. By the end of February the actual loss thus incurred by the labouring population of the district was estimated at 400,000. But this, as we showed at the time (vol. xxxi., p. 138), was but a fraction of the real loss. The stone thus set rolling has continued its course. Rise of price, in all departments of expenditure, has continued, throughout the year, to augment like an avalanche. We do not suppose that, even for the prime necessities of life, 4s. will now go as far as 3s. a year ago. While certain causes which originate out of England (as the production of a larger annual yield of gold than formerly) have something to do with a rise of prices which is felt throughout Europe, it has been the attitude of certain portions of the working-classes that has chiefly aggravated the cost of commodities during the past year in England. We have good ground for saying that the advance in price, measured in shillings, that has occurred, in twelve or at the outside eighteen months, is not far from one-ninth part of the total advance that has occurred from the time of the Norman Conquest to the present day in consequence of the depreciation of the

currency. The pennyweight of silver, which had sunk from 24 to 22½ grains Troy by A.D. 1257, is now represented by 8 grains Troy. In this gradual lowering, not of the purchasing power of silver, but of the real quantity of silver (or of gold) in a nominal pound of account, the managers of our currency effected many miserable speculations at the cost of the public, and, eminently, at the cost of the poor. What kings and princes did, under pressure of need, and in ignorance of true political economy, the working-classes seem now bent on out-doing, although they are themselves the chief sufferers. For in a general rise of price (or in the relation between legal currency and commodities, however caused), the poor man is the chief sufferer. The rich merchant, manufacturer, or tradesman, keeps up his rate of profit; so that the more costly is his merchandise, the larger is his income. The person of independent, but limited, income, meets an increased demand upon him for necessities, by lopping off luxuries. With the poor, luxuries are few. The margin that they have for saving is small. A fall in the rate of wages, or what is the same thing, a rise in the cost of provisions, thus means neither more nor less than pinching the belly. And this result,—now, alas! but too widely felt,—is the natural, foreseen, and certain consequence of that rise of price which is caused by the power of combined illdness. That is to say by any systematic effort, on the part of the workman, to make the rate of wages depend, not on the true value of the work done, but on some artificial method of limiting the supply of labour.

This unconscious imitation, as far as results go, by the working classes, of some of the most mischievous unthrifts of the welders of irresponsible power in his enlightened times, has resulted, among other things, in the organisation of that federation of which we spoke recently.

Passing from the industrial retrospect of 1873, which is not a cheering or assuring subject of contemplation, we have had a terrible warning,—and more than a warning,—given to the country as to its sanitary condition. It has been the second great warning within two years. The Local Government Board, Parliament, and the public seem resolved to wait for the third. It is a hazardous audacity. It is now little more than two years since the hair-breadth escape of his Royal Highness the Prince of Wales from the terrible scourge of typhoid, produced throughout the country a sensation which has had no parallel since the occasion of that European calamity, the death of his royal father. The nation was stirred and worked up to the fact that a terrible and ruthless enemy, one that seemed to select the virtuous among those whom the world could least spare, was encamped in the land. This enemy, they were told, the sanitary engineer would pledge himself to exterminate. *Carte blanche* was given, not so much by public terror as by public-good men to her Majesty's advisers, to set the engineer to work. The result was the imperfect measure of 1872,—imperfect in its design, and reduced to a state of imbecility in every part of its growth, from the grub of a Bill to the fly of an Act of Parliament; and secondly, by an administration, or rather, non-administration. Again the terrible scourge has been shaken over us. Not this time by selecting two or three conspicuous victims,—victims to suffering and anxiety, even where life was saved. The destroying angel has swept over our thresholds. Many of those most loved, most honoured, most needed by those who depended on their life, have been taken from our midst. One good step has been taken for the protection of the metropolis, by detecting at least one source of infection,—a poisoned supply of milk. But the very reports made by the professional men who visited the sewage-contaminated dairies show what is the condition of the country under the administration of Mr. Stansfeld's Bill. If there was one pleasant picture of rustic health and cleanliness in England, it was the dairy-maid. English poetry is musical in its praise of her neat-handed activity and blooming beauty, that beauty which is the outward and visible sign of the in-dwelling virtue of cleanliness. Hard-headed men of thrift were at one with the poet here; for the products of the dairy are of so delicate a nature, that they at once betray to the practised observer the want of due care as to purity; yet in the dairy was found the only explanation of the terrible typhoid of 1873. What must the country be outside the dairy?

Even as we write, one much esteemed friend,

a man whose name is intimately associated with sanitary engineering, has found himself impelled to give public utterance to a complaint that we have more than once had to urge. He has shown how the attempt to turn doctors into engineers (which has been most unfortunately aided by many medical men, although to the Local Government Board we may be said to owe its origin), while it must be a disastrous failure, as far as the medical ventilators, draughts, and sewer-makers are concerned, is a retrogression to the worst habits of protection and ignorant times, and is the certain road to mischief. Nothing but this division of England into great sanitary water-shed districts, which we have pointed out as the first intelligent step towards a real sanitary survey, and towards the adoption of really protective measures, and the proper organisation of a competent engineering staff for the discharge of the national sanitary duties, will prevent a third warning, which is likely to be more fearful than that of either 1873 or 1871.

The year 1873 has earned a bad eminence in respect to railway accidents. The grim total is not yet summed up. Nor, when the official returns are complete, will this by any means represent the real amount of personal injury sustained. Very recently it has come to light that reports of accidents to railway servants—who after all are human beings—are rather the exception than the rule. We took occasion (vol. xxxi., p. 697) to ask attention to one main cause of the greatest number of the accidents which had been reported up to that time. We showed that they might be traced, in nine cases out of ten, to a false economy of construction. We pointed out the necessity, if we were to pay any heed to the rules of common sense, or to the protection of human life, of taking the same care, by means of structural arrangement, to avoid the crowding of one line of train traffic over another, on the same level, that was originally prescribed with reference to the several streams of traffic by road and by rail. The report of Captain Tyler, issued some few weeks after our remarks, gave to them the definite sanction of statistical proof; as the investigation made by him of the causes of the accidents on which he had to report showed, that the main cause was that which we had pointed out. The glaring catalogue, however, had continued to lengthen. The melancholy death of Mr. J. O. P. Cunliffe, knocked down as he was crossing the Brighton line at a station, brought home the idea of personal danger to the most cautious. A correspondence has lately been made public between the Government and the representatives of the railway interest, in which the latter competently assert that they have nothing to amend.

It is impossible for the matter to rest here. The natural course of things, therefore, will lend force to the arguments of those who are in favour of the assumption of the railways by the State. If it once becomes clear that the fullest service of the public is inconsistent with the maintenance of the profits of the proprietors of railways, the subordination of our own entire system to Government control, as in the case of the Post-office and of the Telegraphs, will only be a question of time.

An architectural question of extreme interest, as regards the structural ornament of the churches of England, has assumed considerable importance. The decision of Dr. Tristram, that the erection of the permanent Tabernacle, called a Baldacchino, which is a part of what the doctrines of the English Church call the superstitious veneration of the Host, is illegal, will probably yet be fought over. A similar question is now under dispute as to a new reredos at Exeter. The one main principle, it seems to us, which should guide the architect in these questions, is truth. It is not for the architect to volunteer his opinion as to whether the road to heaven lies most directly through this church or that. But it is his business, if he rise to the true dignity of his profession, to see that the church or chapel that he erects or adorns, for any creed or sect, should be, as far as possible, the structural expression of the requirements of that particular form of worship, and thus of the opinions of that sect. We cannot conceive that an educated and intelligent architect could refuse, for instance, to build a synagogue, if he was invited to do so (and if the Jewish architects were not to the fore to hold their own). If he undertook the commission, it would be his duty to provide the place for the Ark, or repository of the Law, and generally to produce a building

suitable for the customary worship of the synagogue. If he were to attempt (as matter of gratification to his own ideas of religion) surreptitiously to introduce Christian symbols, he would be unfit for his task. The churches and cathedrals of this country have been for the last three hundred years the rallying-point of a creed that condemns idolatry in plain terms. The framers of that creed bade all idolatrous emblems, whether crucifixes, images of saints, or tokens of superstitious veneration for sacra- mental churches. That is the law of England. When a Romish congregation seeks to build a new place of worship, the builder will yield due admiration to the munificence and taste with which the requirements of their creed are carried out. A similar condemnation—in the bosom of every plain-dealing, honest man, is due to every attempt, whether of insidious craft or of mere æsthetic ignorance, to re-introduce into the churches of this country the symbols of a worship and a rule which England has rejected. We misread the signs of the times if England is not being now goaded towards a very unmis- takable expression of opinion on this subject.

Other objects of retrospection crowd so fast upon the view, that it is hard to avoid either wearying the patience of our readers, or giving but a partial and truncated sketch of the main features of 1873. Architectural discoveries in the East have been brilliant, as described in our account of Canon Tristram's "Land of Moab," and of Lieutenant Conder's discoveries in Palestine (vol. xxii., pp. 397, 838). The researches of Mr. George Smith in Assyria, hardly so productive during this year as might have been hoped,—are resumed, as is fit, at the expense of the British Museum. Public attention has been called,—in a somewhat blundering manner, but with good results,—to the necessity of vigilance as to the condition of our great merchant navy. The Royal Navy has not attracted so much scandal as in former years, although there has been some reason to fear that the ready service of the steam-engine tends to throw into the background the hardy and manly qualities which are those of the good sailor and the great sea-captain. The rapid march of science, and its victory along the whole line, were brought into full relief at the meeting of the British Association. A financial disturbance,—it may almost be called a convulsion,—that occurred in November, is worthy of especial note by all those who, as large employers of labour, depend at times on banking facilities, from the close parallel which it afforded to a similar movement in 1872. In that year the Bank rate of discount, rapidly rising, attained the maximum of 9 per cent. on the 9th of November, and sank to 5 per cent. by the 12th of December. In 1873, 9 per cent. for discount, and 12 per cent. for short advances, were obtained on the 7th of November; the rate sinking to 5 per cent. by the 4th of December, and continuing to fall. Undue fears as to the effect of the German war were the cause of the depression in the former year; the bursting of a huge bubble of American credit, in the latter. But the great lesson is, that our finance is, from year to year, becoming more and more of a cosmopolitan character; more easily affected by events entirely out of the control of our own merchants and financiers; but at the same time retorning, with unprecedented rapidity, to the general average law of Europe.

In art and in education 1873 cannot be said to have shown any retrogression. A terrible famine seems impending in Bengal. Our little war on the Gold Coast shows the danger of such administrative experiments as have been so freely indulged in for the last five years. At the same time it yields a welcome proof that the pluck of the English soldier has not been diminished by the pains lately taken to improve his comfort and ensure his elevation. We are proud to be able to refer to the name of one of the youngest captains in the army,—his Royal Highness Prince Arthur,—as one of the numerous volunteers for this dangerous service. We cannot but contrast, as perhaps the most brilliant feature of the year, the unselfish, unhesitating devotion to duty which is the prime characteristic of the British officer, and, under his inspiring example, of the British soldier, with the miserable disclosures of the court-martial at the Trianon. England may continue to expect her sons to do their duty, when the pick and flower of her youth, with a son of the Queen at their head, press forward to offer their services not only against the dangers of war, but the worse dangers of pestilence.

ON FIREPROOF BUILDING.*

An examination of the qualities of the materials ordinarily used in building in relation to heat shows that they may be classed roughly in a threefold division—viz., 1st. Those which are combustible but non-conductive, in which class are to be placed all timbers. 2nd. Those which are not combustible, but are ready conductors of heat, and lose all strength and utility as building materials in the presence of heat, in which are comprised the metals used in construction. 3rd. Those substances which are not combustible, are bad conductors of heat, and do not lose their cohesive strength in the presence of heat; in this class are comprised stones, earths, cements. This last class must, however, be again separated into two subdivisions, as there are some stones which are, as has been before stated, chemically affected by heat—notably the compounds of lime and others; indeed the great majority of stones are affected by strong heat when suddenly or irregularly applied, in the same way as thick glass on the sudden application of boiling water. We have, then, in this third class some materials which are thoroughly trustworthy, as the earths and cements, using that term to comprise all mortars and concretes, the materials of which do not comprise unaltered limestone; and others which are less trustworthy, viz., the stones.

But before we proceed to the practical application of the principles we have been considering, there is a point of great importance which we must first examine and make ourselves thoroughly conversant with—that is, the effect of water on these several materials. The object before us is the saving of property from damage as the result of fire, and the loss is no less if we use such a material as will perhaps resist fire, but fail on the application of water. Now the effect of a strong jet of cold water on cast iron and stone is generally to cause them to split and fly like glass; it will strip walls and ceilings of plaster with marvellous rapidity, and wash out the joints of brickwork, possibly from some chemical action in the lime, but I believe really from the mechanical effect produced by suddenly cooling. Malleable iron would be only liable to distortion by sudden and unequal cooling, but otherwise would not be affected. On timber alone would no effect whatever be produced; the action of water would simply reinitiate the process of combustion, if successfully applied, without doing any special damage of its own.

Now, I think we are in a position to see and know what we must do to produce a fireproof structure, and to judge of any given design that pretends to that quality, whether that pretension is founded on fact; but there is still another consideration which ought to be taken up before proceeding any further, and that is the intended use of the building—viz., what is to be put in it; what the arrangements connected with its occupation are to be. Is the material to be stored in the building one which in its nature is non-inflammable or only with difficulty inflammable? Is the operation to be carried on one which involves little or no risk of fire? All these are questions to be ascertained and settled before sitting down to design a building which shall be suitable for the intended purpose; for it is quite clear that with a very inflammable material, such as flax, or cotton, or oils, we have primarily to guard against their being ignited (which is rather matter of precaution in the working of the concern than belonging to the building of it), and also against the effects of their being ignited on the building. But there are many things the risk of igniting which is very small indeed—such as books and papers in densely-packed bundles, casks of wine, &c.; these there would be great difficulty in setting fire to, and it would be sufficient, therefore, to make the building arrangements such as would not bring masses of inflammable material into contact with them. Such things are safe enough if stored in a building composed almost entirely of iron and brick or stone, without floors or sheeting or trimmings of windows or other fittings of deal, as the materials will not burn, except as the result of long-continued effort. There can be no fire to injure the iron used in the construction, and such a building would be safe against anything but deliberate and intentional fire-raising.

But the case where the real difficulty of the architect occurs is when the contents of the

building are themselves inflammable, or the operations carried on in it are such as involve the risk of fire on a considerable scale. Now as regards these cases, the type for the architect's imitation is a baker's oven or an iron puddling furnace, the constructive essence of which consists of its being an apartment, the walls, ceiling, and floors of which are composed of brick and tiles; in the latter case they use only the best Stourbridge brick set in fire-clay, and the 9-inch brick is burned away to 1½ inch thick in about seven days. But the great difficulty is, that this form of structure is limited in its application to dimensions so small as to be quite unsuited to many purposes of modern trade.

And here I would mention, by the way, a recommendation of great importance made by Captain Shaw, of the London Fire Brigade, I believe—viz., that as far as possible the risks should be divided; that, whenever practicable, strong fireproof divisions should be constructed, so as to limit the damage and loss, and also the labour of extinguishing, within the narrowest bounds. Thus, if a store or factory were being constructed, say 100 ft. long and 20 ft. broad, there would be doubtless some sacrifice of appearance, and probably of convenience, and not a little additional expense in construction, in dividing it into five parts separated by a good thick wall, and having double sliding-doors on the face of each partition wall; but, in the event of a fire occurring, such a mode of construction would be of enormous advantage in preventing, or at the least considerably delaying, the spread of fire, thus allowing the efforts of the firemen to be concentrated on one spot, and limiting damage by water, &c., to one compartment.

But what is the architect to do who has to design a cotton or flax-mill, perhaps 200 ft. long and 40 ft. or 50 ft. broad, and some five or six stories high, without a single internal wall or anything to act as intermediate supports to floors but pillars, which must be kept as light as possible? I confess that such a problem is not solvable.

AMERICAN INSTITUTE OF ARCHITECTS.

At the seventh annual convention of this body, recently held in Chicago, Mr. P. B. Wight, architect, as deputy president, made an address, some portions of which we print:—

This is a National Convention of Architects—no less than the Convention of an organised Institute of Architects. The American Institute of Architects is only the machinery of the convention. Nothing can be done without permanent organisation. An organisation formed each year, and then dissolved, would be incapable of progressive effort. The machinery of this society is constantly in motion. It is very economically administered. There are no salaried officers. It is supported by the voluntary contributions of those who become its members; that is to say, by the annual dues of members elected upon their own application. It does not operate for itself, but for all. Whatever benefits it confers are enjoyed by all alike, whether they pay or not. It does not seek any special benefits or privileges for its members. Its objects are clearly expressed in its constitution:—"To unite in fellowship the architects of this continent." That is very clear, and yet to those who have practised in isolation it must sound strangely. "Fellowship" may be a condition not clearly understood by some of us. It is possible, however, and in our experience has been found to succeed remarkably well. There are unprofessionals, also, who do not understand us any better.

The self-enforced isolation of architects has been the source of all the misfortunes of our profession. In the absence of friendship, backbiting and slandering become easily-acquired accomplishments. Until late years our profession stood alone in the prevalence of these evil practices, and wherever they have existed it has fallen into well-deserved contempt. The innocent have shared this with the guilty, and, as a result, have either retired in disgust to other occupations, or have adopted the tactics of the less scrupulous persons to procure business enough for a decent living. Unscrupulous clients have taken advantage of this state of affairs to drive sharp bargains, whereby they have procured the services of architects at rates so low that they have been forced to resort to a system of collusion with builders and persons furnishing materials, whereby they receive commissions for favours granted, or blood-money for neglecting to compel the faithful execution of contracts.

* By Mr. James H. Owen, M.A. Read at meeting of the Architectural Association of Ireland, December 18th, 1873.

Unscrupulous architects, who have gained extensive notice by pretending to work for merely nominal remuneration, have made their living by forming combinations with rings of contractors, or favouring the use of certain materials; all of which is virtual robbery of their clients, for all that they receive comes out of the price paid for the work. They have set an example which weaker brethren have too often followed. These are some of the practices which have cursed our profession, and which are the natural results of the spirit of unfriendliness which so long existed among architects. That they exist now to an alarming extent cannot be denied. The only cure for them is the cultivation of a spirit of friendly relations and a union for mutual support. By this means the interests of architects and clients will alike be subserved, and mutual confidence, so essential to the successful prosecution of work, will be established on a sure and lasting basis.

But, gentlemen, the objects of this Institute, as defined by its constitution, are twofold. They are not only "to unite in fellowship the architects of this continent," but "to combine their efforts so as to promote the artistic, scientific, and practical efficiency of the profession." Herein is described the influence to be exerted by the Institute upon the actual work of architects. There are no generalities in this expression. The educational qualifications essential to an architect are mentioned in detail. It is the combination of these elements which makes him fit for his work. He must be artistic—his feeling for beauty must be developed—a knowledge of the whole range of art must be his. He must be scientific; his knowledge of the science underlying construction must be thorough; he must not only know what has been done constructively, but he must understand the chemistry, the mathematics, the law of forces, and the strength of materials. With this knowledge he can invent construction, and produce that which has never been done before. Thirdly, he must be practical—he must understand all the processes in use, and must be apt at combining them, and levying contribution on all past experience. These three qualifications are the means for producing successful results. And in these results, the finished work of the architect,—the completed structure,—the whole world is largely interested. It is for this reason that our proceedings attract a peculiar interest, especially in this city, whose people have recently been brought into such intimate relations with her architects.

It is a happy circumstance that the convention should be held this year in Chicago, especially at the present season, which completes the second year of her resurrection from ashes. As an adopted citizen I think I may claim the privilege of thanking you in her behalf for the compliment you have bestowed by your unanimous vote in favour of holding the seventh convention in our city. How much the Chicago architects appreciate the honour conferred upon them by this meeting they will assure you this evening, when you become their guests. The new city will afford you a sensation altogether novel, and will be of special interest to you above all others. It is useless to look through history for an account of the building of the substantial business portion of a great city within a period of two years. We have heard of, and some of us have seen, those remarkable frontier cities which have come into existence within the period of a few weeks; but they were cities of boards and shingles. A continuous line of such buildings, $\frac{1}{2}$ mile in length, was erected in this city, for temporary use, in a period of one month, and now not a vestige of them remains. Half the space covered by them a year ago is now a cultivated park, embellished by landscape art to the highest degree, and the remainder is covered by the new exposition building, a structure which ranks with the largest in our country.

In its sensational aspects the new Chicago is a city of substantial buildings commenced two years ago, and covering a square mile of ground. To the calm, dispassionate view of the professional eye it is the growth of a necessity which knows no waiting, and as such can make no claim to perfection. As a whole it may be the wonder of the world, yet in its parts it cannot fail to bear the impress of hasty execution. You will doubtless find much to praise and much to criticise. With but few exceptions you will see the work of Chicago architects and Chicago mechanics. You will also have an opportunity for comparing what remained of the old city, without the

burned district, with what has been built of the new, making due allowance of the additions of these two years in the unburned part, which have also been considerable.

At such a time as this the architect may find an appropriate period for critical reflection. We have passed through two years of great activity. Our experience has had all the elements of a battle. But this contest with crude materials, with time and the elements, has been a work of creation and not of destruction. We are the tillers of an old soil, and now we behold a fair field overgrown with good fruit, yet rank in parts like hasty vegetation. With calmer skies we now may look for better fruit. With time and thought bestowed, we may confidently hope that the future may be brighter in its results than the present; that architecture may here take that high rank which the importance of this city warrants; and that her practitioners may be sensible of their high calling, and fulfil the promise conveyed in the works which they have set before us.

We have adopted in our constitution a rule that the condition of membership into this body shall be, "the honourable practice of the profession." We have also adopted the rule that "no member shall accept direct or indirect compensation for services rendered in the practice of his profession, other than the fees received from his client," and we propose to enforce them if in our power. But we cannot "adopt" or enforce any measure unauthorised by our constitution. We can, however, recommend—we can investigate, and find out what is best, and give it authoritative recognition. But even then our action can have no weight, unless it receive the moral support of the profession. This is better than arbitrary rules which cannot be enforced. A man may be free to act as he likes, but if he follows the spirit of our laws it will be a point of honour with him to sustain the opinion of the majority. A union founded on honour is the strongest of all unions.

Your committee will report on these matters in detail. Their authority covers all questions that may arise. They may even review our own action on past occasions. We have adopted not only a Schedule of Charges, but a Schedule of Competitions, both of which have been extensively published. The latter is quite as important as the former, and there is equal necessity for uniformity of practice in both cases. The benefits conferred by uniformity of charges will accrue to the weak rather than to the strong. When this principle is recognised, no one need barter away his valuable services for a song, and surrender to the demand of shrewd bargainers, from fear that a successful rival may underbid him; then there will be no rivalry but that which is based on merit.

This being the case, competition, based only upon the merit of work, becomes a necessity. Now, in order to be assured of the truth of this broad assertion let us note some facts observable in every-day experience. An architect procures employment in either of three ways. First, he has a friend who employs him without special reference to his ability, or that friend recommends him to somebody else. Second, he is selected on the strength of his executed works, viewed in comparison with those of other architects. Third, he is employed because he has made a design in competition with others, which design has pleased his patron. The two last methods are essentially competitive. In the former of the two his works stand in competition, though often he is not aware of it; in the latter his design is in competition, and the impression conveyed by a drawing decides his fate. The former is legitimate competition, the latter can only be so under certain restrictions. Theoretically, competition is a fair way of estimating reputations, but practically, it has been in nearly every instance a failure. Were all men perfect, and this world a Utopia, it might not be so. But, and perhaps unfortunately, this is not the case. Architects take the world as it is, and the world takes architects as they are, and the result is too frightful to relate. Our fair city has just brought her tearful experience to bear upon this question, an experience which has thus far been characterised by everything that is lamentable except bloodshed.

The roar of battle has been heard in our midst for the past six months, and the varied successes of the different champions have been watched with eager interest by hosts of sympathising, and perhaps interested, friends. The very air has been full of the direful imprecations of con-

tending factions. The whole profession has been scandalised by the charges and countercharges that have been bandied about, and obtained publicity through the press. The official records of our chosen representatives are the authentic evidence of their inability to grapple with the question, or else of their utter indifference to all sense of justice and right. Its supposed settlement by the adoption of a plan proves to be only a truce, for the great question is yet to be decided as to which faction shall put its architect in charge.

The successful competitor—if success it can be called—suddenly finds that the adoption of his plan is an empty honour after all. His reward is the smallest prize offered, plus the honour of acceptance, and no sooner is his plan adopted, than he hears the proposition to place his design in the hands of a rival for execution.

Taken altogether, the incidents of this disgraceful struggle have not failed to be novel, startling, and sensational,—characterised by originality and inventive genius of the highest order.

For the first time in history, questions of religion, public morals, temperance, and nationality, have all been involved in the attempt to decide which one of fifty designs shall be followed in the erection of a court-house, and which one of fifty shall be employed to superintend it. That of a committee which reported one of three plans as deserving of a first prize, nearly every member has since publicly proclaimed that it is the worst of the three; and, as if to crown with absurdity all the other features of this public performance, we have been witnesses of the fact that the common council of this city appointed a committee to investigate charges of corruption against its members before a design had been definitely selected.

Seriously, gentlemen, this is a question which does not alone concern the city of Chicago, and the competitors who offered their designs. It concerns every one of us. We are to-day on trial before this community, and before the whole country. If we fail to give our authoritative opinion, and throw the whole weight of our influence upon this question, we will stand convicted of incompetence to deal with it. And not only will the city of Chicago—which has become an object of ridicule and contempt, a jeer, a by-word, and a laughing-stock, by her attempt to conduct an architectural competition,—fail to procure the services of those best fitted to do her work; but you, who by education and experience are the natural leaders of public opinion in this respect, will soon find that ability and honesty are poor recommendations for places of honour and emolument, and that the public buildings, not only of this city, but of every other city and State, will fall under the control of charlatans and pretenders. And for such results you need not blame your common council or your Board of County Commissioners. Your shrewd committeeman knows by experience how little bait it takes to catch a greedy architect. We may say what we like about the importance of throwing safeguards around these competitions, such as the appointment of experts, and the like, but so long as fifty sets of the most elaborate designs can be procured on a specification so loose that any one may be robbed of his precious ideas, and be powerless to maintain his natural rights under it, there will be no reforms. Any recommendation of this Institute pointing to reform, to which the architects will not give their support, is a nullity and a farce. This whole matter is in your hands to regulate. You may compete or not as you please. But your ambition will always be your weakness, and plenty stand ready to take advantage of it.

Believing that competition is theoretically right, I think you have but to name such conditions as you may think just, or re-assert such as you have already adopted, and you will regulate this whole matter; but if you fail, the fault will be mainly yours. You have but to unite your efforts, and to stand together, bound only by the obligation of honour, and justice will surely be yours.

Unpleasant as these reflections may be, they are the practical problems of our every-day life, and must be solved. Our profession is a peculiar one, demanding varied and almost contradictory accomplishments in him who would be successful; combining the delicate sensibility of the artist, the research of the scientist, the practical experience of the mechanic, and the shrewdness of the financier. Is it to be wondered at that

so many fail? Were we that easy-going race, as we are sometimes pictured, who spend our days in the indulgence of beautiful fancies committed daintily to paper, and coloured by the most accomplished artists, it would indeed be waste of time to travel thousands of miles for the purpose of discussing practical problems. But we are, after all, work-a-day men like the rest of the world, carrying great responsibilities, and subjected to annoyances and trials of patience little calculated to develop a love for art. Yet we live in an age marked by great advances in our profession, and we have a serious work to perform, if we but keep in the traces. This has been called the age of the new Renaissance,—not according to the technical meaning of the word,—but because of the fact that it is characterised by new revelations in architecture, the resuscitation of old principles, and the adoption of new forms.

Our part in this revival is well defined. Everything we do exerts its influence. If we do not keep up with the current of progressive thought, we will only become impediments in the way. Our duty is clear, and our opportunities are great. Let us strive, then, to be at least worthy of our day and generation. Let us seek all possible means of self-improvement, and prepare to take a leading place among the nations, that the arts of our country may be worthy of our progressive civilisation, and our happiness a joy for ever.

PARIS NEWS.

The Arcade of François I.—Preliminary measures have just been taken by the Paris Municipal Committee of Public Works for the re-edification, in the gardens of the old Hôtel Carnavalet, of a curious specimen of the architectural art of the Renaissance, which was discovered eight days ago by the workmen occupied in levelling the ruins of the Hôtel de Ville. It is a stone arcade decorated with the salamanders adopted as emblems by François I., and with several *Ps* woven into royal crowns. The relic was found under the central part of the Hôtel de Ville, at the spot occupied by the equestrian statue of Henry IV. It was in removing the stones of the impost on which this statue rested that the workmen's picks laid bare the arcade. It is in admirable preservation. The presence of the royal initial and the salamanders leaves no doubt as to the date and origin of the fragment. The arcade must have formed part of the façade of the old Hôtel de Ville, which must therefore have been built before the death of François I., in March, 1547. A vexed point among architects is thus finally settled. The primitive façade was constructed by Domingo Boccadoro. In a few days the arcade will be visible at the Hôtel Carnavalet, near Mme. de Sévigné's boudoir, Condé's pavilion, and the bed-chamber of Nînon de l'Enclos.

A Model Theatre.—A rather improved pendant to the "Criterion" has just been opened in Paris. It is the Salle Frascati, belonging to the famous *cafetier* of that name. The theatre is small, but the architectural disposals are admirably ingenious and artistic. Entering by the Rue Vivienne, the visitor finds himself in a small lobby, where the box-offices are situated; by a double staircase he descends to a large vestibule, at the right of which is the Grande Salle, for the balls and concerts. This hall is very spacious. At the entrance is a fountain sprinkling perfumed water, and of which the central figure is that of a naïf hesitating, her attention distracted by the music of the orchestra, before plunging into the water. At the further end of the Salle the orchestra is established. A circular promenade is reserved for smokers; and behind the orchestra is a *café*. Above, the promenade a tier of boxes has been established; and underneath the concert-room is a vast shooting-gallery, decorated with trophies exhibited by nearly every well-known gunsmith and armourer in France. On the same level are four saloons: a reading-room, a dressing-room, and rooms for the doctor of the establishment, and the commissary of police on duty. The vestibule gives also into the theatre, which is very small, the stage being but eight metres wide. From the auditorium a long gallery and promenade lead to the Rue Richelieu. This corridor is bordered by pilasters, between which are *jardinières* full of evergreens, statues, and benches, alternating with small billiard-tables, and stalls for fancy articles, kept by women. From the centre of

the gallery branch out a *café*, and a hall reserved for games of all kinds, roulette, swings, roundabouts, &c. The decoration is tasteful. The walls are marble to a distance of 3 ft. 6 in. from the ground. Above there is a continuous frieze of looking-glass 1½ metre in width. Finally, there is a suite of hangings in panels—red and gold for the theatre and ballroom, green and gold for the promenade and shooting-gallery. The ceiling is decorated with a series of skies, separated by ornamental borders, and surrounded with acroteria garnished with flowers. The difficult and elaborate work of transformation and decoration has been completed by the architect, M. Higonet, within the space of thirty-four days.

Cessation of Work in Paris.—A popular French proverb asserts that when the builders work everybody works. The Paris municipality appears to doubt the truth of this ancient adage. Its policy has been, above all, to establish the very reverse of M. Haussmann's *réforme*. Nearly every work of repair and construction, whether of the fate in the hands of the civic authorities, progresses tardily; fitful spasms of energy that last a week, succeeding lethargies that last a month. The Hôtel de Ville is occasionally deserted for four or five days together. One member of the Municipal Council has endeavoured on several occasions to call the attention of the authorities to the waste lands that might be utilised, to the new thoroughfares demanded, to the numerous buildings belonging to the city left unoccupied and unrepaired. This member is M. Martin Nadaud, a self-educated journeyman-mason, deputy in 1848 and 1871, and author of an excellent "History of the English Working-classes." His efforts have been unavailing. And during the past week there has not been one contract for public works adjudged by the Tribunal of Commerce. Setting apart the periods of the siege and the Commune, this is the first time such a thing has occurred for the last sixteen years.

The New Year Barques on the Boulevard.—The lines of wooden sheds or *barques* that appear on the chief boulevards during the two weeks' festival of the new year, are the subject of a special and complicated municipal service. The planks, clamps, iron fittings, &c., are kept by the city in warehouses organised for the purpose. They are let out gratuitously to all retail dealers who produce testimonials as to their good character and their ability to sufficiently garnish the stalls; but the occupants are expected to pay 1 franc 50 centimes a day for the construction of their shops. The mode of construction is uniform, and very simple and expeditious. One workman can raise a *baraque* in less than a day. They are all painted blue and white, numbered, and stamped with the civic arms. Moreover, every dealer who intends to exhibit a sign is compelled to submit his device to the police authorities. An average of 90 per cent. are usually refused, because of their revolutionary or irreligious character. 1,700 of these uniform sheds have been awarded this year. But this number does not include the stalls erected independently in the suburbs and populous quarters. 10,000 workmen are supposed to find employment in the raising and demolishing of the new year's fair.

The Level of the Seine.—The overflow of the Seine last year will be remembered. A repetition of the catastrophe, by which some 10,000 persons suffer annually, is already threatened. The level of the river at Paris has risen, and is rising every day. It marked at the beginning of the week 1 metre 30 centimètres above the maximum figures of the register. The engineers charged with the inspection of the river allege that, in a month the inundation of last year will be surpassed, and precautionary measures have been taken in consequence. This is the ninth year that a great part of the department of the Seine Inférieure and Seine-et-Oise has been flooded. The further embankment of the river has now come to be regarded as inevitable.

A Central Railway-Station in Dublin.—At a special meeting of the Dublin Chamber of Commerce, the proposal to establish a central railway-station in Dublin was submitted by Mr. Barry, C.E. He estimated the cost of construction at 700,000*l*. A resolution to the effect that a central station would be an advantage to the city, as well as to the American passenger and goods traffic between Queenstown and England, was adopted.

ARCHITECTURAL AND BUILDING CONTRIVANCES AT INTERNATIONAL EXHIBITION.

A MEETING of the sub-committee for obtaining a proper representation of building contrivances and materials at the approaching International Exhibition was held on Wednesday last at Gore Lodge. Col. Galloway presided, and there were present, Col. Wray, Mr. Elger, Mr. Roger Smith, Mr. Grant (Metropolitan Board of Works), Mr. John Bird, Mr. Kirkaldy, Mr. Grissell, and Mr. Godwin; Capt. Clayton acted as secretary. Amongst other matters discussed was the desire of the sub-committee to institute a series of careful experiments on a large scale as to the strength of wood, iron, and stone; giving up the child's play of 3-in. cubes and 9-in. pillars, and working on girders, beams, posts, stone columns, and so forth, of such sizes as are used. Properly conducted, as of course they would be, such a series would be of the greatest advantage, and would provide a set of constants of extreme value to this and other countries. Necessarily the work would be costly, but there are several sources from which aid might be expected. Many of the large builders, quarry owners, timber importers, and ironmasters would probably give facilities, and the Royal Institute of British Architects, the Institution of Civil Engineers, the Society of Arts, and Her Majesty's 1861 Commissioners might fairly be applied to for assistance in so important and promising a work.

NEW REREDOS IN ST. PAUL'S CHURCH, WALWORTH.

A NEW reredos, in memory of a recently deceased member of the congregation of St. Paul's Church, Lorrimer-square, Walworth, has just been erected in this church, and was unveiled for the first time on Christmas-day. It is sculptured in Caen stone, and is about 5 ft. in height, and a little more than 6 ft. in width. It is divided into three panels or compartments, on which are painted in *tempora* a number of Scriptural figures. In the central panel is represented the Virgin and Child, while on each side panel are respectively the figures of St. Gregory and St. Ambrose, and St. Jerome and St. Augustine. The artist who has executed the paintings is Mr. W. H. Hughes.

IMPERFECT ACOUSTICS.

SIR,—Having had the misfortune, like too many others, to be connected with a chapel, which, though a very pretty building, has given us great anxiety owing to its defective acoustics, my attention has been directed to the adoption of measures to remedy the evil. Some months ago, hearing that a large hall, notorious for its reverberating qualities, had been cured by stretching wires across it, I had the curiosity to go and see and hear for myself, and was so satisfied that, on my return home, I at once set about applying the wires to the chapel above referred to. The result has been most gratifying.

My object in writing is to state the fact, and so far to make known this very simple and effective remedy. I shall be happy to communicate with any who may be suffering from a like case, with a view to the curing of an evil which it is scarcely possible to exaggerate.

J. S. JENKINS,

Proprietor of the *Malvern Advertiser*.

* * We shall be glad to receive a precise description of the building, and the course adopted.

SIR JOSHUA, AND A GLANCE AT HIS WAY OF WORK.

THERE are very many ways in which an age may be characterised, but most certainly there is none better than that afforded to the world by the special impression made on it by some exceptionally gifted individual who does some work which no one else can do. If this were at all doubtful, doubt about it must be removed by a thought of Sir Joshua Reynolds, and by a bare recollection of the work he did in and for his generation. No one can look at a portrait by Sir Joshua without an intense conviction that he was in some way especially appointed to do the work he did, and at the time he did it, and for the men and women of the generation he lived

in. Nay, it almost seems at times, when looking at one of these famous memorials of the men and women of Reynolds's time, that his very way and manner of working was exactly fitted for the portraiture of the men and women and children, and very costume of the age in which he lived. The recent genial and pleasant address of the President of the Royal Academy, on Reynolds and his way of work, will send people to the galleries to look at the "Reynoldses" with a renewed feeling of delight in them, and with a fresh curiosity to gaze again and again at some of those who have gone before us, and to wonder again and again at the marvellous way in which the painter has left us their express likeness and image. A few passing thoughts on Reynolds and his special way of work as a true artist-workman may have their use and interest.

It is a somewhat curious circumstance, and a not a little lucky one, that we happen to have two "remembrances," or living memorials of the Reynolds generation which most surely have never been surpassed in accuracy of life-like delineation;—these very portraits of the great painter, and the "Life of Johnson," by Boswell. In the last, as it has been so well noted, "we may yet see our fathers," and hear of what they did, and what they said, and what they thought,—so true and vivid is that memory of them. In the painter's work we actually do behold their face to face in bodily and actual presence. We may and do through these see old Samuel and his friends as plainly as if yet living, and himself dictionary-composing, and in act of laying down the law on almost everything which then interested men. "Johnson," says a great thinker, "would not have exchanged the *Strand* for the Garden of the Hesperides; and it would most certainly have been no small loss to the world of English if he had done so; for how much should we then have lost? And as for Sir Joshua, how much would have been blotted out of remembrance for ever had he not lived and worked in Leicester-square?"

The works of Sir Joshua Reynolds may usefully be divided into three classes: his portraits of men and women, his lovely likenesses of young children, and his historical pieces. It is a very difficult, if not an impossible, thing, to accurately describe in words the special characteristic of a great artist's work,—the style and manner of his work,—and to give an idea to any one who has not himself seen any example of it, what it really is. It is a thing to be seen and perceived, and understood, as soon as looked at, but really in no other way. It is as mysterious to the many as the *how* a great painter mixes and works his colours—always a great marvel. He does not himself know how the feat is accomplished, and could not by any possibility instruct others in the art and mystery of it. There are limits set, well worth noting, to the powers of the instructor or teacher, and this very instance of Reynolds's work may well be a lesson to those who talk so learnedly of "higher education." How soon you get beyond its power! How much is to be learned from these pictures of Reynolds's, and in how very many ways, both academical and otherwise! Reynolds's colour has puzzled not a few mortals, and how many have attempted, but in vain, to imitate and to rival it. Hardly one of them, we suspect, ever thought of finding in a looking-glass one of the helps to it, but which Sir Francis Grant so kindly told the students of the Academy did a part of the work, and sharpened the eye of the painter to fully realise to himself Nature's work.

So much has been written on Reynolds and his great portraits of the men and women of his age, that it is needless to do more than to remind the reader of the existence of so much accessible information about them; and, after all, it is not in the talk about them, however learned that may be, that the power to appreciate them is to be got at. We must look at them again and again till we find out their individuality and value. We may pass by, too, his historical compositions, and pause only to wonder at his paintings of children. It would seem to be absolutely impossible to paint a child better than Reynolds did, or to throw into the work so happy and lovely a glow of feeling. Reynolds was really at work as an artist-workman when he painted a poorly-clad child. Poor children, it may be noticed, are nature's own work, pure and simple. They are fresh from the workshop, there is no artificiality about them, they wear their "careless livery" without consciousness of

having it on, and move about without constraint, and as nature prompts, with simple unstudied grace. We have often longed to see an exhibition, a gathering of Reynolds's children. They might well form an exhibition complete in themselves, and would Academy ever had on its walls. It might be not a little instructive too, and would show how powerfully individualised the work of a great artist always is; for all these children have a peculiar form of face of most excessive loveliness and sweetness of expression. All Reynolds's youthful faces and forms are beautiful, whether of the high-born and well-dressed, or of the lowly and lightly clad. In these it is not the clothing first, and then the human being, but the humanity first, and then in time, as you gaze at it, the "poor drapery" which lends it grace, and movement, and contrast. Reynolds did not understand this mighty difference between the two ways, as M. Angelo did, who was but too well content with the rough blanket or the fold of cloth. It is a most wonderful thing, hitherto but little noticed, the instinctive choice which different artists have made of those objects in nature which they have taken as their inspiring motives and guides to their special work. How different would the work of M. Angelo have been had he gone to "genteel" life for his models; and how different might have been the work of Reynolds had he found his chief work amidst poverty and rags.

We would here, too, venture to hint at another most interesting and instructive Reynolds teaching, which, by help of the president of the Academy, might be got together, viz., a collection of the *drawings* and sketches by Reynolds, and of which there must needs be here and there and scattered about a goodly number. Reynolds was a working man, and did a good deal in his day, and a vast number of his drawings, in chalk and pencil, must exist, and sketches, probably, in colour. These would be of great use and interest, as showing how the painter worked, in the first instance, and what "sort of line" he drew, and how he first sketched out his thoughts. We have seen a few of these, and could not but be struck with the peculiar character of his drawing and the nature of the "line" he drew on a flat surface. It will be recollected that in Reynolds's day, at the Royal Academy, which he did so much to found, though he did not, as commonly supposed, originate it, portrait-painting was not in very high favour. It was looked upon as vastly inferior to the "historic" and the epic. The professor of painting at the Royal Academy, Fuseli, considered portrait-painting to be a vastly inferior art, and contended, rudely enough, that were it not for the mere vanity of those whose portraits were painted there would be none at all; and that the great painter should be above it, and refuse to do such inferior work. Nature, said Fuseli, continually "puts me out." And so she did; and it is not a little fortunate for us that nature, and vanity, and Reynolds were too strong for the professor's biting remarks and objections; for what a poor show it would have been, comparatively, had Reynolds confined his powers to the "grand and historic," and rejected portraiture.

And there is yet another addition to these hitherto but little noticed works of the great painter, which we would fain see a little more of; and that is some of those works of his which he left more or less incomplete and unfinished. These, from the very fact of their being unfinished, are really remarkable works, and to the instructed eye show so much of what we want to know—how a great artist works. We see in them what he does with his colours and his brush, whether by aid of looking-glass and "running to and fro," or without the glass, and standing still. His first, second, and third touches are visible, and the actual hand of the master is at work before us. How many of such works there are, and where, may be a question, but doubtless we should soon know if search were made for them. It may be, too, that some of them are not very highly valued, consequent on their unfinished and sketchy state; but how valuable all this is to the educated eye! It is truly melancholy to think of the multitude of precious things lost to the world of art from the very fact, all valuable as it is, of their being left by their authors in an incomplete state. The fine drawings and sketches in colour, and half-painted pictures, and mere "studies" for greater works, which have disappeared, and been even purposely destroyed, may be beyond wanting. More's the pity, indeed,

when we come to consider how valuable these would be, and how full of life-like interest, even on the surface of a bare whitewashed wall. Compare such a thing with common "papering," or with trade "decoration," and mere mechanical work, with "manufactured" work, and all the other poor things that nowadays pass muster, and which are paid for sometimes so heavily!

And to all this, if we dared but to go into details, must be added, as we have before hinted, the interest always to be found in the works of Reynolds, as illustrative of the times in which he lived. We are now almost as far from the days of Reynolds and Johnson, and the rest of that notable gathering, as we are from Homer and his Greeks. The tremendous powers of mechanism-age had hardly commenced, or been thought of. To decorate St. Paul's without painting it, would no more have entered into the minds of Reynolds or Johnson than the painting a picture by steam, or the writing an epic by a machine. Justice has not been done to the "art" of that day, as we take it. If we look at the household furniture, and the chimney-piece ornaments,—capital tests of the time,—we shall notice not a little that is good and refined, and quaint in form and treatment. The *workmen* of the day, for that is one of the great secrets, had not a tithe of the machinery to aid them that we now have. The machinery had not then attained to the power of taking the work out of the hands of the workman quite. Like picture-painting, there was more of *hand-work*, and consequently of individuality of treatment, and expressional and inventive power. We see not a little of all this even in the pictures of Reynolds—in his backgrounds and accessories. We see into the rooms in which those of that generation lived, and see but to admire what they made for themselves, and must have admired. If Johnson has been, for these generations the "prophet of the English," as Carlyle affirms, it may be said, with equal truth, that Reynolds was, to the heart's core, the painter of the English—and there never was a better!

REBUILDING AND ENLARGEMENT OF CLAPHAM JUNCTION STATION.

ALTHOUGH Clapham Junction Station is known to be one of the largest in the metropolis, at which the lines of several of the great railways converge, with a network of metals covering an area of upwards of twenty acres, its general accommodation is altogether inadequate to the enormous traffic, and the necessity of a very extensive enlargement and entire reconstruction of the station has for some time past been felt. The station is the joint property of the London, Brighton, and South Coast, and the South Western companies, but several other companies also make use of it, and the trains in and out from one or another of the lines are continuous throughout the day. For some time past the two companies principally interested have decided upon the rebuilding and reconstruction of the station, and within the last few weeks the works have been in progress on that portion of the station area, and the land immediately adjoining, which belongs to the London and Brighton Company.

The works going forward are on a scale of considerable magnitude, and one principal feature is an entirely new approach to the station buildings and platforms (all of which are to be reconstructed and enlarged), from St. John's-hill and the Wandsworth-road, so as to avoid, to a large extent, the present dark under-ground approaches. This new approach will be by means of a long gallery, formed of lattice iron girders, running laterally for a considerable distance, several feet above the railway level, and carried thence across over the several lines belonging to the company, and communicating with the different platforms by descending staircases. The enlarged station when completed will be upwards of 1,000 ft. in length, and, exclusive of a large space adjoining as sidings, will cover an area of more than five acres in extent. The station buildings and offices will occupy a central position, the company's main lines and platform in connexion with them being on the south-east side, whilst the lines for the West London, the London and North Western, Great Western, and other trains running in connexion with the station, being on the north-west side. The new station buildings containing the booking offices, waiting-rooms, and other apartments, will be a spacious and

ornamental structure. It will be 180 ft. in length, and will have two elevations in every respect uniform with each other, the one elevation facing the main lines, and the other the west-end lines. The elevations will consist of a centre and two wings. The central portion will be 33 ft. in height to the cornice, and the two wings 30 ft. in height. It will be built of stock brick, with red brick bands and dressings, the windows and doors having gauged arches, in black, white, and red brick, with bands of black and white brick between each window, running the entire length of the elevation. The central portion of the elevation will have a foliated string in Bath stone, and the hood mouldings to the arches of the windows in this part of the building, will be in terra-cotta, the chimney shafts being also carved with terra-cotta. The cornice will be of red and black brick dentilled. The principals from the roof of the station overhanging the adjoining platforms on either side, will rest upon moulded corbels in Portland stone. The roof to the ridge will be covered in with Bangor slate.

The central portion of the interior of the building will contain the booking-offices, a large general waiting-room, first-class gentlemen's and second-class ladies' waiting-rooms, station-master's office, and telegraph-office. The west wing will contain a ladies' first-class waiting-room, and there will also be lavatories and other conveniences in connexion with all the several waiting-rooms. The west wing will also contain the ticket-collector's office, whilst at the extreme west end of this wing there will be a spacious refreshment-room, 20 ft. long by 18 ft. wide, in connexion with which there will be a kitchen fitted up for cooking and general culinary purposes. The east wing will contain the parcel offices, cloak-room, porters' and lamp rooms, urinals, &c.

The platforms in connexion with the newly-constructed station will be four in number, and of great length. Those on the south-east side belonging to the main line will be the longest, one of them being 700 ft. in length, and the other 600 ft. The two other platforms will be each 450 ft. long, and all the platforms will be 18 ft. wide. They will all be laid with asphalted floors, and for the most part covered in. The longest platform will be covered over with a roof 450 ft. in length, formed of Vieille Montagne zinc roofing, on iron columns with ornamental brackets. The other platforms will be similarly covered over to the greater portion of their length. The whole of the works have been designed by Mr. Bannister, the company's engineer, and are being carried out by Mr. Charles Dickinson, the contractor, of the Brighton-road. Mr. Dickinson has now a large number of artificers employed upon the various portions of the work, which is being actively pushed forward, and it is expected that the re-constructed station will be completed and ready for opening early in the spring, it being the wish of the company that the increased station accommodation should be utilised simultaneously with the commencement of the excursion and travelling season of the year.

The South-Western Company will shortly commence the work of enlarging and re-constructing their portion of the station, in a manner similar to that which is now being carried out by the London and Brighton Company; but we understand that the works are for the present deferred in consequence of their plans not having yet been finally decided upon, and that these will not be fully settled until the decision upon a Bill which they intend to lay before Parliament next session, and which includes an application for increased powers in connexion with the intended enlargement of the station.

GOthic BALDACCHINOS IN RATISBON CATHEDRAL.

ALTHOUGH the baldacchino is looked upon as a feature peculiar to Romanesque and Renaissance churches, yet the Gothic examples which exist, though by no means numerous, are often very interesting and remarkable. It is hardly necessary to observe that by far the greater number of examples of Gothic baldacchini in existence are to be found in Italy; in fact, there can be no doubt that during the thirteenth century it was in general use in that country. During the fourteenth century, however, the baldacchino appears, even in Italy, to have fallen into disuse,—at any rate, few examples of that date exist, and fewer

still of the fifteenth century. The Renaissance men revived this feature of ecclesiastical architecture, but treated it in quite a distinct manner from what the earlier architects had done.

The baldacchino seems never to have been so generally used in other countries as it was in Italy, although it seems to have been a favourite feature in the twelfth and thirteenth centuries in France. In Germany it is occasionally to be met with, and a good example, dating from the end of the twelfth or early part of the thirteenth century, is to be seen in the ancient chapel of Castle Trausnitz, at Landshut, in Bavaria. This baldacchino is attached to the east wall of the chapel, and the inner roof is arranged in the form of a semi-dome. The sides are solid, and the front ornamented with short attached columns, supporting finely-carved statues, which stand under rich canopies. The outer roof and gable were altered in the fifteenth century; so it is difficult to say what they were originally like.

In the Abbey Church of Gelhausen the roof-screen is arranged so as to form the baldacchino over the high altar for the laity. This is the earliest example we know in Germany of this treatment, though it became very common in later times; and the fine roof-screen at Münster, which was pulled down only three years ago, was a magnificent example of this treatment.

Ratisbon Cathedral possesses three excellent examples of Gothic baldacchini of the fourteenth century, admirably designed and adorned with sculpture and foliage: two of these are shown in our view. Other examples of this date are to be seen in St. Stephen's, Vienna, at Erfurth, &c., though they are by no means common. In fact, the great triptich rededicates which the Germans, and in fact all northern nations, so much delighted in, quite excluded the use of the baldacchino; and as the art of painting became more and more developed the baldacchino gradually disappeared. Late examples, however, are to be seen in the Cathedral of Ratisbon, where the altars of the north transept, and the Lady-chapel (the latter a very rich and splendid example) possess baldacchini of the fifteenth century.

In the "Teyn" Church, Prague, is a large and very rich example of the commencement of the sixteenth century; and in St. Mary's Church, at Esslingen, a plainer one.

In France we know of no examples in existence of a later date than the thirteenth century.

In Spain, the cathedral at Gerona possesses an example of baldacchino of the fourteenth century; but although it is constructed of costly materials, its general form is singularly ugly. We are not aware of the existence of any remains of a Gothic baldacchino in England, if we except the fragment recently discovered in Henry VII.'s Chapel at Westminster, and this scarcely comes within the province of our notice, as it is Renaissance in style, and was the work of Torrigiano, an Italian. We have, however, been informed, on good authority, that remains of a baldacchino are to be seen in the ruined Abbey of Pluscardine, in Scotland, probably dating from the thirteenth century.

We hold that a baldacchino would be entirely out of place over the Communion-table of the Reformed Anglican Church.

EXETER CATHEDRAL: THE REREDOS DIFFICULTY.

THE Lord Bishop of Exeter has issued a citation "peremptorily ordering and enjoining" the Very Rev. the Dean and Chapter to appear before his lordship, in his capacity as Visitor of the Cathedral, on the 7th of January, and show by what authority the new reredos in the choir has been erected, whether the sculptures thereupon have been placed there under any legal authority, and whether the retention of these sculptures—called "images" in the citation—is sanctioned by the laws ecclesiastical. The citation, which bears Bishop Temple's signature and seal, states that his lordship has been moved thereto by a petition presented to him by Archdeacon Phillpotts, Chancellor of the Diocese, and is dated the 9th of last June.

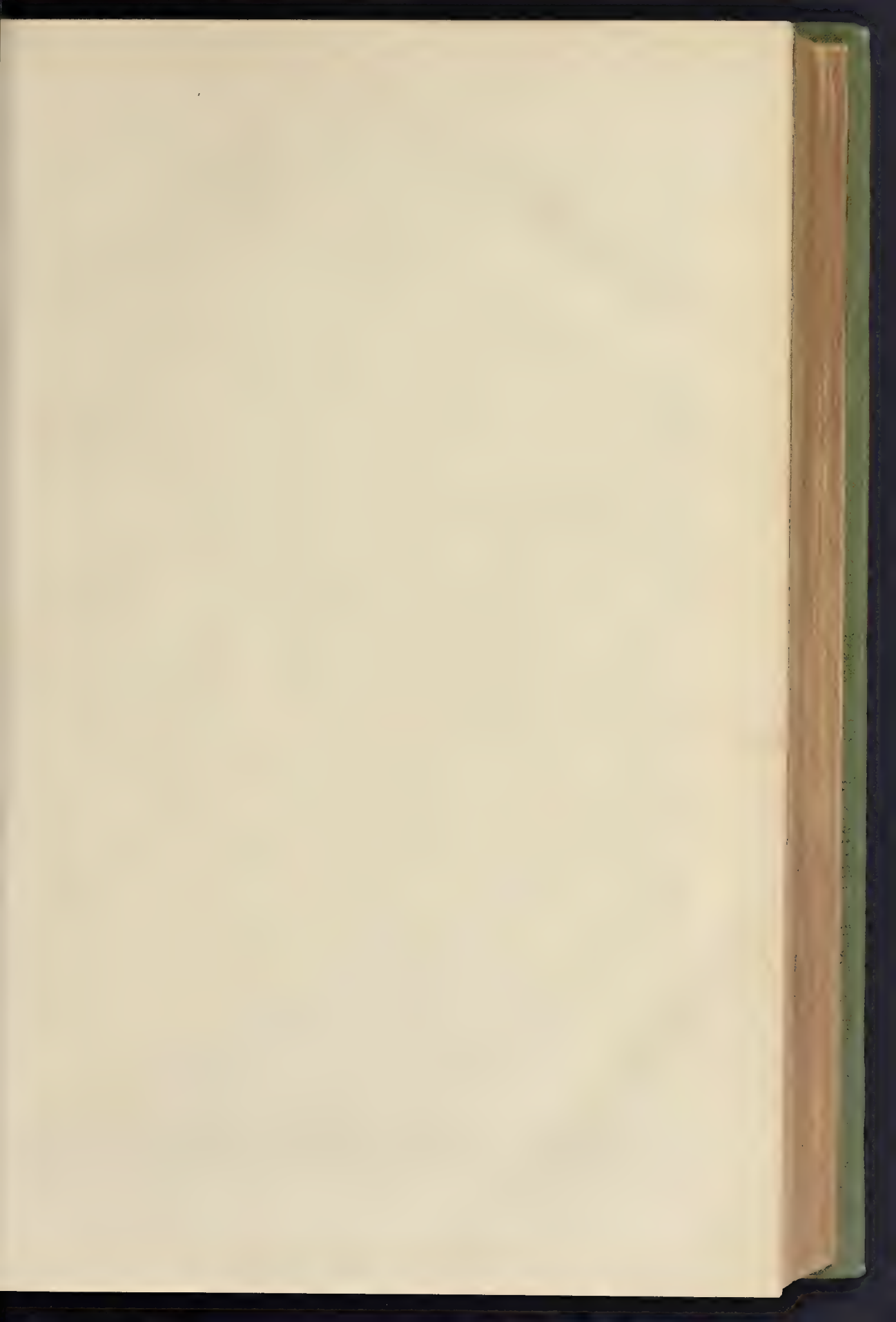
Our readers will doubtless be glad to see what the reredos is like, and we publish a view of it. It has been erected from the design of Sir G. G. Scott, R.A., and has cost, we believe, about 2,000*l*. The materials are alabaster, marble, and precious stones. The reredos rises to a height of 27 ft. above the floor of the choir, a central

cross, finely gemmed, forming the apex. There is a super-altar, 11 in. in height, of polished alabaster, the reredos proper at the rear having three compartments, divided by pillars of alabaster. The marble base extends across the whole width of the choir, but the reredos itself is somewhere about 12 ft. wide, and about equal height. Of the three compartments, the central is the largest, and here is the representation of the Ascension. Christ is ascending with angels on either side, and watching Him are the eleven—or rather there will be, for one of the figures is not yet out in; the Saviour appears to be blessing them, and the Apostles are watching the ascent with mixed surprise and awe. The four figures stand out prominently. The south panel represents the Holy Ghost descending in the form of a dove upon the disciples, and in the north panel five figures are gazing at the "Transfiguration," and astonishment is depicted in the faces of the Apostles. On either side of the reredos there is open iron work. Dr. Blackall has defrayed the cost of the central and principal compartment of the new reredos, Chancellor Harrington meeting the rest of the expense. The work was executed by Messrs. Farmer & Brindley. The citation says,—

"We, Frederick, by Divine permission Lord Bishop of Exeter, to all and singular clerics and lay persons in our Diocese of Exeter, and especially to the Very Reverend Archibald Boyd, Doctor of Divinity, Dean of our Cathedral Church of Saint Peter in Exeter, and to the Reverend Edward Charles Larking, Master of Arts, the Reverend Henry Woolle, Esq., Master of Arts, the Reverend Frederick Charles Cook, Master of Arts, the Reverend Philip Freeman, Master of Arts, and the Reverend Scyller John de la Torre, Esq., Master of Arts, the Canon of our said Cathedral Church, greeting.—Whereas the Venerable John Phillpotts, Archdeacon of our said Cathedral, and Archdeacon of Cornwall, having by his petition, which presented to us a petition, dated the ninth day of June, one thousand eight hundred and seventy-three, praying us to exercise our power as Visitor of our said Cathedral of Exeter, viz. that we would order the removal of the reredos in the choir of our said Cathedral Church, with certain images thereon, not being on any tomb or any altar, and that we would order the removal of the same, as alleged by the petitioner, without our consent, and the images thereof so placed being in themselves contrary to the laws ecclesiastical of this realm, as the petitioner, when called upon, alleges he is ready to prove; and further praying that, on such proof being made clear to our satisfaction, we would order the removal of the same, as alleged, and the substitution of the Ten Commandments in their stead. And whereas we, considering that the aforesaid alleged images of Christ and the Apostles, being introduced into, do, by virtue and in exercise of the jurisdiction, powers, and authorities vested in us as Visitor of our said Cathedral Church, and of the said Dean and Chapter of Exeter, purpose to hold a visitation of our said Cathedral Church, and of the said Dean and Chapter, on the seventh day of January, one thousand eight hundred and seventy-four, at the hour of ten in the forenoon on that day, in the Chapter House of our said Cathedral Church, for the purpose of inquiring into the allegations of the said petition."

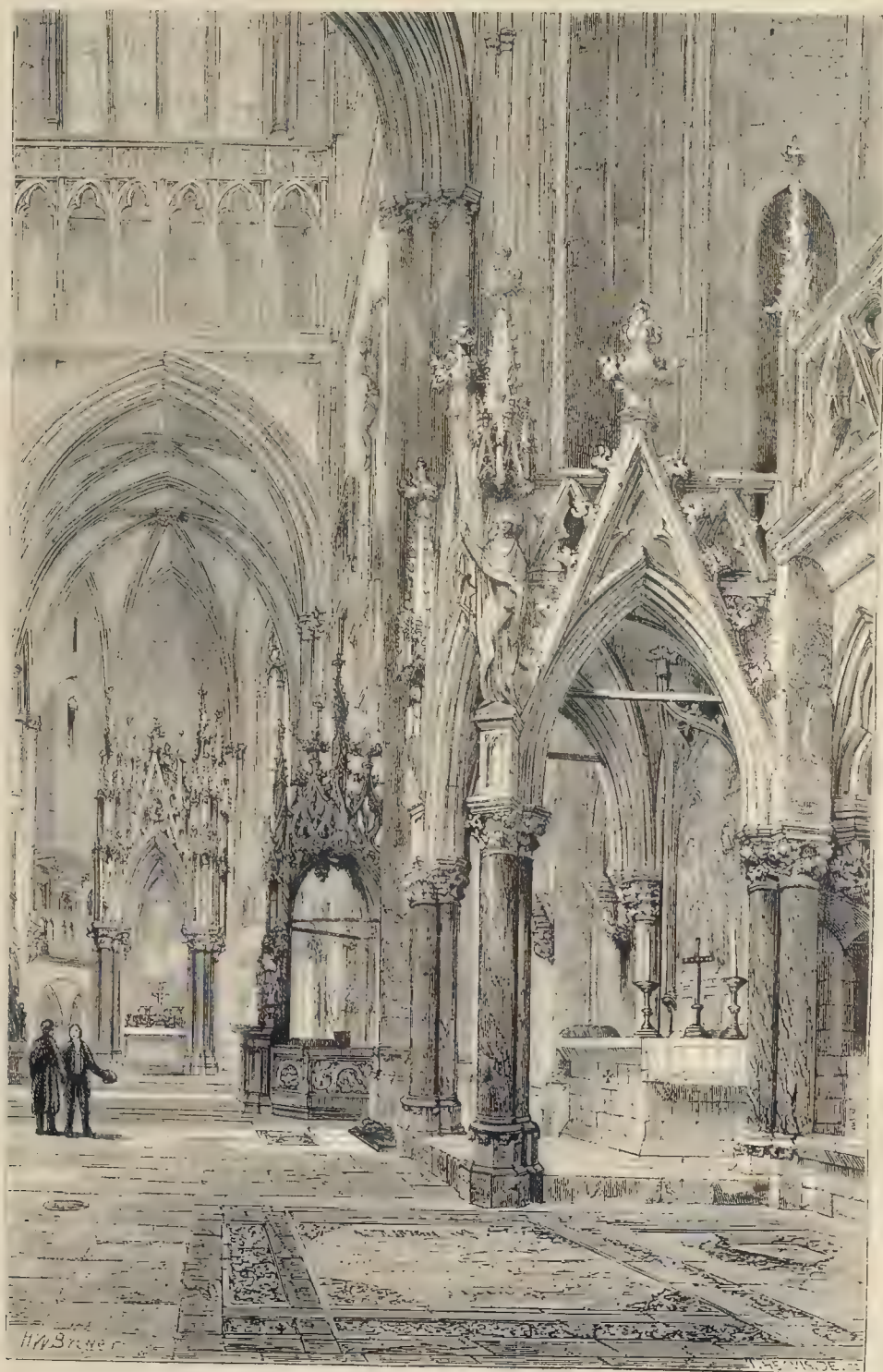
Directio is given that the citation is to be affixed to "the west or principal door" of the cathedral, and it has been noticed that this was not done in the order in the instrument, but to the small southern door in the west front, where notices are usually posted. A few days ago a little discovery was made in the south-west corner of the Priest-Vicar's Court, on the south-side of the choir. The workmen engaged in making the necessary alterations for converting this part into a vestry, upon removing some masonry, found a hidden doorway, with a pointed arch over it. This opened into a passage, which turned sharply round to the south-east, the roof rising to a height of about 12 ft., and being stone-groined. A small squint-like window—now blocked up—formerly lighted the place, and immediately underneath this window is a hole, some 2 ft. by 3 ft. square. A ladder and candles having been obtained, at a depth of about 9 ft., a vault-like place was found on the north side. The room is composed of rough masonry, and is 7 ft. by 6 ft. 6 in. square. The walls are of rough masonry, and are roofed in by a round-headed arch, of true semicircular sweep, and of a 3 ft. 6 in. radius. The place is partly filled in with loose soil, but it is quite evident that it is a vault of at least 15 ft. high. Amongst the rubbish nearest the top were found about a dozen clay tobacco-pipes, of the quaint shape and outline in general use some two hundred years ago; and the greater part of a pair of ancient working boots, broad in the heel, and narrow-toed.

Noisless Pavings around Hospitals or Sick Asylums.—At the instance of the London Hospital authorities, the Whitechapel Board of Works have ordered one of the streets adjoining the hospital to be paved with wood instead of granite, as was about to be done. They deserve all honour for so much merciful consideration,—not always to be found on public Boards.





THE REREDOS IN EXETER CATHEDRAL.—SIR G. G. SCOTT, R.A., ARCHITECT



BALDACCINOS IN RATISBON CATHEDRAL.—CHOIR OF THE FOURTH CENTURY.

A NEW ERA OF ART.

Sir,—Between the spirit of true art and the pretensions cant which too often affects it, there is, thank God, a mighty gulf. *That*, by the magic of its touch, sweetens life and beautifies the aspect of nature; *this*, ignoring the age, seeks only self-glory. The one speaks sympathetically to the universal heart; the other courts academic honours and the "line." The one is humble, and walking through the highways and byways of life, scatters its treasures broadcast; the other, self-conscious and arrogant, draws its skirts aside, lest it be contaminated by the touch of the profane multitude. *That* reflects glory upon the living age, and will be remembered by posterity; *this* is already shrouded in the glory of that past with which, under cover of affected humility, it presumptuously consorts.

Objective art, seeking its expression, on the one hand, in sculpture, has ever lead its votaries into that bathos of cold abstractions misnamed "Classicism," which has made the English school the mock of nations, and our annual exhibition of nude inanities the jest of smaller wits; and, on the other hand, in painting, to that nightmare of heroics, or history made hideous, exemplified in the works of such men as West, Fuseli, and Haydon. In neither case has the subject or the treatment anything in common with our times, habits of life, or channels of thought; and the logical result has been that the most ambitious efforts have only differed from the most untentious by affording more conclusive evidence of the mistaken enthusiasm of the artist, and the worthlessness of his works.

No one in any degree familiar with the contemporary history of English art can, I hope, read some recent addresses without feeling that the speakers are trading upon an assumed ignorance or credulity in the audience which should be resented by every intelligent listener as a personal insult; and such senseless panegyrics are doubly mischievous, because they proclaim supposititious triumphs in a direction in which we ought never even to have sought them.

If manufacturers be really so sensible of the importance of good designs in the development of our national industries; if the works of our artists have suddenly become the admiration of foreign critics, and the English "school" is to dominate all Europe, to say nothing of America and Japan; if our system of art education has proved so eminently successful, that we are not only able to supply the ever-increasing demands (?) of our own country, but to assist our neighbours and the United States, with skilled designers and efficient art-masters, who work rather than our speeches should make this progress apparent,—our exhibitions and our manufactures, not an array of facts and figures.

But if on the one hand the false assumption of powers which we do not possess is ridiculous and dishonest, so also on the other hand is the petulant demand for their spontaneous manifestation childish and illogical.

Art is not a product of the chemical laboratory, but of the human intellect; and unless the potentiality of something better is within us, Government grants and fashionable patronage will but serve to debase that power we have. Art is much more than an isolated fact, self-existent and self-sustaining, and has the closest relation to national culture, national wants, and the amenities of social life. It is not in the power of money to bribe, nor of speech to flatter it into inconsistencies, but faithful to its earliest allegiance it will ever manifest itself in harmony with the genius of the age and country of its birth. Fortuitous circumstances may for a time direct its course, or wholly check its progress, but so impeded, it will, as certainly as the mountain torrent finds its way through all impediments to the valley, accumulate force and overflow the artificial barriers set up by ignorance, prejudice, or interest.

There were mighty builders when the nations built for the glory of their gods and for posterity; there were great painters and great sculptors so long as patriotism and religious fervour fired the artist's brain, and his subjects were parts of a living faith; oratory was a power by which nations were awayed so long as any worthy subject of discourse, new to the audience, remained for the orator; witchcraft and demonology were hatched of ignorance and superstition; and modern poetry responded to the demands of a stilted and artificial age. But which of these arts could now find in England

the soil wherein to flourish? Hero worship and religion are no longer enlisted the artist's devotion, we build railroads, hotels, and warehouses: our subjects are the mountains, plains, and rivers, and we make immortal the land we live in; the daily press completing the work begun with the discovery of printing, anticipates men's thoughts, and laughs to scorn the eloquence of the forum; science has trampled upon demonology and witchcraft; the chemistry of common things has proved more wonderful than the tricks of the alchemist; and political economy has usurped the poet's throne.

Why then should we affect the arts we no longer need? Why should we deplore the loss of things time has made useless? Why should we cling to the dead past as though it were a living reality; or galvanise into the semblance of life that which if living would excite only our ridicule or contempt? Why poison the healthy and vigorous growths of the age with the admixture of effete matter of antiquity? Rather let us in art, as in science and literature, boldly draw the line between the past and the present, and admitting that we have no great luminaries to dazzle, rejoice that we enjoy an immunity from deep shadows in the possession of an infinite number of lesser lights. Let us endeavour to understand the spirit and tendency of the age we live in, and aid with all our heart and strength its fruitful development. Then shall we begin to comprehend the significance of the fact that the diffusion of art is no longer limited by the old slow and costly processes of manual labour. Then we shall duly appreciate the fact that the human intellect working through steam hammers, looms, and printing-presses, can so infinitely multiply and perfectly counterfeit the highest excellencies of handicraft labour, that prejudice only need longer gaze in envy and despair upon these works of ancient and Medieval times, which should claim our respect and admiration less for their wealth of art than for the patient and well-meaning industry which they embody. Then the decadence of those astounding faculties of dexterous manipulation, which it is the fashion of dilettanti art-critics and enthusiastic amateurs to deplore, will give us no longer any uneasiness. They have passed into history with the necessity which gave them birth; and the questions whether the human hand is or is not a more perfect machine than any combination of iron and steel and brass?—whether the force of genius is superior to that of steam?—are not, I ween, any more profitable discussions.

Let us seek to understand better the nature of our inheritance. There are no breaks in the system of nature; and the miracle of creation is for ever and always repeating itself. The human intellect is not less active to-day than in the age of Pericles; the circumstances under which it manifests itself only are changed. As not one atom can be subtracted from the weight of the planet, so neither can there be any loss of aggregate energy in the faculties of the human mind. The forms of matter may change—may be condensed into solids or diffused into gases; and intellect may be concentrated within the brain of the Homers, the Phidias, the Platos, the Bacons of the age, or be shared by the human race. But by what warrant or analogy do we demand the co-existence of art, and science, and literature, within the narrow limits of our own nation, and each the best of its kind? All history proclaims our presumption.

The science of agriculture is in advance of psychology, and our philosophers have been beaten in the race of reason by the tillers of our soil. It is found in farming that the highest results are obtained by a rotation of crops,—wheat this year, potatoes the next, and the next clover; and this order of succession is nature's law. If you cut down a primeval forest of hard wood, it will be succeeded by a spontaneous growth of soft; and if in defiance of this principle you persist in the cultivation of potatoes, or peas, or mangel wurzel, upon land already exhausted by an overgrowth of those vegetables, the addition of manures will but give you an *exuberant crop of weeds*. Moreover, if you will have plants of large and vigorous growth, you must pick out the sickly roots, that the healthy may have more room, and light, and air, and nourishment; but if, neglecting this, you achieve uniformity, it will be the *uniformity of the least*. This is also nature's law, and the forest giants of North America attest it.

Now, if we will examine our national system of art-education by the light of these well-ascertained laws of nature, we shall not be slow

to discover the secrets of our failures. Analogy will at once demonstrate what our radical errors have been.

First, we have assumed, in spite of ample evidence to the contrary, that the mental soil of England is adapted by nature or culture to the prolific growth of the highest art.

Secondly, having sown our seed broadcast upon unsuitable or unprepared land, we have strained at uniformity of product, and sacrificed the "fittest."

Thirdly, dissatisfied with the results of our tillage, we have resorted to a reckless use of artificial stimulants, and are now reaping an abundant harvest of rank and poisonous tares.

But the law of progress will be vindicated. The pessimist shall be confounded, and the spirit of the optimist made glad; for the art of the future is coming upon us with mighty strides and irresistible force. Inert matter, subjected to man's dominion through countless generations, has at last felt the impress of his will, and, fertilised with the surplus and "waste" of human thought, it gives forth in the engines of the nineteenth century the infinite knowledge and energy accumulated through countless ages of the past. Shall we say that they are lower organisms awaiting only their alliance with the vitalising principle of electricity to become the forerunners of a race which shall dwarf us to the proportion of pigmies? Whatever explanation of the phenomena of modern mechanical science be accepted, there can be no two opinions of the facts themselves. We have invented machines which, with the intelligent guidance of one pair of hands, will accomplish the work of thousands, with exactness, equality, and finish, unattainable by any conceivable development of manual dexterity.

That the highest art of which we are capable does not already repeat itself indefinitely through these channels, or at least in the same degree as in other countries of Europe, where artists of celebrity co-operate, without loss of professional status, with manufacturers in the production of domestic industries of the humblest class, must be charged against that still active spirit of protective prejudice which, in the latter half of the seventeenth century, defended the "honourable, ingenious, and profitable mystery and science" of printing from the "infamy and disgrace" of further extension by an order of the Star Chamber limiting the number of "master printers" in England to twenty; which, in the beginning of the eighteenth century, opposed the course of popular education on the ground "that it rendered a gentleman ashamed of being a scholar," and which, before and since, has ever planted itself in opposition to the best interests of civilisation and progress.

C. HENRY WHITAKER.

A GRUMBLE ABOUT BOOKS.

I wish to call your attention to one or two little points in the workmanship of books as to which I think improvement would be possible. They are, as you will perceive, comparatively unimportant details: each is only a little wound, which, however,

"Would not be greater if 'twere none at all."

You will, I am sure, permit my complaint to be addressed to you,—though the subject might seem at first a little out of the line of the *Builder*,—when I say that books on architectural subjects are among the most notable offenders.

I have before me a recently-published, very satisfactory book on such a subject,—illustrated in a way that need cause no complaint. There are engravings and woodcuts—well executed and well to the point; not too many, of course. That one would deem impossible in a book—that does not require to be painfully bought, but can (happily at least for one party) be begged or borrowed with practically similar results.

In such cases the utmost profusion,—not a little Graingerising even,—may be tolerated, and no whisper of regret be heard. These illustrations are arranged—as they should be in well-regulated books,—on the principle first discovered and acted on in the making of well-regulated Christmas puddings,—the big plums occur at convenient intervals, and the less are scattered pretty evenly throughout. Nothing could be better than such an intelligent following of the best precedents.—But they are none of them numbered. See the consequence! I have the book open at page 7,610, and find a footnote—"See annexed Plate." I turn forward, and find, two pages on, one of the illustrations to which I have just now been so complimentary. It is,

however, an interior view, and the excellent author is discouraging of external features. Turning back six pages, I find "the annexed plate." Need I say more? Why should not the method followed by Mr. Fergusson, among others,—*e. g.*, in "The Handbook,"—of numbering all illustrations consecutively, be followed universally? plates, lithographs, woodcuts,—large or small,—inserted page or double-page drawings, or diagrams in the text, all to be treated to their own numbers, from frontispiece to finish? It might be,—would be, no doubt,—in some instances, a little awkward for the author; but it is not out of the reach of hard work. Of course, when a book is put together in a leisurely way, as must be most comfortable for everybody, no difficulty need occur. Only when illustrations require to be pulled up in a hurry to a level with the writing, and the most of the references have to be stuck into the proofs,—under such circumstances the sensitive soul of an author would at times be wrung in making his consecutive numbering undergo a manipulation too vigorous to be entirely happy, such consecutive numbering having been determined on at an earlier stage, and carried out beyond revision in the woodcuts printed with the text. When the fatal extra numbers come on the scene, and 50, 50A, 50B, 50C, are absolutely necessary, to give anything like adequate backing to the text, he would, no doubt, beat his breast and forehead, after the manner practised by heroes born and bred on the stage. Consider, however, the advantages purchased at the hazard of such pathetic scenes. Those sad scraps of foot-notes disappear, and the whole matter of reference is made in the text, and in place of an irksome task becomes quite a healthful recreation. The facility for reference is really a considerable point. Take an instance. My correspondent in New Zealand, who receives his books unbound, and reads them after Dr. Johnson's excellent manner, extracting the marrow by smacking the bones,—*is*, of course, obliged, after such rough doings, to gather together the fragments (as best he may) and take them to the bookbinder. No one need therefore be surprised to hear that when I call his attention to the page in vol. i. which I have alluded to above,—if the illustration referred to is somewhere else; that he consequently mistakes the meaning, and in his reply to me he occupies seventeen pages foolscap in ingeniously refuting what I had looked upon as an error that I deserved a little credit for avoiding,—and, if possible, a little more, for my generosity in warning him as to its whereabouts. . . . You will see at once that the sort of case I mention is frequently recurring; and that a regular thorough system would get rid of many cumbersome *vides*. I have just looked into several books that my memory accused, and find them as guilty as my prophetic soul had hinted. As to

II. I happily need say little, after what Lord Campbell and others have said so forcibly. When a high judicial authority begins to talk about the performance of duties being necessarily precedent to the just demand for remuneration, it indicates,—something, probably. I do not want to be vindictive; but I cannot forget that I have had, on occasion, to take in hand my own indexes,—left incomplete, or utterly wanting by heedless authors. Such conduct can only be attributed to a shameful imperfection of memory, that is,—as I have hinted above,—little less than, suppose we say quite amounting to, criminal neglect, in these days of advertising and well-recommended professors of mnemonics. A first-rate professional book (another, two years old) that I have just seized with wrath in my soul, has between 150 and 200 pages, a good part of a hundred plates, and no index of subjects, places, names, or even of the illustrations. In comparison with such enormity,—the kind of cases Campbell must have had in view,—one is almost indisposed to enter on—

III. But it may as well be done, and a clean breast made that far. It is only in reference to pagination. I want to know why a book cannot be paged through regularly from cover to cover. Why does the paging begin with vi. (the second page of preface) and continue to xv; and then recommence at 4 (the second page of the work), and continue to 17,341? I confess to a liking for continuous pages, and, if need be, hint at the locality by figures on the cover, after the manner of the lettering of volumes of Encyclopædias. Why so many missed pages, however, fly-leaves paged in imagination, and other devices "for filling," censorious people say? Why cannot the first page of a preface or

chapter have its own number in visible type? It would often be a real convenience when there are acres of engravings to square inches of luminous text,—and surely be no drawback at other times? But one must terminate suddenly such persistent indication of inquiry, or there will be as many whys and notes of interrogation as in the Reverend Mr. Blair's much-circulated school-book. Of course, as prefaces by all orthodox rule have to be written last, although read first by conscientious persons, many people are, in fact, not at all surprised that even the most talented authors are unable to page print till it is printed. Such talented persons cannot, however, be so easily acquitted by just and severe persons. Cannot they determine the length to which they will expand in this supplementary way? Have not good fathers of families had first-born children christened Octavius, or,—in heroic mood,—even Decimus, foreseeing clearly their own staunch persistence, in years to come, in the path they thus chalk out as that of honour and duty? Cannot such shining examples be safely pointed to in order to encourage the others in their lesser spheres of usefulness?

Will you, Sir, pardon the length to which my letter has extended; and also believe that I am not the less serious in my suggestions, because I can judge them at their whole value, and therefore have not been disposed to treat of them as being inextricably bound up with all the hopes and all the chances of happiness of your obedient servant,

X. Y. Z.

THE BALDACCHINO IN PROTESTANT CHURCHES.

MENTION has already been made of Dr. Tristram's judgment in reply to application for a faculty to erect a baldacchino in the parish church of St. Barnabas, Pimlico. A record of it may be useful to some of our readers, and we therefore print the pith of it:—"The proposed baldacchino is a handsome marble structure or canopy, with a pointed roof, and three gables pointing different ways, supported by four columns standing apart from the east wall of the church, and would cover the Holy Table, extending about 2 ft. beyond the west side of the Holy Table, leaving sufficient space for the celebrant priest to stand within the canopy on the north and south sides of the table. During the argument numerous authorities were cited by the counsel on both sides in reference to the date of the introduction into the Eastern and Western Churches of altar canopies, the different terms by which they were designated, their form and the materials of which they were constructed, their symbolical signification and their use. As the history of altar canopies is not without a bearing on the first and main question under the consideration of the Court, I will state briefly what appears to me to be the fair result of the historical information before the Court on these several heads. The earliest known instance of an altar canopy in the Christian Church appears to have been one in the Church of St. George at Thessalonica, referred to by Mr. Phillimore, and supposed to have been in use about A.D. 325, and from the representation of it extant, it would seem to have been a canopy fashioned like a cupola or cup reversed, resting on four columns planted at the four corners of the altar, and between the columns were curtains, with steps leading up to the altar. This dome-like canopy was usually designated 'ciborium,' from its resemblance to the bowl of a reversed cup. Altar canopies were subsequently introduced into Italy, and were placed over the high altar, as well as into France and other countries in Western Europe. On the schism between the Eastern and Western Churches the use of the canopy or the ciborium in France was discontinued, but that with side curtains was retained. In later times in Italy the term 'ciborium' was transferred to a tabernacle or diminutive temple erected on the altar, in which was placed a pyx containing the reserved Sacrament, and the ancient canopy is said to have been thenceforward called 'umbraconium' or 'baldacchino,' so called from 'Baldach,' an old name of Babylon,* whence came the stuff or silken material of which such canopies were then principally composed. In England the introduction into general use of altar canopies is referred to a Constitution of Archbishop Peckham in 1279, requiring a tabernacle to be made in every church in future, with a

decent enclosure, within which the reserved Sacrament was to be placed in a pyx (2 Johnson's Canons, 464). . . . Altar canopies in England appear prior to the Reformation to have been principally composed of some stuff or silken material, and so in Italy until the seventeenth century. The altar canopy over the high altar under the dome of the Cathedral Church of St. Peter in Rome is said to have been the first baldacchino constructed in Western Europe of durable material. It may be here observed that, by ancient custom, canopies or baldachinos are in some countries carried over persons of dignity on state occasions as a mark of respect and honour. Thus a canopy is borne over the sovereign of this country during a part of the ceremony of the coronation. For the like purpose a baldacchino is carried over the Pope, over cardinals, and over Roman Catholic bishops in processions. In the *Rituale Romanum* it was ordered that a baldacchino should be carried over the Host when conveyed to sick persons; and on the Feast of Corpus Christi, instituted A.D. 1234, by Pope Urban X., for the special adoration of the consecrated wafer, a baldacchino was ordered to be preceded to be carried over the Sacrament. Baldachinos are, therefore, with significance and with consistency, erected over the altars of Roman Catholic churches 'for honour' (as Dr. Harding, in his controversy with Bishop Jewel, says) 'of that blessed Sacrament.' So much for the historical view of the case. I will now proceed to consider it in its legal aspect; and the first question that suggests itself to the judgment of the Court on this branch of the case is whether the baldacchino or altar canopy proposed to be erected in St. Barnabas (which was described by the counsel for the petitioners as 'an extremely rich ornament, covering the whole of the altar, and in fact, a small house under which the altar stood') is an ornament, in the sense in which the term 'ornament' is used in the rubrics of the Prayer-Book, or whether it is nothing more than an architectural adornment or decoration. If it is a Church ornament, unless it is such an ornament as comes within the provisions of the Ornament Rubric of 1662, or would be subsidiary to the services of the Church, as prescribed by law, it is not competent to this Court to grant a faculty for its erection. . . . It seems to me that the *ciborium*, or altar canopy, as known and used in England at the time of the Reformation, was an ornament or article of church furniture within the meaning of the term 'ornaments' as used in the Rubric of the first Prayer-Book of Edward VI. It contains all the characteristics of a church ornament, whether as regards its form, the materials of which it was constructed, its symbolical signification, or the use to which it was applied—to which I have already referred. But as the baldacchino, or altar canopy, proposed to be erected, is to be of marble or other durable material, and not of the materials used in the construction of the altar canopies in use at the time of the Reformation, this further question arises—'Whether a baldacchino or altar canopy of this description is equally an ornament with the old altar canopies within the Rubric.' In the position it is described as an architectural adornment for the east end of the church. This is an inaccurate description of it. For if the Holy Table were removed from underneath it, the baldacchino would be there without meaning. It never could seriously be proposed to erect a baldacchino over a vacant space in the middle of the chancel for the sole purpose of adorning the east end of a church. It must, therefore, be taken to be an erection in connexion with the Communion-table, and was so admitted by the counsel for the petitioners in argument. If it is an erection in connexion with the Holy Table, it must be either a structure so attached to the Holy Table as to form part of it, or a structure separate from the Holy Table, but in connexion with it. If it were taken as something attached to the Holy Table so as to form part of it, the table with the baldacchino added to it would not be that decent Communion-table required by the 82nd Canon. If it is not to be treated as attached to the Holy Table, but as a structure separate from it, and yet in connexion with it, it is obviously an ornament. . . . If the baldacchino is an ornament within the meaning of the Rubric, the next question for consideration is whether it is one of those ornaments sanctioned by the first Prayer Book of King Edward VI., and if not, whether it can be shown to be of use as subsidiary to the services of the Church. There is no mention or reference to

* *Qy. Bagdad?*—Ed.

altar canopies in the first Prayer Book of Edward VI. The only ornaments mentioned in the Communion Service of that book are the Lord's Table, God's Board, or the altar, as it is indiscriminately called, the Corporals, Paten, and Chalice; and the direction in the Rubric following the Prayer of Consecration,—‘that the priest shall perform that ceremony without any elevation, or showing of the Sacrament to the people,’ is inconsistent with the retention of an ornament which was introduced into this country, and used, as already shown, for the purpose of exhibiting on high the Reserved Sacrament. The contemporaneous exposition of the law to be gathered from the authorities and practice supports this construction of the Rubric. The whole tenour of the discussion between Bishop Jewel and Dr. Harding on the subject of altar canopies and the Reserved Sacrament in 1554, and which has already been referred to, confirms this view. Again, in 1559, Queen Elizabeth, by virtue of her supremacy, issued certain injunctions in matters ecclesiastical, by the 23rd of which directions are given for the taking away and destroying of all shrines, coverings of shrines, trindals, rolls of wax, pictures, paintings, and all other monuments of superstition; and to see that this, among other injunctions, was complied with, certain commissioners were appointed. From a return made to these commissioners in 1556, by the churchwardens of 150 parishes in Lincolnshire, which has been published in Peacock's ‘Church Furniture,’ it appears that in several of the parishes canopies had been found, and were removed by the churchwardens as monuments of superstition, indicating that at that time they were not deemed to be lawful church ornaments. The Court was urged by the counsel for the petitioners to sanction the erection of the baldachino, for the purpose of giving greater dignity and honour to the Holy Table in the Church of St. Barnabas; but the honour and dignity to be given to the Communion Table in our churches, I take it, has been provided for in the Rubrics and Canons, and I hold that it is not the province of this Court to issue faculties for the purpose of giving greater dignity or honour to the Holy Table than the simple dignity which is prescribed by the law. After much consideration, I have come to the conclusion that the baldachino, to authorise the erection of which a faculty is prayed, is an ornament of the church within the meaning of the Rubrics, and as it is not prescribed by the Rubrics, or can be regarded as in any way necessary or subsidiary to the performance of the services of the church, I decline to order the faculty to issue.”

WESTMINSTER BOULEVARD BILL.

IN anticipation of the last two sessions of Parliament notices were given of the intended introduction of a Bill with the above title, but for some reason the Bill was dropped at an early stage. This year the necessary notices have been published, plans, sections, and book of reference have been deposited, and a copy of the Bill was lodged in due course within the stipulated time, and, so far, the project is still on foot.

The Bill is to construct a new street or “boulevard” from the New Palace-yard, near the Clock Tower of the Houses of Parliament, to Eaton-square, near St. Peter's Church, and other streets and improvements connected therewith. In the body of the Bill it is stated that the new street is to be not less than 150 ft. wide from house to house, the central longitudinal line to be a straight line from the centre point of the Clock Tower to a point in the central thoroughfare in Eaton-square,—that is, King's-road. The new road, it is proposed, will be planted with row of trees on each side, “after the fashion of the boulevards of Paris,” but with such improvements or alterations as may be deemed desirable. It is also proposed by the Bill to widen, alter, improve or divert, Princes-street, Queen-street, and James-street, Westminster; and Buckingham Palace-road, Grosvenor-gardens, and Belgrave-mansions, Piccadilly. Also to make new streets, on the south side of the proposed boulevard, near Chapel-place, to terminate in Victoria-street, opposite Strutton-ground, such street forming a continuation in a straight line of the roadway on the north side of the boulevard, terminating in the Birdcage-walk. Another to commence on the south side of the boulevard, near the northern end of Gardener's-lane, and to terminate in Victoria-street, near to Artillery-row. Another street to commence on the south

side, near Little James-street and York-street, to continue in a straight line to Victoria-street, opposite Victoria House. Also, a new street in Piccadilly from the south side of the boulevard, near Wallis's-yard, to terminate near the junction of Victoria-street with the Vauxhall Bridge-road. Power is asked for by the Bill to stop up or alter a large number of streets, courts, passages, and thoroughfares, situate in the area lying between Great George-street, Birdcage-walk, and Victoria-road on the north, and Victoria-street, Vauxhall Bridge-road, and the Broad Sanctuary on the south, excepting Wellington Barracks and Church, Buckingham Palace Hotel, and the Duchy of Cornwall office. In Piccadilly similar powers are proposed to be taken. Special provisions are made in the Bill for the removal of the poor displaced to model lodging-houses, and restrictions are imposed as to rentals or profits therefrom. Surplus rates are to be applied to the reduction of rentals of model lodging-houses. It is also proposed by the Bill to provide markets for the sale of meat, vegetables, fruit, fish, game, poultry, china, glass, and earthenware. It is proposed to carry out the powers of the Act by means of a company with limited liability.

The idea of constructing such a spacious road as is proposed is certainly attractive. The thoroughfares between the Houses of Parliament and Belgrave are sufficiently spacious in so far as Great George-street, the Birdcage-walk, and Buckingham Palace-road, for the north, and Victoria-street for the south routes are concerned; but the entrance to Belgrave at the west end is tortuous and needs improvement. The proposed new street would be constructed between the two present routes, and would open up valuable frontages, and provide a fine vista. The cost of the project would be great, though a proportion of the property required is of comparatively small value.

How this cost is to be got back the projectors know best. Whether or not the public should be called on to aid in some such improvement is an open question. The new street would be about one mile one furlong in length, and, though called a “boulevard,” will not be on “the space occupied by a bastion or curtain,” or on the “site of demolished fortifications.”

THE INSTITUTION OF CIVIL ENGINEERS.

THE fifty-sixth annual meeting of the members of this society was held on Tuesday evening, the 23rd inst., Mr. Hawksley, the president, in the chair. In the introductory passages of the annual report, the mode of voting for the election of the council was referred to, when the opinion was expressed that the charter rendered it imperative on the general meeting to make an election solely by the members present thereat. In connexion with the “Civil Engineering, &c.,” class of the London International Exhibition of 1874, the members were urged to make the collection of models of, and of other objects relating to, public works, as full and as complete as possible. On the subject of finance, it was remarked that for some years the receipts had been considerably in excess of the payments. Indeed, in the last fourteen years the savings had amounted to something like 2,000l. per annum on the average. Now the receipts were nearly 9,000l. per annum, while the ordinary expenditure was only about 6,000l. per annum. The council had under consideration how that sum could be most judiciously and advantageously expended, in promoting the objects and interests of the corporation and of its members. Allusion was then made to the Trust Funds, four in number, being the bequests of Thomas Telford, Joseph Miller, and Thomas Howard, and the donation of Charles Manby. It was stated that the nominal, or par, value of these funds was 13,716l. 0s. 11d., that the Institution investments amounted to 16,244l. 1s. 8d., and that the available cash balance was 263l. 5s. 11d., together 30,223l. 8s. 6d., as compared with 28,651l. 9s. 11d. at the date of the last report. The maximum previously reached was 29,835l. 18s. on the 30th of November, 1867, before any expenses had been incurred in connexion with the new building, on which account a sum of 19,973l. 14s. 6d. had been paid. As the result of actual enumeration, it had been ascertained that the library now contained 10,443 volumes, inclusive of 320 volumes of tracts. The attention of the council had been devoted to a question of the gravest importance, namely: How the character, scope, and style of the original communications (papers)

read at the meetings, and the consequent discussions, could be improved? Having regard to the number now presented, and to the impossibility, for want of time, of reading and discussing thoroughly more than ten or fifteen communications in each session, it was proposed, as far as possible, to accept for reading at the meetings only papers which contained principles suitable for discussion, reserving such others as might be accepted for publication in an appendix to the proceedings, either *in extenso* or in abstract. This would introduce what might be regarded as another class of original matter into the volumes; but the council deemed other alterations necessary to meet the exigencies of the case. It had, therefore, been determined to introduce a system which had been found to act beneficially in other societies, both at home and abroad. This was the organisation of a scheme by which the publications of the Institution should contain a summary of information, gathered from the transactions of foreign engineering societies, and from foreign scientific periodicals, on all branches of professional knowledge.

THE BOARD OF WORKS AND ISLINGTON VESTRY.

ON the 12th of December I received a peremptory notice from the Islington vestry to alter the number of my house within a week, or risk a fine of 40s.; the vestry taking on itself, at the direction of the Board of Works, to also alter the name of the street.

Now there are no less than 112 house numbers to be altered in this one street (or grove, as it is called), and up to the present time (Dec. 30) the vestry has neither seen that its orders have been carried out by the householders nor affixed the new name to the street. About one-half of the houses have new numbers, and for more than a week the old name of the street has simply been painted out.

No one can tell to what excessive inconvenience and loss the negligence of the Islington vestry has put the inhabitants of these 112 houses. Coming as the notice did a fortnight before Christmas, with its continuous fog,—at a time, too, when letters and parcels are more numerous and important than at any other time of the year,—the confusion in the numbers and the obliteration of the street-name has been simply disastrous to many others than myself.

To make the matter worse, the vestry officers have been remonstrated with (more than a week ago), without any effect.

MILDMAY GROVE.

EMMANUEL CHURCH (DULWICH) COMPETITION.

THE committee for building this church received in competition forty designs, from which they selected seven, and referred them to Mr. Roger Smith to report upon them, having regard to whether they were within the terms of the instructions, and could be carried out for the stipulated sum (7,000l. for church, and 1,900l. for the parsonage); he was also asked to look through the remaining thirty-three designs, and if it appeared to him that any design of great merit had been passed over, to draw the attention of the committee to it.

The seven selected designs were marked,—1. Fleur-de-lis, in a circle; 2. Sigma; 3. D. V.; 4. Domus Dei; 5. Respite Finem (design B); 6. Fortiter et Fideliter; 7. Camdenia.

The referee's report is now before us. From it we learn that Nos. 1 and 2 were put out of court by not providing the stipulated 900 sittings. After examination the referee finds himself bound to recommend No. 4, “Domus Dei.”

“The plan is a nave, 26 ft. wide, of four bays, with aisles 12 ft. wide, and transepts, a choir, with apse and tower on north side of choir. The organ-chamber is in the tower with an entrance below it. The vestries are on the south side of choir. A vestry for the choristers being ingeniously contrived above the clergy vestry, but the access from these vestries to the choir is ill-arranged. The choir is smaller than in most of the designs, but still sufficient. There is indeed throughout this design a most vigorous economy of space.” “In cost this design, especially if considered apart from its lofty tower and spire, compares favourably with all the others selected. Its moderate height and small floor space per sitting explain how this should be. At the same time, after giving it careful consideration, and looking at what the author says in his report, I am not of opinion that this design can be carried out, including its tower and spire, for 7,000l. My own most moderate estimate does not come within 22 per cent. of that of the author, and a second made with more care reaches a much higher figure.”

From the remaining thirty-three designs, he selected sixteen as the most worthy of attention,

namely:—1. Auxilium ab Alto. 2. K. H. 3. K. H. 4. Alenci invadere. 5. Industry. 6. Ich Dien. 7. Eack. 8. Ab uno disce omnes. 9. Audabata. 10. Red Rose. 11. Grandeur et Espérance. 12. ☉. 13. Respiece Finem, design 1. 14. Westminster. 15. LL. 16. Put to the Test.

The best of these, and in his opinion one of the best designs sent in, is the one marked with a cross in a circle ☉; but for reasons given he cannot recommend it.

"Eack," however, he strongly recommends to notice.

"It is not free from faults, but it is of good enough architectural character to claim attention. Its plans and arrangements are excellent, and its author has had the rare courage to tell what he believed to be the truth. His estimate for church, including tower and spire, is 7,975; my approximate estimate is within 6 per cent. His estimate for the parsonage is 3,300; mine, which is perhaps a high one, is within 18 per cent. of his."

The results of the report the referee thus sums up:—

"The best design out of your selection is that marked 'Domus Dei.' I have endeavoured fully to state its merits and defects. The most moderate estimate I have formed of the church design is more than 22 per cent. above that of the author, and a second examination carried me to much higher figures.

The design which I have not selected by you, I consider the best is 'Eack,' and my estimate of the church is within 6 per cent. of that of the author. The one which I place next to it is that of 'Put to the Test,' and my estimate of the cost of the church is within 17 per cent. of that of the author."

We understand that the committee have selected the design "Domus Dei," which proves to be by Mr. E. C. Robins, conditionally,—i.e. subject to his obtaining a satisfactory tender.

PIPES AND PRESSURE.

SIR,—In reply to "J.D.P.'s" inquiry in your pages, as to the weight per foot run of lead pipe required to withstand a pressure of 150-ft. head of water; your correspondent should have added fuller particulars, to enable a definite answer being given. If the pipe is subject to hydrostatic pressure, or that of still water alone, then lead pipe weighing 4 lb. per foot run would be of sufficient strength, and consequently this weight of pipe is more than strong enough to withstand the pressure of a flow of water from such head passing through it, if such flow is but continuous and unchecked; but in practice, the great demand on the strength of a pipe arises from checks in the current, such as the sudden shutting off of the flow through it; and to resist the maximum effect of such strain, a pipe weighing 20 lb. per foot run is required. The above weights give a sufficient factor of safety.

J. R. MANN.

MEAVY CHURCH, DEVON.

The moorland church of Meavy, South Devon, which is about to undergo restoration, consists of a nave with single aisle, south transept, chancel, side chapel and a tower at the west end of the nave. It was founded early in the thirteenth century, by the family De Meavy, and grants under this name to the neighbouring religious houses of Plympton and Buckland (c. 1202 and 1214) are extant.

The chancel and chapel (on the south side), known as the "Drake Aisle," belong to this period, and have Early English walls and east windows. The other portions of the church are Perpendicular, the roofs being all of the Devonshire "wagon" type, having some curious bosses at the intersection of the moulded ribs: one representing a lion with his tail curled up; another, a deer with his head turned back; and another, a woman's head, with a mouse coming out of her ear (emblem of cunning leaving the brain).

It is intended to repair some of the ribs and bosses of the roofs, to open up the tower arch (now blocked by a gallery), re-seat the church throughout, re-pave the floor, and furnish the chancel with new oak fittings. No portion of the ancient work which it is possible to preserve will be removed.

The architect for the restoration is Mr. Hine, of Plymouth.

Like most other Devonshire churches, Meavy Church once possessed a rich screen. The roof turret is on the north side. The tower is a well-proportioned granite structure of the fifteenth century, and has six bells, which are not at present rung, one being crazed and another broken in pieces. These will be recast.

The parish of Meavy was the original home of the family of Drake, whose old manorial resi-

dence adjoins the church. In the vault beneath the before-mentioned "Drake Aisle," several of the family, and one Sir Francis Drake (nephew of the great circumnavigator), are buried.

There are some odd epitaphs in the churchyard of this secluded parish. One tombstone records the deaths of four members of a family, their ages varying from sixteen to ninety-four; and adds,

"Our life is but a winter's day;
Some only breakfast, and away;
Others to dinner stay, and are full fed;
The oldest man but sups and goes to bed.
Large is his debt who lingers out the day;
Who goes the soonest has the least to pay."

A NEW GUILDHALL AT CARNARVON.

THE Corporation of Carnarvon have hitherto had no public building in which to transact the business of the borough, or general municipal transactions, although the town is the capital of the county, and up to the present time the meetings of the Town Council have been held in the Grand Jury-room of the County Hall. This want has, however, now been met by a new Guildhall which has just been erected, and which was opened formally on Friday in last week. The new building is a spacious and ornamental structure, built of stone from one of the neighbouring Welsh quarries. The building, in addition to a council-chamber, and other municipal offices, contains a large decorated room for public meetings, balls, concerts, and other entertainments. The main elevation of the building, which is in High-street, the principal street in the town, includes a balcony displaying, in front, in sculptured stone-work, the arms of the borough. The building, which has a prominent clock-tower, was designed by Mr. John Thomas, surveyor for the County of Carnarvon, and has been erected at a cost of a little more than 3,000l.

THE NEW PRIVATE BILLS.

THE general list of petitions for private Bills for the session of 1874 has been printed by the officials of the Private Bill Offices of Parliament. In 1866 there were 633 Bills brought forward; in the following year the number sank to 317. In 1868 there were 228 Bills; in 1869, 212; in 1870, 240; in 1871, 275; in 1872, 303; in 1873, 334; and for next session the number of Bills is 281, which may be thus classified:—Railway Bills, 153; Railway Clearing-house Bill, 1; Railway Station Bill, 1; Canal Bill, 1; Tramway Bills, 10; Water Bills, 22; Gas Bills, 14; Gas and Water Bills, 8; Docks, Harbours, and Pier Bills, 22; Corporation Local Board and Local Improvement Bills, 26; Reclamation of Land, 8; Subway, 1; Miscellaneous, 19; total, 281. This number is exclusive of about fifty projects, for which plans have been deposited under provisional orders or certificates.

HOUSES IN WALTHAMSTOW.

SIR,—Reading with great interest the articles in your paper headed "Homes in Hornorton and Hackney Wick," I wish to draw your attention to some "Homes at present existing in Walthamstow," where, since the opening of the new railway, a great many persons have removed from London.

On the right-hand side of Green Leaf-lane, about five minutes' walk from Hoe-street Station, and some five or six miles from Bishopsgate, there are two building estates situated on a hill,—the one on the east side, called the Prospect-hill Park Estate, where houses of a very pretentious character are erected, and where, I suppose, sanitary matters are fully attended to. But, on the west side of the hill, called the Tower Hamlets Estate in legal documents, but Mud Island by every one acquainted with the place, there is absolutely no drainage whatever. This parcel of ground was sold in small building plots some seventeen years ago, when no sewers were put into its six intersecting roadways, and they were not formed to the satisfaction of the parish authorities, who have since entirely ignored the existence of the place excepting to collect the highway and other rates of the inhabitants. Dust-bins are unknown, all vegetable and other refuse is thrown into the roadway, as during the winter months no vehicle can pass along. Some of the houses have cesspools with over-flow-pipes into the road channels; others get rid of their sewage matter

by directing it to the lowest part of their own ground and letting it run away where it can,—probably it is directed on to the ground of a more low-lying neighbour, who either banks it out of his own premises, or directs it, with his own, across the public footway; and there it remains until (in summer time) the sun hardens it, or (in winter) a more than usually heavy and continuous fall of rain washes it away, or assimilates it with the already pestiferous mud that forms the public highways; and when the filth from pig-keeping is added to other sources of infection the picture is as deplorable as can well be imagined.

In spite of this state of things, every house but two on the estate is fully let to respectable poor people, who have in a great many instances lodgers, in addition to their own families, and who avail themselves of the early morning trains, being so short a distance to the railway-station.

The parish authorities have been applied to on many occasions, their answer always being, "The owners of the property must do the necessary works first, and to our satisfaction: then we will take to the roads and keep them in repair." Now as the owners are to a great extent poor people, whose only possession is perhaps the house and bit of ground they reside on, and who, in some instances, live "en-famille" with their pigs, and are content with the existing state of things,—any large outlay or combined effort is entirely out of the question, while those who would like to live a little more like human beings are compelled to exist in this foul plague-spot; for, on warm or wet days, every door and window has to be kept closed because of the stench from the disturbed sewage-matter, there being contamination enough to poison the atmosphere for miles round. Perhaps if you will insert this in your paper it may stir up the Local Board formed under the new Act to some action in the matter, and prevent an appeal to the Local Government Board.

SUBURBAN.

"COLLINS v. ULLMANN."

SIR,—Referring to the report of this case which appeared in your number of the 20th ult., permit me to say that the portion of it purporting to give my evidence is not correct, as I did not state that I never charged "more than 5 per cent. commission whether the works were difficult or not," neither did I directly or indirectly assert that "I and other architects would undertake the works connected with a stable, or an elaborate boudoir, or the designing stained-glass windows for 5 per cent." I did say, however, that I thought 5 per cent. commission was the fair and ordinary charge for designing and superintending the work in question, and I further stated I was of opinion that Mr. Collins ought to have acquainted his client of his intention to charge 7½ per cent. commission previously to undertaking the work.

H. L. JARVIS.

P.S.—Since I penned the above I see in your last number a correspondent has been misled as far as my evidence is concerned by the report of the case referred to. I quite agree with him that no sensible man could adopt a system of a uniform charge of 5 per cent. In the course of my practice I have often charged more than 5 per cent., according to the skill and trouble involved in the work entrusted to me.

H. J.

. The correspondent from whom we received the account of the trial asserts that his report of the evidence given by defendant's witnesses is substantially correct: we willingly, however, and as a matter of course, accept Mr. Jarvis's repudiation of the statement in question.

WORTH NOTICE OUT OF AMERICA.

THE *New York International Review* says,—
"Let us honestly admit the truth, and manfully apply the remedy. The peril in our American life is dishonesty. This produces the lack of confidence which is the root of paucity. Our very existence is at stake. American life presents an anomalous spectacle. We are socially pure and commercially depraved. Men who are upright in their neighbourhood, and admirable in their homes, will habitually, and knowingly, and systematically, do wrong in their business. Nor is the malady confined only to men in distinguished position. It affects all classes of our republic. The tainted streams on the summit percolate the entire mountain. Of all

the sins of humanity bribery is perhaps the meanest. Most other crimes are possible to a single transgressor. Here there must be two parties to the guilt—the man who gives and the man who takes. Both are debased. There may be daring in robbery and courage in murder. The peculiarity of bribery is its cowardice. It sneaks, it cringes, it hides, it winds, it twists, it wriggles, it skulks. It is not a lion roaring and rushing on its prey, but a serpent lurking in the grass to infuse its poison before crushing with its coils. A man who abuses his office, warps his judgment, and twists his conscience for a bribe, sells his soul by his act, and ever after lives expecting a higher bidder for himself; and he is like nitroglycerine, dangerous to his purchaser. Now it is a painful and mortifying fact, that nearly everything in our country has, in some way, directly or indirectly, been controlled by bribes. Mechanics, overseers, builders, contractors, architects, have been bribed. Clerks, merchants, bankers, have been bribed. Constables, policemen, collectors, inspectors, weighers, measurers, gaugers, postmasters, have been bribed. Lawyers, doctors, chemists, analysts, surgeons, witnesses, have been bribed. Judges, juries, legislators, governors, have been bribed. We have sometimes feared that it would be difficult to place a stone, or a timber, or a lock, or a screw, or a nail in your house that has not somewhere on its passage felt the stain of a bribe. It is doubtful whether the food which supports our lives, or the coffins which will convey us to our graves, can wholly escape contamination. The consequence is, disturbed faith in each other, and sometimes a distrust of our country and our humanity, with a fear like a shadow, that on all modern European and American societies is but the old doom of ancient Babylon and Rome. One faith alone saves from despair. That is sufficient, but not here to be discussed.*

BURLINGTON FINE ARTS CLUB.

MR. JOHN HENDERSON, F.S.A., whose never-failing kindness in placing his collections of works of art at the disposal of his friends, is only equalled by the taste and liberality with which these collections have been made, has enabled the Committee of the Burlington Fine Arts Club to exhibit a beautiful assortment of drawings and sketches by David Cox and Peter de Wint. There are fifty by Cox and twenty-six by de Wint; and all who admire the works of these artists, or desire to acquire the power of doing so (it is not given to all), should take advantage of the present rare opportunity.

SCHOOL BOARD SCHOOLS.

London.—Progress is being made with the new schools which are being erected in Kenish Town, on the side approaching to Camden Town. The walls are raised to their full height and the boys' and girls' schools will be roofed in shortly. The building to be appropriated to the infants is roofed and covered with slating. The chief building, to which the infant school will serve as a sort of supplement and appendage, stands on the southern side of Lower Mansfield-place, at the point where it joins Willes-road. It is three stories in height, the upper floor being intended for the boys and the next floor for the girls, while the ground floor is devoted to covered playgrounds and to necessary offices and outbuildings. There are separate open and covered playgrounds for the boys, for the girls, and the infants; and the site of the entire building occupies nearly half an acre. The frontage in Mansfield-place is about 250ft. in length, and the buildings are of brick, with stone facings, in a plain style, approaching to the pointed Gothic in some of its details. The total cost of the new schools, we understand, will be between 10,000l. and 11,000l. The architect is Mr. Edward R. Robson, the architect to the London School Board; and the builders and contractors are Messrs. Niblett & Co., of Hornsey.

Conisbrough.—The opening ceremony in connection with the new schools erected by the Conisbrough School Board has taken place. The school is situated on an eminence at the western extremity of the village. It consists of boys' and girls' schools at the northern and southern

extremities, with class-rooms and lavatories at the eastern end, and an infant school between the boys' and girls' rooms at the western end. The building is modern in style, and is erected of brick with stone dressings. Altogether there is accommodation for 600 children. The rooms are light in appearance, lofty, and well ventilated. They are fitted up with pitch pine desks and forms, and the whole have been constructed at the cost of 3,500l. The architect was Mr. Wm. Watson, of Doncaster and Wakefield, and the contractors were Messrs. Twiby & Goodlad, of Conisbrough.

Edinburgh.—The Edinburgh School Board have come to the conclusion, after careful inquiry, that provision would require to be made for 3,916 children. They therefore recommended to the Educational Board in their report that seven new schools should be established in different localities. Bailie Tawse objected to the report, on the grounds that he did not approve of the principle on which it was drawn, and because he believed the data to be erroneous. He contended that seven schools were unnecessary—suggesting four as a more likely number—and charged the Board with attempting to sweep all elementary schools into the national system. The majority of the members repudiated Bailie Tawse's assertions, and the report was approved.—Bailie Tawse dissenting.

OPENING OF AN INDUSTRIAL EXHIBITION AT CAMBRIDGE.

In the Working Men's Hall, an Industrial exhibition under the management of a committee, with Lord George Manners, M.P. for the county, for their president, has been opened. With the exhibition is combined a loan art collection, and the whole is intended to give the working men of the county and neighbourhood an opportunity to exhibit specimens of their own handiwork, the inducement of prizes being held out to encourage good use of their working or leisure hours, and to exhibit specimens of the industry of other parts of the world, and of other periods in the history of art and industry, these latter being contributed on loan by their possessors. A duke and a porter, a university professor and a schoolboy, college dons and college servants, a vice-chancellor and a pupil teacher, gentlemen and ladies, boys and girls—all add their quota, and a good result is achieved by the contribution of in all about 700 persons. Machinery is represented in its various branches by models or working examples, and there is a valuable contribution in metal work and textile fabrics from the South Kensington Museum. Addresses were delivered at the inauguration by Lord George Manners, the chairman, and by the Rev. the Master of St. John's College (Dr. Bateson), Mr. Hodgson, Mr. Pratt, and others. An inauguration ode was delivered by Mr. W. B. Godding. The working men and their friends attended in crowds in the evening, when the price of admission better suited their pockets and the time their convenience.

ST. MICHAEL'S, SHREWSBURY.

This church, erected about forty-five years ago in no particular style, has been enlarged by means of a sanctuary, built of Redhill stone, unplastered inside, cased externally with light-brindled Broseley bricks, which agree in colour with the rest of the walling; and it has a high-pitched open-timbered roof, covered with Ridge Hill tiles, and rises above the nave. In a niche over the east window, outside, is a figure of St. Michael, carved by Mr. Boulton, of Cheltenham. The dressed stonework to the windows, buttresses, &c., is from the Shelvock Quarry. Internally, the walling is relieved with yellow Grinshill; the floors are laid with encaustic tiles.

The eastern part of the nave, which has been converted into a chancel, is separated from the rest by a low stone screen, from the south side of which rises a stone pulpit, with carved cornice, &c., and panels inlaid with coloured marbles, the metal lectern being fixed on the north side of the screen. The chancel, which, including the new sanctuary, is now 38 ft. long internally, is provided with oak stalls. There is a rise of two steps at the screen, and an ascent of five more, in all, to the altar.

The reredos, of Caen stone, executed by Mr. Earp, has a central group in high relief, representing the Crucifixion, with St. John and the

three Marys. The gas standards, altar-rail, and lectern, are by Hart, Son, Peard, & Co.; the lead-glazing is by Mr. W. Done; and Mr. W. Dodwell supplied the underground hot-air-stoves in the nave and chancel. Mr. Haycock, of Shrewsbury, is the architect; the contractors being Messrs. Bowdler & Darlington. The total outlay has been about 800l.

It is intended, as funds may come in, to gradually recast the church in the style of the new part, retaining walls, &c., as far as possible.

RESTORATION OF ST. SEPULCHRE'S CHURCH, SNOW-HILL.

This interesting and in part ancient church, comprising some remains of fifteenth-century work, besides Sir Christopher Wren's addition after the Great Fire, is now in course of restoration. The tower is being reconstructed, as our readers know, from the designs of Mr. W. P. Griffith, and the next stage in the proceedings will be the restoration of the body of the church.

As to this, the vicar and churchwardens have sought, we are told, the advice of the Council of the London and Middlesex Archaeological Society, and we have been furnished by Mr. E. W. Brabrook, F.S.A., and Mr. John E. Price, F.S.A., honorary secretaries of that society, with a copy of a report, emanating from their council, prepared by Mr. John Livock and Mr. C. H. M. Millham.

We have great respect for the committees of the London and Middlesex Archaeological Society, but we cannot resist a feeling that they will best carry out the real objects of the society by confining their labours to the study and preservation of the antiquities of the country.

We are glad to perceive that they do not think it necessary to recommend that the body of the church should be made "to match the old tower and porch in style of architecture."

PRO ECCLESIA DEI?

Sir, I cut this advertisement from the *Church Times*, for December 24th.

"PRO ECCLESIA DEI. Who will send One Shilling to help two boys to restore a very fine old rood-screen in Bicknoller Church?—Address L. G., Bicknoller Vicarage, Taunton."

The very "fine old rood-screen" after standing a glory and a thing of beauty, for some four hundred years or so, is now quietly awaiting its fate at the hands of "two boys."

I know nothing more of the matter than what I glean from the advertisement, and hope the shillings will not come in very fast; for surely the least work done under the circumstances the better?

Is it not possible to stop "L. G." in his destructive work, and persuade him to procure the advice of an architect upon this matter before it is too late?

HARRY HEMS.

VELOCITY OF CHIMNEY DRAUGHT.

Sir,—"F.R.S." in one part of his letter, says, "Mathematicians have differed most materially in their calculations of the velocity of chimney draught. The method of Montgolfier, however, is at once the most simple and accurate." Will the writer please state where Montgolfier's method is published, as I should like to see it?

W. G.

ARCHITECTS TAKING WORK OUT OF CONTRACTORS' HANDS.

FOR NOT PROCEEDING SATISFACTORILY.

In the County Court of Newcastle, considerable and expensive litigation has, since May last, been going on, in which a curious and important law-point in the interests of architects, builders, and house-owners is involved.

The action was brought by Mr. Henry Richardson, of Monkton Lodge, Jarrow, against the trustee of the estate of a bankrupt of the name of Morris, a builder and contractor; a summary must suffice.

It appeared that Mr. Richardson had retained Mr. Tillman, architect, of Sunderland, to prepare necessary plans for the alteration of Monkton Lodge, and to superintend the work whilst in progress, and also to obtain tenders for a contract of the work.

Mr. Morris, who then carried on business as a builder and contractor, tendered and obtained the job for 1,642.18s., and the contract was entered into in April, 1871. The architect, Mr. Tillman, being very much dissatisfied with the progress of the work, exercised a power invested in the contract, and gave the builder, Mr. Morris, a written notice that after twelve hours the contract was accordingly carried out, and the completion of the job entrusted to Messrs. Hurst & Sons, builders, of Sunderland.

Upon the work done by Mr. Morris being measured up, it was found that 299.3s. 3d. worth had been done up to the time the contractor had it taken out of his hands, and that Mr. Richardson had paid only 50l. towards that value. After this Mr. Morris filed a petition in bankruptcy, and at a sitting Mr. Richardson presented himself as a creditor against Morris's estate to the amount of 320l. 6s. 11d., on a proof of its being the difference in

* The portions in italics are not so distinguished in the original.

the price of Morris's original contract and the amount actually paid to Messrs. Hurst & Sons for completing the work.

This proof was rejected, and the trustee to the bankrupt's estate next claimed 32/3s. 10d. of Mr. Richardson, for the balance due to Mr. Morris for the work done.

Upon the first trial the jury returned a verdict for Mr. Morris's estate. Mr. Richardson then applied for and obtained a new trial, and the jury not only again found for the trustee, but also for 35s. interest upon the sum owing from the date of Morris's summary dismissal from the contract by Mr. Tillman, the architect.

BRICKS.

Sir,—"In your recent article on "Brick Architecture" you say, "and even the need of a larger or smaller brick than ordinary for special purposes requires little short of an Act of Parliament to produce the article." Allow me to say that this does not apply to Buckley's Mountain manufacture, as here we make bricks and blocks daily from 2½ in. by 2½ in. by 9 in., 9 in. by 4½ in. by 1 in., to 46 in. by 12 in. by 6 in., or any other sizes.

J. M. GRISON.

THE RETURNS ON RAILWAY INVESTMENTS.

CAPT. TYLER in his last annual report to the Board of Trade, recently issued, says:—"Of the amount of capital returned as guaranteed, amounting to 63 millions nearly 2½ millions received dividends of 2½ per cent., nearly 1½ million from 3 to 3½ per cent., nearly 18 millions from 4 to 4½ per cent., upwards of 30 millions from 5 to 5½ per cent., upwards of 9½ millions from 6 to 6½ per cent., and nearly 1½ million of 7 to 12½ per cent. Of the amount of capital returned otherwise as bearing preferential interest, amounting to 114 millions, rather more than 9 millions received no dividend at all; about five millions received dividends from ½ to 1½ per cent., about 1 million from 2 to 3½ per cent., about 15 millions from 4 to 4½ per cent., about 23 millions from 4½ to 4¾ per cent., nearly 55½ millions from 5 per cent., nearly three-quarters of a million from 5½ per cent., about 2½ millions from 6 to 6½ per cent., about 1½ million from 7 per cent., and about half a million from 8 to 12½ per cent. Of the loans, amounting to 66 millions, upwards of 1½ million received interest at rates under 4 per cent., about 33 millions received interest at 4 per cent., about 14 millions at 4½ per cent., about 11 millions at 4¾ to 4½ per cent., upwards of 6 millions at 5 per cent., and upwards of half a million at 6 per cent. Of the debenture stocks, amounting to nearly 86 millions, about half a million stood under 3½ per cent., about 45 millions under 4 and 4½ per cent., about 21 millions under 4½ per cent., about 17 millions under 5 per cent., and about 2 millions stood under 6 per cent."

CONVERSAZIONE OF ROYAL INSTITUTE OF IRISH ARCHITECTS.

THE CONVERSATION of the Irish Institute of Architects will take place on Tuesday evening next, in the Royal Hibernian Academy. It is expected that the Lord-Lieutenant and the Countess Spencer will honour the assembly with their presence. There will be a display of architectural drawings, and other objects on the part of several of the profession, and a good attendance is anticipated. *En passant*, it would be desirable to see the Royal Hibernian Academy extending its usefulness, and having the intentions of its architect-founder carried out, so that it might become really an academy of painting, sculpture, and architecture. Of late years its annual exhibition in the first two branches of the fine arts has been rather meagre indeed, and its services in the interests of architecture are scarcely worth mentioning. A little judicious reform, and the infusion of some fresh blood and energy into its management, would work some good, and afford a pleasure to those who honour the memory, and do not forget the services of its first president and founder, Francis Johnston.

ST. MARK'S CHURCH, WALWORTH.

On Thursday, the 1st inst., the Bishop of London consecrated the Church of St. Mark, East-street, Walworth-road. The building was commenced in May last, and will seat about 750 persons, all on the ground-floor. The chief feature of the design is the width of the nave, which is 27 ft. the aisles are only 5 ft. wide. The height of the aisle walls is 27 ft.; in them are lancet windows. The nave is 98 ft. long; the roof is wagon-shaped and close boarded, which has contributed to make the acoustic

properties of the building satisfactory. The piers between the nave and aisles are of Bath stone, of octagonal form, 2 ft. 4 in. diameter,—they support red brick arches. The height of the arcade is 30 ft. The chancel is the same width as the nave, and 32 ft. deep; it is covered with a polygonal boarded roof. The east window is 25 ft. high; it is of Decorated tracery, with five lights, and is filled with grisaille glass, made by Mr. Pepper, of the Euston-road, from the architect's designs. The walls are faced externally and internally with picked stock bricks. The total cost will be about 5,000l., including heating and lighting.

Mr. Thompson, of Camberwell, was the builder; and Messrs. Henry Jarvis & Son were the architects.

MONUMENTAL.

The Simpson Memorial.—At a meeting of the committee of subscribers for a memorial of the late Sir James Simpson, bart., M.D., &c., held in Edinburgh, it has been unanimously resolved that Mr. William Brodie, R.S.A., be commissioned to execute a statue in bronze, to be erected on some suitable site in Edinburgh.

Papworth Liverpool. In the churchyard of this parish, a monument in affectionate remembrance of the late Rev. F. Cheere, of Papworth Hall, has recently been erected by his widow. The memorial consists of a decorated Irish or Iona cross, having a basso-relievo of the Saviour in the centre, and enriched with sculptured groups of passion flowers, lilies, and wheat. The whole is executed in blocks of hard Sicilian marble, and the inscription is engraved in letters of lead. This monument stands at the head of the grave, the whole space being enclosed by marble-carving, pillars, and galvanised chain-work. The entire work has been designed and executed by Mr. Edw. Jas. Phyllis, of London, sculptor.

The Monument to Flora Macdonald.—A serious disaster has occurred to the Iona cross erected two years ago over the grave of Flora Macdonald. The fearful gale of the night of the 15th ult., which blew full upon the face of the monument, proved too much for it; the cross fell upon the ledger, and broke into three pieces. The shaft snapped just below the cross, and again near the middle, and the connexion with the pedestal was also severed. The pride of the monument was that it was a monolith. The pedestal was 10 ft. in height, and the cross, one stone, was 18 ft. 6 in. high.

Statue of Joan of Arc.—A hoarding has just been put up on the open space in the Rue de Rivoli, Paris, formed by the Place des Pyramides, where a bronze statue of Joan of Arc is about to be erected. It is near this spot that the Maid of Orleans was wounded by a bolt from a crossbow, while besieging Paris, then occupied by the English. The high ground known as the Butte Sainte-Roch was then skirted by a moat, and she had courageously advanced to the ramparts to sound the depth of water with a lance before making the attack, when she was struck in the thigh.

VARIORUM.

WE must add to our notice of books sent to us by Messrs. Partridge & Co. a few words about Child Land: Picture Pages for the Little Ones," a gay little volume full of sketches by Oscar Pletch, and Mr. Richter; the majority of them excellent of their kind.—"Endless Mirth and Amusement." By Charles Gilbert (Dean & Son), is a collection of games, conjuring tricks, forfeits, and so on, which will doubtless enable many a youngster to astonish his grandma. Some of the tricks require as much practice as the pianoforte, but many of them may be easily acquired.—"Everybody's Year Book" (Wyman & Sons, Great Queen-street), appears now to be firmly established, and the issue for 1874 is quite up to the original standard. Among the papers, one headed "A Glass of Pale Ale" gives an interesting account of the rise, progress, and ramifications of the vast brewery of Messrs. Bass & Co., of Burton.—"The Cosmopolitan Masonic Calendar" (Geo. Kenning) is a book of reference addressed to the Masonic body, and contains information peculiarly its own.—"The Gentleman's Magazine," under a new editor, has begun well a fresh career. The changes in the purpose of this serial have been great. Let us hope it will attain to the same elevation in its new sphere that it held in its old one.

Miscellaneous.

New Exchange at Brussels.—The Brussels correspondent of the *Pall Mall Gazette* says:—"Brussels is being rapidly transformed into one of the finest and healthiest capitals of Europe. The new boulevard, which traverses the city in about the same way as the Boulevard du Sabotage at Paris, is approaching completion and the principal building situated on it, the new Exchange, of which Brussels stood greatly in need, owing to its importance as a financial centre, has been opened with a great hall. M. Léon Sny, the architect, has accomplished his task in a very short time, for the building was commenced only in 1868. It is constructed of white Caen stone, and forms a rectangle of 40 metres in width and 80 metres in length, covering therefore 3,200 square metres of ground. The style is mixed so as to allow of very rich sculptural ornamentation. The frontispiece of the great portico represents the city of Brussels surrounded by groups of allegorical figures,—industry, agriculture, peace, navigation, painting, free trade, &c. Many other groups of sculpture of considerable merit decorate the outside of the building, which is surmounted by a large dome culminating in a gilt spire, about 4 metres in height. The large hall is really magnificent. It is in the shape of a Latin cross. The cupola, 25 metres in height, is supported by twelve Corinthian columns in stucco of a reddish grey colour, while the galleries repose on columns imitating dark red porphyry. The floor is a masterpiece of mosaic work, executed by Italian workmen, who were brought to Brussels for the purpose. The staircases and smaller rooms are in perfect unison with the splendour of the whole. The large hall, as well as all the other rooms, is comfortably heated, and the sunlights, composed of 1,400 jets of gas, shed an agreeable and sufficient light throughout the large hall."

The Antiquities of the Isle of Man.

The Rev. H. T. Howat, minister of the Queen's-road Presbyterian Church, Liverpool, has delivered a lecture in the schools connected with that place of worship, "On the Isle of Man Antiquities." There was a large attendance. The rev. gentleman, having described the geographical position of the island, and explained how it derived its name, he referred to the peculiarities of the place, one of which was its House of Keys. The business community was one which never used a stamp from one year's end to another, even in the most elaborate legal documents. It was a grave domestic community, whose cats had no tails. Connected with the island there was no lack of legendary history and traditional tales. Although the remains of the Roman wall had not been abundantly found, several coins and earthen mounds had been found. From one of these mounds the laws made had been promulgated for a thousand years. The House of Keys was established by King Orry; and in the Manx dialect at the present day the Milky Way was still known as "the Great Road of King Orry." To the Norse rule in the island belonged the origin of runic crosses. The runes were ancient, but they threw very little light on the previous history of the island. The present arms came into existence in the thirteenth century; and in the same period was introduced the most interesting antiquity of the island,—Peel Castle. As seen from the high level of Kirkcubbin-road, or from the sea, on a cruise round the island, the castle presented a most commanding and striking appearance. Having alluded to the historic incidents, legends, and traditions connected with Peel Castle, the lecturer proceeded to speak of the legal antiquities of the island. In 1700 there was a most complete system of insular compulsory education.

Plans by Telegraph.—At the Paris Academy of Sciences, M. Dupuy de Lôme has recently exhibited an invention for sending a plan or topographical sketch by telegraph. Over the plan or map is placed a semicircular plate of glass graduated. On the centre is a radial arm, also graduated, which carries on a slide a piece of mica with a blade-point. A fixed eye-piece is adjusted; and, looking through this, the mica-point is carried successively over all the points of the plan to be reproduced, and the polar co-ordinates of each noted. The numbers thus obtained are transmitted by telegraph, and they are laid down by the receiver, who uses a similar arrangement to that described.

The Valuation of the Metropolis.—The Metropolitan District Asylum Board has issued the list of altered totals of the gross and rateable values of the parishes and unions throughout the metropolis, according to the requirements of the Valuation (Metropolis) Act, 1869. The totals show that in the year the total gross value of the metropolis has increased from 24,783,700*l.* 5*s.* 6*d.* in 1872, to 25,226,885*l.* 13*s.* 6*d.*, being an increase of 443,185*l.* 8*s.*, and the rateable value from 20,379,535*l.* 9*s.* 4*d.* in 1872, to 20,731,709*l.* 4*s.* 4*d.*, being an increase of 352,173*l.* 15*s.* The following are a few of the detailed accounts:—**Bloomsbury** (including St. Giles's-in-the-Fields and St. George's, Bloomsbury), gross, 368,981*l.*; rateable, 307,149*l.* **Islington**, gross, 1,263,901*l.*; rateable, 1,041,879*l.* **Kensington**, gross, 1,274,092*l.*; rateable, 1,060,109*l.* **Lambeth**, gross, 1,192,155*l.*; rateable, 977,048*l.* **Marylebone**, gross, 1,412,745*l.*; rateable, 1,180,551*l.* **Paddington**, gross, 1,166,409*l.*; rateable, 978,941*l.* 13*s.* 4*d.* **St. Pancras**, gross, 1,441,942*l.*; rateable, 1,195,545*l.* **St. George's** union (of St. George's, Hanover-square, St. Margaret and St. John's, Westminster), gross, 2,269,517*l.*; rateable, 1,891,756*l.* The City of London Union, which includes 112 parishes, inns, and precincts, all separately assessed, gives a total of 3,128,025*l.* 17*s.* gross, and 2,620,497*l.* rateable value.

The Belgian Use of Earth with Coal.—In reference to the use of three fourth parts of loam or clay, with one part of coal-dust, made into lumps or balls with water, for use as fuel, a correspondent of *Galignani's Messenger* says such a mixture has been long in use, and—

It utilises the heat evolved during the combustion of the coal—first by causing the coal to burn more slowly, and secondly, by exposing a greater surface of hot matter with the same bulk of real fuel. Mixtures of coal, clay, &c., by enabling us to economise heat may consequently be employed with advantage under certain conditions, and this fact has frequently suggested a use for the refuse dust of collieries. But practically it has not been found easy to introduce the use of this kind of fuel; first, because it is inferior to coal for many purposes; secondly, because the cost of manufacturing it is nearly, if not quite, equal to the cost of bringing an equal quantity of coal to the pit's mouth; and thirdly, because the price of fuel of all kinds is determined principally by the cost of transport. So long as the most popular method of burning fuel in our houses permits 25 per cent of the calorific to escape up the chimney, it is idle to talk of the relative economy of different fuels.

If it utilises the heat, it must save so much of what our preposterous fireplaces send up the chimney; and being in lumps, it may prevent the perpetual falling of embers of small coal from wide-gaping fire-bars, which is another ridiculous arrangement, the old-fashioned Scotch Carron grates, for the large-lumped Scotch coal, being totally unsuited to the average small-sized places in which the richer English coal is commonly used in such Scotch grates throughout England.

The Sub-Wealden Exploration.—In an article on the progress made near Battle, in Sussex, with the boring of the strata, the *Standard* says:—"We seem to be feeling our way towards a great discovery [that of coal especially]. . . . That there is a correspondence between the coal-fields in France and Belgium and those of South Wales and Bristol cannot be questioned, and there is now the hope that the line of communication will be struck along the intervening portion in the south-east of England. A depth of 1,000 ft. in the Wealden boring may lead to a solution of the whole problem, or we may even hope to gain the desired knowledge at a lesser depth. Perhaps this boring will only prepare the way for another; but as the scent gets stronger the pursuit will become more ardent, and we may trust that the enterprise will be carried on to a satisfactory conclusion." The present depth of the boring at Battle is rather more than 300 ft. from the surface.

Belfast Architectural Association.—The usual fortnightly meeting was held at the Museum on Monday evening, the 22nd of December, Mr. A. McAlister in the chair, when a paper was read by Mr. F. W. Lockwood "On the Architectural Treatment of Shop-fronts." The principles which should guide the arrangement of design and selection of the materials were fully dwelt upon, and a truthfulness as to the exhibition of the construction strongly insisted on. There was considerable discussion afterwards, in the course of which Dr. James Moore, R.H.A., strongly recommended the younger members to take a more prominent part in the discussions, which were the life of a society like the present.

Improvements in the Temple.—By order of the Benchers of the Temple, many much-needed improvements are being vigorously carried out within their territory. The entire range of the Temple Gardens, from the lodge at the Essex Stairs entrance to the eastern extremity next to Blackfriars Bridge, is being inclosed with lofty iron railings, let into a granite wall, and resting on a concrete bed. Additional trees and shrubs have been planted, and the yard, &c., of the gas-works, which has so long proved such an eyesore, is now completely hidden from view by a lofty wall of Bath stone, with a turreted and latticed coping. At this end of the gardens a handsome gate, with stone pillars, has been erected, and the porter's lodge will soon be completed. In view of the repeated complaints of want of room, the benchers have decided to extend the blocks known respectively as Harcourt and Plowden Buildings, a distance of 80 yards into the gardens, thus bringing them on a level with the river front of the library.

Plymouth New Guildhall.—Tenders were lately received by Messrs. Norman & Hine for erecting retaining walls, supplying and laying granite steps in connexion with the laying-out of the ground between the northern and southern buildings of the new Guildhall, when Mr. J. Finch's tender was accepted for the sum of 845*l.* Mr. Finch subsequently, however, found that he was unable to carry out the work for the sum named, and the contract fell through. Mr. Pethick's tender has been accepted, and the contract signed, for the sum of 1,139*l.* There were five tenders received in the first place. The Guildhall is to be ready for opening by May, and the designs for the "apostle slabs" are decided upon. It is rumoured, however, that the slabs are to be left for the time in their primitive state; and Mr. Harry Hems and his carvers have all taken their departure. Are funds running short?

Manchester Exchange.—So far as the exterior of the building is concerned, it may be said to be completed, with the exception of the balconies and tower. The latter is to rise to the height of about 180 ft. Upon these the workmen are now engaged. Most persons will be astonished to find what an immense space will be available for the purposes of the Exchange when the building is completed there being no less than 4,000 square yards of flooring. At present the full proportions of the room cannot be appreciated, and it is difficult to estimate the effect until the partition is removed. But there cannot be a doubt that Manchester will possess in the Exchange, when it is completed, one of the most remarkable rooms in the world. So great a width and altitude has but rarely been attempted. It is 96 ft. in width. We have already given some illustrations of this building.

Public Offices for Oxtown Township.—The *Liverpool Journal* states that the foundation-stone of new public offices for the township of Oxtown has been laid. The site is in Village-road, opposite the end of Alton-road, the land having been presented to the Local Board by the Earl of Shrewsbury, Lord of the Manor. The building will be in the Italian-villa style, from plans prepared by the Board's architect, Mr. Joseph Bratton, of Birkenhead. It will be built of red bricks, with white stone-dressings, and will contain a board-room, 30 ft. in length by 20 ft. in breadth; surveyor's office, surveyor's private-office, collector's office, law-clerk's office, waiting-room, &c., together with store-rooms and an out-house for the township fire-reel and hose. The estimated cost of the building is 1,630*l.*, and the contract has been given to Mr. Alexander Bleakley, builder, Birkenhead.

Drowning of Workmen in the Tay.—The sad accident which recently occurred on the Thames, has been followed by a similar one on the Tyne, in which eighteen workmen and seamen have lost their lives. The men were on their way to the dredgers and hoppers of the Tyne Commissioners, to commence their usual day's work. They went in a steamboat, which struck upon a sunk dredger near the Northumberland Dock, and immediately went down. Some men were saved in boats, and one by a retriever dog.

Royal Academy of Arts.—The private view of the collected works of the late Sir Edwin Landseer will take place on this Saturday, the 3rd inst. The exhibition will be open to the public on Monday. The members of the Academy dined together on New Year's day.

Sanitary Science.—On Monday evening last a lecture upon this subject was given by Mr. G. H. Stayton, C.E., the Borough Surveyor, at the rooms of the Isle of Wight Philosophical and Scientific Society, Ryde, Dr. Barrow, J.P., in the chair. The lecturer dwelt very strongly upon this question, urged that it should be more thoroughly discussed and taught in schools; he touched upon the questions of sanitary legislation, death-rate, the benefits of sanitary works, and gave an amusing description of the defects in our dwelling-houses, together with some excellent advice as to heating and ventilating rooms, ventilation of sewers and house-drains, and so on. The lecturer was attentively listened to throughout, and a vote of thanks unanimously awarded to Mr. Stayton.

Opening of a Drinking-Fountain at Liskeard, Cornwall.—A drinking-fountain, which has been erected on the parade, Liskeard, by Mr. Matthew Loam, Mayor of the borough for 1870, has been formally presented to the town. The structure is a square block of Polyphant stone, built above two steps of granite, which run round it. There are marble basins, each fitted with iron cups on three sides, whilst at the other side is a door which communicates with the interior. The top of the block has overhanging cornices, on which is some elaborate carving of crocodiles, serpents, bulrushes, and other suitable objects, the handiwork of Mr. Harry Hems, of Exeter. Above this is a globular lamp, placed on a raised iron stand, which is gilded.

Dorington, Shropshire.—A school has been built in this village at the expense of Mrs. Hope Edwards. It consists of a room, 30 ft. by 18 ft., fitted with convertible benches and desks; a porch, with lavatory, a class-room, &c. The roofs are open-timbered, and covered with Ridge Hill tiles. A residence for the mistress is attached. Red brick, relieved with bands, &c., of white and black, is used for the walling. In the windows, wood frames, mullions, and tracery are used; and in the arches over cut blue, white, and red bricks. The architect is Mr. Haycock, of Shrewsbury; and the contractor is Mr. R. Jones, of Dorington.

A Proposal for the Sanitary improvement of Darlington and Durham.—The *Darlington Times*, in describing the alleged wonderful sanitary properties of the anti-fever tree, described lately in our columns, says:—

"If this heaven-sent blessing could be coaxed into growth, and acclimated in these northern regions, so splendid a substitute for Boards of Health would be hailed with the profoundest satisfaction. The back slums of Darlington should be hidden in the recesses of a dense forest as speedily as possible, and the rest of the county of Durham, which the *Builder*, of November 22nd, described as 'in a shocking state,' 'ever raging' about for miles, might have some hope of regeneration."

Gifts by a Manchester Working Man.—A new lifeboat and carriage, to be stationed at Sexton Carew, have been presented to the National Lifeboat Association, by Mr. Jacob Hindley, a working man. The boat and carriage cost 490*l.* The donor had formerly worked as a calenderer in a mill at Manchester, where, losing his arm by a machinery accident, he was treated in the infirmary. Being unable to follow his employment, he started business as a tripe-dresser, and, realising a competency, retired. He showed his gratitude to the Manchester Infirmary by a donation of 1,000*l.*

Manufacture of Iron in Burnah.—It is noteworthy, in connexion with the extension of applied science in all parts of the world, says the *Athenaeum*, that the South Staffordshire iron district has just dispatched for Burnah the first portions of an order given by the King of Burnah, consisting of the plant for two blast furnaces, puddling and mill furnaces, rolling-mills, &c., with all the most recent improvements, and their requisite steam-engines. These are all to be put up on the banks of the Irrawaddy, about twelve miles from the capital of Burnah.

The English Waterworks at Berlin.—The German journals state the city of Berlin has obtained the money required for purchasing the English waterworks in the Prussian capital as a loan from the German Empire. The sum for which this loan is contracted amounts to 10,000,000 thalers. It will be paid over at the new year direct to the English shareholders, being appropriated from the German Government's deposits at the Bank of England.

Skelton Church Screen.—Mr. Abraham Newland claims to have executed the work of this screen.

A Note from Florence.—Florence is full of English and Americans. Naples is empty, and deserted. All is going on much as usual in Florence, and everything getting double in price to what it was. However, the city is still very lovely, and there is not a room in all the new houses now building by the English society that is not taken, though the houses will not be habitable till next November. Moreover, 20,000 *employés* still have to go down to Rome when Rome can hold them.

Builders.—We notice in our advertisement columns that the old established firm of builders, Messrs. Hill & Sons, of Charlton Works, Lambeth, S.W., on the 1st inst., in order to join the equally old contractor's business of Mr. Wm. Higgs (who retires), his eldest son joining the first-named firm under the style of Messrs. Hill Higgs, & Hill. Having some personal knowledge of the manner in which the Messrs. Hill carry out work confided to them, we wish the new firm every success.

Wedge-Brake for Trams.—Mr. Lightbody, slate-merchant, of Edinburgh, has invented and patented a form of wedge-brake for trams. It is simple and inexpensive. The idea, as far as we can gather, is to thrust up a wedge, by means of a simple lever between each of the present brakes, the lever acting through a transverse fulcrum rod at right angles to the wheels, which stops the car instantaneously upon any incline. In Edinburgh the gradients are very heavy.

An Austrian Railway King.—Ofenheim, the Austrian railway Crosses, who a few days ago lived in a magnificent palace on the Schwarzenberg Platz, is now confined in a cell of the prison of the provincial tribunal. The papers are full of details of his arrest, and that of his accomplices, Ziffer and Liskowitz, and not a voice is raised on their behalf. The whole case will be brought before a jury, and it is believed that some scandalous revelations will be made in the course of the trial.

Association of Municipal and Sanitary Engineers and Surveyors.—The District Committee for Lancashire and Cheshire will meet at the Town Hall, Liverpool, on this, Saturday, 3rd January. After the usual formal business, the Committee will visit the New Central Station; also the docks and river approaches on both sides of the Mersey; and upon returning to the Town Hall, various papers will be read.

Wall Painting.—The Council of the Bedfordshire Archeological Society have received information that during the restoration of Temple Church now being carried out, an interesting wall-painting had been discovered in the north wall of the nave. It represents St. Catherine and is painted in outline in two colours, puce and brown; the design being one which has been adopted in other rural decorations of this character.

St. Andrew's Church, Plymouth.—The committee for the restoration of St. Andrew's Church, Plymouth, acting under the advice of Sir Gilbert Scott, have accepted the tender of Mr. Harry Hems for the whole of the wood-carving of the new seating. This will be in wainscot oak, and all the bench ends will be more or less carved. There is, likewise, a great deal of other carving.

Opening of a Greek Church in Cardiff. Premises connected with a place of business have been opened as a place of worship for Greek sailors and others in Cardiff. The place cannot be consecrated, according to the rites of the Greek Church; but the essential accessories have been consecrated, and that it seems suffices in the meantime.

Antiquarian.—At Redhill, about three miles from Bonremouth, eighty-six urns, many of them containing portions of human bones, have been dug up. The urns are said to be Roman, but a few persons who have already visited the spot think they must be ancient British. Only one of the urns has been secured in even tolerable preservation.

Holderness House.—For several weeks past a large number of workmen have been employed on the foundation of the Marquis of Londonderry's mansion in Park-lane. The foundation, it appears, has given way in parts, and it is likely to be some weeks before the necessary repairs are finished.

Companies.—The Share List of the Cleveland Slag Working Company, Limited, will close on Monday next, the 5th inst., for London.

Wisbech.—New national schools for boys are to be erected immediately; they are of the L. Gothic in character, with white brick facings, relieved by bands of red brick ornamentation and stonedressings. They will accommodate 200 boys. The architects are Messrs. Adams & Son, of Wisbech and Lynn.

Rolled Iron Girders.—Messrs. Macnaght, Robertson, & Co., of Bankend, Southwark, have published a new section sheet of rolled iron girders, and joists and filch plates; with price list and rules for ascertaining strengths. It will be found useful.

Institution of Surveyors.—The next meeting of this Society will be held on Monday evening, January 5th, when a paper will be read by Mr. F. A. Philbrick, entitled: "The Lands Clauses Act, with Suggestions for their Amendment."

The Asphalt Companies.—Arrangements have been made for the amalgamation of the various asphalt paving companies.

TENDERS

For erection and completion of New Town Club House, in Wheeler-gate, Nottingham, exclusive of excavations and sub-story works to ground-line, as also of iron-work, pillars and cornices to shop-front, by Messrs. Goddard & Massey, and the patent revolving shutters of Messrs. Clark & Co. Mr. Sidney R. Stevenson, architect. Quantities supplied:—

Low	£4,800 0 0
Bell & Son	4,173 0 0
Stevenson & Weston	4,131 0 0
Levick	4,125 0 0
Mosses	3,917 0 0
Ellis	3,854 0 0
Bradley & Barker	3,827 0 0
Vickers	3,800 0 0
Fish & Son	3,738 0 0
Wood & Son	3,681 0 0
Jelly (accepted)	3,660 0 0

For the erection and completion of engine and boiler houses, workshops, stores, stabling, and workmen's dwellings, for the Moorwood Moor Colliery, Mr. Sidney R. Stevenson, architect. The bricks and stone supplied by the Moorwood M. or C. quarry. Askew (accepted). Schedule price for labour only.

For rebuilding chancel and new vestry to the parish church, Brickley, near Newark, ex-*ante* to foundations. Mr. Frederick Thomson, architect:—

Mason & Son	£388 15 6
-------------	-----------

For erection of new schools, for School Board, with master's residence, at Uffington, Devonshire. Mr. J. H. Newey, architect. Quantities supplied:—

Charalierian	£2,639 10 0
Tottle & Cook	2,600 0 0
Williams & Co.	2,500 0 0
Brook & Bruce	2,499 0 0
Langdon	2,359 8 8
Hubbard & Co.	2,151 0 0
Parkhouse	2,051 0 0

For erection of new schools at Ashill, Devonshire. Mr. J. H. Newey, architect. Quantities supplied:—

Williams	£429 9 0
Brook & Bruce	820 0 0
Tottle & Cook	725 0 0
Hubbard & Co.	570 0 0

For addition to Waterloo Flour-mills, for Mr. Seth Taylor, Mr. George Low, architect:—

Macey	£1,180 0 0
Hart	1,410 0 0
Tarnall	1,351 0 0
Marland	1,305 0 0
Woodward	1,300 0 0
Dickinson	1,270 0 0

For Lodge-hill branch, City Bank, 61 & 63, Lodge-hill, E.C. Messrs. J. Larring & Son, architects:—

Ward & Sons	£7,763 17 3
Hill & Son	7,240 0 0
Kilby	7,150 0 0
Dovey	7,095 0 0
Perry & Co.	6,750 0 0
Roberts	6,843 0 0
Cooke & Green	6,610 0 0
Jackson & Shaw	6,590 0 0
Shurmer (accepted)	6,192 0 0

For the erection of copper and boiler houses, cooler-floor, and offices, &c. (contract No. 6), for Messrs. Truman, Hanbury, Buxton, & Co., Burton-on-Trent. Mr. Scamell, architect. Quantities by Messrs. Curtis & Son:—

Dakin	£5,941 0 0
Patrick	5,469 0 0
Holmes & Nichol	5,068 0 0
Low & Son	5,532 0 0
Brown	5,290 0 0

For erecting three warehouses on the Charterhouse Estate, Goswell-road, for Messrs. Tabbs & Lewis. Mr. John Collier, architect. Quantities by Mr. W. H. Darler:—

Carter	£4,370 0 0
Lawrence	4,667 0 0
Sharrington & Cole	4,087 0 0
Elkington	4,018 0 0
Crabb	3,968 0 0
Mark	3,968 0 0

For the erection of two houses at Menai Bridge, for Mr. O. Jones. Mr. R. Y. Thomas, architect. Quantities supplied:—

Williams	£1,300 0 0
Pritchard	1,300 0 0
Jones (accepted)	1,250 0 0

For a pianoforte manufactory at Kentish-town, for Mr. Geary. Messrs. Lander & Beddall, architects:—

Rider & Son	£4,354 0 0
Dovey, Broas	4,175 0 0
Williams & Son	4,127 0 0
Grover	4,098 0 0
Servener & White	3,973 0 0
Manley & Rogers	3,967 0 0
Kelly, Bros.	3,953 0 0

For alterations at the school, Great Queen-street, for the London School Board. Mr. E. H. Robson, architect:—

Hodson	£145 0 0
Blott	135 0 0
Newman & Mann	118 0 0
Sargeant	116 0 0
Nightingale	110 0 0

For the formation of basement story to a new warehouse at the corner of Fenchurch-street and Leadenhall-street, for Messrs. Zimmerman & Co. Mr. J. Wimble, architect. Quantities supplied by Mr. W. W. Wimple:—

Cole	£1,157 0 0
Abby & Horner	1,110 0 0
Brass	1,063 0 0
Kilby	1,038 0 0
Marechalchin	1,010 0 0
Servener & White	975 0 0
Bland	949 0 0
Newman & Mann (accepted)	936 0 0

For alterations and additions at the Convalescent Home for Jews, Lower Norwood. Mr. N. L. Joseph, architect:—

Bird	£277 0 0
Newman & Mann	870 0 0
Hollidge	835 0 0
Cole	825 0 0
Love (accepted)	807 0 0

For repair of roads at Dulwich, for the British Land Company (Limited):—

	First year.	Second year.	Third year.
Green	£2,340	£2,000	£2,000
Dover, Son, & Co.	2,083	1,874	1,733
Gill	2,407	1,193	1,169
Clarke (too late)	1,561	1,171	1,020
Hayes	1,100	860	800
Hubbard	1,000	740	730
Hubbard	730	700	700
Harris	430	475	500
Hayes	400	400	400
Jahson (accepted)	325	375	425

For finishing three houses at Turnham-green. Mr. T. Clarke, architect:—

Cockell	£329 0 0
Norris	515 10 0
Taylor & Parsons	457 0 0
Thorpe	455 0 0
Harris, Broas	427 0 0
Stubbs	307 0 0

For building office, store, and boundary-wall, at Leytonstone, for the North Metropolitan Tramways Company. Mr. G. Hopkins, architect:—

Low	£490 0 0
Ashwell	446 0 0
Boyce	435 0 0

For the erection of workmen's barracks at foot of Stroud for the Great Sudwood Copper Mining Company. Mr. R. Y. Thomas, architect:—

First Contract.	
Rogers	£560 0 0
Threlkeld	525 0 0
Jones (accepted)	550 0 0
Second Contract.	
Jones (accepted)	200 0 0

Tenders for Manchester Conservative Club-buildings, Manchester. B. Walker, London; and Messrs. Horton & Bridgford, Manchester, architects:—

Farker & Son	£24,936 0 0
Brown	23,109 0 0
Ellis & Hinchcliffe	23,017 15 0
Warburton	22,781 0 0
Davies & Mawley	22,249 0 0
Clay & Sons	22,174 0 0
Thompson	22,156 0 0
Southern	22,100 0 0
Neill & Sons	21,473 0 0

TO CORRESPONDENTS.

H. G. B. - F. R. F. R. T. & Son. - E. H. A. - C. A. - H. H. - S. R. A. - M. Y. - L. R. - L. - Dr. M. G. - S. J. - R. J. - F. - W. J. - T. & C. - J. H. M. - J. K. - W. S. - J. C. - W. W. - E. Y. T. - G. W. S. - H. J. & Son. - H. N. G.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of letters, &c. must be accompanied by the name and address of the sender, not necessarily to publication.

N.B. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We shall give with our next Number, as a supplement, an INDEX and Title-page to the Volume of last year. A COLOURED TITLE-PAGE can be had, Gratis, on personal application.

The THIRTY-FIRST VOLUME of "THE BUILDER" (bound), for the year 1873, will shortly be published, price One Guinea.

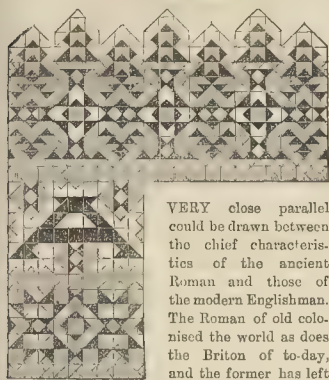
CLOTH CASES for binding the Numbers are NOW READY, price Three Shillings each.

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of Four Shillings each.

The Builder.

VOL. XXXII.—No. 1614.

The New Road.



VERY close parallel could be drawn between the chief characteristics of the ancient Roman and those of the modern Englishman. The Roman of old colonised the world as does the Briton of to-day, and the former has left behind him monuments

of his energy and masterful genius, as will the Briton; for both have paid equally small regard to the word "impossible." We wish, however, merely to note one great exception to the general likeness. The Romans were the greatest road-making people the world has ever produced, and the English, if we put the railroad on one side, have been among the worst. For instance, in London little originality has been shown in striking out new thoroughfares, and if we look at an old map of London we find that where streets are now there were formerly country lanes, and the old paths have been constantly followed with slavish exactness. Even many of the chief improvements in London have not been entirely new,—thus Regent-street followed the track of Swallow-street, and New Oxford-street was a long-required junction of Oxford-street and Holborn. The New-road, however, is a great exception, and the conception of this grand thoroughfare did honour to its originators, who carried it out at the right time, before houses had arisen to impede the work. When the road was first projected great opposition was made to it by certain interested persons, one of the most influential of them being the Duke of Bedford. Horace Walpole, writing to Conway, on March 25th, 1756, says,—“A new road through Paddington has been proposed to avoid the stones. The Duke of Bedford, who is never in town in summer, objects to the dust it will make behind Bedford House, and to some buildings proposed; though, if he was in town, he is too short-sighted to see the prospect.” The renter of Capper’s Farm, behind Montague House (now the British Museum), and the west end of Great Russell-street, Bloomsbury,—one of the Duke’s tenants,—wrote to his grace on the subject as follows:—

“My Lord,—I am informed of a road intended to be made at the back of your grace’s estate, which, from dust and number of people, must entirely spoil those fields, and make them no better than one common land. I most humbly entreat your grace to prevent such an evil; for it will be impossible for me to hold your grace’s estate without a large abatement of rent.—I am, with all submission, your grace’s most dutiful and obedient servant, Es’her Capper, 14th Feb., 1756.”

Miss Capper does not appear to have taken into consideration the increased value of the

land for building purposes, which would be considerably more than the 3l. per acre which she paid. The Duke of Grafton, who possessed property in the proposed line of road, took a more far-seeing view than his brother peer, and supported the Bill for its formation, with all his influence. When the Duke of Bedford saw that his opposition was not likely to be of any avail, he attempted to introduce a clause restricting the building of houses within a very great distance from the road, but his amendment was rejected. A clause was, however inserted in the Act (29 Geo. II., cap. 88), prohibiting the building of any erection whatsoever within 50 ft. of the road, and empowering the parochial authorities, upon obtaining an order from a magistrate to pull down and remove any such erection, and levy the expenses thereof on the offender’s goods and chattels, without proceeding in the ordinary way by indictment. The title of the Act is, “An Act to make a new Road from the great Northern Road at Islington to the Edgware-road, near Paddington; and also from the north end of Portland-street, cross the Farthing Pye House fields, into the said new Road.” The following four reasons were given in favour of the road being formed:—

“1. That a free and easy communication will be opened between the county of Essex and the different parts of the county of Middlesex, and the several roads leading from the western to the eastern parts of the kingdom, without going through the streets, and by a nearer way of about two miles.

2. That the frequent accidents which happen, and the great inconveniences which arise, by driving cattle through the streets to Smithfield Market, will be prevented.

3. That the pavements of the streets will be greatly preserved, and the frequent obstructions therein, by the multitude of carriages, which must necessarily pass through the same to go from the western to the eastern parts of town, will be in a great measure removed, and the business of the inhabitants of London and Westminster, will be transacted in a much easier and more expeditious manner.

4. That in times of public danger, by threatened invasions from foreign enemies or otherwise, this new road will form a complete line of circumvallation, and his majesty’s forces, may easily and expeditiously march this way into Essex, and other counties adjacent, to defend our coasts, without the inconvenience of passing through the cities of London and Westminster, or interrupting the business thereof.”

The cost of the road was at first estimated at 8,000l., but before many months had passed it was found that it would be much more expensive. No time was lost in the preparation of the road, and on September 18th, 1756, it was reported “that great numbers of coaches, carriages, and horsemen pass daily over the new road from Islington to Battle Bridge, and that the surveyors are hard at work in fencing and marking out the road across the fields from Battle Bridge to Tottenham-court-road.” Four days after this an announcement was made that “the tracts and fences of the lands between Battle Bridge and Tottenham-court-road were levelled on Friday last, so that the new road across the fields to Paddington, and the grand communications between the great eastern, western, and northern roads are now open to the public at large.” It was soon found that the original estimate of 8,000l. was, as already stated, considerably under what the total cost was likely to be, and it was estimated that more than 100,000 cartloads of gravel would be required before the road could be completed. As might be expected, the road, which passed through fields, was not very safe at night, and in 1757 patrols were sent out by the magistrates to protect those who chose to pass along it. Some years passed before the road became a

frequented thoroughfare; but in 1798 the first coach on this line plied between Paddington and the Bank. The proprietor, however, could hardly obtain a subsistence by his speculation. On July 4th, 1829, Mr. Shillibeer started the first two omnibuses in London, which ran from the Bank to the Yorkshire Stingo; and in 1833 stage-coaches and omnibuses were running from Paddington to the City, every five minutes, daily. In referring to the conveyances of the New-road, it is necessary to mention one that is unseen. When the Metropolitan Railway (more popularly known as the “Underground”) was opened, some years ago, it was believed that it would greatly relieve the traffic of the road under which it was excavated, as well as of the other streets leading from east to west, but there is now but little perceptible difference. In 1853 an Act of Parliament was obtained, giving a company power to construct a line from Paddington to King’s-cross; but no action was taken with this power, and in 1854 the company obtained liberty to carry a line below the streets, from the Great Western Railway, Paddington, to the General Post-office, with a branch only for Post-office purposes, to the London and North-Western Railway. Fuller powers were afterwards obtained, which allowed the company to carry out the present work. On the 9th of January, 1863, a large and distinguished party travelled from the Bishop’s-road Station to the Farringdon-road, stopping at and inspecting each station on the line. The first public trains ran on the following morning, and were quickly filled with eager and curious passengers. The New-road is nearly three miles in length, and was formed principally through the pasture-lands of the then extreme north of London; but no sooner was the road planned than forty new streets, contiguous to different parts of it, were projected. In 1857 the name of the New-road, which had lasted for 100 years, was abolished, by order of the Metropolitan Board of Works, who divided it into three parts, called respectively Marylebone, Euston, and Pentonville roads. The Marylebone-road extends from the Edgware-road to Albany-street; the Euston-road, from Osnaburgh-street to King’s-cross; and the Pentonville-road, from King’s-cross to the Angel at Islington.

The Marylebone-road passes through the manor of Lilestone,—a name now corrupted to Lisson,—which is connected with a green and a grove, no longer to be seen. The position of the grove and its boundary are marked by the Grove-road and the Grove-end-road. The manor is mentioned in Domesday-book among the lands in Ossulston hundred given in alms; but it afterwards became the property of the Priory of St. John of Jerusalem, which gave its name to St. John’s-wood. On the suppression of the Priory it was granted, in the year 1548, to Thomas Heneage and Lord Willoughby, who conveyed it in the same year to Edward Duke of Somerset. On the attainder of the Duke, the manor reverted to the Crown, and was granted in 1564 to Edward Downing, who conveyed it the same year to John Milner, in whose family it remained for nearly two centuries. On the death of John Milner in 1753, it passed under his will to William Lloyd. In 1792 the manor was sold in lots, and the largest lot, containing the site of the manor-house, was purchased by John Harcourt, M.P., who built a mansion for himself at the corner of the New-road and Harcourt-street. The Yorkshire Stingo tavern is now numbered No. 183, Marylebone-road; but it was a well-known place of entertainment, with extensive bowling-green and grounds, before the New-road was planned. A fair was formerly held here annually on the 1st of May, which was tolerated by the magistracy until it became the resort of disorderly and dissolute characters, when it was put down at the instance of the respectable in-

habitant of the vicarage, to whom it had become a great nuisance. The parish curate (Thomas Hurdwick, architect) forms a very striking object in the Marylebone-road. It is well situated, and is seen to great advantage from the Regent's-park, looking down York-gate; but when it was built the projectors forgot the prohibition of buildings within 20 ft. of the road, and on its completion they discovered that the portico was within that distance. Pews were entertained; but the portico would have to be pulled down; but an Act of Parliament was passed (7 & 8 Geo. IV. c. lxxix), entitled, "An Act for removing Doubts as to the Legality of the Erection of the Portico of the Parish Church." In the interior there were originally private galleries, like private boxes, at the sides of the organ, fitted with chairs and fireplaces; but in 1826, when some interior alterations were carried out, these were destroyed, and the gallery was made to sweep round to the organ. Trinity Church, on the north side of the road, is at the boundary of the parish of Marylebone, and a part of its site was in that of St. Pancras; but an exchange of certain ground was made by the two parishes, and the Act already referred to (7 & 8 Geo. IV. c. lxxix) was also passed for the purpose of "declaring the whole of the site of Trinity Church to be within the said parish, and for altering the boundary between the said parish and the parish of Saint Pancras." The architect of the church was Sir John Soane, and it was consecrated in 1828. The ordinary arrangement of a church has been departed from, and the front facing the south, the altar is at the north end of the building. The first house in Albany-terrace is the rectory-house, where the present rector (the Rev. W. Calman) lives. Of the three divisions of the New-road, the Marylebone-road is by far the best, and here there still remain handsome private houses, with elegant gardens in the front. Moreover, the outspread branches of the trees throw a rural air over the view to be obtained from certain points; but this section even is encroached upon by offices, baths, homes, and other miscellaneous institutions.

The Easton-road is so called from its proximity to Euston-square and the Euston Station of the London and North-Western Railway, but as it is in the parish of St. Pancras it would more properly have been named, on the same principle as the two other roads, Pancras-road if that name had not already been appropriated for another thoroughfare. Near the commencement of the Easton-road Brookes's menagerie was formerly situated, which was one of the sights of London before zoological gardens were thought of. The following is one of the advertisements of this establishment:—

"Brookes's Original Menagerie, New-road, Fitzroy-square, revived by the late Mr. Brookes's son Paul, who, having travelled for several years to various parts of the globe, for the purpose of collecting and establishing a correspondence, by which he will be enabled to obtain incessantly a supply of the most rare and interesting animals, now has the honour to inform the nobility and gentry, that there is on sale a choice collection of curious quadrupeds and birds, chiefly from South America, procured in his last voyage, as well as many remaining of his preceding voyage to Africa, and a multitude from Asia and other foreign countries, lately purchased, as well as pheasants of every variety, poultry, pigeons, &c."

Euston-square is so completely cut into two by the road that it is difficult to believe it to be but one square. The northern portion has lately been greatly improved by the making of an opening to lead to the North-Western terminus, and the erection of a statue to Robert Stephenson. The foundation stone of the new church of St. Pancras in Euston-square was laid by the Duke of York on the 1st of July, 1819. The building, whose exterior is so remarkable for its side porticoes of Caryatides, made of terra-cotta, like most of the architectural enrichments, was designed by the Meiers, Inwood, and the total cost of the structure was 76,679l. 7s. 8d. The pulpit and reading-desk are made of the celebrated Fallop oak, which stood in Hainault Forest, Essex, until the year 1820. The church was consecrated by the Bishop of London on the 7th of April, 1822.

The Euston-road is chiefly remarkable for the stone-yards of the masons, whose sculptured figures are to be seen in what were once the gardens of the houses, and in many instances the Act of Parliament that prohibited building within 50 ft. of the road has been totally disregarded. The east end of the road has been

greatly improved by the building of the magnificent station and hotel of the Midland Railway.

The Pentonville-road takes its name from the chapel of Pentonville, in the parish of Clerkenwell, the first erection in which took place about 1773, on the land of Henry Penton, M.P. for Winchester. Madame Tussaud's exhibition of waxworks, now established in Baker-street, Portman-square, was situated, in 1834, in Gray's Inn-lane, opposite King's-cross. The following is extracted from one of the advertisements of the "Royal London Bazaar, Liverpool-street, opposite King's-cross, New-road." "Now open, with increasing approbation, the more it becomes known, in the only room large enough for the purpose, the Assembly-room of the Bazaar, Gray's Inn-road, Madame Tussaud's Exhibition and Promenade, unequalled in Europe, continues to increase in estimation." Reference has been so often made in these pages to King's-cross and its surroundings, that we will not allude to them now. The Chapel of St. James, Pentonville, on the north side of the road, was commenced in 1787, and opened for public worship in the following year. Its history has been for many years one of incessant litigation and disagreement; but, by an Order of Council, dated April 7th, 1854, the district chapel of Pentonville was created. There is little to attract attention in the Pentonville-road until we come to the Angel Inn, which is commonly, but erroneously, called the Angel at Islington. The earliest notice of the inn is to be found in the "City Remembrancer" for the year 1685, where mention is made of a citizen who, during the period of the great Plague, broke out of his house in Aldersgate-street, and obtained shelter at the "Angel." A contributor to the *Gentleman's Magazine* gives the following explanation of the encroachment of Clerkenwell upon Islington, in the number for October, 1823:—"The whole of the ground from what is now the corner of the Back-road [Liverpool-road] to the Angel Inn, at the corner of the New-road, was forfeited by the parish of St. Mary, Islington, in consequence of the refusal of the Islingtonians to bury a pauper, found dead at the corner of the Back-road. The corpse being taken to Clerkenwell, and buried there, the district was claimed and retained by that parish. This might probably have happened before a single house stood on the spot. Certain it is that on the opposite side of the way the parish of Islington extends to the corner of the City-road, facing the Angel. I give you the tradition as I received it, at a distance of more than seventy years."

A road that runs for so long a distance as three miles, which the New-road does from Paddington to Islington, requires, for purposes of convenience, more than one name, and probably the Board of Works did well to divide it into three; nevertheless, a road which has long been recognised as one in its origin and continuity, and is a representative boulevard of the northern district of London, will be long known by one name, and we hope that that of "New-road" with which its formation and subsequent history are connected, will long continue to exist in the memory and language of its inhabitants.

SANITARY PROSPECTS OF 1874.

The members for North-west Yorkshire, for North Stafford, and for Bedford, are about to re-introduce into the House of Commons, "on the earliest day of the coming session," in substance, and for the most part in letter, the Public Health Bill which they brought forward during the past session.

The proposals of this measure are based on the Report of the Sanitary Commission. The first object is to prevent the use of polluted water; the infiltration of sewage into water used for human consumption; and the intrusion into buildings of noxious gases, by the use or construction of untrapped or ill-ventilated drains. The same provisions are required as a safeguard against cholera. Consumption, which may now almost be called a function of damp site, is to be checked by efficient drainage; and rheumatism, which is such a sore scourge to our rustic population in many districts (to which may be added the more acute and intolerable suffering caused by that disturbance of the sympathetic nervous system, which we call rheumatism when it attacks the moto-sensory nerves,—we mean neuralgia), is to be checked by increased security in the effective shelter

given by dwelling-houses, and by the exclusion of injurious moisture.

The remedies which the Bill provides are thus indicated by the proposals. It is intended to enlarge the list of legal nuisances, which may be complained of before justices of the peace, investigated under the power of a summons, and dealt with by justices' order.

It is proposed to declare by law that every inhabited house without an adequate supply of wholesome water, or access to an adequate supply within a reasonable distance, is a nuisance under Act of Parliament.

Any inhabited house or building, or any inhabited part of one, admitting rain or other water, so as to be injurious to health, is placed in the same category.

So is any well or pump, public or private, used or likely to be used by human beings, which is fed by unwholesome water.

Further provisions are directed to prevent the intrusion of sewer-gas, and to remove difficulties that impede the operation of existing sanitary legislation.

Finally, it appears to be proposed to give power to seize and destroy the tea which is prepared in China from the gleamings of the dungs, hills, and re-fired for English taste; and the milk which, containing the germs of typhoid, the vendors already manfully offer not to sell on condition of being compensated for their loss.

We need hardly say that our warm sympathies are with these honourable members. The objects which they profess are those which every intelligent man, who is not selfish—nay, every intelligent man who is intelligently selfish,—must ardently desire to see carried out. The basis of the reasoning, as to the preventable character of these frightful scourges, as to the methods proper for their prevention, and as to the effect which experience tells us will result from the adoption of proved remedies, is sound and irrefutable.

What then, it may be said, remains, but heartily to wish God speed to the effort?

Something more. It is extremely important that neither time should be lost, nor, what is even more so, power and credit be lost. Admitting the excellence of the object, and admitting the theoretic applicability of the means proposed to effect it, there yet remains the knot of the question—the practicability of the proposal. And the practicability has two distinct branches. One is, what will Parliament authorise, or what can it, as matter of political common sense, be rightly expected to authorise? The other is,—If the measures proposed were passed *verbatim*, how would it work?

As to the means relied on for efficiency, indeed, we find rather a disclaimer than a proposition. The Bill "creates no new office, and brings no new burden on the rates other than that which may arise incidentally from the operation of more stringent provisions for the extinction of disease." Is not this such an attempt to draw the sting of legislation as would leave the new Act, if passed, somewhat in the condition of a honey-bee that had lost that essential weapon of self-defence?

While Mr. Powell's letter lies on the table, as a matter not for hasty comment, but for anxious and sympathetic consideration, another letter has been brought before the public. It bears the well-known initials, "S. G. O.," which may be taken to stand for Sense, Goodness, and Observation. At all events, we hope their noble owner will not quarrel with us for such a reading. We have, however, this great objection to compliment the letter, or even to speak of it as highly as it deserves,—it is an echo of our own words. We are not accusing the writer of plagiarism. When men study a subject, grasp a subject, and feel strongly on a subject, they are apt, unless their intelligences be of very different order, to arrive at the same conclusions, and to express them in language of which the sense is identical, whatever be the sound. So it is in the present instance.

To a certain point, the proposers of the Bill, "S. G. O.," and ourselves, are absolutely at one. It is precisely at the practical question that the hesitation of the latter, then, commences, as well as that which we ourselves feel. It is one thing, says this second letter, to cry out for remedy against abuse; it is another to apply the remedy. Local Boards of Health, sanitary officers, and inspectors of nuisances, are easily "floated" but when they come into action we find the difference between can and will.

This has been the central, vital, irremediable error of the whole effort of legislation, under the

impulse of the Local Government Board. We have pointed it out again and again. A whole session might be devoted to the discussion of the details of such a measure as was proposed by the Sanitary Commissioners: laws may be passed by the dozen; and rules and bye-laws issued by the legion. But so long as this one fatal cancer is not only undetected, but petted and protected, all will be little better than waste paper.

The root of the evil has been, the design to make the efficiency of sanitary legislation subservient to party purposes, or at least, to theoretical political views. "Sanitary reform by all means, but local automatic self-government first," has been the one steady purpose of the administration. "Sanitary reform, as a matter of life and death, and let each party look out for its own recruits, and labour at its own organisation," is our object; only do not let them work actually to uphold typhoid and cholera, under the title of elevating the country population to a sense of their privileges! Unfortunately the war between these two views, the sanitary view proper, and the *doctrinaire* view, is interminable. The politician has got hold, for the time, of the best end of the stick. The sanitary reformer has been turned from the wall. The whole gist of the difficulty lies here.

The words of "S. G. O." are words of wisdom to this effect. If existing laws were put in execution, "with common honesty of purpose," a very great amount "of good would be done; quite as much as we have a right to expect." We may go further. We may almost add, quite as much as the country would stand. But we have carefully and anxiously predicted, as the simplest consequence of the ordinary course of human action, that the legislation under which we are now living,—those of us who are left,—was sedulously bent (we do not say intended, but actually calculated), to render such common honesty of purpose impossible; or at least to hedge it with such thorns as to render it of little avail. A man must have something more than common honesty of purpose. He must have fearless resolve, and lofty independence of spirit, and, alas! of circumstances too, who should attempt now to do what we know must be done. We fear that the measure of Mr. Powell and his friends, if passed, would still leave us labouring under the same difficulty. Who is to boll the cat?

And yet the remedy is so simple, so obvious, so certain! It is so necessary a deduction from the first principles of business, from the very idea of constitutional government, from the exercise of the smallest modicum of untwisted good sense!

That remedy is simply this, in idea,—the detector of a nuisance is not to be the servant of the promoters of the nuisance. This has been our one steady cry in the matter. As to detail, we shall have enough to say, when the time comes but we are now dealing with the principle. Is there any man who can contradict the postulate? Does our law allow any one to be at once defendant and magistrate? Yet that is the position in which Mr. Stansfeld's legislation places the Local Boards. We pointed it out when the Bill was introduced. But it has been adopted as the very central pillar of our sanitary legislation.

Now, it seems to us that it is against this central cancer that the efforts of all those who care for either public or private health should be steadily and of one consent directed. If further legislation be desirable, wise, and practicable, by all means let us have it. But let not any one think that by legislative activity it is possible to overcome administrative sloth, or administrative disinclination to move. It is very possible that the odious utility of that obnoxious servant of the law, the common informer, might be of sanitary service. We hardly see on whose support, except that of this anomalous functionary, some of the provisions of the new Bill can rely for being carried into effect, should they become law. But we shrink from such an auxiliary. We do not want to come before the people of England to ask for powers that are to be enforced by the aid of the informer. We want them to carry out the sound old English maxim that no one shall be the judge in his own case. If this were once openly and honestly adopted, the practical application of the principle would be easy. It would be a mere question of detail; and of detail singularly unattended by difficulties.

In fact, the administrative principles that must regulate any attempt at sanitary reform that is not either childish or mischievous are

just these two,—not to make the defendant the judge, and not to give the work proper for one man to do to another and a wrong man. If the first be admitted, we shall sweep away the anomaly of making the representative of the ratepayer the judge of medical and engineering questions. If we admit the other, we shall neither expect (nor allow) the medical man to attempt to do the work of the engineer, nor the engineer to attempt to do the work of the doctor. In fact, he may do it, and very efficiently, but it will not be by the doctor's formulae.

We are not anxious to risk predictions; at the same time there are certain signs which no man of sagacity can neglect. There are indications which enable the impartial and unimpassioned looker-on to give a shrewd forecast as to the character of the coming session, unless some unforeseen events of magnitude occur to interrupt the natural course of things. With regard to any wise attempt at new legislation, it is indispensable to take some such forecast. To say that Parliament is Parliament, and that the best way to insure good legislation is to bring forward sweeping proposals at the earliest moment, to fight them as hard as possible, and to secure as much of the scraps as possible, may be very English, but it is not very sagacious.

In the first place, we are about to enter on what is, in all probability, the last session of the existing Parliament. The indisposition to trouble, and especially to open new sources of trouble, which characterises the moribund, may be expected to be strong, both in the House of Commons as a corporate body, and in its individual members. Members who are about to reckon with their constituents will be sure, in many cases (human nature being unchanged), to act on the principle of that wary Oriental of whom we hear, at least once every year from the pulpit, as the "Unjust Steward." They will be apt to take their bills, and write down fifty instead of a hundred; they will be unwilling to come before constituencies, in which the popular element is in the ascendancy, in the character of advocates for the increase of rates; or for anything that might tend to increase rates. Of itself, therefore, the session is unfavourable for the introduction of any comprehensive plan of reform, sanitary or otherwise.

If such be the case, on the supposition that the session is to be allowed to run its natural course, undisturbed by any artificial causes of storm, or attempts at "heroic legislation"; it is yet more worthy of note, when we regard those straws and feathers which, whirling in the air of public dinners or of newspaper columns, portend a squall. First of all, the Prime Minister is also Chancellor of the Exchequer—a combination always of significance, and which, under certain circumstances of personal idiosyncrasy and of biographical antecedent, may possess an extreme significance. When to this is added the publication of a species of report, drawn up by one of the most eminent members of the Cabinet, on the subject of the relative burdens on landed and other incomes in this country and on the Continent, a statement issued avowedly as a basis for some proposal affecting the incidences of local and Imperial taxation,—the barometer points yet more decidedly towards "storm;" and when, on New Year's-day, the new Solicitor-General throws the blame of increased rates upon "the insatiable man of centralised philanthropy and doctrinaire extravagance," we not only are answered by the actual commencement of the rising gale, but are made unpleasantly aware that it blows from a quarter the most hostile to the real requirements of the country in sanitary matters. Under such circumstances, with every indication that a cry is about to be got up for service at the ensuing hustings, the wise pilot will shorten sail. He will look at the essential, rather than at the comprehensive. He will so limit his course that he may stand no chance of a disastrous wreck.

Under these circumstances, a detail on which we might not otherwise have commented obtains great importance, from the fact that it will certainly be seized as a weapon against the patriotic aim of Mr. Powell and his friends. We refer to the proposed extension of the limit of the legal nuisance. Strictly speaking, this term has a rightful application to a portion of the evils announced by the measure. That application, however, is novel. It needs discussion and argument to bring it home to the public mind; and the force of that argument is diminished by the fact that the same logical

basis does not apply to the whole use of the term.

To sow the seeds of contagious diseases, or to prepare a seed-bed in which, if a stray seed fall, it will certainly thrive, spread, and propagate its kind, is, in every sense of the word, a public injury,—a real public nuisance.

But by neglect or mal-construction to omit to take the most efficient means of curing non-contagious diseases is another matter. It is wrong from every point of view. But it is not a wrong of the nature of the former. Society must be educated to a point far above its present state, and sanitary truths must be not only more known, but more felt, than is the case at present, before we shall find people prepared to admit of inspection of their domestic arrangements for the sake of their own health. Nothing but the fear of infection can arm the inspector with such a power. That which, as regards typhoid or cholera, may be ceded to the public now, will hardly be granted in the cases of consumption and of rheumatism. The owners of these sad complaints will be apt to demand the right to do what they will with their own. They will argue that, as their neighbours are not affected by their sufferings, they must be left to take their own remedies.

We deny this right. We hold that it is the duty of the statesman to provide for the public defence—whether from visible or invisible foe—when the certitude of that defence is ascertainable. But this is only to be done on the high principle, *Salus Populi Suprema Lex*. We do not think that such a result can be attained by a side wind, and we much question whether the extension of the legal term "nuisance," if it can be attained, is the wisest method of enforcing this primary principle.

All this, however, is for the consideration of the proposers of the Bill, and of their supporters. We only offer our own observations, as old combatants in the good cause. Any real extension of sanitary precaution will have our hearty co-operation. Our anxiety is, first, that no steps should be taken which will place sanitary reformers in a false position; that is to say, in one which is easily misrepresented for political objects. Secondly, that no steps should be attempted without reasonable prospect of success. Thirdly, and chiefly, that no measures should be proposed to Parliament which can in any way throw dust in the eyes either of the House of Commons, or of the public. That is to say, that honourable members should neither persuade themselves, nor seek to persuade others, that legislation can do the work of administration. This we believe to be the cardinal vice of the day, in political matters; not in sanitary questions alone. To substitute organic change, the result of theory, for administrative vigour and administrative reform, the outcome of experience, has been the favorite nostrum of the feeble and the violent (the two qualities are naturally connected) in all time. It is this vice which is the stop-gap in the way of sanitary reform. It is this which all sanitary reformers should in the first place betake themselves resolutely to oppose.

It is enough to call the blush to the cheek of a public writer, to find himself almost alone in the field in urging so obvious and so vital a point. All the great triumphs of the practical science of modern times are due, and confessedly due, to the division of labour and to the specialisation of functions. It is this which forms the essential difference between an orderly, organised nation, like the armed and educated hosts of Germany, and a horde of shrieking savages. To constitute the Boards for the decision of medical and engineering questions out of the respectable agriculturists of the rural districts and tradesmen of the towns, is to do absolute injustice to those men, as well as effectually to stop any real advance. Let the Boards have their proper functions; but let there be such an organisation of the medical and engineering staff as will place its members out of danger from the caprice, the ignorance, or the not altogether discreditable parsimony, of the Boards. Each medical and engineering officer depends on the other; neither is efficient alone. The one is chiefly called for at the moment; the other is the man of the future. The one applies remedies; the other, if allowed to do his duty, will prevent the necessity of that application.

The Licensed Victuallers' Asylum.—The annual ball in aid of the funds of the Licensed Victuallers' Asylum will take place at St. James's Hall, on Thursday, the 15th inst.

ENGLISH ARCHITECTURE.
PRESENT QUESTIONS.

In the course of his recent address as President of the Institute of British Architects, Sir G. G. Scott gave a review of what may be termed the present architectural "situation," which was, as to much, in such entire accord with the views to which from time to time of late we have given a degree of prominence in our pages, that we must regard it as contributing valuable evidence of their truth, and as indicating that a more general and combined attention must and will be given to certain questions now immediately affecting our present and future architectural progress. We shall briefly refer, by way of commentary, to some of the points named by him, not as criticising Sir G. G. Scott, but because, at the close of his enumeration of the adverse influences now so injuriously affecting our architecture, he said that his sagacity utterly failed to suggest any remedy," while we think that their very statement irresistibly points to certain practical conclusions, from the consideration of which in the present aspects and tendencies of English art, it will not do to shrink.

In referring to the *ad captandum* criticism to which architects and architecture have been recently so plentifully treated, Sir G. G. Scott well said he had no desire to fathom its motives, and he pointed out very forcibly its one-sided captious character. It is undeniable, however, that though, inherently absurd in principle, and destitute of real weight, it has had the effect of placing the architectural profession in a position of disparagement before the general public. Now, though a truism that "sweeping judgments are generally unjust ones," and may sometimes be dismissed as deserving only silent contempt, it is not always safe to adopt this course, and to have done so in the present instance would have been construed into "allowing judgment to go by default"; and even as it was, architects had already begun to be reminded, with ill-concealed satisfaction,—that they could be almost superseded or dispensed with, as the ordinary builder even, found less and less need for their intervention, and that the civil and military engineer were fast treading upon their heels, and invading the precincts of architecture in a manner, and with qualifications which must make architects look to their laurels. We refer to this not only for the *entimus* it displays, but as involving a fundamental fallacy in the conception of what constitutes the true architect, and, *scilicet*, true architecture, the non-perception of which underlies so largely the causes for the present state of things, and to which we shall have more particularly to advert in the sequel. But this style of criticism becomes a call to architects to assert the distinctive character of their art, and not to let its honours and rewards slip from their grasp, but to place its woe status in that position of repute, dignity, and advanced excellence to which it is entitled, and which should be beyond the reach of any not possessing what, in a true order of things, would unmistakably mark out the genuine architect.

The most important point dwelt upon by Sir G. G. Scott, and the central one about which so many present questions range themselves, was the existence, alongside with men of mark and undoubted genius, of a host of professed architects for whom he had no other name than "pretenders." He pointed to the fact that with whatever degree of success the "revivals," which the history of modern English architecture has witnessed, have been carried on by men who have evinced all that fine enthusiasm and devotion to their art, as such, which is an essential of all artistic greatness, in the production of works, whether Classic or Gothic, or in related styles, which will ever challenge and deserve a large share of admiration, yet that the whole result had certainly not been altogether commensurate with just expectations, nor yielded a sustained, consistent progress, and commanding influence over the whole of our architecture. The cause for this he traced, more than anything else, to the presence in the profession of pseudo-architects, "a mixed multitude," who, uninspired by the same high motives which characterised their greater brethren, had been content to plagiarise every step in advance, and to catch at and imitate every fresh suggestion in an unthinking, unintelligent manner. In a time like our own, such efforts prove successful in an *ad captandum* vulgar sense, but really most disastrously degrade and retard the progress of genuine architecture, which lives only

in good examples; while these, occupying the place of better work, inflict a lasting injury upon art and public taste, which the presence of few and far between works of real excellence can do little to counteract. The possibility of securing patronage and repute, equal to or beyond that which falls to the share of real genius, for such anti-art, constitutes one of the greatest dangers with which our architecture has to contend, and presents, perhaps, the most difficult practical problem now to be dealt with. If the works of men who have deservedly won name and fame, and fought their way to the front by dint of sheer excellence, are not lessened in repute by a mass of bad, pretensions architecture, yet many less fortunate in obtaining public recognition, and only able occasionally to give token, and that perhaps in minor efforts, of their possession of the finest gifts, often with surprising and startling effect, are necessarily crowded out, and almost lost to our art-history, to which their services would have been of the utmost value; thus giving rise to the suspicion that such architecture as we have, which can fairly be pronounced good, is not, perhaps, the best which sounder conditions would have produced.

A further point dwelt upon was the absence of any recognised system of perfected education for our architects, and it must be confessed that our present haphazard one certainly affords no guarantee that we are furnished with the best men, or that it confers the very special training which the profession of the architect demands, and which our entire art-progress is now more than ever capable of offering.

The great necessity of a singleness of aim, of a devotion to and community of effort in the advancement of art, above all individual and personal considerations, was also urged upon our architects. But that this is no light or easy matter,—it might be said almost an impossible one,—save on the part of those who have made a good position, which is almost a monopoly of patronage, with nothing to fear from the ardent rivalry and competition and adverse influences of the present condition of things, must be too painfully manifest.

We have thus selected the most salient points of Sir G. G. Scott's address in its bearings upon certain aspects of our architectural position, as containing convictions which, coming from such a source of influence—one might say of authority,—cannot but gain for them the earnest attention of the profession, to whom, indeed, he commends them, but with the admission, which we have previously quoted, that he sees no remedy for the existing state of things. This statement of his views, however, very much reinforces that recently expressed by us in articles dealing with the present status of English art and architecture from a more general and historical point of view. The evils noted by Sir G. G. Scott as presenting almost a *vis inertia* to any satisfactory architectural progress are just those which must come uppermost in any candid consideration of the subject; and upon their practical solution in some shape or form depends the future of our architecture, whether for better or worse. We have already expressed the belief in our former review of the whole subject, that the stages through which our modern English architecture has passed, were, perhaps, inevitable; that we have been, as it were, feeling our way to a true definite national architecture; in this somewhat resembling, though with a difference, the long Transition period which marked the decline of Classical architecture, till at length the Gothic, with its new principle of construction and endless versatility, reigned supreme, superseding all the heterogeneous attempts at new and mixed styles and structural modes which had been going on for centuries. There was nothing, however, resembling the extraordinary condition of things now prevailing amongst ourselves, which, in a mushroom growth of architects and architecture, whose productions in every contrived style crowd upon the view with a perpetual sense of surprise, till the whole impression left, from an extended passage through our streets, is for the most part that of some hideous nightmare from which we long to escape, but cannot. This co-existence of good, bad, and indifferent is no goal to arrive at and rest in, and can only be regarded as transitional, though a necessary and inevitable result of the peculiar conditions which have surrounded the growth of our modern architecture. The one pressing question then is, in what direction can advance now be made? A clear perception of certain evils has now been

reached; their causes are equally clear, and we cannot but think that the discernment of these carries along with it, as a sequence, the remedy, which, if it could not be discerned before, is now self-evident, and must be applied, if we are to see the extinction of present anomalies, and if a different and better order of things is to ensue.

We take it, then, that the whole growth of the present state of things as regards our architecture has arisen from the practical disbelief or neglect of several fundamental principles, which, if not observed, it is vain to hope that our art can be native or national, either as to style, or dignified consistent progress; or other than at best respectable imitation and adaptation of past styles; while it is very possible, and quite as likely, to present what it now does to a large extent, as many changes,—very facile and novel, and with not a little of art about them,—as the other changes of fashion, which have no motive beyond the passing vogue. At the present moment, one of the latest of these architectural fashions is to be seen stealing upon us in the adoption of "French Classic," the result of one of those "suggestions" Sir G. G. Scott alluded to, but which is not likely to yield us any more real satisfaction or lasting pleasure in our architectural work than the many other modes which have had their turn.

The first fundamental mistake we would allude to as having been gradually and increasingly committed during our modern architectural history, is the not having acted up to the belief of what constitutes the true architect. We regard it as equally true of the architect as of the painter, sculptor, poet, musician, that he is "born, not made." Few, perhaps, would dispute this, when directly put; but it cannot be said that it has been other than practically ignored in the modern system, which furnishes us with our architects; in which a little taste in art, a certain amount of scientific and professional training, and an acquaintance with past styles and precedents, is deemed sufficient to launch a man upon the career of an architect. That tame, soulless imitation should be the chief result is not surprising; or, that when something original is attempted it should prove an extraordinary production, which most well-wishers to art would be glad to see extinguished. We, of course, have had, and have, amongst ourselves, men of the genius which characterises the genuine architect, whose works speak for themselves, and add proof to the lesson taught by all the past that a special and distinct order of genius in art makes the architect; to whom building, in all its requirements, becomes his mode and language of expressing the thoughts of beauty in all its characteristics from grace to sublimity, as much, as we have said, as the poet in language, the painter and sculptor in form, the musician in sounds, find each his separate vehicle for telling out by an inward impulsion through such modes his sense of sources of thought, emotion, beauty, &c., which shall be capable of conveying and evoking like impressions in others. We maintain, then, that this is the key of what, in essence, constitutes the architect. The perception that man in his works, as the Creator in His,—and born from this,—can make them yield impressions of beauty, character, and expression, which become sources of refined and abiding pleasure. True builders should and may be noble, grand, beautiful,—should have an expression in accordance with their character and purpose, is that essential demand of a certain stage of culture in all nations which, when given to them, is what we properly understand by architecture, over and above the utilitarian purpose of building. Hence the solemn temple, the sumptuous palace, the severe court of justice, the gloomy prison, the frowning fortification, the meditative cloisters, the seclusion of the college, the inviting, joyous rest of home, are all expressions which have been sought and realised in building; and the true architect is he who perceives the possibilities of these varied impressions of aesthetic pleasure, and is able to satisfy them, both supplying a demand,—a universally-felt want of human nature,—and creating again in his works a sense of that life and variety and possibility of advance which is akin to the infinitude of nature, and which constitutes the true life and progress of all art. Now, we say that this alone is true architecture, when building becomes to us a source of such pleasures. If it is not this, in some sense,—the least demand being fitness and grace,—it ceases to be architecture, its author is no architect, and

his work and himself owe an apology for affecting to be what they are *not*, inasmuch as all such work occupies the place of what should and might have been better: instead of being a pleasure it becomes an offence. It will scarcely be disputed that the powers we thus claim for the genuine architect bespeak a very rare and high order of mind. That this is inborn, and cannot be conferred by any amount of training, however exhaustive; though it is quite true that its mastery depends on and must be in obedience to conditions of material, the integrity of definite structural principles, and the observance of the natural laws of proportion, light and shade, perspective, &c., which it is the business of the architect to discover and apply in relation to buildings, and which, with what has gone before, constitutes the special character of his genius. To return, then, to the point from which we started. It cannot be said that the system which gives us our architects has had for its object the recognising and training and affording scope to the true architect alone, in the sense on which we have insisted. It cannot be accidental that so much of the architecture which has come down to us from the past has impressed upon it the diverse characteristic expressions we have pointed out, and is stamped with an imperishable beauty, even in its ruin; and it cannot be accidental, that under the modern system, which gives us architects by the thousand, and admits of almost any one, in fact, setting up as such, we have so little work which can at all claim the like merit and glory, but, on the contrary, floods us with a mass of work unworthy of the name of architecture at all. The conclusion is irresistible that we have practically overlooked the essential condition which leads to true architecture, — the finding the true architect. Bad architecture must argue the poor architect; and as we are so plentifully supplied with the bad, and so sparsely with the good, there cannot be two opinions that the system which has contributed to this result must be a false and pernicious one.

There is yet another fundamental mistake which has been committed in the progress of modern architecture, and that is the leaving it to the separate, individual cultivation of the minds devoted to it; no distinct influence, at least, operating to the contrary. That Classicists on the one hand and Gothicists on the other may have been drawn together by the common tie of promoting certain ends in art is very possible; but this is not what we mean. It may very plausibly be argued that the invention of printing and book illustration has so placed at the command of all the aids which could only previously be gained by the few working in concert, that the latter is very conveniently superseded. But we think that in regard to architecture this, in the nature of things, is a mistake, and by no means effects the objects attained of old, or in any way compensates for their loss. The art of the painter or sculptor may, perhaps, best find their end in individualised cultivation and expression, but architecture calls into play such varied powers that it is almost impossible one mind should be their epitome. The sameness in structural principle, plan, and method of ornamentation which severally characterised Egyptian, Greek, and Gothic art, however widely separated as to time and place, argues a concert, agreement, and combination in securing definite results in art, to which individualised expression must have been very much subordinated. Modern art does not seem to have gained much, even at the best, by pursuing an opposite course. A national style of architecture must ever be determined by climatic conditions, the materials to be employed, — which will dictate the structural principle, — subject to the never-changing mathematical and optical laws which govern all the sources of beauty, in proportion, light and shade, &c., and these all moulded by the genius of the architects of a given time to make their work yield those esthetic expressions to which we have before alluded. It is impossible to predicate what style a national art must assume at a particular period. It can only be given to us by architects, working in full intelligence of all current conditions, and hence the absolute importance of the primary effort to secure the right men, — the real architects for the time being. Without the certainty of this other efforts in the way of affording professional training to a large body of students will be almost valueless, and much more the hope of improving our architecture by disseminating its "principles" among the general public, and thus reacting upon our architects! This is impossible,

for it is only by placing noble buildings before the public that they can be educated to discern what true architecture is, and thus be prepared to reject the bad when offered.

We must leave to a future opportunity the further consideration of the second of the important principles, non-attention to which has, we think, had so much to do with the scattered, heterogeneous results of our architecture, and the absence of any nearer approach to a consolidated, national style. This may never be possible, and certainly cannot be under present conditions, but should a sounder system obtain, this belief need not be entertained till proved by experiment.

We cannot think, as Sir G. G. Scott seemed almost to imply, that the evils which he so graphically portrayed have attained such gigantic proportions that nothing can be done. He rightly objected, perhaps, to the rigid system of examinations pursued in France for the purpose of securing competent architects as too inflexible, though it seems an improvement upon our own wholly fortuitous and irresponsible system. But we do not think we are tied down to either extreme, and that there is a *via media* which is at least worth the trial. Our object now has been by accepting Sir G. G. Scott's conclusions as valuably confirming our own, to take them as a point of departure for an advance which they seem inevitably to involve and suggest.

THE GREAT ENLARGEMENT OF THE LIME STREET RAILWAY STATION AT LIVERPOOL.

In our notice of the reply of the railway companies to the circular of the President of the Board of Trade, we referred to the statement of the chairman of the London and North-Western Company, to the effect that their Lime-street Passenger Station at Liverpool had been built three times, and that notwithstanding its repeated enlargements, they were now doubling its area at a cost of 500,000.

The unusually large outlay which the company are about to incur in the enlargement of this station in itself shows the extent and magnitude of the work, and a few particulars as to its character will be interesting.

The present station occupies an area of upwards of four acres in extent, having a frontage to Lime-street 320 ft. long, and extending about 500 ft. in depth. When the station was last enlarged, the Lime-street elevation was removed, and a large and handsome hotel, designed by Mr. Waterhouse, erected on the site, extending a considerable number of feet in depth, on to what was formerly a portion of the station area, and the latter was much more than correspondingly enlarged by the excavation and opening out of the tunnel which is carried under the town from the station in an easterly direction towards Edge Hill. The station area was at the same time widened by the absorption into it of land on the south side, and the increased space so acquired enabled the company very much to enlarge the station accommodation, securing three large platforms and four double lines of rails, in addition to a spacious platform area at the rear of the hotel. The station so enlarged was covered in by an enormous roof in one span, said to be the largest of its kind in the country.

Spacious as this station is it has been found still unequal to the requirements of the traffic, and during the last session of Parliament the company obtained the necessary powers for the extensive enlargement of the station which is now in course of being carried out. The works involve the extension of the station area to more than double its present size, for which purpose the company have to purchase an immense quantity of property on the south and east sides of the station, in order to increase its width and length. The Lime-street frontage will be carried in a southerly direction, in continuation of the hotel, to double its present length, and when completed will be upwards of 600 feet long. This frontage extension necessitates the absorption of Gloucester-street, a main thoroughfare, immediately on the south side of the present station boundary, leading out of Lime-street, together with a number of houses and places of business, including four valuable hotels, having their frontage in one of the principal portions of Lime-street. The compulsory purchase of this particular property will form one of the most expensive items in the enlargement of the station,

its estimated value being upwards of 201. per square yard. The town council have arranged with the railway company that advantage shall be taken of enlarging the station to widen Lime-street at this point by the new buildings forming the extended station elevation being set back several feet beyond the present line of frontage. These buildings are intended to be of a handsome and ornamental character, and to harmonise to a great extent with the front of the hotel, — a lofty structure, and built of Portland stone. The buildings will contain a new and distinct set of booking-offices, waiting-rooms, refreshment-rooms, and other apartments for the company's officers, and there will also be a carriage approach into the station direct through the frontage. We understand that the company have entrusted to Mr. Waterhouse, the architect of the hotel, the designing and superintendence of the enlarged station buildings. In lieu of Gloucester-street, absorbed in the station, the railway company have undertaken to construct a new street running eastward, at the southern boundary of the enlarged station, 50 ft. in width, forming a junction with another main thoroughfare called Copperas-hill.

In addition to the purchase of the property already named for extending the Lime-street frontage, the enlargement also requires the purchase of sixteen other streets eastward, containing an area of about 11,000 square yards, or between two and three acres in extent. In these several streets there are upwards of 300 dwellings, all of which will have to be demolished for the purposes of the enlargement, and, after their demolition, the area forming the site upon which they now stand, and under a portion of which the tunnel runs, will have to be excavated down to the railway level, in order to obtain the increased station area, the tunnel being thus opened out to such increased length. This excavation will be one of the heaviest portions of the works, and will involve the removal of several thousand cubic yards of the hard sandstone rock forming the stratum below the ground level, which averages upwards of 20 ft. above the railway.

The area of the station will be thus increased to nearly 600 ft. in width, and 700 ft. in length, covering a space of about eight acres in extent. This increased station area will not only admit of additional lines of railway and platforms, but also enable the company to lengthen the latter to a considerable extent. The present number of double lines of rails are to be increased by two, together with additional single lines and sidings, whilst there will be two additional platforms, making six double lines of rails in all, besides the single lines and sidings, and five platforms, about 550 ft. in length each. The whole of this enlarged station space will be covered over by a continuation of the single span, the station being thus one of the largest passenger stations in the country. It is expected that these extensive works will take a period of two years to complete.

AN OBSERVATORY IN BIRDCAGE WALK.

Those who have been in the habit of passing along Birdcage-walk will have noticed, during the last two months, a lofty roof and turret gradually rising up in the neighbourhood of Queen's-square Place, immediately adjoining the chapel attached to the Wellington Barracks. The structure has already been carried up to a considerable elevation, and is a specially prominent feature amidst the surrounding mansions.

The tower in question forms a portion of additional buildings which are in progress at the mansion of Mr. H. A. Hankey. The main portion of the building, having its frontage to Birdcage-walk, has been raised by the addition of another story, making the building 52 ft. in height. This has been surmounted by a mansard roof, 32 ft. high, and about 16 ft. wide at the summit. The elevation of the roof facing Birdcage-walk, and also that to the west, contains three tiers of windows. Rising out of the mansard roof is an octagonal turret, 34 ft. high, which has now been carried almost to its full height, making the entire height of the building, from the ground-floor to the top of the tower, 118 ft. The tower is to be surmounted by a large glass dome, about 12 ft. high; the extreme height of the whole elevation to the apex of the dome being thus 130 ft. We understand that it is intended to have an observatory within the dome above the tower, the unusually high altitude securing a commanding view of the

metropolis and the country around. The structure at present has a somewhat curious aspect.

In addition to the works above described, the mansion is also being still further enlarged by the erection of a long wing or side front, one story in height, carried in a westerly direction from the main building, and extending 153 ft. in length. The architectural character of the Birdcage-walk frontage of this new structure is somewhat peculiar. The style is Gothic, and the windows, which are twenty-five in number, and very lofty, are carried along the elevation in an irregular line of angles. The basement of this new building will contain an extensive range of apartments for the domestic of the establishment, together with kitchen, and all cooking and culinary requirements. One portion of the structure contains a large dining-room, 40 ft. in length, 27 ft. in width, and 16 ft. in height from the floor to the ceiling. Immediately adjoining, and approached from it, is a billiard-room, 32 ft. in length; whilst leading from the billiard-room is a drawing-room, 50 ft. in length, and 22 ft. in height; and at the extreme west end is an organ gallery, with a platform and orchestra raised several feet above the floor of the drawing-room, 32 ft. in length; the entire length of the dining-room and the organ-gallery and orchestra being 85 ft.

The new buildings are being erected from designs furnished by Mr. Hankey himself, and are being carried out by his own workmen.

THE MANSION HOUSE.

The official residence of the Lord Mayor of London has lately been undergoing renovation and decoration. At the commencement of the late mayoralty, it was partly done by Messrs. Galloway. The various works just completed have been executed by Messrs. Pittman & Cuthbertson, painters to the corporation of the City of London. The north-east staircase, which is ornamented with bold plaster enrichments, now obtains notice, the old dingy, all-resplendent colors having been superseded by two shades of purplish grey and blue in the ceiling; two shades of green in the wall panels and styles, and the enrichments being picked out with ivory colour, with blue-seamed urns (red, green, ochre, and black), in the dado.

The morning drawing-rooms contain two oblique corners, and these have been painted in shades of warm grey and silver grey, the ceilings and enrichments being picked out with ivory colour, and further relieved with deeper tints. The walls are painted salmon color, with the styles soft, duck-egg green, and the mouldings picked in broken white. The richly carved chimneypieces have been etched with gold. The entrance-hall, secretary's room, and other parts have also been in the decorator's hands. The spacious saloon, which forms the communication between the two ends of the building on the ground floor, needs to be taken in hand.

M. VIOLETTE-LE-DUC AS AN ARCHITECT.

I have read with interest several articles that have been appeared in the architectural journals relative to the restorations of M. Viollet-le-Duc, and the published works of our distinguished contemporary, Monsieur Viollet-le-Duc; and having just completed a long tour in France, made principally with the object of seeing and examining his buildings, I shall be glad to say a few words in order to correct what I consider to be false impressions on the part of some English architects. M. Viollet-le-Duc's admirable books are too well known and appreciated to call for comment from me, and I am happy to believe that Mr. Pugin is as singular in his opinion that the "Dictionnaire" is dangerous, as he is in his belief that it would be better for the interests of art, were there no museums or other traces of the past. His statement, however, that few read the "Dictionnaire," is, I fear, but too true, otherwise it would be difficult to account for the prevailing impression that Viollet-le-Duc is distinguished only as an archaeologist and a writer, and not as an architect; for I am convinced that no reader of his books could possibly entertain this most erroneous opinion,—by which we alone are the losers, inasmuch as his fame as an architect is well established in France, and unquestioned in Germany, Italy, and even in

America. To believe that any one can possess his profound knowledge of the principles and his familiar acquaintance with the forms of architecture, combined with his power of delineation and vast practical experience, and yet not be an architect, and a great architect, is opposed both to reason and common sense. He is accused by some of not observing in his buildings the principles which he so forcibly inculcates in his books. I can only reply, that, having carefully and critically examined many of his executed designs, I have never yet discovered in them the slightest contradiction of those principles. It is true that his architecture is not a reproduction of any period of the past, and such it is founded on the study of every phase of ancient architecture, and proceeds by exactly the same principles. And no doubt this very originality is an offence to such as are wedded to particular forms. No degree of perfection would ever satisfy them unless presented under the forms they prefer. I am happy to think, however, that the number is daily increasing of those who can appreciate truth and beauty under whatever garb they are presented, and I venture to hope that as we make ourselves better acquainted with the works of this remarkable man, we shall discern and acknowledge their peculiar merit.

I need not observe that in criticising contemporary architecture, the question is, not whether it reproduces more or less exactly time-honoured forms (for it is to be hoped that we have all given up the notion of proceeding by way of imitation), but whether it exemplifies the *timeless principles of Art*; whether the arrangements and the construction are in harmony with the requirements and with the means; and whether both are clearly expressed in the general design as well as in the ornamentation,—in a word, whether knowledge and reason have presided over the work.

These conditions the buildings of M. Viollet-le-Duc fulfil in a pre-eminent degree. Nothing can surpass the simplicity and perfection of his arrangements. There are abundant space and ample strength, but not an inch of wasted room or material. The construction is ingenious, often novel, but always scientific. The general design accurately accords with, and clearly expresses both the arrangement and the construction.

Every detail has its *raison d'être*, and is designed to serve a practical purpose, a purpose that its form exactly interprets. As regards his sculptures and painted decorations,—however much their purely original character may offend the susceptibilities of those whose studies and tastes run in a narrower groove, they unquestionably possess all the characteristics of real art,—vigour, delicacy, harmony, and sobriety. They display his profound knowledge of the forms, habits, and laws of nature, as also of ancient and Eastern art. What is most extraordinary is their almost infinite variety: M. Viollet-le-Duc never repeats himself. The thought and care bestowed on the execution, in the drainage, the lighting and heating of his structures, the precautions taken to secure the easy escape of the water, and to prevent the effects of damp and decay, all denote the able builder and the artist who loves his work. His buildings are marked by an entire absence of affectation; it is simple, easy, and natural, the natural expression of what they are. However sumptuous his work, there is a rule to which he is always faithful, economy of means to an end,—there is nothing *de trop*, nothing wasted, everything has its value in the construction and the design. In plain and simple work he is never common-place, in his most splendid he is always sober. All his structures possess the charm of art, from the little lodge at Cuçuy, so perfectly adapted to its purpose and situation, to the grand tower that so nobly crowns the cathedral of Notre Dame,—which for the science of its construction and the perfection of its grace may well compare with the finest productions of the past, and of itself testifies to the consummate architectural ability of its designer. As to M. Viollet-le-Duc's restorations, they are executed in accordance with the principles laid down in his interesting essay on restoration in the *Dictionnaire*, and are done in a thoroughly conservative spirit: the old surfaces, and even the old stones, where good, are always preserved. It is easy to see at Pierrefonds, where the old work ends and the new begins.

In the chapel vaulting, and in the tracery of the rose-window, may be seen two or three untouched old stones found in the *debris*, and from which he reconstituted the ceiling and the

window. In all cases where a trace remained sufficient to indicate what had been, Viollet-le-Duc has faithfully reproduced the original work; where no such trace existed, he has, wisely I think, done as the ancient architect would have done had he possessed our appliances. To the more antiquary, this part of his restorations will have but little interest, but to the practical architect it is by far the most instructive, for he there sees the problem resolved of the employment of modern materials and appliances in conformity with the ancient and immutable principles of art. At Pierrefonds it was the question of cost, as well as of durability that determined the architect to employ iron for the roof instead of timber, at a saving, he told me, of fully one-third. It is a mistake to say that the iron principals have spread and cracked the walls; they do not exert the least thrust upon them. The slight cracks noticed by a correspondent were caused by the inevitable settling of new work built against or into the old. This statement is equally mistaken with regard to the chimney-flues, which have been constructed, like other chimneys, to carry up the smoke, which function they effectually performed when on several occasions the fires were lighted.

As to the propriety of such a restoration as that of Pierrefonds, I will merely remark that had the chateau been left in ruin, few would have visited it, and with but little profit. In the restored grandeur it will be studied by crowds of earnest students, to whom it will prove a veritable school of architectural art.

BENJAMIN BURNALL.

ECONOMIC USE OF FUEL.

It is to be regretted that so much time is allowed to elapse in the matter of the competition for the prizes offered by the Society of Arts, for the best stoves, or other apparatus, that have been invented, to obtain a maximum of heat, and the best distribution, from a minimum of fuel. It is now certain that the current winter will be nearly, if not quite, over, before the competition can be completely arranged, and the awards made, which is to be regretted, inasmuch as practical results from the exhibition may be reasonably expected, and that the wasteful and extravagant mode of applying fuel for domestic purposes complained of is proceeding unchecked, except partially, perhaps, as a consequence of the interesting exhibition of cooking stoves and ranges at the late International Exhibition at South Kensington. It is gratifying to be able to state that inventors are responding freely to the invitation of the Society of Arts. There are 107 competitors, and a large number of stoves have been already sent in, but in many instances unaccompanied by the data necessary to forming a judgment upon their comparative merits.

The council have issued a circular to competitors requiring them to state the date of their invention; the special novelties claimed in either construction or in the method of economising fuel; whether any particular kind of fuel is to be used, and what; the particular points which the attention of the committee is invited; any place in or near London where the stoves are to be seen in action; and the price of the apparatus, cost of fixing, facilities for repair or renewal, and probable cost.

EASTER ISLAND ANTIQUITIES.

SOME interest was excited by particulars and views which we gave in 1870, of the gigantic figures and heads scattered over Easter Island, in the Pacific Ocean.* At a recent meeting of the Anthropological Institute, Mr. J. Parkes Harrison, father of the gentleman whose sketches we had engraved, exhibited casts of some curiously-inscribed tablets brought from the island. Mr. Harrison stated that the tablets were found in 1869 by the French missionaries in one of the stone houses (styled by the natives, "Taura Runga"), once inhabited by the kings. They were entrusted to the captain of a Peruvian man-of-war, for the Government; and two of them are now in the National Museum at Santiago de Chili: a third was sent to Paris. Casts were made under the direction of Mr. E. Roed, who is attached to the Museum; and copies were sent to London, Berlin, Cassel,

* See vol. xxviii, pp. 890, 892; and vol. xxviii, pp. 4 and 19.

and Liverpool, in the beginning of last year (1873).

Paper impressions were sent over three years ago, but from injuries received in transit, nothing could be made of them; and Professor Huxley, then president of the Ethnological Society, thought they were merely stamps for marking cloth without any meaning; and Petermann, in July, 1871, adopted this view.

On examining the casts, he had found, in addition to bird-headed men (with the heads of albatrosses), sharks, &c. (familiar forms in Easter Island); numerous other signs, representing snakes, clubs, animals like civets, pelicans (conventionally treated); penguins, and men with faces like negritos, none of which forms of life are found in Easter Island, where the only quadruped is a rat, the only land-bird a domestic fowl, the only insect a fly, and very few fishes, on account of the depth of sea round Easter Island, in which is the cone of a volcano as lofty as any of the Andes.

There are also no reptiles in the island. The negritos are represented as dancing *en file*, with numerous fishes arranged in lines. The women dance by themselves, in couples, holding hands. There are also plants and fruits which are foreign to Easter Island.

All this seems to show that strangers arrived in the island across the Pacific, who introduced implements and arts, which distinguished the Easter Islanders from Polynesians generally. It is not believed that they remained in the island, — at any rate, not all of them.

The tablets are of hard wood, a species of mimosa. They are 1 ft. 2 in., and 1 ft. 6 in. in length, by 4½ in. and 5 in. respectively. They are probably copies of earlier tablets. The signs are engraved on both sides, right lines on the smaller tablet, and twelve on the larger one.

In every alternate line the hieroglyphics are reversed: so he assumed that every other line is to be passed over in reading the signs, and then the tablet being turned round, the other alternate lines are read.

As the faces of men and animals look to the right, the signs are to be read from right to left.

BUILDING IN HACKNEY.

It is fresh in the minds of our readers and the general public that before the close of the late year we made some statements respecting the homes in the districts of Homerton and Hackney Wick, and that we challenged a denial of them. The upshot was the appointment of a committee of inquiry, who have now laid their report before the District Board of Works. This report was to come under discussion at the last bi-monthly meeting of the Board; but, owing to some other business, the subject was postponed.

We are not as yet in possession of any of the information contained in the report, and under ordinary circumstances we should refrain from saying a word further on the matter until the recommendations of the sanitary committee were made known; but fresh facts have come under our observation this week which render some additional words necessary in the interest of the public.

There is a new street of houses in course of building nearly opposite Homerton Church, and one row backs on a narrow passage called, we believe, Mackintosh-lane. The garden or yard space at the back of this row of houses is being excavated at the present moment to the depth of 15 ft. or 20 ft. for the whole width of the garden space (several yards wide), and the hollow is being fastly filled up with the vilest street and house rubbish, brought thither by the scavenger or dust contractor of the parish. If a few feet of the garden space were dug out to procure sufficient building sand for the houses on the site, the evil would be small; but it is otherwise, and the sand has been carted away elsewhere for sale. Here, in fact, is an artificial "shoot" of monster dimensions created; good solid ground dug out, and what is little less than a levitation cesspool established. It must be examined to be realised. The contents are similar to what we have already described in relation to Hackney Wick, — rotten vegetable and animal matter, ashes, filth, and the usual quota of broken dirt, battered tins, bottles, and miscellaneous refuse of all kinds. It is an artificially-created swamp, and producer of disease.

If no powers to prevent such destructive proceedings exist, they must be obtained; but our impression is that they already exist.

NEW FACTORY PREMISES AT WALSALL.

A LARGE block of buildings has been nearly completed for a firm of merchants and saddlery ironmongers in Froer-street, for the purposes of their extensive business, the manufacturing branches of which, hitherto scattered in various parts of the town, are henceforth to be concentrated under the same roof. The buildings have a frontage of 103 feet to the street, and in the main part a depth of 41 feet, but two wings, each 22 feet wide, are carried back 10 feet further, and beyond these again are the carriers' shops and yard extending the whole length of the land, or 147½ feet from end to end. The materials used are R-entingham pressed red bricks with ornamental string-courses and variegated arches over the windows and doors, with an elaborate brick and stone cornice. The centre part of this elevation projects somewhat, and is relieved by scroll ornaments of carved stone, and the trade-mark of the firm, also carved in stone in the centre of the pediment, while the windows in this part are of double size, divided into two parts by a coloured brick column with stone cap. The building is divided into four floors, in addition to the basement, and includes offices, packing-rooms for the home and foreign markets, workshops, show-rooms, stores, stock-rooms, &c. A lift, from the manufactory of Messrs. Bunnell & Co., London, and capable of lifting half a ton, communicates with the different floors. The whole building is heated by steam; lavatories are placed on every landing; the internal arrangements and communications are complete. The architect is Mr. R. Chamberlain, and the builder Mr. T. Taylor, both of Walsall. The cost of the structure will be about 10,000l. Mainly through the generosity of Messrs. Brace & Co., the proprietors, a workmen's "rearing supper" has taken place in the Dragon Assembly-room, Walsall.

A LARGE AQUARIUM IN LIVERPOOL.

THE extensive and varied public aquarium at Brighton has given an impetus to the establishment of similar institutions in other large towns, and it has just transpired that an aquarium upon a large scale is about to be constructed in Liverpool. The announcement of the fact has been made by Mr. Wilbert Beale, who is connected with a new club for the middle and industrial classes, which has been recently established in Liverpool. Mr. Beale states that he, and those with whom he is associated, have for some time had the undertaking under their consideration, and that it is now so far advanced that negotiations are in progress for the acquisition of an appropriate site, and that the aquarium will be completed and opened during the current year. The plans are of a comprehensive character, and in addition to the provision of the intended structure to be set apart for the aquarium itself, they include a lecture and concert room, together with a high-class restaurant, all of which will communicate with the corridors of the aquarium. Mr. Beale is right in saying that the modern aquarium combines a larger amount of non-compulsory education with greater powers of attraction than any other exhibition of its kind, and that it will in time teach us a better mode of capture, and tell us much that we ought to know, but do not now know, about food of fishes generally. We understand that the site of the intended aquarium will be in close proximity to the Mersey, from which it will be furnished with water, in a manner similar to the aquarium at Brighton.

ASPHALTE, WOOD, OR GRANITE, FOR STREET TRAFFIC.

A REPORT to the Commissioners of Sewers, by their engineer and surveyor, Mr. Haywood, contains the results of some useful observations as to the relative merits of the various paving materials now employed in the metropolis. Mr. Haywood states that in the reference made to him he was directed to cause observations to be made as to the number of accidents befalling horses on the asphalt, wood, and granite pavements, under as nearly as possible similar circumstances, distinguishing the different results under different conditions of weather, and showing the percentage of accidents, with any other particulars worthy of notice. The observations were made during fifty days in the months of March and April last, and the pavements selected for observation were the asphalt pavement of Cheapside and the Poultry, the granite

pavements of King William-street and part of Cannon-street, the improved wood pavement in King William-street and Gracechurch-street, and the ligno-mineral pavement (Tremay's patent) in Gracechurch-street. The results of the trial are thus stated in the report:—

On the average of the whole fifty days' observations the granite was found to be most slippery, the asphalt next so, and the wood the least. Separating these pavements under three conditions of surface as regards moisture, it appears that asphalt was most slippery when merely damp, and safest when dry; that granite was most slippery when dry, and safest when wet; that wood was most slippery when wet, and safest when dry; that when the surface of the pavements was generally dry, granite was the most slippery, and wood the least slippery; that when the surface of the pavement was damp or dry, or degrees of asphalt was the most slippery and wood the least slippery; and that when the surface of the pavements was wet asphalt was the most slippery and granite the least slippery. That, on the whole, wood was less slippery than either asphalt or granite; that if the observations on the ligno-mineral paving be eliminated, and the improved wood pavement alone taken for comparison, wood was, on the whole, less slippery than either asphalt or granite to a marked degree, it only being inferior to granite when the pavements were wet, and the difference then between the wood and the granite being inconsiderable. That of these accidents which are most dangerous to the traffic as well as most injurious to the horses, asphalt had the greatest proportion, granite the next, and wood the least, and the greatest proportion of accidents on all the pavements was to horses and vehicles drawn by three or more horses; and that had the granite been under as favourable conditions as the asphalt, the wood, the results would have been more in favour of the granite, although to what extent cannot be stated.

In concluding his report, which will repay careful study, Mr. Haywood recommends that observations should be made at a season different from that at which those reported on were taken.

RE-OPENING OF THE POST-OFFICE LIBRARY.

By invitation of the committee of the Post-office library, a large company assembled on Thursday evening of last week, in the galleries of the new Post-office buildings, St. Martin's-lane. Grand, to inaugurate the re-opening of the library. Dr. Lyon Playfair, the newly-appointed Postmaster-general, presided, as far as chairmanship was practicable, the right hon. gentleman being supported by Mr. Scudamore and the principal officers of the telegraph branch. There were also present Mr. Cauley, the engineer-in-chief; Mr. Winter, the assistant engineer-in-chief; and the divisional engineers, and various other officials. Mr. Frederic Hill, assistant secretary of the Post-office, also attended; and his brother, Sir Rowland Hill, although not able to be present, contributed one or two objects of extreme interest. The galleries, which were decorated with flags, were divided into sections, each a centre of interest throughout the evening. In the south-west gallery there was arranged a museum of early telegraphic instruments and appliances, the latest improvements in the science of telegraphy being illustrated by the mode of transmitting news to, and receiving messages simultaneously from, nineteen of the larger towns of the kingdom. The new process of dispatching messages simultaneously in opposite directions through a single wire by the instrumentality of Mr. Stearn's invention, was worked throughout the evening, communication having been effected for the purpose with Southampton. In the central gallery there were wires working in direct communication with Australia, India, Teheran, America, St. Petersburg, Paris, and Berlin, the process being rivalled in interest by the action of the pneumatic tubes which connect the Central Telegraph Station with the principal offices for the collection and delivery of messages in the metropolis. There was also in this gallery a working model of the travelling post-office, with the apparatus for the receipt and delivery of the mails while the train is in motion.

REBUILDING AND ENLARGEMENT OF CLARENCE HOUSE.

DURING the last few months, Clarence House, hitherto possessing few claims to architectural distinction, has been in course of reconstruction, in anticipation of the approaching marriage of the Duke of Edinburgh, and the rebuilding and enlargement of the mansion is now externally approaching completion, the new and extended elevation facing the Mall, between Suffolk House and St. James's Palace, having already been carried up to the top story, and in the course of a week or two it will be covered in. One portion of the works includes extensive alterations and additions to the west frontage of the buildings, where was formerly the main

entrance. Externally, this has already been completed. The portico entrance, together with the projecting columns and balcony above, have entirely disappeared, and the entrance is closed, and in this portion of the elevation, as well as in that part above forming the first floor, three large windows have been placed. In front of the new elevation overlooking St. James's Park there will be a gateway, and the new entrance to the mansion will be through this gateway, and under a large portico, within the grounds in front of the building. Another story has also been added to the west frontage. The frontage to St. James's Park, together with that portion of the reconstructed and enlarged apartments in the rear of it, are being erected on the site of old buildings extending to St. James's Palace, which have been demolished for the purpose, and also on a space adjoining, which was formerly used as a court-yard. On the area thus utilised for the enlargement of the mansion, in addition to a spacious basement which contains the general domestic offices and servants' apartments, the building is carried to a height of three stories, to a certain depth from the front; but that portion of the rear is only one story in height, and will be exclusively set apart as the dormitories of domestics. The additional apartments in the enlarged mansion will be altogether about forty in number, the officers in connexion with the comptroller's departments occupying a considerable portion of the ground-floor. The Duke's private apartments, and those of the principal members of his suite, will occupy the whole of the first floor, and the general bedrooms and other apartments in the floors above. The works connected with the internal decorations and fittings will occupy some time, and it is not supposed the mansion will be ready for reception before April or May. In the meantime it is understood that the Duke and Duchess, on arrival in London after their marriage, will take up their residence in Buckingham Palace. Messrs. Waller & Sons, of Lyell-street, Belgrave-square, are carrying out the works.

VENTILATION.

AN A-B-C HINT FROM AMERICA.

AMONGST the many efforts that have been made to introduce some reliable system of admitting fresh air and removing foul air from our public halls and private homes, I have often thought that the more perfect ventilation of our "closets" was the first and one of the most important sanitary problems to work out. Beginning with such as our smallest apartment, surely we might expect that fresh air could be led in as simply as pure water, and that the expulsion of vitiated air could be managed as easily as the carrying away of foul matter in the soil-pipes. The closets in many dwellings are so placed that they, having no direct communications with the external atmosphere, require above all other apartments an ever-acting extract-fine such as I would now describe, namely, an air-pipe as many inches in diameter as is the soil-pipe, fitted up so as to extend from the top of the closet-seat to the apex of the roof; 5 ft. from the floor a gas-jet placed in this pipe, within a glass globe lantern, closely connected with the pipe both above and below, will insure an upright draught, and at the same time give the light required in many interior-placed waterclosets. This simple mode of direct expulsion of foul air from its too frequent source has been strongly urged for the last thirty years by Frederick Emerson, brother of the most profound thinker in America. There his simple form of tube ventilation has proved the best of all the many forms yet introduced there; and as it may be suggestive of a very economical mode of ventilating any building that has been erected devoid of such arrangements, I will now give the "rules for making Emerson's ventilator as entered according to Act of Congress in the year 1848, by Frederick Emerson, in the Clerk's Office of the District Court of Massachusetts, U.S.A." The tube of the ventilator may be of any practicable size, and the dimensions of all the other parts must be proportionate to the diameter of the tube as follows:—

The base of the cone frustum (or collar) and the top or disk should be twice the diameter of the tube. The angle of the collar to be 48 deg. The height of the disk or top above the collar should be 6-10ths of the diameter of the tube, or less where it is important to keep out the rain. The length of the tube below the collar

should never be less than one-and-a-half diameter of the tube. The size of the tube should be, for—

25 persons, one tube of 10 in., or two of 7 in.	
50 " " " "	11 " 10
100 " " " "	15 " 14
200 " " " "	21 " 18
300 " " " "	27 " 22
400 " " " "	31 " 24
500 " " " "	35 " 28
600 " " " "	42 " 30
700 " " " "	48 " 32, &c.

The tubes should be made out of galvanized sheet iron.

When a church or thinly-occupied hall is to be ventilated, the sizes given in the foregoing table will answer for two or three times the number of persons stated in the first column.

There should be two ventiducts or flues from the room to the ventilator, one at the ceiling and the other at the floor, with horizontal slit openings there, each of which should be equal to one-half area of the ventiduct, the upper opening being provided with a shutter to close when the room is cold; but the lower opening should always be open to carry off the vitiated air, and then the room will never feel close or foul.

A house warmed by open fire-places does not require as large ventilators as where stoves or steam-pipes are used; neither does it require ventilators, excepting at the ceiling.

An American architect, who in his youth studied under Dr. Reid when in Edinburgh, visiting this country twice since 1837, does not think our ideas of ventilation in 1873 are abreast of those expounded by Emerson in 1848, who, no doubt, had Dr. Reid's ideas to guide him to further his views, the utility of which has been found, after thorough practical application to any building.

Mr. J. W. Kerr, architect, Pittsburgh, Pa., says, "I have proved the truth of his theories in my practical experience." JAMES KERR.

THE LADIES' COLLEGIATE SCHOOL, BELFAST.

THE ceremony of laying the memorial stone of the building now in course of erection for the Belfast Collegiate School for Young Ladies, has taken place at the Lower Crescent, in presence of a large and distinguished assemblage. The Ladies' Collegiate School was commenced in 1859, by Mrs. Byers, who, finding that her efforts to introduce into Belfast high-class education for ladies, have been attended with success, resolved upon erecting large and commodious buildings for the accommodation of her increasing collegiate establishment. These buildings, which have now attained considerable height, occupy the large block of ground between the University-road and the Lower Crescent houses, presenting a frontage of about 75 ft. to the former, from which, however, it will be about 40 ft. distant, and of 116 ft. to the latter, having on this side a southern aspect upon the open space of the Crescent Gardens. The boarding department is separated from the schools, and occupies about one-half of the space next University-road, from which it is entered by an ornamental porch. The schools are placed at the end farthest from the road, and have their main entrance from the Lower Crescent. The common hall is 50 ft. by 30 ft., and 15 ft. high, having at one end two large rooms for the preparatory school, one end which, by drawing aside curtains ordinarily separating them, can be added to the common hall, thus making it 69 ft. by 30 ft. A spacious staircase from the hall leads to three floors above the ground-floor. On the first floor there are large class-rooms, music-rooms, and cloak-room. The second floor is fitted up with separate sleeping chambers. The third floor, which is lighted by large dormer windows on opposite sides of the roof, will also be approached in a similar manner. The boarding department has on ground-floor, porch and inner hall, from which visitors' parlour, study, and large dining-room, are approached. At the rear are placed the house-keeper's room, kitchen, and all the requisite offices connected therewith. The first floor above this is occupied by a large drawing-room, with semicircular bay window of three lights, in the side facing University-road, and class-rooms and study. The second and third floors are occupied by bed-rooms, bath-rooms, lavatories, &c. An infirmary has been arranged so as to be quite separated from the house if needed, having a special entrance to itself. The open space at the rear of the school buildings will be prepared for a playground, having a covered way leading

to it from the rear of the school-hall. The exterior walls of the buildings throughout are of selected Scotch stone, with the dressings of doors, windows, and chimneys, chiselled and chamfered. The contractor for the entire work is Mr. Robert Corry, of Donegall Pass; and Messrs. Young & Mackenzie are the architects.

EDINBURGH.

THE new Free Church at Morningside is almost completed. It is far from being a satisfactory example of modern Gothic, either as regards composition or detail. Church and spire seem not to be on good terms with each other and do not unite happily. The buttresses are attenuated, the pinnacles spiky, the mouldings feeble, and the general effect poor. The cause of this may not altogether be attributed to want of skill in the architect, but may probably arise from his having been too ambitious, and attempting more than the means at his command justified. A wise reserve seems to be one of the characteristics which the Edinburgh architect is slow to learn; sordid pretentiousness is a quality which had better not appear in any building, particularly in one devoted to the worship of the Deity. Richness and grandeur are certainly desirable, if they can be attained; but when they cannot, it is better to accept the conditions and strive to produce a simple and inoffensive work, which need not on that account be ineffective.

The attempt to raise a national memorial to John Knox has resulted in failure, the funds collected being only sufficient for a statue.

A committee has been formed, with the Duke of Buccleuch as chairman, for the purpose of erecting a memorial to the late Dean Ramsay. It is to take the shape of a recumbent figure, surmounted by a canopy. The execution of the figure has been entrusted to Mr. John Steell, R.S.A., and the design for the canopy to Mr. Burgess. The site it is to occupy is on the open ground to the south-east of St. John's Church, facing Princes-street.

Plans have been prepared for laying out the space of ground to the north-west of the city between the Queensferry-road and Comely-bank. The situation is a remarkably fine one, and the ground-plan is satisfactory; but the elevations are of that stereotyped common-place description prevalent in the new town. So long as this sort of work pays, it appears to be useless to plead for anything more artistic.

On the East Coates Estate building operations are still in progress. Some of the elevations here are not devoid of a certain degree of elegance and dignity.

A large extent of ground is to be opened up for building purposes at the Easter-road, adjoining Leith. The site is well adapted for manufacturing premises and workmen's dwellings. It would be an advantage to the amenity of the city could manufacturers be attracted to this quarter, as they have begun to encroach upon the suburbs, where their presence is decidedly objectionable.

LONDON TOPOGRAPHY.

I HAVE strung together a few queries in the hope of clearing up some doubtful points of interest in London topography.

1. The primitive form of Wyke-street is stated as "Via de Aldwyk"; what was this old wyke; old village? The line of traffic trends up Drury-lane to St. Giles's; was the hospital of St. Giles planted in this old village, or is "wyk" merely vicus, a way? This would bring us back to "old street way," perhaps a line of traffic to the N.W., before the thoroughfare across Holborn-bridge was laid open.

2. What is the natural elevation of that platform on which St. Martin's Church and the National Gallery now stand?

3. What origin has been ascribed to the extensive system of vaults belonging to St. Martin's parish? In other words, are these vaults in the natural level, or are they excavated?

4. What are the superficial strata shown by Messrs. Easton & Amos, in boring for the artesian wells in Orange-street.

5. From what circumstance arose the designation of Castle-street, Leicester-square?

6. Has Carlton-House-terrace any natural basis, or is it a purely artificial elevation?

CIVIS.

As these queries cut into a good many subjects, it is hoped that respondents will confine themselves strictly to the salient points.

"LIFE IN GREAT CITIES."

THE DWELLINGS OF THE POOR IN LIVERPOOL.

THE Rev. Charles Beard, of Liverpool, known as an eloquent Unitarian minister, is giving a series of lectures in that town on "Life in Great Cities." The first of these was delivered on Sunday evening last, in the course of which some remarkable statements were made as to the unhealthy and degraded condition of the dwellings of the poor in certain districts in Liverpool. In the first instance, he pointed out the violent contrasts of riches and poverty, of intellect and ignorance, which were characteristic of all great cities. Referring to the cities of London, New York, Chicago, St. Louis, Paris, Berlin, Vienna, and others, he observed that in a great city the characteristics of the civilisation to which it belonged were brought together in the most intense form, and in the strongest contrast, and these contrasts were strikingly remarkable, especially those between wealth and poverty. Adverting more especially to Liverpool, he dwelt upon the vast evidences of wealth and luxury there; and then, as a counter picture, drew attention to the life and character of some of the dwellings to be found in some of the courts in the town. Selecting those in the neighbourhood of Dale-street, one of the main thoroughfares in Liverpool, he said:—"There are houses here where there is a family on every floor—almost in every room; no decent places on which to lie at night; no table on which to place their coarse and scanty food; everything dirty; everything repulsive; everything showing the very depth of destitution. I will not ask what the cause of all this is, but there it is; and let me ask you to contrast it with what I have told you of the wealth of Liverpool, and surely never was any more hideous contrast put before the minds of thoughtful people." The lectures, five in number, are to be continued weekly.

MARY QUEEN OF SCOTS' STATE PRISON IN SHEFFIELD MANOUR.

There is a very interesting architectural relic in the suburbs of Sheffield, connected with the long imprisonment of Mary, Queen of Scots, in England, which has received no notice from her various historians, because its existence and authenticity have only very recently become known. It was at the end of the year 1568 that Mary was consigned to the custody of the Earl of Shrewsbury, and on the 28th November, 1570, he removed her to his strongest fortified residence, Sheffield Castle, where she remained, with short intervals of change to Buxton, and Chatsworth, and Sheffield Manour, during the long space of fourteen years.

Sheffield Manour, now a complete ruin, is about two miles from the castle. She was first taken there, whilst her apartments were being cleansed at the castle, about eighteen months after she came to Sheffield; and Sir Henry Percy very nearly contrived her escape. The building alluded to, as still existing, must have been specially erected as a safer cage for the captive. Joseph Hunter, F.S.A., the learned historian of the district, always knew that it was built by the Earl who had the care of the Queen; but he thought it was merely a lodge to the old Manour House. For a long period it has been occupied as the farm-house belonging to the Manour farm; and, both externally and within, it underwent alterations and adaptations to suit the tenant farmer. The Rev. J. Stacey, president of the Sheffield Architectural Society, drew attention to the belief, that it was originally used for the custody of the Queen; and when the British Archaeological Association met in Sheffield, in August last, the members confirmed his conjectures. Already had the Duke of Norfolk, the owner of the property, been convinced of its character, and ordered its restoration; and the out shown in our columns gives an accurate representation of the edifice, as it appears after removal of its original features.

The stucco outside has been removed, and shows thick walls, roughly and hastily put together. A doorway has been opened, which leads directly to a narrow spiral staircase, which is lighted by the small windows at the side. On the ground-floor are two rooms, which were evidently the guardroom for Shrewsbury's retainers, with a kitchen adjoining. Access to these was obtained through a door, which is now built up. On the first-floor are two chambers, the larger one having a patterned ceiling in compartments, and which must have been the room

occupied by the queen's lady attendants, with a sleeping-chamber adjoining. The larger room above is evidently the royal captive's state prison. The ceiling of this room is richly embossed with the heraldic charges of the Talbot family, and has rose, pomegranate, and fleur-de-lis ornamentations. Over the fireplace is the earl's coat of arms, slightly differing in the garter-plate from that of his two preceding ancestors and his son. It contains the quarterings of the Earl of Ormonde, from whom he was maternally descended; and, as Queen Elizabeth herself descended through Anne Boleyn from the same stock, we may reasonably conclude that this display of a common ancestry with the reigning queen was purposely adopted to show Mary that she had no chance of shaking her keeper's loyalty. Round the top of this apartment there still remain the fastenings on which tapestry was suspended over the walls; and in the doorstead are the strong crooks, on which a heavy door for security was formerly hung. The small contiguous chamber was the queen's bedroom. The size of the larger apartment is 18 ft. 6 in. by 13 ft. 6 in., and it is 8 ft. 6 in. high. The turret staircase leads to the lands through the cupola entry-box; and there, we may suppose, the unhappy captive was allowed to breathe fresh air, and see the hawking and hunting in the park below, during her occasional visits here, for refreshment from the closer confinement at the castle.

For the view we have given (which shows the building as restored under the direction of Messrs. Hadfield & Son) we are indebted to the Rev. Alfred Gatty, D.D., who has just now published an interesting little history of Sheffield, "the capital of steel."

The gradual progress of Sheffield to the rank of a commercial town, largely contributing by its productions to the general prosperity of the country, is shown, as well as the reputation rapidly gained after a certain time by the goods produced there. Nevertheless, Mr. Gatty does not omit to quote Fuller, who says:—"Nor must we forget that though plain knife-making was very ancient in this country (Yorkshire), yet Thomas Mathewson, on Fleet Bridge, London, was the first Englishman who gave it *élégance*." (1563) made fine knives." London had an earlier and higher reputation than Sheffield for the variety and excellence of the articles manufactured. The common knife, first known as a "whittle," was the staple production at the latter place, and up to the middle of the last century it would seem a Sheffield cutler was but a poor man. All this is now changed, and in Mr. Gatty's book it is agreeably set forth. The volume is appropriately dedicated to Sir John Brown, chairman, Mr. Mark Firth, vice-chairman, and the other members of the first Sheffield School Board.

WILKINSON'S VERTICAL STONE RUBBER.

The accompanying engraving illustrates, to adopt the language of the specification, "a new and useful design for a rubber for cleaning vertical surfaces of stone work." It is the invention of Mr. J. Wilkinson, clerk of the works at St. Paul's Cathedral, and it has for its object the cleansing of vertical surfaces of stone work. Its speciality is, that it is capable of carrying on the work continuously instead of at intervals, as in the old method; in the latter the sand and water supplied by the operator being thrown against the wall to be cleaned, but in this they are both supplied from a receptacle or box above the rubbing-stone. The instrument is also adapted to performing the finishing to new ashlar work of any description.

In describing the drawings we shall quote the specification at length, as issued from the Registry Office, to which the drawings are made to conform:—"In the drawings the same letters always refer to the same parts in the various positions indicated in the figures: thus *a* is the frame of the rubber, *b b* are projections bolted to it, between these is wedged the rubber stone *c*, by means of the wedges *d d*; at the back of the frame is fixed a handle, *e*; *f* is a box to contain sand and water: this box is dropped on to the top of the rubber frame, and is held there by the side pieces *g g*. A horizontal partition, *h*, is fixed midway in the box so as to separate the

* Sheffield: Past and Present. Being a Biography of the town during 800 years. By the Rev. Alfred Gatty, D.D. Vicar of Ecclesfield. Sheffield: Rodgers, London: Bell & Son. 1873.

sand from the water. Fine perforations are made in the partition to allow the water to pass to the sand; over the perforations is placed a flat board, *k*, with a stem on it. The height of this board over the bottom of the water-chamber is regulated by means of the screw, *l*. Part of the front of the sand compartment of the box is open so as to allow the sand and water to run on to the stone, *c*, which is bevelled to allow the sand and water to get between it and the wall to be cleaned.

The whole apparatus is suspended by a rope over a pulley so as to touch the wall. At the other end of the rope is a counterpoise weight; the apparatus can then by means of the handle be rubbed in any desired direction, either from side to side, or up and down."

The little figures marked *y* and *z* show the side and back views of a rubber for cleansing the internal angles where the larger rubber cannot be used.

Whether the instrument is used for cleansing the surface of old walls, or for the finishing of new ashlar work, in either case it performs the work both cheaper and more effectually than in the old hand-rubbing. Ordinarily the saving may be reckoned at about fifty per cent. over the old method; but when used to clean walls that have been painted, the cost is still further reduced, as the aid of chemical ingredients is dispensed with.

The contrivance has been most largely and successfully used by Mr. Wilkinson in the cleaning down of the walls internally of St. Paul's Cathedral, under the supervision of Mr. Penrose, the surveyor to the fabric.

LONDON AND COUNTY BANK, ISLINGTON.

The new building for the Islington branch of the London and County Bank has just been completed, within a few doors of the old premises, on the site of Nos. 4 and 5, Upper-street; Mr. Chancellor being the architect. Messrs. Hill & Sons, of Charlton Works, Islington, were the contractors.

The site of the new premises, which are large, and of irregular shape, extends back with a small frontage, in Parkfield-street, Liverpool-road. The new premises include,—

On the ground floor,—The bank-room, 54 ft. by 26 ft., with circular ends (on plan), lighted by a ceiling-light at the rear, as well as from the front; the space for the public, paved with Staffordshire tiles; the walls, dado, and pilasters finished in Parian cement, and the ceiling enriched. Also manager's room and waiting-room at the rear of the bank, both lighted from above; with lavatories, and so forth.

On the basement,—two strong rooms, and bullion-room between them, with corridors each side, running from front to back, paved with stone; the walls and ceiling of strong rooms and bullion-room, lined with white glazed bricks, built with hoop iron in cement; also a reference-room and cellars.

Above the public room,—three floors approached from the front, and distinct from the business part of the premises, as private apartments for resident clerk.

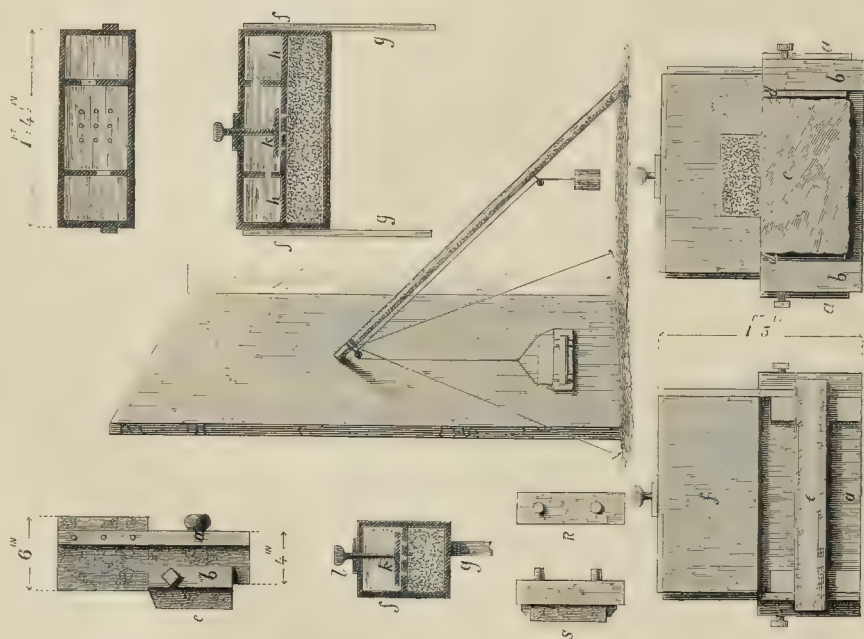
The facing of the front consists of Aberdeen granite plinth, rusticated pilasters of Forest of Dean stone to ground floor; door-heads and cornice of ground floor of Ancaster; with red Mansfield frieze. Above this the rusticated ashlar is of Red Mansfield stone to top of two-pair floor, and Forest of Dean stone above. The cornice of second floor is of Ancaster, supported by pilasters, with Dean stone shafts, and Ancaster caps and bases; the cornice at top is also of Ancaster, supported by red Mansfield pilasters, and the blocking to the chief cornice, window dressings, chimney stacks, and returns of building are all of Ancaster stone.

The floors of public room and floor over same are of Homan's fireproof construction. The stone-carving was executed by Mr. Bradford. The lift for books is by Messrs. Lawrence. The fittings to the bank are of Spanish mahogany, in keeping with the general design, giving accommodation to four cashiers, and about sixteen posting clerks, and are lighted from brass polished gas-standards, fitted with ornamental desk-railing.

The land at the back is utilised by placing a four-roomed cottage as a residence for the messenger, connected with the front premises by a small lobby. The total cost of the bank, with fittings and gasfittings, will be about 7,000l.



QUEEN MARY'S STATE PRISON AT SHEFFIELD MANOUR.



WILKINSON'S VERTICAL STONE RUBBER.

R. P. Whitlock.



THE LONDON AND COUNTY BANK, ISLINGTON.

OPENING OF THE BRADLEY HALL, MARLBOROUGH COLLEGE.

The largest gathering of Old Marlbornians ever witnessed within the walls of the College buildings assembled to do honour to the Rev. G. Bradley, D.D. (Master of University College, Oxford), by participating in the inauguration of a hall, built as a memorial of his services during the lengthened period he was connected with Marlborough, which, with its 560 boys, now stands in the foremost rank among the great public schools of this country.

Mr. Street, R.A., architect, furnished the design. The contractors for the works, which involve an expenditure of 3,000l., were Messrs. Dove, Brothers, who commenced the hall last May. It occupies a convenient site nearly opposite the College Chapel, and corresponds in its style and material with the older portion of the College buildings, all of which, with the exception of the chapel, are constructed of brick. The entrance to the hall is of moulded brickwork, with carved stone head, supported by carved trusses. In the north gable is a moulded stone tablet, with the monogram of the teacher in whose honour the structure has been reared. The roof is open and lofty, covered with red tiles, and supported by six moulded principals, with circular moulded ribs springing off stone corbels. The ceiling is divided into panels, formed with moulded wood braces. On the east and west sides there is a large carved oak cornice, supported by carved trusses. The length of the interior is about 60 ft., and the width 30 ft. Moulded framework, to the height of about 9 ft., extends around the whole of the room, and is stained and varnished. There are on the west side of the hall two carved and moulded fireplaces, 15 ft. 6 in. in height, and about 8 ft. in width. Over one of the fireplaces there will be an inscription in honour of Dr. Bradley, and above the other some lines from Emerson. Around the hall are hung a series of engravings, the gift of Mr. Lucas. There are ten large moulded windows. The hall is lighted from the roof by eight suspended brass coronas, with three burners in each, the gasfitting having been carried out by Mr. Phelps, of Marlborough. The clerk of the works was Mr. Chas. Bosley.

WESTMINSTER BOULEVARD: THE COST.

MESSRS. TEVLON & CRONK, surveyors, in the official estimate that has been deposited for this project, state the cost at 4,095,500l. Parliament in its wisdom has divided private Bills into two classes, and prescribes that upon Bills of the first class 4 per cent. of the estimates, and upon Bills of the second class, with exceptions, 5 per cent. shall be deposited with the receiver of the Court of Chancery on or before the 15th of January, as one of the essential conditions to a petition for a Bill being entertained by Parliament. First-class bills embrace, burial-grounds, charters, churches, chapels, paving, lighting, watching, police, letters-patent, poor-rates, fisheries, ferries, and a variety of other subjects. The second-class Bills include: canals, railways, docks, embankments, harbours, streets, tunnels, &c. The Westminster Boulevard comes clearly under the second class, but is exempted from the higher rate of deposit, and the deposit that will be required will accordingly amount, at 4 per cent, to 163,820l. Whether this large sum will be forthcoming at the proper time remains to be seen.

ARCHÆOLOGICAL REMAINS OF NORSEMEN IN SCOTLAND.

MR. J. S. PHENE, F.S.A., has just opened a tumulus at Largs, in Scotland, which has never before been opened, but which he believed to be a monument of the great battle fought in 1263, between the Scots and the invading Norsemen.

"The Sagas," says Mr. Phene, "treating of the battle of Largs, state that King Hakon (Iraoc), the day after the battle, buried his dead on the coast in the neighbourhood of a church. The Danish antiquary, Worsaae, describes two mounds as, to him, the most remarkable in Scotland, in one of which the Scots, and in the other the Norsemen, were buried after a battle. His dimensions agree with those of the mound I have just examined, and he states further, that the one forming the grave of the Norwegians is close to the shore, which exactly agrees with the one in question, the mound of the Scots being

some distance inland." "When the centre of the mound was reached it was one mass of fat, unctuous earth, dotted all over with red and black, formed by pieces of burnt clay and charcoal, many light-coloured patches from unburnt clay being also prominent. The clammy and adhesive nature of the soil was such that, but for sections making a clean passage through all the materials, these would not have been observed. Lumps of apparently simple soil, on being out or broken, spread out into fragments of deep black from charcoal, or bright red from the fractured clay. This made minute investigation very difficult, and frequent and tedious washings of the soil became necessary to find out what was within it. A close inspection of the sections produced new results; bright flakes of green turned out to be bronze or copper plates or fastenings, probably remnants of armour; hard, white, and soft, brownish-grey substances, in curves and lines, turned out to be bones; some quite calcined, others only partly burnt, which latter lost all form as soon as touched, and could not be separated without destruction from the thick tenacious earth in which they were embedded. With the exception of some human teeth, which explained the class to which the bones belonged, the only reliable evidences (the calcined bones, without which the remainder would have been very inconclusive) were preserved in an unusual and unexpected manner. Many of these particles of bone were found adhering to, and slightly embedded on the surfaces of the fire-hardened clay, which formed, in short, tablets of history, on which the facts of the formation of the mound were recorded as graphically, though not in the same way, as on the lettered clay tablets from Mesopotamia. The king, Haoc, ordered that the ships stranded on the shore on the 1st and 2nd of October, 1263, at the place where the battle raged, should be burnt. Here, then, is the explanation of the whole affair. The reason why so few remains of armour are in the tumulus is clear; while the bodies, burnt, probably, to prevent molestation, or search for arms or plunder, were heaped pell-mell with the fragments of the burning ships, which charred and burnt the bones and the clay, lumps of which had been mixed with sand and gravel in the hurried collection of materials for the tumulus, which was probably then finally heaped up. The grain of the oak was quite visible in the charred wood, and the calcined bones were in many instances close to the burnt clay, which had probably concentrated the heat more intensely, and retained it longer than the looser soil, and so caused the preservation of the bones near it."

COMPETITION.

A NEW chapel is about to be built in Southport, and the following gentlemen have been invited to submit designs in competition. Mr. William Dawes, Manchester; Mr. Hill, Leeds; Messrs. Mellor & Sutton, Southport; and Mr. Sutton.

MASTERS AND MEN.

Lincoln.—The stonemasons have given notice for an advance of 3s. 2d. per week in their wages, to take effect on the 1st of April next.

Alloa.—At a meeting of the operative joiners of Alloa, Tillicoultry, and Dollart, it has been resolved to send in a petition to their employers requesting an advance of 1d. per hour on their wages, which are at present 6d. per hour—the advance to take effect on 13th April.

Alleged Intimidation by Unionists.—Summonses have been issued at Burnley against the president of the Miners' Amalgamated Association; the miners' agent; sub-treasurer of the association; general secretary; and several other prominent officials connected with the Strike and Look-out Committee of Burnley, for conspiring to induce certain workmen to leave their work. The men in question are chiefly Cornish men, and the Miners' Union have paid their fares to their homes.

Liberalism to Employers.—On the retirement of the elder members of a Worcester firm from business, they called together their clerks and workmen (118 in number), and handed to each a parting gift. For every year that a man had been in the service of the firm he was paid 1l. Several received 20l.; and one, who had been in their employ forty-two years, received 42l. In this manner 1,173l. were distributed in "New Year's Gifts."—On Saturday afternoon, after

entertaining about seventy of his employees, Mr. Allcroft (of the firm of Dent, Allcroft, & Co.), generously presented them with cheques varying from 50l. to 250l., according to length of service. To those who had been with him twenty-five years he presented a cheque for 250l.; twenty years, 200l.; fifteen years, 150l.; ten years, 100l.; and five years, 50l.

PAYMENT FOR QUANTITIES.

SIR,—Will you give me a little advice in the following:—

A private house in the county of Middlesex some time since went under alteration and repairs. It was open for competition,—several builders competed.

A copy of drawings and bill of quantities, got out by the architect's clerk, lay at the house for inspection only.

One item mentioned in the quantities (that 2½ per cent. was to be paid to the architect for quantities (which, by the way, were very deficient).

No contract was signed on account of there being two clauses in same which the builder objected to, and it never was signed (the job was finished).

Note, no bill of quantities was supplied, but it merely lay for inspection. What I want to know is, Can the architect claim the 2½ per cent. before mentioned?

A GROCER.

* * Although the matter seems somewhat irregular, the contractor accepted the terms by sending in tender on the basis set forth. If the quantities could be proved defective he would have a remedy.

PRIZES OF THE PLASTERERS' COMPANY, 1874.

THE Worshipful Company of Plasterers, London, offer prizes to be competed for by students in metropolitan and provincial schools of art in connexion with the Science and Art Department.

For the best model of a group of flowers, foliage, or fruit, in plaster, 7l. 7s. will be given, and for the second best, 4l.

For the best original design drawn in pencil or monochrome, and capable of being executed in plaster, in low relief, for the decoration of one panel forming a portion of the side of a room 18 ft. in height, 8l. 8s.; and for the second best, 5l. 5s.

The designs must be sent to the Science and Art Department in April, 1874.

BONDING COURSES.

SIR,—Your correspondent "X" (see *Builder*, Dec. 13th, 1873), raises certain questions, and refers to some remarks of mine; I may therefore state what I conceive to be the nature of the bonding course as used in ordinary buildings.

When a wall is of ample thickness, stands upon a firm foundation which is not likely to be interfered with, has no very large or irregularly placed openings,—and is not subject to great irregularity of load or to excessive vibration, I do not see the necessity for any special bonding courses; for the whole of the wall, being composed of good bricks and mortar, is so thoroughly bonded into one mass that immense force would be required to cause any fracture in it. Our bricks, however, being as much as 3 in. in thickness, have as little hold one on another in the direction of the wall's length as 2½ in., and, where all the conditions above named do not exist, no great force is required to produce a crack, either by drawing the bricks apart, or by breaking across the courses from joint to joint; and in order to guard against this result, we must consider what the danger is in each case.

The Romans used frequently stones measuring 4 in. or 5 in. square on the face of the wall,—a worse shape than our 9 in. by 4½ in. brick,—and introduced bonding courses of tiles about 11 in. by 1½ in., a better form than our brick for this purpose. They also used alternately different classes of masonry,—as herring-bone, rubble, and ashlar,—the effect in each case being, that every slight tendency to fracture arising in one course should be checked at the point where the crack would have extended into the part where the different kind of masonry commenced. Until recently it was common to introduce bonding timber in brick walls with the same object, its

allow the water to run off. The surface of the road scraped, and cleansed of the mud, and well watered in summer, and the whole in a finished state before the traffic is allowed to wear upon it. A small staff of labourers would be required to keep the road in repair, fill up the hollows, and remove the snow in winter.

With the aid of such improvements as modern science might suggest, I do not see why such a road, for firmness, comparative cleanliness, and freedom from noise and slipperiness, should not realise most, if not all of the essentials of a useful and durable roadway. At all events, the experiment could easily be tried, without, I think, much fear of failure, on some of the roads or streets under the control of the Commissioners of Sewers, or the Metropolitan Board of Works.

J. H.

MANCHESTER SCHOOL OF ART.

FROM the report of the committee of this school, presented at the annual meeting held on the 23rd ult., we learn that the school has again been successful in securing a proportionately large number of prizes from the Science and Art Department, and the Princess of Wales's Scholarships of 25l. and 11l. respectively, have both been awarded to students of this school. These scholarships were founded for the two female students who might take the highest prizes of the year in the national competition of all the schools of art. In mentioning this, the committee desired to record their satisfaction at the manner in which the school is conducted by Mr. Muckley and the assistant masters, to whose unceasing care and attention, they say, the increasing success of the school is entirely due.

THE DWELLINGS COMMITTEE OF THE CHARITY ORGANISATION.

AT the last meeting of the council the report of the committee appointed to consider what action should be taken to give effect to the recommendation of the Special Dwellings committee, was considered.

Sir Charles Trevelyan moved the adoption of the report. The committee thought it very important to have their case stated fully and clearly to Parliament and the public without delay. They therefore recommended that a Bill should be prepared, making it the duty of the Corporation of the City and the Metropolitan Board of Works to prepare comprehensive schemes of improvement analogous to those planned and carried out by the municipalities of several of the large provincial towns, and that this should be introduced into the House of Lords, with a view to its being referred to a committee of that House. Interfering with fever-dens had hitherto been no part of the work of the Metropolitan Board.

Mr. A. H. Hill, Mr. Willis-Bund, Mr. Wightman Wood, and Mr. J. R. Holland, thought they should try to get others to take the question up, and to interest leading men in the subject.

Lord Lichfield said that no one felt the importance of the work of the Dwellings Committee more strongly than he did. He agreed with their recommendations, and would be glad to see them pressed on Parliament. But the council were not the right body to take up the question in the way proposed. They might spend their whole time on it for months, and after all effect nothing. A Royal Commission was required, but it would be almost as difficult to obtain this as to pass an Act. He was in favour of adopting so much of the report as related to presenting a memorial to the Government; they could thus point out how essential it was that the matter should be dealt with.

Sir Charles Trevelyan urged, in reply, that the business of the society was to improve the permanent condition of the poor, and this could only be done by operating on the causes that had depressed their condition. It was a fallacy to say that all other work should be postponed till the society had perfected its own machinery. This would stop all progress.

After some further discussion the following amendment was moved by Mr. Wightman Wood, and carried:—

"That so much of the report of the committee as refers to the memorial be adopted."

It was resolved, on Mr. A. H. Hill's motion,—"That it be referred to the joint committee to prepare a suitable memorial for presentation to the Government, after consideration by this council."

CABMEN'S RESTS.

FOR a long time London cabmen have desired, and we as well as others have tried to obtain for them, some other resting-place in the ranks than their own cabs or the public-house. Birmingham, Derby, and other towns have for some time given accommodation to cab-drivers in the shape of a structure of wood and glass; and it has been proposed that the same shall be done for London. An application was made last week on the part of the Cabdrivers' Benevolent Association to the Board of Works of St. Margaret and St. John, Westminster, for permission to erect at the head of Sloane-street a small structure of glass and wood for shelter to cabmen when on the rank in bad weather. The honorary secretary to the association stated that the building proposed would not be more than 25 ft. long, by 9 ft. wide, and 10 ft. in height; that the structure would be ornamental in design, and supplied with gas, &c. He stated that Colonel Henderson was of opinion that such "rests" would be of great benefit to cabmen, and reminded the Board that in London at present the only shelter the cabman had was his own cab or the public-house. The Board, after consulting, expressed their sympathy with the object the society had in view, but regretted that in the present state of the law they could not sanction the erection of any such structure, and that, should one be constructed, the responsibility would rest with those who erected it. Colonel Henderson submitted the question to Messrs. Ellis & Ellis, and they are of opinion that the statutory powers which the Colonel has of appointing stands for hackney carriages do not extend to the proposed erections, and they think he should not in any way authorise or sanction them. At the same time they cannot find that any duty is thrown upon him of proceeding against those who erect them. Proceedings, if taken at all, would probably be taken under the Highway Acts.

THE UTILITY OF ART.

FINE ART was the subject of one of the courses of free lectures now delivering at the Leicester Museum. The lecturer was Mr. Frederick Burgess. After dilating on the real usefulness of each department of Fine Art, on the necessity of painting and sculpture as well as poetry and oratory to the true and wholesome development of the mind, he said, according to the *Bible*, *Man was made*, that the fact was Fine Art was for everybody, as much as food and clothing. So long as a man possessed a heart to feel, an imagination to conceive, and senses to perceive, so long would Fine Art be necessary to him. All enjoyments, sufferings, passions, and emotions found expression through this medium, and not the expression for the moment only, but each of these, however evanescent in itself, had at one time or other been written by art in permanent characters. And inasmuch as Fine Art had to serve the actual wants of man in the present, and not to express the wants of men long since gone, it was necessary that it should be the spontaneous outgrowth of the present time. This, he thought, was much overlooked. To reproduce the things of the past ages, to copy the great artists, and sculptors and poets, was to mistake the object of Fine Art. These men deserved to be studied, but only so far as the study facilitated the study of nature and the training of the heart, head, and hand. To do justice to Fine Art they must study not alone the great men who had preceded them, but that which these men studied, which was nature. They copied Grecian and Roman architecture, forgetting that these styles were developed from the circumstances of the countries in which they were matured, and that they might be wholly unsuited to the requirements of Fine Art, which was to minister to the wants of the present. The problem of Fine Art, then, was to reach the soul through the body. It offered to the senses forms, colours, sounds, words, so arranged that they excited in the soul, concealed behind the senses, the emotion of beauty.

Memorial of Charles Dickens.—The executors of the late Charles Dickens have, with the sanction of the Dean and Chapter, erected a mural tablet in Rochester Cathedral to the memory of the deceased novelist. The tablet is of brass, mounted on black polished marble.

CHURCH-BUILDING NEWS.

Backwell.—The parish church of Backwell, which is dedicated to St. Andrew, having been restored and renovated, has been re-opened for divine worship. The church after its accommodation for 350 persons, and consists of nave, north and south aisles, chancel, vestry, and tower. The roof of the nave has been taken off, and renewed in English oak, the original design being strictly adhered to. The aisle roofs, which are of oak (pannelled), have been repaired. The chancel roof, which is entirely new, is of oak, divided into panels, with carved bosses fixed on moulded ribs. This roof is covered with stone tiles; all the other roofs are covered with lead. During the progress of the works it was found necessary to take down and rebuild the walls of the north aisle. The modern buttresses and vestry, which so much disfigured that side of the church, have been entirely removed. The old stonework has been repaired, and the tracery of the windows (which in many cases had been almost entirely destroyed) has been made good, and restored. The porch, as well as the nave and aisle passages, is laid with tiles. The font is of Painswick stone, carved. The pulpit is of oak, carved, the front in five panels, with grained canopies over the same, and filled in with tracery, terminating with carved brackets and finials; the base is of stone, moulded with tracery panels on three sides. The seats are of pitch pine, and are furnished with carved poppy-heads to the fronts against the cross passages. The choir-seats in the chancel are made of wainscot oak; the bench-ends are moulded and filled in with carved portions alternately. The poppy-heads are carved, and of varied design. The south altar piscina have been restored. The floor of the church has been considerably lowered, and the bases of the nave piers, which were hidden by the floor, are once more exposed to view. The old level of the chancel floor has been retained. This alteration has given a much more imposing appearance to the interior of the church. The edifice is warmed by hot air, with Messrs. Haden & Sons' apparatus. The oak chancel screen has been renovated and repaired, and the carving, where destroyed, renewed. The work has been done by Mr. Williams, of Bristol, under the direction of Mr. G. Street, architect. The cost of the restoration has been about 5,000l.

Beeston.—St. Mary's Church, Beeston, which has been closed for some months, has been re-opened after undergoing a restoration. The exterior of the church has been renovated, and a new porch erected at the south-west corner of the church. The principal alterations, however, have been made inside. The gallery, which ran across the west end, has been removed, together with the dilapidated pews, and replaced by pitch pine open benches throughout. A new pulpit and reading-desk have also been added. The floor has been laid with encaustic tiles; ornamental altar-rails and gas-standards have also been fixed. The decorations, which are in the fifteenth-century style, have been executed by Messrs. Powell Brothers, of Leeds, and have been carried out as follows:—The flat roof has been laid out in panels, and in the centre of each is an ornamental device, the one immediately over the altar bearing the sacred monogram I.H.S. The colours in the roof are dull blue and chocolate on a stone ground. The walls of the body of the church are treated in buff and grey, lined out in courses of ornament in chocolate and sage green, with the addition of a little gold. Within the altar-rails the decorations are of a more elaborate and costly nature. A green dado, sprinkled with ornaments in white and pink, occupies the lower portion of the walls at each side, and on the east wall are the Commandments, Lord's Prayer, &c. Above this the walls are divided into a series of panels, each containing a conventional treatment of water and the water-lily, with various Scriptural texts. Over the altar is placed a painting of the Last Supper. The joiner's work has been done by Mr. W. Pinder, of Holbeck, and the tiles have been laid by Mr. Taylor, of Leeds.

Ripon.—The church of the Holy Trinity, Ripon, has been reopened. It was built about the year 1826, at a cost of 13,000l. Sitting accommodation was provided for 1,000 persons. The increased population at the north end of the city has augmented the congregation attending the church, and consequently more room was required. To gain this the high-backed pews have been removed, and open seats substituted, and

the organ gallery at the west end has been enlarged. Some attention has also been paid to decoration. The gallery fronts have undergone extensive alterations, and two new porches have been added to the east entrances. The east window, which consists of three lancet lights, has been filled with stained glass by Mr. H. M. Barnett, of Newcastle. A new hot-air heating apparatus has been supplied by Mr. Grundy, of Manchester; and the gaslights, which previously were attached to chandeliers in the centre of the edifice, are now carried round the caps of the pillars. Mr. H. E. Bowen, Harrogate, has been the architect; Messrs. Raworth & Co., Harrogate, the contractors for the stonework; Messrs. Troes & Son, Ripon, for the stonework; and Messrs. Fortune, Harrogate, for the ceilings.

Books Received.

The Architectural History of Exeter Cathedral. By PHILIP FREEMAN, M.A., Archdeacon and Canon of Exeter. London: Bell & Son. ANTHONY D. FREEMAN, by expanding two lectures delivered by him in Exeter, has produced a compendious and valuable Architectural History of Exeter Cathedral, not a compiled and condensed version of others' writings, but a fresh account of the building, deduced from its architecture, and the records remaining. The ancient fabric rolls have been laid under contribution, and, efficiently handled, have yielded valuable information.

A photograph of the Foundation Chapter of Exeter Cathedral, placed by Edward the Confessor on the altar of the church of St. Peter at the enthronement of Leofric, the first bishop, a most interesting document lately found, is amongst the illustrations.

The Child's History of Jerusalem. By FRANCIS ROUBILLAC CONDER, C.E. London: W. Leister & Co., Ludgate-hill, 1874.

HAPPY CHILDREN! Lucky boys and girls of the nineteenth century, to have books written for you, which while they interest and amuse, make you wiser than your fathers. The book before us is an example in point. Mr. Conder has told the history of the Holy City, from the date of the earliest account to the present time, and in doing so has conveyed no small knowledge of some of the most salient points in the history of mankind. The author has well studied the subject, and has accurately made his outline, though general, so precise, that many children of the largest growth will find their advantage in reading it. As a school-reading book nothing better can be named.

Miscellaneous.

Cubic Contents of a Ton.—Few persons have an idea as to the amount of coal that can be stowed in a given space. Manufacturers think they have not enough room, even though they may be offered a bargain. We therefore give an example of the manner in which it may be figured up. A shed or room, 15 ft. high, 18 ft. wide, and 30 ft. long, will hold 200 tons of anthracite coal, and perhaps 10 tons less of Cumberland. Thus, $15 \times 18 \times 30 = 8100 \div 40 = 202\frac{1}{2}$. The average number of cubic feet required to stow a ton of coal is as follows:—

<i>Bituminous.</i>	
Cumberland, maximum	42.3
" minimum	41.2
Duffryn (Welsh)	42.99
Cannel, Lancashire	46.37
Pitburgh, Pa.	47.08
<i>Anthracite.</i>	
Peach Mountain	48.06
Forest Improvement	41.07
Beaver Meadow, No. 5.	39.08
<i>Coal.</i>	
Natural of Virginia	48.03
Pitburgh	70.09
Charcoal	104

It is usually stated that a ton of coal "in the hill" measures about a cubic yard, or 27 cubic feet. A prominent retail dealer in Philadelphia informs us that from many years' experience he finds the cubic contents of 2,240 lb. of hard Lehigh coal to be a little over 36 ft.; an average Schuylkill W. A., 37 ft. to 38 ft.; Shamokin, 38 ft. to 39 ft.; Miller, Greaf, & Co., Lorberry, nearly 41 ft.—*Saward's Coal Trade Circular, U.S.*

Cars, Omnibuses, and Velocipedes worked by Spring Power.—Such an arrangement of powerful springs as would work street vehicles was one of those improvements suggested in the *Builder* for behoof chiefly of workmen with velocipedes, but applicable also to heavier vehicles. The London correspondent of the *Scotsman*, we observe, announces an invention of this kind. There is, he says, every probability of a new motive power being introduced other than steam, which will do away with the necessity for horses. He had seen the working models and drawings of an invention by which tram-cars can be propelled by simple mechanical means alone, without horses at all. The motive power used is an arrangement of powerful springs encased in cylinders like watch-springs, on a very large scale, the application of which to the existing tram-cars is extremely simple and easy. These springs are to be wound up by small stationary steam-engines at each terminus of the line, and when so wound up will propel the cars, even with stoppages, for a longer distance than any existing tramway-line extends. The models, he adds, are on a sixth scale, and work perfectly, the action being reversible, and the application of the brake power entirely satisfactory. The springs are now being fitted to full-sized cars, and the new invention, which is patented, will be tried very shortly on a tramway-line at Greenwich. Many competent engineers have expressed themselves sanguine as to the results. The springs can be made of almost any strength, and will be widely applicable in many other ways besides the propulsion of tramway-cars.

Wool Exchange, London.—A large range of buildings and offices is being erected in Coleman-street, in the city of London, and rapidly approaching completion, with the object of supplying a want long felt by the mercantile community,—a Metropolitan Wool Exchange. The exchange itself consists of a large hall, surmounted by a glass dome. This has been leased for twenty-one years to the woolbrokers of London. The premises extend from Coleman-street right through to Basinghall-street, and will include the whole of Sambrook-court. The new erections comprise numerous salerooms and offices, both for dealing in wool and general business, and will become a central gathering-place for those interested in all branches of commerce connected with the wool trade. This will be a convenience to purchasers from the West Riding of Yorkshire, and also from the cloth-manufacturing districts of Stroud, Westbury, and other parts of the West of England. The central hall contains seats for the accommodation of 600 persons. The City is mainly indebted for this addition to its mercantile facilities to the public spirit of Colonel Angus Croll, formerly Sheriff of London and Middlesex. The growth of the wool trade of Great Britain of late years has been enormous. The increase in our exports of manufactured woollen goods of all kinds has also prodigiously increased.

Leeds Public Library.—The annual report states that the Reference Library was open to the public 809 days, during which period 28,049 volumes were consulted, and 65,468 visits made to the reading-room. During the year 3,187 volumes have been added to the stock, making a total of 18,500 volumes, which includes 3,000 volumes of specifications of patents, and nearly the same number of Parliamentary blue-books. The Central Lending Library still continues unrivalled in its popularity, and table 3 shows that the whole stock has been turned over 20,343 times during the year. It has been open 300 days, the issues each day averaging 800 volumes, and reaching a total of nearly a quarter of a million, being one volume to each man, woman, and child in the borough. With the very limited area at the service of the public (only 36 square yards), the means of supply are, even now, taxed severely, and should any great increase occur, it would be absolutely impossible to attend to the wants of the borrowers. A table shows that the contents of the Juvenile Library are turned over nearly once a week, fiction once in twelve days, miscellaneous literature once in three weeks, voyages and travels once a month, science and art about the same, biography and history in forty days, and theology in fifty-four days. The general stock since the last report has been increased by 4,142 volumes.

Local Taxation and Local Government.—On this subject Mr. Frederick Hill will read a paper, at the Rooms of the Social Science Association, on Monday next, the 12th inst. Mr. Newmarch, F.R.S., will preside.

Death of Mr. William Telbin.—This distinguished scenic artist, who for the last thirty years has enriched our theatres with works of pictorial art, has passed away with the year just ended. Mr. Telbin died on Christmas-day, at his residence, 8, Winchester-road, St. John's Wood, in his 61st year. He had been an invalid for some time, and had, indeed, never recovered the depressing effect of his son's death, which occurred through an accident in the Alps by a fall of an avalanche, about six years ago. Among the artistic achievements by which the name of Telbin will be long remembered, may be mentioned the original act-drop of the Princess's Theatre in 1842, the act-drop imitative of white satin, painted for Mr. Macready at Drury-lane, the Overland Route, painted in association with Mr. Thomas Grieve for the Gallery of Illustration, and the panorama of the Holy Land, exhibited a few years since at the Haymarket Theatre. The panorama of Killarney, now being exhibited at the Adelphi, is another proof of his merits as an artist.

Mineral Produce of the United Kingdom.

—Mr. Robert Hunt, F.R.S., the keeper of the Mining Records, will shortly have his statistics for the year 1872 before the public, and he has favoured the Press beforehand with a few facts therefrom. In his summary of the mineral produce of the United Kingdom he states that there were 3,001 coal-mines, producing 123,497,316 tons, of the value of 46,311,143l., and 266 iron-mines producing 16,584,857 tons of iron ore, of the value of 7,774,874l. The metals obtained from the ores, he finds, were valued at 22,070,447l. There were 6,741,929 tons of pig iron made, which was worth 18,540,304l. The increase in total value over 1871 was 12,871,523l., due chiefly to the additional cost of "getting" each ton of coal. The increase in the consumption of coal at our ironworks has been very small during the year 1872. Mr. Hunt computes that 51 cwt. of pig iron are used for all purposes for each ton of coal iron produced. The quantity used in 1872 would thus be only 17,191,918 tons.

Co-operation amongst the Million.

—Returns were received in 1871 from 746 Co-operative Societies, the members of which numbered 267,964. Their share capital at the end of 1871 was 2,305,951l.; loan capital, 215,553l.; capital invested in other industrial societies, &c., 145,946l.; reserve fund, 67,722l.; value of buildings, fixtures, land, &c., 928,194l.; liabilities, 2,866,318l.; assets, 3,025,567l.; cash received for goods sold during the year, 9,439,471l. The total number of co-operative societies in the United Kingdom is from 1,200 to 1,300, and their membership must be considerably above 400,000. If those co-operative societies which have sent in no returns are doing as much business proportionately as the above 746 societies, the value of goods sold by co-operation annually must be from 16,000,000l. to 17,000,000l. Nearly all the members of co-operative societies are working men.

The International Exhibition of 1876 in Philadelphia.

—The Hon. Hamilton Fish, the Secretary of State for the United States, has officially notified the Hon. A. T. Goshorn, the director-general of this Exhibition, that the Governments of the German Empire, Belgium, Ecuador, Mexico, and Hayti have decided that those countries shall participate in the Exhibition. Prince Bismarck recommended to the assembled representatives of the several states composing the German Empire the appointment of a commission from each of those states, and of a plenipotentiary to reside at Philadelphia to represent the empire. This suggestion has been adopted. The executive consider that European manufacturing nations have in this Exhibition the best opportunity yet presented of extending the markets for their productions. The people of all nations of North and South America will be represented.

Testimonial to Mr. Rupert Kettle.—Mr. Rupert Kettle has several times decided wages disputes in the North of England iron trade and various other trade questions, and his valuable services as an arbitrator are to be recognised by both masters and men. An address, richly illuminated, is to be presented to him by the Cleveland mine-owners and miners for acting as arbitrator between the mine-owners and the miners in June, 1873.

Somerset.—We are glad to hear that a Local Board of Health has been formed for the town of Wellington, Somerset. Mr. E. T. Howard has been appointed surveyor to the Board.

TO MANUFACTURERS OF BUILDING MATERIALS
AND OTHERS

THE Advertiser is desirous of meeting with
any Firm or Firms of good standing who may wish to OPEN
DEPOT in London, or who require to be represented here. Unex-
ceptionable References given and required. Address, 355, Office of
The Builder.

AND IMPROVED to the PLUMBING Good references. —
 reas, J. HARRISS, West-street, Shipston-on-Stour.

The Builder.

VOL. XXXII.—No. 1615.

The Archaeology of Rome.*

VER and anon, in the course of the last few years, the archaeological world has received items of intelligence from Rome relating to discoveries arising out of explorations and excavations made to ascertain the structural features of the Eternal City in its youth—the days of Romulus and Remus, of Corioliannus, Cato, Pompey, Cæsar, Antony and Cleopatra, Horace, Cicero, and other popular heroes and heroines. Apart from the results of the

systematic investigations of the Italian Government, and those instituted by Napoleon III., the most interesting of these scraps of old-world news have been short notices of the progress of the researches of Mr. J. H. Parker, keeper of the Ashmolean Museum. Eight years have elapsed since the first word reached us of his intention to explore the remains of ancient Rome. In this interval he has made a sufficient accumulation of facts to fill two volumes, which he has just dedicated to Mr. Gladstone, and which scholars will find of considerable attraction.

We would not have it inferred that the facts classified by Mr. Parker are all new. On the contrary, his investigations have resulted more in a yield of evidence in favour of the general truth of the testimonies of ancient writers, than in new discoveries. For instance, he finds that Dionysius was literally correct when he said that each block of stone was a load for a cart, for each block of tufo is of a ton weight. The chief merit of his labours in Rome consists in the conscientious reproduction, by photographs, of every ancient fragment of importance. Dark, gloomy, and often dank as is the masonry in question, it has a radiance arising from associations as potent as sunshine, which sets it apart from any other. With this length of *opus quadratum*, we may fancy the eyes of the Sabine women were familiar; upon this *opus reticulatum* glanced Caracacæ, as he marched past it, on his humiliating entry into Rome; or against this *opus Lateritium* the robe of Lucretia may have swept; and so on through almost endless conjectural reminiscences. One of the present volumes relates to the primitive fortifications, the walls and gates, and their historical construction; the second consists of photographs of those remains with short descriptions attached to each illustration. Both are but instalments, probably, of a larger work, but Mr. Parker has, he tells us, purposely, made each section complete in itself, so that if unable to carry out his original idea, some one else may proceed with his undertaking easily, on the plan he has commenced. Fresh information is given in successive appendices, with somewhat puzzling profusion. One chapter has four appendices.

Almost the first step taken by Mr. Parker

resulted in the discovery of the foundation of the principal southern gate of the City of the Kings. He divided Rome into districts, in accordance with the regions of the Regionary Catalogue of the fourth century, and began with the first on the list, the Porta Capena. The site of this gate was unknown; and as nothing could be satisfactorily made out until this was ascertained, Mr. Parker commenced his researches by a quest for it. He relates that he obtained permission to dig, after considerable delay, and by following the line of the aqueducts over the valley, between the Collian and Aventine hills, came upon it in the exact spot where he thought it must be. This early success gave him confidence, besides the clue he required. Further on he heard of a vaulted chamber at the bottom of a well at the corner of the Circus Maximus, and on descending into it, found that it corresponded exactly with the accounts left of the Lupercal of Augustus; and in a cellar he subsequently found what he believes to be part of the great prison of the kings. He then explored a set of subterranean chambers below the great building on the southern slope of the Capitoline Hill, and made them out to be the *Ærarium*, or treasury. On another occasion, when out with his photographer for the purpose of selecting a good view of the mouth of the Clonca Maxima, he discovered, low down among the brushwood, three stone corbels projecting from the bank of the river, above the remains of Pons Sublicius, which were carved into lions' heads, about 3 ft. square, and from the holes in them, had evidently been used for the fastening of chains and ropes when the port was in use, as those on our own Thames Embankment are intended to be; and assisted by the excavations of Signor Rossi, he traced out three lengths of the earliest wall in Rome, or that which inclosed the space mentioned by Tacitus as the Roma Quadrata. But the chief bearing of his researches, as we have hinted, is a general confirmation of the truthfulness of the particulars given by Livy in his first book, and by Dionysius, and of the allusions made by Varro, Vitruvius, and Plutarch. This, perhaps, is as pleasant a result as he could have gathered in the eyes of the classic scholar.

Throughout Mr. Parker refers to Jerusalem and other contemporary cities, for corresponding features and explanations. Thus, the early walls of Rome are found to be of precisely the same character as those of Alba Longa, whence the original settlers upon the Palatine are supposed to have come, and both are found to be provided with a remarkable reservoir of rainwater. Outside the walls of Rome was a *pomarium*, or orchard in the trenches. This feature, Mr. Parker points out, is frequently mentioned in the Bible as usual in the earliest times; and he quotes Deuteronomy, to show there was a special enactment for the preservation of fruit-trees in this position:—"When thou shalt besiege a city a long time, in making war against it to take it, thou shalt not destroy the fruit-trees thereof, by forcing an axe against them; for thou mayest eat of them, and thou shalt not cut them down (for the tree of the field is man's life) to employ them in the siege."

The Roman *Pomerium* is treated of at considerable length. The original meaning of the word was lost in the days of Aulus Gellius, who thought it must have been derived from *post-marium*—the tract or slips of ground immediately behind the outer wall, which, as they could not be built upon, were utilised as a garden. By the time of the Empire the word *pomerium* was used to signify the boundary of the jurisdiction of the city. Only those rulers who had made conquests abroad could extend this boundary, which extension was looked upon as a religious privilege, and was attended by special rites. *Vespasian* tells us that it was not permitted to an emperor to add to the *pomerium* unless he had enriched the state by wresting some portion of

territory from the barbarian. Following this clue, Mr. Parker goes over the ground very carefully from *cippus* to *cippus*, and makes out the successive extensions in a precise manner. Some of the *cippi*, or boundary stones, now found, have inscriptions, which are given.

In an appendix to his chapter on the primitive fortifications, Mr. Parker has collected several interesting facts and comments upon the ancient streets and roads. The streets were originally all made in the trenches of the fortifications, and the roads, when not also in the same situation, were closely connected with them. Strabo, it will be remembered, speaks of the roads, aqueducts, and drains, as among the wonders of the world. To understand the connexion between the roads and fortifications, we must call to mind that each of the famous hills was, at first, a separate fortified village, combined into one city by the later kings by the construction of short *aggeres*, or banks of earth, across the valleys between them. In the trenches left by the formation of these banks there was a road, as a matter of course. In counting over their number, Mr. Parker concludes there would have been one round each of the separate hill fortresses, and one on both sides of each of the connecting *aggeres*. These *foasways* eventually became streets in the time of the Republic and of the Empire, by the erection of houses along the banks. In 1870 four young Roman princes made an excavation near the railway station, and found that the backs of the houses thus built were actually constructed in the bank. The houses they uncovered belonged to a street thus made in the first century of the Christian era. Like all the streets constructed in the trenches of ancient Rome, it was about 20 ft. below the level of the surrounding ground; but the explorations were given up before the width of it was ascertained. Over some of these ancient pavements, 20 ft. below the surface, there have been uncovered second pavements about 10 ft. higher than these, bearing testimony to the truth of the record that new streets were made in Rome in the second century of the Christian era. The old streets were only about three yards wide, and there were frequently steps up the banks from them. Mr. Parker continues,—
"To each of the hills, also, there was a zigzag road, like that now in daily use up to the Pincian. These have been altered into straight streets, with a steep slope at various periods; some of them only in the sixteenth century, under Sixtus V., who made many new streets in Rome, especially the principal street, called the Corso, or racecourse, because the races of horses without riders are held there in the carnival, and the long straight street from S. Maria Maggiore to the Pincian, called by different names." This alteration of some of the old zigzag streets into straight ones has left very insecure foundations for buildings. When the Scottish College was rebuilt, in 1863, the builders had to go down through 40 ft. of artificial soil before they came to a solid foundation, at which level there was an old pavement. No carriages were allowed to be used in the old hollowed out streets. Ladies rode on horseback, or were carried in litters to the gates, where their carriages awaited them.

The section on the construction of the walls to which we have on other occasions referred, is also full of minute particulars. Mr. Parker thinks it easier to read off the date of a Roman building by a glance at its masonry than it is to tell the age of a Mediæval structure by its ashlar work, because the distinctions are much more marked. He holds, we note, the old mistaken opinion that the date of an English building can only be determined by its mouldings; but there are no mouldings to the earliest Roman buildings, therefore the masonry itself must be perused. As the early Romans used the quarries nearest to hand, their buildings are composed of

* The Archaeology of Rome. By John Henry Parker, C.B. Oxford: James Parker & Co. London: John Murray. 1871.

blocks of the local *tufa* laid without mortar. After the conquest of Alba Longa, Lapis Albanus, or *peperino*, from the Alban Hills, was brought into Rome and used for building purposes. As another century passed by, the quarries at Gabii were laid under contribution for *spesone*. Four centuries later the limestone, *travertine*, was brought in or floated down on rafts from Tivoli in large quantities; and, later still, marble was imported from greater distances. "Independently of these building materials, which it is not always easy to distinguish at first sight," Mr. Parker owns, "the construction itself is a sufficient guide, and we can see the difference when it has been once pointed out, between the wide vertical joints of the early period, into which a cane can be thrust, and the closely-fitted joints and well-cut stone of the second period, and the iron clamps, or the holes from which they have fallen, in the third period." The author believes his is the first work in which these differences, together with those of the related work of the empire, have been treated with any attention. But in this particular, he makes rather too large a claim. He is the first author, however, who has illustrated the several kinds of masonry so copiously with photographs. In Roman masonry, the larger the blocks the greater its antiquity. This is the case, too, with regard to the stone-work of Jerusalem. But the rule does not apply to Medieval work; for Norman masonry consists of stones of smaller dimensions than those employed by the Plantagenets and Tudors.

Concrete buildings are no novelty. The earliest example seen in Rome is a lofty wall on the Palatine Hill by the side of the wall of Romulus. The beams of wood have perished that were inserted along the face of it at intervals, but the concrete is still as firm as the hill itself. Since this specimen of the material has proved to be so durable, it is a matter of moment to ascertain the exact process used in its manufacture. Mr. Parker attributes its durability to the facts that the necessary lime was burnt on the spot and used quite fresh; and that the Romans combined with their lime the rough and gritty Pozzolana sand and broken bricks.

We must not pass over altogether without mention an appendix contributed, chiefly, by Mr. Vaux, of Balliol College, on brick-stamps. The products of the potter's art frequently determine the date of a building by their inscriptions. The earliest known example bears the name of Augustus; but the bulk range from the commencement of the second century to the time of Alexander Severus A.D. 233. Mr. Vaux has ascertained that the inscriptions record the name of the consul or consuls of the year in which the brick was stamped, or its own title, or that of the manufacturer, or that of the estate whence the clay was obtained. The marks are generally circular, either in one line or two, running round a central ornament, such as a flower, or animal, or head helmeted; but they are also occasionally oblong. Curiously, the Ashmolean Museum possesses several examples.

Mr. R. P. Pullan contributes a chapter on the details of Roman architecture, in which he remarks that in Rome, as in other cities, at all ages of the world, the purest architecture flourished under the best government. From this point of view he describes the principal remains photographed. We recommend Mr. Parker's work to antiquaries and professional students if not with unquestioning confidence, at least with great praise.

We have reason to know that Mr. Parker has spent large sums in his Roman researches, and it is to be hoped that the public will not let him be a large loser.

PICTURESQUE LABOUR AND MACHINERY.

THE precise position at any particular time of the working, or labouring classes, as they are commonly termed, must of necessity be interesting to architects, and to all who employ, however indirectly, working men. This is interesting, as we say, at all times, but at the present moment it is more especially so, not on account of any particular or important "strike," or dispute, but on the broad ground of the *change* the organic change, that would seem to be now going on in the condition of one particular section of labour: and this the more so from its influence on other portions necessarily consequent on such change in this particular one. We allude to the organic change that is taking place

in the condition of the agricultural labourer, as he is termed, or the agricultural working-man. A few thoughts have occurred to us which may interest a thoughtful reader here and there. It has a bearing, too, on bricks and mortar, and perhaps *fine art*, and is worth at any rate a little cogitation.

It would be curious to note, according to date and place, one after the other, the various degrees of estimation in which the "husbandman," or tiller of the ground, has been held. He is, perhaps, above most others an historic man,—nay, he is yet older than history itself. In the most remote ages we may hear mention made of him, and his praises, and the dignity and importance of his occupation dwelt on in glowing terms.

In the oldest of human records the first man born into the world was a tiller of the ground; and in the most refined, and polished, and artistic of nations, the Greek, cultivation of the earth was an occupation not disdained by the most illustrious of men. How needless to cite instances, for so many are they that to hint at them is almost enough to baffle the keenest memory with the crowd of images which the bare suggestion calls up. Whole volumes of sweet poetry have come into existence written to the music of the pastoral reed, from the earliest of days down to the present hour. We say, and must repeat, the *present* hour, for things are indeed about to change in this department of human doings which bid fair to remove the "husbandman" at least from the range and ken of poetic efforts. The useful, and the practical, and the getting the most out of everything by the shortest and cheapest of methods, is overriding all things, and the word-skill of the poet himself, however keen it may be, must needs fail at last, not from want of power, but from inaccessibility of subject.

The old-fashioned husbandman, or tiller of the soil, the ploughman, the sower of the seed, and the reaper, all so picturesque, and so full of country life and attractiveness, have as it is more than one half of them disappeared, we are told statistically, and in but a few years' time they will and must totally disappear, and make way for the "ploughing engine" driven by steam, the sowing-engine, and the reaping-machine. Six thousand reaping-machines made in one single year by one firm, to do the work of sixty thousand men. Sixty thousand husbandmen and picturesque tillers of the soil turned to other vocations by the practical and unpaintable, and not to be described, except in a specification—"reaping-machine." In twelve days only (it has been accurately calculated) 80,000 reapers may do the work practically and well of no fewer than 800,000 poetic-looking husbandmen. All know well of the use made of the ploughman, and the sower, and reaper, by the clever sculptors and wood-carvers of the old Gothic days. The Dark-Age cathedrals and churches, here and everywhere, are full of them, and a right good and interesting collection might be readily made of these men and carved wood representations of the agricultural life of the Gothic ages; and not a little light thrown on the forms of the rude implements of the husbandman as then in use. The sculptor could hardly go wrong. The rude machine seemed almost made for the sculptor's use, and the man and the machine seemed made to fit each other, and designed almost to be copied in stone or wood. We are never tired of looking at them, and speculating on their artistic value of work. But compare such things with such terrific-looking engines and masses of machinery as the modern and most approved "ploughing engine." What shall the sculptor or the painter do with it? How mould it into artistic shape? It would seem to be a veritable impossibility to work into a picture a complicated and ponderous mass of new and improved machinery. The rude and rough old "engineery" seemed to fall into picturesque forms of themselves, almost as though they had been designed specially for such artistic purposes. Rough and huge wheels, and ponderous cranks, and huge supporting gear transferred themselves readily to the stone and wood, and became without any inventive effort picturesque and sculpturesque, and "architecturesque." But what can we say of the modern improved and perfected machinery, all of bright clean metal, and all so accurately fitted together and so polished? To paint it is impossible, and to carve it almost as much so. It is really not a little curious to look into an old worm-eaten book with representations of the old machinery

for whatever purpose it may have been made;—all agricultural implements of the roughest and rudest, but yet, by the bye, effective, lifting apparatus used in building operations,—effective as we know by what they have done,—and a host of other strange things all obsolete in this improved mechanical age and country, but wonder-working indeed in their own distant day. There are but few things more singular than these of the old-fashioned mechanical appliances of past days,—one but the work it did, the masses it moved, and helped to mould into form and artistic shape!

But there is another and a more practical view to be taken of this phase of human labour, and it is perhaps yet more curious than that we have been commenting on and wondering at. It is the surprising change that is taking place in the condition and prospects of the husbandman or countryman through the power of machinery. Machinery and engineery are, to say plain truth, putting away the poetic husbandman; he is no longer required; the steam-engine, the ploughing-machine, the sowing-machine, and the reaper are gone into the fields, and are driving him out of it. There is really but little now to do but to look on and see how the all-conquering machinery does its clean and quick and effective work. One man can nowadays with a machine, and by dint of but little else than looking on, do the work of multitudes, and apparently rejoice in the feat, the multitudes having more to eat in consequence. The small field is despised, the mighty machine demands a larger and a larger sweep of work; and what must needs grieve the artistic mind, it rides over all picturesque hedgerows, and fairly "levels" everything. It seems a pity that the destruction of hedgerows, and quaint, and picture-making corners; but what is to be done? The times, and the machine, and extending population, and education, and fate itself will have it so. It can hardly be expected that all these influences shall stop and cease to act for the mere sake of furnishing to the picturesque tourist, and to the Gainsborough of the hour, a something to look at, and to love, and to sentimentalise over, and to talk about, and to paint. What is the loss and gain here may exercise the ingenuity of the curious.

And thus are the picturesque husbandman, and tiller of the soil disappearing from human ken; but this is not all by a long way, for not only is the all-powerful machine driving him out of the green fields, and doing his work for him, but he is, strange to say, running away fast from the fields himself. All sorts of vocations, so we are assured, are calling out for him, and enticing him from his rural life and belongings to the cities and towns, and to the work done in them and about them. Mines, manufactories, building in the metropolis, and in large towns, and even watering-places are demanding his help, so that the tiller of the earth, like the earth itself, is the real source which supplies the world with what it needs primarily. One of the earth's all things come, and thus is the country supplying the town with its needful quantity, if not quality, of labour; and thus leaving the poor earth itself to the tender mercies of the insensible machine,—the machine, *per se*, with the human element of labour or work at a minimum, if there can be said to be any human work at all in it. We have said nothing, as being may be a little out of place, of that great coming "exodus of labour" which is to be soon inaugurated, and which promises to provide in distant lands an El Dorado of plenty for the favoured husbandman. But why, looking to facts, provided so kindly for him only? The cottager truly may at times need help, even in the most favoured localities; but there are cottagers, and plenty of them, in great London, in Liverpool, and in all other great towns we ever saw, and their inmates are to the fall,—does Mr. Arch know it?—quite as helpless as ever their country cousins can be. Nothing can well surpass the interior of a town cottage. This is, indeed, an architectural and building subject, and not a little important; for nothing can surpass the evil arrangements and surroundings of a London cottage and its inmates, and this may bring us to another strange result of this change in the condition and doings of the primitive husbandman or countryman. It is the probable effect on the labourer in towns, and the consequent change even in his prospects. The British labourer, it would seem, has a capital prospect before him if he will but be content to stay at home and bide his chance. The ground

is clearing for him day by day, intelligence is spreading, and the clever workman, whether of town or country bringing-up, is pretty certain of occupation; so that for the mere hewers of wood and drawers of water there is a plenty to do, and ample room to do it in. Their prospects are improving, and competition is not so keen, or, at any rate, will not be so in the future. All this, we are confidently assured, is so; and it is not a little curious to think of the causes which have brought all this about. Labour, mere labour, is the simplest and commonest of all human vocations. The labourer is always ready at call, and his simple work is soon learnt, whether in town or country, whether in a ditch, or in helping to build up or to pull down a house. A strange enough fate is the "labourer's." He fits into all positions, from high poetry to the merest commonplace. If the painter wants a picturesque figure anywhere, why, the labourer is always ready for him, properly clothed in picturesque diversity of costume both in shape and colour. If but a crowd be required in the dim background, how could it be made up without the groups of working men,—labourers always, somehow or other, to be found everywhere hanging idly about? Practically, not poetically, what is the poor labourer to do when the mighty "machine" has totally run him down? He must cultivate himself, and become a professional man: learn to look after machines,—perhaps invent them. Well, thus we all go on advancing. Thus it has been, and thus it will be.

SIR EDWIN LANDSEER FROM FIRST TO LAST.

THE Royal Academy deserve every acknowledgment for giving all the room they could, and rooms they have that one of the busiest of the brotherhood,—once,—and one of the most to be honoured,—ever (for what he did he did perfectly well) should show his share of work again in the temporary home he has left for good. Those who are very much in love with life this side of the turf might beseech for so many more years of it as will pass before God's creatures whose language is in their eyes,—who act as they mean,—and such another advocate to represent them, to plead for them or defend them, as Edwin Landseer did; for if the prayer were granted it would set at rest all doubt as to whether man's or woman's age could be centenarian or not. Snyder, Rubens, and Velasquez notwithstanding, he was the greatest painter of what he painted that the world has yet seen.

The world grows bigger every day, and graves should make earth nearer to heaven by every hillock that tells of dust returned to dust.

Let every one go to Burlington House to see these pictures—the works of the late Sir Edwin Landseer. If the benefit to be derived from the visit were confined to the impression of what one man's work in his given days may amount to, the usefulness of such example would be worth a fortune to those who could follow it.

The course of labour has descended—from long ago—more in reverse than reversion, for the curse of idleness now is the heaviest, if not the most bitter to be borne. Sweat of body or brow is salve for any trouble, and to labour is to pray, as we have been told over and over again. Strong health and a big business, with rather more of it than it is possible to do, give a very firm basis for a whole pile of happiness. It must be a question if the criminal convict finds his hardest time in hardest work, though it be his penalty; the scarcely less pitiable wretch—the man who labours honestly with no result but failure,—must find some fascination in hard work, or he would not wait until dazed brain and skin for his bones' dressing gave him testimonial for poor-law relief.

We have often done wrong by omitting to do right, or writing, sometimes: sins of omission weigh down sins of commission in the scales of justice, or should do so. What we might have said a week ago would be stale now, for with little variation all must think alike of Landseer.

Abroad, "Sir Landseer's" name is a household word. Foreigners, who look upon fog as deadly inimical to any growth of æsthetic matters, recognise in "Sir Landseer" an exception to their general rule of ignoring our belongings—our painters.

But the world is full of animals, and the Creator created man the last of all; for woman is but an adaptation. (You should remember this, Miss Albion; for to hear your talk, one would

think that woman was formerly, as now, the first thing to be thought about in all creation, when she was nothing of the sort.) Men and women are very like dogs and ducks, fierce lions and fawns; and Pythagoras may have been right, after all.

"Only an animal painter!" Were Titian and Joshua Reynolds anything more?

There never could be more stupid wrong done than when it is said Landseer ministered to a taste; he evoked the taste. It is nearly as reasonable to say that Æsop wrote natural history, or to take it for granted that Diogenes was a vintner, maltster, or took in washing, by reason of his analogous affinity to a tub; as to enclose Landseer's claim of recognition as teacher with the mere truism that he painted only lions and lambs. Eagles and birds in a long list tell even the most ignorant, that he took higher flight than this, though a sparrow, if it but gave a text, was not too small a theme for him. Again, that he so humanised the brutes as to lose their distinctiveness from the superior beings, when it may be that there really is less to lose than the more concealed of the superiors could be made to believe.

It is given for the reward of few to whom "the night cometh when no man can work," that his life's labour should remain visible, lovely, and ever admirable for ages after that which brought "night" for the last time.

It is not in the number of his productions that this glory is assured to Landseer (for had he painted but half this number the results would be even more certain), but in the unerring directness of their appeal; the marvellous enunciation of their purport that never fails to be at once apprehended by the least and the most learned alike; and the exquisite and inimitable method of painting which seems to be the only right and proper one, because it vitalizes more than any other the particular representation to which it is applied—the of the wearers of wool and fur and feather and hairy hide.

No doubt the popularity of animal portraiture is mainly attributable to Sir Edwin's excellence, but it remains to be proved if he have not left it a more difficult path to success than ever it was before; for he was as singularly foremost in his speciality as Charles Dickens was, is, and will remain as a writer, and, in some degree, "only an animal painter," too.

There is evidence enough to show amongst the great array of pictures, and more in the splendid national possession of Sir Edwin Landseer's works (what a strong supplement these would have been to the memorial at Burlington House), that he sacrificed a right to be considered a colourist to his first wish and desire to be widely known.

To what extent the engravings by Samuel Cousins, of his comparatively early productions, may have influenced him, may be guessed by the wonderfully improved effect the black-and-white versions of "Bolton Abbey in the Olden Time" and "The Return from Hawking" present when compared with the pictures; but to assert that the painter of such fixed images of the warm glow of life to be seen in the great painter's portrait of his father (241); or the charmingly brilliant Swiss picture "Refreshment" (215); or of the sketch for the fresco of "Comus," in the South Kensington Museum, was no colourist, is to say a funny thing; although it cannot be denied that this sense of colour has been relegated in favour of giving help to the inevitable translator—the burin.

There are but two things in the world that defy description: the cessation of sensation by death is one, and what positive constituents go to the formation of "genius" leave genius the other; for its possessor must be indescribably unlike; anybody else to be accounted a genius at all.

"Immense capability of monstrous exertion," is one definition, and "a gigantic result of no effort to speak of," is another.

The schoolboy's fudge of a similarly posing question is the best definition of all: "I know it, sir, I know it! I can't exactly describe what it is; but I know it when I see it!"

Nature and kindly fortune convened most of the essential elements for making the great artist of Sir Edwin Landseer; it is as difficult to perceive where or how his education commenced—at least, from any of the earliest specimens of his workmanship exhibited here,—as it is easy to decide when his heart was or was not in his work, throughout the great assemblage of these varying pictures: best always when Nature's help is most gratefully shown; worst, some-

times, when kindly Fortune's turn comes to be thanked.

One of the most puzzling of puzzles that beset a pilgrim to the goal of this life's maze is, "when to be grateful, and, what for?"

MESSRS. CASSELL & CO.'S NEW BUILDINGS.

WHEN the London, Chatham, and Dover Railway Company entered upon the works for their Holborn Viaduct extension, they took possession, amongst other property, of a number of narrow lanes, and upwards of a hundred houses of an inferior class, lying between the Old Bailey and the neighbourhood of the rear of Farringdon-street. Upon a portion of the site the extension railway has been carried in the direction of Holborn by arches, whilst upon that part of it extending from Messrs. Cassell, Petter, & Galpin's premises, in Belle Sauvage-yard, to Fleet-lane, large and extensive new buildings are in course of erection as an addition to their establishment. The new buildings, which are of considerable magnitude and extent, will occupy a ground area of upwards of 25,000 square feet, or nearly three-quarters of an acre. The memorial stone of the intended new buildings was laid last week, with some ceremony, by Mr. Cassell and Mr. Petter, when representatives belonging to several departments of the establishment were present.

The necessary excavations and works for the foundations alone have been unusually heavy, and have occupied upwards of twelve months, during which about 20,000 cubic yards of earth-work have been removed. Several interesting antiquarian discoveries were made during the progress of the works. In the course of the excavations the bed of the old Fleet ditch was reached, and on it were found the remains of several old boats, whilst in other portions old coins were met with; but the most interesting discovery was a sarcophagus hewn out of the solid stone, in which were the skull and other portions of a skeleton, believed to be that of a man from its great length. The sarcophagus and its contents were taken to the City Museum, where they are now deposited. The extreme depth of the excavations from the street level of the Old Bailey to the sub-basement ground-floor is 40 ft., and the estimated cost of this portion of the works alone is 5,000l. The basement of the building from the street level to the floor is 18 ft. 6 in., whilst below this there is again a sub-basement 10 ft. in depth, in which will be placed the engines, boilers, and general steam power belonging to the works, whilst the machinery will occupy the basement.

The principal elevation of the building will be in Fleet-lane, to which it will have a frontage of 227 ft. in length and 70 ft. in height to the eaves. It will consist of the ground-floor and four stories above, in addition to dormers in the roof. In the centre there will be a lofty tower, carried to a height of 150 ft., and the new building will be connected with the existing premises, which, when the works now in progress are completed, will cover a ground area of nearly two acres in extent. The ground-floor portion of the elevation will be in Portland stone, carried up in piers, the upper portion of the building being of white Suffolk brick, with Portland-stone dressings; Portland-stone piers being also carried up to the top of the building. Above the third story there will be a massive cornice, formed partly of Portland stone and partly of brick, and ornamented in terra-cotta. The capitals of the piers will also be in terra-cotta; whilst under the window-sills of the different stories there will be panels likewise in terra-cotta. The windows of the two lower stories will have segment heads, and the third-story windows circular heads; the arches of all the windows in the different stories being turned and faced in coloured marble.

Internally, the ground-floor will be supported by strong cast-iron columns, five tons each in weight, resting upon stone blocks in the basement, three tons each in weight. From the columns will spring wrought-iron girders carried across the entire area of the floor, the columns and the girders supporting rolled iron joists, upon which a fire-proof floor will be laid. The upper floors will be similarly supported by iron columns carried one above another to the top of the building, together with iron girders and joists, diminishing in their weight and dimensions at each successive floor.

At the north-east angle there will be an annexe, the ground-floor of which will be for the

workmen's entrance. This portion of the building will be carried up to the full height of the main elevation already noticed, the whole of the stories above the ground-floor being completely fire-proof, and exclusively set apart for the steel, copper, wood, and other blocks used in the production of illustrated works.

The architect is Mr. Francis Chambers, of Bow-lane, and the contractors for the foundations are Messrs. Elkington. Mr. J. R. Wilson superintends the works as the architect's representative, and Mr. Brodie is the clerk of works. The contract for the erection of the superstructure has not yet been entered into, but this will be finally decided in the course of the ensuing week.

THE LANDS CLAUSES ACT.

INSTITUTION OF SURVEYORS.

AN ordinary general meeting of the members was held on the 5th instant, the president (Mr. E. N. Clifton) in the chair, when a paper was read by Mr. Philbrick, Q.C., on "The Lands Clauses Consolidation Act, with some suggestions for their amendment."

In the course of the paper Mr. Philbrick said that the Lands Clauses Consolidation Act, 1845, with the amended Acts of 1860 and 1869, presented them with a tolerably complete code of law on the subject. It was formerly held that no subject could be compelled to part with his property; but as the wealth of a country increased and the masses increased, the wants of the community became greater; and hence it was necessary for Parliament to grant compulsory powers for the taking of land for building, railway, and other purposes. The earliest Act of this character was the "New River Act" of 1605, which was for the purpose of bringing a freesteam of running water to the northern part of London. The necessities arising for the making of streets, roadways, docks, and other works of an important public nature, specific for these objects were sought for and obtained through Parliament; and these applications had been of late years very numerous, especially towards the latter part of the last century. The Lands Clauses Act was pretty general in its provisions. The power of purchase by agreement was expressly limited to those lands which were authorised to be taken. The taking of land involved the purchase, though the purchase of that land must involve damage or injury to the former owner of the land, who required compensation. The Act had to deal with these various branches, but it was desirable to keep them apart, for they had to consider positive law, or law laid down by enactment; and obviously, therefore, they should know exactly what they intended to effect, so as to be clearly understood, and to devise proper machinery to the results desired to be attained. The principles of compensation ought to be laid down. The purchase of the real estate involved, amongst other things, (1) parties able and competent to contract; (2) and the price agreed upon. With regard to the fixing of the price, there were lands of such value that it was impossible to fix a price so as to tempt the owner; but the law was a fixed principle in all cases, though it should be borne in mind that hard cases made bad laws. With regard to the statute of 1845, he objected to the careless manner in which the Legislature had framed the Act, giving rise as it did to many contentions.

Speaking of the question of arbitrations, he thought that it was a useless formality for an arbitrator to make a declaration before proceeding to make an award. The question, too, of the taxation of costs involved many difficulties, which, he trusted, would be taken into account, causing, as it did, great inconvenience. But when the different clauses were framed, they were not so well understood as they were at present. He would suggest the amendment of the 47th section of the Act, which referred to the jury proceedings. He would also advocate the creation of a court, which should be presided over by judges, and subject to a High Court of Appeal, which court should be charged with the duty of all things arising out of the Lands Clauses Consolidation Act; the funds would, he thought, be easily obtainable by all the claimants paying a certain percentage towards it, which money, he was of opinion, would be well spent, and would effect a great saving.

In conclusion, he said that the Act had now been in operation for many years, and under it property to the value of millions had changed

hands under compensation for damages; and he trusted that while venturing to suggest some amendments of the Act, the main principle of it would receive the consideration which their practical utility and good work demanded.

Mr. Clark briefly proposed a vote of thanks to the reader of the paper.

Mr. Ryde, in seconding the proposition, said that with regard to the amendment of the Lands Clauses Act two important suggestions had been made by Mr. Philbrick. In the first place, he advocated that the law should be amended so as to give the opportunity of first contesting the right of the land to compensation before proceeding to the amount of compensation. To any such view he (the speaker) would have the greatest objection; and whether in the interest of companies or not, nothing should be done to increase the hardship upon the claimant. If the law were amended it would give to the company not prepared to pay the money opportunity for delay which some companies would be certain to avail themselves of. This was one question on which the judgment of the Institution might be serviceable. The other important alteration was that there should be a court of appeal. It was very desirable that mistakes of all kinds should be corrected; but were there, after all, many mistakes made? They must not cavil much at the judgment; and, taking a broad view, when the companies took a proper course were there any mistakes made, and did many companies pay on the whole very much more than they ought to pay? The great objection would be that more litigation than was necessary would consequently take place; and a company, not liking a decision, would appeal against it, and the matter would go on till all the money would be spent in litigation. One of the clauses of the amended Act of 1869, which dealt with the question of costs, did nobody any good, he thought, and injured companies more than anybody else. Arbitrators considered, according to this clause, that their clients would have to pay the costs of the action if they did not recover from the company, and so the objectionable clause was bad in principle, and was a miserable failure, and it urgently required amendment.

Mr. Philbrick explained that it was never his intention to suggest that any alteration of the system should be effected when once the amount of compensation was fixed; but as to the errors of principle he intended his remarks to apply. On the motion of Mr. Ryde the further discussion was adjourned till the 19th inst.

THE HOLBORN MEMORIAL OF THE PRINCE CONSORT.

ACCORDING to the daily papers, the equestrian statue of the late Prince Consort, for some time under canvas, and of which we gave a view and description in our last volume,* was uncovered on the 9th inst., his Royal Highness the Prince of Wales graciously assisting. We may repeat from the official description that the Prince is represented in the dress of a Field Marshal, and in the act of returning a salute. The pedestal is slightly under 15 ft. high, in granite, and composed of stones weighing from 2 to 10 tons each; the base is in light Shap; the whole of the upper portion (with the exception of the rock on which the horse stands) is in Ross of Mull granite, highly polished, and is placed on a concrete foundation of considerable depth. In the sides of the pedestal are two bas-reliefs; the one represents the first public act of his Royal Highness within the City—viz., the Prince laying the first stone of the Royal Exchange, 1812; the other represents Britannia distributing awards to the successful competitors in the Exhibition of All Nations, 1851. At each end of the pedestal is a figure; the one, "Peace," holds in her right hand a cornucopia, and in her left a palm-branch; the other, "History," is recording events of the Prince's life in a book. The sculptor of the whole work is Mr. Charles Bacon, who, in the design for the pedestal had the advice of Mr. P. C. Hardwick, and the work has been executed under the general superintendence of Mr. William Haywood, the engineer of the Holborn Valley Improvements. The bronze castings are by Messrs. Young & Co., of Pimlico; the granite work is by Mr. D. D. Fenning; and the monument has been erected by Messrs. Field, Poole, & Sons, of Westminster. The position of the statue is not altogether a happy one. The committee point out as amongst

the advantages of the site that the statue can be seen from Holborn for a distance of 500 yards, but unfortunately what is seen for the greater part of these 500 yards, the back of the group, is neither edifying nor agreeable. In sentiment the position may be said to be correct; but it seems to us that the effect as regards that great majority of the persons who pass it would have been much better if the group had been placed across the road instead of facing the viaduct and backing upon Holborn.

BUILDING CONTRIVANCES AND MATERIALS AT THE INTERNATIONAL EXHIBITION.

A MEETING of the sub-committee for architecture, building contrivances, and materials, was held at Gore Lodge, on Wednesday, the 14th inst., when there were present (Mr. Godwin, F.R.S., in the chair), Col. Wray, R.E.; Mr. T. Roger Smith, Mr. Elger, Mr. Kirkaldy, Mr. Grant, and Mr. Bird. Capt. Clayton, R.E., acted as secretary. The chief business was the consideration of a scheme of experiments on building materials in large sizes and spans. It includes 232 experiments on wood, granite, iron joists, stone steps, posts of wood, granite, and stone columns, granite and stone cubes, bricks, brick piers, and cements. On the motion of the chairman, seconded by Mr. T. R. Smith, the following resolutions were agreed to *nem. con.*—1. That this committee consider it desirable steps should be taken to obtain the means for carrying out the scheme of experiments submitted by Mr. Kirkaldy at a cost not exceeding 500*l.*; and 2. That the commissioners be recommended to apply to the Royal Institute of British Architects, the Institution of Civil Engineers, and the Society of Arts, to learn if those bodies are disposed to assist with funds the object in view.

We sincerely hope that they may be found willing to do so; the work proposed could not fail to prove of great public value.

There are about 120 applicants for space in this section, and the foreign exhibitors have yet to be added.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

SANITARY ASPECTS OF HOUSE CONSTRUCTION.

AN ordinary general meeting of the session was held last Monday evening, the chair being taken by Sir Gilbert Scott, who attended for the first time since his election to the Presidency, having just returned from Italy, where he has been staying for some time for the benefit of his health. Messrs. T. Naden and R. L. Hesketh were elected members.

The secretary, Mr. Charles L. Eastlake, read a letter from Mr. Ewan Christian, calling the attention of the meeting to the threatened destruction of Ely Chapel, Holborn, which, he stated, was to be publicly sold by auction; and urging upon the meeting the necessity and importance of taking some steps in the matter.*

The President stated that Ely Chapel was an interesting building of the year 1295, and though robbed of much of its decoration it was really an admirable architectural work. Professor Kerr said that representations to the auctioneers should be made with all respect; and he would move a resolution to the effect that a committee be appointed to call upon them to see what could be done in the matter. The motion was seconded by Mr. Charles Barry and unanimously carried.

Captain Douglas Galton, C.B., then read a paper "on the Sanitary Aspects of House Construction."

Mr. T. H. Wyatt, in proposing a vote of thanks, said that Captain Galton was an authority on the subject of which he had treated, and they ought to be very grateful to him for engendering that strong feeling in connexion with sanitary science which should animate all of them. But there were difficulties in this matter to be carried out which were known only to architects.

Professor Kerr said that with regard to the responsibilities of architects in reference to sanitary matters, sanitarians would improve them off the face of the earth; the fact of the supposed neglect of architects in this respect

* See vol. LXII., p. 827.

* We have received several letters on this subject. Surely some arrangement can be made to preserve the ancient structure.—Ed.

did not lie with them, but with others. At the same time they were all sufficiently interested in the matter to appreciate, in some degree, the excellence of Captain Galton's paper. He (the speaker) thought that it was the first paper he had heard which had exhaustively set forth the whole practical question which was now before the public. It seemed to him that there was one matter which the expert sanitarian might occupy himself with, and that was to take up houses as they were and see what could be done, without placing insurmountable obstacles in the way of their improvement. If an architect ventured to ventilate a building he was generally stopped in his work, and thus architects had great difficulties to contend with.

Mr. Wyatt hoped that the room in which they were then sitting, which was very well known to be badly ventilated, would be attended to.

Mr. Charles Barry said that Captain Galton had told them that he had advanced no new theories, but had dealt with facts which no one than he could deal with more successfully. He was in the envied position of being able to lay down principles without having the responsibility of having them carried out in the face of the difficulties which surrounded architects, who had no choice of locality, and extenuating circumstances might be very well urged for them. The ventilating arrangement for drawing-rooms in ordinary houses, as they all knew, unfortunately failed; and it was very difficult, in fact all but impossible, under existing arrangements to properly ventilate a dwelling, the difficulties to contend with being so great. Relative to the stove which bore Captain Galton's name, he (the speaker) said that all those gentlemen who had examined it were unanimously agreed as to its efficiency for the objects for which it was arranged. There was, however, one point which he would like further information upon, and that was as regards the solving of the question of the curing of smoky chimneys by the adoption of the Galton stove.

Mr. W. White, speaking of the proposed new Sanitary Bill, said that the difficulties of sanitary science in this Bill would, he understood, be thrown entirely upon the local medical officer; and he could only hope that the medical officer would prove as efficient as Capt. Galton. At the present time there was a very great difficulty and objection regarding the ventilation of houses; and he would then take occasion to remark upon the room of the Royal Institute of British Architects, which had been so long stagnant in its air, and not very fresh, and he trusted that the matter would be attended to. Mr. Woodthorpe said that he had attended that evening for the express purpose of protesting against the ill-ventilation of the room they were at present sitting in. Many architects would not attend the meetings of the Institute in consequence of this. It was an offensive room, and as a sample of architecture, a disgrace to them as a body; and he thought that something should be done to give them a comfortable and wholesome room.

Mr. Rawlinson said that the question had been asked as to what might be done to remedy existing defects in sanitary matters. This was an important question, and he himself thought that it was the question of acquiring knowledge as soon as possible to answer these ends. With regard to London, the system of drainage was more perfect than in any other city, but the sewers were not as they might be; and a house in London, with drainage, was just about as bad as it could be. Very frequently the basement was underlaid with drains, which were often on a previous subsoil running from back to front. Now, such an arrangement as that was of the worst possible kind which could be devised for the drainage of a house. The drains should be rendered air and water tight, and be buried in concrete, and so constructed that no air from them should be admitted in the building. With regard to ventilation, their rooms were made for domestic uses, and there was the difficulty, when a large number of people were together, of good ventilation, which, if not carried out, caused an incalculable amount of mischief. Under existing arrangements, it was impossible to construct modern houses so that equal comfort could be given to the family and to the visitors at the same time. The staircase should be the lungs of every house. He had exposed himself to some ridicule by certain observations which he had made as regarded the sanitary conditions of houses, but these he himself had practically carried out. In the first place, he had removed

every drain from the basement, and both sewers and drains he had ventilated, as well as the public sewer. In modern houses there was no ventilation for the higher parts, and no arrangements were made for freeing upper stories of warmed air and effluvia which ascended, the result being that the upper stories were unwholesome and unhealthy. Speaking of the ill-ventilation of the Institute, he said that the question regarding its unwholesome state he brought before the meeting no less than six years ago, and during that time they had been suffering from the ill effects of the present arrangements without attempting any remedy.

The President, in putting the vote of thanks, regretted that he was incapacitated from adding any remarks upon the interesting subject which had been brought before them, as he was still suffering from the effects of his late illness. He would, however, make one remark, in addition to the many remarks which had been made, and that was to speak of the value of the paper which had been read.

SILICA.

On the 2nd of January a paper was read, before the Geologists' Association, by Mr. Hawkins Johnson, F.G.S., on "The Nature and Formation of Flints and allied Bodies." The object of the paper is to show the nature of several members of a large group of bodies occurring in sedimentary deposits of different ages, and which are generally known as nodules, and described as concretionary. Those specially alluded to are the Septaria from the London and Kimmeridge clays, the flints from the chalk, the iron pyrites from the chalk, the phosphatic nodules of the Gault, the clay ironstone nodules of the carboniferous series, and the ironstone from the Woolwich beds. By the gentle action of solvents the structure of these bodies is revealed, so as to be easily examined by the microscope. They are then found all to agree in possessing a silicified organic structure, which may be described as a network of fibres, or a mass permeated in every direction by anastomosing canals. This structure was subsequently filled in with other material, such as carbonate of lime, silica, bisulphide of iron, phosphate of lime, carbonate of iron, &c.; the particular substance thus filled in depending upon the relative abundance of the substances dissolved in the interstitial water of the surrounding matrix. The singular groups of concentric, silicious, circular bands seen upon many fossils, and known as Orbicular Silica, or Beekite markings, are also explained. The fossils on which they occur were imbedded in a matrix more porous than themselves, and of irregular constitution, so that the evaporation, to which the consolidation of the dissolved silica in their pores was mainly due, occurred at a number of points on the surface of the fossils, at which points a deposit of silica took place, forming the central tubercles. The cessation of evaporation was followed by a fresh saturation with the solution, to be again evaporated as before. But, as the evaporating points were now plugged up by the previous deposits, the silica last consolidated was deposited around their margins, and upon them internally, appearing outwardly as a ring round the tubercle.

ARCHITECTURAL ASSOCIATION.

IRON CONSTRUCTION.

An ordinary general meeting was held on the 9th inst., Mr. Quilter, vice-president, in the chair, when the following gentlemen were elected members:—Messrs. A. A. Ranson, R. A. Boyd, J. B. Hoombe, H. M. Mavor, and G. W. Gael. It was stated that the Saturday afternoon visits would commence on the 17th inst., and that an announcement would appear in the *Builder* as to what building would be visited.

The Chairman said that most of the members would remember that, last year, a fund was instituted, in the form of prizes, to encourage students in architectural drawings, several gentlemen liberally contributing towards it. This year it has again been established, and Mr. Reed had generously given twenty guineas towards this object. Professor Lewis, too, had again contributed 5l. He would have much pleasure in proposing a vote of thanks to these gentlemen. Mr. J. Douglass Mathews, in seconding the proposition, said that five prizes had been founded, and the idea was not to give members an im-

mense deal of work, but rather for them to produce thoughtful drawings.

The resolution was then carried.

The Chairman intimated that that day month the members' *soirée* would take place, and he trusted that, by its means, greater geniality would be established among the members.

Mr. Paice then read a letter from the secretary of the Architects' Benevolent Society, acknowledging the donation of 7l. 5s. from the Association.

Mr. Mathews moved the following resolution:—"That a fund be established to receive small donations from members towards the Architects' Benevolent Society, and that a donation of 5l. be contributed from the funds of the Association to head the list."

Mr. Blashill seconded the resolution, and it was unanimously carried.

Mr. Richard Moreland, C.E., then read a paper on "Iron Construction." In the course of his remarks, he said, with regard to cast-iron pillars in long columns, the transverse section had two duties to perform, viz., to support the load, and to resist flexure, so that only one half of the strength of the pillar could be considered available for the resistance to crushing, and the other half for the resistance to flexure. In other words, one half was in compression, and the other half in tension; and this was precisely the condition in which a girder was, or it might be taken as a question of leverage; the length of one end being the diameter of the pillar, and the other the half length of the column; but in the case where the pillar was large in comparison to its length, then the whole of the material must be taken to resist compression of a considerable portion of its crushing strength. The working load on pillars should not exceed one-tenth to one-sixth of the breaking load, and, under ordinary circumstances, should not exceed 25 diameters. Special care should be taken when the pillar was subject to transverse strains, where heavy goods of unstable form were piled against them, as a considerable strain must be produced from that cause; and also in the event of blows from rolling goods, or other causes. Pillars in juxtaposition to brick walls, took the whole load when they were strong enough to bear it; but masonry served to stiffen the pillar if secured to it; but if the wall was built in cement, and of considerable thickness in comparison to the iron pillar, they then possibly must assist each other. In cases where the brickwork was liable to be compressed, and the pillar unequal to its load, then obviously nearly the whole weight must be discharged on the pillar; but care must be taken as possibly intense compression might take place at the base of the pillar. The basis should be as level as possible. Short columns under crushing force were deformed by pyramid wedges forming at the ends, and forcing out wedges at the sides. This was also seen in the crushing of stone and other solid materials. For various forms and sections of pillars, and also of different lengths, the strength of the material would vary considerably under the diverse conditions in which it was placed. For small proportions of length to diameter, cast-iron was the strongest material, but its strength diminished as the proportion of length to diameter increased faster than wrought iron; and in the comparison of solid square or wrought-iron pillars, with solid round cast-iron pillars beyond 26½ diameters, the wrought iron was the stronger. For ordinary work no cast-iron column should exceed 27 diameters in height. The elasticity of cast iron was twice as great as that of wrought iron. The strength of girders to resist resilience was proportional to the weight of the beam, irrespective of the length, so that a beam twice the weight or twice the length would take twice the load to produce the same deflection, as rolled girders were only economical up to a given size and weight. He then referred to the wrought-iron trussed girders placed over the dining-room at De Keyer's Royal Hotel, and said that in designing the outline of the ironwork of these beams, Mr. Greening, the architect of the building, had several objects in view. The thickness of the floors through which the structure was fixed should not be thicker than the other floors, and that generally the girders comprising the truss should be limited in depth so as not to interfere with the heights of the various rooms; the central space, too, should be quite open. The two side spaces being occupied with chimney-breasts and flues, economy of space and material, together with

great rigidity, were thereby attained. The construction of the six trusses might be briefly described. Two wrought-iron girders were taken for upper and lower members of the truss and distanced apart by two vertical girders, and so dividing the space into nearly three equal parts. From the junctions of the vertical girder with the upper girder to the ends of the lower girder another wrought-iron girder was placed at an angle and securely bolted and secured at the ends. Each of the long girders, independently of the truss construction, would be able only to support its own area of floor, say 1 cwt. to 1½ cwt. per foot; but by the employment of these girders as upper and lower members to the construction, these, by the addition of about the weight of one girder and a half, were made to support a load of ten times that which they would carry by themselves. The three lower girders were placed immediately above the dining-hall; the lower girder was only 10 in. deep, 12 in. wide; the upper girder was 10 in. deep, 12 in. wide; the length was 38 ft. 3 in.; and the span between walls 35 ft. 6 in.; and the whole height was 9 ft. 3 in. The distance between the vertical rods was 15 ft. 6 in., so that a space was given of 7 ft. 1 in. high by 15 ft. 6 in. wide. In the centre of the girders the diagonal trusses were of the same section as the lower girders. The sectional area of the lower girders and trusses was 46 square inches, and, deducting 8 in. for rivets, gave a net sectional area of 88 square inches. The upper girder had a gross section of 48 in., which was all available for compression. The foot of each diagonal was bolted to the lower girder, and an angle-casting was also secured to it and the lower girder; and similar castings were also fixed at the junction of the vertical girders with the upper end of the diagonals. Each separate piece of the truss was riveted together and laid in position, the corner castings fitted, and the whole of the holes drilled, after being carefully put together; and the various positions were then fixed in their respective positions and securely bolted together. The summary of load on the girder was 200½ tons.

FROM PARIS.

Marshal Bazaine's Hotel.—Despite the heavy costs to be defrayed by the prisoner of Sainte-Marguerite, Bazaine's Hotel is not yet announced for sale. It is a simple construction, commenced in 1869, and finished after the war. It is situated in the Avenue d'Jena, and occupies about a hundred metres of land. There are but two floors, surmounted by a sloping roof. Above the chief entrance is a terrace-room, 10 yards square; the left is the porter's lodge, and to the right a *perron* of three steps, giving access to the ground-floor. On this floor are situated the *salon*, dining-room, and study; on the first are another *salon*, and four bedrooms. There are at the back a coach-house, and stables for four horses; but Bazaine, who has occupied the house more than six months, never brought his horses to Paris. The hotel is built after the plan of M. Ferre, and cost 180,000 francs, the ground lease included. This sum has not yet been paid. 70,000 francs remain due to the *Crédit Foncier*, which, it is said, is about to seize the property, as the ex-marshal, deprived of his status as a citizen, cannot be prosecuted.

Sale of Public Property in Paris.—The Paris Municipal Council has been for many years an enthusiastic and influential political body, but, commercially speaking, it is a failure. There is more unproductive civic property in Paris than in any other capital of Europe. The Council avows itself unable to utilise these possessions, and is now proceeding to sell all lands and buildings that yield a revenue out of proportion to the price of purchase. But this operation is somewhat delicate and complex—the Council has been taught prudence by a bitter and costly experience. Therefore, instead of selling as before at any price, the authorities intend to organise a vast system of exchange, which shall permit them to get rid of unproductive encumbrances, and at the same time enlarge and embellish the lands, squares, and buildings that yield a sufficient revenue. Negotiations have been opened with the different companies in possession of public thoroughfares, and it is through their instrumentality that the exchanges will be effected. The contractors succeed where the Council fails. This latter body was unable after three attempts to sell the site and *abris* of

the Ministry of Finances, albeit it is situated in the centre of the fashionable quarter, and private houses adjoining it which were destroyed by the Commune have been since rebuilt and sold easily at profitable prices.

A School of Industrial Art.—Great things are expected from the administration of the new director of fine arts, M. de Chennevières, and his first innovation encourages the expectation. He is about to execute a plan conceived by him many years ago, and which provides for the establishment of a school of industrial art, which shall hold an intermediary position between the so-called industrial schools already existing in different parts of Paris, and the classic *École de Beaux Arts*. The former are known to be too mechanical, too purely industrial, to be of any use to the many professions that range from historic painting to tanning and silversmith's work. M. de Chennevières's school is designed to become a veritable hot-house of practical artists, porcelain-painters, artistic photographers, wood-carvers, architectural ornamenters, &c. The designers for the manufacture of Gobelins, Beauvais, and Stèves will be chosen from among the pupils of the new school, to which a novel branch will be added,—workshops for the artistic working of iron and stone.

BUILDING IMPROVEMENTS IN WALWORTH ROAD.

AN important improvement is now in progress on that part of the west side of Walworth-road, lying between Penrose-street and Amelia-street. A short distance from Penrose-street, in the direction of Manor-place, a large extent of property having its frontage to Walworth-road, and extending westward to Walworth-road, and the recently completed Newington vestry's stone and dust depot, has been entirely cleared away. The site upon which this property stood is upwards of three acres in extent. The whole of the houses which covered the site, including those facing the Walworth-road, were in an unusually dilapidated condition, whilst at the rear, behind the last-named thoroughfare, close and ill-ventilated courts abounded, containing hovels not fit for human habitation. The site as cleared has been newly laid out, and fronting the main road a number of substantial houses and shops are in course of erection, which will effect a great improvement in this portion of the thoroughfare. The buildings in question are of a rather ornamental character, the materials being yellow stock brick, with moulded and carved stone dressings. The windows above the ground-floor have arches of white, red, and black brick. Extending the entire length of the Walworth-road frontage an area which was enclosed within the former buildings has been thrown into the footpath, by which it will be materially widened, and rendered more convenient than heretofore for pedestrians. At the rear of the site dwellings of a superior class are also being erected containing improved sanitary arrangements. On a site a little further northwards, extending almost to the south side of Manor-place, and also on a third side between Manor-place and Amelia-street, similar blocks of new buildings, having their frontage to Walworth-road, are likewise in course of erection. The new houses and places of business in progress in the locality are altogether upwards of 150 in number.

BRANDON SURREY GARDENS ESTATE AND SCHOOL BOARD FOR LONDON.

A COMPENSATION case, of interest to those who have the management of large building estates, was decided on Monday last, by Mr. Under-Sheriff Abbott and a jury, having lasted two days.

The claim made and supported on behalf of the estate by several well-known surveyors amounted to from 3,500l. to 3,900l., for about five-eighths of an acre of valuable freehold building land, taken compulsorily by the Board, including consequential damages to the remainder of this large estate, upon which it is proposed soon to erect 300 houses. There is, however, a subsisting lease of the Surrey Gardens for an unexpired term of eight years and a half.

Mr. Eliott and other surveyors, on the part of the Board, considered that there would be no damage to the estate by a Board school for 80 children, and 1,163l. and upwards the proper sum to be paid for the land.

The jury, after an hour's deliberation, awarded the trustees the sum of 2,400l., being 1,650l. for land, and 750l. for damage to the estate.

It did not transpire why the Board selected a site affecting one or more of the few entrances to a large estate, and so involved themselves in the payment of a large sum for consequential damage.

Messrs. Lander & Badells, the surveyors, and Messrs. Chinnock & Galsworthy, the auctioneers, of the Brandon estates, appeared on behalf of their clients, and both sides were represented by counsel.

SPEKE HALL, LANCASHIRE.

SPEKE HALL, a fine timbered mansion of the olden time, of which there are some good pictures, by Nash, in the South Kensington Museum, appears to mean Spike Hall.

The name occurs as *Espeic*, *Le Espeake*, &c., in old documents, which I read as Spiney, i.e. Thorney Hall.

A. H.

THE RAILWAY CLEARING HOUSE.

THE private Bills deposited, the powers indicated in which Parliament will be asked to sanction in the coming session, include "a Bill for enabling the Railway Clearing Committee to purchase Land by compulsion, and to build thereon for the purposes of the Clearing System," &c. The proposed enlargement of the already very extensive premises occupied by the Railway Clearing Committee, give occasion to inquire what work is done by this institution that it hath grown so great.

Before entering on this inquiry, it may be explained, concerning the draft Bill, that it sets forth in the preamble that the Clearing Committee, by their Act of 1855, acquired, for the purposes of the railway clearing system, an extensive building called the Railway Clearing-house, situated on the south-west side of Seymour-street, Easton-square, in the parish of St. Pancras; that the building is held in the name of Mr. Philip William Dawson, the secretary of the committee, in trust for them, for the residue of 74 years, from 1855, with a right of renewal for any term not exceeding 999 years. That the business of the Clearing-house has greatly increased, and is still largely increasing, and that it is necessary, for the convenient carrying on of the business, that additional building accommodation should be acquired in close proximity to the present Railway Clearing-house, which cannot be attained without the aid of Parliament. The piece of ground proposed to be appropriated for the enlargement of the Clearing-house is the plot immediately adjacent to the present building, and lying to the south-west of Seymour-street, and the north side of Bedford-street. It is also proposed by the Bill that the committee may from time to time borrow and re-borrow any sums not exceeding, in the whole, exclusive of money borrowed, the sum of 150,000l. The powers for the compulsory purchase or taking of lands, for the purposes of the Act, shall not be exercised after the expiration of three years from the passing of the Act. Powers are asked for in the Bill for the clearing committee to elect trustees in which the property shall be vested.

An idea exists in some minds that where there is a choice of railway routes between two given points the public have the benefit of competition. The idea is a delusion, as was brought out in the evidence given in last session of Parliament, before Mr. Chichester Fortescue's Joint Committee of Lords and Commons on railway amalgamation. The evidence of numerous chairmen of railway companies, general managers, and others intimately acquainted with railway affairs, brought the committee to the conclusion, stated in their report, that it may be taken as a general rule, that "there is now no active competition between different railway companies in the matter of rates and fares. Wherever different companies run between the same places they arrange their prices. For instance, not only do the London and North-Western, the Midland and the Great Western, make the same rates between Manchester and Southampton, but bind themselves by agreement not to make lower rates, so that one cannot lower its rates without the consent of the other two. And if a new railway should ever be started, with a promise of lower rates, it is sure, after a short time, to arrange with its original rivals a system of equal

charges." In answer to the Earl of Derby, a member of the committee referred to, Captain Tyler, R.E., Board of Trade Railway Inspector, stated his belief, having previously given evidence that led up to the conclusion, that "competition must, in the end, die a natural death." Combination of railway companies, however, is a more real thing than competition among them, and in the Railway Clearing-house they have a union, organisation, and instrumentality, that serves practically as the executive of a great "federation." But it is not, it should be admitted, a combination as against the public, but rather an agency that is essential to the transaction of railway business, as regards traffic in which two or more companies are concerned. The operations of the Clearing-house Committee and their staff are of advantage to the public as well as to the companies that are parties to the system, and it is not too much to say that the suspension of the functions of the Clearing-house authorities would bring the through traffic railway business of the United Kingdom to a dead lock in a single day.

The Clearing-house was established in 1842, the need for such an interposing and regulating authority being strongly felt even then, when the railway system was so much less extensive and complex than it is now. The original object of the clearing system was to settle the proportions of receipts arising from through traffic in which there was more than one company concerned. Ninety-and-nine of the principal railways of the United Kingdom are now committed to the Clearing-house authority, each company being entitled to send a delegate to represent it at the periodical conferences and special meetings. In 1850, the committee were granted another Act, by which they obtained powers to sue, and to be in the position of being liable to suit, in the matter of balances that they might declare against any company. The delegates meet quarterly, and, amongst other matters, decide the rates that are to be charged against one company for the use of the rolling stock of another, and the proportions of terminal charges. The Clearing-house officers trace the traffic for which they adjust the proportions of payments to the respective companies by their own men. This they effect mainly by having number-takers stationed at every junction where trains pass from one company's system to that of another. In illustration, if a ton of goods is sent from any Aberdeen to London, a return is sent to the Clearing-house from Aberdeen, giving the date of despatch, the number of the invoice in which the goods are charged, the weight, and the number of the wagon in which the goods are carried. A corresponding return is sent by the London station; if not corresponding, it is the duty of the Clearing-house officials to find out the cause of the discrepancy, and to bring the companies into agreement. In the case supposed, if the goods come by the East coast, the Caledonian Company would have the carriage to Perth, the North British Company to Berwick, the North Eastern Company to York, and the Great Northern Company to King's-cross. The clearing-house number-men take account of the transfer from one company to another at Perth, Berwick, and York. In such a journey special allowance is made for portions of the route that have involved extraordinary cost in construction. For the high-level bridge at Newcastle, for instance, which is a mile in length, three miles are allowed.

The duties discharged by the Clearing-house committee are of the most multifarious, complex, and onerous nature. While they are in a certain degree arbitrators between railway companies, they are also their responsible representatives. The Clearing-house committees really constitute a species of railway parliament. There is the clearing committee, and committees of general managers, of goods managers, of coaching superintendents, with arbitration committees on rolling-stock charges and goods traffic. The several committees pass, from time to time, important resolutions affecting the interests of companies and of the public. When these resolutions have been thoroughly canvassed, and the necessary preponderance of authority has pronounced in their favour, they are duly codified, and thereafter acted upon, individual companies having, however, in some instances, right of dissent. Among the important matters discussed and almost invariably settled by the Clearing-house authorities are various questions of fares, excess, through, return, season, tourist, &c. In rates they determine charges for goods, minerals,

live-stock, parcels, newspapers, postages, insurance premiums, "paid on," goods sent in error, questions of running powers, alternative routes, terminal charges, special allowances, credit and bad debts, loss and damage of goods, over-charges and under-charges, charges for "smalls," for round timber, trans-ships, mileage and demurrage. The mileage and demurrage charges for rolling-stock on special service upon a "foreign" line (as all other lines except the company's own are called), is 10s. per day for a first-class, 7s. 6d. for a second, and 5s. for a third class carriage.

The Clearing-house regulations and classification of goods for rates appear to be quite exhaustive. In addition to the fares before referred to, the regulations prescribe those charged for family carriages, fares for military and naval officers and cadets, volunteer officers attending schools of instruction, soldiers, sailors of the Royal Navy, policemen, prisoners, shipwrecked mariners, volunteers, volunteer officers' grooms, bands of music with excursions, military bands,—to quadrille bands no concession is made,—boats' crews proceeding to regattas, who are charged a single fare for return-tickets, operative and theatrical parties, boys intended for service in H.M. Navy, scholars and apprentices, season tickets, &c., and voters at Parliamentary elections. Members of the British Association, the Social Science Association, and the Institution of Mechanical Engineers, have "the privilege of obtaining, on the presentation of cards of membership, return-tickets at the usual fares," but no concession is made to religious societies or for attendance at scientific or political meetings. In cases where there is more than one company concerned in carrying to a particular station, no reduction in the fares can be made "without the concurrence of all the parties interested."

The regulations affecting goods traffic and the rates to be charged appear to be much more complex than those that apply to "coaching" or passenger traffic. In the classification of goods there are about 2,500 enumerated items, many of them rather curious. In this general classification, for instance, there are acids, almonds, aloe, anchors, anchovies, and arsenic; bagging, barilla, barn, barometers, bath-chairs, bird-cages, blacking, blubber, bones, bread, brooms, bullets, burr stones and buttons; cabbages, candied peel, cardamoms, carriages, cedar, cement, chalk, cheese, cigars, cinders, cinnsmon, coal-dust, cockles, coffee, coffins, copper, corn, corozo nuts, cow-heels, crabs, cranberries, craps, crow-bars, crucibles, and cutch; dates, dials, dripping, drapery, dried peas, and dye woods; earth-closets, ebony, elephants' teeth, engravings, and evergreens, "including misletoes"; fang bolts, farina, feathers, figs, flax, and furs; gall nuts, game, garden-rollers, gas tar, ginger beer, glucose, gravel, goloshes, and grindstones; hammers, bats, hoes, hominy, hops, and hinges; ice, Indian corn, indiarubber, indigo, iron, and iodine; jams, jet, and jute; kelp, kettles, keys, and kamptulicon; lace, lampblack, lard, litharge, and lobsters; machinery, malt, meal, matches, molasses, mushrooms, and mustard; nets, needles, naves, and nuts; oakum, old clothes, onions, oranges, osiers, and oysters; packed manures, paints, pans, paper, pipes, pistols, pork, pozzolano, prawns, and putty; quicksilver and quills; rabbits, rags, raisins, rice, rosin, rotten stone, and rye; sacks, safes, sago, sand, scoria, shoes, shot, snuff, soot, spiritis, sprats, sugar, and sulphur; talc, tar, tarlants, telescopes, timber, tin, turtle, and turnips; amber and umbrellas; valonia, vases, vegetables, veneers, vermicelli, and verdigris; wadding, walking-sticks, wax, waste paper, whelks, wine, wire, and wood; xylomite, yarn, yeast, and yellow berries; zebra-wood and zinc.

Iron and hardware are entered in the general classification, but they are also further minutely subdivided, iron into twenty-four items of undamagable, and sixteen items of damagable articles; castings into fourteen undamagable, and nineteen damagable; bridge work is divided into ten items, and the parts of iron roofing into as many. Hardware is divided into 120 articles, including amongst many others,—augers and awl blades; bells and beetle-traps; calipers and chain-sifters, and coffin furniture; door-knockers and dust-pans; edge tools and eyelet-holes; files and frying-pans; gimblets and grid-irons; handcuffs and hooks and eyes; Italian irons, jacks, and Jews' harps; matchboxes and mousetraps; nails and nut-crackers; pincers and pins; rat-traps and riddles; shoe-horns, skates, and spitoons; tacks and toasting-forks; warming-pans and weights, &c.

The voluminous regulations, instructions, tables, schedules, and forms, compiled for the guidance of the railway companies that are parties to the clearing system, convey some idea of the great number of contingencies that have to be provided for, and of the vexatious disputes and untoward circumstances that frequently occur, and that are fitted to tax severely both time and temper. Among questions referred to the Clearing-house for settlement are those of insurance of parcels, parcels addressed paid that are not paid, parcels refused, parcels left to be called for, damage of contents of parcels and packages, &c. Then there is a large number of matters and things carried by railway for which special rates have to be charged and special regulations laid down. Among the specials are German sausages, that are favoured by being charged half-parcels' rate; ice, that may not be sent in smaller quantity than 28 lb.; plants and flowers, that are conveyed to shows for a single rate; plate-glass, stereo casts, tobacco, pianofortes, each charged as for a private carriage if put upon a carriage-truck; sewing-machines, cartridges, percussion caps, petroleum, and other mineral oils; Bath-chairs, velocipedes, perambulators and bicycles, boats and canoes, carried at 2d. per mile, with a minimum rate of 5s.; vans, caravans, and steam roundabouts, 6d. per mile; bullion; horses, minimum rate, 5s., with special rates for race, stud, and hunting horses; hounds, carriages, tramway-cars; oxen, bulls, calves, sheep, pigs, and other small animals, except dogs. Corpses, the charge for an adult being 1s. per mile, and for a child, 6d., the minimum charges, 20s. and 10s. if a vehicle has to be attached to the train, or 10s. and 5s. if not. Special rates are also charged for live gold fish and live poultry. Poultry, if consigned to a dealer for consumption, are charged half-parcels' rates. Gunpowder, gun-cotton, cartridges, lucifer-matches, fuses and fog-signals, phosphorus cases, naphtha, naphthaline, petroleum, benzoline, and other mineral oils, are properly subject, as regards their carriage, to very stringent regulations. The vapour of the mineral oils carried must not be inflammable at a lower temperature than 100° Fahrenheit.

The services rendered by the Clearing-house to the companies, and to freighters, are very valuable and important, and such as could only be given by a central and neutral authority. The companies are guided by the Clearing-house as to the distinctive marks and numbers, for ready identification, that they put upon their ropes, chains, sheets, and wagons. The stripes in various parti-colours to be seen upon wagons, are transverse, oblique, at right angles, and otherwise disposed, and might seem to the uninitiated to be painters' vagaries, but they have all their use and meaning. One of the most useful tables published by the clearing-house gives the maximum dimensions of the carriages or wagons loaded, that they may travel safely over 110 lines of railway in various parts of the kingdom, that are duly enumerated, so that the loaders know, before it leaves the sending station, whether the wagon can pass to its destination.

An enormous number of accounts and returns are received daily at the Clearing-house, and are duly entered, docketed, and put away: the accounts are kept for seven years, and the station returns for four years, and are then destroyed. The accounts as between companies are settled at the Clearing-house monthly, except for horses, carriages, dogs, parcels, and newspapers, the balances for which are settled half-yearly. Payments on account in disputed cases are placed to a suspense account at the Clearing-house.

In last session of Parliament the representatives of this great confederation obtained an Act of Parliament that was much needed, and that is likely to prove of great utility, for securing superannuation allowances to railway officers. A number of large companies have already established such funds, but there are many companies that have not a sufficient number of officers to form a satisfactory fund. The Clearing-house superannuation fund extends its advantages to the officers of all companies, parties to the clearing system, who choose to contribute to it. The fund is formed on the same basis as those of the companies referred to, which vote amounts equal to the aggregate contributions of the members.

It is expected that the Railway Clearing Committee's Extension Bill of this session, like the one they introduced in the last, will pass unopposed.

ON FIREPROOF BUILDING.*

The ordinary construction, called fireproof, consists of brick arches carried on iron beams, which generally rest on iron columns for intermediate support, the end arches being tied by iron bars to prevent outburst of the walls; and what generally happens when a fire takes place is, that the columns become softened or split by a dash of cold water while they are very hot, or the under side of the girder—which is generally exposed to the greatest strains—is weakened by heat or split by suddenly cooling, or the tie-rods lose their tensile force; the floors fall in, the walls fall out; and the very process adopted for the preservation of the building greatly facilitates its total destruction. Of the two, a common timber floor, well sealed underneath, would have lasted longer, thereby giving more time for salvage, and could not, at the worst, have suffered more than the pseudo-fireproofing; but still something can and must be done to protect the ironwork, as by its means alone can the sort of structure which is required for the business be erected with the necessary stability.

In designing such a building, the architect should first ascertain the smallest area that he can be allowed to use as the unit of construction; he should subdivide by internal partition-walls as far as he will be allowed to do so; and, having thus arrived at the cubic spaces of which the intended building is to be composed, and finding that the spaces over which he has to carry his floors render it necessary to avail himself of the constructive facilities afforded by iron, he must set himself to work deliberately to contrive such a mode of using it as will protect the iron from the effects of fire. If columns are required for intermediate support, I think they might be of iron, of somewhat larger diameter than usual, and the interiors filled solidly with cement concrete, carefully packed and rammed, the idea being that the cement should form an interior column capable of sustaining the load in the event of the iron failing; or of T-shaped iron, with a coating of brick in cement; or, best of all, a simple shaft, with cap and base constructed of bricks laid in fine Portland cement, as nearly akin to skin as possible. These would be not very slightly; but that is of very slight importance when the enormous damage to be overcome is considered; but as it is not worth while to make anything uglier than it need be, I should recommend a shaft stopped at top and bottom. This would have the appearance of a clumsy timber post; but a series of them would not look amiss. Then, as regards the floor itself, in which I include not the surface only, but the whole mass from floor to ceiling which separates the two stories,—what we have to do is to support an area, say 15 ft. or 20 ft. square, and at the same time present to the action of fire a surface, above and beneath, which shall be absolutely unflammable, and which shall not be subject to any alteration of dimensions or strength by the action of fire,—not be destroyed by the action of wet. I believe these objects would all be attained as nearly as possible by the construction which I have sketched, which consists of a beam of rolled iron resting on a cushion of brickwork not less than 3 in. over the finished top of the pillar. When the beam is set it should be painted and well sanded all round; then a platform or centre-line should be erected of the exact form of the intended under-surface of the ceiling when finished; over this tiles of any pattern that may be approved should be laid, face downwards, filling up the whole surface; the remaining space should be then filled in to the level necessary for laying the floor tiles with a concrete prepared of Portland cement, sharp silicious sand, and broken bricks and potsherds, or broken granite or sandstone, carefully excluding all calcareous stone, gravel, or sand. The upper surface should be properly levelled and floated, and a course of flooring tiles laid and grouted with cement in the ordinary way. The supports of the centreing should be suffered to remain as long as possible, and it would be advisable in all cases to finish each floor complete *port pass* with the walls, letting the cement concrete which forms the floors rest solidly for some inches in and on the outer walls.

There are, I confess, doubtful, or rather unsettled, points about this construction, viz.—1st.

* Mr. James H. Owen, M.A. Read at a meeting of the Architectural Association of Ireland, December 15th, 1873. See p. 1, ante.

The proportion of the load to be supported by the iron girders, and consequently what the proportions and sectional area should be. 2nd. The transverse strength of beams or slabs of cement concrete; no experiments that I have been able to find have yet been made to determine this. 3rd. Whether the tiles forming the under coating would not be detached by fire or water suddenly dashed against them when hot. I would wish to say a few words on each of these points. First, as to the basis of calculation of the load to be borne, or the amount of work to be done, by the iron. It will be observed that from the nature of cement concrete it differs from a floor formed either of beams and joists or of a brick arch, inasmuch as it resembles a slab of stone; and in that it is at one and the same time, both in load and self-supporting, within moderate dimensions, we can readily conceive a square slab of concrete to be independent of support except on two sides of it. And here comes in the second doubtful point. If we had the strength of a slab of concrete alone as well known as that of a slab of granite or limestone, we should know exactly that with a certain thickness we could use it with safety for a certain projection beyond the supporting wall. To take an example: no architect would venture to fix a landing of granite projecting 4 ft. 6 in. from the supporting wall, and 6 in. thick, or to cover a space 9 ft. between the walls by slabs of granite 6 in. thick; in either case it would be recognised that iron beams under the joints would have nothing to do—would be superfluous. We have not that experience as regards slabs of concrete; we do not know how far they are to be trusted; and therefore I recommend the employment of iron in conjunction.

The only experiments of which I have any knowledge which have been made in this direction are those of M. Vicat, and one made at the Great Exhibition of 1851. M. Vicat made a beam of hydraulic lime and granite sand, as sketch, of the following dimensions:—

Experiment No. 7.

c. foot.

L 0.03 = 0.08127

D 0.025 = 0.08127

B 0.04 = 1.5748

W 32.00 = 620.06

Experiment No. 8.

4700 = 92515

Applying the general formula $W = \frac{f}{c} \cdot \frac{b \cdot d^3}{l}$, we find the value of c to be, in No. 7, 16 cwt., and in No. 8, 235 cwt. These results are very low as compared with the value of c for other materials; as, for instance, 3 for Riga fir, 4 for red pine, 18 for cast-iron, &c. I cannot help thinking that the exceedingly small dimensions operated on were very unfavourable for an experiment of the kind on such a material.

The experiment made at the Great Exhibition of 1851 was somewhat similar. The beam was

of pure Portland cement, 14 in. long, 4 in. \times 4 in., and it bore 1,580 lb. Adopting the same formula, this gives a value of 1.174 cwt. for c , or, but as Portland cement loses its strength very materially by admixture with sand, we must reduce the constant very materially for this reduction; but, on the other hand, there is nothing easier or more natural than to increase the strength of the Portland beam by giving it a curved form underneath; and for the same reasons that we make a beam of iron of a parabolic form in order to collect the materials

exactly into the place where they will produce the maximum of effect, so we should give the beam of Portland cement an arch form of the same shape underneath; and it is not improbable that this expedient would make up for the loss of strength caused by adding sand and gravel to the cement—or, in other words, of using concrete in place of pure cement.

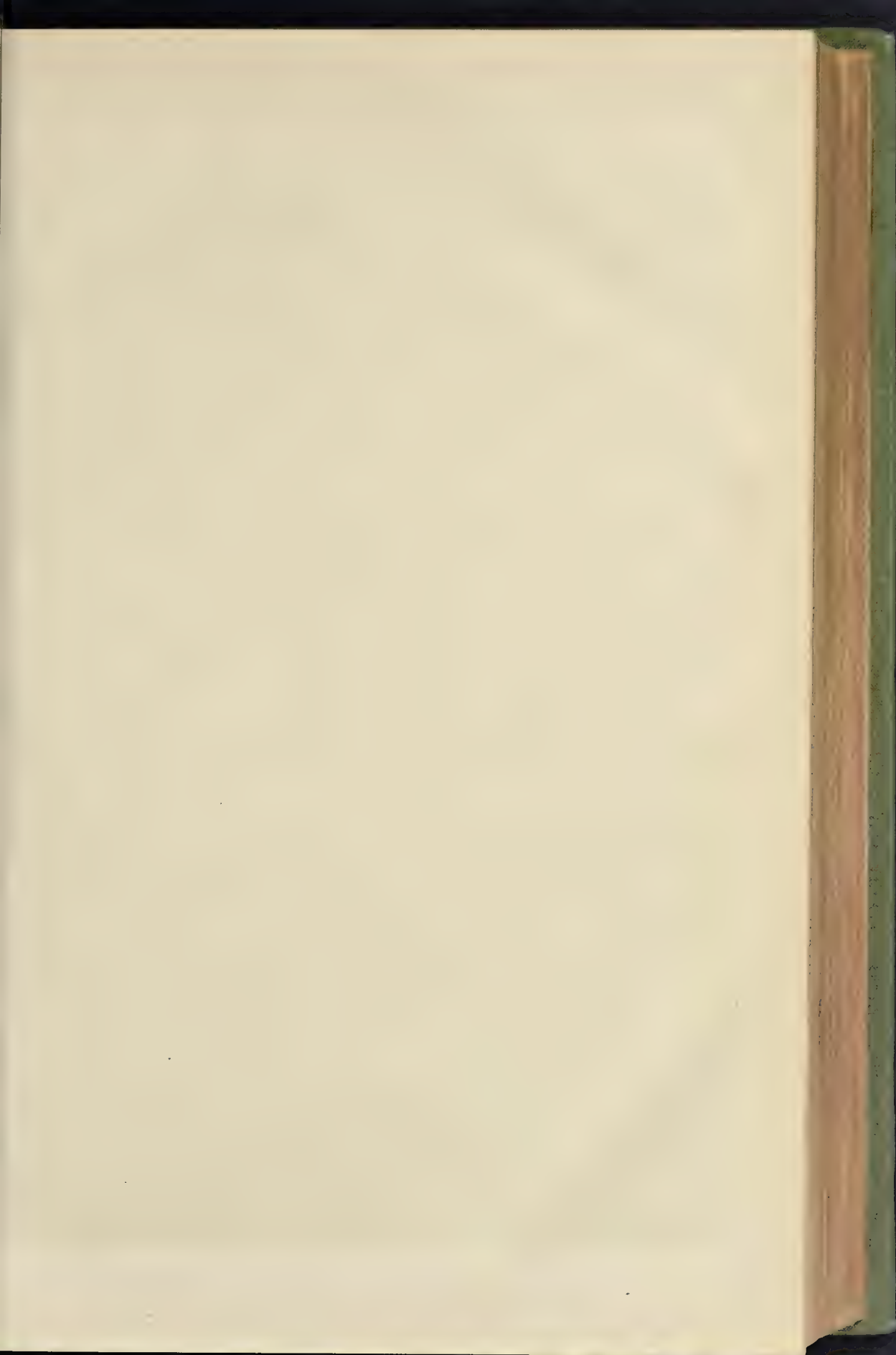
One other thing to be borne in mind is, that in all cases of using cement concrete for covering over spaces the value of B becomes extended. In an ordinary beam we have B only a few inches, and bearing the weight of an average of 10 ft. of floor. In the Exhibition experiment the weight amounted to nearly $4\frac{1}{2}$ cwt. per foot superficial of floor; and as the exterior weight for warehouses and factories is only reckoned at $2\frac{1}{2}$ cwt. per superficial foot there was evidently great excess of strength, considering the proportion of 4 in. of breadth to 10 ft.

I must not dwell longer on this subject, or you will fancy I can never get down from my hobby. I do hope, however, that those who have the opportunity will try really testing experiments on concrete in this sort of application, and publish them for the benefit of the profession. I feel rather confident that the result will be that floors and ceilings combined can be constructed of concrete, which shall rival any other form of material as regards price, strength, and economy of space.

I think it desirable to add a few words as to precaution which may be used in lessening the tendency to catch fire in buildings which are not in their nature actually non-inflammable or intended to be so. Whenever timbers are exposed, it is very desirable to cover them with a coating of common white wash, which acts doubly as a preservative, both by excluding air from the timber, and from its non-conducting power. This will, of course, be of no use when a fire has once been kindled and got to a head; but in case of fire, seconds of delay in kindling it or communicating it are of vital importance. In many a workshop or factory, if the floors and roof timbers were kept well whitewashed the risk would be much diminished. Special precaution should be taken about the floors and fireplaces: there is frequently great carelessness in timbering joists and living grounds for skirting, &c. It would be very desirable always to skirt chimneys, breasts in cement or plaster, and to fill in the place under the hearthstones with cement concrete. Ceilings, again, should be formed with much stronger laths and better nailed; and if about 2 in. of rough mortar, the corner the better, were laid over the laths between the joists, it would be found very difficult to set fire to them.

They would resist for a considerable time even a fierce fire underneath. Again, all rooms should have a good height, otherwise the constant operation of gas-lights is to prepare the timber of the ceilings for combustion on the most rapid scale, if the opportunity be once given. As regards all stoves, great attention should be paid to their being so arranged as to avoid all risk arising from the heat of the stove itself, its flue-pipe, or its ash-pan; no stove should be considered safe the flue-pipe of which cannot be heated to redness with perfect safety to the building. But in all ordinary buildings the most important point to attend to is the staircase; it should be, if circumstances will admit, closed at top or bottom, cut off from the passages leading into the rooms, and in the construction of it it is very desirable to lath the soffits with extra strong laths, and fill in from the upper side with concrete, so that all the space at the back of the riser and under the tread shall be a solid mass of non-inflammable material. Such a staircase would probably stand and bear the weight of persons ascending and descending under circumstances where an iron or stone staircase would be destroyed or useless.

Dirty Colliery Owners.—Owing to the determined action taken by the London Board, the disgraceful state of the hovels tenanted by pitmen, in not being provided with water-closets, is at last to be remedied; and last week a number of colliery owners were ignominiously summoned before the Lancaster Bench, county Durham, for neglecting to find such places. The owners of the Linth Colliery and others agreed to supply the accommodation, and the summonses were remanded, to learn if the promises be fulfilled, the owners having to pay the costs.





NUTFIELD PRIORY, SURRY



NUTFIELD PRIORY, NUTFIELD,
SURREY.

THIS mansion, of which we give a view, is rapidly approaching completion. It is built for, and has been occupied by, Mr. Joshua Fielden, M.P., since Christmas, 1872; the pulling down of a portion of the former edifice having been commenced in September, 1870.

The approach through its park from the opposite side to which our view is taken is from the main road between Redhill and Nutfield, and is about a mile and a half from the former town.

Our view represents the south or terrace front, which commands a fine and extensive prospect over the counties of Surrey, Kent, and Sussex; whilst in the foreground is a large sheet of water surrounded by ornamental planting.

The house was intended only to be partially pulled down and rebuilt; therefore the character of the existing architecture had in some slight measure to be adhered to; and when it was decided to pull down and enlarge the main portion of the building, the servants' offices, &c., had already been roofed in: this of necessity caused some difficulty in the rearrangement of the plan.

The building throughout is faced externally with the hard lower bed of the local grey nobbled stone and Bath-stone dressings; the strings, copings, &c., being weathered, and of Box-ground stone. The tower over the principal entrance is carried up to a height of 86 ft., the turret to which has yet to be built.

The windows to the principal rooms of the ground-floor, hall, and staircase have arched stone tracery heads; the tracery is varied in design, and carving indicative of the purpose of each room is introduced. The roofs, excepting those to the towers, are high pitched, and are covered with boarding-felt and brindle-colour tiles. The hill to the north, and next the court-yard on the entrance-front, has been excavated, and buttressed retaining walls built, as shown on plan,* the ground rising thence to a height of 35 ft., and falling from the garden-front considerably. This materially determined the width of the building, and the terrace on which it stands.

Internally, the ground-floor is arranged as shown; the entrance-porch and cloistered arcade are stone groined with moulded ribs; and on the bosses are motives, with carved figures, foliage, shafts, and corbels supporting the ribs. The three windows of the latter are filled with richly-painted glass. The floor of these and the conservatory are laid with red and brown Mansfield stone in diagonal squares.

The conservatory, which is the only remaining portion of the former edifice, has been entirely rearranged, and its stonework altered. The flower-beds of this and the two laying out of the ornamental planting generally have been carried out under the direction of Mr. Edward Kemp.

The entrance has a massive oak door, the vestibule an oak-ribbed and boarded ceiling, and is divided from the porch and staircase by wainscot oak double-swing glazed doors, with traceried upper panels, and fanlights.

The hall, which is carried up through the first floor, is 28 ft. high, and has an oak ceiling panelled with moulded beams and ribs, supported on carved stone corbels. The windows are filled with painted glass (executed by Powell & Sons), from the full-sized cartoons designed and drawn, and the glass selected by F. R. Pickers-gill, R.A., connecting the various dates, &c., with reference to the passing of the Factory (or Ten Hours) Bill, in which the late John Fielden, M.P., took a leading part.

The large bay window is richly carved externally with monograms and motto, &c., and consists of twenty-four lights, besides the tracery, the main front lights representing the different ages and methods of spinning. The eight top ones (four each) show when the upper classes employed themselves so usefully in that avocation, "with the spindle in the thirteenth century," and, until it was superseded, "by the wheel in the sixteenth century," whilst the four lower lights represent the work being done by operatives in the nineteenth century by the aid of machinery, steam power having superseded hand-work, rendering it one of the great commercial pursuits of this country. Two of the side upper lights represent the state of the operatives before 1816, and the opposite two after 1847; whilst the other lights have the names and medalion portraits of those who were instrumental in ameliorating the condition

of the over-worked women and children. The borders to the whole of this window, and to the other two six-light windows of the hall (which latter have stained-glass medallions, containing the Lancashire and Yorkshire badges), are formed by the representation of the cotton plant, &c.

The hall is of oak wainscot, panelled to a height of 6 ft. 6 in., the upper ones carved with separate devices. The chimney-piece is of polished Hopton wood stone, and wainscot, richly carved, having a motto carved on the stone mantel. The archway leading to the principal staircase and garden entrance is delicately moulded and enriched with traceried spandrels, appropriate mottoes, and carving.

The artificial lighting of the hall is by a sun-burner, with an ornamental bronzed ventilating pendant richly finished.

An open gallery crosses one side of the hall, forming a communication on the first floor, and is supported by oak-moulded trusses and stone corbels, having a wainscot handrail and traceried balustrade. The staircase is of stone, with a similar balustrade.

An organ with carved oakcase will be placed in the recess provided in the hall, the bellows to be worked by means of water pressure.

The joinery of the drawing-room is finished with birdseye maple and king-wood inlay. The windows to this and the other principal rooms on the ground floor have gun-metal sashes with self-acting fasteners, and glazed with plate-glass in single sheets running between the outer stone and inner wood mullions and traceried heads. The ceiling of this room is plaster divided into quatrail and other ornamental panels, having mouldings and patterns, and decorated with colour and gilding. The chimney-piece and fender are of statuary and Sienna marbles, having shafts and carved caps, with statuary jambs and mantel inlaid with Sienna, the glass over being specially designed to suit.

The joinery to the boudoir is of picked wainscot, the ceiling plastered and enriched. The chimney-piece here also is of statuary and Sienna, the frontispiece for glass over is of Sienna marble inlaid with carved statuary, enriched with corbels at intervals supporting brackets for china.

The library ceiling is wainscot panelled with diagonal moulded ribs, having carved bosses at their intersections, and boarded diagonally to a pattern. The walls and recesses are fitted with wainscot bookcases specially arranged. The chimney-piece is of Grottoe marble and wainscot, richly carved, and over it is an ornamental silvered glass with carved columns.

The dining-room ceiling is of plaster, with appropriate enrichments; the joinery is of wainscot; the chimney-piece and fender are of Hopton wood-stone, with Emperor's red marble shafts, shelf, &c., moulded and enriched with traceried panels and carving. The doorway leading from this room to the cloisters has glazed traceried upper panels, and lead with jamb linings well carved with fruit and other devices.

The billiard-room, which is approached through the conservatory, is a large and well-lighted room, with an open-timbered roof, the joinery being of wainscot. The chimney-piece and fender are of Devonshire marble.

The offices are fitted up carefully.

In the basement are the necessary cellars, and a heating apparatus, which warms the hall, staircase, the principal rooms, &c., in addition to or irrespective of their fireplaces. The system is very economical in the consumption of fuel, and consists of a small boiler, from which are carried flow and return pipes to a central chamber in the basement story. This chamber is fitted with hot-water coiled piping, under and through which the fresh air enters; and below the ground-floor are air-tubes conveying the warmed air to each room through valved ornamental brass gratings fixed in the skirtings.

On the first and upper floors are arranged thirty bedrooms, a schoolroom, day nursery, sewing-room, seven dressing and (hot and cold water) bath rooms, housemaids' closets, linen and other closets, store-rooms, &c.

The rain-water from the roof is utilised, the washing water is afterwards used for garden purposes, and the other water to supply the house generally is from the Caterham Hills, stored and filtered through tanks, containing upwards of 21,000 gallons, formed in the high ground, at a level sufficient to supply the top floor, and to which pipes and hydrants on the several landings, and externally, can be attached hose in case of fire.

The house, stabling, and farm buildings are supplied with gas made at the latter. The drainage is used for irrigating the land.

The works have been well carried out by Messrs. W. Cubitt & Co., from the designs and under the direction of Mr. John Gibson, of Westminster, Mr. Hankins having acted as general foreman of the works, to the satisfaction of the architect.

PRESIDENTIAL ADDRESS IN IRELAND.

ROYAL INSTITUTE OF IRISH ARCHITECTS.

At the annual meeting of this Institute held on the 6th in the rooms of the Royal Librarian Academy, the President of the Institute (Mr. J. H. Owen) delivered an address. After a few introductory observations, he said,—What is to be the future of architecture? What chance is there of a distinctly national style being produced among us? I believe that there is no chance whatever of anything of the kind; but, on the contrary, that, just as all the old distinctions of national costume are rapidly disappearing under the influence of easier intercommunication, and as it becomes more and more difficult daily to distinguish, by their appearance, the nationality of persons of the educated classes, so the distinctive characteristics of the architecture of the nations which are most advanced in modern civilisation will become more and more minute and evanescent; local colouring will disappear, and nationality of character will, to a great extent, merge in one universal modern style, which will have for its basis the adaptation of each structure to its intended use, with such ornamentation superadded as the nature and purposes of the structure may suggest, borrowing ideas both of construction and ornamentation from the past, using freely what has been done before, but never slavishly following arbitrary and empirical laws in anything. This, I feel convinced, is the tendency of the architecture of the future; and as it is undoubtedly in a right direction, it gives great promise of leading to right conclusions. It may be said, indeed, that this altogether excludes the idea of originality,—that if we are always to go on borrowing from the past, there exists for the future only a bald repetition of familiar forms and used-up ideas. But such use of old material is inevitable in every mental pursuit which has attained a certain stage of development. Give the architect a differently constituted order of human beings to lodge, or different climatic influences to counteract, or materials to use of a nature different from any that have been before employed, and it becomes his duty to be original—to invent means and appliances for meeting the new wants which are presented to him, and counteracting the new and strange influences, and to originate, after due analysis and experiment, the best and most efficient mode of using his new materials; but as long as he has to work out the same old problems, with the same old data as all his predecessors have been engaged upon, he must be satisfied to work under the same old laws, the truth of which has been established by the experience of ages, and to seek for the credit of originality only in the right and just application of them. All other originality is the originality of conceit and ignorance, which, wilfully leaving the beaten paths, and striking out ways for itself, too often ends in quagmires and cul-de-sacs, to the loss and discredit of the rash originator. At the existing stage of the history of the art, the only possible originality is to be found in the happy adaptation of old ideas to modern uses; in studying the work which we have to do in the same spirit which moved the excellent and honest architects of old, we shall perhaps succeed in producing such results as they would have attained, with the same objects to be aimed at and materials to be used,—we shall imitate without copying.

We are indebted to-night for our place of meeting to the graceful kindness of the president and council of the Royal Librarian Academy, which it were ungrateful of us to pass over without public acknowledgment, and the more so as it has enabled us to solicit the honour of your Excellencies' attendance at this meeting, to countenance by your presence the efforts of Irish architects, as they are exhibited on the walls of these galleries. They are poor and humble enough, probably, in comparison with similar exhibitions in the great centres of the population of the world; but, as compared with the position and population of Ireland, they

* Plan will be given in a following Number.

cannot but be considered as showing satisfactory progress and tendencies in a right direction, which time, and the improvements in the social condition of the country which are undoubtedly taking place, will hereafter confirm and develop.

The Royal Hibernian Academy is indebted for their lodging in these very suitable and convenient apartments to the love of art and the liberality of one of my predecessors in office, Francis Johnston, who was architect to the Board of Works down to about the year 1830.* However much I, or any of his probable successors in the future may be tempted, by possession of the same feelings to imitate his action in this respect, there is very little probability of his ever being able to yield to the weakness, by providing the Royal Institute of Architects with a suitable habitation, or to contribute to the art-education of the country in any appreciable degree. The works that he is chiefly engaged upon are of a strictly utilitarian character, and must bear that character impressed upon their exteriors. I have sometimes experienced a feeling somewhat analogous to that of Hans Andersen's Ugly Duckling, as if I were cut off by the sphere of my duties from all the beauty and grace which are open to my more fortunate contemporaries, who are not limited, as I am, in the range of their works; but I have consoled myself by the reflection that ornament is not always beautiful,—may, sometimes, that attempts at ornamentation only produce deformity; that simplicity is not always or necessarily mean; that plainness and ugliness are not, rightly considered, synonymous terms; and that there is room, even for the architect to the Board of Works, to contribute something towards the advancement of the art, by studying how to do common things well and honestly.

The great topic of the day, as far as our profession is concerned, is the necessity of adapting all our works, whether public or private buildings, whether single or in groups, to the rules and requirements of sanitary science. I am not going to dwell in this address on the subjects which it took our talented townsman, Professor Cameron, a course of lectures only to touch upon very recently. I only call attention to it to suggest the caution that, while it must not be ignored altogether, it must not be treated partially or one-sidedly, or suffered to engross our whole attention to the exclusion of other considerations which are of equal importance, and, above all, to maintain strict moderation, and avoid extremes. I may illustrate my meaning by calling your attention to the fact that water—that element of our daily food, on the supply of which, in a pure and wholesome state, we are so dependent for healthy, vigorous life—is not to be found in a state of absolute purity in nature; it is only with considerable difficulty that the chemist can procure it in that state for his experiments. The chemical analysis of a water which is of admirable quality for all the uses of man, reveals an amount of admixture of foreign matters that is quite startling until the test of experience is applied to the analysis, to determine whether the admixture is such as to afford wholesome food or deadly poison. In like manner we must carefully avoid allowing ourselves to be carried away by appearances—or permitting scientific facts to divert us from following the results of experience. It is an undoubted fact that prolonged breathing of the same air is prejudicial to health, but it is equally true that it is not necessary to establish a thorough draught through every room to make it habitable. We must dilute our science with a large measure of common sense, if we are to get out of it all the benefit which it is capable of affording us, and, without doubting or discrediting the results of scientific inquiry, use them in the true scientific spirit—not blindly or rashly, but definitely,—with careful relation to quantity and quality, and giving all the circumstances of each case their full weight and consideration.

NOTES FROM AMERICA: THE ST. LAWRENCE.

For a thorough enjoyment, let it be by water on board a magnificent steamer, with state cabins, where one can take a quiet nap either by day or night, get his three square meals a day, and can take a wee drop if he feels chilled. Having procured a ticket, and secured a cabin, we start from Prescott, a miserable dirty city in Canada; we then steam for Brockville, a lively smart city, picturesque in the extreme, and con-

taining a number of large foundries, also good hotels, with all the life and vigour of a go-ahead Yankee city, though in dull Canada. From Brockville we start for the Thousand Islands, and truly the islands are indeed a sight never to be forgotten, lighthouses dotted here and there, islands undulating, flat, oval, and horse-shoe shaped. Passing St. Anne's, an enthusiastic Irishman reminded me that Tom Moore composed the "Canadian Boat Song" at this place, and he, with a sweet brogue, pointed out the first line, "Row, brothers, row." From the Thousand Islands we touch at Kingston, Canada. Kingston possesses some very fine buildings, a penitentiary, and several banks, with a fine marketplace; business seems very dull in this city—enterprise apparently wanting. The convicts in the penitentiary are taught harness-making, lock-making, and grave and other stone cutting.

From Kingston the boat touches at Oswego, a sort of Wapping: here a lot of grain-elevators are to be seen in full work, piles of lumber, and a great many coal-wharfs. Oswego viewed from the river is not a very enticing place, it is in the New York State. From Oswego the steamer sails on until it comes to the Welland Canal and has to pass, I think, about twenty-seven different locks. On the Welland Canal the city of St. Catherine is situated. St. Catherine's, though small, is a noble, picturesque, compact city,—the finest for beauty in the whole of Canada. The locks in the Welland Canal are closed on Sundays, so the steamer had to lie idle, giving the passengers an opportunity of visiting Niagara Falls, a distance of about nine miles from Welland. Niagara Falls is a scene never to be forgotten, and, so often described, that it will suffice to say that for hotel charges I have never met the like, and hope never to do so again.

Leaving the Welland Canal, we steam for Cleveland, in the State of Ohio. Cleveland is a pretty and dirty city—clean in one part, but shabby in another. The city is crowded with Germans, Irish, French, English, and Yankees; lager-beer saloons, gardens, and a goodly number of entertainments to suit the appetites of the various nationalities. To see a German or "Dutch," as they are called in the States, drink lager, one would, like Samuel Weller, say "his suction powers are very vast." The Dutch lager-drinkers can knock the spots off a Britisher at beer-drinking.

From Cleveland we start for Detroit, in the State of Michigan. Detroit is a fine city, and contains about 50,000 inhabitants; broad streets, several very fine buildings; the public institutions really are artistic, and worthy an architectural compliment. There is a great number of blacks, who seem to be longing about waiting for something to turn up. Opposite Detroit is Windsor, in Canada, about as dirty a place as can be traversed; not a single street macadamised, no lamps, and muddy: the contrast with Detroit is glaringly striking. A ferry, fare 5 cents, runs from Detroit to and from Windsor every few minutes.

From Detroit we steam through the Saginaw Bay,—a rather rough place, but enjoyable to a good sailor. Saginaw is a lumber region. From Saginaw we then finish our voyage by arriving at Chicago. Chicago marble fronts; Chicago, "The City," as the Yankees call it, but marble fronts seems to me a synonymous expression. Everything seemed to be hurried up, not squarely and workmanlike built. The city, in my opinion, is remarkable for its growth, and the number of whisky saloons.

There is a magnificent hotel and railway depot being built, but beyond a few buildings of a real architectural character, the city seems to me to have a name for wonders and smartness (and courts the same), really more from "gas" than "genuine reality."

A word for Mr. Arch. Your correspondent has seen the States and Canada, not from a railway carriage, but by observation on foot. Let him persuade the tenant-farmer, who is saving his 20l. a year, to stay in England, where he can see something, and be seen. A man to work for his grandchildren is very courageous; but if the hardihood of cleaning up a bush-farm were really known, it would take the pluck out of the jolly, merry farmer-boy; let him swing an axe for ten hours, and see then what is work.

The poor chawbacon farm-labourer send out,—he can command decent wages, will have to work hard, but will be decently fed, and will not have to take his hat off to squire, lord, or lady; but he will find there is no place like home, if he can obtain anything like a decent living in the old country. Lastly, a word for

clerks, shopmen, and no-trade men,—stay at home. Muscle, muscle; plenty of wood, water, and hard work, is the motto for an American emigrant.

QUEBCU.

THE HOOSAC TUNNEL.

An opening has been effected between the opposite workings of the Hoosac Tunnel, an engineering work which is exceeded in magnitude in its class only by the Mont Cenis Tunnel.

The mountain to be pierced has two summits, with a wide valley between. The exact distance between the two portals is 25,031 ft. The eastern summit is 6,100 ft. from the eastern portal, and 1,415 ft. above the grade of the railway. The western summit is 6,200 ft. from the western portal, and is 1,704 ft. above grade. The two summits are something more than two miles and one-third apart. The lowest point of the intervening valley is 801 ft. above grade. A geological examination of the mountain by Professor Hitchcock, then one of the best American authorities, seemed to establish it as a fact that the formation was mica slate throughout. "Mixed up, however, with a little quartz of an imperfect kind, which does not differ materially from the mica slate in hardness." This did not prove to be true, as a vein, several thousand feet thick, of very hard rock was struck some years ago, and caused a material delay in the completion of the work.

All sorts of inventions have been tested in the Hoosac Tunnel. There was one boring-machine that was to cut its way into the rock at the rate of 2 ft. an hour. It failed utterly. A great dam was constructed across the Deerfield River, which flows by the eastern portal, to furnish power for compressing air. The dam cost nearly 300,000 dol., and yet it was necessary to supplement it with steam-engines. Thousands of dollars were wasted on experiments with power drills, and there is perhaps no known explosive which has not been tested in the Tunnel. Since the Messrs. Shively took the contract, all the drilling, except on the central shaft, has been done by means of compressed air driving-power drills, which are an American improvement on those that were used at Mont Cenis. At all the points of working except one the usual explosive has been nitro-glycerine. As a total result of the ten years' desultory working up to the making of the contract, only 9,338 ft., or somewhat less than two-fifths of the entire distance, had been pierced. The progress in 1869 was 1,688 ft.; in 1870 it was 2,854 ft.; in 1871 it was 3,553 ft.; in 1872 it was 4,456 ft.; in 1873 it has been 3,132 ft., completing the entire distance of 25,031 ft. The tunnel is completed from the east end to a point 750 ft. west of the shaft; that is, about 13,600 ft., and from the west end about 9,600 ft., leaving between about 1,850 ft., where the opening is of full width, but only 8 ft. high. The dimensions of the full-sized tunnel are 21 ft. in width, and 20 ft. in height, and its shape is nearly semicircular, the variation being such as to give nearly the full height of each of the two tracks which will be laid through it.

The advantages of the tunnel are not so much a shortening of distance as a diminution of gradients. If Albany were the objective point of a railway, the "tunnel route" would be six miles the shorter. But on the Boston and Albany road there is an ascent of 85 ft. to the mile, as against 60 ft. on the tunnel line. Of course, as the tunnel is twenty miles to the north of the nearest point on the Albany-road, the distance also would be shortened if the idea be to seek a lake port where the produce of the West may be transhipped. This is, in fact, a part of the plan.

The tunnel will be completed in July. Unfortunately, the railway east of the Hoosac is in a bad condition. It has but one track, its location is as bad as it could well be, and the road-bed is utterly unfit for the transaction of a large amount of business. The same remarks apply, modified slightly, to the middle section, about fifty miles in length. The Fitchburg-road, the Boston-end, has a double track, but it is unprovided with freight-rooms, wharfs, docks, and elevators, such as a great through line should possess. The strange circumstance, therefore, of a great work that has cost 10,000,000 dol., or 12,000,000 dol., being, nevertheless, practically useless, seemingly to be presented.

The object of the central shaft, which was begun under the State Commissioners about ten years ago, was to supply four faces to work upon. When it had been sunk to grade in 1870, opera-

* He died on the 11th of March, 1820.—Ed.

tions were begun in both directions; but large "pockets" of water were struck going westward, and only three faces could be worked. Water made so fast that immense pumps were put down the shaft, which raised it in three lifts 1,030 ft. at the rate of more than 200 gallons a minute. In 1872 the headings eastward from the shaft and westward from the east end, met in December. Soon afterwards the removal of the "bench" between the two points of working gave the water an opportunity of running harmlessly out at the east end, and westward work from the shaft was resumed.

More than three months ago Mr. Shanly estimated that the two headings would meet on the 1st of December. As a matter of fact he gained three days on his estimate. There are many circumstances of interest in connexion with the opening. The headings met with wonderful accuracy. The measurements have not been made; but the two lines cannot possibly vary more than an inch or two, and probably the error is less still. For a great part of this work the State is indebted to Mr. Wederkinch, a young Danish engineer, who has not only run all the lines in the central shaft section, but has invented and made with his own hands the necessary instruments. The amount of nitro-glycerine used at each blast was something enormous. The total quantity used was more than 150 lb., being nearly twice as much as was ever before put into one charge. The effect was in proportion. One great piece of rock, weighing upwards of a ton, was thrown directly outwards with such force that, at 100 yards' distance, it demolished the great wooden barrier which had been put up to protect those beyond. Another singular fact is, that the current of air sets steadily outwards. Heretofore the current between the east end and the shaft has depended on atmospheric conditions; now it would seem to be established that there will be a steady current through the entire tunnel from east to west when it shall be opened.

The Times, to which we are indebted for the particulars herein condensed, gives a longer account of the history and opening of the tunnel.

OPENING OF LONDON SCHOOL BOARD SCHOOLS.

York-road, King's-cross, Islington.—A new Board school has been opened in the York-road, Islington, by the Lord Mayor, and Mr. Charles Reed, M.P. (chairman of the London School Board), Mr. Currie (vice chairman of the Board), Mr. Chatfield Clarke, &c. The total accommodation, it was stated, in the new schools, is for 1,388 children, thus divided:—boys, 512; girls, 354; and infants, 522. The building consists generally of three stories, the infants' department being on the ground floor, the boys' on the first floor, and the girls' on the second floor. There is also a small basement for the heating apparatus and coals, and a third floor forming a central feature in the elevation, containing apartments for the care-taker. The infants' department consists of two distinct schools, each comprising one L-shaped schoolroom, with two classrooms adjoining,—one for babies, the other for the more advanced infants,—also lavatories and cloak-rooms. The boys' department is divided into senior and junior schools, both on the same floor, and each comprising an L-shaped schoolroom and classroom adjoining, the schoolroom arranged for subdivision into two portions when desired, by Stone's patent partitions, and the inner boys' classroom divided into two by double sliding partitions, with semicircular double sashes over same. Lavatories and cloak-rooms for each department adjoin these schoolrooms. The girls' schools are designed upon a similar principle, but the schoolrooms are simple parallelograms. A drawing-class room, 25 ft. 6 in. by 18 ft. (top lighted), is placed to the rear of the schoolrooms on the second floor, and the staircases are so arranged that the rooms can be used by either boys or girls without interfering with the separation of the sexes. A manager's room, 20 ft. 6 in. by 18 ft., is placed on the first floor, under the drawing-class room, accessible from both the boys' and girls' staircases, and forming a means of communication for the care-taker to all parts of the main building. This room will also be used as a mess-room by the masters and mistresses, and waterclosets and lavatories for each sex are provided in connexion therewith. The boys' school and playground are entered from a newly-formed side street. A large archway,

giving a central feature in the front elevation, forms a general entrance for the girls and infants, who will also have the same playground. The building is warmed by the system of Messrs. Price & Co., of London, by which the cold fresh air is warmed by passing over hot-water vessels, and is supplied therefrom to the several rooms and staircases by means of flues having valvular entrances, so that the supply of warm air can be regulated at pleasure. This system will also in summer provide for a full supply of cold fresh air through the flues into the rooms, when the apparatus is not required for heating purposes. In connexion with the warming is the ventilation, which is provided for by means of perforated zinc panels in the ceilings, through which vitiated air escapes into flues from which it is drawn by a rarefying apparatus placed in the turret. This system is supplemented by a large portion of every window being made to open, and windows being placed on both sides of all rooms, ample through ventilation is provided. The several entrances and staircases have been so arranged that there are no corridors, a general landing on each floor giving all the accommodation requisite. The building is of Gothic character. The principal elevations are faced with red Suffolk bricks with stone and terra-cotta dressings. The cost of the schools has been 12,000*l.*, including site, which is at the rate of 8*l.* 15*s.* per child; the cost of the building, including extras, 9,150*l.*, or 6*l.* 16*s.* per child. The schools were built by Messrs. W. Henshaw & Co. The architect is Mr. T. W. Aldwinckle, of London, whose designs were selected in a limited competition.

Battersea.—Two spacious blocks of school buildings, erected in Battersea under the auspices of the London School Board have been opened for the reception of scholars. One of these, in Bolingbroke-road, accommodating about 580 children, has been in one of its sections open for several weeks; but the part appropriated to the girls began its useful work on Monday last week for the first time. Here there were 148 boys, 48 girls, and 130 infants; and the number would doubtless have been equal to the capacity of the buildings, but for the absence of publicity to the fact of the opening. The value of publicity in these matters was shown in the influx of children to the new schools in Winstanley-road, near to Clapham Junction Station. The place was besieged with parents accompanying children whom they sought to enter on the school register. Those actually received comprised 100 boys, 160 girls, and 170 infants, besides 150 boys brought from the Board's temporary school in the neighbourhood, so that 580 places out of 700 may be said to have been filled up on the opening day. The lighting of the rooms, the heating, and the ventilation appeared to be excellent, both in Winstanley-road and Bolingbroke-road; but the limited area of the playground in the former case calls for enlargement. Mr. Robson is the architect, and Mr. G. Stephenson the builder. Mr. Noble, the inspector for the south and west divisions, witnessed the opening at Winstanley-road, and then went on to Bolingbroke-road, before going to Monnow-road, Bermondsey, where a third school for 1,100 children was inaugurated.

THE TRADES-UNION CONGRESS AT SHEFFIELD.

The sixth annual meeting of this Congress is taking place at Sheffield. Mr. William Rolley, President of the Sheffield Trades Council, was on Monday (the first day) appointed chairman of the Congress, and took the chair. Mr. Alfred Bailey, Preston, was appointed vice-president; Mr. Prior, Sheffield, secretary; Mr. W. Allen, London, treasurer. For the office of auditors, Messrs. Casey and Knight were elected.

The Credential Committee presented their report, which showed that about 120 amalgamated national and confederated societies were represented by delegates, and that the number represented was between 900,000 and 1,000,000. The principal associations were Lancashire, Cheshire, Derbyshire, Factory Lists Reform Association, including men, women, and children, 236,000; Glasgow Trades Council, 140,000; Miners' National Association, 130,000; Amalgamated Associated Miners, 105,000; Amalgamated Society of Engineers, 42,600; Amalgamated Iron and Steel Workers, 35,000; Amalgamated Railway Servants, 25,000; Operative Masons, London, 22,000; Amalgamated Carpenters and Joiners, Manchester, 12,000; London Trades

Council, 10,758; Operative Cotton-spinners, Lancaster, 11,927; Ironfounders, England, Ireland, and Wales, 11,748; Staffordshire Miners' Association, 8,700; Boilermakers and Shipbuilders, Sunderland, 13,500; Tin Plate-makers, Swansea, 4,000; Wigan Trade Council, 9,500; Shipping Trade Council, Liverpool, 2,147; Brassworkers, Birmingham, 5,000; Edinburgh Trade Council, 10,000; Birmingham Trades Council, 10,000; Liverpool Trades Council, 5,667; Sheffield Trades Council, 4,000; United Kingdom Coachmakers; Kent Agricultural Labourers' Union, 9,000; Oldham Trade Council, 2,500; Bolton Trade Council, 2,000.

The secretary read the report of the Parliamentary Committee, which was a very long one, commencing with congratulations on the rapid growth and development of the trade-unionism during the year, the progress made having been unparalleled, especially in those branches which had hitherto been but badly organised. The funds had also correspondingly increased with increased pay and shorter hours of labour. The Congress had continually to contend with misrepresentation in the press and on the platform; but the committee had been able to hold their own by setting right the misinformed and resenting and exposing the calumnies of the unscrupulous. The efforts that had been made in connexion with the Criminal Law Amendment Act, the Masters and Servants Act, 1867, the Conspiracy Laws, the Trades-Union Act, 1871, the Juries Bill, 1873, Compensation to Workmen Bill, Payment of Wages (Truck) Bill, and the Factories Nine Hours Bill, were reported in detail, and the deputation to Mr. Lowe were encouraged to believe that the Government would deal with these questions in a just and liberal spirit. The federation of employers did not cause the committee any fear of disastrous results. The committee had never desired warfare in any sense, and they hoped that peaceable arrangements would be brought about through friendly intercommunication between that federation and the Parliamentary Committee. A reply to their statements had been prepared by Mr. Henry Crompton, and would be presented to the present Congress. The report expressed a hope that a reform would be effected in the mode of appointment and removal of the unpaid magistracy, and especially with a view to the appointment of stipendiaries in all parts of the country. The report closed with the Parliamentary programme for 1874, which includes repeal of the Criminal Law Amendment Act, alteration of the Masters and Servants Act, so that a breach of contract shall not be a criminal offence; alteration of the Law of Conspiracy in accordance with the Solicitor-General's Bill; the reconstruction of the Small Penalties Act; the summary jurisdiction of magistrates; reduction of the qualification of jurors, to admit workmen; compensation for workmen in case of accident; the Factory Nine Hours Bill; weekly payments in money; and an Act for the better protection of seamen's lives by preventing the sending of ill-found and unseaworthy vessels to sea.

The financial statement showed that, including a balance of 119*l.* 18*s.* 4*d.* from last Congress, the receipts of the Congress were 543*l.* 18*s.* 6*d.*; the expenditure, 393*l.* 19*s.* 4*d.*; leaving a balance of 149*l.* 19*s.* 2*d.*

The new president brought under notice, on the second day of the congress, the purposes for which, from time to time, their Congress meetings were held. One of those purposes was for the furtherance of the most blessed of all principles, that of one common brotherhood. Another was to discover their weak points as an organisation. Another object was to seek to rectify the wrongs under which they, as working men, groaned. He rejoiced that they had their Parliamentary Committees. To him it was a point of great importance how the power of the Parliamentary Committee could be increased.

After treating on political and other points of interest to the Congress, the president closed with an appeal to trade unionists to go forward confidently in the hope that victory, although it might be delayed, was certain to come.

Mr. Henry Crompton read a report upon the memorial presented to the Home Secretary by the National Federation of the Associated Employers of Labour. The thanks of the Congress were tendered to Mr. Crompton for his report, which was ordered to be printed as a trade union tract.

The Congress then proceeded to consider their future programme. Mr. Mundella, M.P., was requested to introduce the discussion of the

Criminal Law Amendment Act. He did so, narrating the steps that had been taken to amend that Act in a spirit of fairness to the employers. He was ignorant of the Government intentions, but he was under the impression that Mr. Lowe would surprise them on this point. He was strongly in favour of the entire repeal of the Act.

Mr. George Potter advised united action and pressure being brought to bear on members of Parliament.

Professor Goldwin Smith, who was received with loud cheers, said although he had been absent from England for five years, his heart had never ceased to be with his old friends in their cause.

Mr. George Odger moved a formal resolution asking Mr. Goldwin Smith to speak on emigration, which was one of the most important questions at present before the working classes of this country. Resolution passed.

Mr. Plimsoll, M.P. for Derby, was warmly received.

The Congress resumed its sittings on Wednesday, when the Criminal Law Amendment Act was a prominent topic of discussion. A resolution, moved by Mr. Potter, and seconded by Mr. Odger, was carried, expressive of satisfaction at the progress made during the year, with the agitation against the Act, and further, pledging each delegate, individually, to use all possible means, by agitations, public meetings, &c., to further the cause. It was also resolved that the Conspiracy Laws required amendment in the direction of the Bill brought in last session by Sir W. Harcourt.

On Thursday morning the delegates were to breakfast with Mr. Mundella, M.P., at the Victoria Station Hotel, Sheffield.

A meeting of the representatives of the Trade Councils of the United Kingdom, representing 202,474 members, has been held in Sheffield, to discuss the question of forming a federation of the Unions. The following resolution was passed:—"That in the opinion of this meeting a great advantage will accrue to the labour population of the kingdom by a federal action of the Trade Councils throughout the country, in order to support those trades which belong to any Council in the federation, and agree to act on this principle for the general welfare of organised trade societies."

WANDSWORTH SURVEYORS AND CONTRACTORS.

SIR,—I see the *Builder* is the one only professional paper which has even alluded to this matter,—certainly the most flagrant case I have, in a long professional life, "come across," as Dr. Keenly says.

You will see by the local paper, inclosed, the agitation in the parish is still going on. My house is in Wandsworth; and, though I know absolutely nothing of the three implicated surveyors and their subordinates, I have been at the pains to collate the whole affair, from its commencement last Midsummer, and send it to you in a roll some considerable number of yards long.

As the case stands up to this writing, the Local Board has,—

1. Disqualified Neale & Co. from ever again tendering in their parishes, because they stand charged with bribing surveyors, their under-surveyors, and foremen of roads.

2. Discharged all the subordinates, sans benefit of clergy.

3. Condemned the asserted *laches* of all the surveyors; on the plea, I suppose, of the traditional jury verdict,—"Not guilty; but we hope they will not do it again!"

If the *Builder* will not take up such a case as this, I for one shall begin to question its very reason d'être.

W.

THE EXETER ARCHITECTURAL SOCIETY AND THE CATHEDRAL REREDOS.

WE are requested to publish the following:—"The Committee of the Exeter Diocesan Architectural Society desire at this time to reaffirm certain principles which the Society has always felt itself bound to maintain to the utmost of its power; and they unanimously resolve:—

1. That natural and revealed religion alike sanction that general principle which bids us offer of our best to God, and consecrate the

highest efforts of human genius, taste, and skill to the service of the sanctuary.

2. That this principle applies with special force to the production of art in all its branches.

3. That some of the greatest triumphs which art has achieved have been won by her, when she has been working as the handmaid of religion.

4. That the highest forms of art, when employed as decorations of God's house, and as adjuncts to His holy worship, are means of creating and elevating devotional feeling, and of setting forth the honour and glory of God.

5. That the exclusion at this time of any one particular branch of art from the service of religion, and the restriction of that branch to secular uses only, on the ground that it has at some time been abused, is arbitrary and illogical—for the same objection applies with equal truth to every other branch of art—and such restriction would act injuriously both on religion and on art; on religion, by limiting the extent of the services which it has a right to receive from art; and on art, by withholding from some one branch of it that influence which has inspired its loftiest aims and noblest efforts.

6. That the employment of sculpture, both in wood and stone, for the adornment of churches by representations therein of

(a) Persons,
(b) Natural objects,
(c) Events of Sacred History,

is only a particular instance of the operation of the general principle set forth in Resolution 1; and is regarded with warm approval by this committee; because it

(a) Responds to the common instincts of Christianity;
(b) Conforms to the analogy of the Divine works in the Universe;
(c) Obeys the Divine will as declared in Holy Scripture.

7. That for these and other reasons it is the bounden duty of all thoughtful Christians to cherish and defend the use of sculpture and the sister arts in our churches; and to oppose to the utmost of their power the iconoclastic spirit, whosoever, and by whomsoever it is exhibited.

J. L. FULFORD,
BARNHOLMEW C. GIDLEY, } Hon. Secs.

THE NEW APPROACHES TO THE RIVER AT LIVERPOOL.

AN engineering work of great magnitude, at Liverpool, which has been in progress for upwards of eighteen months, has now been considerably advanced towards completion, and is expected to be finished and ready for opening to the public early in the present year. The works to which we allude are the new approaches from the town to the river Mersey, for the purposes of carriage traffic across the river from Liverpool to Birkenhead, as well as to facilitate passenger traffic. The works are on a gigantic scale, and involve the filling up of one of the dock basins (St. George's), on the margin of the river, containing an area of between two and three acres in extent. The magnitude of the undertaking may be conceived when it is stated that in filling up this basin, no less than 169,000 cubic yards of earthwork and refuse have been required, which, in addition to that supplied by the Dock Board, who are executing the work, have been furnished by contractors, builders, and others. Whilst the basin was being filled up, a river-wall across the entrance to it was also in progress, and this part of the work has now been built up to the coping level. The approaches, connected with the roadway from the town, will be by seven short bridges, together with an immense floating bridge, falling 1 ft. in 21 ft. at the lowest state of the tide. The sides of this bridge are built of Scotch granite, and the roadways on either side will be 100 ft. and 150 ft. in width respectively. The floating bridge will be connected with an enormous landing-stage in the river, 2,000 ft. in length, and 80 ft. in breadth. This ponderous structure will be formed by lengthening and connecting two landing-stages, the George's and the Prince's, which are already moored in the river for the use of ferry and sea-going steamers. In order the more effectually to connect the new approaches with the neighbourhood of the Exchange, a new thoroughfare is contemplated, which, if carried out, will involve the taking down of office property in that locality, which is of great value. In anticipation of the opening of these river-approaches,

the Birkenhead authorities contemplate a better mode than that now in use for conducting cross-river traffic, and with this view they some time ago invited designs, offering premiums of 200*l.*, 100*l.*, and 50*l.* respectively. These designs are now open to the inspection of the public, at the municipal offices at Birkenhead, including the three to which the premiums have been awarded. The designs for the approaches at Liverpool, now in progress, were furnished by Mr. Lyster, the dock engineer, and are being carried out under his superintendence. Their estimated cost is 150,000*l.*

CHIMNEY DRAUGHTS.

IN answer to the inquiry of your correspondent in your impression of the 3rd instant, I have to state that the theory of chimney draughts is fully treated in the following works:—"Professor Robison's Philosophy" (by Brewster), 1822, vol. iii., pp. 683-692; *Nicholson's Journal*, vol. ii., p. 269, &c.; "Annals of Philosophy," vol. xix., p. 403, &c.; *Quarterly Journal of Science*, vol. xiii., p. 113, &c.; Gregory's "Mechanics," vol. i., pp. 498-515; Rees's "Encyclopædia," article "Furnaces"; "Warming and Ventilating," by an Engineer (Underwood, London, 1825), pp. 144-174; Tredgold's "On Warming and Ventilating" (London, 1830), p. 76; Hood's "On Warming and Ventilating" (fourth edition, London, 1869), p. 366, &c.; "Proceedings of Royal Society" (Dr. Ure), June, 1836; Ure's "Dictionary of Arts and Manufactures," article "Chimney."

These several references give (so far as I am aware) all the information which science has yet produced on this subject. The method of Montgolfier is stated in several of these works, notably so in Hood's and Ure's works, and incidentally in several of the others.

These several references give the methods adopted by Davies Gilbert, Sylvester, Gregory, and Tredgold, as well as that of Montgolfier, as already stated.

F. R. S.

MODERN ART AND ARCHITECTS.

THE tenor of the remarks by Mr. Whitaker in your recent issue entitled "A New Era of Art," is quite in accordance with my own, and deserves perusal. If the "architecture" and "architects" of the present are to maintain the character and respect which ought to be maintained towards them, it will certainly be from a mode of thought and action which at present seems at a great discount among the profession. With a few exceptions, chiefly the work of men uninfluenced by a fashionable age and patronage, or the powerful current of conventional taste which naturally belongs to metropolitan art, there is really no genuine art to be found. When I say *genuine*, I mean art which is *fittest* and most in accordance with modern wants and science, which adapts to a larger extent than has yet been seen, the materials which belong to our age; which openly and boldly accepts all the principles and improvements which science has thrown in our way without hesitation and free from a blind infatuation for the things of the past, an art, in a word, which accepts the dicta of progressive thought without a faltering waveringness. If the profession still pursues the dead past in preference to the living present, by a miserable and slavish adherence to the form and detail of everything that savours of Mediævalism and the Dark Ages, the inevitable result will be the greater divergence, if not total separation, of the science and art they profess; a greater gulf than at present exists will be made between construction and "art"; and ultimately probably the handing over of all our important works of construction to the civil engineer or constructionist. Thus the best and noblest part of art's heritage will be snatched from a race of professional fashion-mongers, who, forgetful of the two-fold character of architecture, have chosen the lowest and most paltry sphere of work—the decorative divorced from the constructive. It will be notoriously true that the only real architecture of the nineteenth century, in fact the only real art, will be in the engineering works, poor as some may be, yet still attesting the struggle between intellect and modern taste,—between a rapid and ceaseless progress and the demands for the æsthetic element.

The very tendency of modern professional art-teaching is an affected disregard for the

cluded from the general inspection, and omitted by the ordinary meter inspector. Two or three special inspectors will at once be sent into it, and there is no doubt that a few days' work, or even less, will generally bring it back to its normal condition.

The advantage of such a system is manifest. Without it, waste-water inspectors discover only superficial defects, and spend their time equally on good and bad ground; but the best evidence of its value is the unprecedented success which is attending its adoption in Liverpool.

I do not now propose to speak of what I really think we shall be able to do here, but the result up to the present time is, that out of a population within the borough of about 600,000 persons with eight to ten hours' supply, and without the borough of about 125,000 persons with constant supply, taking in each case about 24 gallons a head (excluding only water used for trade purposes), we commenced work in a district within the borough of 31,000 persons, who were taking only 14 gallons a head in the eight or ten hours, and 34 gallons per head per day, when on constant service, and that we have given and continued the constant service, and reduced the consumption to 12-17 gallons per head per day, which is maintained without the slightest difficulty.

RESTORATION OF BATH ABBEY.

The ninth annual meeting of the subscribers to the restoration of the Abbey Church of St. Peter and St. Paul, Bath, has just been held. The work has been carried out under the direction of Sir Gilbert Scott, and the rector has been a liberal contributor. The work was originally divided into three portions, the choir being used for divine worship while the nave was restored. The nave was first used for service in commemoration of the recovery of the Prince of Wales, and the whole church was first used for the inaugural service of the late Church Congress. The sum of 21,000l. has already been disbursed, and several thousands more are required to complete the work. The restoration has embraced the reparation of the exterior masonry and the roof; the strengthening of the foundations of the pillars in the nave, the substitution of a groined stone roof for a plaster one, the reseating with carved oak the whole area of the church, the providing at a cost of 800l. of a corporation pew, the removal of all tablets from the floor and fixing them on the walls, the removal of galleries in the choir, the substitution of an organ pulpit for the old one, and a new system of lighting and heating. Mr. Murch, a Dissenter, undertook to collect funds for an east window, and has accomplished the work, and left a balance in hand.

ACCIDENTS.

Collapse of a Tunnel near Merthyr.—An accident has occurred in the tunnel between Merthyr Tydvil and Aberdare, on the Vale of Neath, Great Western Railway. This tunnel is about two miles in length. It passes through the mountain at an elevation of about 500 ft. from the bottom of the valley, and intersects many of the coal measures. Indeed, several years ago, the colliers working a neighbouring colliery had got under the tunnel in the excavations, and were so close to the roadway that they could hear the trains rolling over it distinctly. The excavation of coal have proceeded, and it is supposed the cavity thus formed have seriously interfered with the bed of the tunnel. A passenger train from Swansea to Merthyr had a very narrow escape. It passed in safety; but a goods train which followed it half an hour afterwards became blocked, and it was found that the tunnel had collapsed, the locomotive half burying itself in the debris. Although there were continual falls, the engineers cleared for a train, and the passengers were in their places awaiting the signal, when suddenly alarming news was received that nearly a hundred yards more of the tunnel had fallen in, and traffic could not be restored for several days. Meantime the traffic had to be carried over the Taft Railway to Quaker's-yard Junction.

Fall of a Mill-floor, near Holmfirth, during a Sale.—A serious accident has occurred at Bottoms Mill, near Holmfirth, where a sale of machinery and effects was taking place. As the sale was drawing to a close, the auctioneer entered the shoddy-room, at the end of the mill, in which were a pair of pattern-loom and a fear-nought for sale. A number of persons pushed into the room, and some others were about to enter, when the floor gave way with a loud crash, and most of the occupants, together with the machinery, fell into the room underneath, a distance of about 10 ft. Many persons were injured.

Accident with Petroleum at Ulm.—A frightful accident has just occurred in the theatre of Ulm through the use of petroleum. Twenty-four

lamps attached to the chandelier suspended to the ceiling of the house exploded while the performance was going on, and the flaming liquid fell in a shower on the spectators, amongst whom were a considerable number of ladies. In an instant the dresses of some twenty of them were in a blaze, and produced serious burns. One of the ladies expired a few hours afterwards.

MONUMENTAL.

The Prince Consort Memorial at Elibyugh.—The red granite pedestal, which forms no unimportant feature of this monument, will, the *Weekly Scotsman* anticipates, be generally recognised as probably the noblest piece of polished granite work in the kingdom. Messrs. Macdonald, Field, & Co., of the Aberdeen Granite Works, he says, had been preserving an enormous block,—the largest ever met with in their quarries,—in the expectation that it might be wanted to give due dignity to an important national work. When at length the order was given, the firm lost no time in proceeding to its execution. The working of three or four heavy stones as form the upper portion of the pedestal,—weighing respectively 22, 20, and 18 tons,—has necessarily entailed much labour and anxiety. The following are the dimensions of the three upper stones:—

	Ft. In.	Ft. In.	Ft. In.
Cornice	12 1	6 10	2 2
Dado	10 1	4 10	4 4
Base	11 5	6 2	2 2

The pedestal was put up by Messrs. Beattie & Sons, with the assistance of Messrs. Macdonald & Co.'s foreman.

Oxford Diocesan Wilberforce Memorial.—The following statement has been issued by the Rev. J. H. Ashurst, of Waterstock Rectory, Oxon, the hon. secretary of the fund:—

"As I have been asked by several of the subscribers to the Oxford Diocesan Wilberforce Memorial to tell them how the work is progressing, I beg to inform you that at the end of the year 1873 the following amount had been procured.—For general purposes, 3,914l. 3s. for heavy stones, 128l. 3s.; for missionary studentship, 182l. 12s.; for endowment, 351l. total, 4,250l. 18s. The committee have been obliged to abandon all idea of a statue, as the amount promised leaves no hope of their being able to carry out that part of the scheme in a satisfactory manner. They propose, however, in lieu of a statue, to erect a bishop's throne in Christ Church Cathedral, towards which upwards of 300l. have been already subscribed; if they could obtain about 700l. more, a handsome throne might be erected, bearing some inscription and carving to identify it with Bishop Wilberforce, which would form a suitable addition to the rest of the work. The committee feel justified in beginning to build a chapel at Cuddesdon College, and hope to obtain the necessary plans and specifications from Mr. G. E. Street, the diocesan architect, as soon as he returns from the Continent. The committee are sorry that the scheme for a missionary studentship at Cuddesdon College has not been more liberally responded to. At least 2,500l. would be required to found one studentship of 1000l. a year."

The Lancashire Statue Memorial of the late Lord Derby.—The balance-sheet and subscription-list of the Lancashire statue memorial of the late Lord Derby, erected in Miller Park, Preston, and unveiled on Whit-Tuesday last, shows that the total amount of subscriptions and bank interest was 2,574l. 10s. 8d., and that the statue, pedestal, and erection cost 3,535l. 5s.; printing, advertising, and other expenses amounted to 36l. 11s. 8d.; leaving a balance remaining in the Manchester and County Bank of 2l. 14s. The subscription-list includes about 500 sums from the gentry and tradesmen of Lancashire, together with the penny subscriptions of 90,000 working men. The statue is the work of Mr. Noble, of London, and is considered a good likeness of the late earl. The prominent site selected for it makes the statue a conspicuous object to travellers entering Preston by rail from all parts of the South of England.

CHURCH-BUILDING NEWS.

Ramsgate.—The memorial stone of St. Paul's new Mission Church has been laid by the Bishop Suffragan of Dover. The locality in which the church is situated is that part of the town inhabited by a dense population of the poorer class,—near the top of King-street,—for whom a place of worship had been long felt to be a pressing want, which will now be supplied by the erection of this mission church. The architect of the new church (which will be 63 ft. long and 27 ft. wide) is Mr. R. Wheeler, of Tunbridge Wells, and the builders are Messrs. Smith & Son, of Ramsgate.

Barlavington.—Barlavington Church, situated at the foot of Barlow Down, has been reopened for divine service. The church itself is Early

English, and consists of a nave and chancel, with side aisle. The whole fabric, at considerable cost, has undergone a reparation. The external walls have been cleaned and pointed, a south aisle entirely rebuilt, a new open roof added, nearly all the windows redressed with Fulborough stone, all quoins made good, a new chancel-arch built, the windows filled with cathedral tinted glass, a stone bell-gable erected, and the whole church repaved with Milton tiles. The cost of the work has been defrayed by voluntary contributions.

Chipping.—The Bishop of Manchester has reopened the ancient parish church of Chipping, which has, for a year and a half, been closed for restoration. Excepting the chancel, the whole of the church—comprising the nave, north and south aisles, and tower and south porch—has been restored by subscription, under the direction of Mr. Hibbert, of Preston. His report, which estimated necessary repairs at 1,500l., was submitted to the landowners and parishioners, and the response was so good that not only were the authorities in a position to commission Mr. Hibbert to proceed with the work, but also to enlarge his original scheme so as to include the erection of a new vestry and the re-seating of the aisles, it having been before intended to fill them with the old oak benches, and only re-seat the nave. This increased the estimate to 1,800l., which sum was promised before the commencement of the work. On the removal of the roof of the nave and north aisle, it was found that the timber was too far decayed to be put on again, and the leaning of the walls led to an examination of their foundations, which were discovered to be only 2 ft. deep, whereas interments had been made to the depth of 6 ft. close to them on both sides. A new roof and the rebuilding of the walls were now absolutely necessary, which further increased the cost to 2,500l. In the rebuilding, the church has lost none of its ancient character, the architect preserving the old features. The tower arch has been opened out, and the tower window now contributes to the improved appearance of the interior. This latter has been filled with stained glass, mainly by private subscription, by Forrest & Co., the subjects being coats of arms. The nave and north aisle have now open-timbered roofs of pitch pine, in keeping with the character of the building; and the oak roof of the south aisle has been cleaned. The windows are filled with diamond-shaped panes of cathedral-tinted glass. The roof is covered with Haslingden flag, and the walls externally have been cleared of whitewash, and pointed with cement. The contracts were let to the following:—Stonework, Messrs. Sparling & Lamb, Preston; woodwork, Messrs. Charnley, Coulthurst, Helme, & Howson, Chipping; plastering, Mr. Blake, Preston; slating, Messrs. Cooper & Fletcher, Chipping and Ribchester; plumbing, Mr. Dewhurst, Preston; heating, Mr. Seward, Preston; glazing, Mr. Walmaley, Preston. The lectern is of English oak, made by Mr. Tomlinson, Preston.

Weston-super-Mare.—Loxton Church has been re-opened. The old pews have been removed, and open low benches substituted; also the flooring has been taken up and replaced with ornamental tile flooring. The old stone pulpit, supported on a corbel, carved in the form of a grotesque figure, had been moved at some time from its original position; the pulpit was therefore taken down, restored, and re-erected in a position nearer to the chancel screen. Illuminated texts have been employed as a decoration to the walls, and standards for candles are ranged down the central aisle. The work was executed by Mr. Samuel Harvey, contractor, of Weston-super-Mare, under the superintendence of Messrs. Ponton & Gonch, architects.

Poorstock.—West Milton Church has been consecrated. The new church is in the Early English style of architecture, and is built of native stone obtained at the local quarries of Nettlecombe. The dressings are of Bath stone. The edifice occupies a prominent position, commanding picturesque views of luxuriant dales. The structure comprises a nave, chancel, vestry, and baptistery; the external dimensions being,—nave, 55 ft. 6 in. long, 25 ft. 3 in. wide; chancel, 26 ft. 6 in. long, 20 ft. 9 in. wide; height from ground to eaves, 16 ft. 6 in. On the south side of the nave the church is entered by a porch, on the east side of which rises a tower about 30 ft. in height, and which is intended to receive, when the funds will allow the work to be done, a turret or spire. Bridgewater tiles cover all the roofs, the tiling formed in bands, alternately plain and

ornamental, with an ornamental tile cresting on the top, and four small Bath stone crosses on the main roof and porch. The floor is laid with encaustic tiles supplied by Messrs. Maw & Co. The whole of the plans for the structure were prepared by Mr. A. B. Hansford, son of Mr. Hansford, of Powerslock; and the carving was mainly done by Mr. B. Grassby, ecclesiastical sculptor, of Dorchester. The architectural advice of Mr. G. R. Crickmay, of Weymouth, was also obtained, and that gentleman presented the Portland stone steps.

Glebebury Mortimer.—The church has, for the last six weeks, been undergoing partial restoration. A chancel, 50 ft. long; a chantry, dedicated to St. Nicholas; a nave, a tower 100 ft. high, with north and south aisles of five bays, a southern porch, and a high spire of wood, form a specimen of the architecture of the early part of the fourteenth century. The parishioners have cleared the first bay of its pews from the northern to the southern end; they have laid the floor with encaustic tiles, scraped the arches and pillars, and, we believe, are about to replace the pews with open seats, when they can raise sufficient funds. A carved roof, of the fourteenth century, is hidden by a flat ceiling, and deal pews and a western gallery still disfigure the church.

Leves.—The new cemetery for the united parishes of all Saints and St. Thomas-à-Beckett, in the Cliff, has been consecrated by the bishop of the diocese. The new burial-ground is situated in the parish of St. Ann, and immediately adjoins the cemetery of St. Michael's. It contains about two acres, has been walled in, and laid out with a broad winding path in the centre. The eastern portion is that which is consecrated for the interment of members of the Church of England. Near the lower end two mortuary chapels have been erected, from the designs of Mr. G. Pailer, architect, the builder being Mr. Punter, of the Cliff. The chapels are similar, forming a Gothic structure of red brick, with stone facings, in the Early English style of architecture. They are connected by an arched covered entrance, surmounted by a turret.

Eighton Banks.—The church dedicated to St. Thomas at Eighton Banks has been enriched at various times, although it is situated in the midst of a poor population. Some four years ago, the wife of the respected vicar originated a scheme for decorating the interior. The first idea was to fill the east window with stained glass, which was duly accomplished. After a time a reredos, undertaken by Mrs. Atkinson, and painted by that lady, was placed in the church. Since then, the whole of the interior has been decorated, and now eight stained-glass windows have been erected. The choir have placed four of the windows containing the acts of mercy. The churchwardens have given another window, with the subject—"The Call of St. Peter." The next window, containing the release of St. Peter from prison, is the gift of working men; and the other two, "Eunice tending Timothy," and "Raising the Widow's Son," the gift of the vicar and his wife.

Books Received.

The MacIise Portrait Gallery; with Notices chiefly by the late William Maginn, LL.D. Edited by WILLIAM BATES, B.A. London: Chatto & Windus, Successors to John Camden Hotten.

The bringing together of the series of portraits of illustrious literary characters originally published in *Fraser's Magazine* between the years 1830 and 1838 was an excellent idea. Mr. William Bates, of Birmingham, suggested it in *Notes and Queries* in 1871, and the late enterprising Mr. Camden Hotten took up the suggestion, obtained Mr. Bates's co-operation, and proceeded to put it into execution. He was not permitted to see the publication of the volume, but his successors in Piccadilly have carried out the work to completion, and by this time have, we believe, nearly sold off the edition printed. It is a large, handsome, and most attractive volume, and leaves us but this one regret, that it was not made two, so that the additional notes by the editor might have been less "solid," and easier to read. It is almost impossible to review this book; it is so difficult to leave off reading it: to those who knew the men and women depicted it has a fascination that can scarcely be described. A large majority we ourselves knew; many of them intimately, and with

warmest regard, and we could supplement with scores of notes the information, skit, and criticism here given. The group shown in the cartoon marked "A few of the F.S.A.s," including "Athelian Aberdeen," Sir Henry Ellis, Old Carlisle, Bowyer Nichols, the kindly-hearted Jordan, Roser, of the Byronic collar and Hessian boots; Crofton Croker; Caley; Hallam, of the "Middle Ages"; and some others, we have seen actually so placed, and in similar conclave, scores of times. All these have passed away without exception. Of the whole number of eminent persons illustrated by MacIise's rapid and truthful pencil (much more truthful, by the way, than the pen of Maginn, always prejudiced, and sometimes wicked), but very few remain. These include, —and long may we be able to say so,—Mrs. Norton, Mrs. S. C. Hall, D'Israeli, Thos. Carlyle, George Cruikshank, Harrison Ainsworth, and J. B. Buckstone.

We should not do justice if we omitted to say that Mr. Bates has done his part ably, and that the value of this most interesting series of pen and pencil sketches is much increased by the notices and observations contributed by him.

The printing of the book (by Messrs. Wyman) also deserves commendation.

Miscellaneous.

Working Men's College.—At the winter *conversations* of the members of this Institution, held at the College in Great Ormond-street, Mr. T. Hughes, M.P., the Principal of the College, addressed a few words of welcome to the guests of the evening, expressing his gratification and that of the council at the attendance of so many of the old friends and former students of the college, as well as of those who now constituted its *alumni*. That was a proof that the collegiate character of this Institution, which was always a part of its design, had been preserved. They had the pleasure of the presence of the heads of two corresponding associations—Mrs. Matheson, who conducted the newly-established Working Women's College, and who was endeavouring to set up a system of joint classes with this college; and also Dr. Christian, the head of the Ipswich Working Men's College, of the success of which it was sufficient to say that it numbered 1,100 members. He was glad to say that all the classes were in excellent working condition, and especially the art class, which was as advanced and steady in its development as when Mr. Ruskin, its first supervisor, left it. He had to announce that Mr. Lowes Dickinson had painted a portrait of the late and the first Principal of the College, the Rev. F. Maurice, which would be hung in a conspicuous position on its walls.

The Sewage Scheme at Buntingford.—A memorial having been presented to the Local Government Board from a large number of the rate-payers of Buntingford, against the adoption of the scheme of Messrs. Smith & Austin, about to be carried out by the Rural Sanitary Authority for draining the town, Mr. R. Rawlinson, C.E., C.B., the Government inspector, attended at the Board-room of the Rural Sanitary Authority, and made inquiries into the subject matter of the memorial, hearing all persons entitled to be heard upon it. Mr. Rawlinson visited the site of the proposed works, in company with the engineers and other gentlemen. The result of the inquiry will no doubt shortly be made known.

Railway Station Extension at Leeds.—The North-Eastern and the London and North-Western Companies are promoting a Bill, jointly, for the enlargement of their joint station at Leeds. It is proposed to extend it for about 1,695 ft. in one direction, and 225 ft. in another. It is also proposed to make a new approach to the station out of Boar-lane, and to stop up part of a small neighbouring street. Mr. T. E. Harrison, C.E., estimates the cost of the works at 209,351*l.* for the extension of the station, and 40,095*l.* for the new street, or a total of 249,446*l.* The two companies propose by the Bill to raise, each, 125,000*l.* in new share capital for the purposes of the Bill, and 41,000*l.* by loans.

The Walker Art Gallery, Liverpool.—It has been decided by the Liverpool Council that the New Art Gallery be called the "Walker Gallery," in honour of the present mayor, who has provided the funds for its erection, and that it shall be placed adjoining the Free Library and Museum.

Labourers' Cottages.—The Earl of Portsmouth has, in a letter to the *Times*, taken up the subject of labourers' cottages. His lordship admits that farmers in the South and West of England now find a difficulty in getting a sufficient supply of labour to cultivate their farms, and are beginning to put pressure on their landlords to provide comfortable cottages and gardens, so as to attract labourers to their employment. The remedy which Lord Portsmouth suggests is, that Government should advance loans to landlords at low interest. "Why not," he asks, "advance 100*l.* for every dwelling containing a minimum amount of space, with four rooms, and complying with certain sanitary requirements, built substantially of brick, stone, or concrete, to the satisfaction of the county surveyor, whose fee for inspection might be fixed by the magistrates at Quarter Sessions? Let it be a first charge on property, like a drainage loan, and the interest could be collected by the officers of the Inland Revenue." There can be no doubt, as Lord Portsmouth observes, that the question more particularly affects the small landowner, who has to meet the pressure with only small resources.

Lord George Manners's Partnership Farming.—It will be remembered that, more than a year ago, Mr. Brand, M.P. for Cambridge-shire, and Speaker of the House of Commons, proposed to the labourers on his estate in Sussex to become partners in his farming projects. Lord G. Manners, the brother to the Duke of Rutland, and senior member for the county, has, since Michaelmas, 1872, taken the labourers on his Ditton Lodge Farm *noles volens* into partnership. Lord George does not expect his agricultural labourers to contribute anything during years in which he may farm at a loss, but he is satisfied with 5 per cent. interest on his capital, and 5 per cent. as profit, dividing the surplus amongst the labourers and himself in two equal proportions. The share of the labourers for the year ending Michaelmas last is 36*l.* 18*s.* 8*d.*, which will be about 3*l.* a head. Lord George has paid his labourers their ordinary wages, the item for labour being 675*l.* 8*s.* 3*d.* His lordship anticipates that in an unfavourable year his loss will be nothing so great as it would be but for this arrangement.

Acts of Parliament and Contracts for Water.—The readers of the *Builder* may remember a paragraph in which a liberal-minded citizen of Bishop Auckland, feeling for the sufferings of the poor, offered to supply the town with good water for the next twenty-five years at an expense of 10,000*l.* to himself. The subject has again been brought forward before the Board of Health, and the clerk read the following legal opinion, "that, according to the 10th and 11th Vict. cap. 34, section 122, the Local Board could not contract with any person for water-supply for any longer term than three years; and by the Public Health Act, 1848, no contract could be entered into above 100*l.* without public notice inviting tenders. Mr. Duff's offer was for twenty-five years, and from the nature of it, it was quite clear that such a contract could not, from its extent, be entered into by the Board, however advantageous it would be to the district." This decision has finally put an end to the generous offer.

The London Gas Movement.—At the last week's meeting of the Metropolitan Board of Works Mr. Freeman introduced a numerous and influential deputation from the parishioners of Kensington, who presented a memorial protesting against the proposed increase in the price of gas by the Gas-light and Coke Company. Mr. Gordon, on behalf of the deputation, said prior to 1872 the district of Kensington was supplied by the Western Gas Company with 20-candle gas at 5*s.* per 1,000 ft. The company amalgamated with the Chartered Company. The effect of this amalgamation was that the company had given notice of its intention to raise the price of gas to 5*s.* 5*d.*, and to supply 23-candle gas. The consumers did not want 23-candle gas. He contended that the company had an unnecessarily large capital, which they expended in a most reckless manner. He hoped the Board would use all its influence to prevent the proposed increase. The subject was referred to the Works Committee for report.

Sewage of Malvern.—The Board of Great Malvern have sought the advice of Mr. Bailey Denton upon the disposal of the sewage of that town.

Lambeth Palace.—The work of external restoration, to which we have before now alluded, approaches its completion. The whole of the brick and stonework of the "Lollard's Tower" has been externally renewed, the flooring has been repaired, and one or two rooms have been subdivided, in order to put it up for its present purpose; namely, as the town residence of the Bishop of Lichfield and of his brother, Canon Selwyn. The Morton Tower, or, as it was formerly and is often still called, the "Great Gate," is all but completed. The present gateway, which was built in A.D. 1490, by Cardinal Morton, is massive in size and of great strength, and resembles the entrance of a castle rather than an episcopal palace. The Archbishop allows the library to be open to students, and, indeed, to all respectable persons, on application, every Monday, Wednesday, and Friday in the year, vacations excepted.

St. Marie's Bells, Norfolk-row, Sheffield. A meeting of a committee appointed for raising subscriptions for these bells has been held at the Roman Catholic Association Rooms, Paradise-square, Canon Walslow, R. C. rector of St. Marie's, presiding. Mr. Ellison stated that he had been asked by the Duke of Norfolk to request Mr. Hatfield, his Grace's architect, to obtain information as to the cost of the bells; and that in consequence Mr. Hatfield had amongst other firms, applied to Messrs. Mears & Stainbank, who had supplied the large bell now in the tower; and that the cost of seven bells would be covered if a sum of 600*l.* were subscribed. Messrs. Hatfield & Son were instructed to obtain from Messrs. Mears & Stainbank estimates and full particulars, with the view of ordering, without delay, seven bronze bells, to complete a full peal of eight.

Building in Sunderland Park.—The following letter has been received from Alderman Reed by the Sunderland town council:—

"As a ratepayer and inhabitant of the borough of Sunderland I respectfully give you notice that in case you should proceed to erect on the Borough Park any building, to be used as a council chamber and offices, museum, and library (as intimated by your advertisement dated the 18th day of November last, from plans, specifications, and estimates), or any building for any purpose whatever, I shall feel myself obliged, although very reluctantly, forthwith to adopt such legal proceedings as may be necessary to restrain you from doing so. The resolution of the council, dated the 4th day of March, 1861, shows that the ground referred to was purchased by the council, to be maintained, laid out, and planted as public walks and pleasure-grounds, as an addition to, and extension of, (then) existing park, and for no other purpose, and the resolution of the council dated the 19th day of August, 1863, also shows that the sanction of the House of Commons was given to the purchase of the ground for such purposes, and for such purposes only."

Winchester.—This ancient city, amongst other improvements, has had constructed, from the designs of Mr. T. Stopher, a shop for the sale of meat, which occupies the site of the old chemist's shop in the Piazza, premises dating as far back as the days of Queen Elizabeth, and which were worn out and untenable. These have been removed, and replaced by a kind of Tudor house, which is far above the surrounding houses, in order to give height to the shop. The walls are covered with white glazed tiles, relieved with panels of chocolate, and similar coloured contrasts. The slabs are marble, and the front beneath them filled in with tiles, so that when the walls and slabs are cleansed the water will damage no paint. The builder was Mr. J. Crook of Northam, Southampton.

A Workman Tanning his own Hide.—At the Gilegate Tannery, last Saturday night, a man employed at the works, whilst proceeding, with the aid of a dim light from a horn lantern, down the tanyard, suddenly found himself tumbling in one of the pits, and lost his sight. After wading about some time, he contrived to land, and made the best of his way to his own cottage. His extraordinary appearance startled his better-half, who failed to recognise William, her spouse. The tanner's skin is now stained a dark green morocco-colour, by his immersion in the warm liquor, and so strong is the tan, that in all probability the man will die a bookbinder's green.

Carlton Tower, Yorkshire.—Carlton Tower, the seat of Lord Beaumont, has been for some time past undergoing extensive alterations and additions. The old Stapleton Tower is just finished, and it is expected that a few months more will see the state apartments out of the builder's hands. Messrs. Haigh & Co., of Liverpool, are executing the work, under the direction of Mr. Welby Pugin. Mr. Seid is clerk of the works.

Bursting of a Reservoir at Festiniog.

On the 1st inst. there was an extraordinary heavy fall of rain, so that foaming torrents came down the mountain-sides. On the Dolwyddelan side of the Rhiwrydydd quarries there were some large lakes, or reservoirs, artificially formed for the use of the machinery used at the quarries. In one of these—an immense reservoir—the water burst through the dam, carrying destruction in its wake. In some cottages, which were flooded, two children were drowned in their sleep. There were about thirty men working that night in a mine which was afterwards flooded, but owing to the presence of mind of a young man who ran there in time to warn them of the catastrophe, they were able to reach a place of safety, and in a few seconds afterwards the mine was flooded.

New Indian Museum and Library.—The Indian Museum, as now situated on the highest story of the India Office, has been found to be useless for all the purposes for which it was intended, and it has been resolved to erect on the plot of vacant ground in Charles-street, directly opposite the India Office, and facing St. James's Park, a new museum and public library. To this building, which will be very handsome and commodious, all the treasures exhibited in the present museum, as well as those now stowed away for want of space, will be removed.

More Prizes for Art Students.—The Joiners, Carvers, and Cellars' Company of the City of London have offered various prizes for competition amongst the students of the Schools of Art within the metropolitan area:—For building construction, one of 5*l.* 5*s.*, and a second of 3*l.* 3*s.*; for wood-carving, one of 5*l.* 5*s.*; for designs for carving, one of 3*l.* 3*s.*; and for designs for ceilings, frames, &c., one of 3*l.* 3*s.* The prizes are to be given in mathematical instruments, books, &c., to be selected by the successful competitors.

St. Matthew's Church, City-road, London. A chancel screen has been added to this church, from the design of Mr. Blashill, of Old Jewry-chambers. The plinth is of the blue Forest of Dean stone, upon which stands a moulded base of red Mansfield stone. The upper part is of Hopton Wood limestone pierced with moulded cinquefoil openings, and highly polished, so as to bring out its fine warm grey colour. Each half of the screen is formed of a single stone. The work has been executed by Messrs. Farmer & Brindley, of Westminster Bridge-road.

Iron Trade.—Messrs. W. Bird & Co., in their last report, say,—"As the result of the quarterly meeting is that there is no reduction in the price of Staffordshire manufactured iron, we have to advise the maintenance of present list prices. Manufacturers state that the inability to obtain ore, coke, or pig iron at reduced prices renders it impossible for them, now that old contracts have run out, to produce finished iron at a profit, and they are of opinion that any attempt to reduce wages would bring them into undesirable conduct with labour."

The Artizans and Labourers' Dwellings Association has been so successful that the directors have determined to issue all future shares at a premium. The shares are nominally 10*l.*, but after June 30th present subscribers will have to pay 10*l.* 5*s.*, and outsiders 10*l.* 10*s.* for them. The completion of the contracts on hand will involve a total cost of 250,000*l.*

The Institution of Civil Engineers.—The newly-elected president, Mr. Thomas Elliot Harrison, delivered an inaugural address on the evening of Tuesday, the 13th of January, 1874, at the house of the Institution, in Great George-street, on taking the chair for the first time after his election. We will return to it in our next.

Bow.—The congregation of the Presbyterian Church in the Mornington-road, Bow, having determined to erect a suitable permanent building, have appointed Mr. Peebles as their architect.

Roundhay Park, Leeds.—Two correspondents inquire what has been finally settled as to the plans for laying out this park. The authorities will perhaps inform us.

South Shields.—At the last meeting of the town council of this borough, held on the 7th inst., the salary of the borough surveyor (Mr. Manburrill) was increased from 250*l.* to 300*l.* per annum.

TENDERS

For certain alterations and additions to Norfolk Hotel, Brighton. Messrs. Gouly & Gibbins, architects:—
Holland (accepted)..... 42,307 10 0

For decorations to Mitchen Hall, for Mr. S. Gedge Messrs. Stevenson & Robson, architects. Quantities by Mr. G. D. Tait:—
Arnold..... 21,205 0 0

For warehouses, St. Bride-street, for Mr. A. Clark. Mr. Albert Bridgman, architect. Quantities by Mr. A. Clark:—
Bracher & Son (accepted)..... 23,686 0 0

For alterations and repairs to, and partly rebuilding "The Allport House," Tavern, and house adjoining, the same, Marylebone-road, for Messrs. Combe & Co. Mr. Henry B. Cotton, architect. Quantities by Mr. A. J. Gate:—
Gate:—

Newman & Mann.....	23,615 0 0
Foxley.....	3,589 0 0
M'Lauchlan.....	3,557 0 0
Patrick.....	3,548 0 0
Toms.....	2,679 0 0

For fittings, &c., to "The Allport House," Tavern, Marylebone-road, for Mr. Gascyne. Mr. Henry B. Cotton, architect. Quantities by Mr. A. J. Gate:—
Gate:—

Wilson.....	23,076 0 0
Longan.....	34,773 0 0
Higgs & Hill.....	34,734 0 0
Hayes.....	31,635 0 0
Crockett.....	34,467 0 0
Smith.....	34,000 0 0
Perry, Bros.....	33,900 0 0
Jenard.....	33,753 0 0
W. & F. Croaker.....	33,690 0 0
Wood.....	33,370 0 0
Downs & Co.....	33,470 0 0
Hart.....	31,370 0 0

For alterations to 7, Little Tower-street. Mr. Theodore K. Green, architect:—

Browne & Robinson.....	21,754 0 0
Newman & Mann.....	1,747 0 0
Simpson & Baker.....	1,680 0 0
Survener & White.....	1,690 0 0
Lawrence (accepted).....	1,533 0 0

Accepted for two dwelling houses, Victoria Park, Waverley, near Liverpool, for Mr. William Dilworth, Mr. John E. Reeve, architect. Quantities supplied:—

Drilllayers' Work.
(Exclusive of gates and mantelpieces.)
Dilworth..... 2750 0 0

Masonry.
Crowther & Houghton..... 2230 0 0

Joinery.
Moore..... 2721 10 0

Slating and Plastering.
Fell, Parker, & Hunter..... 2230 0 0

Plumbing, Painting, and Glazing.
Smith..... 2234 0 0

For warehouse, shop, and dwelling-house, on the Holborn Viaduct, for Mr. Duck. Messrs. Treas & James, architects:—

Jackson & Shaw.....	24,640 0 0
Brace & Son.....	4,320 0 0
Brass.....	4,180 0 0
Conder.....	3,928 0 0
Wagstaff & Son.....	3,798 0 0

TO CORRESPONDENTS.

T. W. A. just too late for what was wanted.—R. V.—H. L. P.—W. G. T.—X. M.—H. J.—C. H. L. W.—Building Courses.—Hoop Iron.—D. & Sons.—R. C.—G. L.—M.—W. F. C.—L. & R.—"Rumour, &c."—J. R.—G. & O.—S.

We are compelled to decline printing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

N.B.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE.—All communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent Garden. All other Communications should be addressed to the "Editor," and not to the "Publisher."

CHARGES FOR ADVERTISEMENTS.

Situations Wanted.		Situations Vacant.
Six lines (about fifty words) or under..	2 <i>s.</i> 6 <i>d.</i>	4 <i>s.</i> 6 <i>d.</i>
Each additional line (about ten words).....	6 <i>d.</i>	6 <i>d.</i>

TERMS OF SUBSCRIPTION.

"THE BUILDER" is published, direct from the Office, to residents in any part of the United Kingdom at the rate of 12*s.* per annum, *postpaid* in advance.

Its penny stamps accepted for amounts under 3*s.* Any larger sums should be remitted by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to Mr. J. H. COLEMAN, PUBLISHER.

The Builder.

VOL. XXXII.—No. 1616.

The Discoveries in the Troad.

UR readers have already been informed briefly of the remarkable discoveries in the Troad, by Dr. Schliemann, first made public in England by the conductor of this journal, at the Sheffield Congress of the British Archaeological Association. Dr. Schliemann has just now given to the public a most interesting account of his three years' exploration. The treasures, disinterred from a site upon which the explorer insists Troy once stood, are second in importance to none of a similar kind.

The account to which we refer is contained in a splendid work issued by the publishing firm of Brockhaus, of Leipzig. An atlas comprising upwards of two hundred photographs of the objects dug up accompanies the text. Mr. Gladstone, who was favoured with a view of these photographs previously to publication, has expressed an opinion as to the exceeding importance of the collection to the archaeologist, the philologist, and indeed to every lover of the "Iliad." Mr. Newton, the keeper of the antiquities in the British Museum, has started for Athens, where the objects collected by Dr. Schliemann, to the number of twenty thousand, are deposited.

Shortly after Mr. Newton's return we shall, of course, hear a great deal of these Trojan antiquities. Meanwhile our readers will doubtless be glad to have a condensed account of the information communicated by the author. These discoveries needed no adventitious circumstances to arouse general attention and interest; they are, however, likely to be connected with an eager controversy, on account of the conjectures and theories attached to them by the explorer. As yet there has been no collision of theories, although two distinguished men have spoken in the matter. Professor Max Müller scouts the idea that these relics are from ancient Troy, for the simple reason that such a city never existed, save in the legends out of which the grand Homeric poems were composed. M. Emile Burnouf, the director of the French School of Athens, takes another view, and appears to follow Dr. Schliemann implicitly.

The bases of the doctor's speculations are briefly these. At Hisarlik, in the Troad, he has been so fortunate as to excavate the remains of ancient life. He has come across vestiges of large buildings, and has turned up a great number of valuable objects exhibiting civilised design and workmanship. Among these objects, which are of baked clay, gold, and silver, have been found many vases and vessels bearing the likeness of an owl-headed deity. In this symbol the doctor sees typified Minerva, the patron-goddess of the Trojans. Some finely-executed objects in gold and silver have also rewarded the explorer's efforts. These latter, for reasons we shall presently mention, are stated to be "the treasure" of King Priam. Upon these discoveries

Dr. Schliemann brings the whole story of the Trojan war within the domain of history. The "Iliad" to him is not a myth, but a veritable historical record, the pécadilloes of Paris and Helen, the sorrows of King Priam and his queen, and the glorious deeds of the Greeks are all literally true. In any case any controversy arising out of the Homeric poems cannot fail to be interesting and profitable to the reader.

It is unnecessary for us to express an opinion upon these questions; we can best serve our readers by laying before them an account of what these valuable objects consist, and the manner of their discovery. What is palpable and undeniable is, that Dr. Schliemann has brought up from the earth a large collection of relics of the highest value, and there can be no doubt that these disinterred remains belong to a far-distant and pre-historic period.

Dr. Schliemann, then, is convinced that he has discovered the site of ancient Ilion beneath the soil of modern Hisarlik. The ardent *savant* commenced his explorations in the month of April, 1870, and brought his labours to a brilliant termination in the summer of last year. During this three years' period the explorations were only discontinued in the fever season. The number of workmen employed in excavating the earth was sometimes as many as 150, and nearly 8,000*l.* have been spent in the work.

Over a large tract of the upper soil at Hisarlik were discovered *débris* belonging to the period of the Greco-Roman occupation. The space once covered by a city is surrounded by a fortified wall studded with bastions. He caused this wall to be laid bare in many places in such a way that he was enabled to construct a plan of the whole inclosure. In other places he sank shafts, to the number of twenty, down to the virgin rock. He thus discovered that the fortified wall and its foundations—the depth of which was 5 metres—belonged exclusively to the Greek colony. The whole space was bestrewn with fragments of statues, and the objects in baked clay, which at the surface of the soil showed signs of belonging to a late Roman epoch, became, in descending, ruder and more archaic in design, and were evidently of a much earlier period. Some of these objects—vases and statuettes—were of most elegant shape; others of a very primitive pattern. None were of an earlier date than the seventh century B.C. Dr. Schliemann states his reasons for believing that this city was the one alluded to by Strabo, as being built about 700 B.C., which was destroyed by the Roman emperor Constantine II.

Our explorer next attacked a mound known as the Acropolis of Hisarlik, which rises from the plain, and commands a view of the Scamander, as well as of a part of the Hellespont, of Tenedos, and of the *Ægean* Sea. The diggings carried on around this mound exposed the encompassing wall of a Greek city, built apparently by Lysimachus. Here was brought to light what he calls the "Hellenic bed," a stratum of the uniform thickness of two metres. He resolved to search this stratum thoroughly. A trench was cut, the wall of Lysimachus laid bare, and, lower still, another wall was discovered. This second wall, exterior to the first, was used as the foundation of the upper wall and citadel, which had apparently been built upon its ruins. The objects found at this depth clearly indicated that the place had been inhabited before the foundation of the Hellenic colony, to whom the upper citadel had given protection. Dr. Schliemann was greatly encouraged by this discovery.

In the following year he opened an enormous trench, descending 14 metres below the base of the mound. An examination of the vertical wall of this trench displayed, lying beneath the Hellenic bed, three distinct strata. The lowest stratum, which reposed on the virgin rock, was composed of earth, and of fragments of pottery

and other objects; the second bed, several metres thick, like the first, was entirely made up of red ashes and of calcined fragments, the evident result of some immense conflagration. Remains of brick houses were found in this layer, as also vases and other objects, all bearing marks of fire. The third stratum was composed of earth; the houses herein found were built immediately above those in the second bed, and were constructed of small uncut stone, joined with mud. The walls seem to have been plastered on the interior, but the exterior was left quite naked. This bed was generally about 3 metres in thickness. A fourth bed, some 2 metres thick, appeared to be a continuation of the preceding. Between this last-named layer and the Hellenic bed were found some vases, to which a Lydian origin has been assigned.

The enthusiasm of the explorer was still further roused by another discovery made in the same year. To the south of the first trench he made a fresh cutting, and came upon a wall 8 metres in height, the base of which rested upon the rock. This wall, of enormous thickness, is held to be that of a bastion; and beyond this was found a door which gave access to the interior of the citadel, according to our author. In any case, abundant signs were displayed that here were the remains of a place of strength and importance. Dr. Schliemann declares it was a veritable palace and fortress, and the residence of a reigning chief. The tower, the gate, the palace belonged, by their position, to the era of the second stratum, the bed in which were found the red ashes and the calcined fragments. On clearing away the rubbish of a portion of this citadel, it was found that another palace had been built upon the ruins of the burnt stronghold. According to the practice of antiquity, the second citadel had been superimposed on the *débris* of the first; the second erection belonged to the third epoch, to that which succeeded the era of the conflagration.

A third cutting, running in a north-easterly direction, was executed in the same year. Here, again, the indefatigable explorer met with the reward due to his perseverance and acumen. A marble metope was brought to light. This metope depicts Phœbus driving four steeds in a chariot. Dr. Schliemann declares that the design of the horses recalls the memory of the animals of the Parthenon. Phœbus belongs to a type which points to an era bordering upon that of Alexander the Great. This metope, which is at this moment, with the rest of the treasures, in Athens, is held to belong to a temple of Apollo, which once existed in the citadel, but which has not yet been explored.

The researches carried forward in 1873 are not less interesting in their nature and results. The remains of a grand edifice of the Greek era were lighted upon. From an examination of the objects found in the interior, the explorer comes to the conclusion, that they belonged to a temple of Minerva. This temple was 80 metres in length. In the course of his digging, Dr. Schliemann also happened upon the remnants of two houses,—one a tradesman's shop, or cellar, for it contained, ranged in an orderly line, nine enormous jars of baked clay, which had held either oil or wine. In a bed of red ashes he turned up the altar of Minerva, on which the people who had preceded the Greek colony had offered their sacrifices. This altar is formed of an enormous stone resting upon a brick foundation, and manifestly belonging to a town built of brick and not of stone.

Dr. Schliemann, having almost approached the end of his self-appointed task, was on the point of giving up his excavations, and of quitting the Troad, perhaps for ever, when a lucky prod of the pickaxe revealed treasures as welcome as they were unexpected. In a small quadrangular space were found lying vases and other objects in metal, all bearing marks of fire,

and sometimes even soldered together by the fierce heat. The quadrangular space had once contained a wooden box, which had been so completely burnt up as not to leave a trace behind. This glorious find consisted of vases of gold and silver, head-dresses, earrings, and bracelets of gold, and copper weapons of war. The spot where these treasures were found was just outside the palace, and it is assumed that the box was suddenly abandoned, as the violent raging of the fire gained upon the fugitives who bore the valuables.

The objects collected from their subterranean resting-places at Hisarlik, are upwards of twenty thousand in number. A detailed description of these antique treasures is impossible here, but a general idea of them may be imparted by classing them in groups according to their nature and uses. The materials in which the ancient people worked were not numerous, and they had made little or no progress in turning to account the forces of nature. Leaving out of consideration the objects in wood, and the textile manufactures which have been almost entirely destroyed, the only materials left are clay, stone, and metals, to which, however, must be added the skin and hair of animals, bone, horn, and rock-crystal. The mechanical appliances of the assumed Trojans were of the most rudimentary nature; the hand performed the chief part of the work. Most of their tools were of hard stone, a very few were in metal, whilst some were wrought from bone. They appear to have been entirely ignorant of any kind of turning-machine, even the pottery was modelled entirely by hand. After stone, fire was the principal auxiliary in the workmanship of the relics. Fire, besides being employed for domestic purposes, was used in the baking of clay vases, and in casting metal. It was, however, never utilised on a great scale, for there are no traces of a furnace in the beds at Hisarlik. Even the houses of this period are of unbaked bricks; and the brick supports of the altar of Minerva have never been subjected to the action of fire. These people were able, nevertheless, to melt large quantities of copper to form shields. Amongst the mechanical instruments, the stone complements are the most numerous; and among the objects for use, baked clay is the commonest material employed. The collection is very rich in stone implements, though vast quantities were left behind as unworthy a place among these antique curiosities. The siliceous saws are very fine; they are quadrangular in shape, and have one or both sides indented with very sharp teeth. The knives, or rather the long, thin, and sometimes curved blades which have been thus designated, are fashioned some of siliceous, and some of obsidian; a large number of them have serrated edges. There are likewise admirably-shaped hatchets and chisels, with smooth, cutting edges. Hammers have been found, with holes pierced for the handle. The perforation is thought to have been made by the action of sand and water. No handles for those tools have been met with; probably they were of wood, and have consequently disappeared in the conflagration.

The excavations have yielded mills, mortars, and pestles in numbers. The mills, or more correctly grinding-machines, are of trachyte. They are formed of two very large stones, convex on one side and flat on the other. One stone was firmly fixed in the ground, the other was moved backwards and forwards by the hands. Similar machines remained in use long after the invention of rotary mills, and remains of them have been met with at Pompeii. They are even used at the present day by the Greek women in some of the islands of the Archipelago. The pestles and mortars are of granite, and are only larger and exaggerated forms of those now in use. Nothing resembling a stove, or pan of terra-cotta, such as the Greek housewives of our own day use in baking cakes on the hearth-stone, has been found: it is inferred from this that the people of that far-off time were unacquainted with what we call bread, and must have treated farinaceous substances in a totally different mode from ours.

Judging from the number contained in the Hisarlik collection, stones played an important part in the industries of the old city of the Troad. There are small pebbles of granite, rounded and polished in the river's bed,—these were used as weights. There are other and larger stones, all of them perforated, which may have served the weaver and the fisherman in their vocations. There are also many large cylindrical and conical stones, all of them worn and polished on the

flat, lower face, proving that they were used for the purposes of a grinding-stone, or muller, as we term it.

To pass to the instruments in metal and bone. There are hatchets, long cutting blades, and chisels in copper, which in shape do not greatly differ from those preserved in the museums of pre-historic antiquities found in Western Europe. Some of these instruments may have been used in warfare, but the majority undoubtedly served the purposes of the workman. There is, however, a group of copper lances, battle-axes, and daggers, which were certainly warlike weapons. The utensils employed in the working of metal form also an interesting group.

Throughout the course of these diggings only four metals have been found—gold, silver, copper, and lead; but there is evidence that the inhabitants of the burnt city were acquainted with that elaborate alloy of gold and silver which the Greeks called *elektron*. Dr. Schliemann has discovered several beautiful examples of works executed in this alloy, notably a goblet wrought with the hammer in a series of spirally-disposed facets. The colour of this specimen is a pale yellow, of brilliant polish, and were it not for the hard knocks it has received in the process of excavation, it might be supposed to have just left the hand of the workman. Some of the copper is now being analysed by two eminent French metallurgists, for the purpose of discovering any admixture of tin. Lead has been met with, but only in rare instances; iron is entirely absent. If it ever existed, it has totally disappeared under the oxidising action of the soil during several centuries.

Most of the vases found throughout the entire series of beds, from the rock to the Hellenic stratum, were fashioned out of the clayey earth of the country. This earth is often red, but sometimes grey or yellow. The potter worked his clay solely with his fingers. His knowledge did not permit him to press into his service any mechanical auxiliary. When the vase was half dry, he polished it with a stone burnisher, and this polish the vase retained after it had been baked. Every one of the terra-cotta objects prepared in the way we have stated bears the mark of the burnisher, and a large quantity of these tools are included in the collection. Subsequently the lathe, in its rudest and most primitive form, appears to have been introduced. The objects fabricated by its aid are on a larger scale than the others; but the roughness of the workmanship during this period testifies either to the imperfection of the new machine, or the awkwardness of the potter in using it; on the other hand, the vases and other objects shaped by the fingers only, and afterwards smoothed and polished by the burnisher, display the most elegant form and the most careful manipulation. Thus the fourth period of the pre-historic antiquities of Hisarlik has been designated by Dr. Schliemann, the "period of burnished pottery." It must be remembered that the most ancient forms of Greek pottery were shaped on the wheel. The ornamentation of the Hisarlik terra-cottas is very rudimentary. Not a trace of painted design has been observed upon them, the embellishments consisting only of sinuous lines, zigzags, and what the discoverer by a stretch of imagination calls symbolical figures. All these lines were indented in the soft clay as it revolved on the wheel.

Just a few words respecting the forms of these vases. In Dr. Schliemann's "Trojan Museum," as he himself styles it, there are a few exceedingly large vases, of a capacity of many hectolitres. These massive vessels are of the shape of the well-known *amphikypellon*, terminating in a point, and therefore inserted in the ground to keep them steady and upright. The other vases are of various kinds: there are vessels for containing beverages for the table, vases for culinary purposes, vases to which no use can be assigned, but which, perhaps, were employed as ornaments. The whole series of vases is as abundant as it is diverse in character. In one kind of vase, or rather drinking-vessel, the learned and imaginative explorer contends that he has introduced to the modern world the celebrated *kylix* of Homer. This goblet played a principal part in the honors of the feast. The host, taking it by one of its two handles, drank first, and then handed it to his guest, who, according to the etiquette of the heroic period, emptied it at a single draught. These goblets were always of a fantastic shape. Host and guest drank from two different spouts, hence they were often boat-shaped: from the small end or prow,

the host sipped; from the capacious, broad, stern end, the guest drank deeply, in accordance with the custom of the period. Another form closely resembles the elegant water-jugs with long necks found on modern tables. There is a kind of vase which has been modelled in imitation of a female face. In Dr. Schliemann's opinion these vessels carry with them the highest historical importance. In proceeding, however, to details, we learn that the assumed feminine head is half-transformed into that of an owl. Upon this narrow foundation the German *savant* builds up an enormous amount of theory. In the conformation of these vessels he feels himself constrained to believe that he has discovered the symbol of a deity. The Homeric epithet, *glaurops* (*γλαυρόπτερος*), so constantly applied to Minerva, taken in conjunction with the fact that the goddess, as tutelary deity of the Trojans, bore the head of an owl, suffices to carry conviction to the mind of the explorer that these vessels were formed after the lineaments of the protecting deity of the Trojans. Reasoning in this way, the Doctor is more than ever convinced that Troy once existed, and that he is the supremely fortunate discoverer of its ruins. All the prehistoric beds have furnished examples of these owl-faced vases; but the bed which has been subjected to the action of fire has yielded the greatest number.

The explorer refers with pride to that portion of his collection which he calls "the treasure." All the objects composing this were, according to the Doctor, originally contained in a wooden box, which, as we have stated, he supposes to have been burnt up in the conflagration which destroyed the royal palace. With this treasure was found a large copper key bearing a close resemblance to the key of a modern strong-box. A short account of these much prized objects will not be out of place as a conclusion. There are fragments of swords and implements of war, fourteen axes, seven double-edged daggers, and thirteen copper lances. Next follow a silver dish and two small silver vases, which the discoverer calls magnificent in their workmanship. There are also a silver goblet, and three large silver vases, which all possess the peculiarity of being rounded at the base, and therefore could not be stood upon the table. Next follow six large blades of an alloy of gold and silver, and well-wrought with the hammer. A similar mixture of gold and silver occurs in a small goblet 70 grammes in weight, provided likewise with a stand so shaped that the goblet could not rest upon it without being reversed. The gem of the collection is the *depas amphikypellon*—the drinking-goblet to which we have already referred. It weighs 600 grammes and is all of pure gold. The other vessels appear to have been manufactured with the hammer, but this one has been cast. This splendid vessel has also a stand, which only supported it when placed mouth downwards, consequently only when it was drained of its contents. The treasure likewise contains a globe-shaped bottle weighing 403 grammes, and a goblet weighing 226 grammes, both of pure gold. Then there is a copper-plate to which is fastened a silver vase by the effect of intense heat; as well as a copper vase, kettle, and shield. Outside the box, or rather the quadrangular space it is supposed once to have occupied, a helmet, a silver vase, and a goblet, were picked up. The discoverer conjectures that the helmet belonged to the person who had deposited the box and who was endeavouring to escape the conflagration.

TRADE UNIONS' CONGRESS.

THE meeting of the Trade Unions' Congress at Sheffield, which commenced its sittings in the Temperance Hall in that important town on the 12th of January, is a matter of too much magnitude to be passed over altogether in silence. And we think that even those whose blood is stirred by the word "union," almost as the ire of a bull or of a turkey-cock is awakened by the flourish of a red silk handkerchief, must admit that a certain gravity, moderation, and sense of responsibility have marked the proceedings, which form a striking contrast to certain debates at Geneva, to which there has been a strong effort to procure the adherence of the working-classes of this country.

Amongst the leaders of the movement, and chief speakers at the series of meetings, we observe only two members of the existing Parliament. But we also observe the names of not a few thoughtful and practical men, in whom it

may be safe to predict that we recognise future members of the House of Commons. The efforts made, for example, by Mr. Macdonald, to insure the direction of the best available literary talent of the country to the elucidation of the subject of trade unions, deserves respectful mention by men of letters. It is, indeed, almost a tradition of the craft that prize essays are never essays worthy of the crown. No small degree of experience confirms this view. Yet it is difficult to understand why it should be a part of the nature of things. There can be no doubt that a far better result will be obtained by the method of commissioning a thoroughly competent man to do a requisite piece of work, than by advertising for persons to prove their competence by voluntary performances. From such an invitation the best men generally shrink back. But yet it is the object of the advertisers to discover who these best men are. And, however often the attempt may fail, we are not prepared to say that it can never succeed. It is like the practice of architectural competitions. This involves many evils; great consumption of time, cruel disappointment; much, very often, that savours of imperfect justice, if not of job. Yet it is a tentative method that so continually suggests itself to men who are called on to decide on questions such as those connected with new and important buildings with which they have no practical acquaintance, that it seems useless to attempt to stem the current.

The main object which the Congress appeared to have most at heart is the regulation of the statute law affecting the relation between the employers and the employed. This subject is one that cannot be blinked. It is one which is evidently a primary pre-occupation of a very large mass of the population of this country. Opinions, or (what are often very different things) professions, and pledges, on this subject, are most likely to have a very appreciable influence on the decision of the next election. It is thus of great national importance that the question should be approached in a dispassionate spirit. It is a subject on which no legislation, that is projected and enacted according to our present Parliamentary practice, can by any human probability prove satisfactory. It is pre-eminently a matter for that ancient constitutional method of proceeding in the first place by resolution, to which we think the increasing pressure of business and detail will, sooner or later, compel Parliament to resort, as the basis of anything like organic legislation.

The key to such a solution of the question as is demanded by, and for, the welfare of the country is this;—there must be a clear, mutual understanding; there must be no beating about the bush; no attempt to steal a march. The time has come when England has a right to know distinctly what her working-classes really demand. On this demand must be passed the Senate or Cabinet, but of the general assent of the educated majority of the nation. If right and justice are all that the workman seeks, let it be distinctly known that such is the case. Counsel may be heard in opposition to the claim,—in fact, ought to be, and will be so heard,—but the decision may be confidently anticipated. On the other hand, if the workman demands not right, but power; not justice, but domination; it is well that this should be also plainly understood. The men who hold such demands to be fatal to the welfare and stability of England will join direct issue; and the result, if less easy to predict, will be certain of accomplishment. Is the great national band of sticks to be bound together in the golden hoop of intelligent and enlightened fraternity; or will each minor fagot elect to stand on its own strength and merits? In the latter case, that grim woodman, national decay, will pick us up, stick by stick.

The point which strikes us as the most obscure in the whole matter, and therefore as the most certain and fruitful source of misunderstanding and of quarrel, is this. What is equality before the law? This, we all admit, is the birthright of the Englishman. So far we all go together. We would take it from no man. We would give it to every man who has it not. But, in order to do so, it is necessary to know what it is.

We shall endeavour to make this matter extremely plain and clear. For it is no less difficult than important. If we dismiss the idea, as unworthy of honest men, that the members of these two great interests (into which we mourn to see the great republic of labour more and more distinctly divided from day to day)

are plotting against one another, anxious to snatch from Parliament a hastily tinkered weapon which may serve one side better than the other; if we dismiss this idea,—we shall be forced to admit the vital importance of the inquiry. "I want only what is right," says each of a pair of sturdy disputants. "Fight it out, then," says the professional backer. "Let us see what right is," says the friendly arbitrator.

Equality before the law does not mean the invariable application of the same measure to every man, whatever be his size. Equality, to be true and real, must take fair account of all circumstances. That will be evident if we look at the case of a pecuniary fine. Let us say that an act prohibited by the law,—take, for example, the stealing of bread from a baker's basket,—was punishable by one certain mulct. Suppose that the fine was a pound, and that the alternative, in case of non-payment, was the infliction of three months' imprisonment, with hard labour. Let the penalty apply to the theft, whether it were of one loaf or of the whole contents of the basket. Can anything be more equal?

Yet, see how it would work. It would give impunity to the rich man, who had no temptation to steal; it would strike with a severe stroke the poor starving man, who had the strongest temptation to do so. Suppose a rich man had a grudge against the baker, and felt that he could run him by inroads on his basket. He could calculate the exact cost to himself of the indulgence of his spite, and might rob basket after basket, paying his legal mulct with the utmost composure. To the poor man, driven to appease the cravings of hunger, one offence would ensure the gaol, because he could not pay the mulct. In its operation, on the rich man and on the poor man, the penalty which, from the baker's point of view was so just, equal, and impartial, would be terribly disproportionate. Under the form of perfect equality we should have substantial injustice.

It is thus evident that the establishment of a fine, or pecuniary penalty, by way of punishment for a definite offence against the law, may weigh most unjustly upon the rich man and the poor man. The latter is apt to understand this. His instinct is awake in the matter, and, under nominal equality before the law, he is conscious of actual injustice.

In the case we have put the injustice pinches the poor man. But the converse is no less possible. Take the case of a large employer of labour. He may have embarked in his business the result of the anxious labour, not only of many years, but of several generations. His education, his habits, perhaps his infirm health, make him dependent on a certain amount of luxurious comfort which the hardy soldier of labour could never miss; amid which, indeed, he would feel himself, for a time, far from being at home. His children's heritage, his wife's dower, the provision for his declining years, the deposits of his friends or of his dependents, are all involved in the capital of his great industry. He drives a good business; meets the weekly need of a large pay-bill; and is a wealthy, thriving man. Certainly, whatever else he may be, such a man is a very useful member of society; and has a right to the equal protection of the law.

It is of the essence of a great business, such as we have supposed, to deal by way of contract. A certain amount of confidence in the future is necessary for the execution, for the very existence, of contracts. A man undertakes to deliver so many thousand tons of rails, within a definite time, at a price which affords him a fair profit. He agrees to pay a penalty in case of non-fulfilment, which would swallow up all that profit; or which, if incurred, may even be ruinous.

Now if this man have engagements standing with his workpeople, on the strength of which he enters into those gigantic operations which are necessary for the conduct of the business from which they all derive their maintenance, it is clear that the legal definition of a certain moderate penalty, to bear on both parties alike, for the breach of that agreement, does not affect both parties equally. Let us suppose that the fine in this case, as in the other, were a pound. Industry on the part of the workman is an essential part of his performance of the compact. But suppose the employer to take a dislike, deserved or undeserved, to an industrious workman, or to a dozen of them? He can order them to walk off his premises, pay down his pound apiece, and there's an end. The man receives the forfeit, takes his turn elsewhere, and the matter rights itself.

Turn the picture. The workmen obtain an idea that their employer is under heavy penalties. They think they can obtain an advance of wages. They break their contract with their master by a strike. They know the utmost they can be called on to pay, and the union thinks it worth while to stand the risk. The employer is put in a cleft stick. No pecuniary penalty for breach of contract that any existing legislation will sanction can be equal in such a case as this. To make the employer equal before the law with his hands, something must be available that is more adequate to his protection than a slight pecuniary fine.

To propose to remit the decision of such a case to a jury, is simply childish. If it were possible in the crowded streets of a manufacturing town to hold a court of *pie-poudre*, to seize the first dozen passers by, and empanel them into a jury, that should give its verdict with the promptitude of a drum-head court martial, it might be by far the best plan. But this cannot be done. The liberty of the subject is surrounded with so many guarantees, by the jealousy of our sturdy ancestors, that the value of time has been left out of sight. What with consulting a solicitor, who would demand time to take counsel's advice; then obtaining a summons; having a hearing before a magistrate, and finally having the case remitted to the sessions or the assizes, the master would be a ruined man before his complaint could be even heard. And if it were heard, found to be just, and satisfied, according to the law, by an order on each of a thousand workmen to pay a pound damages, what recompense would that be when obtained, for the actual damage and loss? In a case like this, the power is so disproportionately on the side of the many, that it is a mockery to speak of the enforcement of a definite and equal penalty as giving equality before the law.

The case would only be complicated if more were left to the discretion of the magistrate. To do this would be to throw on his shoulders a responsibility which is properly that of the Legislature. We do not speak of the invidious position in which the magistrate would be thus placed. He sits on the bench to do his duty, and not to do what is agreeable to himself. But it must not be forgotten that anything that tends to place a magistrate, unavoidably and repeatedly, in a false position, detracts from the dignity of the bench, deters the best men from accepting it, and is thus against the public welfare. In the fiercely-debated questions to which we refer, the just care of the upright magistrate would be, that his decision should be entirely within the four corners of the law; that it should be such as could not be challenged. The idea of going into the merits of a case, as if he were an arbitrator, and apportioning to each man the degrees of blame and of punishment that he accurately deserved, is not one that could be entertained, in such a case, by an upright magistrate. The more vague was the law, the more timid and cautious would he be in its application.

The fact is, that it is one of the first lessons learned with the increase of any population, that there is a difference between dealing with individuals and dealing with numbers. That one head can direct, and one hand execute, with the power and authority entrusted to the magistrate by the many, better than the whole mass can deliberate, decide, and act, is the letter A of the alphabet of civilisation. For the common safety, and for the common welfare, such a man is armed with the power of many men. In war this is most evident. There the safety of every soldier, and of all those whom soldiers are arrayed to protect, depends on the absolute supremacy, extending to the power of life and death, of the commander. An army that should propose to proceed on the principles of the equality of every soldier before the law, and of his right to give his opinion in each case, and, what is more, to act upon it, would be nothing but food for powder,—if even it got so far as to see the muzzle of a hostile gun. In all common enterprise, unity of direction is a vital necessity.

This great truth applies to the relations between the owners and the occupiers of labour. In that great army the utmost freedom of volunteering is proper, and is prevalent. But a volunteer who asserts his right to throw down his musket the moment that the heads of the enemies' columns come in sight, is not only a coward and a traitor, but a mischievous public nuisance. And what applies to the struggle of

man against man, applies, with certain modifications, to the struggle of man against time, against cost, against the opposing forces of nature.

We hope that, therefore, the intelligent men who are assuming a tone so much more cautious and practical than that of some former utterances, will go heartily and thoroughly with us. If so, they must go a step further. The practical outcome of these considerations is this. In each great industry, according to its requirements, employment is a matter of contract. Let that contract be at once perfectly free in its inception, and perfectly binding when entered on. Time, we have seen, is of the essence of these contracts. The manufacturer who takes upon himself the responsibility of executing a large order, for a definite sum, to be completed by a definite time, can only do so, if he is a sane man,—on one of two conditions; the first is, that the labour which he requires for the fulfilment of his bargain is so abundant, and so certain to be obtained at the market price, that he need not trouble himself to make any bargain with his hands. Such was our experience, years ago, in the construction of the railways of this country. Legions of sturdy navvies were always wandering through the country. Contract between the navy and the sub-contractor was of the very simplest kind. "Have you any room, master?" asks the new-comer. "Where is your shovel?" was the reply. "I have none." "Go to the shop, get a shovel, and I shall see what you are worth." From intimate acquaintance with this system in operation we can bear witness that, whatever was its effect on the morality of the navy, it gave, as a rule, universal content.

This absolute freedom—or rather this extremely brief period of contract—does not apply to more settled industries. There the workman has to be protected against chance or caprice. The question of home, and of home for wife and children, arises. The turf shanty of the navy is not forthcoming. If it were (warm and snug as we know it to be), it would be despised. It is only a glorified bivouac, and the English operative wants a brick-built house. It is thus in the interest, both of the operative and of the employer, that their contract should run for a definite time. Whatever that time may be,—a month, three, six, twelve months,—the one great requisite is, that both parties should be able to rely on its fulfilment. To this end the sanction of the law is requisite; and that sanction, to be a veritable sanction, must be calculated to attain its end. It is not the imposition of a fine of a few shillings on either party for the breach of contract that can attain this end. Such a proposal is too childish to discuss. There must be efficient protection to the employer against breach of contract on the part of the large numbers of men on whose united aid, under contract, he relies, as well as for the operative. And this is necessary, not in the interests of the employers, but in the interest of the trade. Unless this can be ensured, trade will leave our shores.

We cannot but think that this is the very back bone of the whole matter. Combination—conspiracy—strikes—all these ugly words come to this. No one can compel another to labour. The owner of the labour can do as he will with it. But, if he sell it for a fixed time, the law must hold him to his bargain. It must do so by means that are effectual; that is to say, by means that are disagreeable. The law must make the breach of contract on either side so painful to the offender as to deter him from the repetition of the offence. The effectual character of the remedy is the true object—the true requisite for national welfare. It is not a nominal, but a real equality before the law that is right, and just, and wise.

If our friends on both sides of the dispute will patiently go thus far with us the dispute is at an end. Anything else is matter of detail, and can be arranged by amicable discussion. Any new legislation can be proposed by common accord.

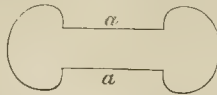
But if, such being the real truth of the matter, both parties blink it; if each seeks to snatch an advantage; if legislation is proposed as a class object, or discussed with the real gist of the matter carefully kept out of sight; then is evil before us. The equality that we seek before the law is not the equality of a herd of savages, but that proper to a highly complicated state of civilisation. That once accepted all round, misunderstanding will be altogether at an end.

STRENGTH OF PORTLAND CEMENT.

SIR,—I send you the results of some tests of the tensile strain borne by Portland cement pure, and mixed with different proportions of sand; and as this cement is now much used by persons little acquainted with its properties, I trust the information may be of some value.

The cement tested was manufactured on the Tyne, and such as I am daily using in the New Quay and other works here, and is what would be called *slow-setting*. The sand used was ordinary river-sand, not selected, so that the experiments might be useful in every-day practice. And I may say, that for the last ten years I have never permitted any cement to be used till it has been tested, and has borne the requisite strain; and if this was more generally insisted on we should hear less of the failure of works where this very valuable (but treacherous where not carefully watched) material is employed.

The test-bricks shaped thus, with a cross



sectional area of $2\frac{1}{2}$ superficial inches at the neck *a a* (that is, about $1\frac{1}{2}$ in. square) were cast in iron moulds, and removed as soon as possible without destroying the cohesive properties of the mixture, and then placed in water till required to be tested. This was performed by a machine made for the purpose, which grasps the shoulders at each end of the neck, and strains the brick till it breaks by a tensile or pulling strain.

The test-bricks of pure cement were removed in two hours after being made; those of one of cement and one of sand in twelve hours; those of one of cement and two of sand in twenty-four hours; and those of one of cement and four of sand in sixty hours.

Table of Tensile Strains described as above.

Age when tested.	Pure Cement.		One of Cement and one of Sand.		One of Cement and two of Sand.		One of Cement and four of Sand.	
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
Day 7	830	and 720	570	and 510	375	and 340	277	and 270
14	890	.. 740	735	.. 500	350	.. 340	154	.. 141
28	935	.. 630	495	.. 535	359	.. 350	133	.. 112
56	914	.. 940	830	.. 577	406	.. 375	135	.. 121
112	1045	.. 1055	850	.. 837	580	.. 565	224	.. 221

* There was a flaw in this brick.

It would appear from this that the difference in the strength of the pure cement one week old and four months old is only 36 per cent.; the difference in the strength of the mixture of one of cement and one of sand, one week old and four months old, is 55 per cent.; that of the mixture of one of cement and two of sand 60 per cent.; and that of the mixture of one of cement and four of sand upwards of 200 per cent. Looking at the great increase during four months in the last-mentioned mixture, it would appear as if it ultimately would become as strong as the pure cement, and this is no doubt the case. In a practical point of view, however, it is most important to note the rapid deterioration in strength (at seven days old) the test-bricks undergo as a larger quantity of sand is used; those having a mixture of one and one being 7-10ths the strength of the pure cement; those of a mixture of one to two being 4-10ths the strength of the pure cement; and those of a mixture of one to four being only 1-10th the strength of the pure cement; which would point to the advisability of using not more than two of sand to one of cement, in work required to set quickly.

I would just point out in conclusion another feature of importance. The mixture of one to four when seven days old is only one-tenth the strength of the pure cement (as noticed previously); but at the end of four months it will be seen it had so far overtaken or gained upon the pure cement, that it had risen to one-fifth the strength.

JOHN LAMB,
Corporation Property Surveyor's Office,
Newcastle-on-Tyne.

Exeter City Surveyorship.—There were 78 applicants for this appointment. Mr. H. P. Boninois was elected.

THE LANDS CLAUSES ACT.

INSTITUTION OF SURVEYORS.

An ordinary general meeting of the members was held last Monday evening, the 19th instant, the president (Mr. E. Norton Clifton) in the chair, when the discussion was resumed on the paper which was read at the last meeting by Mr. Phillbrick, Q.C., on "The Lands Clauses Consolidation Act, with some Suggestions for its Amendment."

Mr. Hyde, in opening the discussion, said that Mr. Phillbrick, at the close of his paper, expressed a hope that, while suggesting amendments, the main principles of the Act must be preserved, in consideration of their practical utility and tried worth, a hope which he (the speaker) cordially concurred in. This Act, he thought would go down to future generations as a carefully-constructed Act in many respects, bearing evidence of its practical utility. By the common law of the land, no subject of the realm could be compelled to part with his property to any other subject; but the first person, perhaps, who ever had compulsory powers granted, for the purpose of taking land compulsorily, was the Baroness Burdett Coutts in the case of the Columbia Market. The compulsory powers given in the acquisition of land have concerned streets, water companies, gas companies, drainage, sewage irrigation, railways, and embankments. In the earliest statute of this nature, the New River Company's Act (1605), the owners of the grounds through which the river passed were compensated, it was stated, to their "contentment"; but in the present day such a thing would be a hopeless task. In these days, however, the matter was left "to the practical good sense of the Commissioners to do what they might think fair in each particular case." He always had thought that some measure might be adopted whereby in railways made the lands taken could be benefited, and be able to contribute towards the expense of their making. As regarded the compensation for the value of the land, the Act, as it at present stood, he thought, would answer, and if they attempted to legislate further, only harm would accrue; and in his experience the Act worked well in its present form. He would not give companies the power or right to compensation, but he saw no objection if there should be provided a machinery by which the right to compensation ought to be claimed merely for the diversion of the street traffic, for if it were allowed where was it to cease? There should be more care exercised, he was of opinion, in laying out the land, for engineers did not regard property at all, but ran through anything that came in their way. In this respect there was great need of reform. Section 22, which dealt with cases where purchase-money and damage as claimed did not together exceed 50*l.*, and remitted such claims to the settlement of two justices, was, he thought, a useless section. He fully agreed with Mr. Phillbrick as to the abolition of section 38, which compelled the arbitrators and umpire to make a statutory declaration that they would act faithfully and honestly. Speaking of the vexed question of costs, he said that it was a tender point that the masters of the superior courts of common law should tax the costs. The great good of the proceedings under the Lands Clauses Act was, that they were final and a great injustice would be done if this was not so.

Mr. Horatio Lloyd, Q.C., said that it was quite impossible in a single meeting to discuss individually the different sections of the Act, for it would occupy too much time. The practical matter they had to deal with was to look at the Act as it stood. There were objections to the Act, and some very striking ones, indeed; and it was his intention, at some future time, to go through the Act, and to suggest what appeared to him its defects, and to propose remedies, to be brought before a meeting of this institution with view of framing a Bill for Parliament. In many respects he differed from the conclusions arrived at by Mr. Phillbrick. The basis of the right to compensation depended upon the Railway Clauses Act, and not as Mr. Phillbrick supposed. The Lands Clauses Act merely prescribed the mode in which compensation was to be assessed. With regard to the question of principle, Mr. Phillbrick had rightly distinguished as to that which involved the purchase of land and that which was the compensation for the damage which resulted to persons. With regard to the percentage added upon a compulsory sale according to the principles laid down by the

Act, they were to assign the full value of that which was to be purchased. In giving the full value, on what principle were they to add the further per-centage of the property taken by compulsion. As respected the taking of the land by compulsion, most important distinctions should be made. If a person had his property in the market, he (Mr. Lloyd) never could understand, when the full value was estimated, why the per-centage was added at all. It was quite monstrous that there should be one uniform amount of per-centage given in all cases of land which was in the market for the purpose of being dealt with in purchase, and he regretted that this rule was now becoming inveterate. Speaking of the question of the jury for the awarding of compensation, he thought that a more incompetent tribunal to treat of these matters than jurymen he did not know; they knew nothing of the value of property, and were often liable to be prejudiced, topics being introduced by opposing counsel of totally an irrelevant nature.

Mr. Beadel was of opinion that there were many things in the Act which operated with prejudice to the claimants and also to companies. It was within something like thirty years since the Lands Clauses Act came into operation; and in the working of it there had unquestionably been great injustice done. He differed from Mr. Lloyd's views regarding the per-centage upon a compulsory sale; and to him (the speaker) it seemed only right and reasonable as far as compulsory sale was concerned. He agreed, however, with Mr. Lloyd that the jury was the worst tribunal before which compensation cases could be determined. He contended that there could be no tribunal so perfect as referring the matter to arbitration, a fair value in such cases being always given for the property. If the surveyors of England would set apart the unfair regard they had for the clients they represented, and look at the questions involved in an honest way, he believed that a great number of the questions which now went to arbitration would be prevented from going to arbitration at all.

Mr. Shield thought that the view of assessing the compensation first, and trying the matter afterwards, was a technical blemish; and, if only in this instance, there was a crying remedy needed. He, with the previous speakers, was largely impressed with the inability of jurymen to try compensation cases; and thought that some remedy in this respect should be proposed.

Mr. Driver said that the Lands Clauses Act, which had been established for so many years, showed that the promoters of it were men of great ability. With regard to the court of appeal, he thought that it was a fearful thing for the claimant, after he had gone through the great costs and expenses of a trial, to have the case disputed upon some technical point to oppose the verdict.

On the motion of Mr. Marriott, the further discussion was adjourned till the 2nd of February.

HOW THEY MANAGE THINGS IN JAPAN.

It would appear as though in Japan they do not carry out their public works in a very systematic or methodical way. We learn that the Japanese Government have recently had some works to carry out in Tezo, and seem to find a difficulty in controlling the outlay of their officers. A peculiar illustration of the way they manage things may be given. Four "strong and durable" piers have recently been constructed in Tezo;—one at Mori of 500 ft. in length, and three on the Ichi Kari river. At the end of each of these piers the greatest depth of water is 7 ft.; so that, although each of them is estimated to have cost not less than 100,000 dollars, they are one and all entirely useless, and do not afford facilities even for loading junks, much less larger vessels. The junks could not be brought alongside the pier at Mori even in calm weather. The construction of a road, too, from Hakodade to Sapporo is said generally to have cost the Japanese Government more than double the actual outlay for the labour and material which were expended on its construction, this result being arrived at by comparing the numbers of labourers employed, as noted by the American officers, with the cost of labour said to have been charged to Government. The road is said, on good authority, to have cost about 300,000 dollars, while the Government have paid 800,000 dollars. These are only two

instances against many which might be quoted, showing the absurd manner in which public money has been expended in carrying out public works in Japan. The Hakodade road above alluded to has been constructed in itself in an admirable manner by American contractors, and does not show a single slip notwithstanding the rapidity with which it was carried out, and the heavy rains to which it has been exposed. Another somewhat important work is the construction of a line of telegraph between Hakodade and Mori, which will be carried along the road to Sapporo. The last-named place is the chief town of the island of Tezo. It covers about a mile square and is situated on a fine plain. The town has been laid out with a view to its future importance, and contains a Government house, several Japanese hotels, a number of houses of superior construction, for the use of Japanese officers, and still better houses for the gentlemen of the American mission. The streets of the town are broad and well made, and there are a hospital and other edifices of a public character.

NOTES FROM DUBLIN.

In the Corporation a persistent attempt was made to continue the Main Drainage Committee as a permanent one, but the efforts were frustrated by a motion by which six members by ballot were elected from the late committee, and six from the several members of the house. This proceeding has given an infusion of new blood to the constitution of a committee which long stood in need of it.

In the water supply, the civic body has raised a storm about their heads by the promotion of a Bill which some think prejudicial to the interests of the inhabitants and the townships. The water supply of Dublin is good, but it has been a most costly affair, and it will be many years yet before Dublin wipes out the load of debt and taxation that attaches to it.

The rebuilding of the new Essex Bridge over the Liffey, connecting Capel-street on the north, with Parliament-street on the south side, is progressing. The old foundations will be utilised, and it is expected that the bridge will be ready to be opened for traffic in October next. A temporary foot-bridge has been erected on the western side of the works, and opened for passengers on last Saturday.

A number of sanitary cases have been heard within the last few days before the divisional magistrates, fines inflicted, and orders made for the abatement of nuisances. The state, however, of the streets is disgraceful, and is calling forth the rebuke of the magistrates and the repeated complaints of the ratepayers. The corporation say they have no funds for sanitary purposes; yet they find sufficient every session for the object of promoting new Bills and schemes. An application is again about to be made to the Board of Public Works for a loan for sanitary purposes, particularly in relation to paving, scavenging, and other works urgently needed to ensure the public health. At present, in Dublin, there is scarcely an available rate but is mortgaged under the head of loans for work long since proposed to be done, the greater portion of which is still unfinished. A resolution has been passed by No. 1 committee by which the council are requested to vary their order of last year, and sanction the committee in adopting to the extent of 12,000 yards the specification of the Val-de-Travers Asphalt Company for footways, similar to that laid down near Trinity College.

A new company is floated under the title of the Irish Midland Coal Consumers' Company on a co-operative basis, and with the object of enabling members to obtain native bituminous coal at 2s. a ton above cost price. The coal-fields to be worked are in the province of Connaught, near Lough Allen.

A new and useful body has been formed for the protection of the rate-payers, and the business of their special meeting this week was to consider what steps should be taken to place before the citizens the acts of the corporation in giving legal fees to one member of their body and contracts to another.

Considerable progress is making with the work of "restoration" at Christ Church Cathedral, which will soon call for detailed description. If the long projected new street from the foot of Cork-hill to Christchurch-place were constructed by the municipal authorities, the appearance of the cathedral would be considerably enhanced, its approaches greatly

improved, and the health of that district benefited. The new street cannot be much longer delayed, and its formation, it may be observed, will remove one side of the historic Castle-street, one of the oldest streets in the city, and famous in the annals of several centuries. The street was the birth-place of Dogget, the actor, and a few yards backward from the thoroughfare is not the less noted Hoo's-court, the birth-place of Dean Swift, and also the residence of many noted characters down to the close of the last century.

THE ROMAN REMAINS AT YORK.

For some months past the North-Eastern Railway Company have been making extensive excavations at York, for the purpose of making a new station, and from time to time important discoveries of Roman remains have been made. Reference was made to some of these in our columns, but a Malton archaeologist and antiquary has been drawn by the most recent "find" to make a thorough examination, and classify the whole. He says:—

"There are two sepulchral monuments, with inscription; two altars, with sculptures; a mutilated lion, a conical stone, and a female skull in fragments, with a gold plate inserted in the palate; and about ten sarcophagi with covers, but without any lettering; lastly, some boulder stones, embedded in the lid clay, representing the granite formation of Ship in Westmoreland, and some other bluish stone of Plutonic origin, puzzling to geologists. The most important of all is, however, the tomb of the Roman magistrate at York, whose name is apparently Vilius, this being inscribed, but who is described most legibly as Decurio, or alderman of the municipality of Eboracum. York, therefore, was a colonia of Rome, and had its regular local magistracy, as before evidenced. The other most remarkable relic is the skull, with the thin platina of gold in the mouth. . . . The custom of the Romans to bury their dead alongside their great thoroughfares is well illustrated by this extensive cemetery, and it certainly appears that men and women of rank were interred in another side of the road leading from the camp at York to that at Aldborough. Besides the Decurio mentioned, there is an Olinthus lately come to light, sculptured with her husband and child, and these names represent high nobility; a Lactus Olinthus Olinthus was Consul of Rome under Domitian, and the Emperor Adrian was of the same family."

All the relics have been deposited in the York Museum, and form a valuable addition to the interesting collection of antiquities previously stored there. It is to be hoped opportunity will be, or has been, afforded for careful and thorough examination of the relative positions and surroundings of the "bluish stones of Plutonic origin, puzzling to geologists," and other boulders, or sarcen stones, which directly underlie the site of the Roman cemetery,—just apparently as an aboriginal British sacred place, or place of sepulture, might.

ON TECHNICAL MUSEUMS.

A PAPER has been read at the Society of Arts "On Museums for Technical Instruction in the Industrial Arts and Manufactures of the United Kingdom, and the Surplus of the Inventors' Fee Fund," by Mr. Thomas Webster, M.A., F.R.S. (one of Her Majesty's Counsel). Mr. Webster, in the outset of his paper, said:—

"The communication now submitted to the Society for the Encouragement of Arts, Manufactures, and Commerce has two specific objects: the one, the establishment, maintenance, and utilisation of museums for the technical instruction of the people; the other, the application, appropriation, and utilisation of the Inventors' Fee Fund to and for such purposes."

The term *technical instruction* is adopted in preference to *technical education*, in order to express the more limited object of the present communication, as compared with others which have been heretofore discussed at, and occupied the attention of, meetings in this room and elsewhere, and for several reasons. First, instruction is only part of education; it is, in the arts and manufactures, for a special class what reading and numeration are for mankind generally. The fact has just gone forth that no child among us shall be left without the letter; so I hope that, by the exertions of this ancient and energetic society, something may be done towards the former. There are other reasons why it is desirable that the subject should be specially limited. This society has taken steps and is pursuing active measures as to "national museums and galleries and public education," with the view of bringing under direct Parliamentary responsibility the national museums and galleries, so as to extend their benefits to local museums, and to make them bear on public education.

This great and comprehensive plan, which must commend itself to all earnest reformers of the education of the people, is worthy of the exertions of this Society, which has inaugurated and helped forward so many other noble undertakings."

After going into the subject at some length, and speaking of the Patent Office and other museums, he said:—

"In addition to the contents of the foregoing museums under the immediate control of the Commissioners of Patents, there exist in several rooms or portions of the South Kensington establishment, entirely apart from the Patent-office Museum, numerous other models of the

highest interest. Other collections also of models exist but partially utilised. No catalogues exist of these valuable collections; indeed, the ownership of many of the models and machines is doubtful, some belonging and some lent to the Commissioners, some belonging or lent to Mr. Woodcroft, and some belonging or lent to the Exhibition Commissioners.

These, if collected in one building and properly classified, would form a valuable nucleus of a National Museum of Industry, and by a proper distribution of duplicates, material assistance might be rendered to local museums.

A discussion followed the reading of the paper.

THE AREA ROUND ST. PAUL'S.

The well-known east-iron railings round St. Paul's Churchyard, having been sold by auction, are now being removed, and the aspect we showed by an engraving some short time ago will soon be attained. The railing brought 341L 5s., or about 8l. per ton. It is of Sussex iron, about the last produced in that county. The sum named is for the ironwork only, not the stone parapet wall into which it was secured. This still remains the property of the cathedral, and consists of some fine blocks of Portland, equal in quality, or nearly so, to that of which the cathedral itself is built.

The Dean and Chapter intend to open the west area to the public next Monday (the 26th), and will make rather a high day of it, being what is termed the "Conversion of St. Paul."

The corner or memorial stone of the Cartesian Schools, with an appropriate inscription upon it, will be laid by them in its place on the same day.

THE SHOP-FRONT COMPETITION.

The stipulation made by Mr. F. Sage, that all the designs submitted, whether rewarded or not, should remain his property, proved fatal to the competition, as we said it ought to prove. The competitors were only seventeen in number, and the majority of the designs sent in are worthless. We have great pleasure, however, in recording that the whole sum offered, viz., 150l., was awarded. The three gentlemen who acted as judges, - Messrs. L. H. Isaacs, Shoppee, and J. Wimple, - observe in their report :-

"We deem it right to say that, owing to the conditions of the competition, we were bound to award prizes in each instance. It must not be considered, however, that the awarding a prize is to be held as an approval by us of the design; on the contrary, we are of opinion that many of the drawings do not merit the prizes they have received; but, owing to the conditions to which we have referred, there was no alternative left us. Some of the designs, however, evince careful study and practical knowledge of the subjects treated, combined with a considerable amount of artistic feeling."

The competitors to whom premiums have been awarded are the following: - Mr. J. C. Nicol (5-14. 10s.); Mr. Joseph H. Blako (7l. 10s.); Mr. Frank W. G. Buckler (5l.); Mr. Jas. Young (2-15l.); Mr. G. P. Beater (3-13l. 10s.); Mr. H. Millar (2-7l. 10s.); Mr. M. Woolland (2-24l.); Mr. Jasper Wager (3-19l.); Mr. W. H. Arber (4l.).

We understand that Mr. Sage intends to repeat his offers, omitting the objectionable stipulation, and in that case may fairly expect a more satisfactory response.

RICHMOND WATER SUPPLY.

The inhabitants of the higher districts of Richmond have complained of the supply of water, and attention has been directed to the possibility of obtaining from another source a pure and wholesome supply.

At a recent meeting of the select vestry, plans were laid before them by Messrs. Russ & Minns, according to the instructions given, and were approved, and ordered to be forwarded at the earliest possible date to the Local Government Board, in order that the amount estimated may be borrowed for carrying out the works; namely, 30,000l.

Messrs. Russ & Minns, in a published report, have indicated the different sources from which water may be obtained. They have selected the chalk beneath the London clay as that from which to get a water-supply for Richmond. The site chosen for the pumping-station is the old Brewery, at the end of Water-lane. The well is proposed to be 8 ft. 6 in. internal diameter for a depth of 100 ft., then decreased to 7 ft. diameter for the next 120 ft., and from this depth to the chalk (which is expected to be reached at a further depth of 56 ft.) of 5 ft. diameter. When the chalk is reached, a boring of 18 in. diameter is to be sunk in it, making a

total depth of 420 ft. Powerful engines are to lift the water to high and low service reservoirs, the former in Richmond Park, and the latter near the Union Workhouse. The service is to be constant, and under sufficient pressure to command the tops of the highest houses in the district. It is estimated the water may be supplied at 6d. in the pound on the rateable value of the houses.

M. VICTOR BALTARD, ARCHITECT.

On the 14th inst., Paris lost M. Victor Baltard, who died in the 69th year of his age. He was a member of the French Institute, and corresponding member of the Royal Institute of British Architects. "Prix de Rome" in 1833, M. Baltard was for a long time architect to the Government and to the city of Paris, and in those capacities restored a large number of monuments, and built the church of St. Augustine. His chief work is the Paris "Halles," for the idea of which he was to some extent indebted to the late Hector Horeau. M. Baltard had skill with the pen as well as with the pencil, and published several works.

REFORMATION OF LEICESTER-SQUARE.

At last we see light: order will come out of chaos, and, in lieu of a disgrace, we may hope to find beauty. We have good authority for saying that the central area of Leicester-square has been purchased by a munificent individual, and will speedily be laid out as a garden, adorned with sculpture, and presented to the public. The scheme, as we are informed, includes four colossal busts, on pedestals, of distinguished men connected with the locality, the commissions for which have already been distributed. Thus Mr. Calder Marshall has undertaken the bust of Newton; Mr. Woolner, Johnson; Mr. Weekes, Reynolds; and Mr. Joseph Durham, Hogarth. The hoarding will come down, it is expected, in June. A pleasanter piece of news has not reached us for some time.

STATIONS AND ROLLING-STOCK OF THE NORTH-EASTERN RAILWAY COMPANY.

In a letter which the North of England Freighters' Association have just addressed to the President of the Board of Trade, they prefer a formidable bill of indictment against the North-Eastern Railway Company in respect of defective accommodation for both passengers and merchandise, as illustrated by inconvenient and inadequate stations, limited sidings, bad carriages, and irregularity of trains. The company's rolling-stock is totally inadequate to the requirements of the traffic, and the whole of the trade in the North of England is now, and has been for some time, subject to great inconvenience and loss from this cause. The Association add, that "there is no punctuality in the train service on any part of the system;" and that through this irregularity in the running of the trains "much valuable time is wasted, and the commercial community is put to great inconvenience." Assuming these grave charges to be well founded, it would appear that there is a wide field on the North-Eastern line for the employment of large numbers of artisans connected with building and other works of a kindred nature.

SOUNDS AT SEA.

THERE was an unusually crowded meeting at the Royal Institution last week to hear Professor Tyndall's lecture. The chair was taken by Mr. Spottiswoode, and the Bishop of Bath and Wells, Professor Huxley, Dr. Hocker, Professor Allman &c., were among the audience. The professor commenced with the remark that the puff from a locomotive engine can obscure the light from the noonday sun, and it is, therefore, no matter of surprise that fogs are able to obscure the less powerful lights placed round our coasts as signals to mariners. During the last ten years 273 ships have been lost around England in consequence of lighthouses being obscured by fogs, and the Trinity House has earnestly considered what substitutes for lights can be used to warn mariners of danger. In America, experiments with sound signals have been made, and it has been found that for some reason or other great uncertainty exists as to the distance at which sounds can be heard on different days. The

matter presenting itself to the Trinity House in this form, the Elder Brethren determined to institute a series of scientific experiments to ascertain, if possible, what is the cause of these variations. The South Foreland was selected for the experiments, which were placed entirely under Professor Tyndall's control, and were commenced in May last. Steam-whistles, air-whistles, steam-trumpets, 18-pounders, howitzers, and mortars, were the instruments used for originating sounds; and a Trinity vessel, the *Trema*, conveyed the Professor and his staff to different places in the Channel to listen for the sounds. A tabulated arrangement was given of the various distances at which the sounds were heard on different days. There were interesting and perplexing problems in the results that challenged solution. The Professor then made an allusion to his lecture delivered before the British Association on "The Scientific Use of the Imagination," and gave some few illustrations of the value of a duly controlled imagination mentally picturing the invisible. Standing on the deck of the *Trema*, he said, and listening at different times to the sounds, it was evident to all the party that there was a something which caused these variations, something which had a real existence, something invisible which it was for the imagination to picture. The Professor proceeded to speak of the passage of heat through different bodies, and mentioned the almost perfect stoppage of heat by some, and its ready transmission by others. Imagination has to picture vapour from sea and land arising in the air in layers, these layers presenting "reflecting surfaces" to the passage of sound. In the relative homogeneity of the atmosphere, or its being split up into many layers, we have a clue which may enable us to arrive at a knowledge why sounds of equal intensity will travel further on some days than others. The Professor explained some instruments called "gyrens" in use in America, and also read some extracts from Faraday's correspondence with the Trinity House on the subject of sound signals.

Although the lecture extended half an hour beyond the usual time, it was listened to throughout with marked attention.

THE CARVING TOOLS OF NATURE.

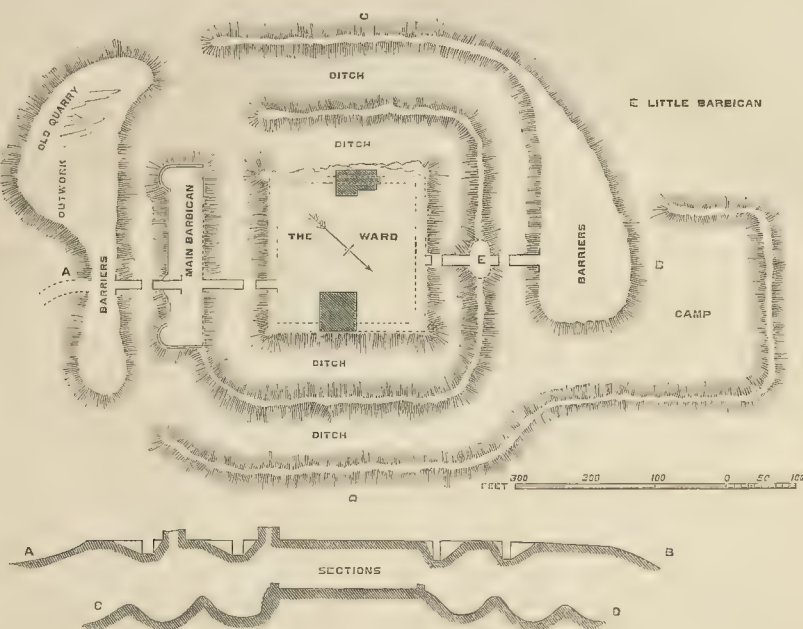
A SERIES of "Science Lectures for the People," announced by the council of the Crews Mechanical Institution, is being given in the hall of the Institution, by Mr. T. G. Bonny, M.A., F.G.S. (Tutor and Senior Fellow of St. John's College, Cambridge), and several other gentlemen from Cambridge who have also consented to give their services in the delivery of these lectures gratis.

Mr. Wordsell, jun., in introducing Mr. Bonny, said that they had had a variety of lectures, or rather amusing entertainments combined with instruction. These new lectures were intended to instruct and entertain, though not perhaps so much as the others.

Mr. Bonny then commenced his lecture, the subject of which (as well as of the lecture which followed) was "The Carving Tools of Nature." On the first evening he dealt with "Rain and Rivers," on the next, with "Frost and Ice." Had it ever occurred to question themselves as to how it was that the earth had taken its present form? What had fashioned the hills and the valleys, and spread abroad the plains by the side of the rivers? That question he endeavoured to answer.

At the second lecture the chair was occupied by Captain Moorsom, and there was a very fair attendance. The *Warrington Guardian* reports the lectures at some length. It is to be hoped that the public of Crews will appreciate these efforts which are now being made for their instruction in scientific subjects. The council make no charge for admission.

The further course is as follows: - February 5th and 12th, two lectures on "Mechanics," by Sedley Taylor, M.A., late Fellow of Trinity College, Cambridge; February 19th and 26th, two lectures on "Waves," by G. W. Hicks, B.A., scholar of St. John's College, Cambridge; March 5th and 12th, two lectures on "Light," by William Garnett, B.A., scholar of St. John's College, Cambridge. These two last will treat of spectrum analysis, and its application to the Bessemer flame. H. N. Read, B.A., of St. John's College, Cambridge, will give the two concluding lectures, on "Chemistry," on March 19 and 26. Each lecture will be illustrated by experiments.



HELMESLEY CASTLE.

HELMESLEY, the Elmesale of Domesday and the Hamlake of genealogists, is the name of an extensive tract of wild moorland which lies on the southern slope of the Cleveland Hills, in the north-east corner of the North Riding of Yorkshire. The hills rise to 1,400 ft. above the sea, but Helmsley Moor hardly reaches 1,100 ft., and the town of Helmsley, placed where the uplands pass into the plain, scarcely stands at 200 ft.

The real river of Helmsley, descending from the moors, is the Seph; but after its union with the Rye, the stream and the dale bear the name of the latter water, made famous by the Abbey of Rievaulx, about four miles below which, sweeping round the well-wooded promontory of Duncombe, the stream, returning somewhat upon its former course, forms the southern boundary of the castle and the town.

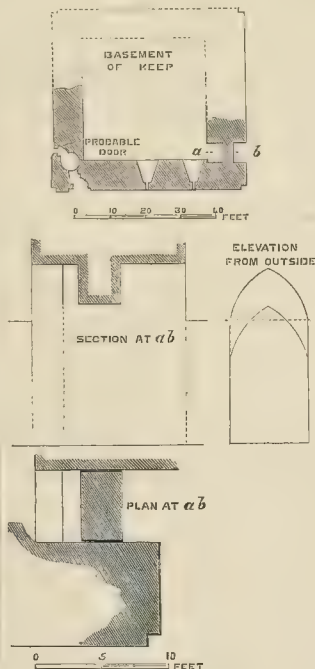
The castle is barely included in Duncombe Park, part of its eastern outwork being traversed by the border. Its position, if not specially striking, is yet strong, and favourable to the operations which rendered it in former days almost impregnable. The low platform upon which it stands is mainly of rock, and the labour employed has been rather of removing than of making ground, the ditches being wholly artificial.

Besides the Rye, which, where it flows about a furlong south of the castle, has low and swampy banks; close upon the east, between the town and the castle, descends the Eiton beck on its way to the Rye, a stream the level of which allowed of its being employed to flood the ditches of the fortress.

The plan of the castle is rectangular, and its earthworks are upon a scale not usual with castles of pure Norman origin, and which, notwithstanding their form, raises a surmise that they may be of much earlier date.

The main ward of the castle is about 200 ft. square, level, and contained within a deep and broad ditch, completely surrounding it. A moderate bank of earth crowns the edge of the slope, partly no doubt original, but in part composed of the ruins of the curtain.

Beyond the ditch, and forming its counter-scarp, is a ridge or bank of earth a few feet lower than the level of the ward, and therefore commanded by it. This ridge, interrupted at the southern angle, so as to communicate with the excavations beyond, is expanded upon the north-west front and again still more considerably



upon the opposite or south-east front, so as to form a lesser and a greater barbican, covering the two entrances to the place.

Again, beyond the ridge, is a second ditch, also encircling the whole place, and passing, therefore, in front of the barbicans. This, in its turn, is succeeded by a second or outer bank, also interrupted, and in three places, at the north,

south, and east angles. This also is of variable breadth: somewhere, a mere ridge; in other places, as before the two fronts, expanded into broad platforms, covering the entrances and the approaches to them. Supposing these ditches to contain either water or mud, the interruption in the banks would very much increase the difficulties of those besieging the place, by breaking the communications, and preventing them from attacking the barbicans by the flanks. There are traces, outside this second bank, of a third ditch, which, however, seems to have been confined to such points as were supposed especially to need further protection.

It is evident that an earthwork such as that described, covering above ten acres of ground, and with ditches 60 ft. to 70 ft. broad, and deep in proportion, would, in resolute hands, and properly palisaded, be a most formidable stronghold. That such was the nature of the defences contemplated seems certain, since the banks would not support masonry; and although the edge of the inner ditch was of firm ground, the back or crest thrown up upon it was not, and had masonry been contemplated, would have been superfluous.

When the Norman engineer undertook to fortify the place, he seems to have confined himself to the construction of a curtain of 10 ft. thick round the inner area, placing it on the firm ground, and employing the earth-bank as a ramp against the wall; to this he added a gatehouse at each end, and a work of some strength as a barbican beyond the inner ditch; then a second gatehouse, placed upon the barbican; and finally a second or outer bridge. On the west side of the inner area, where the rock was firm, a low cliff of 20 ft. to 25 ft. was substituted for the slope of the ditch.

Besides the *enceinte* or curtain-wall, the four drawbridges, and probably four gatehouses, there seem to have been four drum-towers—one capping each angle of the place. It is true that these are no longer to be seen; but a circular heap of rubbish at each angle seems to represent such towers, which, indeed, were the usual and necessary constituents of such a work, though whether these towers were of the Norman period may be doubted: probably they were later.

In addition to these works, and reared up high above them all, was the rectangular keep, placed near the centre of the east or town side, and upon and forming a part of the *enceinte*. Opposite to the keep, and also forming a part of the *enceinte*, but on the west side, and built there.

fore upon the edge of the cliff, were the domestic buildings, some parts of which remain mixed up with later works. It may be also seen that a cross curtain between the keep and the domestic buildings divided the ward into a northern and a southern court, and it would seem that a fragment now standing, and which has much the air of having been part of a chapel, was connected, as at Kuarborough, with this wall.

The keep appears to have been a square of 53 ft., and although about 9 ft. of it are buried in earth and rubbish, it still rises to about 90 ft. Rather more than the outer or eastern half has been blown up, and has fallen into the ditch, and what remains has suffered much from alterations and additions. It is built in rubble of a very ordinary description, but with quoins and dressings of ashlar. The plinth, if one there be, is of course concealed. The walls are plain, 9 ft. thick, having neither string nor set-off, and but one low pilaster buttress, which rises to the first floor only, and is placed upon the west end of the north wall, to give strength to an interior stair. At the two remaining angles are nooks, but not intended to carry shafts or beading.

The original tower was composed of a basement and first floor, about 70 ft. high, or, as now seen, 60 ft. There remains within, against the west wall, a not very high-pitched weather-table, which shows, as at Rochester and Richmond, where the roof abutted against the wall as a gable. The wall was carried all round, high enough to conceal the roof. The west angle contains a well-staircase, which rose from the basement to the first floor. The door into the basement is buried, but the line of the steps in the wall points downwards. A breach has been effected in the west wall exposing the staircase, and seems to occupy the place of a loop.

In the west wall of the basement are two acutely-pointed recesses, terminating in square-headed loops; and in the south wall is a doorway, of 5 ft. 6 in. opening, also under an acute arch. It is possible that this basement was vaulted, though it is more probable that the covering was of timber.

The first floor was originally lighted by three windows, in Early Pointed recesses, of different sizes and heights, and above the central recess, which was placed lower, to give place for it, is a round-headed recess and window, placed in the angle of the gable. The three lower windows have been replaced by three lancets, and the recesses reduced in height and proportion to suit. The latter arch is handsomely ribbed. It is uncertain how the first and main floor was covered over. In the north wall are seen the springing-stones of three ribs, evidently part of a vault; but near them is a short table, with four corbels, possibly connected in some way with the stair-entrance. Also there are fragments of two ribs in the west wall, so that the arrangements of the vaulting are obscure. The ribs mentioned are plainly chamfered, and may be Early English, or later. An addition of about 80 ft. has been made to the original keep, giving it an upper or second floor. In the west wall of this addition is a Pointed window in a segmental recess, resting on the old masonry. In the north wall is another Pointed window and a fireplace. There is a loop towards the south; but this part of the wall, both inside and out, is obscured by ivy. In the wall of this floor, cutting the line of the windows, is a corbel-table, the corbels cut somewhat into the shape of heater shields. This must have supported the roof, but have interfered seriously with the windows. How this story was reached does not appear; probably by a well-stair in the wall, now destroyed, a point which could, no doubt, be ascertained by uncovering the fragments in the ditch. The upper wall seems as thick as that below; and it is curious that there are no traces visible of mural galleries or chambers.

The battlements remain perfect, so far, at least, as are the walls they crown. The embrasures are of moderate size, and the merlons broad, and the running moulding is carried round the whole. At each angle is a square turret, rising about 10 ft. above the curtains. These turrets rest upon a light bracket outside, and each of the outer faces is flanked by two light, slender buttresses, in tabernacle-work, resting below upon brackets, and, no doubt, once ending above in delicate finials. In each face is a single embrasure. Of course, all these are additions.

The question of the entrance to this keep is obscure. There remain three doors, any one of

which would serve. That on the ground-floor to the south; a small round-headed door at the first floor level to the north; and a third door, in the same wall, a little lower down, leading into the well-stair. There are, however, indications that none of these was the real entrance. Against the south wall are traces of attached masonry, probably of a forebuilding, containing and covering the entrance, which in that case would have been in the south wall near the east end, a part now destroyed. The staircase seems to have commenced against the south-west end of this wall, and to have passed over the present door, which probably, as at Rochester, opened into a cell below the staircase of the forebuilding. This conclusion is strengthened by the presence of seven holes in the keep-wall at the rampart level, evidently to carry a battlement commanding the staircase below. Also, high up in the same wall, there projects a mass of ashlar, which may very well have been part of a machicolation, overhanging the door at the stair-head: arrangements similar to these are not uncommon in keeps of this pattern. Of the other doors the small round-headed one may very well have opened upon the ramparts as at Clitheroe; and that which is left into the well-stair, now closed and converted into a loop, looks rather of a Decorated character, and may be an insertion, or it may have led into some annexed building, now destroyed. At the period when this keep was built there was no longer that extreme caution in allowing more than one entrance to the keep.

It would seem that the original keep was Late Transition or Pointed Norman, and therefore might well have been built, as supposed, by Robert de Ros, surnamed Fursan, who held the lordship from 1184 to 1226, and probably completed the work before 1200. Then came the alteration in the first floor in a most decided Early English style, and therefore probably by Robert de Ros, Fursan's grandson, who married the heiress of Belvoir, and flourished between 1257 and 1285. Then followed the addition of the upper story, and of the battlements and turrets, all rather late Decorated. This might well be the work of William de Ros, who held Helmsley from 1317 to 1342, to whom, in 1337, was granted the tower built by Edward II. in London, near Baynard's Castle, and which seems to have stood on the bank of the Fleet-ditch, where some ancient foundations were recently laid open in the formation of the new street. This he was to hold as appendant to his Castle of Helmsley.

The domestic buildings standing opposite to the keep are composed of two blocks. One is a square mass of great height, and with walls of considerable thickness, has traces of Transition Norman or Early English work, but has undergone alteration in the Decorated period, and finally in that of the sixteenth century. The other or northern building may be on early foundations, and probably is so, but its fittings are of the sixteenth century, and probably the work of the Earl of Rutland whose armorial bearings are embossed in plaster on a deep cornice and on the panelled ceiling, all now in the last stage of decay.

The northern gate-house, and any structure that may have stood upon the smaller barbacan, have disappeared utterly from sight, though probably their foundations could be laid open. To the south there is more to be seen. The inner gate-house indeed is ruined, and nothing is visible above the rubbish save the outline of the western jamb, which shows a portcullis groove and rebate for folding-gates.

The outer gate-house and its barbacan form a very remarkable work. This barbacan is, as has been stated, an expansion of the bank which surrounds the inner ditch. It is here above 80 ft. broad, and long enough to cover completely the southern front of the place. The gate-house, like that behind it, is much nearer to the east than to the west end of the work. It is composed of two small round turrets, and two large drum-towers flanking the portal. On either side of these extend the curtains, which terminate in a pair of large drum-towers, which flank and close the outwork.

The gate-house is tolerably perfect on the ground floor. The upper story is in ruins. The portal, about 32 ft. deep, is vaulted throughout at different heights and with arches of different curves. It was defended by a portcullis and a pair of gates. The outer portal is handsome and peculiar. It is of about 10 ft. opening, and shoulder-headed, the shoulders being worked brackets. Above is a pointed arch of relief,

and the tympanum between the two is composed of stones joggled together with great neatness. Above is a good flat-topped Decorated window of two lights trefoiled. Traces of the chain-holes for the bridge are seen in the spandrels of the portal.

The gate-house is evidently of two periods. All behind the portcullis groove is original, either late Norman or Early English. The grove with all before it is late Decorated, probably of the age of the upper story of the keep.

Much as the buildings of this castle have endured, it is curious that the piers, counter-piers, and bridge-pits of the four bridges should remain quite perfect, and all of excellent ashlar. The inner, or pier from which the bridge dropped, is from 9 ft. to 12 ft. long, and the pier across which it dropped of 12 ft. opening. The counter-pier, upon which the bridge dropped, is much longer, from 40 to 55 ft., and as this long and exposed causeway was but 12 ft. broad, any body of enemy's attacking by it would be placed at a great disadvantage.

It is difficult to form an opinion upon the age of the earthworks of this castle. Either the Romans or the Normans might have laid out an earthwork on a rectangular plan, but when either people desired to construct a place of excessive strength, they employed masonry rather than earthworks. The Saxons and Early English, on the other hand, though much given to employ defences of earth, and often upon an immense scale, are not known ever to have made them rectangular. What was the practice of the Romanised Britons, who, inheriting something of Roman arts and military rules, might also well have derived from their Celtic forefathers a taste for works in earth, is not known. Such a fortification as the present may possibly be their work. Of course, it is possible that the whole may have been the work of Robert Fursan, especially as, remarkable as it is, it is not named in Domesday nor any early record.

Tristram appears, as has been stated, in Domesday as "Elmesloe, in the wapentake of Langebore." It is now in that of Ryedale; but that this is the place meant seems certain, from its entry in company with Sproustun, now Sprouston, one of its townships, and Harun, now Harome, a chapelry in the parish. The entries, however, are of a very ordinary description. The tenants are—"in Sproustun Turloghe Normand et Sortcolf; in Elmesloe, tres Taiti; in Hrum Sartcol." When these holders were swept away, and who succeeded to them, is not known; but, according to Dugdale, Helmsley was held in the reign of Henry I. by Walter L'Espee, a very famous baron. He appears as connected with Yorkshire, Bedfordshire, and Carlisle, in the Pipe-roll of 31 Hen. I., 1130-1; and having lost his only son by a fall from his horse, he founded the abbey of Kirkham and Rievaulx in Yorkshire, and Warden in Bedfordshire. L'Espee was a Norman, and held estates in Normandy, but when or how he came over is not recorded. A certain William Spech is recorded in Domesday as a great tenant in Bedfordshire, and he may be the father of Walter, who had lands there. He died in 1153, and in 1157-8 W. de Bussei is found moving against Robert de Ros for the partition of this estate. Who this Robert de Ros was is uncertain. Adeline, Walter's daughter and co-heir, married Peter de Ros, who in her right was of Helmsley, or, as it was always called, Hamlake.

Peter de Ros, whose name was derived from his lordship of Ros, in Holderness, was, by Adeline, father of Everard de Ros, who appears in the Liber Niger as the tenant in capite of several Yorkshire fees, which no doubt included Helmsley, as many of the tenants' names are local, as Hairun, Spouston, and Stainesgrave. Everard, being under age, was then in the wardship of Ranulph de Glanvill. He died before 1186, and was succeeded by his son Robert, third Lord of Hamlake, surnamed Fursan, one of the Magna Charta barons, and the reputed builder of Helmsley Castle. He died as a Templar, and his effigy is still pointed out in their church in London.

Robert de Ros, his grandson, who probably executed the earliest additions to the work of his grandfather, married Isabel d'Albini, heiress of Belvoir.

From them came William de Ros, seventh lord of Hamlake, who died 1342-3, and probably completed the keep and the outer gatehouse and barbacan at Helmsley. With his descendant, Edmund, fifteenth lord, the male line failed, and Helmsley passed with his sister and co-heiress Eleanor, to Sir Robert Manners, or rather to their son, George Manners.

His descendant, Francis Manners, sixth Earl of Rutland, became Lord of the Hamlets by patent, which, however, died with him, as he left a daughter only, Katherine, who married George Vinders Duke of Buckingham, whose son dissipated the estate, which, at his death, was sold to the ancestor of the present owner. The barony of Ros, or Roos, of Hamlake, was called out of abeyance, but exists quite separated from the castle or estate.

G. T. C.

THE POSITION OF THE ARCHITECT.

THE architect stands in a different position from that occupied by the painter or sculptor.

The painter has his models to choose from in the inexhaustible storehouse of nature; he sees the ever-changing clouds as they career across the cerulean, casting shadows on the slopes of the purple hills; he stores up in his mind's eye the effect caused by a momentary gleam of light upon the overhanging foliage of the wood, with flowers, of varied hue and form, grow in marvellous luxuriance at his feet; the birds of the air, the beasts of the field, display their habits of life before him; and man—his fellow man—is ever crossing his path, a being whose every action is replete with interest, whose countenance is the index of a mind teeming with ever-changing and subtle thought.

These forms of beauty are provided for the painter by nature, and these he selects, arranges, and depicts in glowing colours for the admiration of his fellows. His art is one which all men can, in a greater or lesser degree, appreciate and sympathise with; for it deals with the multifarious character and action of life, its subjects are inexhaustible, ever varied, ever new.

Less popular and more arbitrary is the work of the sculptor. He has principally to deal with form, to perpetuate in enduring material the fleeting beauty of grace or power of which he catches glimpses in animated nature. The superb contour of the human form—the masterpiece of Nature—is displayed before him. The untrammelled freedom of action of the lower animals, and the loveliness of the vegetable kingdom, him themselves upon the retina of his eyes, and from those he selects and combines the several qualities fitted for the display of his art.

The architect is not favoured with direct tuition from nature, like the painter and the sculptor. No work of nature is a model for him. The form of his works must be the creation of his own mind governed by necessity.

The effects which constitute the elements of the grand, the graceful, and the picturesque;—the effects produced by contrast and gradation, light, and shade, simplicity, complexity, and variety;—the practicability of uniting beauty of form with strength of structure, utility and fitness with gracefulness and durability; all these he may learn from Nature, but she provides him with no models. When he deals with nature it is but a morsel of detail wherewith to adorn his structure, and that he treats not in a naturalistic, but in a conventional manner. It thus appears that at the outset the architect has greater difficulties to contend with than the painter or the sculptor, but there are yet greater awaiting him. Their works are complete as they issue from their own hands; he must give over the execution of his design to others; they are not embarrassed by the element of utility as he is; little or no scientific knowledge is necessary for the successful prosecution of their profession,—such knowledge to him is an absolute necessity.

There are two qualities, then, which the architect must possess,—qualities not often found equally combined in one individual. He who possesses a thorough knowledge of the theory of the art, who is inspired with the noblest ideas and most poetical conceptions, may be deficient in the practical knowledge requisite to enable him to carry these ideas into execution. He who has a wide practical knowledge may be very deficient in refinement of taste and idealism; he may do all that is necessary in a utilitarian sense; his work may be a masterpiece as regards construction and arrangement, and may not be a truly architectural production after all. The ideal and the real seem to have an antipathy towards each other, and friendly intercourse between them is rare; entire concord never.

Architecture as now practised by us has been developed through successive ages; it is compounded of Greek, Roman, Gothic, Italian, and

French elements. From the same sources we derive the language now spoken by us. The contracted and simple speech of our Saxon ancestors has been enriched by the fusion of these tongues, and we now employ a form of speech by which we can give expression to the most complex phases of thought. What the language has lost in simplicity it has gained in breadth and variety, its mixed character is a necessary result of the advance of knowledge and intellectual culture, the accumulation in the storehouse of the nation of the fruits gathered by her sons.

The freer intercourse with foreign countries and the researches of archaeologists have placed at the disposal of the architect the accumulated results attained in the art over the civilised world. These he interprets and adapts to his purposes so as to meet the complex requirements of the age. He uses these materials as the language in which to express his ideas, and if he is a man of talent he will produce a work of art as truly original, as much his own, as he who produces a volume of history, a poem, or a work of fiction.

It is asserted that in England there is no school of art, but only scattered items of personality without unity without a common standard. How far is this an evil? In the one case we have a body of artists governed by certain rules, and there is consequently a comparative unity in their mode of working, a means whereby the efforts of individuals are conserved and not expended in efforts towards an indefinite end. On the other hand a school of art is apt to degenerate into pedantry and become a mere disciplined body of men obeying a supreme command.

The tendency of the age is to break down the barriers that have hitherto separated the states of civilised Europe. The railway and the telegraph are proving to be greater levellers of distinctions than even the printing-press,—the struggle for ascendancy amongst the nations may in the future be one for intellectual ascendancy; and as in individuals, so in nations, the leader will be followed until he is superseded by another. So that even there will be a perpetual shifting and changing, at longer or shorter intervals.

This tendency to follow a leader is already apparent in places where it was least likely to be expected. In remote Japan, a country which, within the memory of the present generation, was closed to the footsteps of Europeans, we find the fashions of Europe being rapidly adopted. In Turkey, Egypt, India, and the ancient world generally, European influence is pushing its way, and it will ultimately penetrate into the most remote regions, and in course of time even the barbarians of Central Africa will be subjected to the dominant influence. Local peculiarities there ever must be; the climate and the material at command will necessitate particular treatment, but the marked distinctions which now obtain will surely be softened down. There is, therefore, the greater necessity for singleness of aim, for unity in the methods of instruction, so that we may run the race without confusion towards a distinctly understood goal.

As the matter at present stands, the architect is bidden with an *exhortation to richness*. There is a constant demand for something new and striking, and he is accused of want of originality, because he cannot invent a new style. Architecture, as a fine art never has been, and never will be, advanced by such means; it will not flourish in the forcing-house; it is a plant of slow growth requiring many years before it throws out new branches. If cut down it springs again from the original root, and the reticulation of the branches is as before. If the seed is diligently sown, and carefully cultivated, a new variety may be produced, but still its affinity to the parent plant will be obvious.

A NEW RAILWAY FROM NORTH-EAST LANCASHIRE TO SCOTLAND.

THE first sod of a new railway which will materially shorten the distance between Blackburn and the neighbouring towns in North-East Lancashire, and the extreme north of England and Scotland, has been turned, amidst much ceremony and rejoicing, by Lord Ribblesdale. The new line is a continuation of the Blackburn and Chatburn railway, commencing by a junction at Chatburn, and terminating at

Hellifield, in the West Riding of Yorkshire, by a junction with the Midland Company's new line between Settle and Carlisle, now in progress. Although it is only eleven miles and a half in length, it will effect a saving of upwards of twenty miles between Blackburn and North-East Lancashire and Scotland, by avoiding the present route via Preston and Lancaster.

The works will comprise several heavy cuttings and embankments; but although the line passes through a mountainous country, the engineers have managed to avoid tunnels. One of the heaviest portions of the work consists of a viaduct over Stook Beck, not far from the town of Gisburn, where the railway will pass through a most romantic glen about a mile in length, at a height of more than 100 ft. above the river which flows beneath. The line will not only open up one of the most picturesque portions of Lancashire and Yorkshire, but will offer facilities to the North, which has hitherto been unknown to the central Lancashire towns. The increasing traffic between North-East Lancashire and the North of England and Scotland has induced the Lancashire and Yorkshire to enter upon the undertaking, and the line is to be pushed forward with vigour. The company also intend to erect extensive station accommodation at Chatburn and Gisburn, along the line, together with spacious locomotive works at the latter place, and for this purpose they have purchased fifteen acres of land at Chatburn, and twenty acres at Gisburn.

LAMBETH NEW WORKHOUSE.

THIS workhouse, which was recently opened for the reception of inmates, is situated on a piece of ground at the rear of Kennington-lane, with an approach also from Kennington-road. The several buildings and yards occupy between seven and eight acres of land.

There are three main divisions, viz., the "house" proper, or "indoor" department; the outdoor-relief department; and the official building, in which the parochial poor-law business is transacted.

The "house," which is designed for 820 inmates, is arranged on the pavilion system, the administrative block dividing the sexes. There are two blocks for able-bodied and two for aged and infirm, all connected with the central block by a general corridor, 9 ft. wide, lighted on both sides, and having an open corridor above serving as a means of communication for the first floor.

A system of rigid classification has been carried out in this design, and this separation of the several classes has been carried down to all minor offices. Each class has its own and distinct day-rooms, dormitories, staircases, lavatories, waterclosets, airing-grounds, and work-rooms; the only common-place of meeting being the chapel and dining-room, where conversational intercourse is forbidden. The several classes in each sex are for aged, able-bodied of good character, and two subdivisions of able-bodied of bad character, together with accommodation for a limited number of boys and girls.

There is a dining-hall for each sex leading direct from the kitchen, and a large chapel with open-timbered roof.

In the rear of the main blocks are the laundry, engine and boiler house, well, bakehouse, corn-mill, and general workshops, the machinery in which is worked by a 30-horse power engine, supplied by T. Robinson & Co., of Rochdale.

The out-door poor department is arranged for 400 men and 200 women, and comprises large stone-yard, with 150 stalls, oakum and wood picking sheds and yards, and hand corn-mills.

The official block comprises a large waiting-hall for out-door poor, and the Board-room and relief-offices.

The dining-halls and chapels are warmed by Bacon's high-pressure warming apparatus. All other rooms are warmed by open fireplaces.

The ventilation is provided for by perforated zinc panels in the ceiling, connected with vertical flues in the wall, a star gas-burner and iron hood being placed in each panel, to cause an upward current of the vitiated air. Cold fresh air is introduced into the rooms by means of openings in the outer wall, and galvanised hit-and-miss gratings in the floor.

The cost of the "house" proper was 46,000l.; that of the official and out-door department, 7,500l.; of the engineering works, 7,250l.; and of the fittings, 3,500l. The architects were Messrs. R. Parris and T. W. Aldwinckle, whose designs were selected in a limited competition. The builder was Mr. W. Crockett.

1. Entrance for friends of paupers.
2. Porter.
3. Day-room for four youths.
4. Bedding-room.
5. House committee-room.
6. Office of committee.
7. Office of committee.
8. Master's office.
9. Master's private office.

10. Store-room.
11. Store.
12. Master's parlour.
13. Master's dining-room.
14. Men's dining-room.
15. Male officers' mess-room.
16. Women's dining-room.
17. Women's mess-room.
18. Female officers' mess-room.

19. Master's office.
20. Kitchen.
21. Scullery.
22. Store.
23. Cook's store.
24. Bread-cake-room.
25. Store.
26. Corridor.

28. Lobby.
29. Lavatory.
30. Day-room for boys.
31. Officers' lavatory.
32. Day-room for able-bodied (good).
33. Day-room for able-bodied (bad).
34. Attendants' sitting-room.
35. Day-room for aged.

36. Dormitory for aged.
37. Day-room for boys.
38. Day-room for girls.
39. Training kitchen.
40. Training kitchen.
41. Training kitchen.
42. Training kitchen.
43. Training kitchen.
44. Training kitchen.
45. Training kitchen.
46. Training kitchen.
47. Training kitchen.
48. Training kitchen.
49. Training kitchen.
50. Training kitchen.
51. Training kitchen.
52. Training kitchen.
53. Training kitchen.
54. Training kitchen.
55. Training kitchen.
56. Training kitchen.
57. Training kitchen.
58. Training kitchen.
59. Training kitchen.
60. Training kitchen.
61. Training kitchen.
62. Training kitchen.
63. Training kitchen.
64. Training kitchen.
65. Training kitchen.
66. Training kitchen.
67. Training kitchen.
68. Training kitchen.
69. Training kitchen.
70. Training kitchen.
71. Training kitchen.
72. Training kitchen.
73. Training kitchen.
74. Training kitchen.
75. Training kitchen.
76. Training kitchen.
77. Training kitchen.
78. Training kitchen.
79. Training kitchen.
80. Training kitchen.
81. Training kitchen.
82. Training kitchen.
83. Training kitchen.
84. Training kitchen.
85. Training kitchen.
86. Training kitchen.
87. Training kitchen.
88. Training kitchen.
89. Training kitchen.
90. Training kitchen.
91. Training kitchen.
92. Training kitchen.
93. Training kitchen.
94. Training kitchen.
95. Training kitchen.
96. Training kitchen.
97. Training kitchen.
98. Training kitchen.
99. Training kitchen.
100. Training kitchen.

LANEETII NEW WORKHOUSE, KENNINGTON LANE.—*Plan of Ground Floor.*

GROUND PLAN

Scale: 0 10 20 30 40 50 60 70 80 90





LAMBETH NEW WORKHOUSE: CENTRAL PORTION.—MESSRS. PARRIS & ALDWICKEL, ARCHITECTS.

A CANOPY.

SIR,—Permit me to point out that Dr. Tristram (*Builder*, p. 15) entirely misconceived the meaning of a canopy in the raid of 1556. It was a cloth of lawn or net weighted at the corners with metal balls, and hung over a pendent pyx. The practice of reservation having ceased in the Reformed Church of England, the pix and its veil or canopy became illegal and were removed. So Harding says, "Deny the reservation and keeping of the Blessed Sacrament, for which the pendent canopy served in the churches of England" (*Jewel's Works*, ii., 555). It was purely an English custom and mode.

With this "little canopy, a thing of small price," he contrasts the "gorgeous texture or canopy of gilded boards" over a bishop's chair (p. 557), and the dean's "canopy of tapestry silk and arras," which was also a tester.

The only purely structural ciborium in England was over the altar of Henry VII. in Westminster Abbey, and lasted there till its destruction in the Great Rebellion. It had a roof and four pillars of marble. It never was called a canopy, a name only employed for (1) the pyx cloth or (2) a tester.

MACKENZIE E. C. WALCOTT.

THE "CRITERION" AND THE BOARD OF WORKS.

At last week's meeting of the Metropolitan Board of Works, the district surveyor and the architects of Messrs. Spiers & Pond were heard with reference to the "Criterion." The district surveyor said the building complied in all respects with the Act as a building, and the province of the Board was to consider "as an act of courtesy between one public department and another, to use the words of the chairman of this Board," whether the requirements of the Lord Chamberlain had been complied with, and the tavern and proposed theatre were really separate buildings, he proposing to grant or withhold his licence upon their report.

The architect of the Board who had surveyed the building suggested certain modifications in the existing plans, and the proprietors were advised by counsel upon these.

Mr. Selway admitted that the "Criterion" was a handsome building. He hoped, however, that he would not see many more structures with a ball-room at the top, dining-rooms in the middle, and a theatre at the basement, which had to depend upon the air that was pumped into it by machinery.

After a long discussion,

Mr. Roche moved, "That the Board do proceed to make an order in pursuance of the superintending architect's report made on the 7th inst."

Mr. Newton seconded the motion.

Mr. Richardson proposed as an amendment, "That inasmuch as the building has been constructed in strict accordance with the Building Act, and to the satisfaction of the surveyor, the Board take no further action in the matter."

The Chairman then put the amendment: seven voted for it and seven against.

The amendment was next put as a substantive motion, and carried. The responsibility of granting a licence to the "Criterion" was thus left with the Lord Chamberlain.

DESCRIPTIVE GEOMETRY.

A LETTER from the country, signed "A Striver under Difficulties," asks for the name of a book on geometry adapted to serve as a text-book for advanced students of the mechanical and applied sciences. We depart from our usual role, and suggest for our correspondent's purposes "Descriptive Geometry," by W. Timbrell Pierce, architect (Longmans, 1873), to which we have already briefly alluded. The book best to compare with it in English is "Bradley's Practical Geometry," and as the author states in his preface there was ample room for an advanced text-book. We are just beginning to perceive the utility of giving a sound education to our artisans and working men, and as a knowledge of practical geometry is the best starting-point for a system of scientific tuition, the value and need of a book like the present is apparent. Our Continental neighbours have for a long time made descriptive geometry a special study in their colleges and schools, and with marked success, and the author acknowledges that his own work is founded in a great measure upon

the similar work by Professor Leroy published in France. Mr. Pierce's treatment of the second part on perspective is different from that generally adopted; and the reasons of the difficult constructions "in plano" are very concisely stated. From the nature of the book, perspective is treated as a mathematical radial projection. We may add that the book is of convenient size, and includes eighty-five plates.

OPENING OF TWO NEW BOARD SCHOOLS IN LEEDS.

DURING last year, Bowlerley-street School, the first built by the Leeds School Board, was publicly opened, and the same ceremony has now taken place in connexion with two other schools also erected under the auspices of the same body. The schools now opened are situated, one on Primrose-hill, Green-road, and the other in South Accommodation-road, Hunslet.

The foundation-stone of the Primrose-hill School, for 676 children, according to a statement made by the chairman, was laid on the 13th November, 1872, by Mr. John Jowett, vice-chairman of the Board. The school comprises separate departments for boys, girls, and infants. The boys' and girls' schools are identical in size, each making provision for 228 children. The principal schoolrooms are 46 ft. by 30 ft., and three class-rooms are attached to each department. The infant school will accommodate 220 children (making a total provision in the three departments of 676), and it also comprises principal schoolroom and three class-rooms. Covered and open playgrounds are provided. The site, containing 3,915 square yards, cost 1,420l. Builders' contracts and other expenses amount to 6,880l. The architects are Messrs. W. Perkin & Sons. The provisional school in Beckett-street, which has been attended by 369 children on the roll, will now be transferred to the new school. The schools are situated in the North Registration District, the total population of which district in April, 1871 (census), was 49,621. The total number of children over three and under thirteen years of age is 11,873. The Board considered that elementary school provision should be made for four-fifths of 11,783, or for 9,498 children.

The building is two stories in height. On the lower floor are the infants' entrance and lavatory; schoolroom, 41 ft. 6 in. by 30 ft.; infants' class-room, and two class-rooms capable of being thrown into one; boys' and girls' entrances and staircases to the upper floors; and covered playgrounds under the boys' and girls' class-rooms. On the upper floor are boys' and girls' schools, each 41 ft. 6 in. by 30 ft., and three class-rooms to each department, with lavatories and cloak-rooms. The style is Domestic Gothic. The materials are brick, with stone dressings; the doorways have pointed heads and tympanums, with traceried heads and mullions; the windows are of three and two lights, with stone sills, mullions, transoms, and circular heads, recessed with inner brick and stone voussours and label moulds. Those in the gables have pointed heads, and are filled with plate tracery. The covered playgrounds have arches, with stone and brick voussours and moulded labels. The playgrounds are spacious, and are enclosed with walls and palisades.

The South Accommodation road School was opened by Mr. Jabez Woolley, chairman of the Sites and Buildings Committee of the late Board.

Towards meeting deficiencies in school accommodation, the Board have provided the Bowlerley-street School, with accommodation for 854 children, and the school under notice, which accommodates 660 children. In addition to the Jack-lane School, for 679, which is in course of erection, schools at Hunslet Carr, at Low-road, Hunslet, and in Princes-field, are also included in the Government requisition. The Provisional Board schools in Hunslet are already attended by 1,534. In the Bowlerley-street School, in addition, there are 826.

The foundation-stone of the school was laid on the 13th of November, 1872, by Sir Andrew Fairbairn, chairman of the Board. The school comprises separate departments for boys, girls, and infants, the boys' and girls' making provision for 235 and 237 children respectively. The principal schoolrooms are each 46 ft. by 30 ft., and three class-rooms are attached to each department. The infant school will accommodate 198 children, making a total provision of 660. It also comprises principal schoolroom and three class-rooms.

Covered and open playgrounds are also provided. The site, containing 4,115 square yards, cost 2,583l. The builders' contracts and other expenses amount to 4,801l. The schools, which have been erected from the designs of Mr. E. Backhouse, Leeds, will accommodate 236 boys, 230 girls, and 194 infants. There are for each department a general schoolroom, three classrooms of various sizes, a covered playshed, retiring conveniences, and large and airy playgrounds, the whole being surrounded on three fronts by an iron boundary railing. The main schoolrooms are arranged in three wings, the centre of which, being considerably recessed from the other two, forms the infants' school, 50 ft. by 24 ft.; on the one side of which, and parallel to it, is the boys' school, 46 ft. by 30 ft.; and on the other side the girls' school, also 46 ft. by 30 ft.; while the subordinate classrooms belonging to each department are grouped between and in the rear of them. The outline is thus considerably broken. The lightning and ventilation of the several rooms are considered good. Each department is provided with a separate entrance porch and lavatory. The buildings are erected of brick, with stone dressings, and are of a plain character, in the Byzantine style of architecture. The windows are all round-headed, with shafts and moulded arches. There is no carving in any part of the building.

LONDON AND ITS FOGS.

SIR,—As your interesting article of the 27th ult. will doubtless direct much attention to this subject, I beg to submit the following to your readers, in answer to the inquiry, "What is the cause of these dense Fogs?"

In various papers read at the meeting of the British Association in Glasgow (1840), at Oxford (1847), and otherwise published, I have endeavoured to explain the cause of rain and allied phenomena on the following theory, and I hope to show that the cause of the dense London fog is explicable in accordance with it. The theory is,—that, as electricity has no weight, occupies space, and coats the surface of all bodies, and as the surfaces of bodies increase in proportion to their bulk as the bulk diminishes,—although water is 860 times heavier than air under the ordinary pressure of the atmosphere, the particles being so minute, when distinctly detached, and completely enveloped in their normal coating of electricity, are rendered by it almost buoyant in the air at any low temperature; but with an increase of temperature, their capacity for electricity being increased, they are buoyed up into the air by this increase of their electric charge; then if condensed near the earth's surface (i.e., cooled, and their capacity for electricity diminished), the extra charge of electricity is withdrawn, and the particles sink, or are attracted to the condensing body as dew; but if they rise out of the electric attraction of the earth, and are then condensed, the electricity, being insulated, forms an atmosphere around each particle, which surcharge of electricity not only suspends the vapour by its lightness, and also repels the neighbouring particles, and prevents the formation of rain; but on the escape of this surcharge from the particles of vapour, either from passing over high hills, from the air becoming damp and in a conducting condition, or from any other cause, then the particles lose their buoyancy, and fall as rain.

With respect to fogs, I totally disagree with the idea that they are "formed by the mingling together of masses of air at different temperatures," or that they are "occasioned by a descending current of air." From my own observation I am of opinion that dense fogs seldom or never occur except with a cloudless sky, and in calm, or nearly calm weather, and I believe they are generally caused by a free radiation of heat from the atmosphere when highly charged with vapour at a low level, which vapour, from the conducting condition of the air, loses its electricity as it cools down, and gradually sinking, becomes visible, not from any change in its condition except the approximation of the particles of which the fog is formed. It is usual to attribute the visibility of vapour to condensation or cooling, but steam from a railway train becomes invisible on diffusion, although it must then be fully condensed.

In producing the dense fog of London other causes come into operation. At such times, from the vast population, the thousands of fires, and from the continuous traffic, the streets and London generally, must be warmer than the air

above, and the vapour resulting from this being unable to rise, increases the density of the fog; or if it could rise into the clear above the fog, it would be cooled down by the radiation of its heat, and losing its electricity would sink again into the mass of vapour below. But doubtless the principal cause of the darkness of the London fogs is the quantity of smoke mingled with the vapour of the fog; and I believe the conducting condition of the atmosphere, which causes the vapour to sink, is also a principal cause of the descent of the smoke. Steam is electrical, and in a dry and non-conducting condition of the air may be seen to ascend from the rail-trains to a very considerable height; but in a damp and conducting atmosphere the steam does not rise, and at times sinks at once to the earth.

The rising or sinking of smoke in the air seems also to depend on the conducting condition of the atmosphere, and is, I believe, an electric phenomenon. Smoke (i.e., carbon) is heavier than the air, and, although it might be blown out from a chimney with force, it could not rise higher than that force would send it without some buoyant agent. I believe the ascent of smoke in the air is strictly analogous to that of vapour, and that the particles take up electricity according to their temperature, which is retained during a dry state of the air, or dissipated, and the atoms fall on the air becoming damp.

I fear I am trespassing too far on your patience with this long letter, but I have been anxious to meet all the points alluded to in your paper. This, I believe, I have done, as on this theory it may be seen why "the deepest darkness hangs over the most crowded neighbourhoods"; why London should be comparatively free from fog during very early hours; and why over the cold clay soils the fog should be dense. As for the descent of fog in chimneys, I think, it may be accounted for from the tendency to diffusion in all bodies equally charged with electricity.

G. A. ROWELL.

. From a medical point of view, it would be interesting to ascertain the proportion of pure air procurable from a certain quantity of the atmosphere during a dense fog, as compared with that from an equal quantity of air in its ordinary condition at the same temperature, and under the like atmospheric pressure; as, in addition to the impurities (smoke, &c.) of the air during dense town fogs, the impurities inhaled must be in an inverse ratio to that proportion.

RE-OPENING OF CO-OPERATIVE HALL, BURY.

This hall, which has been closed for a considerable period for the purpose of undergoing alterations, has been re-opened. The work has been done in accordance with designs prepared by Messrs. Maxwell & Tuke, architects, Bury. The interior has undergone a transformation. The hall, as originally constructed, was defective in many respects, but chiefly in its acoustic properties. The platform has been transferred from the position it formerly occupied to the Knowlesy-street end of the hall, and the space leading to the entrance of the room has been utilised for ante-rooms, of which there are four in connexion with the platform, fitted up with lavatories, &c. The platform is a spacious one. Formerly one side of the hall only was galleried, which gave the room a disproportionate appearance; but this has now been remedied by carrying a gallery completely round the building, the ornamentation of its front being in harmony with the platform.

The gallery front is framed with curved and enriched cast-iron standards from the designs of the architects. These, as well as the gallery pillars, have been provided by Mr. McFarlane, of Glasgow. Between these standards the space is filled in with boarding covered with plaster moulds and panels, the whole being surmounted with a polished baywood capping. No alteration has been made in the main ceiling except that necessitated by the ceiling to the platform, and two centre flowers round the additional sunlights. The platform has been placed in a recess formed on the Knowlesy-street side of the hall, between the main stairs and the new retiring-rooms. The front is encased with framing with a bold cornice, and footlights are provided for theatrical representations. The tinting of the walls and ceiling is merely a temporary substitute for the more

thorough decoration which they are intended hereafter to receive.

The access to the hall and egress from it by means of the present staircase appear to be inadequate and disproportioned when compared with the accommodation supplied by the addition of the gallery; and the committee of the stores, whilst having every facility for securing another entrance, run a great risk in contenting themselves with one entrance to a hall of such dimensions, and at such a height. Any alarm which caused a panic must, under present arrangements, result in a fearful catastrophe, as the architects themselves have declared. It is intended, however, at some time, to erect a spacious staircase leading up to the principal floor and gallery, to increase the convenience and safety of visitors, but nothing definite is decided upon. Mr. John Smith, joiner and builder, Bury, has had the principal contract for the work; the plastering has been done by Mr. Jacob Lomax, and the plumbing by Mr. R. Caton.

PROPOSED DRAINAGE OF BASINGSTOKE.

THE Town Council have been discussing the drainage question, and conferring with Mr. Charles Jones, C.E., of Ealing.

Mr. Jones read a report on the proposed drainage of the town, in the course of which he said that he found that the town was what was called a cesspool town, and only a few of the houses drained directly into the sewers. He had ascertained that the present drains were 2 ft. or 3 ft. below the surface, and the sewage was discharged by four outlets. The whole of these sewers could without difficulty be brought into one main sewer, concentrated at a point near the gasworks, and carried along the main road to a point below the Basingstoke Mills. This was Scheme No. 1. The other scheme, which he would call No. 2, would be far more expensive, and also far more efficient. He invited their most serious attention to this, because this scheme was complete, although it would cost some 1,800*l.* more than Scheme No. 1. If the old drains were used, the outlets must be considerably enlarged, but it was far better to incur a somewhat larger outlay in the first instance, and adopt a complete system. The scheme No. 2 was precisely similar to the one he was completing at Ealing. The total cost of the Scheme No. 1 would be about 3,578*l.* 9*s.*, and total cost of the Scheme No. 2 about 5,335*l.* 7*s.* The annual cost of the smaller system (No. 1) would probably be as much again as the cost of the larger one. He proposed to purify the sewage by the lime process, which is very simple. It was the first process brought out, and he believed it to be the best. They were not proposing to go into the question of irrigation farming, but will have a small quantity of land to utilise and further purify the sewage. For system No. 1 they would require two men at the works, at say 1*l.* each per week; say four yards of lime per week, which would cost about 52*s.* per week; extra for gravel, &c., say 20*l.* The total annual cost of working Scheme No. 1 would be about 250*l.* In Scheme No. 2 one man only would be required, and only one-half of the quantity of lime. The total annual cost of this scheme would be about 135*l.*

"CREEPING RAILS."

Str.,—Having read several letters which have lately appeared in your valuable publication under the above heading, my interest as a traveller has been excited. It is supposed to be caused by the earth's motion. It is not stated whether the influence is magnetic or atmospheric: if the latter, the same cause would operate to give to every plant that grows a westward incline; and, if magnetic, the currents being most powerful in a line with the poles, and consequently in a line with rails north and south, one rail could not be affected more than the other.

Another solution must be sought: the prevailing winds in this island range between E.S.E. and W.S.W. Taking the average force of such winds to be one-pound per foot, and average trains to be 200 ft. long and 10 ft. high, a force of 2,000 pounds is operating on every train in motion up or down; the flanges of the eastward wheels driving on the eastward rails, and the flanges of the westward wheels receding from the westward rail in the same degree.

Taking also into account that these winds are accompanied by more or less rain, softening the

soil in which the sleepers lie, it may be found that the same cause operates to produce *creeeping sleepers* as well as *creeeping rails*.

Interested as a traveller, I may, perhaps, be excused for interference as a non-professional.

AN ADMIRER OF THE "BUILDER."

PROPOSED RAILWAY BRIDGE OVER THE RIVER DEE.

AN important Board of Trade inquiry was held on Friday and Saturday last at the Town-hall, Chester, in reference to the height of a bridge proposed to be erected by the North Wales, Chester, and Birkenhead Railway Company, over the River Dee, near Connah's Quay, the main question involved being whether the bridge, if erected at the limited elevation proposed by the railway company, would not seriously interfere with the navigation of the river. The circumstances under which the inquiry was held were as follow:—During the last session of Parliament the railway company obtained an Act for constructing a railway between the points named, the undertaking including a bridge over the Dee at Connah's Quay, as already stated. The promoters, when the Bill was before Parliament, proposed 78 ft. as the height of the bridge, contending that that elevation was sufficient to admit of all vessels frequenting the Dee passing under it, with few exceptions, and that these last-named vessels would also be able to clear the bridge by striking their topmasts, which could be effected in a short time. The House of Lords, however, in passing the Bill, named 110 ft. as the height of the bridge, but left it to the Board of Trade to make any reduction in the height which they might think desirable, after an inquiry into the subject, and in accordance with this Parliamentary decision the Board of Trade directed Colonel Hutchinson, R.E., and Captain Richards, R.N., to visit the locality, and take evidence for and against the proposal by parties interested, and the inquiry took place at Chester last week, as already stated. There was a formidable array of counsel present on the occasion, the promoters of the undertaking not only being represented, but also the River Dee Commissioners, the Great Western Railway Company, the Shropshire Union Railway and Canal Company, the Corporation of Chester, together with several traders on the river; all these several bodies appearing in opposition to the bridge being limited to 75 ft. in height.

The commissioners, at the close of the inquiry, said they should make their report to the Board of Trade, who would then give their decision.

CONCENTRIC CIRCLED STONE CARVINGS IN IRELAND.

MR. THOMAS DEWE, A.R.H.A., has sent to the Archaeological Society of Ireland (late of Kilkeny), an account of concentrically incised stones found in the counties of Dublin and Wicklow. "Many," he remarks, "may not be aware that within easy reach of Dublin exist remarkable specimens scattered over a particular district. The district referred to is on the borders of the counties of Dublin and Wicklow, not far from Bray; and the stones bearing these inscriptions are found in the vicinity of sundry old churches, and used either as gravestones, or in the construction of the ancient building." One of them, we may remark, very much resembles what is called the "Spectacle ornament" inscribed on stones in Scotland, being double, and united together by a band. There is more symmetry about this, and another given in illustration, than is usual with concentric circled carvings.

THE BLACKBURN FREE LIBRARY AND MUSEUM.

THE new Free Library and Museum, which has been in course of erection during the last eighteen months, is now nearly completed and ready for opening, and in connexion with the undertaking a liberal and generous act has just been performed. At a meeting of the library and museum committee held last week, Mr. Alderman James Thompson (the chairman) and the other members of the committee decided to carry out the additional carving required to complete the entrance-front in Francis-street, at their own cost, the chairman generously offering to defray half of the entire expense. The sculptural designs in Francis-street represent science, literature, and art, and contain altogether twenty-seven figures, executed in relief.

PROPOSED NEW INFIRMARY BUILDINGS
IN HACKNEY.

THE Local Government Board and the Hackney guardians are at issue on the question of erecting a new infirmary. The Local Government Board have decided upon the erection of a new infirmary, in order to effect a complete separation of the workhouse and infirmary, and placing each other under independent management and control; whilst the guardians are opposed to the proposal as unnecessary. The subject was warmly discussed last week at the meeting of the guardians, when Mr. Longley, one of the Local Government Board's inspectors, was present. In the course of the discussion the guardians protested against the proposed outlay, contending that by certain alterations which were now being effected in the arrangements of the workhouse, the sick would be kept entirely apart from the able-bodied, and that the ratepayers ought not to be put to the expense of 12,000*l.* or 15,000*l.*, which the erection of a new infirmary would cost. Mr. Longley admitted that what the guardians had done was good so far as it went, but that in his opinion it was essential that the infirmary should be under the entire control and management of a resident medical officer.

ENGINEERS' PROSPECTS.

MR. HARRISON, the newly-elected President of the Institution of Civil Engineers, in his inaugural address, enumerated the engineering works recently constructed, at present in course of construction, or soon to be carried out, railways in India, Persia, and Egypt, and large irrigation works in the latter country; public works for the drainage, sewerage, and water supply of the city of Buenos Ayres, and the construction of docks at that place; the development of railways in Brazil and Uruguay, and in the empire of Japan; the new Amsterdam ship canal; the extension of the docks at Liverpool at an estimated cost exceeding 4,000,000*l.*, also at many other parts of Great Britain; bridges over the River Tyne at Newcastle, the estuary of the Tay above Dundee, the Firth of Forth, the railway bridge at Moordyk in Holland, the International railway bridge over the River Niagara, near Buffalo, the East River Bridge between New York and Brooklyn, and the St. Louis Bridge over the Mississippi; the blowing up the Blossom Rock in San Francisco Harbour; the tunnel through the Hoosac Mountain and the St. Gothard Tunnel; the use of concrete for a breakwater pier at the port of Douglas, and for a lighthouse tower upon a rock off the south-west extremity of Jersey; and the development of the telegraphic system generally. With respect to railways, Mr. Harrison observed that, having been for many years continuously in the habit of attending Parliamentary Committees, it was impossible to avoid contrasting the ancient Parliamentary practice of forty years ago with that which now existed, and in every point of view the result was in favour of the present practice. He trusted that the system of having a Court of Appeal to a Committee of the House of Lords from the decisions of a Committee of the House of Commons would never be altered, because he had known many cases where circumstances had unexpectedly arisen, which after being fully sifted before a second committee, had entirely altered the features of the case, and led to a reversal of the previous decision. It was too much the custom to assert that railway directors and railway managers and officials had no feeling, and that they looked to a saving of expenditure, in preference to seeking provisions for the public safety; but he had no hesitation in saying, that a more ungenerous and unjust charge was never made against any body of men. The public had no idea of the anxieties which attached to those connected with railway management. He had seen directors completely overcome on receiving a report of a railway accident; and from the few years' experience he had as a railway manager, nothing would have induced him to continue in office. So far from these gentlemen deserving the character attributed to them by the public, they ought to receive the greatest sympathy, for he could name men whose early deaths, or permanent ill-health, might be traced to the constant anxieties incident to their duties. Instead of economy governing the actions of directors, he could state from personal experience, that when it was clearly shown to them, by their responsible officers, that any improvement would

tend to promote the safety of the public, they did not hesitate to adopt it. There was a popular delusion that the various recommendations made to the railway companies from time to time by the officers of the Board of Trade, such as the block system, interlocking of points, &c., were really inventions of those officers; whereas not one of those systems, or any new idea in connexion with the working of railways, had ever been suggested by them.

A THOROUGHFARE MUCH NEEDED.

SIR,—An advertisement in the *Builder* of the 10th inst. invites tenders for two buildings to be placed on the vacant ground between Cannon-row and the Thames Embankment. This I conceive to be a great oversight of the Metropolitan Board of Works, as such building would block the way where a continuous road is much required from the Embankment to the corner of Bridge-street and Parliament-street, thereby relieving the latter from its overcrowded traffic while the Embankment itself is but little used. Let any person stand with his back to the Abbey and he will see at once that such a street is wanted to connect Victoria-street, without the detour by Westminster Bridge with a sharp angle, to the Embankment. The removal of six or eight houses between Cannon-row and Parliament-street, leases of which I believe are now expired, would complete the thoroughfare.

OBSERVER.

BONDING COURSES.

SIR,—Is not the true reason for carrying iron hoop bond through window openings, to steady the piers between whilst they are yet green? I have had buildings with narrow tall piers between upper windows which would shake considerably whilst the roof principals were being fixed, were it not for the artificial aid of the hoop-bond running through the openings.

A useful bond is a continuous iron plate, 3 in. by $\frac{1}{2}$ in., with stubbs riveted in and projecting from the upper side, say an inch. Such a bond takes the place of a wood-plate for floor joists. The joists have to be prepared with a centre-bit hole at each end to fit on over the stubbs. Care must be taken to lay it perfectly level, as bricklayers are apt to be less careful in this respect with an iron plate than with one of wood.

X. X.

THE TUNNEL UNDER THE MERSEY.

A NEW proposal has been made by Mr. W. Austen, C.E., for the construction of the tunnel under the Mersey between Liverpool and Birkenhead, the borings for which are now proceeding. Mr. Austen's plans include a triple-arch tunnel cut through the sandstone rock, which, he says, is water-resisting, and overlying in its nature and consistency. Through this triple arch he would construct the tunnel of three separate and distinct "circular ring arches," of 30 ft. clear span, crossing beneath the Mersey river bed, in a straight line from Liverpool to Birkenhead, continuing from the Liverpool side, below the west-end of George's dock, up through the basement or under-side of Water-street and Dale-street (two leading thoroughfares into the town direct from the margin of the river), to convenient and proper places arranged for the entrances and exits of railways and roads, with communications and similar arrangements on the Birkenhead side.

LONDON ANTHROPOLOGICAL SOCIETY.

THE first anniversary meeting of this Society was held at 37, Arundel-street, Strand, on the 20th inst. Dr. R. S. Charnock, F.S.A., president, in the chair. After reading the report of the council, which showed that the Society had met with considerable success, the president delivered the annual address. He dwelt upon some of the late philological theories, and showed that there was no affinity, grammatically or otherwise, between the Egyptian and Caucasian tongues, the Guarani, Abchass, and Agaw; the Asiatic (Ashantee) and Corean, and the Etruscan and Finnic-Tatar languages. He then considered (amongst other subjects) the late discoveries of human and other remains, including the Brits skull, in different parts of Austria; Dr. Broca's theory of the enlargement of the brain concomitantly with education; Dr. Ferrier's experiments on the localisation of the functions of the

brain; and concluded with a consideration of human progress, both physically, mentally, and morally. The ballot for the council for the year 1874 was then taken, and resulted as follows:—president, Dr. R. S. Charnock, F.S.A.; vice-presidents, Captain Burton, Drs. Barnard Davis and Inman, Messrs. Churchill and Wake; council, Drs. Beddoe, Harcourt, Holden, King, Leitner, Mitchell, Rev. P. Melia, D.D., Messrs. Atkinson, Avery, Carmichael, Harris, Lock; honorary secretary, Mr. A. L. Lewis; honorary foreign secretary, Dr. Carter Blake; treasurer, Dr. Kaines.

MUNICIPAL ENGINEERS AND
SURVEYORS.

SIR,—As an admirer of your journal permit me to offer a suggestion, which, if acted upon, would I feel sure give great satisfaction to a large number of its readers, viz., those gentlemen holding appointments as municipal engineers and surveyors. Your journal is the usual advertising medium for vacant appointments, and it would be very interesting were you to give afterwards, as far as possible, the names of the successful gentlemen and those selected for such appointments.

A BOROUGH SURVEYOR.

* * We always willingly do so when informed of the result.

THE NEW PUBLIC OFFICES AT PENGE.

THE Penge and Sydenham Local Board have approved of the designs for the new public offices which have been furnished by Mr. Elkington, the architect, and tenders for the construction of the new building are to be immediately invited.

The building will be in the Gothic style of architecture, the materials used being Kentish rag, with Bath stone dressings. In addition to the basement, it will contain the ground floor, and two stories above, surmounted by a tower. The basement will contain the cellars, and one portion of it will be appropriated for the heating apparatus. On the ground-floor, 12 ft. high, will be the general office, 28 ft. by 17 ft., together with a small office adjoining, 11 ft. by 9 ft.; also two strong-rooms, 6 ft. by 4 ft.; pay office, 8 ft. by 4 ft.; surveyor's office, 18 ft. by 17 ft., with private office adjoining, 11 ft. by 10 ft.; also a second surveyor's office, 19 ft. by 16 ft., with a private office adjoining, 14 ft. by 10 ft.; also sewers surveyor's offices. One of the rooms set apart for the hall-keeper's residence will also be at the rear of the ground-floor, the other apartments consisting of two rooms in the floors above. The first floor will contain the Board-room, a large and spacious apartment, 46 ft. by 30 ft. The seats for the members will be circular in form, consisting of two rows raised one above the other, and will be arranged to seat forty members, in addition to seats for the officers.

FOREMEN'S TIME.

AT the Middlesex Sessions, before Mr. Serjeant Cox, George Goldthorp was indicted for obtaining 17*s.* from Edward Kerry, his master, with intent to defraud him of the same.

The prosecutor is a builder at Highbury, and the prisoner, a bricklayer in his employ, acting as foreman at the house of Colonel Angus Cull, at Roehampton, and his wages were 8*d.* per hour. On December 8th, the prisoner handed to prosecutor his time-sheet up to Friday, the 5th, showing that he had worked fifty-six hours and a half, and he paid the prisoner 2*l.*, being 8*d.* per hour for fifty-six hours and a half. Some short time afterwards, Potter, the plasterer, came up to be paid, and on the prosecutor asking him how the work was progressing, he said it was only going on very slowly, as the prisoner had not been there on the Monday, Tuesday, and Wednesday preceding. This statement being confirmed by another workman, the prosecutor went to the prisoner's house, and asked him to refund the money which he had been overpaid, but he refused to do so, and told him he might get it the best way he could. Prosecutor summoned the prisoner for obtaining money by false pretences. The prisoner afterwards called at the prosecutor's house, and offered to pay the overcharge and the cost of the summons, which was refused. He afterwards made a similar offer at the Police-station, where it was again refused. The case was heard at the Highbury Petty Sessions, and from there was sent to this court.

Mr. Ellis J. Davis addressed the Jury for the prisoner, and urged that, as the foreman of the job, he was entitled to charge by the week for his services, and was not entirely restricted to the hours he might have been upon the premises. He said that if there was any dispute as to the amount it was a matter for the County Court, and he hoped the jury would prevent a criminal court ever being used for such an unjust and improper prosecution.

Mr. Serjeant Cox, in summing up, said builders must, of necessity, mainly depend upon their workmen for the duties to be performed; for, if they had to pay a person to watch the men at every job they had in hand, the sum would amount to almost the wages of the man, and such

an outlay would materially interfere with their profits. In this instance the prisoner had admitted that he had made an improper charge, or he would not have gone to the prosecutor and offered to refund the money he had been overpaid.

The Rev. C. B. Dalton, M.A., the vicar of Highgate, gave prisoner a good character for nineteen years.

The jury found the prisoner guilty.
The judge said he would not account the good character the Rev. Mr. Dalton had given him; but, as his offence was a serious one, he must have a somewhat severe sentence, which was, to be imprisoned and kept to hard labour for six months.

HOUSE AGENTS AND THE PUBLIC.

In the Court of Common Pleas, last week, an important house-letting case came before the Court, in regard to the civil practice of parties engaging more than one house-agent to sell or let premises.

The plaintiff, Mr. Neville, is well known in theatrical circles, and it appeared that he called upon the defendant, Mr. Noh II, agent, of Tottenham-place, Regent's Park, and signed a memorandum to take No. 7, Boscombe-place, St. John's Wood, at a rental of 75l. per year, and also paid 30l. for fixtures. When Mr. Neville sent his servant with the furniture to take possession, the goods had to be taken away again, as Mr. Huckle, the owner of the house, had let it to Major Robinson, who was in possession.

The plaintiff now sought to recover back his 30l. for fixtures, and, in addition, for expenses incurred; and he further charged the defendant with fraudulently and falsely representing that he had authority to let the house in question.

It, however, transpired that several house-agents were trying to let the place, and some evidence was given tending to prove that the defendant had no authority to make a binding contract.

The defendant, upon this, put in a letter he had received from the landlord, Mr. Huckle, in which was written:—"In answer to your letter, the lowest amount I would take is 83l. for No. 7, Boscombe-place, eight years' lease, subject to the same conditions as I hold the place myself. Fixtures, 20l. The house is in a good state of repair, and the rooms will all be repaired when required." The No. 7 house is also to be 75l. and 30l. fixtures."

Mr. Justice Brett said, after this letter there could not be the slightest ground for charging the house-agent with fraud.

Ultimately it was mutually agreed that a verdict for the plaintiff for 30l. on the money-count should be taken, and for the defendant, on the charge of fraud, each party to pay his own costs.

The judge observed that both parties to this suit were perfectly innocent. If any one was to blame, it was Mr. Huckle, the landlord, or those who had advised him, because he had not retted in a candid way, but had negotiated with several parties at once. Mr. Neville was to be pitied, as well as the house-agent for being charged with fraud.

VENTILATION OF SHEFFIELD MUSIC HALL.

SIR,—In the *Builder*, about three weeks since, I noticed a paragraph about the opening of the new Albert Music-hall, Sheffield. In speaking of the ventilation, you said it was hoped the vitiated air would pass off through the tower, or south-east. I at first (I have not the paper by me), and it struck me you had some doubt whether it would, and I felt rather that such a remark should come from you; for it is well known that I have carried out the warming and ventilating arrangements liberally many architects whose good opinion I value much, and the unfavourable impression they would receive by seeing the doubt expressed by the editor of the *Builder* on the success of my scheme I regret.

I knew at the time that it must answer, because I have had sufficient experience to prove it; and, of that, but I had it from the lips of the architect himself, Mr. Fletcher (who had been testing the ventilation), that the draught upwards in the tower caused by my pipes was sufficient to blow a candle out; but as you seemed to doubt it, I was determined to test the draught myself, and accordingly when I was over in Sheffield, the other day, I went up to the top of the tower, and stood upon the coil of piping (which I have laid in the form of a flat gridiron, so as to cover the entire area of the shaft), and took out my handkerchief, and the draught carried it up the shaft. I was not only convinced of the efficiency of the ventilation, but I was surprised; for I did not expect to find such a strong current as I experienced. I wish you could either test the draught yourself or depute some one else to do so for you, as I know many people are dubious about thermo-ventilation, but here is a great proof of its efficacy. Not only that, but I should be glad if by any means I could induce you to correct the doubt you expressed, as I know it is not your wish to injure one who is a regular subscriber to your journal.

ROBERT BAYTON GIBBS.

ESTATE BUILDERS AND THE PUBLIC HOUSE LICENSING ACT.

SIR,—Soon after the Act of 1869, which empowered the licensing magistrates to grant or refuse beer as well as spirit licences, came into operation, I addressed a letter to you (which you kindly inserted) calling attention to the very stringent manner in which they exercised their powers, and to the great hardships and ruinous losses endured by builders or public-houses on new estates.

I think that a most favourable opportunity now offers itself for obtaining an alteration in the licensing system so as to remedy its unfair operation towards estate-builders, as I see that the Licensed Victuallers have just held a meeting at Birmingham of their National Defence League, at which delegates were present from all parts of the country, and that they have determined to introduce into Parliament, next session, a Bill to remove some of the harsh and objectionable clauses of the Licensing Act, 1872.

I believe that the main object sought by the promoters of the 1869 Act was the suppression of the miserable little dens that had grown up under the then existing Acts, and not to inflict grievous injuries and ruinous losses upon persons who built properly-constructed

public-houses upon new estates for the accommodation of new neighbourhoods, and which would not interfere with the legitimate rights of any existing vested interest; and it is most unfair to induce persons to expend large sums of money, which, under an existing Act of Parliament, gave substantial value to the property, and then by another Act sweep away that substantial value without giving compensation or making any provision to prevent losses to the persons who had so confidently invested their money.

As estate public-house builders have (at any rate perspective) an interest in common with Licensed Victuallers, I think it would be to their mutual advantage to co-operate, and by their united influence they might materially assist each other. In order to carry this into effect no time should be lost: an organisation should be immediately commenced, as Parliament will soon be sitting and the golden opportunity may be lost.

R. G. GRIMES.

SCHOOLS OF ART AND OF SCIENCE.

In accordance with the principles laid down by the minute of the 19th February, 1868, and having regard to the number of students taught in each school, the following sums have been awarded by the Lords of the Committee of Council on Education to the head masters of those sixty schools of art in which the general amount of work, as tested by examinations, was relatively most satisfactory:—W. H. Stopford, Halifax, 50l.; J. S. Rawle, Nottingham, 40l.; A. A. Bradbury, Hanley, 40l.; Charles D. Hodder, Edinburgh, 40l.; W. J. Munkley, Manchester (Royal Inst.), 30l.; W. Tucker, Kidderminster, 30l.; W. H. Soumes, Sheffield, 30l.; John Anderson, Coventry, 30l.; D. W. Raimbach, Birmingham, 30l.; Louisa Gann, Bloomsbury, 30l.; M. T. Lindsey, Belfast, 20l.; Robert Greenlees, Glasgow, 20l.; Joseph Harris, Salisbury, 20l.; G. Theaker, Burslem, 20l.; Edwin Lyons, Dublin (Royal Society), 20l.; Edward R. Taylor, Lincoln, 20l.; J. E. Bacon, Stoke-upon-Trent, 20l.; J. Snowden, Bradford (Mech. Institute), 20l.; W. C. Wray, Newcastle-upon-Tyne, 20l.; A. Brophy, Westminster, 20l.; John Sparkes, Lambeth, 20l.; R. C. Packett, Leeds (Mech. Inst.), 20l.; Alexander Fisher, Brighton, 20l.; George A. Stewart, West London, 20l.; W. Sturgeon, Leamington, 20l.; John Parker, St. Martin's, 20l.; John Bentley, Birkenhead, 20l.; T. C. Simmonds, Derby, 20l.; John Kemp, Gloucester, 20l.; Thomas Stephen, Northampton, 20l.

West London School of Art.—The annual meeting for the distribution of prizes to the successful students in this school has been held at Sir Thomas Chambers, M.P., in the chair. There was a numerous attendance both of students and their friends. The proceedings commenced with the reading of the annual report, from which it appeared that the numbers in the school were 191, being an increase of 17 over last year. The general studies had shown a steady improvement, and the examinations conducted by Government had resulted very favourably as regards honours, though not quite so high as last year. In the second-grade examinations 173 students presented themselves, of whom 134 were successful in passing. In the third-grade examinations the work of 286 students had been sent to South Kensington for examination, and competition with the other schools of the kingdom, and the result was that 67 were declared satisfactory.

The Manchester School of Art.—The annual meeting and distribution of prizes in connexion with this school has been held in the Lecture Theatre of the Royal Institution. Mr. W. J. Munkley, the head master's report stated that the schools during the past year had been attended with more than ordinary success. The Very Rev. the Dean of Manchester presented the prizes and certificates, after which he addressed the students. The advice which he should start with, he said, was this,—the absolute necessity of labour in art as in all other things. Everybody knew that perseverance, diligence, careful attention to principles in art, as in most sciences and in most manual occupations, were absolutely necessary to any great success. People were sometimes apt to draw a distinction between art and other occupations or pursuits. They thought a great deal too much about genius, and that there was some royal road to perfection. Now he wished genius to be put in its proper place by assuring them, on the authority of one whose name would carry universal approbation when he mentioned it, that in art, as in other things, diligence, industry, and attention to principles must precede any excellence. They should not leave one subject until they had perfectly mastered it. Labour was the principle of success in everything.

Art Exhibition at Ryde.—The committee of the Ryde School of Art, in order to raise a

sum of money to aid the funds of the school, have obtained on loan from the resident nobility and gentry of the Isle of Wight a large number of paintings, drawings, and other works of art, which form an interesting exhibition. The Queen lent several pictures from her Majesty's private collection at Osborne; and the authorities of the South Kensington Museum have sent many paintings and drawings.

THE ENLARGEMENT OF THE WATERLOO RAILWAY STATION.

At a special meeting of the shareholders in the South-Western Railway Company, held last week, with reference to contemplated new works and stations, the chairman, referring to the proposed extension of the Waterloo Station, said that that terminus was only intended originally for a road-side station, as the terminal station was to have been at London Bridge, but that that intention was abandoned in consequence of the great expense it would have entailed. The Waterloo Station was, therefore, unfitted for a terminal station, although several additions had been made to it from time to time. Adverting to the enlargement of the station about to be carried out, he said that a very elastic general plan had been prepared for both the present and future requirements, so that portions of it might be erected from time to time without interrupting the traffic, until it was wholly completed as a terminal station. But an immediate extensive enlargement was absolutely necessary, inasmuch as the traffic had so much increased that it was dangerous to cross from the Windsor line to the main line, and they could not carry on the traffic without making considerable improvements. He, however, expressed an opinion to the effect that they could never make it a handsome station, although they might make it convenient for the public, and the working of the trains. The company have purchased land and buildings on the north side of the present station, upwards of one acre and a half in extent, for the purposes of the enlargement, and the works are immediately to be commenced. Respecting the other intended new works within the metropolis, he stated that they proposed to widen the northern side of the main line between the West London Extension Junction and the Clapham Junction, to facilitate the traffic, which was occasionally blocked there. This was in addition to the intended extension and enlargement of the station buildings at Clapham Junction. The directors at Reading has become so large that the company are about to erect a new goods station there also.

CHURCH-BUILDING NEWS.

Leek.—The chancel of St. Luke's Church has been enlarged, and now corresponds with its nave. It has been extended 10 ft. eastward, and its dimensions are 36 ft. in length, by 18 ft. 6 in. in breadth. The length of the church internally from the east wall to the west door is 137 ft. Considerable space has been gained in the nave near the chancel by the removal of the prayer-desk and choir-stalls that formerly stood there. The floor of the chancel has been laid with Minton tiles, and a reredos has been erected from a design by Mr. Sedding, of Bristol, architect. It is composed of Caen stone, and has been executed by Mr. Green, of Manchester.

Hucknall.—The parish church of Hucknall Torkard has been reopened to the public. During the time that it has remained closed for alterations, a change has been put upon its appearance. It is mainly, of course, on account of its connexion with the Byron family, and as the burial-place of the poet, that Hucknall Torkard Church owes its fame. Yet it possesses some features of archaeological interest. The family vault is underneath the church floor, and the register mentions that no less than threescore of the family have been buried within the precincts. In the course of the restoration no interference has been made with any matters of a Byronian character, except two. Firstly, the little marble tablet, which commemorates Ada, has had to be raised a little, through the alteration of the door; and, next, the old pew of the Byrons has been swept away. The Duke of Portland, who is Lord of the Manor, started the list of subscriptions with a donation of 500l. Mr. Godber gave another 500l., and the list was soon swelled to larger dimensions, and the contributions accumulated until the committee felt themselves in a position to commence active

operations. Messrs. Evans & Jolley were appointed the architects, and the contract was obtained by Mr. Booker, builder, Basford. The whole of the south aisle has been rebuilt, and the north aisle has been extended to the end of the tower, thus giving additional room in the interior. The pews and gallery have given place to open seats, and the pulpit is placed in an improved situation. There is a convenient vestry, and good accommodation for the choir. The seats are of stained deal, and the fittings in the chancel are of oak. A portion of the old wood of the porch has been left in, but the other parts are altered and improved. Bulwell stone has been chiefly used, but the stone dressings are from Ancaster. The tower has not been altered, except so far as the pinnacles are concerned. These parts having succumbed to the force of the wind, are being raised and rebuilt. The cost of the whole of the alterations is about 3,000l. The amount still needed for the building itself is about 450l., and towards the payment of this sum subscriptions are solicited. The church will now accommodate about 450, whereas previously it would only seat about 300.

Holt.—The parish church of Plamstead has been reopened for divine worship, having been restored (principally by two ladies) at a cost of 700l. The church, which is dedicated to St. Michael and All Angels, is in the Perpendicular style, but previously to the work of restoration being commenced had fallen into a dilapidated state, the interior more resembling a barn than a place set apart for Christian worship, the ceiling being exceedingly rough and white-washed, while the pews were the ugliest and most uncomfortable imaginable, the reading-desk, pulpit, &c., in an absolutely rotten state, and the windows mostly blocked up, with the exception of two small ones in the south wall, the mullions of which were of painted wood. The work of restoration has been carried out by Mr. Chapman, of Hanworth. The roof has carved angels at each principal. The seating of the chancel, the pulpit, lectern, reading-desk, and font-cover are of carved oak, and new windows have been inserted where required, and filled with cathedral glass. The west window, which was previously blocked up, is the gift of Mr. John Hales, of Holt. The floor is of coloured tiles.

Sheffield.—A meeting of the congregation of St. Marie's Church, Norfolk-row, specially convened by the rector, the Very Rev. Canon Walshaw, has been held in the Surrey-street schoolroom, the object of the meeting being to take the necessary steps for the erection of a peal of bronze bells in the tower of the church. Canon Walshaw addressed the meeting, and having reminded them that, twenty-five years ago, when the church was erected, it had been intended to place a peal of bronze bells in the tower, and that the tunc bell of the peal, weighing 22 cwt., was then purchased, and after its solemn consecration by the late bishop of the diocese, suspended in the belfry. The completion of the peal had been delayed by various circumstances, and latterly, from the fact of the bell-chamber being occupied by the steel bells placed there by Messrs. Vickers; and since they had now intimated their intention of removing them, he thought the time was come for the carrying out of their original intention, viz., the purchasing and erection of the remainder of the bells necessary for the completion of the peal. The rector stated that the Duke of Norfolk had generously offered to meet half the expense, on condition that the congregation would raise the other half; and further said that having recently had a sum of money placed at his disposal for the use of the church he would devote the sum of 50l. out of it, and would subscribe himself 10l. in addition to the same object. Mr. Hadfield proposed, and Mr. A. J. Ward seconded, that the duke's generous offer be at once accepted, and that the warmest thanks of the congregation of St. Marie's are hereby given to him. A committee of gentlemen was appointed for the purpose of raising subscriptions.

The Marquis of Ripon on Church Work. At a *soirée* of the Ripon Church Institute, held under the presidency of the bishop of the diocese, the Marquis of Ripon delivered an address upon "Church Work." His lordship referred especially to the great work which had been done in that diocese in the way of church building and restoration during the past decade, but pointed out that much remained to be done.

DISSENTING CHURCH-BUILDING NEWS.

Wolverhampton.—The memorial stone of a new Wesleyan Chapel, to be erected on the Bilston-road, near the workhouse, has been laid by the mayor. The building will be 33 ft. wide by 100 ft. long, and the exterior will be a plain design, the object of the trustees being to meet the requirements of the locality without incurring heavy expense. The entrance-doors will open into a spacious vestibule, from which on either side will be staircases to galleries and lobbies to the body of the chapel. The interior of the chapel will be 50 ft. by 63 ft. long, and 33 ft. high from floor to ceiling. It is to contain sittings for 500 persons. There will be a minister's vestry, and three class-rooms and prayer-meeting room, with large schoolroom, 25 ft. by 50 ft. 9 in., over the whole. The wood-work will be stained and varnished. The architects are Messrs. Loxton, Brothers, of Wednesbury, and the builder is Mr. Daniel Evans. The total cost will be about 5,000l.

Old Basford.—The foundation stones of a new Wesleyan Chapel have been laid at Old Basford. The edifice that is now being built stands a short distance from the National Schools. Accommodation will be provided for 350, but the building will be so contrived that if necessary a gallery could soon be put in to hold about 300 more. The dimensions are as follow:—Chapel, 51 ft. by 38 ft.; school-room underneath, 38 ft. by 28 ft.; band-room, 22 ft. by 15 ft.; in addition to which there will be vestries and other places erected. The chapel will be entered from the street by a spacious flight of steps, and along the front will run a low wall of Bulwell stone, with an iron entrance-gate at either end. The architect is Mr. Collyer, and the builder Mr. Andrews. The total cost is estimated at upwards of 1,800l.

Bedford.—A new Wesleyan Chapel has been opened here. The building, says the local *Times*, is situate at the suburb of Southend, where a colony has rapidly sprung into existence, and standing prominently at the junction of Offa-road with the Amphil-road. Built of Warrington stone, with dressings of Bath, the entrance is at the north-east corner through a small tower, in which is placed a tablet, having upon it an inscription to the effect that the tower was erected in memory of the late Rev. John Moore. The tower is surmounted by a miniature spire of Bath stone. The edifice, which is fitted with open sittings to accommodate about 250 persons, is lighted at the north end by double elongated windows of white glass, with red-stained bordering and caps, and at the sides by ten smaller windows with the same mixture. An extended and enclosed platform serves as a pulpit, being approached by a pew-like door in the rear from the school-room, which is separated from the chapel by a curtain of crimson and black, over an arch. The building is warmed from beneath, and is fitted with gas-stars. The roof is supported by large open wood brackets, and the walls are stuccoed and pointed.

Manchester.—Hyde-road Chapel has been opened. The plan is transeptal, necessitated by the square form of the site, and the chapel is built in conjunction with the old school chapel which is now used entirely for purposes of a day and Sunday school. The roof is ceiled octagonally, the octagon form being intersected over each transept. Over the front gallery is a large five-light traceried window, and over each of the others grouped five-light lancet windows. A choir-loft is formed over the end of the nave. An arched porch opens to the ground floor, and separate staircases from the front enter to the galleries. Accommodation is provided for between 500 and 600 persons. The cost, including lighting and heating, is 1,850l. The builder is Mr. R. W. Bird, of Bradford, Manchester, and Mr. Fowden, one of the contractors of the Building Fund, kindly acted as clerk of works. The architect is Mr. Alexander Lander.

Buckley.—The Buckley Congregationalists have provided themselves with a new chapel, with turret and gabled front of white pressed bricks. It looks over a swampy part of the mountain's crown, and contrasts strikingly with the almost funeral pall of smoke all around, which has blackened everything, not excepting the church in the distance. The approach was not the most desirable, but it has been improved by the making of a good cinder-path. The building is in the Gothic style. There are five long single-light windows, divided by buttresses, on each side, with a larger window in the front.

Below that are two entrances, with inner vestibule, by which ingress to the body of the chapel and gallery is obtained by four separate doors. The gallery runs round the chapel, the front of it being coloured pink and gold, and in the place of panels open iron-work, coloured blue with gold stars. The whole of the woodwork is of pitch-pine, stained and varnished; the seats being open with sloping backs, and the pulpit with fret-work panels and dais. As there is no gas, the lighting will be effected by means of paraffine lamps with double wicks, the lamps being on standards affixed to the pews. For heating, Grady's hot-air apparatus will be used. The building will seat 500 people comfortably; and as some of the congregation have to come from a distance, there is, in the rear of the minister's vestry, room for the stabling of three horses. The cost of the whole has been upwards of 1,600l., the contract having been taken by Mr. John Williams, of Lane-end, who has carried out the work according to the designs of the architect, the Rev. Thomas Thomas, of Swansea.

FROM SCOTLAND.

Edinburgh.—At a meeting of the acting committee of the subscribers to the Knox Memorial, the following resolutions were agreed to:—

1. That the committee limit their object to obtaining a marble statue of John Knox for Edinburgh, to be placed in a public building, whether church, or gallery, or hall, as may be afterwards found most eligible; and, should the funds at their disposal be sufficient, with an ornamental pedestal of appropriate design, as sculptured basso-reliefs.
2. That artists be now invited to prepare for public competition, before the month of May next, small models of the figure, accompanied with drawings or sketches for a pedestal, and an estimate of the probable expense, singly or together.
3. That these resolutions in the meanwhile be submitted for approval to parties who have already become subscribers to the Knox Memorial.
4. That the promised subscriptions be now paid.

—The completion of the infirmary buildings is more probable than heretofore, the managers, according to the *Weekly Scotsman*, being now in possession of sufficient funds not only to complete the contract for the medical house—on which about 40,000l. yet remain to be paid,—but to undertake the erection of the remaining buildings embraced in Mr. Bryce's plans. As regards the proposed extension of the Edinburgh University buildings, it is reported that the building committee has at length succeeded in coming to terms with various proprietors in the neighbourhood of Teviot-row, and have privately purchased property nearly opposite the new infirmary, on which it is proposed to erect class-rooms, chiefly for the accommodation of medical students. It is proposed to place in the immediate neighbourhood of the new infirmary, theatres, class-rooms, and laboratories, specially adapted to meet the requirements. The sum needed is 100,000l., towards which the committee report that about 37,000l. have now been obtained by private subscription. It has been resolved to hold a public meeting in February, with the view of opening the subscription list to the general public.

Leith.—The Leith Harbour and Dock Commissioners have determined finally as to the acceptance of estimates for the proposed wet dock. At a former meeting, it had been resolved to remit three out of the estimates tendered to the dock engineers to be reported upon, and after full consideration of the engineers' report, the commissioners have now agreed to accept the estimate of Mr. James M'Naughton, Stewarston, Ayrshire, under whose contract the work connected with the undertaking will be commenced immediately. The contract price is about 220,000l., being 15,000l. below the engineers' estimate, about 20,000l. below the tender of the contractor for the Albert Dock, and 60,000l. under the highest offer. It is anticipated that the new dock will be completed within five years.—A new swing-bridge across Leith Harbour has been opened. The bridge, which is of iron, cost 32,000l., and weighs 750 tons. It contains two lines for railway-traffic and two roads for foot passengers.

Glasgow.—The new fish-market in East Clyde-street, which has just been completed, has been formally opened by the Lord Provost, magistrates, and town council.

Kinghorn.—A species of typhus fever has been for some months prevalent in Kinghorn, a small seaport in Fifeshire, opposite Leith, on the Firth of Forth. This fever is manifesting no symptoms of abatement. A good

many fatal cases have occurred. The fever, at first confined to one neighbourhood, has spread throughout the village, and by latest accounts is affecting the country district. The visitation has aroused the authorities to look into the sanitary condition of Kinghorn. With the assistance of the Board of Supervision, the water in use for domestic purposes has been examined, and steps taken for the removal of nuisances and remedying what was found defective in the sanitary regulations.

Alloa.—A monument to the late Earl of Kellie has been placed in St. John's (episcopal) Church, Alloa. The monument, of which the leading figure is a recumbent statue of the deceased peer, has been designed by Mr. R. Anderson, and executed by Mr. Rhind. The lower stages of the structure consist of a moulded sub-base of black marble supporting a chamfered plinth of rich green marble, on which again rests a frieze of red marble, studded with alternate spar bosses and panels of white alabaster. The bosses present a fine variety of colour, and the panels are filled in with foliated ornament, relieved against a vormilion ground. Over the frieze rises a moulding in brown veined alabaster, and on this is placed the couch bearing the statue, which is designed after a type borrowed from the days of the first Plantagenets. The figure of the late Earl is extended at full length, with hands upraised as in prayer, the head resting on a tasselled cushion, and the feet resting against a couchant lion. The figure is draped in a peer's robe, and on the exposed portions of the arms are seen the laced cuffs of a military uniform, which recalls the late Earl's connexion with the Indian army.

STAINED GLASS.

Oaken Church.—A painted window has just been erected in the church at Oaken, near Wolverhampton, to the memory of his wife, by Mr. Neve, of Greenhills. It is a two-light window, and represents the spiritual and the worldly side of life. The former by a female figure in an attitude of devotion, and surrounded by clouds; the latter by a charming figure of Ruth carrying sheaves of corn, both being surmounted by rich ornamental work of flowers and leaves and quatrefoil, with flowers emblematic of purity. The work is from the studio of Messrs. O'Connor & Taylor.

Dunfermline Abbey.—Two elaborate memorial stained-glass windows for Dunfermline Abbey, by Messrs. Ballantine & Son, have been set up. They are triplets, and in the upper portion of each window have large Scriptural illustrations, while in the base of each light is a smaller subject. One of the windows is erected by Mr. Reid, of Ilfley, Oxford, in memory of his parents, natives of Dunfermline. The chief subject is a representation of the family of Bethany. The sick Lazarus is laid on a couch, Mary is seated at the feet of Jesus, while Martha stands listening to Jesus, who is evidently leading their thoughts upwards. The apartment in which they are seated is Eastern in character. The scenes depicted in the smaller groups are Nicodemus's visit to Christ, Christ blessing little children, and the Supper at Emmaus. In the other window, which is erected by Mr. T. Alexander, Dunfermline, in memory of his father, mother, and other relatives, the upper portion contains the Baptism of Our Lord, who is represented as after having come out of the water. Above Him is the dove descending amid a luminous ray of light which radiates over the head of our Lord. On either side are John the Baptist, Mary, and Joseph. The scenes depicted in the base of the three lights are the Sower, the Good Shepherd, and the Woman touching the Hem of Christ's Garment.

Northshield Church.—A new east window of stained glass has been erected over the altar of this church, the gift of Miss Caroline H. Carter. The window consists of five lights. The centre one is occupied by the representation of St. Paul, with a drawn sword, and those on the right and left with figures of SS. Matthew, Mark, Luke, and John. The subjects in the window were designed and drawn by the Rev. Prebendary Sutton, rector of West Totts.

Knaresborough Church.—A window has just been erected in this church, under the direction of the Rev. F. L. Fisher, in memory of his two brothers. The window is of three lights, with tracery openings of angels and emblems. The six subjects are:—The Calling of Simon and Andrew, Stephen the Martyr, Christ walking on

the Sea, Peter letting down the Net, Timothy instructed, and Drawing the Net to Land. The window is from the studio of Messrs. O'Connor & Taylor, of London.

Coniscliffe Church, Darlington.—Five new stained-glass windows were unveiled in this church on Christmas-day morning. Four of the windows are situated in the nave, the subjects "Christ Blessing Children," "The Blind Restored to Sight," "Raising of the Widow's Son," and "The Woman touching Christ's Garment." The fifth window is in the chancel, the subject being "Our Lord's Entry into Jerusalem." The whole of the windows are the work of Mr. Baguley, of Newcastle. A short time ago the east window and three chancel windows were erected by the same artist.

Bildeston Church, Ipswich.—In memory of the late Rear-Admiral Cockburn, commander-in-chief in the East Indies, a stained-glass east window (21 ft. high and 12 ft. wide) has been erected in this church, the late admiral having for some years resided in the parish. The architecture of the window is in the Decorated style. In the tracery are introduced three panels, the uppermost and central one being of pentagonal form. In this upper and principal panel is represented Christ preaching from the ship near the shore of Gennesaret; in the others, St. Paul taking leave of the Brethren on the shore of Miletus, and the vision of St. Paul in the ship in Adria. The lower compartments, which are five in number, are glazed with figured quarries relieved by bosses, and alternately by hands, bearing texts of Scripture. The form of the window was designed by Messrs. Goldie & Child, of London; and the workmanship has been executed by Messrs. Wailes & Strang, of Newcastle-on-Tyne.

Ullingfrydun, Anglesea.—On Christmas-day, a stained-glass window was unveiled in this church, and which has been erected in the chancel as a memorial of the late Mr. Edward Richards, Tyns, placed there by his widow and family. For many years he occupied the post of chairman of the Anglesea union.

Books Received.

The History of Freemasonry; from its Origin to the present Day. By J. G. FENDEL. Second revised edition. With a preface, by MURRAY LYON. London, &c.: Brother George Kenning.

This book is a strictly historical one, from which all seems to be excluded that is not based upon ascertained or probable fact. The tone of it may be gathered from the following passage extracted from the introduction:—

"The history of Freemasonry long veiled in mystery, interwoven with legends, purposely distorted by misrepresentation—has, during the prolonged and conscientious researches of some few solitary and unprejudiced Brethren, acquired of late years a sure foundation upon scientific principles. This more especially refers to the origin of the Fraternity, concerning which, as to the very day, the most confused, ridiculous, and discordant opinions prevail. Blinded by absurd self-conceit, and an eccentric desire to prove the extreme antiquity of the Institution, many have strenuously combated the idea that the Fraternity originated in the Operative Masons; or, seeing that the ancient symbolical marks, and ceremonies in the Lodges have a very striking resemblance to those of the mysteries of the Ancients, have allowed themselves to be deceived and led astray, imagining they can trace back the history of the Craft into the cloudy mists of antiquity. Instead of endeavouring to ascertain how and when these ceremonies were introduced into our present system, they have taken it for granted that they were derived from the religious mysteries of the Ancients. Each fancied resemblance or agreement with some symbol or pretended custom of the ancient mysteries, is considered as a safe guide, and a close connection is immediately inferred, which not unfrequently involves an entanglement in unessential particulars, having not the slightest bearing on the subject.

The idea of Freemasonry is as old as human civilisation, having its source in the human heart, as language has its in the spirit. Therefore we find the idea of Freemasonry already existing in the remotest ages as a shadowy presentiment. Embodied in life, it acquired forms like the *u-jun*, and so we can find its traces in the Mysteries of the Ancients, in the Roman building corporations, and in the Medieval Fraternity of Operative Masons. It is possible that the latter, with the knowledge of the rules and the secrets of the art of building, at the same time received some of their symbols and usages.

The author treats separately of the history of the craft in Scotland, England, Sweden, France, &c., and in America; and this English edition of the work is dedicated to the Grand Lodges of Massachusetts and Iowa, in the United States.

The Local Government Directory, Almanac, and Guide, for 1874. London: Knight & Co. Thirty-third Year.

This is a very useful work,—indispensable, indeed, to all interested in educational and

sanitary subjects, for example, and to many others. Among the contents of the present issue are lists of Local Government Board, School Boards, School Districts, Schools and Institutions certified by the Poor-law Board, Reformatory and Industrial Schools; Urban, Rural, and Port Sanitary Authorities; Public Annals, Burial Boards, Poor-law Board Unions, Asylums, and many more, including the more usual lists of Public Office holidays, terms, Courts of Equity and Law, Ministry, Royal Family, &c., and the almanac proper.

VARIORUM.

"Proportions of Pins used in Bridges. By Charles Bender, C.E., Member of the American Society of Civil Engineers, &c. New York, Van Nostrand, 1873." This small volume forms one as he first took it up, of complicated features which had before perplexed the ability of the original inventor of M. Rouquayrol, engineer of the mines at Firney. "The Sixth Annual Report to the Council of the Borough of Nottingham, by the Committee of the Free Public Library and Museum, 1872-3," congratulates the Council on the continued usefulness of the library and museum, and says:—

"Your committee are again compelled to report that the premises in which the Library and Museum are located are very inadequate and inconvenient. Nottingham falls sadly in the rear of other towns of the same extent in these respects. In fact, the usefulness of the institution is crippled to a very considerable extent by want of commodious buildings. The Reading Library, which is completely overcrowded with books, has also to serve the purpose of a new-room and reading-room. Although the space which your committee can afford for reading is only about 15 ft. by 12 ft., such is the great appreciation of this department that it is attended by about 300 persons a day. There are no places available for the students of the scientific and other works in the Reference Department. In many towns of less importance than Nottingham, spacious rooms are fitted up with tables and proper conveniences for the study of books of reference. The Reference Library now contains as many books as the state of the building will permit. The Patent Library is overcrowded with books. The librarian is compelled by want of shelving in this, as in the Reference Department, to place books on the floor, where they are in constant danger of being damaged."

"The Australian Hand-Book and Almanac, and Shippers' and Importers' Directory, for 1874. Fifth year of issue. Gordon & Gotch, St. Bride-street, Ludgate-circus, London." Though it scarcely merits the name of a directory, this volume, besides an immense mass of advertisements, contains a large quantity of useful matter relative to the Australian Colonies, and coloured maps of them all.—"The Home of the Agricultural Labourer, its Defects, and how to Remedy them. By Francis T. Bond, M.D., B.A., Medical Officer of Health, Gloucester. London: Simpkin, Marshall, & Co." The author of this pamphlet urges that deficiency, either quantity or quality, of accommodation, as the chief defect, cannot, in rural districts especially, be met by the ordinary laws of commercial supply and demand or by voluntary agencies; and that the only effectual remedy for it is to include houses for the accommodation of the labouring class in the permanent sanitary improvements which rural sanitary authorities are empowered to carry out, and to give the same facilities for effecting such improvements as now exist in the case of works for drainage, water-supply, and other similar purposes. The adoption of this remedy, he remarks, involves no new principle in legislation and no new machinery for its execution; the principle that the provision of sufficient house-accommodation for the poor is one of the proper objects of legislation being already recognised, directly, in the erection of workhouses, and, by inference, in the power which the law gives under certain circumstances to close up or even destroy houses that are not habitable; and the machinery also existing in the constitution of local sanitary authorities.—"Report of the Ramsgate Local Board on the proposed Ramsgate Deal and Minster Junction, Minster and Ramsgate Junction, and Ramsgate, Deal, and Dover Railways, by E. Ellice Clark, C.E., Engineer and Surveyor to the

board. Ramsgate: printed by S. R. Wilson, Harbour-street." Mr. Clark reports in favour of the third of these proposed lines. Looking at it, he says, from all points of view, it is a far easier, more comprehensive, and altogether a better scheme than the other two; and he believes if it is carried out it will be a boon to the public, and of service to the town in many ways.

Miscellaneous.

The Blue Gum-tree.—Mr. J. Henry Rogers writes to us from Green Hedges, East Grinstead, Sussex:—"As many somewhat vague statements regarding the hardness of the blue gum-tree and its influence over malarious diseases have lately appeared, the following facts may be considered worthy of being made known. I have at present growing in front of the cottage in which I reside, close to, but not attached to, the west wall, several blue gum-trees. No. 1, planted in the spring of 1871, has survived two winters without protection; at 6 ft. from the ground it has a circumference of 7 in. its height at present is only 15 ft., the upper portion having been torn off by wind. No. 2, planted in the spring of 1872, has survived one winter, also without protection of any kind. Its circumference, at 6 ft. from the ground, is 5½ in., and its height 18 ft. No. 3, planted in the spring of last year, has attained a height of 14½ ft. All these trees, and several smaller specimens of the same and nearly allied species, are at this present time in perfect health and vigour, and are quite uninjured by frost. That this tree is capable of resisting the cold of ordinary winters in sheltered situations of the south of England cannot be doubted, even when planted, as my specimens are, on a retentive clay. As regards its influence over diseases arising from malaria, I may mention that since the winter of 1850-51, when I had a very severe attack of malaria fever in Rome, I have been liable, especially in the autumn, to irregular aguish symptoms, but since my gum-trees have grown sufficiently tall to be against the casement of my bedroom windows, I have not had any return of my very disagreeable sensations. A solitary case like this is, of course, open to various explanations and objections; but the fact remains."

The Discovery at Troy.—A razzia has been made on certain houses in the villages of Kalafati and Yenisher, whence Dr. Schliemann used to draw many of the labourers for his excavations on the supposed site of Troy. The result has been the discovery of a valuable treasure. It consists of necklaces, bracelets, earrings, and other ornaments, and bars of solid gold, weighing together several ounces, according to the *Levant Herald*. It appears that these ornaments had been stolen by some of the workmen employed by Dr. Schliemann. The villagers intended to have had them melted in secret by native goldsmiths and converted into what they considered to be fashionable ornaments for their wives and daughters. The culprits have been imprisoned, and the property seized on account of the State. The discovery cannot fail to be satisfactory to all parties concerned (the thieves excepted). Dr. Schliemann has now the clearest proofs to back him in refuting the invidious assertion to the effect that the gold ornaments of which he had announced the discovery at Troy, had been previously manufactured under his personal directions by a goldsmith at Athens. The Turkish government has also an opportunity of recovering to some extent its legitimate share of the antiquities found by the doctor—who forgot this part of his engagement, and carried off to Athens everything of value which he was fortunate enough to find. Lastly, the scientific world will now be enabled to pronounce upon the true nature and probable age of this most interesting, long-buried treasure.

Breaches of Agreement by Builders on the Walworth Common Estate.—Several of the builders, who from time to time purchased plots of land on the Walworth Common Estate, have failed to carry out the agreements into which they entered by not completing buildings within the time stated, and the Newtoning Governors and Guardians, as the trustees of the property, have in several instances retaken possession of sites and unfinished buildings. At the meeting of the Governors last week they decided to re-enter upon twelve plots, six of which are in Faraday-street, and six in Westmoreland-road.

The Late Mr. Thomas Shave Gowing.—Ipswich has lost, by the death of this gentleman, an energetic, liberal, cultivated citizen. Mr. Gowing was well known in the town from having for some years taken a prominent part in public affairs, for which his talents and extensive general knowledge highly qualified him. His upright, uncompromising, disinterested conduct won him the respect of all, and even those who differed mostly from him felt he was perfectly honest in his convictions. On many points where he failed to convince his opponents time has proved him to be correct in his views. The mechanics institution was a child of his own, and he devoted himself for years to the promotion of its interests. In literature his sympathy was with the best; in art he had considerable knowledge, and some executive power and training; but the latter quality was more exhibited in landscape gardening than in any other pursuit in which he engaged. Mr. Gowing may be said to have introduced an improved and superior style of landscape gardening to Ipswich and its neighbourhood. The Upper Arboretum was almost entirely his work. Mr. Gowing might be seen for many years working at the improvement of the Public Arboretum, and to his last hour he took a deep interest in the place. In earlier life we knew him intimately, and have always entertained high regard for his character and attainments.

New Warehouse in Gloucester.—Messrs. Wait, James, & Co. (corn merchants, of Gloucester, Bristol, and Birmingham), have had erected as an addition to their establishment the largest warehouse in the port, says the local *Chronicle*. It has been appropriately called the "Great Eastern," in reference to its position on the eastern shore of the basin. The "Great Eastern" is 114 ft. long, by 66 ft. broad, is six stories high, and will contain over 25,000 quarters of grain. It is built of brick, with freestone heads and cills. There are thirty-three iron columns, supplied by Messrs. J. M. Butt & Co., on each floor, supporting beams of pitch pine. Improved corn-shoots are provided throughout the building. The winches, supplied by Messrs. Seekings & Co., are fixed so as to provide ample ventilation for the men while working them. The ground-floor is laid with asphalt, by Messrs. Bradshaw & Co., of Bristol. The cost of the entire building will be a little over 7,000l. Mr. Capel N. Tripp, of Gloucester, is the architect, and Mr. Albert Estcourt, of Gloucester, the builder. Messrs. Wait & Co. have entertained the workmen engaged in the erection of the warehouse to a substantial meat tea in the St. Nicholas school-room.

An Aquarium for Margate.—We understand there is a project on foot for the construction of an aquarium, winter garden, ferrierie, and a recreation promenade upon a large scale. The work will commence at Cold Harbour, and pass round Fort Point to the flag-staff point on the Fort Promenade, and will be carried out by a limited liability company, the capital being 15,000l. It is expected that Messrs. Cobb & Co. will be the local bankers. The promoters only await the final consent of the Board of Trade; and in all probability the work will be commenced early in the spring, being concluded at about this time next year. We hear that the plans were to be placed before a special meeting of the Council. Mr. R. Laird, the promoter of the Cliftonville Railway and other works in Thanet, is the promoter of the scheme. A sea-wall will be constructed throughout the whole length of the Promenade, a large area of land being thus reclaimed. The aquarium will be 250 ft. by 100 ft., and will be connected with a large hall 150 ft. by 70 ft., for concerts and balls.

The Plans for New Infirmary Hospital at Warrington.—Three architects of the town appear to have been invited to compete for this building, and the committee, after a short time, for consideration, selected one from the three, as best adapted to the purposes in view. According to a correspondent of the local *Guardian*, a builder of large experience has given it as his opinion that only one of the three competing designs, and that not the selected one, could be built for the sum specified. This correspondent offers apparently reasonable objections to the alleged shortcomings of the selected design. In so limited a competition, could not some competent and disinterested architect have been called in to decide, amongst the plans offered, which, if any, it was advisable to adopt?

Trades Guild of Learning.—A statement, drawn up by the Council of the Trades Guild of Learning, describes at great length the objects which are contemplated by the organisation. It states that its purpose is to provide education for workmen (1) in the sciences underlying their respective industries, and (2) in various branches of higher education; and that it has sprung spontaneously from the workmen of this country, and its responsible direction will devolve in the main on them, with the support of others who can undertake to advise and help in their educational work. It will accept of no aid from the State, but will make use of the national universities as the best source of general education for the people of the great towns, enabling them to acquire, not only the results of scientific research, but the most thorough and scientific methods of teaching.

Atmosphere of Assize Courts.—At the conclusion of the county court business in the Crown Court, at Derby, the judge remarked on the bad atmosphere in which the business of the Court had to be transacted. For the past seven years he had sat in that Court, and had made several complaints about it, and the judges of the superior courts, who had also complained innumerable times, had been compelled to endure the stench for many years. He had to endure it, three days in one month, and he could only say, without exaggeration, that he regarded the stench as extremely prejudicial to health, and it had such an effect on him that it was exceedingly difficult for him to transact the business of the court. It affected his head. That such a state of things should be allowed to continue is shameful. The judges ought to refuse to act until the evil which disables them from doing their duty efficiently is remedied.

Sanitary Matters in Hackney.—Since the appearance of our recent notices of the sanitary condition of different portions of the district of Hackney, the local press of the township have devoted considerable space in supplementing our observations, not alone by republishing our articles *in extenso*, but in urging the necessity of remedial and efficient measures of sanitary reform. A word of commendation is due both to the local *Express* and the *Gazette* for their independent conduct; for instances are not rare wherein we have had to combat the reckless denials of local organs. We are sanguine that good must result from the honest advocacy we have alluded to, and that Hackney, before the close of the present year, will show an improved condition.

The Leicester Flood Scheme.—The committee appointed by the town-council of Leicester to examine and report upon the two schemes patented by local gentlemen for the prevention of floods, have examined the models;—one, Messrs. Goldsmith & Dilkes's, in the Gas Office, Leicester; and the other a working model, that of Mr. J. F. Smith, at the brook in Stoughton-lane. Flood-gates were in this model balanced by a float, which opened the gates as the float was raised by the rising flood. The whole thing seemed simple and efficient, and Mr. Smith insisted that expense of putting down these gates in the river to replace the permanent weirs is a mere trifle in comparison with the cost of the proposed lowering the bed of the river, and he feels confident that by his scheme he could save the town enough money to build a new town-hall, after preventing any further floods in Leicester. The two schemes are under the careful consideration of the committee of the council.

The Death of the Surveyor of Marylebone.—A large and influential committee of residents in Marylebone, with the Rev. C. J. Phipps Eyre (rector) as chairman, Mr. Edmund Boulnois as treasurer, and Mr. W. E. Greenwell (vestry clerk) as honorary secretary, has been formed to consider the distressing position in which the family of the late Mr. Browning, the surveyor to the parish, has been left by his almost sudden and untimely death. Mr. Browning has left a widow and seven young children in very straitened circumstances, and it is to be hoped that, as the vestry are unable legally to make any grant, a liberal response will be made to the appeal for subscriptions, which will shortly be issued by the committee.

Messrs. Cassell & Co.'s Premises.—By a slip the first stone was said to have been laid by Mr. Petter and Mr. Cassell. It should have been Mr. Petter and Mr. Galpin. Mr. Cassell has been dead many years.

A Students' Library.—An excellent idea is being realised at 24, Bride-lane, Fleet-street, close to Ludgate-hill, in the formation of a students' lending and reference library. The first general catalogue of English works has been issued, and although in some of its departments it is little more as yet than a skeleton, in others it already contains a good many useful and important works. The library is intended to extend the benefits of the subscription circulating system to all classes of students, and particularly to architects, art students, divinity students, examination students, law students, professional students generally, science students, and students in general of all descriptions. The terms are moderate: annual, first-class subscription for one volume, one guinea; second, half a guinea; special one guinea and a half.

The Houses of Parliament.—In anticipation of the opening of Parliament next week but one, certain alterations have been made in the interior, together with some decorations, more particularly applying to the House of Commons. During the recess a new staircase has been constructed for the use of members of the Lower House who may be sitting on committees when the division-bell rings. Up to last session members on committees had a long way to go down to the main staircase to reach the House in time to vote. The new staircase has been constructed in the committee-room corridor, near the spot where, until recently, the dining-room stood, and will bring members close to the door of the house in little more than a minute.

Art and Antiquities.—On Thursday last week, Mr. Charles Tindal Gatty, the assistant curator of the Mayor Museum, Liverpool, delivered the first of two lectures on the subject of "Art and Antiquities," at the Free Library, in connexion with the course of free lectures now being delivered there. Mr. Thomas Holder occupied the chair, and, in introducing the lecturer, expressed his satisfaction at seeing present a very large audience. He thought that such an interest as was manifested in science lectures would render it shortly necessary for them to be held in a larger room than they had at present. Mr. Gatty then proceeded with his lecture.

Dublin School of Art.—During the vacation an exhibition of the works of the students of these schools has been on view, having been opened by his Excellency the Lord Lieutenant and the Countess Spencer. The display is remarkable as being the finest that has yet been witnessed in Ireland, and its magnitude is so great as to fill completely the galleries and rooms of the large building in which it is located. The works are interesting in a high degree, as showing the rapid progress that has been made in every department of study, from the matured system of study now in practice, and as administered by Mr. Lyne.

Dangers of Level Crossings.—At Kingston-on-Thames an inquest has been held on the body of Mrs. Davidge, who was knocked down and killed by a pilot-engine, at a crossing near the Teddington Station of the South-Western Railway. It transpired that, some years ago, at the instance of the Local Board, a signal-box had been placed at this crossing, and a man appointed to take charge of it, but that he had been removed. It was also shown that the speed of the engine was thirty miles an hour. The jury found that the company were to blame for leaving the crossing in so unprotected a state, and recommended that a bridge should be built over it.

Accidents.—The roof and front wall of a billiard-room behind the Red Lion Hotel, Church-street, Preston, fell in recently. The room had just been fitted up with two billiard-tables, each worth 60*l*. It appears that the roof, being somewhat too heavy, pressed the upper portion of the wall outward into the yard of the hotel, and the flying splinters of wood and brick have injured the back windows of the Conservative club-room. The total damage is estimated at about 500*l*.—In the Rue Saint-Brice of Clammaroie, Rheims, a house in course of construction has fallen in, and buried in the ruins eight workmen. All were got out—four seriously injured.

Donor of the Holborn Statue.—The rumour which attributes this gift to Mr. Oppenheim, is without foundation. We shall not be surprised to learn that the donor is Mr. McKenzie.

The Manchester Society for the Promotion of Scientific Industry.—The Earl of Derby took the chair at the inaugural meeting of the Society with the above title, which was lately formed at Manchester, and of which he is the president. The meeting was held in the Manchester Town-hall, and was very largely attended by gentlemen connected with the manufactures and commerce of the district. The Earl of Derby delivered an excellent opening address, which has already been extensively quoted by our contemporaries.

Warning and Ventilating Schools at New York.—In the *World*, a New York paper, Mr. Lewis W. Leeds gives "a little practical advice to the New York School Commission" on this subject; and, according to Mr. Leeds, they stand much in need of it. "Every village carpenter," he says, "improves on the New York plan." Mr. Leeds rightly warns his readers against over-heating in the warming of such buildings, warmed air being comparatively of a debilitating nature.

Sidmouth.—The second contract for drainage of the town of Sidmouth was commenced on Wednesday, the 21st inst.; the contractors are Messrs. Hammett & Stephens, Plymouth; the length of sewers about 2,200 yards; the work will cost 1,100*l*. Mr. John Dunning, of Middlesbrough and Sidmouth, is erecting new gas-works in the town of Sidmouth, and is applying to the Board of Trade for a provisional order for powers to construct piers and landing-places, &c.

Warwick Castle.—Good progress is being made in the restoration of Warwick Castle. The great hall, which was completely gutted by the fire that occurred two years ago, is in an advanced state of renovation, and the relaying of its marble floor will shortly commence. The asphalt roofs substituted for those destroyed are nearly complete, and preparations for redecorating the dismantled apartments exhibit satisfactory progress. Mr. Eyre, of London, is still at work upon the ancient armour.

Kettering Sewerage.—The plans prepared by Mr. R. W. Johnson, the surveyor to the Board, have been approved by the Local Government Board, who have also sanctioned the application for a loan of nearly 7,000*l*. for carrying out the same. The sewerage, after being carried nearly a mile below the town, will be dealt with by precipitation and filtration, after which the effluent water can be used for irrigation, if the occupiers of land near the outfall desire it.

Admiralty Draughtsmen.—"Special Regulations" for the open competitive examinations for the situation of draughtsman in the Admiralty have been issued. The examination takes place on the 17th of February, and will be in practical geometry, map and chain projection, topographical plan-drawing, and translation from French, Spanish, or some other modern language. The salary begins at 150*l*. and ends at 400*l*.—"Rambles" in the "Sydenham Telegraph."

Steam Ploughs and County Bridges.—At the Bedfordshire Quarter Sessions a resolution was carried, on the motion of Mr. James Howard, M.P., to place all the county bridges in a suitable condition for the passage over them of road locomotive engines and steam ploughs. The work is to be done by degrees, the necessary funds being borrowed and spread over a number of years.

Royal Architectural Museum.—The drawings and models for the prizes offered by the Goldsmiths' Company for designs for plate, are now being exhibited in this Museum; admission free. The art-workmen's evening drawing and modelling classes are in full work at seven o'clock every Monday, Wednesday, and Friday evening.

The Law of Conspiracy.—On Monday evening, the 26th inst., Mr. Rupert Kettle will read a paper at a meeting of the Social Science Association to be held at their Rooms, in the Adelphi, "On the Law of Conspiracy as affecting the Relations of Employers and Employed." The chair will be taken at eight o'clock by Mr. Fitzjames Stephen, Q.C.

Hove Commissioners.—On Thursday, the 15th inst., the newly-formed incorporated commissioners of Hove elected Mr. S. A. Robinson, of West Hartlepool, to the office of surveyor. Mr. Ellice Clark, C.E., of Ramsgate, being second. There were fifty-eight candidates.

Revolution Indicator for Ships.—T Gold Medal of the Society of Arts, or 20*l*., offered for the best "Revolution Indicator" which shall accurately inform the officer, dock, and the engineer in charge of the engine what are the number of revolutions of the paddles or screw per minute, without the necessity of counting them.

New Bank Premises for Derby.—The foundation-stone of new bank premises has been laid in the Market-place, Derby, for Messrs. Samuel Smith & Co. The architect is Mr. George Robinson Isborn. The contractors are Messrs. John & James Edward Wood; and Mr. Albert Barrett is clerk of the works.

South Stockton Board of Health.—Mr. James Hall, C.E., assistant borough surveyor, Tynemouth, has been unanimously elected surveyor to the South Stockton Local Board of Health. There were 96 applicants for the appointment.

TENDERS

For alterations and additions to new shop fronts, for Messrs. Hatherly & Pinder, Mr. B. H. Nunn, architect—

Colwell	£700 0 0
Cheesman & Co.	690 0 0
Bruton	680 0 0
Parsons	620 0 0
Dyer	615 0 0
Lyne & Son	608 0 0
Nairn & Co.	568 0 0
Patching & Webster (accepted)	566 0 0

For the erection of head quarters for the First Hants Artillery Volunteers, Southampton. Mr. W. H. Mitchell, architect—

Stevens	£1154 0 0
Chapman	110 0 0
Dyer	1079 0 0
Nichols (accepted)	1067 0 0

For fittings to King's Arms Hotel, Liverpool. (Contract No. 2). Messrs. T. E. Murray & G. H. Thomas, architects—

Watkinson & Adams	£240 0 0
Cheetham (accepted)	638 0 0

For additions to Mansion, Blackmore End, Kington, for Mr. R. B. Basendale. Mr. George R. Isborn, architect—

John J. Gilmour	£278 0 0
-----------------	----------

For the erection of a warehouse in Cow Cross-street, Manchester, for Mr. Gearing. Mr. Lewis H. Isaacs, architect. Quantities supplied by Mr. L. C. Hiddell—

Palman & Fotheringham	£2380 0 0
Adamson & Sons	3792 0 0
Kilby	3770 0 0
Scriveners & White	3636 0 0
Bayes & Ramage	3680 0 0
Browne & Robinson	3485 0 0
Elkington (accepted)	3420 0 0

For stable and coach-house, Wyndham-mews, Upper Mount-street, for Mrs. Begg. Mr. C. E. Wray, architect. Quantities by Messrs. Edinell & Giffard—

Crab	£283 0 0
Richard	377 0 0
Keane	369 0 0
Anley (accepted)	367 0 0

For new front, &c., and bar-fittings, at the Unicorn public-house, Covent-garden, for Mr. W. H. Whelpdale. Mr. W. E. Williams, architect—

Hart	£735 0 0
Anley (accepted)	704 0 0

For new shop-front and alterations, at 45, Ludgate-hill, for Messrs. Sheerwood & Verney. Mr. W. E. Williams, architect—

Deard	£17 0 0
Hayward	621 0 0
Anley (accepted)	693 0 0

For new warehouses, City road. Mr. J. W. Read, architect—

Downs & Co. (accepted)	£2860 0 0
------------------------	-----------

For two cottages, Barby Grange. Mr. R. W. Johnson, architect—

Nyde & Son	£216 0 0
Cotton	331 0 0

For six houses in Newman-street, Kettering. Mr. R. W. Johnson, architect—

Bellamy & Wilson	£1138 0 0
Margrett	1092 0 0
Margrett	1077 0 0
Henson	1033 0 0

For farms standing in the Six-hills estate. Mr. R. W. Johnson, architect—

Waite	£292 10 0
Glover	735 0 0
Barnes	629 0 0
Chapman	625 10 0

For eight houses at Kettering. Mr. R. W. Johnson, architect—

Glover	£1650 0 0
Masley	1265 0 0
Barlow	1209 0 0
Shurmer	1440 0 0
Henson	1100 0 0

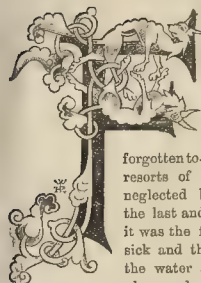
For new chapel at Codsall. Mr. J. R. Veall, architect—

Trow & Sons (accepted)	£500 0 0
------------------------	----------

The Builder.

VOL. XXXII.—No. 1617.

Old London Spas.



FEW things are more affected by fashion than the art of healing. Medicines that were in vogue yesterday are forgotten to-day, and the health-resorts of one generation are neglected by the next. In the last and previous centuries it was the fashion for both the sick and the healthy to drink the water at Bath and other places; but in the present century, sea-side watering places have almost superseded the inland ones.

London and its environs were formerly largely supplied with wells proper for drinking and bathing purposes, and many cures were recorded of these healing springs. No one would now think of coming to London to drink the waters, and yet some of the spas are still in existence. William Fitz-Stephen, a monk of Canterbury, writes, in his account of London in the time of Henry II.,—"There are also about London, on the north of the suburbs, choice fountains of waters, sweet, wholesome, and clear, streaming forth among the glittering pebble-stones: in this number, Holy Well (*fons sacer*), Clerken Well (*fons clericorum*), and St. Clement's Well (*fons sancti Clementis*) are of most note, and frequented above the rest, when scholars and the youth of the city take the air abroad in the summer evenings." The Holy Well here referred to was originally a "sweet, wholesome, and clear" spring at Shore-ditch, which in Stow's time was "marred with filthiness purposely laid there for the heightening of the ground for garden-plots," and was afterwards entirely choked up. The well gave its name to a Benedictine Nunnery of St. John the Baptist near by, and High-street, Shoreditch, was formerly called Holywell-street. The site of St. Clement's Well is marked by the neighbouring Holywell-street in the Strand. Although many believed in the health-giving properties of these springs, others were more sceptical, and in Thomas Powell's "Tom of all Trades" (1631) is the following recipe for making a holy well:—"Let them finde out some strange water, some unheard of spring. It is an easie matter to dis-colour or alter the taste of it in some measure (it makes no matter how little). Report strange cures that it hath done. Beget a superstitious opinion of it. Good fellowship shall uphold it, and the neighbouring townes shall all swear for it." In a curious little book published in 1661, and entitled "Britannia Baconica, or the Natural Rarities of England, Scotland, and Wales," the author (Joshua Childrey) mentions two spas in London,—"The water of Crowder's Well (saith the author of Tactometria) on the back side of St. Giles by Cripplegate, and that of the Postern spring on Tower-hill, have a very pleasant taste like that of new milk, and are very good for sore eyes. But Crowder's Well is far better of the two. An ancient man (saith the same author) in London whensoever he was sick, would drink plentifully of this Crowder's Well water, and was presently made well; and whensoever he was overcome of drink he would drink of this water, which would presently make him

sober again . . . I have heard it reported (but I would have further trial made) that the water of the Postern spring on Tower-hill, being let stand for several days to settle will have in the bottom of it a yellow sediment, both in colour and substance." Crowder's Well is described by Maitland as still, in his day of great reputation, and its memory still lingers in Well-street. Crowder is the old word for minstrel, and survives in the surname Crowther. The proprietors of the various spas were not likely to allow them to remain unattractive, and we therefore find that some laid out gardens and built assembly-rooms for the benefit of their patrons; thus at St. Pancras Wells there were pump-rooms, a long room (60 ft. by 18 ft.) and extensive gardens laid out for the promenading of those who drank the water. In 1729 "Pancras Wells, with a garden, stable, and other conveniences," was to be let, and in the following year the new proprietor published a bird's-eye view of the place, in which the various buildings, the avenues of trees, the ladies and gentlemen walking about, Old St. Pancras Church, the hills of Hampstead and Highgate, and the various roads and footways to the spa are all carefully marked. The waters were "surprisingly successful in curing the most obstinate cases of scurvy, king's evil, leprosy, and all other breakings out on the skin," and Dr. Russel in his treatise on mineral waters describes them as considerably diuretic and somewhat cathartic. In 1769 the proprietor advertised as follows:—"St. Pancras Wells waters are in the greatest perfection, and highly recommended by the most eminent physicians in the kingdom. To prevent mistakes, St. Pancras Wells is on that side of the churchyard towards London, the house and gardens of which are as genteel and rural as any round this metropolis; the best of tea, coffee, and hot loaves every day, may always be depended on, with neat wines, curious punch, Dorchester, Marlborough, and Ringwood beers, Burton, Yorkshire, and other fine ales and cyder; and also caws kept to accommodate ladies and gentlemen with new milk and cream, and syllabubs in the greatest perfection. The proprietor returns his unfeigned thanks to those societies of gentlemen who have honoured him with their country feasts, and humbly hopes a continuance of their favours, which will greatly oblige their most obedient servant, John Armstrong. Note, two long rooms will dine two hundred completely."

St. Chad, the missionary, who introduced Christianity among the East Saxons, was considered after his canonisation as the patron saint of medicinal springs, and on the east side of Gray's Inn-road, near King's-cross, there stood a tenement called St. Chad's Well House, where might be drunk the waters which were once strongly recommended by the medical profession. When this place was frequented there was no King's-cross, and the neighbourhood was known as Battle-bridge, a name that originated, it will be remembered, in the tradition that Boadicea was taken prisoner here after a bloody battle with the Romans, and that King Alfred fought the Danes at the same spot. The characteristic name of Battle-bridge was superseded by that of King's-cross on account of an execrable stuccoed statue of George IV., which was erected by some persons of infinite bad taste, and is gibbeted in Pugin's "Contrasts." In 1842 the statue was cleared away. St. Chad's Well was at one time a favourite spa, and the prices charged for the privilege of drinking its healing waters were one guinea a year, 9s. 6d. quarterly; 4s. 6d. monthly; 1s. 6d. weekly; or 6d. for a glass. Hone writes in his "Every-day Book,"—"The miraculous water was aperient, and in years gone by was quaffed by crowds of invalids, who used to flock hither to drink it." The comedian, Munden, who lived at Kentish-town for many years, made a point of visiting St. Chad's Well

three times a week to drink the waters, and Sir Alan Chambre, at one time Justice of the Court of Common Pleas, did the same when he lived at the Mansion-house, Highgate. Mr. Alexander Mensall, who kept Gordon-house Academy at Kentish-town for fifty years, had great faith in the efficacy of the waters, for he used to walk with his pupils once a week to drink them, in order to keep the doctor out of the house. When St. Chad's had fallen to decay the charge for a glass of the water was reduced to one-halfpenny. In 1837 "the well-known and valuable premises, dwelling-house, large garden, and offices, with the very celebrated spring of saline water, called St. Chad's Well," were sold by auction at Garraway's Coffee-house, and in the particulars of sale it is asserted that "in proper hands it would produce an inexhaustible revenue, as its qualities are allowed by the first physicians to be unequalled." In 1840 the new proprietor (William Lucas) issued a handbill, and a pamphlet, in which the virtues of the spring are set forth with sufficient amplitude. "The celebrity of these waters being confined chiefly to its immediate vicinity for a number of years, the present proprietor has thought proper to give more extensive publicity to the existence of a nostrum provided by nature, through Divine Providence, approaching nearest the great desideratum of scientific men and mankind in general throughout all ages; namely a universal medicine. The frequently attested evidence of those relieved, and their fervent regret that the existence of such an immense benefit to mankind should be so little known, has been the cause of calling forth the present medium of communicating a source of relief to the sufferer." Further on it is stated, with very little regard to historical accuracy, that St. Chad himself was healed of a disease by these same waters.

We now pass on to notice a considerably more famous spa, viz., Bagnigge Wells. There is a tradition that Bagnigge II uso was once inhabited by Nell Gwynne, and that here she often entertained Charles II. and the Duke of York. In those days the old mansion stood on the green slope of a hill, and a clear river rippled through the pasture-land around it. After being inhabited by various tenants, it came into the possession of a Mr. Hughes, who found that the oftener he watered his flowers the worse they thrive; and this circumstance drew attention to the character of the water. In 1757, John Bevis, M.D., examined it, and found that there were two springs, one producing a chalybeate and the other a cathartic. Shortly after this discovery the proprietor opened his house as a public spa; and in 1760 Dr. Bevis published "An Experimental Inquiry concerning the Contents, Qualities, and Medical Virtues of the two Mineral Waters of Bagnigge Wells, near Pentonville, London." In the "Shrubs of Parnassus" (1760) are some lines entitled "Bagnigge Wells":—

"There stands a dome superb,
High Bagnigge; where, from our forefathers hid,
Long have two springs in dull stagnation slept;
But taught at length by subtle art to rise,
They rise, forth from oblivion's bed, their rise,
And manifest their virtues to mankind."

Bagnigge Wells owed their origin to the discovery of the medicinal waters, but shortly after they were opened the place was more frequented as a tea-garden, or minor Vauxhall, than as a spa. The gardens were extensive, and were ornamented with clipped avenues of trees and leaden statues, and in all directions little wooden Cupids spouted water in the air. Engravings were published of the gardens and pump-room, and the plays and verse of the time are full of references to them. In the prologue to Colman's "Bon Ton" (1775) we read,—

"Ah! I love life and all the joy it yields,
Says Madam Foppish, warm from spirituelle fields,
Bon Ton's the space 'twixt Saturday and Monday,
And riding in a one-horse chair on Sunday;
'Tis drinking tea on summers' afternoons,
At Bagnigge Wells, with china and gilt spoons."

Five years later a writer says,—

"The cists to Baginaze Wells repair,
To swallow dust and cas. it air."

It appears soon to have obtained a bad reputation as the favourite resort of light women, and we therefore need not follow its downward career any further.

Clerkenwell (which takes its name from the well where the parish-clerks of London used to meet) was long famous for its mineral waters and Sadler's Wells, the Islington Spa, or New Tunbridge Wells, and the London Spa were all in very close proximity to each other. On the site of Sadler's Wells Theatre there stood, in 1683, a wooden building, called Sadler's Music House. In this same year the proprietor, one Sadler, a surveyor of the highways, discovered in his garden, while digging for gravel, a mineral spring, which soon became celebrated for its curative properties. Sadler, with a keen sense of the best mode of catching his public, obtained the services of Thomas Guidot, a doctor of physic, to pull his well, and in 1681 was published,—“A true and exact account of Sadler's Wells; or, the new Mineral Waters lately found at Islington: treating of its Nature and Virtues. Together with an Enumeration of the chiefest Diseases which it is good for, and against which it may be used; and the Manner and Order of taking it. Published for publick good, &c.” The waters appear soon to have become popular, and we read of 500 or 600 persons frequenting it every morning. This success caused much jealousy among the proprietors of other spas; and in the same year 1681, there appeared an opposition publication, entitled “An Exclamation from Tunbridge and Epsom against the new-found Wells at Islington.” In spite of opposition, Sadler's Wells continued to prosper, and it has left its mark in literature. The following lines are from “A Morning Ramble; or, Islington Wells Burlesque” (1684):—

"People may talk of Epsom Wells,
Of Tunbridge Springs which most excel;
I tell you plainly, by my ten years' practice,
Those are good but I care none of;
To all distempers this gives ease."

In the prologue to Nahum Tate's farce, “The Duke and No Duke” (1685), the place is referred to in the following uncompromising terms:—

"I thought this season to have turn'd physician,
But now I see small hopes in that condition;
Yet how it should hire a Black flower'd Juniper,
And ply at Islington, doctor to Sadler's pump!"

Evelyn went in June, 1686, “to see Middleton's receptacle of water, and the new Spa Wells near Islington.”

Dr. Guidot states that, before the Reformation, the water was “very much famed for several celebrated cures performed thereby, and was thereupon accounted sacred, and called Holy Well. The priests belonging to the priory of Clerkenwell, using to attend there, made the people believe that the virtues of these waters proceeded from the efficacy of their prayers. But upon the Reformation the well was stopped up, upon the supposition that the frequenting it was altogether superstitious, and so by degrees it grew out of remembrance, and was wholly lost.” After its discovery again, in 1683, it appears soon to have been neglected, for in an advertisement of the year 1697, the statement is made that “Sadler's excellent steel waters at Islington, having been obstructed for some years past, are now open and current again, and the waters are found to be in their full vigour, strength, and virtue as ever they were, as is attested and assured by the physicians who have since fully tried them.” After this time little attention was paid to the waters, and the crowds that flocked to the place came to enjoy the varied entertainments that were provided for them. Nearly 100 years afterwards the position of Sadler's Wells Theatre must have been a retired one, for the various advertisements of the performances conclude with the information that “a patrol of horse and foot are stationed from Sadler's Wells Gate, along the New-road to Tottenham-court Turnpike; likewise the City-road to Moorfields; also to St. John-street, and across the Spa-fields to Rossmore-row, from the hours of eight to eleven.”

Islington Spa or New Tunbridge Wells has been confuted by some writers with Sadler's Wells, but it was altogether a distinct place. The points of junction of the parishes of Islington and Clerkenwell are not very well understood, and therefore it is that portions of Clerkenwell are popularly known as Islington. The famous Angel Inn at Islington is really, as our readers know, in Clerkenwell; and the Islington Spa, near

the New River Head, is also in the same parish. The date at which the spa was discovered, and the gardens opened is not known, but the place appears to have been in existence in 1685, for on the 21th of September of that year we find the following advertisement in the *London Gazette*:—“Whereas Mr. John Langley, of London, merchant, who bought the Rhinoceros and Islington Wells, has been represented by divers of his malicious adversaries to be a person of no estate or reputation, nor able to discharge his debts, which evil practices have been on purpose to ruin and destroy his reputation,” &c. In May, 1690, the *London Gazette* contains another announcement of this spa:—“These are to give notice that the well near Islington, call'd New Tunbridge, will be opened on Monday next, the 25th instant, during the whole season for drinking the medicinal water, where the poor may have the same gratis bringing a certificate under the hand of any known physician or apothecary. The coffee-house within the garden there is to be left at a reasonable rate.” The name of New Tunbridge was given to the Islington Well on account of the similarity that existed between the composition of these waters and those at Tunbridge Wells. The price of admission to the gardens was for many years threepence, and in 1691, Ned Ward published a burlesque poem, entitled “The Islington Wells, or the Three penny Academy.” The author visited the place at seven o'clock in the morning and he describes what he saw as follows:—

"Islington's renowned wells,
Where twice or thrice a week, most daily,
In the months of May, June, August, July,
Lawyers, divines, civilians, and Quakers,
The tradesman and his lovely spouse,
The country's youth and the Queen Blouse,
Tailors and other trades which rack
Invention to adorn the back,
Go there to make their observation,
Upon the dresses of the nation.
Of either sex, whole droves together,
To see and to be seen, flock thither
To drink, and not to drink the water."

In the following century the New Tunbridge Wells had become a most fashionable resort, and Lady Mary Wortley Montague took credit to herself for having made the efficacy of the waters known to the beau monde. In the year 1733 the newspapers appear to have been full of reports concerning the place, for in June the Princess Amelia and Caroline, daughters of George II., frequented the gardens daily in order to drink the waters. On these occasions the concourse was so great that the proprietor took above 30l. in one morning. On the birthdays of the princesses they were saluted with a discharge of twenty-one guns as they passed through the spa-field, which was generally filled with carriages. On the 8th of June the following piece of news was published:—“The surveyor of the New River Water-works had been to wait upon Richard Arundel, esq., surveyor general of the King's works, about making a commodious passage in the Cold Bath-fields for her Royal Highness the Princess Amelia to go to New Tunbridge Wells.” When the Princess left off visiting the gardens she presented the master with twenty-five guineas, and each of the water-servers with three guineas, and one guinea to each of the other attendants. In 1734 a poem entitled “The Humours of New Tunbridge Wells at Islington” was published, and the poet dilates upon the mixture of all ranks of society that was to be seen there:—

"Whence comes it that the shining great,
To titles born and awful state,
Thus condescend, thus check their will,
And send away to Tunbridge Wells
To mix with vulgar beaux and belles?
Behold the walks, a chequer'd shade,
In the gay pride of green array'd;
How bright the sun! the air how still!
In wild confusion there we view
Red rib, as ground'd with aprons blue,
Scraps, curls, s, bods, winks, smiles, and frowns;
Lords, milkmaids, duchesses, and clowns,
In their all-various dishabille."

The Spa continued to be a fashionable resort for some years after this date. At the end of one of the advertisements of the place in the *London Chronicle* (April, 1760), we read, “Ladies and gentlemen who come from Hanover and Grosvenor squares and parts adjacent may come to this place, without going over the stones, by striking into the new road from Portland-street to Islington, which makes it an exceedingly pleasant and airy road from all that part of the town and neighbourhood. N.B. There are very pleasant and commodious lodgings to be let with the convenience of walking in the gardens, which are laid out in an agreeable and elegant taste, and

boarding if required. The prices for breakfast are ninepence each person, and for drinking tea in the afternoon sixpence, and coffee eightpence; and no other liquors are sold at this place, which enables the proprietor to keep out all bad and improper company.”

In Dodsley's “London and its Environs” (1761) the Spa is noticed as follows:—“There is here also a spring of chalybeate water in a very pleasant garden, which for some years was honoured by the constant attendance of the late Princess Amelia and many persons of quality, who drank the waters: to this place, which is called New Tunbridge Wells, many people resort, particularly during the summer, the price of drinking the waters being 8d. for each person.” Soon after this the Spa declined in repute, and in 1777 the proprietor became a bankrupt, although a short time previously he had stated that the number of persons receiving benefit from the waters was scarcely to be credited; and George Colman had made one of his characters in a comic piece, entitled the “Spleen, or Islington Spa” (1776), say, “The Spa grows as genteel as Tunbridge, Brighthelmston, Southampton, or Margate. Live in the most sociable way upon earth—all the company acquainted with each other. Walks, balls, raffish, and subscriptions. Mrs. Jenkins, of the Three Blue Balls; Mrs. Rummer and family from the King's Arms; and several other people of condition, to be there this season! And then Eliza's wedding, you know, was owing to the Spa. Oh! the watering-places are the only places to get young women lovers and husbands.”

Attempts were made to bring the waters once more into fashion, and in 1783 *The Diary* contained the following puff:—“The virtues of the waters have been found so efficacious, as to have greatly established themselves in public opinion; so many have been the cures they have lately performed, that we cannot be surprised should we hear of Tunbridge in Kent being entirely deserted the ensuing season”; but the attempts were in vain, and the sun of their prosperity set for ever.

The London Spa, which gave its name to the Spa Fields, is reputed to have been known as early as the year 1206, but there is no authentic notice of it before 1721, in which year an elaborate puff of the establishment was published in “May Day, or the Original of Garlands.”—

"The well neglected, now each from the spring
Her pall fills up, the news to town they bring.
The noble flock in shoals who hear its fame,
To try its virtue."

Now nippin' allers and no skittles grace
The late forlorn and desolated place;
Arbours of jasmine, fragrant shades compose
And numerous blended companies enclose,
The spring is gradually adorn'd with rails,
Whose fame shall last till the New River fails."

There are views of the place about this date; in one a rural-looking building with outhouses and surrounded by trees, is shown; and in the other a fashionable company of ladies and gentlemen are seen standing by the well and drinking the waters. The water, however, soon appears to have become of secondary importance, and to have had little chance of favour in comparison with “the oft-famed flavoured Spaw ale.” In 1733 “Poor Robin's Almanack” states that,—

"Now sweethearts with their sweethearts go
To Islington or London Spa;
Some go but just to drink the water,
Some for the ale which they like better."

Although the London Spa never had the fashionable fame of the Islington Spa, yet it was a well-known spot, and several places were described as near it. Thus the *New Wells*, a favourite place of entertainment, was stated in the advertisements to be “near the London Spaw.” The New Wells Theatre was turned into a chapel by John Wesley, in 1752.

Near the Foundling Hospital were the Powis Wells, the water of which was used about the middle of the eighteenth century, both internally and externally. Our notices of the London spa have occupied so much space that we have but little room left to mention those of the outskirts. In 1778 an advertisement tells us that the Kilburn Wells were “in the utmost perfection, the gardens enlarged and greatly improved, the great room being particularly adapted to the use and amusement of the polite companies, fit for either music, dancing, or entertainment.” Hampstead was highly famed in the last century for its chalybeate spring, and large numbers frequented the village to avail themselves of the mild dissipation of the Long Room. It was to this place that Evelina went with her aunt,

Madame Duval, and the snobbish Mr. Smith. She told Mr. Villars, her guardian, that "this room seems very well named, for I believe it would be difficult to find any other epithet which might with propriety distinguish it, as it is without ornament, elegance, or any sort of singularity, and merely to be marked by its length." In Lamberton's "History of London" (1806) we read that "two other kinds of mineral water have been lately discovered, near Pond-street, by Mr. Goodwin, a skilful practitioner of physic in this village, who has published the analysis of them, from which it appears that one is a saline cathartic, similar in its quality and effects to that of Cheltenham; and the other of a sulphureous nature. It may be of importance to the inhabitants of the metropolis who require the use of mineral waters, to know that such as these can be obtained without the expense of a distant journey." At Tottenham there were two famous wells. St. Loy's Well was said to be always full, but the water never ran over, and Bishop's Well had the reputation of having performed some miraculous cures.

St. George's Spa was established as a place of entertainment on the discovery of a mineral spring about the middle of the last century in a field that now forms part of Bethlem Hospital. The place was afterwards known as The Dog and Duck, because the principal amusement to be obtained there was the cruel sport of duck-hunting. It was then an out-of-the-way spot; but,—

"Saint George's fields are fields no more;
The trowel supersedes the plough;
Swamp, huge and inundate of yore,
Are changed to civic villas now."

A chalybeate spring was discovered at Bermondsey at the end of the last century, and Bermondsey Spa was then converted into a tea-garden by the proprietor, Mr. Keys, who was a most ingenious man. In 1795 J. T. Smith, the author of a "Book for a Rainy Day," visited the Spa with the object of seeing the pictures which Keys had painted and exhibited there, and he was highly gratified with the sight. Keys told Smith that Sir Joshua Reynolds paid him two visits. "On the second, he asked me what white I had used; and when I told him, he observed, 'It is very extraordinary, sir, how it keeps so bright; I use the same.' 'Not at all, sir,' I rejoined, 'the doors of this gallery are open day and night; and the admission of fresh air, together with the great expansion of light from the sashes above, will never suffer the white to turn yellow. Have you not observed, Sir Joshua, how white the posts and rails on the public roads are, though they have not been re-painted for years?' That arises from constant air and bleaching!"

Here we close our notice of old London Spas with the remark that change of air and scene have as much to do with the cure of patients as the medicinal waters, and that as long as the wells were out of town they were frequented, but when they were built round, the public ceased to visit them. Now the external application of water is more esteemed than its internal use, and therefore baths have superseded spas.

"THE SHADOW OF DEATH."

THE large board which, bearing the above inscription, somewhat ominously overhangs the pavement of Old Bond-street, has by this time drawn numbers of people, including not a few of our readers, to the curtained and dimly-lighted chamber, where a silent and somewhat mysterious worship is paid to the work of art which its author has thus designated. The upper room at No. 39 B, is not (at present, at least) as ordinary picture-gallery. We go there solemnly, as if we were going to church, and criticise or admire in reverential whispers, or read in a devout and teachable spirit the painted record of the artist's labours, and his intentions, and of the lesson which his work, rightly interpreted, is to convey to the thoughtful spectator. This is something different enough, at least, from the annual Academy promenade; and one may readily admit that if a work has been the product of earnest study and thought,—if in it a great ideal has been realised,—it is thus that it should be studied, abstractedly and thoughtfully, and not amid a crowd of other works of varying aims and excellences. A painter who chooses to put his work to this severe test necessarily assumes that it does possess the qualities which warrant study of this kind, and challenges criticism, therefore, from this point of view. That

Mr. Holman Hunt's last work has been produced under the influence of a serious aim, and of careful and diligent study, we have his own assurance, in addition to such evidence as the execution of the painting affords; that he has found a public for it cannot be denied. The standing claimed for the work, and the attention directed to it, provoke consideration as to how far these claims rest on a genuine basis in principle, as well as in regard to the execution of the work,—a consideration which bears upon the motive and meaning of the painter's art generally.

"This picture was painted," we are told, "in the conviction that art, as one of its uses, may be employed to realise facts of importance in the history of human thought and faith." This idea of the value of realism in historic painting is, of course, only a part of the movement in that direction with which, as applied to written history, Niebuhr and Carlyle have familiarised us, and which Ruskin has advocated in regard to painting, in his suggestions (in rather curious taste) about Peter in his dripping coat, and Achilles "cutting pork chops," &c. The principle thus assumed is definite and logical enough, up to a certain point.

We are to seek to revivify the great characters of history, not in the light of the legendary halo cast around them during the progress of centuries, but by endeavouring to realise the actual tangible facts of their everyday life and action as it would appear to us if we could be suddenly transported back to the time in which they lived. In applying this principle to a representation of the founder of Christianity, Mr. Hunt is, in fact (though probably he and his friends would utterly repudiate the connexion), treading in the steps of Rénan and his school of historic criticism; or, rather, he would be doing so if he carried out logically the principle on which he professes to act. And a representation of Christ in his purely human aspect, as the humble and earnest worker, subject to everyday toil and anxiety, yet with the consciousness of a high mission expressed in his countenance,—a representation which should in any adequate degree assist us to realise this idea, would deserve to be called a great picture, and would certainly demand all the powers of a great artist, a man at once painter and poet; for such a representation, in the absence of authentic portraits, must evidently be as purely a work of imagination as any one of the numberless conventional representations which the art of painting has produced. This ideal attained, an attention to the archeological correctness of the accessories and details is a point which, far as there were facts to go upon, would give an additional interest to the picture, and would undoubtedly contribute towards a realisation of the outward conditions under which the character represented was placed.

But mere realism of details, even if attainable, will bring us no nearer what we really demand in such a picture, an adequate conception of the figure which is the centre of the whole history. In regard to the expression and character in the countenance of Christ, Mr. Hunt does not offer,—as far as we understand him, scarcely pretends to offer,—anything which can give us a new and more vivid ideal than we at present have. He professes to deal with facts only, and he can get no facts for the likeness of Christ. The face here presented to us can therefore have no more historic value, in spite of its being painted from an Oriental model, than any other representation which painting can show, and as an ideal representation, it is far below many; it is a commonplace countenance, and the sole suggestion in it of anything beyond the ordinary run of humanity arises, oddly enough, from a certain resemblance in the pose and outline of the head to some of the conventional representations of Christ, which have become, in a manner, sanctified to us by long association. But, to make up for this, we are presented with a saw taken "from early Egyptian representations of this tool," other tools "from a collection of ancient carpenters' implements bought at Bethlehem," a censer of *cloisonné* enamel, "used in the East at a much earlier time than that illustrated here;" and so on. But does all this bring us one whit nearer to what should be the main object of the picture? The most that can possibly be said is, that Christ, if he really worked as a carpenter (of which there is but very questionable evidence), may have used some such tools as these. And when we come to the incident which gives the title to the picture, the contrast between the profession of realism and the actual achievement is complete. That the

arms upstretched in fatigue should cast the form of a cross on the wall; that the shadow of the hands should approximate to the tools of spikes hanging there; that the mother of Christ should catch sight of this and read in it the prophecy of her son's future fate—what is all this but to confess that the apostle of realism in painting finds it necessary to invent a foolish and utterly improbable legend, in order to give to his picture a popular interest, which he is unable to achieve by legitimate means? A more unfortunate, not to say absurd contrast, between the artist's professed aim, and his actual treatment of the subject it would be scarcely possible to imagine. So far from the picture giving any new help towards realising the human personality of Christ, it is simply another contribution to the legendary history associated with that name, and the affected realism in regard to possible tools, vases, and wood-rests, can only raise it to the position of "a legend with a circumstance."

In regard to the execution of the picture, those who know Mr. Hunt's conscientious and painstaking manner of working will not find him fall much below his reputation in this work. The principal figure is one of the most noticeable studies of the human figure—spite of some questionable anatomy about the chest—which modern painting has produced; and the mother, kneeling with her head turned from the spectator, is more than this,—is a figure singularly successful in regard to complete natural ease of pose and action, as well as in the drawing of the hands, and the flowing lines and admirable texture of the costumes. But the work as a whole has the two faults of manner which have been so often unfortunately exemplified in the school of painting of which Mr. Hunt is one of the most gifted adherents—the ignoring of aerial perspective, and the want of concentration in the composition. The principal figure stands, as shown by the perspective of the floor, some feet in advance of the wall; but the upper portion of the figure in no way stands out from the wall, which at this point appears to be close behind it; and the eye is distracted in looking over the picture by the multiplicity of small incidents and objects thrust forward at every point, and all seeming to compete for notice. Such an attempt at literal realisation of a scene could only be really successful if a picture could be painted double, in the same manner as a stereoscopic slide, and the effect produced by the angle of vision of the two eyes be realised. No doubt objects in a room, and within a few feet of each other, do present themselves to the eye with almost equal prominence and clearness of detail. But when we paint on a flat surface, and have neither the angular measurement of vision, nor what the astronomers call "parallax," from change of position, to aid us in estimating distances, we must fall back upon a conventionalised aerial perspective (even where distances are not so great as to bring this into play in reality), in order to put subordinate objects in their proper places. The greatest masters of painting were perfectly aware of this necessity, the neglect of which by the modern English realistic school destroys all proper subordination in their productions, and causes the most insignificant details to press upon the eye with the same claim for attention as the principal figure, and necessarily to destroy or impair the effect of the latter, inasmuch that the very elaboration of detail intended to "complete," operates in the contrary direction, and a large proportion of the artist's labour and skill is actually expended in frustrating, as in this case, the very aim which he professes to have had solely and seriously before him.

We quit this picture with a feeling of regret that an artist possessed of unusual powers, enthusiasm, and earnestness, should have spent so much time and labour in an attempt which, however interesting and ambitious, must be pronounced a failure, aesthetically, because entered upon from a questionable starting-point at best, and not even carried out consistently from that point; and which is unsatisfactory in effect, as every picture must be in which the relations between actual objects projected in perspective, and their representation on a flat plane, are so unfortunately ignored. And we cannot avoid the reflection, that the time spent in the collection and study of details of Oriental *bric-à-brac*, of (we suspect) doubtful authenticity, might have sufficed to produce two or three paintings of far higher intellectual value than this one, could the painter only have realised more clearly what it was

which was most important to his subject, and have distinguished between what painting can and what it cannot adequately tell us. As it is, we stand before the work to learn the artist's idea, set forth to us in such lofty language in the printed analysis,—we admire the accurate representation of the muscles of the human frame, the, for the most part, correct drawing, the brilliant painting of texture, and sparkle of detail in dresses and accessories,—till, attempting to combine these into a living and intelligible whole, we find ourselves suddenly at the point beyond which the work has no further message to us, and in the words of the poet,—

"We start—for soul is wanting there."

LORD DERBY AND SCIENCE FOR WORKING MEN.

In this country it is said that national vanity has inspired a conviction that what we are, and what we have done, is due to ourselves, and is the indestructible property and inalienable heritage of our race; and it is quite certain that we do indeed think so, and not only think so, but do take opportunity to now and then say it as well. And till lately it seemed true. But truth to say, a change is coming over the world, so comprehensive and revolutionary that it may be fairly enough said, that the changing point of time in which it is occurring, will divide the history of the human race into two broadly marked and well-defined epochs, viz.,—the past, when every nation was an isolated individuality, and did all its work, whatever it was in its own way; and the future, when as we may fairly predict, every nation will hold intimate communication with every other nation, will interchange thoughts, and borrow mutually ways of work, and will work each one, more or less, in foreign materials. That this is all in the future, who can doubt? All things tend to it. No one will dispute as to the ways of the great past, from which the present has grown, and out of which again the future would have grown, had not this new disturbing or changing influence intervened. No time surely can be lost in the attempt to define these positions accurately, and to balance their so opposite merits and advantages; and Lord Derby, in his address at Manchester, when inaugurating the "Society for the Promotion of Scientific Industry," did somewhat to help us towards a right understanding of this momentous problem. As it occurred, that when talking of the past, the English past history and work, we might have looked to England alone; but when speculating on the future, the problem becomes cosmopolitan and world-wide; and every country, and mode of human work must be had well in view. Two more opposite influences could not be imagined. To go into such a subject as this thoroughly and from the very origin of it, would be well nigh impossible within moderate compass, but some few passing thoughts on it may become suggestive. It is very startling to hear some of the remarks recently made very boldly, and as if beyond possibility of dispute. We have now, men say, "no monopoly of mechanical appliances," and machinery can now be produced nearly if not quite as, some say more, cheaply in Belgium as in England. Will all admit this? Surely the general British impression is, that in machinery, and in all that machinery involves, John Bull is all but supreme, and has it his own way. It is the machine power, be it observed, that so cheapens all things, no matter much what; and the cheapness it is of England's "manufactured" goods, as Cobden loved to call them, that has secured to this glorious little island the "market of the world." It is not the form, and comeliness of the British-made hardware, and crockery, and ironmongery, that has made them cosmopolitan, but their cheapness; and their cheapness does not come of labour, human and intelligent labour, but of ingenious and powerful machinery. And here it is that we would venture to ask Lord Derby what he thinks would come to pass if but England on the one hand, with all her powers of producing cheaply common crockery, for example, had to compete, in the world's market, with such a place,—supposing it now possible that any such could exist,—as old Etruria, with its hand-made "ware," and its hand-drawn "ornamentation on it." We are speaking here for simplicity's sake, of the rough and simply useful, of which specimens from the old unmechanical times may be seen in the British Museum, and other collections, and occasionally

in fashionable auction-rooms; and the other, in the cheaper china shops, as in the New-cut, in Golden-lane, and round about Westminster Abbey, where the shadows are darkest and most picturesque. Is art, fine art, whether rough or fine, cheap or dear, no element in this question? and if it be, how must it in the future influence the "producing power"? In short, is cheapness simply even in common things and for ordinary people always now, and in the future, to rule the market? Must machinery in the future be everywhere and always triumphant and ride down everything? Must art come to be always and entirely machine-produced all the world over, the all but perfect engine doing the work?—for that is the real tendency of things, and one had almost said it, the hope of the future. Is art to become in the end entirely mechanical, and machine-produced, and is the artistic hand of man to hang down by his side a useless burden? No science, be it here observed, can here avail; no "chemistry" can do the work of expressional feeling, manifesting itself through the obedient hand. No subtle chemistry or marvellous mechanism can paint a picture, or even mix the colours on the palette. We know not how a greater boon could be bestowed on the men and women of this generation than that of pointing out, definitely and clearly, what the machine can do, and what it cannot do. It can certainly plough a field, but it cannot paint the hedge-row which it has ploughed up. It can, indeed, coin the gold, and count it afterwards with unerring certainty, but it cannot invent or draw the "head" on it. It can manufacture the paper by the mile, and print on it afterwards, but it cannot suggest the printed matter. Science is as helpless here as the machine it has brought into being; and the foreigner, and even the German, who is now running us so hard to all appearances, is on a fair level with the Englishman. There is no escape from the difficulty here indicated. There is, and must be, a something more in the world's destiny than a triumphant mechanism doing all things, and in its perfection and completeness making the land of man, as far as production is concerned, all but useless. By joint action, says Lord Derby, triumphantly, instead of isolated action, by following the rule of doing nothing for yourself which you can get nature, or a machine, to do for you, we have already succeeded in making our 22 millions, "including women, children, and even the helpless of all sorts," do the work of at least 500 millions of able-bodied men! What more can be said? But can the soul of man live on such inquiry that is still more perplexing, and one that has hardly been thought upon with that care which its immense importance demands. It goes to the root of this inquiry, and must puzzle those who, with Lord Derby, are so earnestly bent on educating the working man in the principles and mysteries of science. It is that of the division—the almost, in some cases, infinitesimal "division of labour."—division carried so far, and so completely, that the man doing any certain work cannot fairly be said to know, or even to care, what it is for! He is all day long doing some small addition of work to the small end of the fragment of a machine. He is perpetually repeating the simple and, by itself, useless process. He works with the speed and regularity of a machine, and his hand vibrates like the pendulum of a clock. He can hardly go wrong. No science is to him, and for this special purpose, necessary, however much it may be so to the original contriver of it, is too simple and isolated. It may be almost likened to the production by one man of the cogs of a wheel: he knows not what the wheel, when finished, is to do, or where it is to go. Adam Smith, in the very commencement of that wonderful book which inaugurated the economical era, and pointed out the road to free trade, dwells on the immense importance of this division of labour; and affirms that, by the use of it, one man can do the work of ten, and illustrates his position. Nay, he does more than this: he affirms that not only is some ten, or twenty, or fifty times more work done, but it is better for the workman himself. His mental labour is less, and his muscular efforts are less exhausting. Indeed, to speak plainly, he needs for his work to have no head at all. We might illustrate this from personal observation in a thousand ways, but it is needless, for every advanced and scientific trade or manufacture will illustrate it to any one who is curious on the subject. Any kind of patent machine will illustrate its action. Pin-

making, cited by A. Smith himself, lock-making, the sewing-machine, which has worked almost as wonderful a revolution in society as the steam-engine itself, descending as it does into the lowliest abodes, and winning its wages where nothing else would, not even match-making. Match-box manufacture, and small sights to see in the excess of its humility and simplicity and in its smallness of pay, and in the tender ego of its workmen and workers, but nevertheless involving and containing in itself more of scientific mystery than Newton could fathom or explain, or than the mystic could dream of. We could go on, but all can easily see these things for themselves, and at small trouble if they care to do so. We are not here even hinting at a neglect of scientific teaching, even to the workman who is moving his hands as a machine, and with what Ruskin has called "paralytic regularity." But may not its importance and necessity to such as the workmen, as they at present are, be very much exaggerated? That the man acquiring it needs to be helped on his way, and made a more powerful instrument in the perpetration of British commercial greatness and supremacy, is true. It might do good, and might make him a more powerful rival to his German confrère. Science, advanced science, may indeed do infinite good, like high art, but must not the circumstances and surroundings favour it first? The maker of a pin's head only, and at it all day long, and every day, and doing nothing else, not forming the body of the pin even, for the sake of variety, and change of bodily movement, how could science, or even art, affect him? But take from such the "division of labour" power, and put before him the gold wire, and put him to work as the Hindoo workman in his simplicity works, then indeed will the science of "applied metallurgy," and applied fine art as well, do him right good service, and he becomes an artist-workman, and science will be to him at once applicable and intelligible and interesting and useful! But then he cannot make pins for the whole world, while that world is doing something better perhaps, and more profitable, and more "advanced." A curious problem this, and we should urge Lord Derby, who is a thoughtful man, to think it out, and tell us what he concludes from it. It is worth a little thought, for the future lies in it. Free Trade, good as it is, has perhaps driven the world a little trade-mad, and forgets that man after all with all his shortcomings is something more than the human and organised end of a dead machine,—digging, and manufacturing, and carrying, and buying and selling. The "mute wonder" in his soul and in the world will every now and then assert itself. To do this takes up time, and time, we all know, is "steady work." But, again, there is one other consideration which may perhaps afford a hint to those, so many and influential, who are taking so much interest in the coming fortunes of the working man. It is the strange fact, for singular enough it is, of the uniformity of wages. Profits, as we all know, vary almost infinitely as trades and manufactures vary; but wages are pretty nearly uniform. Some of the lower kinds of mechanical work command as high a price as some of the most skillful and ingenious. And, what is even more momentous to the workman, this uniformity of wages appertains to the workmen generally in each individual trade. It is really surprising to find how wide apart men are in the same trade, while their wage is uniform. We have known some remarkable instances of this, and have wondered how it is that the price paid does not vary more with the character of the work done, and with the artist's—if we may use the word thus generally—value of the final result. Has machinery increased the force of this uniformity? Is the individual power of the workman in the future a thing to be prized and encouraged, or no? We confess we think it is, and that artistic power, even in a workman, is a higher ideal than a perfected machine, with a man, even if ever so scientific, by the side of it, and with his hand every now and then on a lever! We would commend these few thoughts to the consideration of the Scientific Industry Society, and their noble and accomplished president.

"Old Work at Whitehall."—With reference to a paragraph thus headed, Mr. Lord writes—"In the corner house nearest the Home Office was a panelled library with carved enrichments, and a remarkably well-modelled stucco (not carved) ceiling, the whole being a perfect specimen of Inigo Jones design."

SAVING THE TOWER AT ST. ALBAN'S.

At the last meeting of the St. Alban's Archaeological and Architectural Society, an account was given by Mr. John Chapple, the representative of Sir G. G. Scott, at the Abbey, as to the recent works. We give some notes referring to the central tower; a subject always interesting on account of the unique character of the building once in such jeopardy, but now one would hope safe for many a long year. The story was carefully told in our pages, as the result of close observation, when the critical time was just past,* but it will bear looking at again from a new point of view, and after this lapse of time. Perhaps we ought not to omit to mention that students of St. Alban's will for the future feel themselves indebted to Mr. Chapple for his painstaking plan of the Abbey church, to a scale of an inch to 32 ft., contributed to a little work recently published by Mr. R. Lloyd, one of the secretaries of the St. Alban's Society, "An Account of the Altars, Monuments, and Tombs, existing in 1428 in St. Alban's Abbey." This is a translation of three Latin documents (given in vol. i. of J. de Amundesham's "Annales," edited by Mr. H. T. Riley), illustrated with references to other works, and notes as to the actual buildings; altogether a useful piece of labour conscientiously done.

Mr. Chapple commenced by describing the course of discovery of the insecure state of the pier, on the north side of the Presbytery (13th August, 1870). Mr. G. G. Scott advised on that day that the pier in question should be immediately secured by shoring an arch on its eastern side; that the superincumbent triforium and clerestory should be supported by needling, and that the crumbled brickwork of the pier should be removed in small portions, and the pier itself reinstated on a larger scale with sounder materials. Mr. Miskin, of St. Alban's, was employed, and by him as contractor the restoration of the Abbey has hitherto been satisfactorily carried out. The fixing of the necessary shoring occupied until the 26th August, on which day the first portion of brickwork was inserted. The north and south walls of the presbytery had been pierced with two very large openings, splayed so as in each instance to form a huge hagio-scope, and cut in such an unscientific manner that the bond of the wall had been entirely destroyed. Thus, at this critical point both arcades were materially weakened, and rendered less able to resist the lateral thrust of the great central tower. The openings had merely been eased with brickwork; and the half-piers projecting into the presbytery were also cut away. The surfaces of the walls west of the communicants' step, as now in position, were lined with wainscot panelling, of the date, as written on the back of one piece, 1605. It became necessary to remove this panelling on the north side, when a very great danger was revealed, no less than the bursting of the north-east pier of the tower, and the crushing of the north wall of the presbytery. It was also noticed that the beautiful chantry of Abbot Ramryge, situated still farther east than the work in progress, had, during the previous fortnight, shown evident fractures and dislocations. Its groining had been split open longitudinally; one half of the structure leaning towards the sacrum, and the other half towards the north aisle. In addition to this the west wall of the chantry had been thrust to the extent of an inch towards the east. Such unmistakable signs of subsidence could not be disregarded; the immediate shoring of the large eastern arch of the tower, and the repair of the north-eastern and south-eastern piers were also ordered.

The tower, from its enormous bulk, being the heaviest in the kingdom, and its dimensions at 100 ft. in height, being no less than 46 ft. by 48 ft., with walls of that height of 7 ft. 4 in. in thickness, required shoring of great scantling and in large quantity. The shoring was necessarily attended with some little difficulty, particularly as it was necessary to avoid, as much as possible, proximity to the piers, in order to allow free access by the workmen to the crushed parts. Owing to the nature of the works, and the risk of a sudden slip of the tower, it was considered desirable that divine service should be discontinued in the choir and transepts, and should be held in another part of the Abbey. Accordingly the nave was hastily fitted up, and the first

service in that portion of the Abbey for a long period of time, was held there on Sunday, 16th of October, 1870.

As the result of an examination into the state of the foundation of the south-east pier, it was discovered that a hole had been made in it at some remote period, presumably subsequent to the middle of the sixteenth century, of such magnitude, and in such a direction, that it seemed a sort of miracle that the stupendous structure had kept standing. Some decayed pieces of wood found in this hole had evidently been used as props, thereby enabling the excavators to proceed further with their work of destruction, until the whole pier was pierced nearly through, and the excavation was sufficiently large for a man to creep into the orifice. It is recorded that this mode of rapidly destroying large buildings was in some instances resorted to. When the excavations had been made to the very verge of safety for the operators, the wooden props were fired, and as they were consumed the whole structure collapsed. This large hole was filled with brickwork in cement, and the additional precautions taken to fill up the interstices occasioned by the irregular nature of the excavation with liquid grout, and the whole was surrounded to a depth of several feet with a bed of cement concrete. The foundations of the walls and piers of the Norman structure wherever they have been exposed to my observation, are about 7 ft. 6 in. wide, built in continuous walls throughout the whole length of the building,—thus better calculated to resist pressure than if each pier were built on an isolated base. The materials used in these foundations are flints well grouted, with occasional layers of Roman tiles; in fact, much resembling in form the Roman wall to be seen on the east side of the site of Verulam. The piers are built of tiles, these tiles not being continuous all over the area of the pier, but forming an outer casing only; the centre, or core, is formed of concrete composed of flint and rubble, with a very large admixture of lime. This was the common mode of building at this period, and indeed for some centuries later. To its imperfection is due the decay and ruin of many a noble building. The tower piers were so built. Had they been left alone they might have done their work for all time; but, at some period the desire arose to obtain more available space within the tower; and, in order to accomplish this, two members of each pier on each inner face under the great arches were cut off. This nearly proved the ruin of the whole building. The piers were seriously weakened by the removal of this outer casing (which had been done to a height of 30 ft.); leaving exposed on two surfaces of each pier the concrete core before referred to. There is, commencing at about 18 ft. from the ground, a zone of about 8 ft. in depth, where the mortar of these piers is of a less cohesive nature than elsewhere. As all the four piers at this height have this peculiar mortar, this portion may have been erected in the winter, when the action of frost, or continued rain, caused disintegration, or the perishing of the lime. It is certain that this weaker zone occurs; and in its depth in the north-east pier the crushing took place. The concrete was pulverised; the tower gradually leaned to the weakest corner, and eventually burst open, causing rents from the crowns of the northern and eastern arcades, extending upwards through the outer arches, the bell-chamber windows, and through the parapet. In examining this (the north-eastern) pier, a 10-ft. rod was passed, the greater portion of its length through this weaker part, diagonally and at upward angles into the largest fissure. Here was unmistakable evidence of the likelihood of the collapse of the tower; that it would be a question of time only, and that probably short: especially was this the case when considered in connexion with the fact that from some 200 tests applied at various points, it was evident there was a slow movement going on. These tests were broken again and again. It was determined to insert double shores and trusses to each arch of the tower, and triple trusses in the arches of the presbytery aisles. Measures were at once taken to effect this; and while they were proceeding (13th January, 1871), it was seen, from the further crushing of the north side of the presbytery, and the buckling and cracking up of the groining at the same place, that the tower was still sinking. Everything possible was done to avoid a catastrophe. Arches were hastily bricked up to resist the thrust; raking shores of heavy balks were inserted at every available point; yet the tests still broke, and the ceiling of Abbot Ramryge's chantry opened

further. A cluster of heavy balks planted deep in the ground as raking shores from the north-east, bent as bows under the pressure; the north-east pier crumbled until there was a continuous shower of dust and small particles around it; and certain indication of a crushing up. At length, after many days' and nights' continuous labour, all of which time the workmen stuck bravely to their posts, it was ascertained that the downward progress of the tower was arrested, and that the great trusses in the northern and eastern arches were doing their work handsomely. They had caught the shifting mass, and were upholding it.

The repairs were after this systematically proceeded with. The foundations in the north presbytery aisle, next the tower pier, were found to have been injured by excavation for interments. A great mass of cement concrete, the whole width of the aisle, and of a depth down to the chalk, was here inserted, and well rammed down; then the missing members of the piers were carefully built, one pier only being done at a time. The materials used were hard bricks in cement, with hard York self-faced landings in long lengths, inserted at frequent intervals. Iron ties were also freely used. These ties, before being fixed were heated, and, while hot, steeped in oil to prevent corrosion. Such was the state of the north-east pier that at one particular place it was found necessary to take out the old work to a depth of 7 ft. into the pier, then presenting the appearance of a large cavern. All the old work was well saturated with water, and at every two layers of brickwork, liquid cement grout was used in abundance, completely filling up every crevice. This method of repair was continued, wherever necessary, throughout the whole height of the tower. On the northern and eastern faces a considerable number of York bondstones were used across the rents, and the whole grouted. The walls of the entire structure thus became, as far as possible, once again a solid mass. At four stages, viz., at the triforium, the clerestory, the ringing-floor, and the bell-chamber, a system of strong iron bolts was inserted, passing in every instance through holes specially bored through the walls; the heads of the bolts pulling against massive iron flanges, with triple lead washers. These thirty-two bolts were drawn together with sixteen right and left handed nuts, screwed up by gangs of men simultaneously.

New stone arches and oak louvers were fixed to the tower windows, and the upper stringcourse removed in Chiltern stone, a durable material, taking the place of the perishable clunch or Tottenhoe stone used originally. In repairing the walls of the tower externally, it became necessary to remove the greater portion of its coat of plastering, and much controversy arose as to whether this feature should be maintained, or the Roman tiles left exposed and pointed. Many were the arguments *pro* and *con*. After some delay the question of plastering *versus* pointing was set at rest by a verdict in favour of the latter, and the success was such that there cannot now be two opinions as to the wisdom of the decision. Every angle of the structure is now exposed to view, the Roman tiles are acquiring a weathered tint pleasing to the eye, and the vast pile presents, owing to the unity of character of design and material, a unique appearance of rugged grandeur.

Internally, the tower floors had become rotten and unsafe; many of the main chestnut timbers were much decayed. The bells hung, with broken wheels, in a sadly neglected state, and their whole weight was concentrated on the weak north-east corner. The floor of the ringing-chamber was therefore renewed, as well as that of the bell-chamber. After repairing the beams and joists, and inserting new stone corbels, battens ploughed and tongued were put down, thereby rendering the tower more rigid. A new bell-frame was constructed and fixed in the south-west corner, and the whole pile received an entirely new set of fittings by Messrs. Warner & Sons, of Cripplegate. The 21st of December, 1871, was a day to be remembered by those fond of campanology, for then the College Youths rang out a glorious peal. Forty years had lapsed since the bells had been rung; none but the old and middle-aged had heard their sound, except when chimed.

In the presbytery the floor was concreted, and the historical monumental slabs relaid in the positions they originally occupied. The missing half-piers in the north and south arcades were replaced. The two openings, mentioned before as damaging to the tower, filled up, and the two

* See vol. xxix., p. 137.

ancient doorways in the first bays eastwards from the tower were re-opened and repaired, after having been closed and disused for two centuries and a half. Over the south doorway was erected the beautiful tabernacle work found behind the panelling some years ago. On the north side a similar structure has also been erected. Some blocks in the wall indicated that such had been there originally. The pinnacles and a finial of this structure were subsequently found embedded in the north screen of the Saints' Chapel. They differ in detail, however, from those on the opposite wall, although agreeing with them in general character.

In repairing the chantry of Abbot Ramryge, only the necessary work was done in order to make it secure; the mutilated details tell their own tale. The original incised slab of the Abbot was brought back, and refixed in its former place in the chantry. This had been smashed, and removed to the south presbytery aisle, thereby opening the grave of the Abbot, and giving facility for the interment of the family who appropriated the chapel.

THE GREAT EASTERN METROPOLITAN EXTENSION RAILWAY.

OPENING OF THE LINE TO LIVERPOOL STREET.

The Great Eastern Metropolitan Extension Railway, which has been in course of construction for upwards of three years past, will be opened on Monday next to the main new terminal station at Liverpool-street; but for the present, and until the building of the large new station is completed, the suburban traffic is the only part of the general traffic of the company which will be sent over this extension. The extension lines are carried to Walthamstow, and the portions of the lines between that point and Norton Folgate, where the new low-level Bishopsgate station is situated, have already been for some months opened for traffic. Some portions of the work have been unusually heavy, especially those parts extending from the Bethnal-green Junction, and the final terminus in Liverpool-street, between which points the clearing away of property and the excavations have formed one of the heaviest portions of the undertaking. From Norton Folgate, in the direction of Bethnal-green, the line passes between deep retaining walls for a considerable distance, crossing in its progress under Commercial-street, by a cast-iron segmental skewed bridge.

The completing portion of the extension line to be opened on Monday next to Liverpool-street is a little more than half a mile in length, which passes entirely through a deep open cutting, until it enters the enormous station area of nine acres in extent. From the low-level Bishopsgate station the line passes under Bishopsgate-street, and thence under Worship-street by two archways on the skew, with two lines of rails laid in each. From this point it passes through the open cutting already named. It perhaps may here be stated, with a considerable degree of truth, that the immense demolition of property which the construction of the railway at this point involved, has conferred considerable advantages on the district, both on moral and sanitary grounds, by getting rid of the vast labyrinth of odious and fetid lanes and alleys,—hotbeds of fever and pestilence, and the abode of the most criminal and degraded classes, which formerly covered the area through which the railway is carried to Liverpool-street. During the excavations here several bones were found, one of which was an immense bone, supposed to have been that of a whale, which was found in a thick stratum of gravel. The largest portion of this bone was more than 2 ft. each way in its largest dimensions.

Shortly after emerging from the open cutting, the line passes under a stupendous iron girder bridge, carried across the railway at a considerable elevation, and carrying Primrose-street. This bridge, the roadway of which is now approaching completion, is undoubtedly one of the most striking engineering features connected with the works. It is an immense single-span girder, 190 ft. in length, supported and tied together by massive and lofty box girders, rising to a height of 14 ft. above the roadway, forming an unusually high parapet on each side, and closely resembling the sides of the London, Chatham, and Dover Company's bridge from Ludgate-hill to Blackfriars. On the main cross-girders of the bridge supporting the roadway are

laid a series of iron arches, six of these arches, extending across the carriage-way, and one on each side about 1 ft. higher than the last-named for the footway. Over these iron arches a bed of concrete about 1 ft. in depth has been laid, and upon this wood pavement is to be laid down for the carriage-way, and asphalt pavement for the footpaths. In proof of the strong and substantial character of the structure, it may be stated that, when the scaffolding upon which the bridge was built was removed, a few weeks ago, there was not the slightest deflection. Immediately under the bridge a large signal-house has been erected on the railway level, which contains 100 levers. Proceeding in the direction of Liverpool-street, Skinner-street is carried over the line by another iron bridge, supported at each end by massive brick pillars, and in the centre by three iron columns resting upon a stone basement. Both bridges are constructed the full width of the other portions of the two streets.

The whole of the station area will be covered in from the last-named bridge to Liverpool-street, the entire length of the station from Skinner-street to Liverpool-street being upwards of 1,000 ft., with an average width of 290 ft.; thus occupying a superficial area of about 32,000 square yards. The platform levels at the station will be about 11 ft. below the level of the roadway at Liverpool-street, and access to them will be by easy inclines. Within the last three weeks the building of the new station has been vigorously proceeded with, and the works are intended to be pushed forward with all possible speed. Meanwhile a neat and commodious temporary station has been erected for the accommodation of the suburban traffic.

It may be remarked that the area of this suburban traffic is in itself one of considerable magnitude, and will necessarily bring an enormous number of passengers to and from Liverpool-street, which traffic has hitherto been limited to Shoreditch. It includes all the several districts of Homerton, Hackney, Stoke Newington, East Hamsey, Tottenham, Edmonton, Enfield, Buntingford, Hertford, Brookmans, Cheshunt, Lea Bridge, Buckhurst Hill, Chingford, Walthamstow, Leightonstone, Snaresbrook, Woodford, Loughton, Epping, Stratford, Brentwood, Rowford, Ilford, and several other places in the surrounding districts.

The whole of the works have been designed and carried out under the superintendence of Mr. Edward Wilson, C.E., the contractors being Messrs. Lucas Brothers.

From the proceedings which took place at the half-yearly meeting of the Metropolitan Railway Company, held last week, it appears that new buildings on a rather extensive scale are about to be erected by the company in connexion with the extension line from Moorgate-street to Liverpool-street and Bishopsgate-street, now in progress. They include the erection of a hotel, with shops and offices at Moorgate-street, adjoining the Moorgate-street Station; and also the building of new offices and chambers over the new station about to be erected for Bishopsgate-street.

SANITARY AND INDUSTRIAL QUESTIONS AND THE GENERAL ELECTION.

THE last number of the *Builder* had not been many hours in the hands of our readers, when the political storm which we had ventured to predict burst in the thunder-clap of the announcement of a General Election. Throughout the length and breadth of the kingdom are now to be heard the din and bustle of preparation and of contest. Into the party questions it is not within our province to enter. But with regard to those great subjects of national importance, the sanitary and the industrial questions, we may be expected to give a word of advice.

The opportunity is offered to the earnest and thoughtful friends of health and of industry, to exert an influence that may tell throughout the entire course of the duration of the new Parliament. Candidates, supporters, and those useful persons who put ugly questions to candidates, may all do good service to the country by a little straightforward and energetic action. Let the points be put, as regards the political professions of those who seek for seats,—that sanitary questions, in the new Session, shall be argued on sanitary principles, and not made subservient to party politics; that industrial questions shall be treated on the broad principle of virtual equality before the law,—not on that

of counting noses, or weighing sovereigns, but with the one common object of securing a working and practical state of the law. Months of debate may be saved to the country if these two primary principles of common sense can be established as accepted features of the programme of the new House of Commons.

THE AREA IN FRONT OF ST. PAUL'S AND THE NEW CHOIR SCHOOL.

THE intimation we were able to give as to the intended throwing open of the area in front of the cathedral last Monday, though the correctness of our statement was denied at the meeting of one public body in the City, was carried out to the letter. At the same time the corner-stone of the new Choir School, in connexion with the cathedral, situated at the back of the deanery, was laid by the Dean. The stone, which had formed part of the cathedral itself, bears the following inscription:—"Ad honorem Dei Omnipotentis et ad profectum: sancto matris ecclesie lapidem hunc angularem domus in usum puero-rum chorastasis Sancti Pauli Londinensis edificande postried Festi Conversionis Sancti Pauli MDCCLXXIV., posuit R. W. Church, Decanus, adstantibus: Fratribus, Roberto Gregory, Canonico; Henrico P. Liddon, Canonico; Josepho P. Lightfoot, Canonico; Fiacro C. Cloughton, Canonico; Alberto Barff, Magistro Fuororum; Francisco C. Penrose, Architecto."

REFORMATION OF LEICESTER SQUARE.

THE good news we were able to make known last week, a day before any other journal, was confirmed on the following day by the publication of Baron Grant's letter to the Board of Works. In this the writer adds to what we said:—

"In anticipation of final arrangements, I had plans prepared by my architect, Mr. J. Knowles, for laying out the grounds as a public garden, and these plans are being carried out by Mr. John Gibson, who, as the designer of the sub-tropical Gardens at Battersea, and other works, is favourably known; it is also my intention to enclose the square by a handsome railing, and in the centre to place an ornamental fountain, both specially designed for the purpose, and to provide seats for the public capable of accommodating about 200 persons."

The completion of the arrangements with the owners of certain rights in the square, depends on the passing of a Bill promoted by the Board of Works, in the progress of which a check has occurred. The daily papers say that opposition being raised before the Examiner of Standing Orders by the vestry of St. Anne, Soho, as owners of a seventh undivided share of the property, on the ground that they had not been properly served with notices, and that the Board intended to take land outside the railings, and now forming part of the public street, the Examiner decided that the Standing Orders had not been complied with, inasmuch as the Bill contemplated taking land not within the enclosure. This may possibly be got over by motion to suspend the orders. The vestry of St. Anne, Westminster, deny having anything to do with this.

Meanwhile, outsiders are inquiring whether persons employed to draw Bills have any excuse for not preparing them to meet the requirements of Standing Orders.

"ILLUMINATIONS."

ON the occasion of the recent Royal marriage, in St. Petersburg, Messrs. Defries & Sons had the appointment for carrying out the illuminations and decorations there. It was the first time that illuminations of crystal, with emblematic devices, ribbons, laurels, and mottoes, were introduced into that country, the Russian mode of illumination being merely small tumbler full of tallow, or what they call fat pots, and a few gaspikes pierced with holes. The English Embassy in St. Petersburg was a remarkably fine sight. The illuminations in London with naked gas on that occasion, were little else than despicable; the want of a proper supply of gas rendering the majority that we saw mere rags and tatters, without form or beauty of any kind. Either the gas company or the gasfitter is to blame in such cases, and should be punished. It is quite time it were clearly understood where the blame should really rest.



THE DEATH-PLACE OF THE LATE BISHOP OF WINCHESTER.

THE DEATH-PLACE OF THE LATE BISHOP OF WINCHESTER.

A cross of Cornish granite is just now in course of erection at Evershed's Rough, by Mr. Gilliam, of Dorking, to mark the spot where the lamented Bishop Wilberforce was thrown from his horse and killed in July last. The Bishop was on his way with Lord Granville, it will be remembered, from Leatherhead to Holmebury, and the site of the disaster is not far from Dorking.

A mass of concrete 10 ft. square and 5 ft. in depth, forms the foundation, and the monument is let into this to the extent of 3 ft., standing 10 ft. out of the ground. The monolith is 2 ft. 8 in. wide at the bottom, and 1 ft. 6 in. thick, and has on the head of it a floriated cross, with the initials S. W., traversed by a bishop's staff, below, and the date, July 19, 1873, all projecting from the face of the monument. It was designed by one of the Bishop's family, and was supplied by Mr. C. M. Manuelle, of Fenchurch-street; costing about 40l. independently of the foundation and setting up.

PUBLIC WORKS IN GREECE.

Of late considerable progress has been made in Greece, and many long-talked of schemes of improvement are about to be realised, while numerous important undertakings have already practically been set on foot. Of great importance amongst such undertakings is the scheme of cutting a canal through the Isthmus of Corinth, which has been much discussed as a panacea which, by opening a transit trade, may restore prosperity to Greek navigation. The scheme also involves the construction of docks in the canal, and a town and warehouses on its banks. In order to carry out the work, it is proposed to use a new excavating machine, invented by M. Vaudevinne, and it is expected that by this means the work can be accomplished in a short period of time. The breadth of the Isthmus, in the part where ships were drawn across in ancient times, is stated to be only three miles and a half. The canal is to be 40 metres wide, and $3\frac{1}{2}$ metres deep. The promoter only asks for the concession of 5,000 acres of land on each side of the canal. The

principal object of the enterprise is to establish a port of transit to rival Syra and Constantinople, and to form a new centre for Greek carrying trade in the Levant. One of the principal impediments to Grecian progress has been the want of roads, and without these the construction of railways,—a work which is actively pushed forward,—will not have much effect upon the material prospects of the country. A considerable sum of money has been annually disbursed by the State for the last forty years for the purpose of making roads, but very few have ever been constructed, and the number of really practicable roads in the country is ridiculously small. Railway enterprise, however, is most active. Three important new lines of railway are to be constructed. The first is to run from Athens through Thebes and Livadia to Larissa, near the frontier, a distance of about 140 miles, and thus when connected with the Turkish lines bring Greece into railway communication with the rest of Europe. The Government provides the land for the construction of the line, and also pays a sum of 15,000,000 frs. If the net earnings of the line exceed 7 per cent.,

he Government is to be reimbursed at the rate of 2½ per cent. yearly on the sum advanced, until the entire amount is paid off. It is said that the construction of the new line presents little difficulty, and that its cost will be about a million sterling. The second line to be constructed will start from the Piræus, and will pass through Eleusis and Megara, and across the isthmus to Corinth; thence to Vostizza, Patras, and Rhion. There the trains will be carried across the Antirrhion on the other side of the gulf of Corinth, whence the line will proceed to Missolonghi and Vonizta, and terminate at the gulf of Arta. One of the objects of the line is to compete for the Indian traffic, and if it had been started from Porto Rapti, on the *Ægean Sea*, as was first contemplated, the journey from London to Alexandria would have been very considerably shortened. According to the convention concluded for the line, the Government has the option of guaranteeing an interest of 6 per cent. on an estimated cost of 120,000 francs per kilometre, or of paying the sum of 18,000,000 francs, in which case this amount is to be reimbursed at the rate of 2½ per cent. on the amount yearly, supposing that the net earnings of the railway exceed 6 per cent. The concession for both lines is for ninety-nine years, and they must be completed within three years and a half from the end of June, 1873. The third railway concession has been granted to an English firm, and is for the construction of seven important lines in the Peloponnese. As soon as the convention is ratified by the Chamber, the constructing company is to deposit 5,000*l.*, which will be returned immediately 30 kilometres of railway have been completed. The land required for the construction of the line, and for stations, &c., is granted free to the company, which has the right to all minerals found within 5,000 metres on each side of the line, paying to the Government 10 per cent. upon the profits derivable therefrom.

MR. COLE AND MR. LOVE.

At the Kidderminster School of Art on the 23rd inst., Mr. Henry Cole distributed the prizes to the successful students. At the invitation of the committee he examined the state of science and art instruction in Kidderminster. He advocated the erection of suitable premises for classes to be taught chemistry and other sciences, including music; and for the School of Art also galleries to exhibit pictures, and a technical museum illustrative of the history and processes of carpet manufacture. He expressed the opinion that it was the duty of the Government to make building grants to the extent, at least, of one-third of their cost, to give liberal aid in providing objects and making loans. He thought the provinces would never be fairly treated until the British Museum, the National Gallery, &c., were placed under a responsible Minister in Parliament, like the South Kensington Museum. He said,—"The South Kensington Museum has been as my child, to which I have devoted days and nights of more than twenty years. Without undue self-conceit, I think I may say it has been a real and useful success. It has set an example which has been copied by thirty-five new museums in Europe. Some weeks ago I had to defend its present constitution, on which the life of the Museum depends, and I was provoked to make observations on a late political chief. I omitted to say that during his connexion with the Museum as vice-president he had shown me uniform kindness, had taken a cordial interest in the working of the Institution, and had on all occasions been its champion; but had lately become its opponent, and seriously endangered the independent existence of that Museum, for which I would lay down my life. These observations have caused regret to my best friends. I must have been wrong in making them, and I regret having done so."

ORNAMENTAL GROUNDS, SOUTHPORT.

At a meeting of the Southport Town Council, held last week, it was decided that the designs submitted by Messrs. Maxwell & Tuke, of Bury, for laying out the grounds in front of the town-hall and Cambridge Hall, and erecting new fountain and other embellishments, at an estimated cost of 1,800*l.*, should be adopted. These ornamental grounds will extend from Trinity Churchyard to East Bank-street, and will be a great addition to the beauty of the centre of the town.

ARSENIC IN THE ATMOSPHERE OF ROOMS.

The danger attending the application of colours containing arsenic in rooms, says the *Zeitschrift für Biologie*, has been long known, and the sickening of persons inhabiting such spaces has been proved to be caused by that poison. In rooms the walls of which are painted with green colours or papered with hangings containing arsenic, a dust in which particles of copper and arsenic have been detected, has been found on furniture and floor, which on being inhaled has caused disease. But it has also been found by experience, that in rooms containing deleterious colours, poisoning by arsenic has appeared under circumstances where a dissemination of the arsenic was thought not possible on account of the dampness of the walls, and a firmer adhesion of the colours, without, however, on the other hand, obtaining a clear insight into the process of poisoning. With a view of elucidating whether, and under what conditions, wall-coatings containing arsenic develop arsenical gases, a German chemist, Herr H. Fleck, has made a number of experiments.

A glass bell of 5 litres contents, with a bottle-shaped neck, was covered inside with paper upon which a coating of Schweinfurt green (which consists of 31.29 per cent. of peroxide of copper, 58.65 per cent. of arsenious acid, and 10.06 per cent. of acetic acid), besides a small quantity of free arsenious acid) was applied to a thickness containing on a surface of a square metre about 15 milligrammes of arsenious acid (in combination). Paste made of potato starch served for binding the colour with the paper. The bell was firmly closed by a glass plate, and provided at the top with a cork penetrated by two glass tubes, one reaching to the bottom of the bell, the other ending underneath the cork. A strip of litmus paper, for observing the reaction, was fastened to the cork.

A second glass bottle was lined with a warm mixture of best gelatine and Schweinfurt green, the bottom and sides being covered with a layer of equal thickness all over, and then hermetically closed, like the bottle of the first experiment, by a cork provided with glass tubes and litmus paper.

Under a third glass bell a china basin, containing a thick paste of Schweinfurt green and distilled water was put, the bell being closed, as in experiment No. 1.

For a fourth experiment, a china basin, containing a paste of arsenious acid and distilled water, was placed under a bell of two litres contents, the latter being closed, as in the other experiments.

The temperature of the room in which the experiments were carried on was kept between 17°5' and 18° C. The litmus paper showed in the experiments Nos. 1 and 2, a reddening, extending from the lower end upwards, after the lapse of three days; while in experiment No. 3 the same change of colour took place after twenty-four hours; and in experiment No. 4, already after six hours, the red colour in the two latter cases being very in tense and lasting;—in experiments Nos. 1 and 2, on the contrary, changing back to blue or violet, and then after a few days again to red. This change of colour of the litmus paper was a recurring one in the vessels Nos. 1 and 2, covered with organic mediums, and had not ceased after a period of three weeks; while in the vessels Nos. 3 and 4, containing no organic substances, the reddening of the litmus paper was lasting.

In the bell No. 1, with an inside covering of starch, paste, and paper, formations of mould between paper and glass soon showed themselves,—a phenomenon contradicting the assertion made by many that the presence of arsenic prevents the formation of mould. The gases contained in the vessels were then tried for arsenic. Bell No. 1 showed a most decided reaction after three weeks; the same was the case with bottle No. 2. Bell No. 3 showed a distinct, though weak, arsenic reaction after eight days; while bell No. 4 produced no reaction.

It follows, therefore, from these experiments that the air of damp rooms,—the walls of which are covered with Schweinfurt green, even if no disturbance of dust takes place,—may contain arsenic.

Herr Fleck next tried to find the form of chemical combination of the arsenic here present. The experiments showed that arseniuretted hydrogen gas was contained in bell No. 1, and in vessel No. 2. Bells Nos. 3 and 4, which had

reddened the litmus paper, showed,—No. 3, besides arseniuretted hydrogen, acetic acid; while the reddening in No. 4 was caused by the presence of sulphurous acid, which had been mixed with arsenious acid.

An experiment was then made with arsenious acid and an organic medium, paste of wheaten starch. These two substances were mixed and left, as in former experiments, in a glass bell. After standing during four weeks, without being disturbed, the mixture was thickly covered all over with a mouldy fungus, and the vegetation showing itself at the upper edge of the mixture, near the glass side, was surrounded by a dark circle of crystalline metallic arsenic. A reduction of the arsenious acid had consequently taken place in the process of growth of the fungus mould,—atmospheric air conducted in a current over the mixture containing arseniuretted hydrogen, but no arsenious acid.

Herr Fleck also made a number of special experiments for ascertaining whether in air, which is stagnant and not disturbed, over a mixture of arsenious acid and starch—paste, arseniuretted hydrogen gas was formed. The result was positive.

The latter phenomenon leaves no further doubt as to the presence of arseniuretted hydrogen gas in the air of a room in which Schweinfurt green is used as a coating for walls or for paper-hangings, and confirms the supposition that arsenic, in its dust-like mechanical admixture to the atmosphere of rooms, is not the only poisonous agent, but that arseniuretted hydrogen diffused as gas, a decomposed product of the free arsenious acid in Schweinfurt green, must likewise be regarded as the cause of chronic arsenic poisoning. The experiments made further prove that the development of arseniuretted hydrogen gas takes place in a predominant manner concurrently with dampness in rooms and in the presence of organic matter, and principally of organic mediums.

LAND RECLAMATION.

If he is a benefactor to the human race that makes two blades of grass grow where only one grew before, so, *a fortiori*, must they be benefactors who enlarge the space upon which the grass may be grown. Although the cultivable and productive area of the islands that constitute the United Kingdom can only be extended within absolute limits, it seems indisputable that these limits have not been nearly reached as yet. Much has been accomplished in England in the way of land reclamation since the times now long past, when extensive tracts on the banks of the Thames, that are now verdant meadows, fruitful market-gardens, or that are covered with buildings, and form part of the great metropolises, were only parts of a great irregular lagoon, extending from Gravesend to above London. Much was done by Cornelius Vermuyden, the enterprising Dutchman, in draining the fens of Lincoln, but much still remains to be done in the same direction. The maps and geography-books of a future day—not very far distant it may be—may need other such changes as the obliteration of Whitlessea Mere and Rye Mere, once pretty lakes, now converted into meadows and corn-land. There are portions of bays on the coast of Great Britain capable of being converted, with comparative ease, into dry land, and many sand-banks and swampy estuaries and shores, in parts of both England and Ireland that may be drained and reclaimed. In Holland the *Zuyder Zee* of Vermuyden's plot, the countrymen has long ceased to be "deep" or "rolling," as represented in the bibulous glee in which Myneer Van Dunck figures so prominently; and it is probable that a future Cypri may find abundant studies of cattle upon the space now covered by its shallow waters.

Land reclamation is a healthy direction for speculative enterprise to take, and it may be expected that considerable results, valuable and permanent, are in course of realisation, or in prospect, in this direction. In last session of Parliament powers were given for the reclamation of a part of Pegwell-bay, on the north-east coast of Kent. In that locality,—and in others, indeed,—natural agencies invite by their action the co-operation of artificial means for the conversion of shallow waters and marsh lands into productive fields and meadows, a conversion that may be aided, but cannot be completely effected by natural action.

In this session of Parliament there are three Bills for land reclamation. One of these, the

Ardmillan Reclamation Bill, relates to certain "slob" lands on the banks of Strangford Lough, in the county Down, on the north-east coast of Ireland. These lands, adjoining the manor of Ardmillan, are either under water, or subject to be covered by tidal waters, and hence incapable of cultivation in their present state. The object of the Bill is to construct embankments, catch-water drains and works, to reclaim the slob, and to confer powers on the company to lease or sell the same. Strangford Lough has a large area with a narrow inlet from the Irish sea, and comparatively little of tidal difficulty will be encountered in the construction of the works. The estimated cost of the works is 7,970l.

The River Fergus Reclamation Bill is for precisely similar objects, and relates to extensive tracts on the eastern and western banks of the river Fergus, which debouches well inland into the capacious estuary of the Shannon in county Clare. The works in this case are of an extensive character, the estimate for their construction being 195,000l.

The Bolton-le-Sands, Warton, and Silverdale Reclamation Bill is promoted by the Warton Land Company, whose object is to purchase certain adjoining tracts of land in the neighbourhood of Hest Bank, Carnforth, Warton, Silverdale, and Arnside, all on the shores of Morecambe Bay. The promoters of this Bill have an encouraging precedent in the success that has attended reclamation works in the same locality. An incidental result of the execution of the spirited project of Messrs. Brodgen & Sons, in constructing a railway across Ulverston Sands, has been the reclamation of more than 3,700 acres of land that is worth now from 600 to 700 an acre. Messrs. Brunles & McKerrrow, who have had great experience in reclamation works, estimate the cost at 105,000l. They embrace a foreshore embankment of seven miles in length, which consists of a half-tide wall, or "toe," and an outer embankment. There is also a cross embankment, and works in sluices and drainage of the Keer. The principal embankment is from Arnside Point in Westmoreland, to a point near Hest Bank, Lancashire. Nearly five miles of the embankment are in a straight line. The quantity of land capable of reclamation by the works is about 10,000 acres. For the formation of the embankments the enormous accumulations of slag from the Carnforth and other furnaces in the neighbourhood will be available and excellent material.

Other reclamations on an extensive scale may be expected soon in the Solway Firth, always provided that the landlords on the opposite banks can mutually agree to a plan for the construction of the weirs necessary. Already the receding tides have made considerable progress with the works, in connexion with the Solway Junction railway, which crosses the estuary by embankments running well in from the shore at each end, and an open viaduct in the middle. The sand and alluvial matter that have silted up behind the embankments is already 10 ft. deep on the inner side of one, and 8 ft. deep behind the other. Direction having been thus given to the scour, will make the gradual construction of additional weirs, and the reclamation of many thousands of acres of valuable fertile land, a comparatively easy and inexpensive process.

It is better to invest money in endeavours to increase the prosperity of the country than to lend it to foreign countries to enable them to prepare for assaults on the prosperity of England.

KEMP AND THE SCOTT MONUMENT.

THE Scott Monument at Edinburgh is about to be fully completed. The foundation-stone was laid on the 15th of August, 1840, and the building was finished in 1844. One part of the work still remained to be executed. In each front of the monument above the principal arch are six small niches, making a total of twenty-four in the main structure, besides thirty-two others in the piers and abutment towers. These niches were designed to be occupied by sculptural impersonations of the historical and fictional characters portrayed in the writings of Scott. The work of filling these niches went on very slowly, until about three years ago a vigorous determination seized the minds of the citizens to put the finishing touch to the memorial of one of whom they are justly proud. Twenty-three niches remained to be filled, and the sculptors,—Messrs. Brodie, Hutchison, Stanton, Lawson, Currie, and Mrs. D. O. Hill,—were commissioned to undertake the task. These statues,

which are almost life-size, and chiselled out of what is called Binny Quarry stone, a hard and durable freestone, are being exhibited in the National Gallery, Edinburgh, previously to being placed in position. It may therefore be opportune to record certain passages in the life, little known except to those who knew him well, of the architect and builder of the monument, George Meikle Kemp. Kemp was born in the district which has been truthfully painted by Allan Ramsay in his "Gentle Shepherd," which, for all the poet barber said and sung of it, is neither picturesque nor romantic. The romantic and beautiful figure of Roslin was not far away with its strong-walled castle, and its remarkable chapel. Thither, when ten years of age, went Kemp on an errand, and from the moment he beheld the venerable ruins, he became at heart an architect and an antiquary. When old enough he was apprenticed to a joiner, and when the time of his service had expired, he made his way to Galashiels, and there worked for a year as a millwright. While at Galashiels he had frequent opportunities of inspecting the remains of the abbots of Melrose, Dryburgh, Jedburgh, and Kelso, perhaps the richest specimens of ancient cathedral architecture which Scotland contains. There is a little incident connected with Kemp's journey from Edinburgh to Galashiels which has not heretofore appeared in print. He set out from the city on a bright Saturday morning of July, 1812. He had saved a little money, and was resolved on a fortnight's holiday before commencing his journeyman life. His luggage, which was not over heavy, had been given in charge of the carrier: the only burden that Kemp bore was his sketch-book. He trudged merrily along, reciting passages from his favourite poets. Even as a youth he was well acquainted with Chaucer and Sir David Lindsay, and the poems of Burns he could repeat by heart. When he had left Edinburgh some twelve miles behind, and was gazing in rapture on the ponderous ruins of Bowthorpe Castle, a post-chaise overtook him, the only occupant of which was a middle-aged gentleman, who asked him whence he came and whither he was going, and being informed on both points, proposed that Kemp should take "a lift" in the chaise. Kemp willingly agreed, and as they rolled along showed his travelling companion the few sketches he had, and told him the story of his previous life. The gentleman entered freely into the conversation, and talked and told so much to the youth about old ruins of abbeys and castles, old ballads and old songs, that he felt as if under the spell of an enchanter. Many years after Kemp discovered that the fascinating middle-aged gentleman was Walter Scott, who was on one of his many journeys from Edinburgh to superintend the erection of the would-be baronial mansion of Abbotsford. Twelve years after this encounter Kemp started on a Continental tour, which extended from Boulogne to Abbeville, Beauvais, and Paris, halting at each place for a few weeks, and studying their architectural remains during the leisure hours of his employment as an ordinary joiner. "After two years' travel of this kind," writes a friend, "he returned to Edinburgh, commenced business as a joiner, but was unsuccessful. His hand, indeed, was at this time more conversant with the pencil than with the axe or saw; and he was busy in the study of drawing and perspective, in which he soon became a proficient, without the aid of a master. Having been unsuccessful in business as a master-joiner, he returned to his former situation as a journeyman, to which he added the employment of an architectural draughtsman; and such was the superior beauty and correctness of his drawings that they soon found purchasers." At this time he was taken in hand by Mr. Burn, the well-known architect, and made, it may be said, his first entry on the path he wished to tread. He was one of the fifty-four who sent in plans to the head-quarters in Edinburgh of the committee of subscribers to the Scott Monument, of which plans there were twenty-two Gothic structures, eleven statues combined with architectural accompaniments, fourteen Grecian temples, five pillars, one obelisk, and one fountain. The three best were selected for a prize of 50l. a piece. Of these three two were by eminent English architects, and the third by John Monro. Monro was the architect and builder of Melrose Abbey, and many others of what are now ecclesiastical remains in Scotland. This pseudonym was suggested to Kemp by the Rev. J. S. Mimes, the author of several works on art, especially sculp-

ture. Kemp, when the three prize-men competed among themselves, was successful, and, as architect, builder, and clerk of the works combined, set vigorously about the erection of the monument. For four years he saw his Gothic spire rising, when on a foggy night, the 6th of March, 1844, while returning home from a visit to some quarries in the vicinity of Edinburgh, he lost his way, and fell into the canal, whence his body was not recovered for three days. The news of his death cast a gloom over Edinburgh. It was intended to inter his remains in the vault under the Scott Monument, and a stone coffin had been built to receive the wooden one containing the body, with a tablet simply recording the name and date of the architect's death, but at the last moment it was ascertained that the committee had not the power to entertain such a proposal. The remains of Kemp were interred in the West Church burying-ground. The magistrates of the city, and several other public bodies, together with the committee of the monument, as well as the members of the Royal Scottish Academy, accompanied the procession, which numbered about 1,000 individuals. The streets were densely lined with spectators, and tears even were shed by many as the mournful cortege passed.

THE DRAINAGE OF GLASGOW.*

MR. HONEYMAN has reprinted a paper read so long ago as 1858 at a meeting of the Glasgow Architectural Society, but which he maintains is still "as good as new," since "absolutely nothing has been done to remove the palpable and admitted defects" of the present system of sewerage at Glasgow.

In a summary the author says:—

"I have endeavoured to show what, in my opinion, is necessary for the efficient drainage of Glasgow, or, I may add, any other town—namely, first of all, well-constructed sewers, both as to form, size, and gradient; secondly, clean sewers, and the disinfection of the sewage by means of a continual system of flushing, so that putrefaction and the consequent evolution of noxious gases in the sewers may be prevented; and thirdly, well-ventilated sewers, so that in the event of injurious exhalations rising from the sewage they may be disposed of in such a way as not to be obnoxious to health; and I submit that if such a system were in operation it would practically be of no consequence what manner of filth the sewers contained. It would all be speedily got rid of, and without being permitted to affect our comfort in any degree whatever. There can, therefore, be no excuse for abandoning our water-closet system, except the introduction of some apparatus superior in cleanliness and convenience.

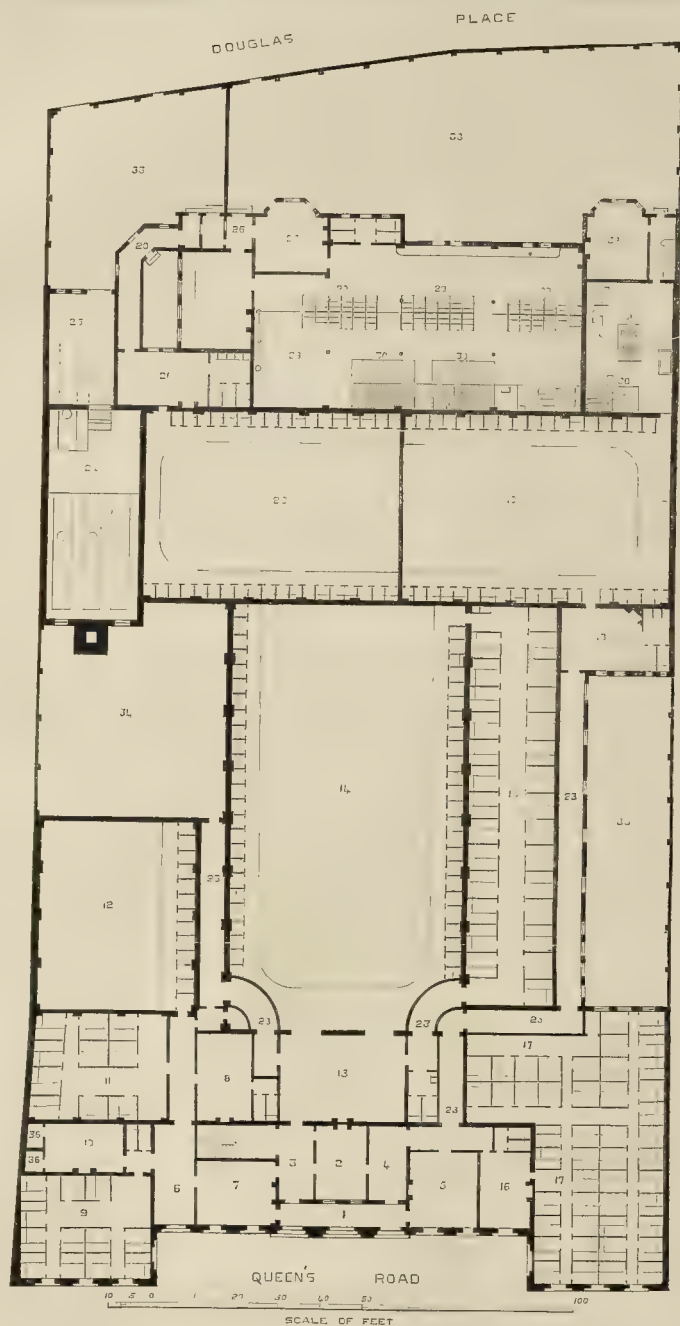
And now, gentlemen, you may, perhaps, be surprised that I have not alluded more particularly to the purification of the river, and the utilisation of the sewage. I intended to do so when I commenced this essay, but find that I have already exceeded my proper limits. But the sum and substance of what I intended to say on this subject is simply this,—that I believe it has received a great deal more attention than it deserves, and that it is of very secondary importance compared with the efficient drainage of the city. I do not for a moment deny that if the sewage were intercepted and conveyed to the Ayrshire coast, or distributed over the adjacent pastures, a very great improvement would be effected upon the condition of the river, and one which no citizen of Glasgow would fail to appreciate; but I certainly do deny that this would of itself affect the sanitary condition of the city in any perceptible degree. I cannot help thinking that those who have devoted so much attention to this part of the subject proceed on a totally erroneous opinion of its importance. They speak, for instance, of the river 'endangering the health of about half a million of human beings,' whereas it must be obvious that the injurious influence of the river can only extend to one or two thousands of the inhabitants; and, in fact, it remains still to be proved that such evil influence exists at all."

There is one point amongst others to which we would wish here more particularly to draw attention. Mr. Honeyman says, in the preface:—

"The only part of sewage which acts injuriously on the health being the gaseous or volatile part, we can protect ourselves from that effectually, with ease and without great cost, and by doing so we get quit of the whole sewage difficulty, so far as it is a sanitary difficulty. This being so, it is evident that the importance of the more or less purely economical question—how are we to intercept or dispose of the sewage?—although actually great, is relatively insignificant."

The italics are Mr. Honeyman's own. Now it so happens that the subject of most interest of late, in a sanitary view, as respects sewage, is its relationship to typhoid fever; and it is well known that it is not so much "the gaseous or volatile part" of the sewage in any special sense, with which we have to deal in that "sanitary difficulty," as with the impregnation of water by sewage itself, and especially by the excreta from typhoid patients, particularly in water supply from wells.

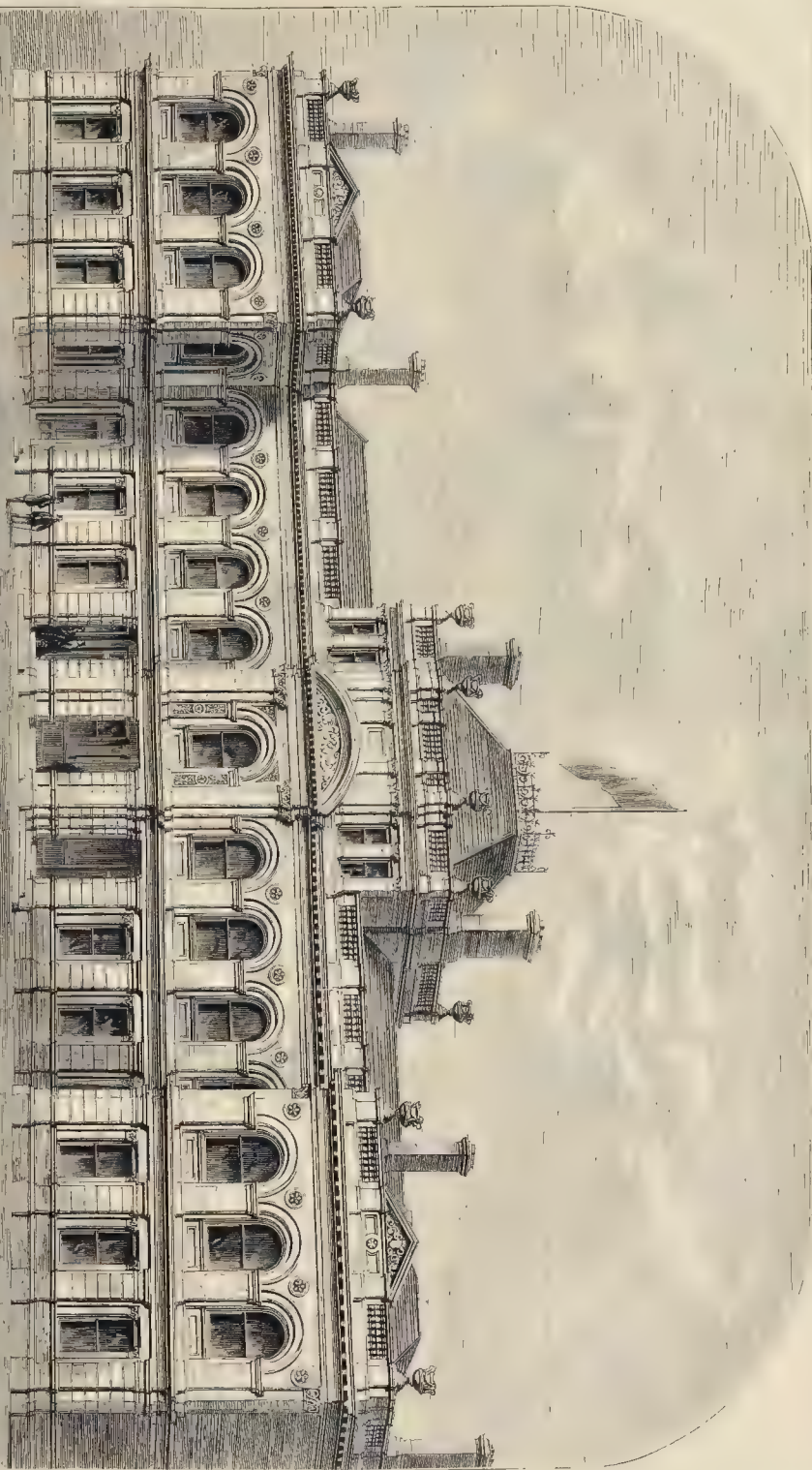
* On the Drainage of Glasgow, with Special Reference to the Disinfection of Sewage, the Ventilation of Sewers, and the Trapping of House-drains. By John H. Honeyman, Architect, Glasgow: Macnab, 1873.



GROUND PLAN

- | | | | |
|--|--|---------------------------------------|--|
| 1. Vestibule. | 10. Women's first-class waiting-room. | 19. Men's second-class swimming-bath. | 28. Washhouse. |
| 2. Ticket-office. | 11. Women's first-class private baths. | 20. Third-class entrance. | 29. Washing-trays. |
| 3. First-class entrance. | 12. Ladies' swimming-bath. | 21. Men's third-class waiting-room. | 30. Drying-closets. |
| 4. Second-class entrance. | 13. Men's first-class waiting-room. | 22. Men's third-class swimming-bath. | 31. House laundry. |
| 5. Superintendent's office. | 14. Men's first-class swimming-bath. | 23. Corridor. | 32. Engineer's living-room. |
| 6. Women's entrance. | 15. Men's first-class private baths. | 24. Boiler-house. | 33. Yard. |
| 7. Shampooing-room. | 16. Men's second-class waiting-room. | 25. Engineer's shop. | 34. Space available for Turkish baths. |
| 8. Women's second-class waiting-room. | 17. Men's second-class private baths. | 26. Lobby. | 35. Space available for gymnasium. |
| 9. Women's second-class private baths. | 18. Men's second-class waiting-room. | 27. Waiting-room. | 36. Closets. |

PADDINGTON BATHS AND WASHHOUSES.—Plan of Ground Floor.



PUBLIC BATHS AND WASHHOUSES FOR THE PARISH OF PADDINGTON.—Mr. LEWIS H. ISAACS, ARCHITECT.

W. MERRISON

PUBLIC BATHS AND WASHHOUSES FOR THE PARISH OF PADDINGTON.

In the month of July, 1872, the Commissioners appointed to carry out the Act for the Erection of Baths and Washhouses for the Parish of Paddington, invited nine architects to submit designs for the proposed building.

Eight sets of drawings, to which we referred at the time,* were received in response to the invitation, and of these the first premium was awarded to the design forming the subject of our illustrations.

The building occupies an area of ground lying between Queen's-road and Douglas-place, Bayswater, having a frontage of 150 ft., by a maximum depth of 250 ft. The front external wall, next the Queen's-road, is set back 12 ft., to meet the requirements of the Building Act, in respect to the line of street frontage.

The entrance to the first and second class swimming-baths, to the private baths, and to the ladies' swimming-bath is in the Queen's-road. The third-class swimming-bath and the washhouse are approached from Douglas-place. Space is reserved on the ground-floor for Turkish or hot-air baths, and for a gymnasium, should their erection at any future time be determined on.

The keynote of the design is the position of the men's first-class swimming-bath. As it is the largest and most important of the various departments into which the establishment is divided, it occupies, so to speak, the place of honour,—the centre of the site,—the other buildings being grouped in respect to the same in such positions as their relative importance and uses would suggest.

This bath is 90 ft. long by 40 ft. wide, and will hold, when filled, 100,000 gallons of water. It will be provided with fifty boxes for bathers, and will have a spring-board at its eastern end, and an ornamental fountain at its other extremity.

The men's second and third class swimming-baths are placed in the rear of the first-class swimming-bath, end to end, and are each 70 ft. long by 30 ft. wide, provided with forty boxes for bathers.

The ladies' swimming-bath is 45 ft. long by 36 ft. wide, and is fitted up with a dozen dressing-boxes. Each class of bathers is provided with a separate waiting-room, with the necessary water-closet and other accommodation. The whole of the swimming-baths are lighted from the roof.

The private baths are in square compartments; made of slate, the first class being 7 ft. long by 6 ft. wide; the second class being 6 ft. square. It is proposed to enamel the slate partitions dividing the first-class baths, but simply to oil those of the second class. The first-class baths will be made of porcelain, the second of copper japanned.

The washhouse is 75 ft. long by 40 ft. wide, subdivided into groups of compartments, and immediately adjoining are the ironing-room and house laundry. A residence for the engineer in charge and a smith's shop are also provided. It should be noted that provision has been made to enable the engineer and other officials to proceed from the front to the rear of the establishment without going into the open air.

The first floor is devoted to a board-room, clerk's office, and superintendent's apartments; and the rooms on the second floor will be used as bed-rooms only.

The style of architecture adopted is Italian, the materials employed in the front elevation being white Suffolk bricks and Portland stone.

The whole of the works embraced in the buildings are being executed by Mr. Thomas Elkington, of Golden-lane, whose contract amounted to 22,595*l*. The boilers, machinery, hot and cold water pipes, laundry, and bath-fittings have been provided by Messrs. J. & F. May, engineers, of High Holborn. The carving in the front is the work of Mr. Almond. The architect's clerk of the works is Mr. James Abbott, and Mr. Rayment represents the contractor. The works are being executed under the personal superintendence of Mr. Lewis H. Isaacs, architect, of Verulam Buildings, Gray's Inn.

The buildings are rapidly approaching completion, and it is expected that the inhabitants of Paddington will be enabled to avail themselves of the many advantages this establishment will afford them, early in the present year.

THE NATIONAL IMPORTANCE OF LOCAL MUSEUMS OF SCIENCE AND ART.

On the 21st instant, Mr. Henry Cole, C.B., as president of the Birmingham School of Art for the year, delivered an address in the Town-hall there. In the course of it he said:—Schools of science and art instruct chiefly the young, but museums can instruct both young and old. They illustrate the studies of youth if properly administered, and give lessons to manhood and old age which it will consent to receive in no other way. They are temples where all can worship in harmony; they teach good habits of order, and cleanliness, and politeness, and make every one feel that he has a possession in the common-wealth. Museums are antidotes to brutality and vice.

As the works of nature abound in every district, so every local museum should have a division representing the natural history of the district—every object so clearly labelled that a child of five years of age might understand it. Such a museum, too, should have its division of typical objects, illustrating chemistry and physics. If the museum be one of a manufacturing town, it ought to have a division affording useful illustrations of past and present works of industry special to it. All these divisions are comparatively easy to form.

The division of Fine Arts is not so easy. A top-lighted special gallery must be provided by the locality. It is indispensable for seeing pictures properly. Every district has pictures which can be borrowed, and it will obtain bequests; but it is not easy to obtain a supply of very fine pictures, or very fine objects of art, without co-operating with the State, even in a wealthy, populous town like Birmingham. There is not in the world an inexhaustible supply of Raffaels, or Titians, or Vandykes, or Reynoldses, or Mulreadys, to be had even for money. You cannot get them as a permanent possession. But, if Birmingham will co-operate with the State, and not stand aloof as though it was in the time of the Heptarchy and part of Mercia, it can borrow them from one central museum at least, and in due time will be able to borrow them from other collections in the metropolis. And it is more useful for study that you should have a succession of fine pictures, rather than one permanent collection of a few, never changing. With pictures as with other things, variety is charming and attractive. Again, you cannot get an Elgin marble, or a *Venus di Milo*, but you can have what is quite as good for study, namely, casts of them. You cannot have the Queen's plate itself from Windsor, or the regalia from the Tower, or the Clibbert gales from Florence, or the bronze doors from Hildesheim; but electrotypes give you them, and they hardly differ from the priceless and unobtainable originals.

It would be unprofitable to Birmingham and every large town to send its emissary over the world to try and get copies of such objects. And he would often be baffled in his attempts. But if you co-operate with the State you get them; and to induce you to have them, you get them at half the prime cost.

For its Museum of Science and Art the municipality must be responsible for all kinds of local management, suitable premises, cleanliness, order, &c.; and when these have been secured, the individual must do his part by paying the fee for entrance.

Because museums, I think, should have the co-operation of the individual in their maintenance. The cost of the museum must be defrayed somehow. Whatever may be said for free compulsory primary education, I think payment in all matters of secondary and technical education, which cannot and ought not to be made compulsory, should be paid for, in part at least, by the individual that uses the museum or school. The fee may be only 1*d*., but I advocate 1*d*. fee for everybody's admission. This principle of contribution has been successfully tried for eighteen months at the Nottingham Museum of Science and Art. The working expenses have been wholly met by it, and there is a balance at the bankers. The Museums Act enforces free admission; I think it ought to allow municipalities to make a charge. Such has been the success of the Nottingham Museum, that Nottingham Castle, which was burnt down in the Reform riots of 1830, is to be restored and made into a Midland Counties Museum—showing itself high above the plains as a beacon of progress and civilisation.

I will now attempt to place before you

what I conceive to be the functions and organisation of parent or central museums. As they must be supported by taxation drawn from the whole country, I contend that they must be at the service of the whole country, which should derive all the benefit from them that is practicable. I repudiate altogether the notion that they are metropolitan institutions. They are no more metropolitan than the Court of Chancery is a metropolitan institution. As central stores they must be placed somewhere, and they are placed in the metropolis because, whilst serving the purposes of the whole country, they may also be consulted there by the greatest number of persons. Excepting very bulky objects, and works of art of the rarest and most exceptional character, I know of none which may not from time to time be circulated, under proper regulations, to populous places like Birmingham, Manchester, Liverpool, Leeds, Sheffield, Nottingham, Bristol, &c. Indeed, every place in the United Kingdom which makes proper accommodation should have its claims for loans of objects duly attended to. Since 1857 the South Kensington Museum has circulated, not only examples, books, &c., to any School of Art that has applied for them, but it has contributed to more than 130 local exhibitions, which have been visited by just 4,000,000 of persons, who have contributed above 86,000*l*.

Much more could have been done if other national collections had been made available for circulation, such as those of the British Museum and National Gallery. I say, advisedly, both these institutions are suffocated with a plethora of possessions which they cannot properly exhibit, and they will not allow the country to share in. And why? Because they are managed by irresponsible Boards, which Jeremy Bentham called "screens." Behind these Boards Parliament is unable to fix personal responsibility; and they defy all public wishes.

Having regard to popular demands, to the growing wealth and intelligence of the people, and to the exceeding profitability of judicious investments in objects, especially of fine art, I will say, with all the force I can, that the public expenditure has been niggardly, imprudent, and impolitic. We have wasted millions, and failed to invest even thousands.

It is notorious that in late years the prices of works of fine art have increased, and are still increasing. Private collectors of works of art in this country, who have bought with caution and judgment, have made most profitable investments. In 1860, Mr. Henry Thomas Hope, a millionaire, informed a Committee of the House of Commons that he was willing to take the whole purchases of the Kensington Museum at the price which had been paid for them, adding to the price a handsome per-centage as profit. At the present time, I believe, the whole collections would fetch in the market double the amount paid for them, whilst some objects would realise ten times the sum paid for them.

In 1862, the national income was 69,000,000*l*. Notwithstanding large remissions of taxation it has increased to 76,000,000*l*. in 1873. In 1862, for purchases for the South Kensington Museum, being the only storehouse for circulation for the United Kingdom, Parliament voted for the purchase of works of science and art the sum of 16,800*l*.; whilst in 1873, when the revenue had increased so largely, and the demand for works of art as well, the amount for national investments in works of science and art has actually been reduced to 13,000*l*.

Sir Stafford Northcote, on one occasion, proved that the increase in the demand for decorative manufactures had augmented in greater proportion than for manufactures into which fine art did not enter. Political economy has hitherto had little effect in regulating wise and prudent investment. I wish Governments would believe in the Scriptures. They teach us that "there is that scattereth and yet increaseth, and there is that withholdeth and yet tudgeth to poverty." I wish they would also heed that account of the unprofitable steward, who hid his master's talent, and, for his mistake, was cast out where there was weeping and gnashing of teeth.

I think it would be justifiable and prudent that the constituencies should call upon Parliament to invest at least 100,000*l*. annually in judicious expenditure in the purchase of illustrations of science and art. It would be only the third of a penny in each pound sterling of national expenditure. It would not be very crippling to the administration of a Chancellor of the Exchequer to insist, "for every pound we give you as a tax on our beer, wine, and spirits,

* See vol. xxx., p. 1020.

you shall put aside and invest, not spend as upon gunpowder, a penny in works of science and art." The national debt would be paid off all the sooner.

The national museums of science, such as the natural history division of the British Museum, and the collections of mechanical science and inventions mis-called the Patent Museum, should be in alliance with all local museums and schools for science. They should collect the best models for teaching; they should form small typical collections of objects, to be lent or to be purchased. All superfluities should be circulated. So with works of fine art. All the national museums possessing works of fine art, especially the National Gallery, should circulate to local museums and schools of art all superfluities, and there are heaps of them. So heaped are the superfluities treasures at the British Museum, and hidden, that it has become, in the words of the modern Jeremiah, of great Carlyle, "little better than a continent of dung."

I have already said that original works of the highest art are hard to be obtained. For all purposes of general public instruction good copies serve equally well. Buy originals if you can; but there are some originals which cannot be bought, and of which copies ought to be made. A moderate annual expenditure would enable students of the schools of art to go abroad and copy such works as Titian's "Assumption of the Virgin," at Venice; Fra Beato's frescoes, at Florence; Giotto's frescoes, at Padua." This country ought to have two chronological series illustrating the art of painting of all countries and ages, one being for circulation, accompanied by a lecturer; and the making such copies, for the benefit of all local schools, should be the work of a branch of the Art Training School. The making copies of works of sculpture, by means of electrotyping and other methods, is comparatively easy. The only difficulty is to persuade the possessors to allow the copy to be made. Casts, thanks to Sir Stafford Northcote especially, have been brought even from the jungles of India; and for a very moderate sum you might have casts at Aston Hall which would teach what India and Indian art is better than writings and talkings for a thousand years.

At the Paris Exhibition of 1867, with a view of smoothing away difficulties in obtaining permission to make copies, the Prince of Wales interested himself in forming an international convention with the princes throughout Europe. France, Russia, Prussia, Hesse, Italy, Austria, Sweden and Norway, Saxony, Belgium, and Denmark, all joined it. It was a real holy alliance. Although the funds for reproductions have been too small to do much, copies of many important works have been obtained for the use of Birmingham and other places, and foundations have been laid for a wide action as soon as the wisdom of Parliament shall recognise the policy of entering upon it.

In concluding, the speaker said,—let me apply these general observations to Birmingham. Acting on the principles I have submitted to you, Birmingham, I hope, will possess fully-developed municipal institutions for promoting museums of science and art. The corporation already has begun the work. In the town there should be the picture and sculpture gallery, drawing its supplies from the National Gallery and British Museum; there should be the museum of industrial art, in connexion with the South Kensington Museum; there should be the School of Music in alliance with the National Training School of Music,—all these lighted up and open in the evening. In the suburbs should be a museum, being head-quarters of natural history, which wants great space, and it should derive all possible advantages from the stores and experience of the British Museum. That noble specimen of old English domestic architecture, Aston Hall, should be a sort of Hôtel de Cluny, and a loan museum for English furniture and architecture, to be collected from the midland counties. The Corporation will maintain the structures, the State should help with objects, and the people with their pence. Ought it not be the pride of Birmingham to possess in the highest perfection such instruments for educating and civilising its people?

Protection from Fire.—A number of tell-tale clocks are about to be placed in the Great Midland Hotel at St. Pancras, to ensure the attention of the watchmen. Mr. Smith, of Derby, is the maker of them.

HOUSES IN REFERENCE TO SANITARY AND ARTISTIC REQUIREMENTS.

At the Belfast Architectural Association Dr. Henry MacCormac read a paper on this subject. After speaking of air, water, sewage, and light, he said, in clothing we bear, so to speak, a portable climate along with us; but no amount of coverings in these regions at least suffices without a fire. Fireplaces, however, as commonly constructed, are not sufficient. The hole in the wall does not adequately heat our houses, and the waste of fuel is extreme. A broad tile laid properly over the fire, I find, goes far to arrest the radiation upwards, radiating the heat, in fact, back; but, otherwise, the "hole" sends most of the heat up the chimney instead of into the room. Commonly the fire is burning and blazing to excess, or else it is half lighted, at once comfortless and miserable. Reflecting on the matter, I have myself devised a fireplace, partly founded on one introduced 200 years ago by Cardinal Polignac, described by Bernan & Edwards, and recently re-introduced by Captain Galton, with, however, important additions and modifications of my own. I laid the matter several years ago before Mr. Grissell, builder of the House of Commons, in the House of Commons itself, and some others as well. My fireplace economises fuel, warms the room, and promotes ventilation as well. Imagine an ordinary, or, preferably, a stove grate then advancing well into the apartment, coated or covered with majolica, porcelain, marble, or some less costly material, immediately over the commoner tiles which are next the fire. The bars are straight and low, while the back of the fireplace is of iron, but say copper as a much better conducting material. Behind the fire, and extending some way up the smoke-duct, is a hot chamber, which admits air by drains of sufficiently ample section from outside the house, which air, when heated, is discharged by valvular openings of equal section into the apartment. A door glazed with glass or talc, single or double, sliding on wheels or hinged, subsists before the fire. One of the fireplace jambs is made hollow up to the ceiling, and so arranged that the opening above shall be covered by the ornamental cornice, while the aperture in the hearth or fireplace below is masked in such wise as to supply, when the door or doors are closed, the fire with the deteriorated atmosphere of the chamber. When the fire-door, indeed, is closed, the heated air from the hot chamber behind the fire enters the room *pari passu* with the consumption of the fouled air derived from the ceiling of the room. In an ordinary open grate 40 cubic feet or so of air pass, it is calculated, each minute into the chimney, but in the fireplace which I have described twice or thrice the quantity, if desired and permitted, may, I calculate, be transmitted. The heated air, in other respects, may be suffered to escape at pleasure, either directly from the hot-air chamber or from tubes running along the base of the apartment. A fireplace of this description would meet, I submit, every artistic and economic requirement. It would at once secure ventilation, supply warmth, and show a cheerful fire, with results which no other grate ever yet has sufficed to realise.

Convenience assuredly ought to be studied in our mansions. No stair-step, for example, should have a rise of more than 5 in., while houses, as on the French or Scotch plan, might be constructed so as to yield ample accommodation on a single floor. No dwelling, either, should be erected (municipalities should see to it) that did not meet at least the elementary requirements of human health and dignity. In the very humblest dwelling there ought to be a decent kitchen, which might also be a living-room, with offices, a minimum of three bedrooms, one for the parents, the others for the youths and maidens of the family, with every adequate provision for heating, lighting, and ventilation. The ground-floor rafters must not be placed over the naked earth, but effectively severed from it, so that neither emanations from the soil, nor damp, nor the incursion of vermin should be so much as possible. The walls ought to be made quite impervious to moisture, and otherwise built so substantially as not to shake with the wind or tremble with the casual tread. A model should be erected, and builders and contractors constrained to come up to it. At the same time, all extant buildings, unfitted by reason of age or faultiness for proper use and occupancy, due notice being given, should undergo imperative reconstruction. But in any and every case the building must be rendered fireproof. It is, indeed, the antithesis of all

convenience that people should be liable to be burnt alive. Frightful casualties are of incessant occurrence, casualties which are at once the opprobrium and the condemnation of existing modes of construction. Whatever be the style adopted, our towns ought to be rendered beautiful.

Green trees I would have growing in every thoroughfare, pictures hung in every dwelling, busts or statues recessed in every wall. In respect of sculpture and architecture, I greatly prefer the Italian style myself, with its balustrades, arcades, and campaniles; but I am free to confess that I have seen Italian structures or what were so misnamed, excessively ugly, and structures perfectly beautiful that were not Italian at all. Let each erection, then, be at least good and sufficient, and, if only it may be, beautiful also. Why must houses be *fascines* of each other, interminable rows of an unmitigable ugliness? If I had my will, I would have no two absolutely alike, but different from each other, as are the lily and the rose, each perfect, and each beautiful.

Viser Dieu should be our motto here, as in everything else, for in God resides all beauty. No single elevation ought to be raised without the aid of a competent constructor—a man of real taste, refinement, and skill; in short, an architect. But houses in thousands, may, tens of thousands, are run up, to use the patent phrase, by persons who, because they happen to know how to lay a brick, or plant a rafter or a joist, imagine themselves equal to every artistic requirement. A builder, I freely admit, may be most able, intelligent, and industrious, but he is not, therefore, an architect—is he? Every one ought to stand upon his calling. We do not require a gardener to draw up an outline of the vegetable kingdom, an apothecary to set forth the practice of medicine, or expect a man before the mast to sail ships across the seas. The builder may fitly execute, but it is the master, the architect's part to plan. At the same time, the young architect, I submit, while he has his Vignola at his finger-end, ought to be practically conversant with all his materials, and not be led away by the mendacious idea that outlay merely and art are one. The humblest, most inexpensive structure may be made to evince a real taste, the truest economy.

CITY IMPROVEMENTS AND CITY RATES.

THERE was an animated and somewhat warm discussion last week at the meeting of Commissioners of Sewers on the question of improvements as connected with local rates. The Finance and Improvement Committee recommended the declaration of a consolidated rate of 7d. in the pound for the half year, which was opposed by Mr. Bedford, who maintained that the recommendation of the committee was unnecessary, inexpedient, and unjust. Referring to the subject of improvements, he said it was a mistake to pay for large metropolitan improvements out of City rates. They ought to be paid for by metropolitan rates. In confirmation he said that "they were going mad on improvements." He had calculated that the line of improvements that had been laid down by the engineer would cost 7,000,000l. He hoped they would agree with him that a 6d. rate would be ample. The great question in the House of Commons next session would be that of local taxation, and if the view of Mr. Goschen were carried out the cost of improvements would be proportionately borne by owners of property, who alone benefited by them. He advised them to wait the decision on this question before raising their rates, as they had ample funds to meet their engagements. He moved as an amendment that the consolidated rate for the half-year be 6d. instead of 7d.

This amendment was seconded by Mr. Deputy Hora, who endorsed Mr. Bedford's remarks, stating that "they were going improvement mad, and the sooner they put a stop to some of their improvements the better." A public board, he said, ought to have no more money than it absolutely required.

In the discussion which followed it was contended by several members that a 6d. rate would not be sufficient to meet their engagements, and Mr. Knight warmly urged that the Commission ought to place some confidence in the committee, and be guided by their opinion.

The amendment, however, on being put, was carried by a majority of nearly two to one, the proposal of the committee for the higher rate being thus defeated, and a 6d. rate agreed upon.

THE CENTRAL STATION IN RANELAGH STREET, LIVERPOOL.

This station, the joint property of the Midland, Great Northern, and Manchester, Sheffield, and Lancashire Railway directors, acting as the Cheshire Lines Committee, now approaches completion. The directors forming the committee have inspected the building, and the new line from Brunswick station, of which the central station is the terminus, with the view of making preparations for throwing the line open to the public. The great advantage of the central station, when completed, will be that the traveller by any one of the three lines with which the Cheshire Lines Committee are concerned, will be enabled to travel by train direct from the centre of the town. For the following particulars we are indebted to the local *Journal*.

The scheme for having a line leading right into the centre of the town from Brunswick station is not of very recent date, but in 1870 the work was begun in earnest, the contract for the construction of the new line and the station being in a competition let to Messrs. Kirk & Parry.

The new line is about a mile and a half in length between the Ranelagh-street Terminus and Brunswick Station. Between that station and the St. James's Station—about half the distance to Liverpool—the line runs along an open cutting, the remainder of the distance to Liverpool being through a tunnel, with three side openings and one open cutting from above for ventilation. The course of the tunnel is under Great George-street, along Berry-street, and down Back Bold-street. In connexion with this line is a new line which is being constructed between Garston and Manchester, and when this is completed it is expected that the distance between the Central Station and Manchester, although fully two miles more than by the London and North-Western route, will be traversed in less time, and that express trains will do it at the most in forty-five minutes. There will be fewer junctions on this line than on the other, so that speed will be less frequently slackened whilst on the whole the line will be much more level than that from Lime-street. The St. James's Station will be sufficiently commodious for the large traffic which it is sure to attract, besides being used as the station at which all trains for the central station will call for tickets to be given up. It will have a north and south platform, each 15 ft. wide, and 360 ft. in length, with several waiting-rooms. The tunnel between the two stations is laid with three lines of rails. On leaving the tunnel towards the terminus, these three lines gradually deploy out until, at the extreme north end of the central station, there are no less than eleven lines of rails, running into four platforms—two of the platforms being single and two of them double. The arrival trains will come to the single platforms, on the west side of the station, between which there is a cab approach and stand. The other two platforms will be used for the despatch of trains, and are to the east side of the station. The longest platform is 800 ft. in length, and the shortest about 500 ft.

The station at present is of a triangular form, the west side of the triangle being bounded by Back Bold-street, the east side by Renshaw-street, and the north side by Ranelagh-street; and, although the shape of the ground proved inconvenient when the station was about to be roofed over, it turned out highly suitable for the terminus, as it gave ample accommodation for a multiplicity of lines—a great desideratum where a large traffic exists. It is in contemplation, however, to extend the station considerably, and the committee have powers by which to acquire the whole of the property on the south side of Ranelagh-street, which will very probably soon be put in operation. The roof which now covers the station is 160 ft. in span; the rise from the platform to underneath the side of the main rib, 65 ft.; and its total length is 670 ft., including the continuation on the other side of Newington Bridge, the existence of the latter having necessitated a break in the structure. The roof is not of the ordinary truss construction, but the whole of the strains are upon the arched main ribs, which are 55 ft. apart from each other. The tie-rods are of crucible cast steel, 3½ in. in diameter, the object of the tie-rods being to keep the heels of the ribs from spreading. The tie-rods are looped up by radial rods from the ribs into a segmental shape, instead of being left to "sag," or rather as they would seem to do if left in a horizontal position. Owing to the

absence of truss-work, the roof is extremely light in appearance, notwithstanding that at least one-half is composed of boarding. The glass used in its construction is Hartley's patent rib-glass, 4 in. in thickness.

The buildings connected with the new station are of an irregular and somewhat nondescript character. At the terminus of the line is a large three-story building, 140 ft. in length, 60 ft. high, and 70 ft. wide. The style of architecture is a mixture of Tuscan and Ionic; but if the frontage was not hidden from view by a range of smaller irregular buildings, to be used as parcel offices and for inquiries, the view from the street would not be at all an unpleasant one. The basement floor of the principal building will be used as a booking-office, in which there will be seven windows for the sale of tickets, passengers being at liberty to book by one or other of the three lines to which the station jointly belongs.

In the new station there will be commodious waiting-rooms. The rooms upstairs will be used as offices for conducting the business of the committee. First and second class refreshment-rooms and a large dining-room are situated in a building to the east of the booking-office, and quite apart from it. The management of these has been entrusted to Spiers & Pond. There will be no hotel for the present, at least in connexion with the station; but when the further extensions anticipated are carried out, the committee intend building one at the corner of Renshaw-street and Ranelagh-street, up to which part of the town the station will then extend.

The station will be approached by four gateways from Ranelagh-street, each gateway being 20 ft. wide.

The cost of the new works, including the line from Brunswick Station, but not the property purchased by the committee to enable them to carry out these improvements, is estimated at between 800,000l. and 850,000l. The whole of the works have been carried out under the engineering direction of Mr. John Fowler and Mr. Walter Marr Brydone; Mr. William Morton being the resident engineer.

THE COMING EXHIBITION.

A MEETING of the sub-committee for architecture, building contrivances and materials, was held at the Albert Hall, on the 28th inst. Col. Gaiway in the chair; and Col. Wray, Mr. Horace Jones, Mr. Roger Smith, Mr. W. Bird, Mr. Grant, Mr. Elger, Mr. Kirkaldy, and Mr. Godwin attending. Captain Clayton acted as secretary. Various very liberal offers of timber, iron, and other materials for the contemplated series of experiments were accepted. The funds for these experiments are not yet assured; it is to be hoped the societies appealed to will give some assistance. A complete Moorish house will be erected in the grounds.

On the previous day a meeting of the sub-committee for sanitary apparatus and construction, was held at the same place.—Dr. Hardwick in the chair; and arrangements were made to accommodate various exhibitors of processes for utilising sewage, and building in concrete. The number of applicants for space in this department, exclusive of foreign exhibitors not yet reported, is something over sixty. Applications from manufacturers and inventors would, doubtless, still receive attention.

BUILDING IMPROVEMENTS IN OXFORD STREET.

THE architectural character of that portion of Oxford-street near New Bond-street has just been improved by the erection of a block of new buildings on a site which, until recently, contained a very low class of property. The lease of the property in question, which belongs to the City, having expired, the old dilapidated buildings, and the site upon which they stood, passed into the hands of Mr. Sedley, of New Bond-street. The old buildings having been demolished, a new block has been erected on the site, which occupies an area of about 15,000 ft. The new buildings, which are four stories in height, front towards Oxford-street, and consist of four large and handsome shops on the ground-floor. The main portion of the elevation above the ground-floor is faced with patent red brick, the dressings and mouldings being in Portland cement. The great depth of the premises admits of ample space for show-

rooms and warehouses in addition to the shops to the Oxford-street frontage, and several of these have already been taken. Amongst the tenants are Messrs. Potter, of South Molton-street, engineers, who have taken a portion of the premises 200 ft. in depth by 40 ft. in width, for the display and sale of their articles of manufacture, which include large and ornamental gates, doors, and so on. The property has been designated Sedley-place, and it is stated that the rental, including the extensive cellarage in the basement, will be about 3,000l. per annum. The architect is Mr. Richard Bell, and the contractors are Messrs. Bywaters.

THE PRESENT CONDITION OF ARCHITECTURE.

ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting of the members was held last Friday evening, the 23rd inst., Mr. E. J. Tarver, president, in the chair, when the following gentlemen were elected members:—Messrs. E. W. Mountford, J. W. Boncher, E. O. Burton, and F. J. Chambers.

Mr. Bowes A. Paice, secretary, announced that the first visit of the session was made on Saturday afternoon, the 17th inst., to the schools (on the Prussian system), in Jenson-street, Stepney, when Mr. T. Roger Smith, by the aid of a large number of drawings, fully explained the arrangements and construction of the building; and he now begged to propose a vote of thanks to that gentleman for his kindness. Their next visit would be duly announced in the *Builder*.

Mr. W. H. White, F.R.I.B.A., then read a paper "On the present State of Thought concerning Architecture." In the course of his remarks, he said that the subject of his address was of an important character; and the fact that the vast majority of the people, so successful as the British, knew little about architecture, was sufficient proof to many persons that the true or false appreciation was of no national importance. But they should learn to distinguish between the genuine and the spurious article. Like the modern freemasons, they revelled in the semblance of mystery, and with far less excuse. Freemasons held secrets which were not worth disclosing, whilst architects trafficked in knowledge which it was suicidal to keep secret. Architects had not the courage of their convictions, and discredited in practice the theoretical means of proving them correct. In the choice of a style, the would-be client had only a little less confidence in himself than in the practitioner he consulted. He knew modern architecture was based upon the traditions of the past rather than the experience of the present; he knew, too, that an architect proper no longer existed. If he starved he did so by rules of art. This contradiction to the spirit of the architect would matter but little if, out of the chaos or architecture, something was transmitted in a tangible shape. Whilst a touch of nature made the whole world kin, a touch of art seemed only to divide them. Of the works of art which had been practised throughout the last three centuries, nothing survived. They had restored mediæval cathedrals and other works in a manner which would astonish the builders of them; but in spite of the resurrection almost general throughout the land, no one was convinced. Gathering courage from despair, they had unearthed a mystery. The antagonism existing between engineers and architects was due to the ignorant negation during the last 300 years of that philosophy which alone could raise architecture above the builder and the old curiosity dealer. The average client of to-day not only hindered them, but imposed upon them his taste; and an architect was now thought to be a luxury of commerce, and was known by the modicum of taste he possessed, which, in the days of Pope, was the curse of the few. Taste was to art what charity was to religion—they both covered a multitude of sins; and taste was the certain prey of error or disaster. Taste was the demon to whom the practitioner sacrificed himself when he inquired what style his client would like to adopt; it encouraged a trade in forged antiquities, and stimulated a system of falsity. That which was known as taste in art would be called an ugly name if it were applied to the ordinary circumstances of life. Modern art was seldom received in polite society, except it was attired in fancy costume. With regard to the young architect, he was entering life with the usual exalted views of the position of archi-

ture. Like everybody else, his first object was to get some one to employ him; and whatever style of architecture he might choose to adopt, he was prepared to execute his clients' wishes to the best of his ability, for it was a question of commerce. He must be a good draughtsman, for his clients would want to see something more than sketches; and if he could not cater for them they would go to others. To architects was partly due the Ritualistic revival which had too long irritated the nation. Creeds and styles were undoubtedly the tribute of man; and by many conscientious people they were regarded from an antiquarian point of view. The next generation might perhaps be spared these battles "twixt Tweedledum and Tweedledee." The so-called Queen Anne revival should not be entertained for an instant; and there was now nothing left to be called upon but utilitarianism, pure and simple. If they were to fight engineers successfully it must be done with their own weapons. Architects had all the materials at their disposal; and buildings should be erected without superfluous mouldings or elaborate decoration. Was there not, he would ask, any moral obligation binding on the practitioner to respect the principles of architecture? The authors of this last revival, knowing what was right, yet did wantonly what was wrong. The interests of the greater number were being sacrificed to the few. The battle was to be fought, and the cause was one of common sense. The actual condition of the public mind concerning architecture was one of confusion, perplexity, and despair. The Government had no alternative, and the ultra-Medievalists and the Queen Anne school were fully satisfied with the condition of affairs; but he would, in conclusion, urge upon them to set their faces against this Queen Anne revival.

Professor Kerr said that the paper just read suggested a deal of thought, and the writer possessed the rare felicity of being able to say bitter things without any bitterness. The impression it had left upon the mind ought to be one for good; it had attacked everything, and defended nothing. To members of the Association it was undoubtedly instructive. He had been an architect for a great number of years, and the longer he lived as an architect the more dissatisfied he felt with the profession of architecture; it seemed to him to serve the practitioner neither one way nor the other. It did not produce a full pocket, nor command public respect; and when one was dead and gone, he was only laughed at. Even Sir Charles Barry, probably the greatest genius in the present generation, was scarcely in his grave before there was contention after contention about his great work at Westminster upon questions of design; and now a similar demonstration, or a much more demonstrative one, was taking place regarding what was said to be the supreme style of architecture and excellency. It was of no use to design, for the style would go out of fashion as well as anything else.

Mr. T. Roger Smith confessed that the paper was really one difficult to criticise. It seemed to him that they must look at the position of matters and see if they could ascertain in which way they stood artistically. They had been born at an unfortunate time when the great period of artistic activity was going on and there was very little impulse to push them forward. They stood there, with their knowledge and tastes formed by thought, and it was perfectly absurd to attempt to ignore the fact that they had within their reach the precedents of Roman, Italian, and Gothic architecture, and they must to a certain extent use them. It was perfectly possible to erect plain common-sense buildings without any ornaments at all, and to make architectural drawings without any ornament; but there was a very large amount of architecture which must be done with architectural effect. Men had been artists before them, and all they could do was to improve a little what these artists had laboured to do for generations before them. One of the great architectural movements of the present day, the Gothic revival, reflected the kind of feeling which existed in the nation; but a great deal of it had now gone too far.

Mr. Edis thought as to the Queen Anne revival there was a great deal to be said for it; and if it had got them out of the stucco work, or pseudo-Classical work, he, for one, would be thankful. The School Board were doing a great deal of good; they had insisted, in the designs for new schools, upon having only plain buildings without any ornaments.

Mr. Phené Spiers was of opinion that it was a natural craving of the human race to have ornament of some form; every architectural nation had been guilty of the same faults which Mr. White had condemned. Architecture was not imitative, it was creative; and those who copied one material did it with the idea of imitating, but they were creating certain forms of building. He would recommend the members to study the principles of architecture laid down in M. Viollet-le-Duc's dictionary.

Mr. Armstrong contended that very few houses were built to the satisfaction of the clients. Elaborate ornaments placed outside houses only increased the expense; and if architects would endeavour to make buildings more plain and useful they would be more successful.

Mr. S. Flint Clarkson said that architects were blamed for that which they were not thoroughly responsible for; and this was fully exemplified in the building of churches, for the Church of England, as a body, did not know the style in which they wanted churches built. He would recommend architects to do the best they could, and not be led away; and to respect their principles, and admire and follow out, as best they could, what was high, noble, and thoroughly pure in architecture.

The president said, with regard to the Queen Anne revival, that while it lived it was a living style, and was a progressive style while it lasted. In reverting to it, then, they were reverting to a living style. As far as construction was concerned, they appeared to be returning to it; but it was a mistake to revert to poor mouldings when they had better at their command.

SURVEYORSHIPS.

The Marylebone Vestry have resolved to issue advertisements for a surveyor, at 600*l.* per annum.

Mr. James Hall, assistant borough surveyor, Tynemouth, has been unanimously elected surveyor to the South Stockton Local Board. There were ninety-six applicants for the appointment.

The Sheffield Highway and Improvement Committees have reduced the list of candidates for the borough surveyorship to the following six:—Mr. P. B. Coghlan, civil engineer, Margate; Mr. J. Bryson, assistant borough engineer, Newcastle; Mr. R. Vawser, borough surveyor, Warrington; Mr. W. H. Lancaster, chief assistant to Mr. Holmes; Mr. J. Pagan, assistant in the highway office; and Mr. J. A. Monks, surveyor, Broomhill. At another meeting each of these candidates will have an interview with the committees, and the list will then be further reduced to three, and from these the council will make a final selection.—A special meeting of the Rugby Board was held last week, to receive the resignation of the surveyor, Mr. Palmer, who has accepted an appointment at Great Malvern. The chairman, on behalf of the Board, said that they should be very sorry to lose Mr. Palmer, and he thought a resolution should be passed on the subject at the next general meeting of the Board.—Mr. John H. Swan, of Cannon-street, has been selected from a number of candidates to fill the office of surveyor to the Walthamstow Local Board.—The South Shields borough surveyor is Mr. Matthew Hall; not, as recently stated, Manhurstall.

THE DISCOVERIES IN THE TROAD.

Sir,—Some light may be thrown on one point in the most valuable discoveries in the Troad, described in last week's *Builder*, by Hebrew literature. You mention, in your interesting article, a silver goblet, and three large silver vases, which all possess the peculiarity of being rounded on the base. There were a large number of gold and of silver vessels among the treasures of the Temple at Jerusalem, which were formed in the same way. We know the cause in this case; and the inference may be drawn, that the Trojan vases, which were accompanied by six electrum knives and by a silver dish, were intended for sacrificial use.

In the Codex Peshachim, or *de Paschate*, of the Talmud (capit v., mischna 5), it is stated, that, when the paschal lamb was slain in the Temple, the priests stood in ranks, with sacrificial bowls of gold and silver in their hands. The ranks were distinct; that which held the golden vessels, having them all of gold, and that which held the silver, all of silver. The appointed Israelite (not a priest) slew the victim. The officiating priest caught the blood in a bowl, and handed

the vessel to the nearest in the row, who exchanged it for the empty bowl of the next, and the blood was thus handed on to the last of the rank, who dashed it on the foundation of the altar.

The exact point lies in the conclusion of the mischna in question, "and the vessels had no stands, lest they should set them down, and the blood might coagulate." Bartonera remarks on this, that the vessels in question were wide above, and narrow below, and that they were so formed that they could not stand, lest the priests, when the sacrifices were numerous, might set one on the ground, and forget it, so that the blood should coagulate and become unfit for asperision.

The blood in this case was cast from the bowl, and not from the finger of the priest. This latter mode of asperision was only practised in the case of the sin offering.

FRANCIS R. CONDER.

WOOD-WORKING MACHINERY.

Sir,—Believing that your columns are always open for the dissemination of useful knowledge, may I beg for an answer from one of your numerous correspondents to the following questions:—Why does not wood-working machinery, as well in England as in the United States? And, why is it not more in general use? I have resided in England during the year 1873, and on making inquiries have been surprised to find that three-fourths of the work which could be done by machinery is still done by hand; and that a great many employers, with large establishments, seem afraid to embark in machinery; while many who are now using it fail in making it a success. Now, why is this? I find that everything connected with machinery is cheaper here than in the States,—such as iron, coal, and labour (both in the manufacture of machinery and in using it), and that almost every quality of pine for the making of furniture, sashes, doors, blinds, and joinery work in general, is about the same price.

The Exhibition in Vienna last year proved beyond a doubt that England leads the world in the manufacture of machinery, and yet, in the application of it, she is a long way behind. I am aware the cry is often raised, that the introduction of machinery means the reduction of wages; but the fact that mechanics of all kinds are better paid on the other side of the Atlantic than here, will, I think, sufficiently disprove that. I think if machinery were brought more into general use, we should see a great improvement in the style and design of furniture, and it would be sold at a much cheaper rate than at present; and if used more in joinery work we should see more tasteful dwellings erected for the working class, instead of the wretched hovels which bear that name, or the prison-looking buildings called model lodging-houses.

B. J. A.

SHIPS' BOATS.

Sir,—Would it be impossible to have in a false cannon (in the porthole of a ship) a boat, which could be expeditiously launched when required, by something on the principle of a boy's pop-gun?

And where would it be "popped" to? Anyhow, nothing can well be worse than the mode in which ships' boats are at present mananged.

EXTENSIVE NEW BUILDING PROJECTS IN WALWORTH.

We understand that new building undertakings on an extensive scale will shortly be commenced on those portions of Walworth lying between the main Walworth-road and Kennington-park-road, and that they will involve the absorption of large areas situated within this particular district, including, amongst other sites, the Surrey Gardens, the spacious area, not far distant, now used as a vitriol manufactory, and other neighbouring plots of now vacant ground. It appears to be generally understood that the Surrey Gardens are not likely again to be opened as a place of public entertainment, but that they will shortly be utilised for building purposes. They will preliminary be step in this direction has, indeed, been already taken by the London School Board, which, under the powers it possesses, is now taking measures for the compulsory purchase of a portion of the grounds, on which to

erect a Board school; and we learn that negotiations are also in progress for the purchase of the whole of the remaining portion of the grounds forming the gardens, with a view to their being at once laid out in streets for building purposes. We understand that in the event of those negotiations being completed, the whole of the estate, consisting of several acres, will be so laid out as to admit of some hundreds of houses being erected, but that the plans contemplate the retention of the large and spacious theatre which, it is said, will continue to form one of the dramatic places of entertainment in South London. The vitriol manufactory to which we have referred, which it is said is also to be utilised for building upon, will admit of a large number of houses being erected on the site, and it is computed that in the course of the next twelve or eighteen months the population in this locality will in all probability be augmented to the extent of some 2,000 or 3,000. In connexion with this projected building it is further stated that a new church district has been formed in the locality, by separating a portion of the district of St. Paul's, Lorrimer-square, which at present contains a population of 16,500, and it is calculated that the new buildings to which we have alluded will bring up the population of this new district to 6,000. In anticipation of such population a new church, to be dedicated to St. Agnes, is about to be built, towards which one donor alone has already contributed the sum of 3,000l.

BERTHS FOR INTELLIGENT WORKMEN IN MINES.

THE Legislature, having determined to put a stop to inefficient management of mines, owing to which many men have lost their lives, the Home Office, in carrying out the Act of Parliament on Coal Mines, 1872, have appointed examiners of candidates for certificates of competency, and seventeen young men appeared at Darlington, before Mr. J. Daglish, M.E., of Tynemouth; Mr. A. L. Stevenson, M.E., of Durham; and Mr. John Foreman, the appointed examiners.

The candidates came from various parts of the district under the jurisdiction of the South Durham Board, which comprises the Whitby, Cleveland, Westmoreland, and South Durham mining districts.

The subjects of the examination comprised the geology of Northumberland and Durham, especially in reference to the coal formation; the practice and theory of ventilation, and the nature and properties of gases; the practical knowledge of the machinery and boilers generally in use at collieries; underground surveying; practical mine working; and acquaintance with the provisions of the Coal Mines Act of 1872.

The examination lasted upwards of eight hours; in addition to which each of the candidates underwent a separate *visu voce* examination.

As appointments fall in, the managers of mines—who have lucrative employments,—will be selected from the list of those men who have passed the examination. It remains to be seen if this step will prevent explosions.

THE SHOCKING STATE OF SKELMERSDALE.

THE sanitary condition of Skelmersdale has now been brought under the notice of a Government inspector,—Lieut.-Colonel Ponsouby Cox. The ratepayers, after protracted and ineffectual negotiations with the Ormskirk Rural Sanitary Authority, recently unanimously adopted the Local Government Acts of 1868. A petition for permission to establish a Local Board was accordingly sent to the Local Government Board, who ordered the inquiry. About 200 colliers, residents in the neighbourhood, were present, and abundance of evidence was given.

Mr. G. W. Goodison, civil engineer, Liverpool, said he had been retained by the committee acting on behalf of the ratepayers to inspect the district, which he had done on four different occasions. The report, which was printed, was accepted by the inspector as Mr. Goodison's evidence. In this report he says:—

"In all my experience I have not seen anything so bad as all compared with the present state of Skelmersdale, and no words of mine can convey the impression it has made on my mind. There is no wonder the place should

have been so full of sickness, and that diphtheria and scarlet fever should have taken the children in numbers. Some families have lost as many as three and four of their little ones during the last two or three months. Had it not been that Skelmersdale is naturally very healthy situated,—being in the midst of a fine open country, and at an elevation at its highest point of about 240 ft. above Ordnance datum,—and that the houses are scattered over a large area, my firm conviction is that some terrible epidemic would ere this have visited it, and left its mark never to be forgotten. I think, therefore, it has escaped wonderfully, considering its vast mass of filth, the total absence of pure, wholesome water, or proper means of drainage, and the wretched character generally of the houses themselves. Overcrowding is also to be found in a great many houses. What Skelmersdale wants is an active and intelligent Local Board."

The inspector himself said he saw enough in an hour and a half to convince him that the sanitary state of the district was shocking; in fact, he was quite horrified. It was clear that the powers of the Rural Sanitary Authority were not sufficient to meet the state of things which existed, and which was likely to exist.

The inspector will, of course, make his report to the Local Government Board; and it is to be hoped that not a moment will be lost in preparing for warfare with the abounding filth, the uninhabitable houses, the abominable water-supply, and the utter want of proper drainage which have hitherto prevailed in Skelmersdale.

SCHOOL BOARDS.

The New Officers for the London Board.—At the last meeting of the London Board, the committee reported that Messrs. Woodfall & Kinder, the leaseholders and occupiers of the property on the east side of the new Board offices, and also the Duke of Norfolk, the freeholder, consider that their rights of light and air will be infringed if the building be erected in accordance with the plans. The committee are of opinion that this is not the case; but in order to save the delay which would arise if an injunction were obtained in Chancery restraining the Board from proceeding with the building, they have agreed to refer to Mr. P. Anson the question of compensation, if any, to be paid in satisfaction of the above claims.

BUILDERS' ACTIONS.

PETTINGREW AND ANOTHER v. STRIDE.

THE plaintiffs in this case, tried in the Court of Common Pleas, before Mr. Justice Brett, Messrs. Pettigrew & Moyes, were builders, and the defendant, Miss Stride, was a lady who is well known as devoting her life to works of charity. Some time after the Covent-street murder had been committed, she took the house in which that crime was perpetrated and converted it into a home for discharged prisoners. The premises wanted some repairs, and among other things the blood-stains from the murder had to be obliterated. The plaintiffs contracted to do the work for 60l. 10s. Of this 20l. had been paid, and 9l. more was paid into court. The present action was to recover the balance.

The principal question in the case was whether the work had been well and properly done; and upon this question evidence was given on both sides.

The jury found for the plaintiff for 36l. 10s. beyond the sum paid into court.

"DICTIONARY OF ARTISTS."

SIR,—Will you permit me to call attention to an omission in the valuable "Dictionary of Artists of the English School," by Mr. Samuel Redgrave, which has been recently published by Messrs. Longmans, Green, & Co.?

Whilst enumerating many of the minor works of my father, the late Capt. Fowke, R.E., Mr. Redgrave omits to mention the fact that the original design for the Royal Albert Hall was his.

I have pointed this error out to the author, who has kindly promised that it shall be corrected in any future editions of his work; but, as he does not contemplate its speedy re-issue, I trust that you will allow me, at once, to notify an oversight which is most damaging to my father's memory, and which, occurring in a work of so high authority, is doubly injurious. FRANK REDF. FOWKE.

ALLEGED ILLEGAL DISMISSAL OF A CARELESS WORKMAN.

PICKERING v. THE BRITANNIA IRONWORKS COMPANY.

THIS action, brought to recover the sum of 7l. 18s. 6d., at the last sittings of the Durham County Court, has for some time past created considerable excitement between the working men of the North of England and extensive employers, and, as will be seen, a question arose as to the right of employers instantly to dismiss a man on the plea of dangerous negligence, without paying wages due or giving the usual notice.

In November last, the defendants in the present action sent the present plaintiff for compensation for loss caused by him for having negligently fixed a manhole-plate in an immense boiler, which stopped the works, as well as endangered the lives of several hundreds of men and the total destruction of the Britannia Ironworks.

Evidence was then given on behalf of the Britannia Ironworks Company that it was Pickering's (the present plaintiff's) duty to fix the plate; whilst Pickering con-

tended that it was not his duty to fix the plate, but that of the hammer-driver; and secondly, that he had not been guilty of negligence, inasmuch as the usual marks (crosses made with a chisel) to guide workmen in fitting the plate had not been cut on the plate in question, and that the company were bound to have seen to this, and by not doing so they were the negligent parties, and had a loss of life taken place, the company would have been answerable for the disaster.

The Judge, upon that occasion, found a verdict for Pickering, on the ground that the company had themselves been guilty of contributory negligence in not having the usual marks affixed to a plate of so particular and dangerous a nature.

Pickering having 4l. 18s. 6d. due for wages, applied for payment, and it did not clearly transpire why the company refused it, seeing that the law had ruled that the master was as bad as the man; but when the present suit was brought, the company paid the wages into court in full satisfaction of all demands. Pickering refused to accept the wages by themselves, as doing so would have made him relinquish 3l., a fortnight's wages, he claimed in lieu of notice and wrongful dismissal.

Counsel were now, as before, retained at considerable expense, and delegates of workmen were also in attendance.

In answer to Mr. Chambers, who appeared for the plaintiff, Mr. Pickering, now stated that he was formerly in the employment of Messrs. Radcliffe, Hopper, & Company, the representatives of the Britannia Ironworks, as a boiler-fitter, until the latter part of last year, when he was dismissed without the usual notice. The workmen connected with the works were bound, according to one of the rules at the foundry, to give the masters a fortnight's notice, and the masters were required to do the same to the men.

On the 9th October, last year, Mr. Wilson, the engineer of the works, went to witness and said, "You have made a fine job of it." Mr. Wilson referred to the bursting open of the man-hole, and desired him to go home, as he had put another man in his place.

Mr. Wilson, the engineer, was called to give his version of the matter, on behalf of the defendants. He stated that since the trial in last November, he had more carefully examined the man-hole plate in question, and found that the usual and necessary marks were actually on the plate.

In cross-examination by Mr. Chambers, he said he had prepared the plan of the man-hole produced at the previous trial. He did not show the marks on the plate because he did not think they were of any importance to the case. A man might look at the plate fifty times and not see the crosses, unless he searched particularly for them. He believed the masters gave the men a fortnight's notice. It was Pickering's duty to keep these crosses clean. It was not possible to put another plate on the man-hole.

George Cookburn, foreman smith, said that the marks were properly affixed to the plate at the time the explosion took place in October last. Pickering was formerly a hammer-driver in the firm.

The Judge said, at the last trial it was sworn that these crosses were not marked on the plate; but it had been now proved that they were there. If these marks were filled up with dirt, it was the fault of Pickering, the plaintiff, in not keeping them clean. It also turned out that the plaintiff was formerly a hammer-driver himself, and therefore ought to have been familiar with the work of fixing these down. He therefore considered there was sufficient negligence on the plaintiff's part in justifying the defendants summarily dismissing him; and more negligence had now been shown on the part of Pickering than at the previous trial. He should order the wages paid into court to be given to the plaintiff. On the question of dismissal, he found for the defendant, with costs against the plaintiff.

The latter order will more than absorb the wages paid into court; so that Pickering, instead of drawing any money out, will have to pay some in, most probably.

REGISTERING STEAM GAUGE.

SIR,—Your readers will be interested to have a slight description of Everett's Registering Steam Gauge, which is now being introduced into this country, after having been for some time adopted in America. It consists of an ordinary gauge, with two additional dials, one registering the extreme pressure ever attained in the boiler, and the other the number of times in any period that the pressure rises above a pre-arranged pressure or pressure. It is also impossible for any one to obtain access to the registering apparatus, without the tampering being apparent to the most casual observer. This being the case, there is no doubt in my mind, that the adoption of the gauge will produce a very salutary effect upon the caution displayed by stokers and drivers. My own experience tells me that superintendents and proprietors of steam-boilers, little know how often the pressure obtained, exceeds the prescribed limits, and it is well we should have ocular demonstration of this when going the round of inspection. I have had one of Everett's gauges at work, in connexion with the boiler in use in this school for some time, and its action is perfect; it is also very simple, and not at all likely to get out of order. J. W. WILSON, Principal, Practical Engineering School, Crystal Palace.

ACTION FOR EXTRAS.

ON Monday, the 26th, the Judges of the Court of Exchequer, sitting in *Banc*, the Lord Chief Baron Kelly and Barons Pigott and Cleasby, decided an important and long-pending case with regard to the law of extras. The plaintiff, Messrs. Laidlaw, are iron pier builders, of Glasgow, and had contracted with the Hastings Pier Company to erect the Hastings Pier for the sum of 23,250l. After the pier was built the plaintiffs sent in a further claim for extras. The Pier Company objected to pay for these extras, and Messrs. Laidlaw brought an action to recover the amount. After the matter had been gone into, the Court ordered it to be turned into a special case, and accordingly it now came before the judges in *Banc*.

From the statement of Mr. Watkins Williams, Q.C., who appeared for Messrs. Laidlaw, it seemed that the contract was signed on December 9th, 1869, and on the 16th the plaintiffs got instructions to proceed with the works. By a clause in the contract the pier was to be finished in March, 1871.

By one clause of the contract the plaintiffs were to be paid by monthly subscriptions, upon the certi-

seats of the Pier Engineer, Mr. Broth, that work to the amount signed for, had been executed, and was satisfactory. It was also stipulated that no extra work was to be paid for unless certified to be necessary by Mr. Broth, and this certificate was also to be signed by the Chairman of the Hastings Pier Board of Directors. The items for the extra amounting to £2,000, were many, and various, and disputed.

The defendants denied their liability to the cost of these extras, on the ground that the Chairman of the Board of Directors had not assigned the extra work to them, with the exception of trifling items. The Engineer's own certificate, it was contended, was valueless, without the Chairman's signature.

The Lord Chief Baron, after a long argument, said the court were unanimous in their opinion that judgment must be pronounced for the plaintiffs, with full costs.

ACCIDENTS.

Partial Destruction of Whitley Abbey.—This edifice has been partially destroyed by fire. Owing to the efforts of the fire-brigade, only the western and middle parts were burnt. The most valuable portions, consisting of the pictures and plate, were saved. Mr. Petrie, the owner, is fully insured.

A House Blown Down at Driffield.—Mr. Weatherill, of Hutton Cranswick, had just erected a new house and shop, at the corner of George-street, facing Middle-street, but not slated, and during a recent gale the roof and upper story of the building were blown over, and the greater part of the brickwork came down upon Boak's Photographic Gallery, under the north side of the building, which is seriously injured; the remainder of the north wall is cracked and bulged out. A large pile of timber was also blown down, and fell upon Mr. Temple's wall, and knocked it down.

Fall of a House Floor during a Sale at Holmfirth.—At the village of Scholes, where Mr. J. Samlerson was conducting an auction sale, at a cottage house of a person named Littlewood, the sale was being held on the ground-floor, when the floor gave way, and the occupants, mostly females, fell into the cellar. Fortunately none were seriously hurt.

SANITARY LEGISLATION.

SIR,—Any letter over the subscription "S. G. O." is sure to contain something valuable from the extensive knowledge and experience of the writer. One that appeared in the *Times* of the 1st instant fully bears that character, though I cannot quite agree with the writer in some of his conclusions. Fully agreeing with "S. G. O." in many of his facts, I think I can explain in some measure how it is that the Public Health Act of 1872 fails to fulfil the object of its projectors, and I am the more readily able to do so from the fact that I hold the position of Medical Officer of Health to a Board "within a few hours' drive" of the spot whence "S. G. O.'s" letter is dated.

On the passing of the Act referred to, and the reception by the Local Board and Rural Sanitary Authorities of the instructions from the Local Government Board to appoint medical officers of health and inspectors of nuisances, there was considerable delay in making the appointments, each "Authority" waiting to see what its neighbouring "Authority" was about to do. This delay was rather augmented by the different advice given to the "Authorities" by the inspectors of the Local Government Board in their various districts, some advising the appointment of the above-mentioned officers for large and widely extended districts; others for small and more limited areas. Some of these medical officers are not appointed at this time.

The appointment I now hold was made in August last, that of the inspector of nuisances two or three months later; consequently our work is in its infancy, and in far too crude and amateur a state even for the friendly criticism of "S. G. O." Added to which, my experience is, that however zealous the medical officer of health may be, he may and will find his suggestions thwarted when placed before his Board, either through their so-called economy, or their utter ignorance of the powers conferred upon them by the Public Health Act. My own diary and monthly reports show the delay that has taken place in acting on reports founded on analysis of water and other matters.

In conclusion, I believe that, as Local Boards and their officers become more acquainted with their duties, they will carry them out more thoroughly and effectually, as is evidenced in the case of larger towns, where a similar Act has been in force for some years; but at present

sanitary matters are in a very crude state, especially in small communities. Our best thanks are due to "S. G. O." for calling public attention to the fact, and adding to the deep debt of gratitude that is due to him from his truly philanthropic services to his neighbours.

J. INGLEBY MACKENZIE, M.B., Cantab.,
Medical Officer of Health, Sidmouth.

NEW INFIRMARY BUILDINGS IN MARYLEBONE.

THE Marylebone guardians are about to erect a new infirmary in connexion with the union, but distinct from the workhouse, and have just taken the preliminary steps in respect of the purchase of a site. It appears that when the guardians proposed, a short time ago, to erect an administrative block at the corner of the Marylebone-road, the Local Government Board raised the whole question of rebuilding the workhouse; but, after considering the matter, it has been found that, in the event of a new workhouse being built to hold 600 sick and 1,500 chronic and able-bodied paupers it would be too high, and numerous stairs would be found objectionable. The workhouse reconstruction committee have, therefore, visited several workhouses where there are separate infirmaries, and have come to the conclusion that separate infirmary buildings are desirable. Acting upon this recommendation, the guardians, at their last meeting, decided to purchase a site for a new infirmary either in the parish or within a reasonable distance from the parish boundary. The site to be purchased is between two and three acres in extent, and we understand that negotiations are now in progress for a plot of land eligibly situated near the parish boundary. The estimated cost of the land and buildings is set down at about 50,000*l.*, the repayment of the amount to be spread over a period of thirty years, involving an annual rate of from one halfpenny to three-farthings in the pound.

WATER FOR THE METROPOLIS.

ACCORDING to the last report of the Water Examiner, the construction of additional subsiding and impounding reservoirs by the Chelsea, Grand Junction, and Southwark and Vauxhall Companies, is most desirable.

The Kent Company are now giving constant supply in Deptford, and having applied to the Metropolitan Board of Works in conformity with sec. 34 of the Metropolitan Water Act, 1871, for instructions for affixing hydrants to the mains in this portion of the company's district, the Board has given an order for thirty hydrants to be erected at distances of 200 yards apart. This company are about to extend the constant supply in their district.

The New River Company have now the power of affording effective constant service in their district. They have also commenced a new high-service covered reservoir to contain 1,000,000 gallons at Southgate, in anticipation of the requirements of the water supply to Edmonton parish.

The East London Company are extending the constant system of supply in their district, and have given formal notice to the Metropolitan Board of Works and to the Corporation of the City of London that they propose within the next six months to give a constant supply of water throughout a certain district.

The West Middlesex Company are giving constant supply to a number of houses on the application of the owners, who have provided fittings according to the Board of Trade Regulations of the 10th of August, 1872, and are fully prepared to extend the constant supply when called upon.

The Examiner appears to say the same thing several times over, as that his report often reads very much like the one that preceded it.

Old London.—The premises of Messrs. Hobson & Co., in Lombard-street and George-yard adjoining, have just been rebuilt. In excavating the old building, an old stone lintel was found over the jamb of an old door-way, leading to a subterranean passage. On obtaining access to this passage, and examining it, several remnants of human remains were discovered, including a number of skulls and bones. The lintel bore the date, 1669.

GLASGOW IMPROVEMENTS.

At a meeting of the Police Board, the clerk read a report from Mr. John Carrick, in which it was said:—For many years the subject of public waiting-rooms has engaged the attention of many members of the Board, and so impressed are the City Improvement Trustees with the importance of the subject, that they have resolved to erect a commodious waiting-room, open to the public in the immediate neighbourhood of the Cross, having suitable retiring-places for women. The question of providing resting-places has also engaged their attention, and a contract has been entered into for the erection of an iron structure, ornamental in its design, at the Bridgeton Cross, provided with seats and drinking-fountains. I have endeavoured in the design now submitted, to carry out on a small scale these objects. The plan purports the erection of a waiting-room on the eastern division of the ground, plain in its character. The inside to be of glazed brick, and provided with seats, and a retiring-room for women. Outside of the building seats may be formed, which may be partly under cover of a verandah. A water fountain of a monumental character is proposed to be erected at the corner of Yates-street;—all the ground to be enclosed with suitable iron railing, and the whole laid down in grass and shrubbery. The subject of suitable "resting-places" has never received the attention its importance deserves in large towns.

Mr. Miller proposed that the Finance Committee should be taken in along with the Watching and Lighting Committee in considering this question.

The minutes and Mr. Miller's proposal were agreed to.

STAINED GLASS.

Orlerton Church.—Mr. Cecil G. Savile Foljambe, of Cockle, near Orlerton, has designed and painted a memorial window, in the Early English style, in memory of his deceased wife, which has recently been put up in the east window of the chancel of this church. The intention of the design, by the six subjects chosen, is evidently to show the victory of Christ over death and the grave. The subjects are in panels (two in each light), with a grisaille pattern above, below, and between them. In the centre light is the Crucifixion, with the words, "It is finished," beneath; on the left of it the Entombment, with the words underneath, "A new sepulchre, in which man was never yet laid"; on the right the Resurrection, and the words below it, "I am the Resurrection and the Life." The three lower subjects are as follow:—

The centre one, "The raising of Lazarus," with the words under, "Lazarus, come forth," on the left of which is the raising to life of the widow of Nain's son, and beneath it the words, "Young man, I say unto thee, arise," while to the right is, the raising to life of Jairus's daughter, with the words below, "Damsel, I say unto thee, arise." The glass was supplied by Messrs. Heaton, Butler, & Bayne, of London. Mr. Foljambe has caused the floor beneath the window to be inlaid with encaustic tiles, to harmonise in colour and tone with the light of the same; the tiles from the firm of Ludwig Oppenheimer, London and Manchester, whilst the walls beneath, and to the right and left, are in drapery panelling in pitch pine. On the north wall of the chancel is erected a black marble tablet, which records the name, age, and parentage of Mrs. Foljambe, who died in 1869. Mr. Foljambe had the two tables of the Decalogue illuminated.

St. Thomas's, Nottingham.—The two chancel windows of this church have been lately fitted with stained glass, in memory of Mr. and Mrs. Sparrow, Nottingham. The subjects of the windows are unusual, there being in them no human figure. The Biblical dispensations are portrayed by means of trees, plants, and emblems. The windows are on each side of the chancel; the left window setting forth the old dispensation, the right the new; each with three divisions. The first division contains the patriarchal dispensation, which is indicated by the oak of Mamre, or Abraham's oak. Underneath it is a ram caught in a thicket of wild reeds, and the text, "The Lord made a covenant with Abraham." Below this is represented the river Nile, with its lotus-flower, maize, and papyrus plant, and on either side is the sacred ibis—all suggestive of the words, "Remember the law of Moses, my servant." The lowest compartment contains the priestly dispensation.

and the dawn of Christianity—a sunrise behind a frankincense tree, with the text, "The Sun of righteousness shall arise." The other window symbolises the annunciation, the triumph, and the passion of our Saviour. The annunciation is indicated by a group of white lilies, into which a dove is descending—text, "His name Emmanuel, God with us." The triumph is, of course, suggested by palm-trees, and the words, "Behold the King cometh unto thee"; and the passion by the setting sun behind an olive-tree—text, "Not my will but Thine be done." There is a border of pomegranates and roses round each window. The artists were Messrs. Heaton, Butler, & Bayne, of London. We are informed that the walls of the church, which are of brick, are shortly to be varied and lightened by decorative colouring, the whole of the work being given by a generous friend of the church.

St. Mathew's, Nottingham.—A painted window has just been erected in this church in memory of her husband by Mrs. Lambert. It is the centre of a three-light east window, the subject being the Annunciation, and is eminently pictorial in its treatment. The Virgin is represented kneeling, and surprised in her devotion by the descent of the angel. The base and canopies in the border are ornamented; lilies being conspicuous. It is intended to fill the side lights, one with the Presentation in the Temple, the other with Christ disputing with the Doctors. The whole forming the story of the childhood of the Saviour. The work is from the studio of Messrs. O'Connor & Taylor, of London.

St. John's, Cullingtonworth.—A stained glass window, executed by Messrs. Cox & Sons, of London, has recently been placed in this church by Mrs. G. H. Townsend, of Park Road, Manningham, formerly of the Royd, Cullingtonworth. It is a memorial window, and the glass is designed to suit the stone-work, which is of thirteenth-century character. The main portion is occupied with a large figure of our Lord in the act of benediction, robed in a ruby tunic, with a white outer garment enriched with ornaments, and leaved in. The head is surrounded by a nimbus, in which the cross is introduced. The background is blue, encolored by dispersed shafts supporting the canopy which fills up the upper part of the window.

Theddingworth Church.—A stained-glass window has recently been placed in this church to the memory of Mrs. Elizabeth Lyne, wife of the late Robert Edwin Lyne, of Theddingworth. This window has been produced by Messrs. Lavers, Barrard, & Westlake, of London, and was on view in the late International Exhibition. It is in the manner of the Renaissance. The subjects forming the prominent centres of the three lights are as follow:—In the centre the Virgin seated on a throne, with the Infant Christ on the right; the interior of the carpenter's shop, with Christ, the Virgin, and Joseph, and representing Christ as obedient to his parents. On the left hand, the interior of the Temple, with Hannah presenting Samuel. Each subject is surmounted by a canopy, supported by square columns.

South Malling Church, Lewes.—The stained-glass window to the memory of the late Rev. William Courtthorpe, for some time incumbent of the parish, has been erected. Upon the recent restoration of the church, a new window of three lights was introduced at the east end. The family of Mr. Courtthorpe intimated their desire to give this window, and orders were accordingly given by them to Messrs. A. Gibbs & Co., of Bedford-square, London, to prepare a suitable design. The style adopted is the Early English, and the design consists of three medallions in each light, on a floriated ground. Each medallion represents an incident in the life of the Saviour, and is surrounded by an edging of luminous glass like a setting in jewels. We understand that the late Mr. Courtthorpe contemplated the re-decoration of the church, and that he had, in fact, just before his last illness, given orders for the preparation of suitable ecclesiastical windows.

St. Michael's and All Angels, North Kensington. In memory of three of the missionary bishops of the English Church stained glass windows have lately been erected by Messrs. Cox & Sons, of London; one to the memory of Bishop Gray, metropolitan of South Africa, placed in his son's church, St. Michael's and All Angels, North Kensington; and another as a memorial of Bishops Hatchard and Huxtable, sent out for the cathedral church of their diocese at Port Louis, Mauritius. The memorial to Bishop Gray is in the Renaissance style, consisting of a repre-

sensation of the Ascension in a panel of simple form with a diapered ground of a rather dull blue. The Hatchard and Huxtable memorial will occupy a three-light window with broad openings, and is in the style of the fourteenth century, the centre light having the figure of our Lord, the Good Shepherd, and the side lights representations of St. Paul preaching at Athens, and St. Peter laying on Hands. Each subject is surmounted by a canopy.

Carrington Church.—A window has just been placed in the east end of the newly-erected chancel of St. John the Evangelist's Church, Carrington, in memory of the late Mr. Ichabod Charles Wright, of Mapperley Hall, at the cost of his widow and four surviving sons. Mr. Wright was a translator of Dante and Homer. The window is the work of Messrs. Barlison & Grylls, of London, who have also lately put a window in the parish church of Keyworth. The window prepared for Carrington Church consists of five lights and tracery. The centre light contains a representation of our Lord upon the Cross, surrounded by a vesica, from which proceed rays of divine glory. In the lights on either side are figures of SS. Mary and John, watching by the Cross. These figures are under canopies, and form the principal feature of the window. Above and below are quarries, upon which are bosses of colour. There is also an ornamental border. The two outermost lights are filled with the same description of ornament, but without any figures. The largest piece of tracery contains the dove, emblem of the Holy Spirit, surrounded by cherubim; while in two other pieces on either side are figures of SS. Gabriel and Mary the Virgin, the whole representing the mystery of Christ's incarnation. The remainder of the tracery is filled with ornament of a simple character.

Over Stoney Church, Somerset.—The western window in the north aisle of this church has been filled with painted glass, by Messrs. Morris & Co., as a tribute to the memory of Lord Taunton. It is the gift of his widow.

Books Received.

The Altar: its Baldaquin and Reredos. By R. POTTLEWELL PULLAN. London: G. J. Palmer, 1873.

In this pamphlet Mr. Pullan gives a number of sketches for baldachins, and apologises for their "roughness and imperfections," on the ground "that they were executed in haste, in order that they might be published before the interest of the public should cool on the subject." If there were a general feeling throughout the country, that to put up a baldachino over the communion-table and otherwise transform it into an altar, was the right thing to do in every church, we could understand this rough and ready attempt to supply the demand. The fact is, however, there is nothing of the kind. The baldachino is a party flag (a very small-party flag) with which the bone and sinew of Protestant England will have nothing to do.

We much prefer meeting our esteemed correspondent of old times in his former capacity, that of explorer and recorder, than as a controversialist.

VARIORUM.

MESSRS. SPRAQUE & Co.'s very useful "Tables, Calculations, and Memoranda" have been revised, and have been added to with respect to Strength of Iron Girders. The List of District Surveyors has been revised up to January, 1874, and is the only published list so convenient a form.—The current number of the *Quarterly* includes a long and very interesting account of Winckelmann and his works,—the wonderful career of the pauper son of a pauper cobbler from the bleak region of the Old March; who "first brought light into what had been up to his time a chaotic mass of desultory ideas and confused theories. He found the study of Art a string of disconnected, fanciful, and haphazard notions; he left it crystallised into a system, the theorems of which, as evolved by himself, have in all essentials stood the test of experience, and have been confirmed by the touchstone of progressive criticism."—Principal Dawson, of Montreal, has commenced in the *Leisure Hour* a short series of papers on Pre-historic Remains in America, which may throw light on some disputed questions of European archæology, and on the antiquity of man.—Professor E. Hull has communicated to the *Geological Magazine* for

January, two papers "On the Microscopic Structure of Irish Granites," which are valuable contributions to this branch of inquiry.—A pile of books wants attention, and will have it forthwith.

Miscellaneous.

Lecture on Electricity at the Charterhouse.—An interesting lecture has been delivered at the Charterhouse by Dr. B. W. Richardson, F.R.S., on "The Original Discoveries in Electricity of Stephen Gray," first Copley Medallist of the Royal Society, who had been a brother of the Charterhouse from 1719 to 1735. A considerable number of guests assembled in the great hall. Stephen Gray first discovered that the electric power could be transmitted along cords or wires, the result being that of electrical action at a distance from the exciting cause. Trying these experiments led him to discover the important principles of conductors and insulators. Induction soon followed, and at the house of Mr. Granville Wheeler he laid what might be called the first electric telegraph, by which, on the 14th of June, 1729, he transmitted electricity along 870 ft. of wire insulated on silk thread stretched across between a series of pairs of poles. In 1731 the result of these experiments was laid before the Royal Society. Gray was soon afterwards admitted a Fellow, and a little later was presented with the Fothergillian gold medal. He continued to experiment in electricity until his death, which occurred on the 15th February, 1735. He predicted that some day the electric spark would be produced so as to resemble lightning, and even went so far as to suggest that lightning was electricity.

The William Salt Library, Stafford.—The dedication to the public of the literary collection called the William Salt Library, has taken place. The premises in Stafford Market-square, long known as the Old Bank, have been adapted for the purpose. The reading-room comprises the bank and adjacent offices, and is 38 ft. by 17 ft., having also a convenient ante-room through which the public are admitted, out of Bank-passage, and from which an upper room of the same dimensions as the library is approached, containing as yet the less presentable portions of the collection. The reading-room presents a comfortable appearance. It is fitted and furnished with polished oak, the greater portion of the bookshelves being the gift of Mrs. W. Salt. The floor is covered with linoleum, and the whole premises are warmed by hot-water pipes. Although the principal wealth of this library consists in its collection of books, MSS. (original and transcribed), drawings, deeds, and engravings illustrative of the county of Stafford, it is interesting besides to the general reader, as containing representatives, more or less, of almost every department of general literature.

London Fire Statistics.—The report of the chief officer of the Metropolitan Fire Brigade on the state of the brigade and the fires in London, during the year 1873, has been issued in a printed form. It states, that in 1873 there were 1,703 calls for fires. Of these, 83 were false alarms, 72 chimney alarms, and 1,548 were calls for fires, of which 166 resulted in serious damage, and 1,382 in slight damage. The fires of 1873, compared with the average of the last ten years, show a decrease of 17. The proportion of serious to slight losses in 1873,—166 to 1,382,—is about as favourable as hitherto. The reporter, Captain Shaw, calls attention, as he has often done before, to the enormous height to which buildings are erected in London, without any precautions whatever for the safety of life in the upper stories. The fire-escape in use can only be made to reach 50 ft.; consequently, persons living in lofty buildings should invariably make their own arrangements for getting down externally to spots within reach of these machines. Amongst other plans he points to iron ladders and balconies, under special arrangements.

Chislehurst.—On Saturday morning the new Petty Sessions Court was opened at Chislehurst. The building has been erected in the rear of the new police-station, just completed, near Camden House. There has never been a police-court at Chislehurst before, and the ordinary cases of persons charged before magistrates have hitherto been heard at Sidcup.

Honour to a Sheffield Manufacturer.—It is pleasant to learn that the Emperor of Austria has conferred the Knight's Cross of the Order of Francis Joseph upon Mr. Joseph B. Jackson, Etna Works, Sheffield. The decoration is a gold cross, bearing in the centre the Emperor's initials, and suspended from a crimson riband. The following is a translation of the decree:—"His Imperial and Royal Apostolic Majesty the Emperor of Austria has, under his most august signature of the 27th October, 1873, been most graciously pleased to bestow upon Mr. Joseph B. Jackson, of Sheffield, saw manufacturer, the Knight's Cross of the Order of Francis Joseph." The Secretary of the British Commission when sending the order to Mr. Jackson, said: "It is a source of great gratification that I am allowed thus to convey to you a just appreciation of the great excellence of the manufactures of your world-known firm."

Land near Chichester.—A sale of property situated in Chichester and the neighbourhood was conducted by Messrs. Wyatt & Son, at the Dolphin Hotel, last week. The property consisted of about seventeen acres of leasehold meadow land at New Fishbourne, and two freehold houses in Chichester; but the land, being leasehold for long periods, was really equal to freehold. Lot 1, consisting of 3a. 1r. 14p. of meadow land, near the railway crossing at Fishbourne, and let at 16l. per annum, was knocked down to Mr. F. C. Sparkes, of Wittering, for 740l. Lot 2, separated from the last lot by the railway, and comprising 1a. 0r. 30p., fell to the nod of Mr. F. N. Hobgen for 165l. Lot 3, also to the north of the railway, and fronting the road running to Salt-hill, consisted of 5a. 1r. 80p. Mr. Sparkes was again the purchaser for 700l.

A New Trade Union.—On Saturday night a meeting was held, consisting of delegates from the London Street Masons, at the Marquis of Granby, Granby-street, New-out, to draw up rules for the formation of a society for the men. The objects of the society are to promote the general welfare of the men engaged in the stone-paving business in London—generally known as York and granite masons—apart from paviours, the number in the metropolis being nearly 3,000. The body of men are constantly receiving accessions from the provinces, and it is now intended to consolidate the whole body throughout the kingdom in one society, as has been done through the present organisation of the general masons. Rules were drawn up on Saturday, and will be submitted to a future meeting.

New Reredos for St. Paul's Church, Carlisle.—A new carved oak reredos has been erected in this church. It is the gift of the vicar, the Rev. F. Richardson, and of his wife, and it is intended as a memorial of Mrs. Richardson's father, who took a warm interest in the church. The style of the reredos is Gothic, in harmony with the architecture of the church, and its ornaments are entirely of a floriated character, no figures having been introduced. The arcade stretches across the whole breadth of the chancel, and there are two returns extending towards the communion rails. Messrs. Habershon & Brock, architects of the church, furnished the drawings, and the work has been executed by Messrs. Jonathan Kirkbride & Sons, the carver being Mr. Riddell.

London by the Thames, Seventeenth Century.—Messrs. Hogarth, of Mount-street, Grosvenor-square, have on view a picture representing the river-side of Westminster, with the landing of Catherine of Braganza at the Palace of Whitehall, attended by the civic authorities. The picture is probably the work of Thomas Wyck, sometimes called Van Wyck, who came to England at the Restoration, and settled here, where he painted, amongst other known works, a view of the parade in St. James's Park, with King Charles II. and his court walking. He died about 1682. The picture at Messrs. Hogarth's is interesting as showing part of London no longer remaining, and the stateliness which accompanied such a procession at the period of the event in question.

A Shaky Steeple.—A vestry meeting of the parishioners of Holy Trinity, Stockton, have decided on taking down and rebuilding 22 ft. of the steeple, in consequence of its shaky and dilapidated condition. The cost is to be defrayed by subscription, and the work will be carried out under the superintendence of Messrs. Weatherill & Moses, of Stockton, architects.

Annual Meeting of Altrincham Master Builders' Association.—The fifth annual meeting of the Altrincham Builders' Association has been held for the transaction of the usual business and appointment of officers for the ensuing year. Mr. Henry Kenyon was elected president; Messrs. J. L. Owen, Drinkwater, and Buck, vice-presidents; Messrs. Kenyon and Douglas, trustees; and a committee of seven members. Mr. James Hamilton was re-elected secretary and treasurer. After a vote of thanks to Mr. Kirkley, of Sale, the retiring president, who had occupied the chair, the meeting adjourned for the annual dinner, which was provided in the Station Hotel. Mr. Kenyon occupied the chair as president for the year, and Mr. J. L. Owen the vice-chair.

Sale of Ely Chapel.—Messrs. Edwin Fox & Bonfield had a numerous company on Wednesday morning last, when they offered for sale what they described as "the grand old edifice, situated in Ely-place, Holborn, formerly the private chapel of the Bishop of Ely, but now designated as St. Etheldreda's Chapel, and used for the purpose of Welsh service." The first offer was 2,000l., and the edifice was eventually sold for 5,250l. Mr. St. Quintin, of the Royal Exchange Buildings, was the purchaser, and he declined to say for what purpose it had been bought. Let us hope, for preservation, whatever we may fear. Several well-known architects and antiquaries were present, but we are not aware that they had any funds at command for the purpose of buying the chapel.

A Cemetery for Wellington.—At a vestry meeting held at All Saints' Church, Wellington, in connexion with the Local Burial Board, for the purpose of obtaining the sanction of the ratepayers to the borrowing of 3,500l., required for the erection of mortuary chapels and lodges, and the laying out of a cemetery, &c., the clerk to the Board, entered into the particulars of the sum asked for, as follows:—Erection of the two chapels, 2,500l.; lodge and gates, 375l.; laying out of paths, 260l.; plants and shrubs, 100l.; architect's commission, 160l.; leaving a margin of some 105l. for contingent expenses. Of 1,750l. already borrowed for the payment of the land and drainage there remained 309l. in hand. The consent of the meeting was given to the Board to raise the money.

A Public Aquarium for Liverpool.—For some time past a project has been on foot for the erection of an aquarium and winter garden in Liverpool, and Mr. Willert Beale, well known to musical and artistic fame, has now succeeded in forming a company for this purpose, and it is stated that the greater portion of the capital has been already subscribed without any general appeal to the public at large. A favourable site has been secured in close proximity to the Philharmonic Hall, and it is intended to erect an aquarium, conservatory, concert-room, and other necessary buildings. The architect, Mr. C. H. Driver, estimates that the cost would be about 45,000l.

Liverpool Architectural Society.—The fifth meeting of the session of this Society was held on Wednesday in last week, at the Royal Institution, Colquitt-street; Mr. T. D. Barry presiding. Mr. W. H. Picton read an interesting paper describing the architectural features of many of the public buildings, which he had visited in company with Mr. Banner, of this town, during a short tour in Normandy and Brittany. The reading of the paper was illustrated by sketches, many of them taken on the spot by Mr. Picton and Mr. Banner. At the close of the reading, a cordial vote of thanks was passed to Mr. Picton for his paper.

Sale of Land, Leicester.—Last week Mr. Warner (Warner, Sheppard, & Wade) sold by auction, at the George Hotel, about twelve acres of building land and six cottages, situate at Belgrave. The biddings for the building land were spirited, lot 1, consisting of 4a. 2r. 6p., situate in Checkitt's-close, being knocked down to Mr. Stockdale Harrison at 550l. per acre. Lot 2, comprising 7a. 1r. 8p., adjoining lot 1, and extending to the Melton-road, speedily reached 500l. per acre, and was eventually knocked down to Mr. S. Harrison at 540l. per acre.

New Steel Works in Warrington.—We understand that new steel works are about to be started in Warrington by a number of gentlemen who are connected with another large local manufacturing concern.

Relics from Russia.—Of the rites, formulas, and decoration of the Greek churches in Russia we know but little, and particularly of the relics preserved in their monasteries and churches. We understand that Mr. John Leighton, who has made a tour through Russia, has obtained much information, and has brought back many specimens of the traditional art. He extended his visit through Circassia into Georgia, returning by way of the Crimea, staying at Livadia, Orlanda, Sebastopol, and the ancient towns upon the coast.

International Exhibition at Geneva.—There will be an International Exhibition at Geneva next year. The building will include a huge dome, to be the largest of its kind, and a special feature will be a colossal column in the interior, from which visitors will have a bird's-eye view of the whole of the Exhibition, and a panorama of Lake Lemman, the mountains of the Jura, the Swiss Alps, and Mont Blanc. The Exhibition will be close to the lake, and piers will project into the water. On these will be erected summer-houses and refreshment-rooms.

Pearson Memorial Windows, Darlington.—We have been informed that the committee met a few days ago to open the tenders, and inspect the designs, which have been sent in for the painted windows proposed to be erected in the chancel of Darlington Parish Church, to the memory of the late Rev. J. G. Pearson, who was vicar of this parish, 1848. A unanimous opinion was expressed in favour of the illustrations submitted by Mr. G. J. Baguley, of Newcastle-upon-Tyne.

Building Land at Goole.—Mr. John Bennett, of Grove House, Goole, has purchased from the Right Hon. Mr. Southern Esquire, the large field on Booth Ferry-road. Hitherto, according to the *Goole Times*, so far as this field was concerned, application to Mr. Esquire's agent for building sites have been without result; but now the land has been laid out in streets and terraces, and a new town will spring up very soon upon it. The extent of the field is 77,824 square yards.

A New Hall for Tunbridge Wells.—It has been resolved by the Local Benefit Societies to form a limited liability company, with a capital of 4,000l., to purchase a site in Basinghall-street, Tunbridge Wells, and to erect a hall thereon, with club-room, coffee-room, committee-room, &c., and a smoking-room, and other accommodation. The club-room will be 53 ft. by 25 ft. A sum of 10l. will be offered for the best plan for a building suitable for the purposes required.

Injuries to Statues in Transit.—In the Court of Exchequer an action was brought to recover compensation for injuries alleged to have been done during carriage to two valuable bronze figures entrusted by Mr. Pini, a dealer in works of art, to Mr. Atkins, as a carrier from London to Naples and back. The plaintiff was nonsuited on the ground that there was no evidence that the goods had been received by the defendant as a carrier; he was merely an agent.

Lampfilghters superseded.—A trial of an electric apparatus for lighting street lamps has been made in Washington, with a view to its adoption by that city. The lamps, for the distance of one mile, were lighted and extinguished instantly, several times, the apparatus turning on the gas and igniting it at the same moment. Whether there is anything new in this beyond what has already been tried in this country we do not see.

TENDERS

For sewerage and sewage works, Hoddleston, Mr. T. W. Grindle, engineer. Quantities supplied.—		
Hampton, Hoddleston	£7,390	0 0
Neave & Sons, Brompton	8,600	0 0
Green & Sons, Stanstead	5,300	0 0
Harris, Camberwell	5,148	0 0
Hunt, Hoddleston	5,145	0 0
Marshall, Brighton	5,100	0 0
King, Hastings	5,100	0 0
Knight & Son, Mile-end	4,968	0 0
Dawson, Chesapeake	4,880	0 0
Moore, 1 Lombard-court	4,838	0 0
Harris, Stratford	4,778	0 0
Jackson, Stratford	4,770	0 0
Dowers, London	4,695	0 0
Bloomfield, Tottenham	4,477	0 0
Potter, Sliepney (accepted)	4,307	0 0

For alterations and repairs to 44½, Edgware-road, for Mr. A. Temple

Harris

£215 10 0

The Builder.

VOL. XXXII.—No. 1618.

*The Industrial
Outlook of 1874.*

VERY member of the great family of industry may find it useful, in the early weeks of a new year, to take a glance at the outlook of the coming months, as regards the probable future of the workman. It so happens, at the commencement of 1874, that an unusual number of statistical statements have made their appearance. Little scraps that occupy three or four inches in the corner of a newspaper, may often represent weeks of conscientious work, on the part of nume-

rous and intelligent men. The essence of their toil is at last distilled into these few drops of condensed knowledge. Too frequently are they glanced at, with only half-awakened interest, or read with some fleeting expression of surprise. But to read, mark, learn, and inwardly digest, is given to few. Perhaps it is rather as furnishing the thoughtful public writer with data than in any other manner, that statistical communications to the public journals have the most available value.

The class of work which is most fully illustrated by recent investigation is that of the agriculturist. Let not, however, the builder, the engineer, or the manufacturer of any description, think that he is not directly interested in the subject. [Whatever be the temporary disturbances that may seem, for a time, to pit class against class, nothing is more certain than the fact that the prosperity of all the industrial classes is intimately connected, and thoroughly interdependent. We may go further, and refer to the ancient and unchanged wisdom that found a voice in the fable of "The Belly and the Members." But our present purpose is to deal with the industrial element.

It is true that the effect of recent legislation, or we may say, with deeper truth, the effect of the application of the steam engine to locomotion, and of the great stimulus that has thus been given to international communications of all kinds, has been to render the working-classes of England far less dependent upon the farmer, and the soil, than was the case half a century ago. The price of the quarter loaf is no longer entirely dependent on the English harvest. Still, a bounteous or a stinted yield, from our own acres, makes a very appreciable difference to the consumer. But while, from year to year, the area of supply is broadened, the main principles of mutual dependence remain unchecked. Three centuries ago there was, perhaps, less rapid and effective sympathy between Cumberland and Cornwall than now exists between London and Calcutta. From whatever source we draw our supply of breadstuffs, the same principles, in the long run, regulate their pro-

duction, that prevailed when each county looked to its own home-raised crops, cultivated by its own home-produced labour, as the measure of its yearly wealth. Thus, while primary principles must always regulate the economical circle of consumption and production, although the introduction of new elements may for a time veil their action, we can tell whither the whole course of industry tends. And not only so, but we can never be sure where the great underlying principles may unexpectedly assert their power. In this unsleeping efficacy lies perhaps the main difference between the action of the laws of nature, and that of the laws made by man.

When, therefore, we regard the condition and the outlook of the agricultural labourer, we regard not only that which ultimately, and as matter of theory, affects, and indeed underlies, the whole organisation of industry, but something more. We are considering an element of the national life and wealth, which may, at any moment, come into the front rank. It is, therefore, a matter of the gravest interest for every owner, and for every occupier,—that is to say employer,—of labour.

A further consideration shows the great economical importance of the state of agricultural labour amongst ourselves. It is this. The relations of labour to the soil have a limit that can be measured. They can be gauged by statistics. Knowing accurately the area of Great Britain, and knowing more, year after year, of the soil, climatic peculiarities, and productive power of every portion of that area, we are also better enabled to ascertain what the island is capable of producing, and, which is the point at which we are now arriving, we are enabled more and more clearly to see what is the most productive relation that can exist between the soil and the labour bestowed upon it. That is to say, we see what is the best proportion, economically considered, between territory and population, not including in that estimate the urban population of great centres of manufacturing industry.

The point where the relation between the numbers of the agricultural population and the acreage of land under corn cultivation has always been most delicately balanced is the harvest. We must consider that the bulk of the corn-crops of England, in order to be saved in fair condition, must be cut within the space of a fortnight. Out of this time two Sundays have to be deducted; and, unfortunately, we can hardly hope for an average of more than nine or ten days at most, out of the fourteen, as rainless. Thus some seven or eight days of the time most precious for harvest is as much as we can at all anticipate as likely to be at our command.

We may take the average area of land under corn crops in England, in round numbers, at 7,500,000 acres, which breadth is under the mark. Harvesting-time in 1873, in Wiltshire, found the farmers paying 10s. 6d. per acre for reaping alone. This is for wheat. Making a deduction for other crops, but bearing in mind the tendency of prices, we shall be safe in estimating the cost of reaping our corn at 7s. 6d. per acre, for 7,500,000 acres. This gives an expenditure little over 2,800,000l., or 280,000l. per diem, distributed over ten days. The army of reapers necessary for the effort will thus appear to be very large. The supply on which the farmer was formerly able to count, of Irish labour, is now no longer forthcoming. Machinery has done much, and will, year by year, do more. But still, the whole available population of the rural districts, men, women, and children, turns out to aid in the harvest.

Not only is the cost a matter of sufficient magnitude to render any appreciable percentage of saving an object of national importance; but

the effect, on the *status* of the agricultural labourer, of this pressure at a particular season of the year, is disastrous. In order to have hands at need, the agriculturist is driven to encourage the production, and the keeping up of a rustic population, for which the greater part of the year does not afford enough occupation to maintain them in any degree of decent comfort. The small weekly wages are professedly eked out by the harvest money. It might seem to the labourer to be rather an Irish way of helping him to better his position by stopping his main source of exceptional benefit. But, nevertheless, it is plain that such will be the case. It is plain, moreover, that such is the certain tendency of improved reaping-machinery. Violent exertion for a few days, pulling on the vital energy, and succeeded by sluggish half-work, is a matter calculated, in every way, to injure the labourer. Steady work and steady pay is the arrangement which enables him to better his condition.

In the wheat-growing districts of New Zealand, we learn from the letter of a colonial farmer, reaping by hand is now unknown. A reaping-machine is as necessary a part of the plant of the farmer as a plough. If his holding be too small to require one, he joins with a neighbour in the purchase of the indispensable aid to their work. Mr. Caird tells us that the "reaper" does the work of ten men, and does it better. The supply of these machines is now actively in operation in this country. One celebrated maker alone turns out 6,000 in the year. Mr. Caird estimates that the entire corn crop of this country could be cut down in ten days, by 80,000 reaping-machines, each cutting an average of ten acres per day. This is one-fifteenth above our preceding estimate of area. The cost of the labour added to the service of the machine we have not found stated. But a pound a day would pay for two horses and two men, and allow a return on the cost of the machine into the bargain. We should thus have our corn cut, the carrying remaining as before, for two shillings an acre, in lieu of 11s. 6d. per acre; or a saving of eleven fifteenths of the sum we have before cited:—more than two millions sterling in the pockets of the farmers.

It may be urged, in reply, that this great economy is effected at the cost of the labourers of England. There is, of course, some truth in the observation, in the abstract. It is the old crow that labour has always had to pluck with machinery. No great benefit has been conferred on mankind, without inflicting some present suffering at the time of its introduction. The printing-press was a terrible blow to the scribe. No doubt many cases of personal suffering occurred at the time of its introduction; but improvements of this nature, good in themselves, have a wonderfully subtle power of compensation for the injury they cause. Not only do we find, that, if we take decade by decade, the labour called into activity by the new arm supplied to industry exceeds the amount of that which it displaced; but, even from year to year, the disturbance will be less than might be fairly anticipated. If we take an illustration from the increased demand for horses that followed close upon the anticipated ruin of the horse-master by the withdrawal of the mail and stage coach traffic from long lines of road, on the opening of our great railways, we shall come to the conclusion that for the two millions sterling that the farmer economises in the cost of reaping, he will be likely to spend four or five millions or more in regular, permanent, remunerative agricultural work.

The absolute money-saving to be effected by the use of the steam-plough will not, at first sight, appear so considerable as in the case of the "reaper." But the actual value to the country is higher; moreover, it is desirable. It is something more than saving. The advantage

is two-fold. First, there is the fact that the work of breaking up the soil is far more thoroughly effected by the steam-plough than by the time-honoured implement, to which it was a good old toast that bade God speed it. Secondly, and yet more important, is the question of time. It has not, hitherto, been in the power of the farmer to concentrate labour upon ploughing with anything like the efficiency with which, since the days of Joseph, it has been concentrated upon harvest. Mother earth has demanded time, as well as toil, to allow of the tillage of her surface. The best efforts of man, horse, and plough have been limited, apparently, by Nature herself, and spread out over weeks, and even months. This has been changed by the magic wand of the "drugging goblin." The share can now almost race the sickle; and broad fallows lie upturned to sun and air that, not a week before, were clothed with the nodding ears of the corn crop.

Mr. Caird estimates that a steam plough capable of ploughing ten acres a day will displace the labour of eight men and twenty horses, and do the work far more effectively. It is not clear whether this estimate means a net gain of so much labour; but, if so, very exceptional cases must be cited. The steam-plough needs the tendance of at least four men, besides the cart, horse, and man required by way of tender for the supply of water and fuel. Ploughing can be done by horse for ten shillings an acre. Even if we take the steam-plough's work to be doably as effective as that of the horse-plough, we do not approach such an economy as that claimed. Mr. Meehi gives the cost of "mashing up the stubble" as 14. 7½ p. r. acre. To this he has added horse-power in drilling and harrowing, amounting to 3s. an acre more. No doubt the value of the work done by the steam-plough is far more than that of the horse-plough; at 10s. an acre, still we do not see our way to a confident estimate of a greater saving, by the use of the steam plough, in money expenditure, than 5s. per acre. But even this comes to two millions sterling per annum on Mr. Caird's estimate of acreage!

The effect of these two great changes on what may be called the limiting elements of agricultural labour cannot fail to be very important. The number of the population dependent on agriculture for their support is cited, from the last census, at 1,590,000 persons. To estimate their average income is not easy; as, on the one hand, very small "persons" must be included in the count, and, on the other hand, the degree of luxury of dress and habit which has nearly banished the frugal and homely charm that formerly invested the same house, draws its support directly from the soil. The twenty-two millions of acres (keeping still a little under the mark) of land cultivated in England have been estimated to receive annual labour to the low amount of 15s. per acre per annum. This gives an outlay of sixteen millions and two-thirds sterling. If we suppose the same estimate (which, we think, is that of Mr. Meehi) to apply to Great Britain, twenty-nine millions of cultivated acres will demand an annual expenditure of twenty-one millions and three-quarters sterling. In this, however, must be included an appreciable sum for the expenses of horse keep. We shall be glad to receive from any of our agricultural readers any positive information as to the relative outlay incurred in human and in horse labour. Approximately speaking, if we attribute 3l. out of the 13l. per head, which the above figures give, to the cost of animal power, we shall probably err on the side of leaving too high a rate for the labourer. Again, if we were to take each labourer's family as containing four persons "engaged in the cultivation of the land," taking no heed of those too young, or too feeble, to be thus enumerated, we should find the resulting average of about 15s. per week for each married labourer, including in that rate the minor earnings of wife and children, possibly, we fear, not much above the mark.

If from the 21,750,000l.,—which is the amount arrived at, on the estimate of 15s. per acre,—per annum, we deduct 2,000,000l., which may be saved by harvesting by machinery, and 1,000,000l., which may be saved by the use of the steam-plough, we find the money demanded from the farmer, in the course of the year, to be reduced to 18,750,000l.; or, in other words, we find one-seventh of the total number of agricultural labourers displaced (on paper) by the steam-engine. But the currency, or what is more to the point the net profit, to the farmer, will probably more than double the actual money

saving. Looking at the three sources of advantage, this estimate will appear low. First, there is the avoidance of damage and loss from bad weather in harvest time, that will be insured by full command of a rapid power of ingathering on the few fine days. Secondly is the increased fertility of the crop, from the more effective upturning of the earth by the steam-plough. Thirdly is the great advantage obtained in purifying the land from weeds, and in consequence of saving the winter corn at the best time, by the increased rapidity of the process of ploughing.

Thus, without any extravagant or heroic changes, were the farmers of this country to be fully "found," in the course say of the opening year, in reaping and ploughing plant, they would be some five or six millions sterling the better for it by Christmas. It is not to be assumed, we trust, for a moment, that this sum would mainly go to swell the luxury of their habits. So far as it accumulated in the bank, it would be making up for the chief inconvenience of the farmer—want of capital. But there would be a far more fruitful and lucrative mode of employing this capital than any bank could offer. That is the most precious and self-multiplying of capital that is utilised in what a chemist would call its nascent state. If the tradesman has found out that small profits on quick returns are every way preferable to a higher rate of profit on a more sluggish rate of receipt, yet more forcibly does this truth apply to the producer—most of all, perhaps, to the agricultural producer. Thus, the ordinary principles that regulate human action would lead to the following result. The spurt of labour at harvest would be no longer necessary. The farmer would have no inducement to encourage the maintenance of a partially employed labouring population. He would employ only so many men as he wanted, all the year round, for steady work. He would thus be able to pay them better wages. He would find, on making the experiment, that it paid him far better to do so. And paying at least seven shillings to the man to whom he now pays six (and by and by, as he learned from experience, paying him more likely ten) he would still find himself, so far gaining on his former position as to be able, year by year, to encounter those mighty, though simple, duties of drainage, irrigation, and general industrial improvement, of his holding, which would lead, steadily but surely, to the doubling or the tripling of his returns.

Looking forward (unless pestilence, war, or evil legislation unfortunately check the natural course of events) to the fulfilment, sooner or later, of these practical hopes, we yet think that the condition of the emigrant workman is of great value. The upshot of the thing we take to be that the young, hearty, industrious, able agricultural labourer may secure, in more parts of the world than one, a rapidly-earned and comfortable independence. But this is the very man whom statesmanship should seek to keep at home. His arms and industry are the very fountain of national wealth. Against the golden temptations held out to him, the cost has to be counted. To many, the severing of all local ties of relationship, friendship, and habit, is in itself no slight price to pay. Still more important is the immense inertia of the venture. It is true that there exist such spots as we have named, the very Paradise of industry. But they are not the spots to which the labourer is called by the advertiser. For one Paradise there are ten pitfalls. Deadly climate, arid soil, swamp, fen, morass, uncleared and impenetrable forest, swarms of mosquitoes, with active venom that makes life a burden, and causes a strong man to cry like a child; deadly snakes, lions and panthers; wild hogs, that come down punctually as the crops begin to ripen; vast, lonely distances, which surround the settler as with an iron chain. All these are far more frequent than the brighter prospects of the case. And to whom is the intending emigrant to trust? How very few of those who say, "Come," have any real advantage to offer! The good wine of the really prosperous settlement does not need the bush of the emigration agent.

The upshot is, that a better time is at hand for the industrious man in old England, and that he will do better cheerfully to look forward to it than to transfer himself to a foreign soil, unless he knows, from personal friends, the exact character of the spot to which he thinks of emigrating.

GENERAL EXHIBITION OF WATER-COLOUR DRAWINGS, DUDLEY GALLERY.

The custom of newspaper notice for recurring picture exhibitions will become one more to be honoured in the breach than the observance presently, when all the news to be derived from their very frequent appearances is really confined to the advertised announcements of such or such a gallery being open for the delectation of a shilling-paying public. That fabled example of steady determination and of a by no means common taste for reading, who went up and down column right through Johnson's Dictionary to the very end of it, and closed the book with the meek remark that he "really thought it rather dry reading," should get a volume or two of some exhibition catalogues for the last dozen years past, and make the world the wiser by giving his opinion of these.

A detailed list of the 670 items that make up the show of drawings at the Egyptian Hall just now is about as interesting to those not intent upon buying, as the description of numbered lots in an auctioneer's catalogue would be to any one not in immediate want of more chairs, tables, couches, ottomans, or old masters, that he is fortunate enough to be already provided with; and there are few instances where this printed promise is at all exceeded by performance. Ten years ago, the Dudley Gallery inaugurated quite a new sort of scribbling of its own, by a great success, which, if it has not remained quite in succession, it would yet be unjust to say does not at times return, though it is more than ever apparent that the modest prefix "general" has become in its appropriateness the honest admission that there is nothing in particular to destroy uniformity in the character and quality of the pictures to be found here now from time to time. In vain you may look for the solid impasto work that has heretofore given the notion of what Mr. P. Calderon, R.A., entertains of water-colour; or for the Mediæval embodiments of clever Mr. H. S. Marks's (A.R.A.) fancies; or for the beautifully finished heads always to be associated with Mr. Burton's name as a painter; or for the highly-coloured classic romances that Mr. E. Burne Jones has been wont to evoke great praise, and sometimes astonishment by, for neither they nor their like are to be found here. The pretty little damsel standing on "The Terrace" (205) recalls better things done by Mr. G. D. Leslie, A.R.A.; and things of a past date done by Richard Westall and others, who never shared the charm by which Stothard managed to make them valuable.

However, amongst what there is to be found, are several nicely-taken idealised portraits, such as "Adeline" (12), by Mr. W. Gale, which would look the better for a little less affectation; "Robinella" (24), more strongly painted by Mr. C. Bellay; the lovelorn lady, "Dost thou love me, my beloved?" (57), so fittingly surrounded with green and yellow hues, by Miss H. J. Miles; "The Young Widow" (176), who it may be guessed will never again be represented by Mr. J. M. Jopling under such woebegone aspect; but will doubtless come before us as "The Happy Wife," "Giuglia" (253) and "Helena" (485) though somewhat hyperbolically pretty, by Mr. E. Taylor; and Mr. C. S. Lidderdale's pleasant-looking little "Weary" one (263). Mr. J. Parker has drawn a head so well, and coloured it so brilliantly, that the more is the pity that the figure it tops should be so disproportionately small (240); and Miss E. Martineau's elaborated study of "A Young Greek Woman" (295), suffers in a lesser degree from the same failing, though it is treated with a scholarly apprehension of a more exalted class of art than any other drawing in the room can show. Miss J. Russell's view of how a very young woman should be studied, though antipathetic to the severe and classic ("Baby Bunting," 192), would best satisfy mamma and papas, no doubt; for Miss Russell seems to appreciate the bright merry tint a pretty, lovable little daughter gives to a home.

There are portraits proper—veritable likenesses, too, to be included when speaking of what is most noticeable here: by Mr. E. J. Poynter, A.R.A. (84), and by Mr. J. C. Moore (224, 333, and 348), that are as evocative of the artists' styles as they can possibly be of other individual distinctiveness; and Mr. F. J. Skill has sent some of his "Breton Children playing," at "Cat's Cradle, in English" (20); Mr. Heywood Hardy has gone to a new field of labour, and in "Field Labour in Upper Egypt" (60)

shows how the local agriculturist has need to combine the agility and practice of the acrobat with the more prosaic and less profitable pursuit of cultivating corn for others to eat: the performance having quite an Islington Hall suggestiveness about it, enough to induce Mr. Hardy to catch his camel, and the accomplished pedestrian professor who balances himself on the rough revolving wooden cylinders whilst driving his eccentric locomotive—steering his ship of the desert—it is quite likely that Londoners may have an opportunity of seeing for themselves how it can be done, as it is not very clearly demonstrated in the picture. It is very much to be hoped that in Egypt they have long ago adjusted all knotty questions between capital and labour; for to think that this nimble-limbed india-rubbery muscled "Felah" is paid for piece-work and not by time, is quite sufficient to spoil all enjoyment of the many pretty pictures yet to be noticed now, and that would be a pity.

"The Gentle Craft" (41), by Mr. J. Parker, of course means fishing; in the mildest form, then, it is an agreeable Walker-Herkomer sort of reflection that sunshine beautifies very homely and ordinary objects. Mr. R. T. Waite evidently thinks—and how many think with him—that you cannot do better, and might do worse, than see nature as Mr. Topham has been showing her since long ago: "The Spring" (76) will prove this. Mr. E. F. Brewtall depicts a provincial "Sir Peter" gathering up the bouquets that his teasing wife, by her quarrelling or her "make up," has wrested from the applauding hands of an admiring audience; "Called before the Curtain" (125), is at once praise for the actress, and for him who is the scene painter. "A Tickle Job" it must be for Mr. S. Lucas's Cavalier, with idolatrous love for the symmetrical shape of his moustache, to shave with the left hand (200): this clever little sketch is one of the best of similar slight things to be found in number. "The Gillie's Pipe," by Mr. J. J. Richardson (341), gives local habitation and a name to airy something,—a well-arranged agglomeration of Scottish sportsmen on the moors, with dogs and guns, and game to betoken a knowledge of how to make good use of them. This is a very carefully finished drawing, conveying a strong impression of truthfulness that arrests attention amongst many works, even, that also speak of truth; on the other hand, though Mr. T. Green's well-studied and cleverly-executed representation of the courtyard of an old inn, with the stage-coach just arrived at "The End of the Journey" (373), attracts attention from its size and the evident care bestowed upon its production, it lacks vitality and fails to interest the spectator from a coldness and want of character in the *dramatis personæ* that no amount of finish can atone for.

"The Vale of Health, Hampstead," by Mr. J. Macbeth, with an aged-invalid in a donkey-chaise, attended by sickly-looking children, and a morose or moralising donkey-boy (398), can bring no pleasure nor profit to anybody. An interior with two young ladies at "Evening Practice" of piano-playing and singing (519), is a far more meritorious if less pretentious display of talent.

Two single-figure studies, by M. L. Leloir, of Eastern women, "Pretty Cockatoo" (549), and "A Moorish Lady" (560), are singularly forcible and deftly done, though rather confused by excess of ornamental appendages.

"After Dark" (604), by Mr. Lionel Smythe, and "Interrupted" (617), by Mr. S. Lucas, again, are another couple of noticeable, though slight little pictures.

We find we have marked in the catalogue Mr. T. R. Macquoid's "Study of Colour" (6), composed principally of some flags or irises in a Japanese jar, and a similar arrangement, by Miss H. C. Coleman (143), one of many of her exquisite studies of flowers and still life that are a great addition to the collection's best attractiveness; "The Mill-stream" (25), and two sunny bits of country scenery,—"Ricks" (541) and "A Study" (560)—by Mr. Wilmot Pilsbury; "Autumn: Twilight" (48), by Miss K. M. Goodwin; "Beccles, Suffolk," by Mr. A. Griffiths; "The Still Pool," by Mr. J. J. Curzon; "Cover Wood near Shere" (93) and "Felday" (95), by Mr. F. Walton; "Return of the Beer Fleet" (96), and other drawings, by Mr. H. Macallum; "A Study: Rome" (106) of a fountain and orange trees, by Mr. H. M. Marshall; "A roused Pet (113) of a puppy-dog, by Mr. J. W. Bazemley; a sleepy sentinel "On Watch" (116), by Mr. J. H. Barnes; "Arliament Point," by Mr. Macallum again; "The

Abbey Brewery, Abingdon" (142), for its simple truthfulness, by Mr. W. Stocks, and "Rocks at Conol-Marten, near Ilfracombe" (153), by the same; "Beer Head, South Devon" (166), by Mr. J. O. Long; "Gateway to the Wartberg" (190), and other drawings, by Mr. A. Ludovici; "A Bit of the Tiber" (193), by Mr. J. Knight; "Hastings from the Tarry Field" (214), by Mr. C. Earl; "House of the Sheikh El Mahdi, Cairo" (222), by Mr. F. Dillon; Mr. W. Field's "River" (245); "Bagnall Banks, Yorkshire" (261), by Mr. C. H. Kemplay; "The Orme's Head, from Conway" (270), by Mr. F. Talfourd; "Florence, from Albergo d'Arno" (314), by Mr. A. Severn; "The Mill at Rest" (349), by Mr. E. H. Fahey; "The Wintry Sea" (417), by Mr. E. Ellis; "Mountain Torrent, Ross-shire" (425), by Mr. A. W. Weedon; some very agreeable and promising works, by Mr. A. C. H. Luxmoore; and a singular drawing of "Orchardleigh Ponds, Somerset" (486), by Mr. A. Parsons, which, weak enough to be thought at first decidedly weak, has some very strong points in its natural colour and general appearance.

A MANUAL OF PUBLIC HEALTH.*

A SMALL work has just appeared that is likely to prove useful to the large staff of medical officers and sanitary inspectors called into existence by the Public Health Act of 1872. It is a manual grouping together as much information as could be gathered by three authors, from three different points of view, concerning the duties of these officers, and the bearing of the law upon them. A fourth eye has superintended the execution of the task, and the work thus perfected is announced as edited by Mr. Ernest Hart. The authors, who bear good names, have doubtless aimed at being as comprehensive as possible, yet some few omissions have been made that might have been avoided.

The subject has been investigated in its legal, medical, and chemical aspects; and the work is divided into three parts, to meet this arrangement. In the first the central authorities, the local authorities, officers and powers of local authorities, roads and ways, sewers, water-supply, public and private lighting, and nuisances, are discussed in very much the same terms as in the Acts of Parliament in which these matters are treated; and three indices are furnished to the statutes pertaining to public health, powers, and penalties. In the second, routine duties, refuse matters, conservancy plans, water-carriage system, water-supply, epidemic diseases, overcrowding, ventilation, and inspection of trades, are touched upon in a not dissimilar manner. In the third, the adulteration of food, commencing with the amount of impurities to be found in the water of the different London water companies, and the composition of the air, is discussed with reference to its influence on the public health. All this is, of course, exceedingly good, but it might have been better. Officers consulting this work, compiled especially for them, would have been glad to find something more than they knew from their inevitable study of the Act, or the statistics of the rival water companies. Somewhat of new personal experience, suggestions based upon wants found in the actual working of the powers, and others built, on the contrary, upon the clever surmounting and disentanglement of difficulties, for instance, would have been welcomed.

It would be acceptable to the new sanitary inspector to learn how he is likely to be received by the various classes of occupiers whose premises he inspects. The tenant who looks to his landlord for everything, he might be told, will hail his approach as that of a deliverer from all sorts of shortcomings in the way of water, drains, and general accommodation. The landlord who occupies his own property, he might be assured, would point with pride to the perfection with which every sanitary precaution is applied on his own estate. The greater the culture, too, generally, the warmer the appreciation of the truths of sanitary science. In the small village, where, perhaps, the blacksmith is the greatest authority, the wild burn, defiled with the drainage from the various farms on its banks, suffices for the water supply; but in the model village, where the neighbouring squire is chief owner and lead-

ing authority, this state of things is, for the most part, already superseded, and a certain sort of water-supply from a pure source is in existence. So, too, in towns. The day of universal ignorance and contempt, at last, is past; but, on the other hand, general or popular disregard is yet in full force. The effects of want of further powers in rural districts might have been dwelt upon advantageously, perhaps. Now, in the matter of bakehouses, the Act gives no power unless there are 2,000 inhabitants in the place. In some cases the result of this limitation is, that the rural authority has not power over a single bakehouse in a large union. A new privy has been built against the oven of a bakehouse at Amble, we may remark, by way of illustration of the working of this limitation, which cannot thus be condemned, as the population is under 2,000. Again, paving is not included among the means by which the public health is supposed to be improved by rural sanitary authorities. This is a grievous omission. Sanitary precautions are obviously least considered in new centres arising rapidly from the surroundings of new industries. In new places the paving is always behindhand, leaving the streets but little more than mud-tracks in bad weather; and the inhabitants would gladly avail themselves of any facility for setting themselves to rights in this respect; but this Act gives them no assistance, although the bad pavement, or utter absence of it, cannot but be allowed to be injurious to the public health. A little rising port now in our mind furnishes a case in point. Here the paving is of the nature of pitfalls, and the inhabitants would gladly have combined in its improvement with other sanitary works they have undertaken, had the Act given them power.

In the case of epidemics, the Act confers the powers to prevent people visiting infected houses and families, and no power to prevent overcrowding, unless there is more than one family occupying one tenement. As most cases of fever and small-pox, measles, and the like, occur in large families living in one room, there are no means of isolation, and there are no means provided to prevent them spreading like wildfire. When a medical officer is appointed for a union, he finds no regulation in force by which he will be informed where fever has broken out, and he has to rely upon the courtesy of the medical officers of the union for information. As these officers are not bound to furnish this information, and as private practitioners are equally exempt, it follows that it is imperfect, often late, and frequently not forthcoming at all.

Here is a piece of experience in the application of the Act to public wells. A colliery company, in sinking a pit, drains away a fine spring of water at a public well; yet there is no power to cause them to provide water from other sources, or to make them desist from their operations. It may be news to the authors of the Manual that colliery-owners have formed an association to prevent authorities forcing them to sanitary measures in pit villages. As the whole of a pit village generally belongs to a company, it follows that the cost of any works undertaken by the authority for water-supply or other sanitary measures could not be reimbursed, as, backed by the association in question, the owners would refuse to acknowledge their liability, or, in other words, would refuse to repay the expense.

Another shortcoming felt in the practical working out of the Act in rural districts is the fact that there is no power of supervision conferred over privies and pigs, except in connexion with new buildings. The owners of old houses may build these conveniences where they please, close to their dwellings, or out in the public view. Not less a nuisance is the fact that a nuisance can only be proved after a long continuance of it.

We must say a few words of praise upon the trouble that will be saved to many a busy personage by finding the kindred subjects of disinfection and adulteration of food, in one volume, with the branches of sanitary science in more familiar use. Not that there is anything particularly new here either, for, after all, the burning of infected clothing is recommended as the best means of disposing of it, but the qualities of artificial disinfectants are discussed candidly, and all told concerning them that need be known. The author of this section proposes to make our towns devoid of bad smells, that the public sewers should be periodically flushed with some of the waste chlorides of commerce, of which he specially commends chloride of lime.

* A Manual of Public Health for the Use of Local Authorities, Medical Officers of Health, and Others. By W. H. Mitchell, F.R.C.S.; W. H. Corfield, M.A., M.D.; and J. A. Wanklyn, M.R.C.S. Edited by Ernest Hart. London: Smith, Elder, & Co., 15, Waterloo-place. 1874.

But for this suggestion we might adjudicate ourselves hypercritical, in making mention of the absence of useful hints for furthering progress in the first sections of the work, and conclude that a summary only of existing law, and of contrivances to meet it, was intended. As far as it goes, then, in its general lucidness and ample references, we can confidently pronounce it to be worthy of the attention of those for whom it is intended.

EASTERN ART, AND ITS INFLUENCE ON EUROPEAN MANUFACTURES AND TASTE.*

In this paper I shall express my opinions freely, with the view of aiding the cause of national progress, and I am sure that, even if my frankness gives pain in some cases, you would rather receive from me a candid statement of my feelings than words of flattery, which should induce you blindly to imagine that we are foremost in manufactures in which we are actually far behind.

In commencing our considerations of Eastern art, I must ask you to notice that in the design of an art-work, we have, first, the construction of the object, and then its ornamentation; in other words, we have first its formation and then its beautification, but the consideration of structure precedes that of beauty. Structure concerns itself with utility, and not especially with beauty. If an object which is intended to meet utilitarian ends is, when formed, beautiful, the structuralist says, so much the better; but if it is verily ugly he cares not, for he is a utilitarian only. But, on the other hand, the artist cares too little about usefulness, he making the production of beauty his first if not his only care.

The ornamentist should stand between the pure artist on the one side and the utilitarian on the other, and should join them together. He should be an artist in every sense of the word, yet he should be a utilitarian also. He should be able to perceive the utmost delicacies and refinements of artistic forms, yet he should value that which is useful for the very sake of its usefulness.

I have no sympathy with those who regard a utilitarian object as of value only as it has artistic qualities—despising its usefulness; and I am equally without sympathy with those who value an object which is beautiful simply on account of its usefulness—despising its beauty. Let us have objects which are useful, but let them be beautiful also.

In this utilitarian age, and in this practical country, there is less danger of our having art works of a useless character than there is of our having useful works which are uncomely in form. The latter finds expression in the new bridge which we have just placed over the Thames at Wandsworth, the railway bridges at Cannon-street and Charing-cross, and the exterior of the Great Northern Railway Station. These are excellent illustrations of objects which are at the same time eminently useful and superlatively ugly. Yet why they could not be both useful and beautiful no one can see.

Leaving considerations of utility, and passing to those of beauty only, I must call attention to the fact that much of what we regard as Eastern ornament is more than mere ornament, inasmuch as it is the expression of a poetic thought, or of a beautiful idea. I have here a Japanese dress, the beauty of which will, I imagine, be admitted by all present. In my judgment it was the finest piece of fabric shown in the Vienna Exhibition, and this is saying much. The pattern of this rare dress consists of many-coloured flowers and butterflies, arranged irregularly upon a cloth-of-gold ground. The flowers are not shaded, but are treated as flat ornaments, and are thus befitting decorations of a flat surface. The butterflies are also flatly treated, and are intermingled with the flowers in a most harmonious manner. It is not, however, simply the colour-harmony that I wish to call your attention to, perfect as it is; nor the beauty of the drawing, excellent though it be; nor the consistent treatment of the flowers and flies, although this is worthy of special study—but to the thought realised in the work, namely—summer. No one can look upon this beautiful dress without feeling the influence of the sunny ground, of the profusion of richly-coloured bloom, of the gay and glorious insects which appear to hover over the flowers, and the

influences make us feel that it is summer while we gaze. The very insects appear to be sunning themselves, the blooms appear radiant with light, and the whole aspect is that of a bed of flowers, where ten thousand blossoms vie with the most gorgeous of flies, both striving to emit the largest share of radiance, and beauty, and light, and yet all this is achieved without any violation of the most rigid art-principles. But by the employment of truthful means more can always be achieved than by resorting to falsehood. No merely imitative treatment of flowers could possibly convey the thought of summer so well as this conventional treatment does, and here we are pleased with the consistency of the means employed, while, if the rendering had been naturalistic, we should have been offended by inappropriateness.

On a cloisonné bowl from China, which was shown in the Vienna Exhibition, were three ornamental panels, situated amidst intricate and characteristic ornaments. In one of these panels was a conventionally treated spray of the apricot, in another was the sacred bean, and in a third was the chrysanthemum. These sprays not only formed a pleasant contrast with the purely ideal ornaments, but conveyed to the minds of the people for whom the work was made, a poetic thought—the apricot typified spring, the sacred bean summer, and the chrysanthemum autumn; and, besides this, the apricot is, to both the Chinese and the Japanese, the emblem of beauty. The bean is sacred—Buddha sitting in the flower—and the chrysanthemum is imperial. This vase was beautiful, its ornamentation was in every way consistent; the panels in which the flower-groups were wrought were not of architectural character, but were truly ornamental divisions of the surface, and it conveyed to the mind the thought of spring and of beauty, or of beauty-spring, of summer and of God,—for to them Buddha is God,—and of autumn and the imperial power; and to these people, whose ruler was the child of the sun, imperial power means much.

We now perceive that one great beauty of Oriental ornament is its poetical significance. What is art without poetry? An ornamental form is as a mere solitary word of a language: a line is as a letter of an alphabet. What use are letters unless they make words? and what use are words without they make sentences? and what use are sentences unless they convey ideas? Ornamental forms should make compositions which speak of the knowledge of the draughtsman, of his perception of refinement, of his power over colour. This they should always do, but they may do more; they may remind us of the dell where the bluebells grow, they may tell of the fading year, they may call up thoughts of joy and of spring, of evening and of shade, or of ten thousand welcome ideas, or emotions of the soul; and all this they may do without violating the simplest canons of art.

I object strongly to the poverty of the mode in which art is taught at the South Kensington Museum Schools, for they there give no instruction in the poetry of ornament; no knowledge of the speaking power of decorative forms; in fact, no insight into the higher qualities of ornament, while much of the information—information which would lead the student to think as well as to draw, information which would give him interest in his work, and remove much of the drudgery of learning—might be given while the tyro was taking his first lessons in drawing. These schools teach the student to draw, but they do not teach him to think; they raise pictorial artists, possibly, but they do not rear ornamentists. Why, I ask, is not the teaching reformed, and brought into harmony with so important a museum as that which we have in Kensington, and why is not the South Kensington Museum itself rendered more useful? The labels should set forth useful knowledge, and surely I do not seek too much when I ask for photographs of all the beautiful objects which the Museum contains. Every one cannot come to London to see the Museum, and we all want at times to refer to special examples in our houses. Why, I ask, cannot every object be photographed, and why cannot these photographs be sold at low prices? The South Kensington Museum, as matters now stand, is chargeable to an extent with monopolising art-treasures which, though paid for by the nation as a whole, can only be consulted by those resident in London. This charge is not removed by the fact that there is a small travelling museum which goes from place to place. The Museum has been founded for the good of the nation, and not for the ad-

vantage of any special district. I say, then, that as a collection of things must be located somewhere, we are bound to do all that we possibly can to render its contents useful to every person who acknowledges our nationality, and to seek to render our museums in the highest degree useful to every member of the community. I hope that the time will soon come when every town in England will have its own museum, and this the society which I have now the honour of addressing is actively seeking to bring about; but if every town had its own museum, the necessity for our copying the works of art which are stored in the central and larger museums, and of selling these cheaply to any individual who desires to possess them, would remain.

To return to my subject,—how am I to apply the principles gathered from a consideration of the poetry or sentiments of art? Where can I look for any analogous expression in English productions? If we set aside ecclesiastical ornaments, with their direct symbolism, what do we produce that conveys a beautiful thought, or a welcome idea? If Edingtons want a shield or a vase with any significance, they resort to figures, never for one moment supposing that ideas can be set forth by ornament, by flowers, by insects, by beasts, by stars, moon, and sun. We have yet, notwithstanding our vaunted progress, much, yea, very much, to learn before we shall in any way approach in spirit the excellent examples which we everywhere find in Eastern ornament.

May I now ask that you join me in inquiring into the manner in which art spread from one country to another in ancient times, and into the way in which the ornament of one country influenced that of another? I will not say that all decorative art has had its rise in Persia; but this I do say, that much if not most of the best surface ornament which the world has seen can be traced to a Persian source, and recent opportunities of study, of which I have been able to avail myself, have shown me that more of the ornaments of different countries certainly have had a Persian origin than I could previously have supposed.

In ancient Persian decorations and manuscripts clouds were drawn in a particular manner as ornaments, and thus drawn they were freely used in Persian decorative compositions. Now this particular and characteristic treatment of clouds is curious and of marked character. There is no mistaking it, for its individuality of treatment is obvious. I need scarcely draw your attention to the resemblance between the Persian clouds and those at present, and in times long past, drawn by the Japanese and Chinese, and especially by the former; I have seen examples of Japanese cloud-drawing which are almost identical with the Persian clouds now produced, but these examples are not accessible to me at the present time; yet in the illustrations before us we find clouds drawn in the same manner and with the same spirit, and with sufficient resemblance to each other to indicate the common origin of both methods of treatment.

It is impossible that I enter fully on the present occasion into the inquiry which I have now raised, for an opinion can only be formed after much research, and after the most careful observation of detail; yet I must give one or two illustrations of the position which I have set up. Persian art is obviously the parent of the Arabian, but it is also the source of Alhambra and Turkish art; and these three latter styles of ornament bear the same relation to the Persian that a dialect does to a language; in other words, they are mere dialectic modifications of the Persian. The architecture of the Moors, of the Turks, and of the Arabians, is also similar to that of the Persians; and both in the forms of arch employed, in the mode of construction, and in the plan of ornamentation, there are striking resemblances between them all.

Byzantine ornament was the result of a union between the Roman and the Arabian, and in decorative features the Eastern element was dominant.

The flat ornament employed during the reign of Gothic architecture has never been equal with that employed by Oriental nations, beautiful though it was. Gothic architecture was most noble, but Gothic ornament was often feeble, and in some cases it was even wrong in character; it was wrong when it employed a structural setting-out, buttressed members, and so on. This comparative feebleness of the ornament, when contrasted with the architecture, would go to show that from the East came surface ornament, for just as its employment was removed from

* From a paper by Dr. Chr. Dresser, read at the Society of Arts on the 3rd inst.

the source from which it sprang, so it would naturally become weak in character.

There is a striking resemblance between the ornament found in the gold back-grounds of the pre-Raffaëlle paintings and Persian decorations; and these back-ground ornaments, although copied and re-copied after the time of the Renaissance, owe their origin to a much earlier date, by the ignorant, however, they are sometimes regarded as Italian Renaissance productions.

A form of ornament intermediate between the Persian and this flat Gothic (or Pussian-Gothic, as it is often called) prevailed till recently on the native fabrics of Morocco. A drawing, which is a copy of a piece of handwork of this character, is before us. The Moors are a stationary, or, perhaps, a retrograde people. They have long since ceased to invent even ornaments, and are now losing their arts. I believe that these ornaments, which are semi-Persian, were procured from the Moors when they held possession in Europe, and that through them much of the best flat Gothic ornament has come from the East.

I cannot refrain from noticing that we are indebted to Eastern ornament and to Eastern ideas for much that we are apt to regard as of Mediaeval origin. The nimbus is not peculiar to Christian saints, for I find that the oldest "gods" of Japan have this adjunct to the head. The mother and child occur in almost every mythology, and the infant standing in the vesica-shape, or mouth of the womb, has been drawn by almost every people, and in every style of art, as an expression of the source of life. The winged head, or cherub, I have recently discovered in old Persian ornaments; and the rosary, or string of beads is, like circumcision, common to many ages and many faiths. I mention these things in order to show that much that we might at first regard as the outgrowth of a particular system, people, or age, may, by early origin, have become common to many countries, and associated with dissimilar religions.

I have said sufficient to show that art has been powerful as a means of influencing the opinions and feelings of many nations (but mark, its influence may, like that of words, be either good or bad: if false, it will aid falsity; if true, it will induce truthfulness). I have also reminded you that three styles of ornament, at least, which have become typical of nations and peoples have had their origin in one style; or, in other words, that, from a consideration of one style of ornament, three nations have borrowed ideas which they have, after mental digestion and assimilation, produced anew as a style of decoration characteristic of their own feelings and ideas. I have shown you that there is reason to believe that all peoples were at one time fire-worshippers, and were thus associated together; and that an imaginative faith which followed this primitive religion was common to Persia, China, and Japan; also that these nations all draw clouds in a curious and characteristic manner, and that they must consequently have held some sort of intercourse one with the other. I have shown you that symbols and customs which are often regarded as purely Christian and Moslem are common to other faiths and other peoples. I have given an illustration, which all can understand, of the manner in which ornament and architecture may reveal historic facts, by referring to an Egyptian column. Thus you can see how I reach my conclusions; and I have shown you that much ornament has obviously risen from a desire to copy Persian examples. I have thus made good my position, and have illustrated it, that most of the best flat ornament that the world has seen has, directly or indirectly, come from Persia.

Society of Engineers.—The first ordinary meeting of the Society of Engineers for the present year was held on Monday evening, in the Society's Hall, Westminster-chambers, Victoria-street. At the conclusion of the ordinary routine business, the retiring president, Mr. Jabez Church, presented the premiums of books which had been awarded for papers read during the past year. The premiums having been presented, Mr. Church retired from the chair, which he had occupied for two successive years, receiving a warm vote of thanks from the meeting. He then introduced to the members the president for 1874, Mr. William Macgeorge, who then delivered his inaugural address.

A PICTURE OF THE TIME.

SIR,—It never occurred to Bob Beggot's friends that they could like him better than they did, and yet he is a trouble, inasmuch as those who have had a lot of it do not count small doses infliction, much less affliction; at all events, that is his opinion seemingly. He has stood beside too many deathbeds to be a lively companion now.

There are some fellows who cannot forget, and others who cannot remember. Why, in the world, do not they be led by law and evidence? There is plenty of both, and what is their use if they are not to be used? There is plenty of law for those who ask for it,—rather more than enough for those who do not; and as for evidence, you may find sufficient to prove almost anything if you do not happen to get beyond the amount you want. A long run of misfortune is apt to make a man a cynic or a stupid. Bob is a stupid. Christmastide brought no pleasure for him, since those who intensified the delight of all seasons alike as they came for him, had left him alone, and he lived only in retrospection. "You may laugh," said he, "but I solemnly aver that, had it not been for the little book that I removed from poor dead Annie's hand, I believe I should be mad now." Poor Bob, the mesmerism of "the shadow of death" stupifies him now, but he possesses the remedy, and his friends like him better than ever since he acknowledges his belief in it. Faith or infatuation, whatever it may be, thank the Giver of all good, most for His best gift,—Blessed, that brings comfort in adversity, strength to the sorely tried, and peace when else there could be none.

"The Shadow of Death" enshrines, in big and bigger type, a whole house and shop in Bond-street; athwart the whole edifice, and on door-jamb, lintel, and window-pane. Stop and read it, "The Shadow of Death."

But do not stop long to read, for you will learn nothing from the big and bigger letters of wrong direction, and there are hundreds and hundreds of visitors who will walk upstairs before you if you stop to ask yourself,—"What, in the world, does it mean?"

"The Shadow of Death," as painted by Mr. Hunt, typifies the means by which repentant sinners are promised eternal light and life; for, like most allegories, it admits of more than one construction, and yet, unlike the generality, it stands in no need of description, since, by the astonishing unanimity of most critics, very copious interpretations of the painter's intentions do more than supplement his own written statement of them in a pamphlet to be obtained at the gallery where the picture is being exhibited.

It is a notable work, no doubt, much to be admired for its thoroughly studied and elaborately painted detail; and it is to be hoped that it will ultimately repay the energy, earnestness, and care, with which an idea has been realised,—only an idea. It requires a special bent to make historical romance interesting; it usually makes but the more may what was a labyrinth before. How far an *alludendum* to the sacred record of Jesus's life by supposititious sensational incident can be justified, is and must remain a question of opinion and taste.

Ritualism, spirit-rapping, the influence of a more than florid school of poetry, and the opening of the Suez Canal, may all tend towards giving latitude to conjectural and collateral illustration of some facts that are best left distinct in their integrity.

The most realistic representative art goes for nothing when employed in attempt to pass what is known to be fiction for truth: the stronger its assertion of truth, the greater its falsehood, of course.

Tradition, in these matter-of-fact days, has lost half its value, unless habit and belief have made it strong enough to pass for knowledge.

Formerly, one might occasionally read or hear of some to-be-extra-blessed baby receiving baptismal denomination—leagues and leagues away from the scene of Christian-rites' origin,—having its brow crossed with veritable water from the river Jordan (perhaps from amongst odd tiers of various vessels where mineral waters, and waters from every chink of the rocks of ages—might be bought, the precious drops that have their first spring in Palestine may be obtained). Not for you, snuffed out of creation; not for you, whose first laugh is owed to a bright-coloured bubble that floats on the gutter-scum, your only source of christening,—yours, and its common designation.

It is all Chelsea waterworks to a lukewarm puddle that no great gain is to be derived from "trying back" when the world's watchword is "Forward." And yet, to some, the Jordan is the same Jordan still, though thousands of new springs and tons upon tons of defilement,—pollution that the muck God's people make of God's gifts,—lie in its bed.

Oh! old habit, how long will you wear? To the last will it last, until the shadow of death,—the shadow of a shadow the most fleeting of all to those who believe in Christ,—tones all views in this world's light; and knowledge, indeed, shall come, and rest; knowledge of what was superstition, what is religion, and rest,—beyond all doubt.

Not quite in the same spirit as rich Mr. Lacquer, of Birmingham, sends for baptismal water from the Jordan that his son may be thoroughly christened; nor, as in a lesser degree, snave, fashionable Mrs. Bantling crosses the Channel in bad weather, that her daughter may be married in a Paris satin dress, when Jewell & Rouge or Allis & Lewinby, could have given her the world's best choice of such material,—without sea-sickness,—has Mr. Hunt lived on a roof, for horizontal light; been to Bethlehem for complexion, and taken a run to Nazareth for some "required fresh matter," and waited all the changes of weather, the obscuring of the sun by mists, and the rising of the wind, &c., "which early and late are, even in Syria, to a painter with a large canvas, distractingly frequent;" and we should tire if we told all Mr. Hunt's trouble besides. There is no need: he is being very well rewarded.

Formerly, admiration for such a picture as this,—appreciation only, indeed, would have been confined to those who crossed themselves when they prayed, and sometimes when they did not; who told their beads, and went any lengths for a short cut to their designs. Jesuits would make much of such a mind and handicraft as belong to Mr. Holman Hunt, if politeness left it to be believed that there were Jesuits nowadays.

Years ago, good people, who thanked God whatever their apportioned lot might be, and asked pardon and patience for what brought and what appeared to them trial and trouble, their share of this world's sorrow; when they knelt with closed lids, "turning their eyes into their very souls;" the grand cathedral, the decorous, graceful church, and the cleanly-swept little chapel, were alike to them—the house of God; the grander, the more decorous, and the more free from common dust and sully the better; but this latter consideration was for the working-days' consideration, not for Sunday's; the hand's work then was to veil sight of all that mortal hand could do or help.

There is so much to be seen now in church and church ceremony, that the eyes never close till the sermon commences; for every now and then some new addition or variation is made to, or in, religious service. However, it is to be hoped that no such change shall come as will admit of inventing a new "gospel." J.

STREET PAVEMENTS.

It is evident, from the leading articles and correspondence in the press, from the strong expression of feeling at public gatherings, and the warm discussions that take place at the meetings of local authorities, that the inquiry as to what form of street pavement is most noiseless, healthy, and safe excites much interest at the present moment.

The first step towards improvement on the old granite setts was made by the Commissioners of Sewers in 1869, when, guided by the experience gained in Paris, they permitted a sample piece of pavement to be laid by the Val de Travers Asphalt Company in Threadneedle-street, which remains apparently very much in its original condition to this day. This sample is of the pure bituminous rock obtained from the mine about twenty miles from Neuchâtel, in the Val de Travers, which the writer visited last October. The vein is about 12 ft. thick, is from 60 ft. to 80 ft. below the surface, and is, curiously, quite evenly impregnated with bitumen throughout its depth; while the rock immediately above and below it is not impregnated at all. The extent of the vein has not been determined, but galleries have been driven into it in various directions, and the quantity of rock obtainable appears to be practically inexhaustible.

The engineer to the Commission, in his report, dated July, 1870, furnished facts of such a nature to the Streets Committee, that the commissioners determined to pave the Poultry and Cheapside with a similar pavement. This was done, and since that time several of the important thoroughfares in the metropolis have been paved with asphalt of this company, or that of other companies called into existence by the success they achieved. Indeed, a great deal of public spirit has been exhibited, and a very large capital sunk in these matters, of which it is to be apprehended the general public, rather than the shareholders, have thus far repaid the benefit.

In the report alluded to, it is stated that safety depends, at times, "largely upon the condition of the surface in respect of cleanliness;" and, under the head of "cleansing," it is stated that this pavement offers great facilities for doing this effectually and economically, and that this could be done every morning, and be maintained "in such a condition of cleanliness as, hitherto, has not been obtained in the City of London." Upon this head the following is the final paragraph:—"Cleanliness of surface is, indeed, under certain conditions, the best means of preventing slipperiness, and, on that account, I specially draw attention to the question of cleansing."

About a year afterwards, namely, in July, 1871, when a great number of other important thoroughfares had been laid, a further favourable report was made upon these pavements, and, under the head of safety, cleanliness is again insisted upon; and the secretary of the General Omnibus Company, the inspector of pavements, the superintendent of street cleansing, the police, and the inhabitants of Cheapside and Poultry, are unanimously of opinion that fewer horses fell than used to fall on the granite; while Captain Shaw states that he is convinced that there is "less danger in travelling over the asphalt than over the granite; that it is safer for the horses, and easier for heavy, fast-going carriages."

At this time it may be considered that the question of durability, as to which there was at first much doubt, is satisfactorily disposed of; but it has been discovered recently that asphalt is much more slippery than was thought before, and a great clamour has been made asking the authorities absolutely to remove it, and, generally, requesting further that an American wood pavement should be substituted. The question now to be considered impartially is: Ought this to be done?

An asphalt pavement,—being jointless and impervious to wet, very easily cut into for repairs, cheaply cleansed, and moderate in first cost,—has advantages of its own possessed by no other pavement; but its slipperiness, when slightly wet and dirty, must be fully admitted, and, as it will be seen by the several reports above named, has been understood from the first. It would appear, however, that even the care at first bestowed has not been persevered in, and, as a consequence, stronger impressions on the part of the public as to the slipperiness, have become general.

The particular wood pavement which some persons recommend, is composed of small blocks set $\frac{3}{4}$ in. apart, on two layers of 1 in. boards, the spaces between the blocks being filled with a mixture of tar and gravel.

We will dismiss the statements obtained from America, where this pavement seems to have failed for various reasons; will say nothing about the difficulty of renewing worn blocks, or of cutting through the foundation of boards to get at gas or water pipes, without destroying the distinguishing principle of this pavement; and we will admit that when first laid, it is pleasant to travel over; that the workmanship is excellent, and the material likely to last much longer than that used at New York. We will also forget that wood has already been tried and failed, mainly because it wore very unevenly and became slippery. But, after all this as to wood, unlike asphalt, traction is very great upon it. It is very absorbent, and not easily cleansed; its first cost is great, and, unless coated with gravel and sand, it must quickly become out of order, as the tar and gravel get loosened from the joints, and the blocks wear round. This may be seen to be the case in King William-street, in spite of the unusual care bestowed to keep that sample piece in order. And here we may remark that the report now just issued of the engineer to the Commission, specially as to the slipperiness of different pavements, cannot be unreservedly adopted, not only as the writer writes out, because of the time of year, when

there was no frost, which is very unfavourable to wood, but also because, as was mentioned in a letter to the *Times*, the wood has been continuously sprinkled with sand and gravel (of which he seemed to be ignorant), so that the traffic really passed over a sort of macadam, with a foundation of wood. In fact, wood pavement, in the condition which it must be in, if used in an extensive thoroughfare, has not yet been tested at all; the expense of constantly sanding and gravelling would be very great on a large scale, besides the cost of removing the mud engendered by this process.

On the whole, therefore we do not see that a case has yet been made out in favour of wood, which justifies an appeal to the authorities to repose any great confidence in it; nor do we think that those good qualities in asphalt pavements, which have induced its use thus far, are shown to be overrated; but rather that a return to whatever system was in force prior to the last twelve months would very much remedy what is complained of, and that further attention should be paid in this direction. Apparently the Commissioners of Sewers are of this opinion, as they have directed the Streets Committee to make experiments for the next three months as to the best mode of cleansing; and we are glad to see that the several asphalt companies have united in offering a premium for any improved invention for this purpose.

We can scarcely suppose that the testimony collected by the Commissioners for their guidance, in the first instance, was fallacious. By it they were thoroughly justified in all they have done; and we trust that ultimately they will be justified still further.

STATUE OF JOHN BUNYAN.

We mentioned some time ago that Mr. J. E. Boehm, of the Avenue, Fulham-road, had executed a fine statue of John Bunyan. On Saturday last, it was cast, in bronze, by Messrs. H. Young & Co. at the Eccleston Iron Works, Pimlico, the young daughter of the sculptor opening the valve which allowed the melted metal to escape into the mould.

This monument is given to the town of Bedford by the Duke of Bedford, and the likeness is from a contemporary painting by Sadler, in the possession of the Rev. Mr. Olive. It is intended to occupy a prominent position on St. Peter's-green, where five roads meet at the approach of town.

Bunyan stands forth as the preacher, with the open Bible in hand. The shackles of his prison lie at his feet. The dress is of the period; and the statue will stand on a granite pedestal, around which will be relievoes from the "Pilgrim's Progress." The work, which is colossal, will weigh about 2½ tons.

THE NATIONAL ACADEMY OF FRENCH ARTISTS.

The love of centralisation, the passion for "officialism," if the word can be coined to designate a mania, so difficult to define, that seems inherent in the French character, have become manifest in a curious and mighty form. M. de Chenevières, the new Directeur des Beaux Arts, has laid before the Minister of Public Instruction a vast project for the establishment of a National Academy of French Artists, based seemingly on the French Academy of Letters and Sciences. The academy is to be instituted under the honorary presidency of the Minister of Public Instruction and Fine Arts. It is primarily to be composed of all French painters, sculptors, draughtsmen, architects, engravers, and lithographers, who have received a recompense from the State; that is to say, all members of the fourth class of the Institute, all dignitaries of the Legion of Honour, all holders of the medals distributed after the annual salons, all students who have obtained the Grand Prix de Rome. The academy will elect annually a committee, charged with the organisation and direction of national art exhibitions; and this committee will select among the exhibitors any number of candidates for academic honours. Every member of the academy will participate in the vote. Moreover, though an artist may not exhibit, he will, if his work be deemed meritorious, be proposed as candidate by the committee of supervision. Foreign artists exhibiting in France may also be elected; but they can take no part in the deliberation of the

academy. Lastly, a few honorary members may be selected. The attributions of the academy are simple. It will organise and direct exhibitions, the State providing the necessary accommodation on condition that the show is opened annually to French and foreign artists. All the artists who have taken part in former exhibitions (that of 1818 excepted) will be called upon to elect the examining jury. The members of all these juries will be *de officio* academicians. The academy will be divided into four sections: that of painters and draughtsmen; that of sculptors and engravers of medals and precious stones; that of architects; that of engravers and lithographers. Every three years a general meeting will take place, and a president, two vice-presidents, and a committee of administration will be elected. The resources of the academy will consist in the income derived from legacies and donations, and from the receipts of the annual salons.

INAUGURATION OF THE MONUMENT OF CONSTANT DUFEX, PARIS.

A MONUMENT has been erected by public subscription in the cemetery of Montparnasse in memory of the late Constant Dufex, architect, and on the 22nd of last month it was inaugurated. The subscription was initiated and supported by his former pupils, some of them now leading architects, and to one of these, M. Ruprich Robert, the design of the monument was confided.

Four discourses were pronounced in presence of a large assemblage of persons; one by M. Godebout, in the name of the "Société Centrale des Architectes," and one by M. César Daly, director of the *Revue Générale de l'Architecture*. The latter was an eloquent and touching address worthy alike of the head and heart of our esteemed and accomplished friend.

NEW STREET AND PROMENADE IN DOUGLAS, ISLE OF MAN.

THE struggle in connexion with this question, the rival architects being Mr. Culshaw and Mr. C. O. Ellison, both of Liverpool, has been advanced a stage by the decision of three Liverpool surveyors, Messrs. Picton, Weightman, and Sherlock, to whom the question was referred back by the Lieutenant-Governor, on the occasion of the passing of the Douglas New Street Bill, by the representative branch of the Legislature, who by their vote had adopted the Ellison plan. The report of these gentlemen has been received by the Governor, and by him referred to the Town Commissioners of Douglas, who are the parties to undertake the work. The Governor in his letter sets forth the conditions upon which he will be prepared to advise the Legislature. The surveyors in their report say:—"We have no hesitation in reporting that, from this general point of view, Mr. Ellison's plan presents many decided advantages. The previous plans (Culshaw, Todhunter, Robertson) merely provided access from the pier to Prospect-hill. The narrow, tortuous access northward, by Duke-street and Strand-street, remained with all its obstructions untouched, and the gradients at the upper end of the new line were far from good. Both these objections are removed by the new plan. There is, however, a much wider question. The old town of Douglas, like old Whitby, old Scarborough, and in other small seaports, had all its streets and buildings turned inland for shelter. All sea-frontages were avoided. The new road, leading northward, has to some extent remedied this, but only partially. The new scheme, by its intake of the foreshore, and the formation of an esplanade and drive, provides sites for lines of houses overlooking the bay, like those at Llandudno, Aberswyth, and Southport. The drive in front communicating with the present promenade will give easy access northwards; while the other fork, leading to Prospect-hill, is shorter and less steep than the former one."

The Sheffield Borough Surveyorship.—At a joint meeting of the Highway and Improvement Committees, it has been decided to recommend the council to elect the future borough surveyor from the following three gentlemen, selected from the reduced list of six, which we have already given:—Mr. F. B. Coghlan, civil engineer, Newcastle; Mr. Bryson, assistant borough engineer, Newcastle; and Mr. R. Vawser, borough surveyor, Warrington.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

An ordinary general meeting of the members was held on Monday evening, Jan. 26th, Sir Gilbert G. Scott, R.A. (president), in the chair, when the following gentlemen were elected:—Messrs. T. Drew, E. Hoole, T. Lawrie, and J. E. Rogers (fellows); Messrs. A. Bridgman and G. Sparrow (associates).

Mr. F. P. Cockerell (hon. sec.) announced the death of one of the Institute's most distinguished foreign members, M. Baltard, architect, of the city of Paris, as already mentioned in our columns.

Mr. C. L. Eastlake (secretary) then read a letter from Major-general Scott, on behalf of the Commissioners of the Exhibition for 1874, asking the Institute to nominate three Fellows to serve on the Committee of Architectural and Building Contrivances and Materials; and announced that the President, Mr. Horace Jones, and Mr. T. H. Wyatt had been nominated.

Mr. R. B. Grantham, C.E., then read a paper "On the Water Supply of Country Mansions," part of which we print elsewhere.

Mr. Charles Barry, in opening the discussion, said that he was sure that they all felt indebted to Mr. Grantham for bringing the subject of the water supply of country mansions before the meeting; it was a subject which had attracted their attention from time to time. It seemed to him that the question of the number of gallons Mr. Grantham assumed to be required for personal use in households (10 gallons), and the number required (10 gallons) for the use of horses, carriages, cattle, &c., was not sufficiently gone into. He would like to ask Mr. Grantham on what basis this prescribed number of gallons for the purposes mentioned was founded. With regard to the cost of the particular system adopted, which they were told extended over 3½ miles of ground, at the entire cost of 2,000l., he would ask whether the cost of the reservoir was included in this charge. The estimate was much lower than he supposed that it would be to execute the works described. He would ask, too, whether any provision was made to prevent pipes being affected by the frost, for mostly when they were wanted they were found to be frozen?

Mr. Jennings would like to know why different sized pipes were used, the pipe from the engine at a certain distance being a 3-in. pipe, and at a further distance a 6-in. pipe. What the object of this was he could not say. The delivery-pipe being larger, he could not understand the reason it was divided in some places.

Mr. T. Morris said that there was one point he would remark upon as to the motive power in supplying mansions with water, and that was regarding the power of wind. He would ask as to the advisability of constructing a small windmill upon large estates, with picturesque effect, to carry up the water.

Mr. C. Fowler asked whether cast-iron pipes alone were used to carry the water, or whether any others were adopted?

Mr. Grantham, in answer to numerous questions, said, that as regarded the number of gallons to be personally supplied, in towns the supply was generally twenty-five gallons to every person, which was quite sufficient, taking all ages, for all purposes. In the country, twenty gallons,—ten gallons for domestic purposes and ten gallons for horses, and so forth, were quite sufficient. In answer to the question concerning the use of cast-iron pipes, these and these only were employed in the works he executed in consequence of the great pressure they had to bear upon them; the soil upon which the whole of the pipes were laid was of a sandy character, and in some places there was clay.

With regard to pipes being protected against frost, that was sufficiently guarded against by having placed them from 2 ft. to 3 ft. under ground, which, in this country, was quite sufficient to protect them from freezing, 18 in. even being safe. The water was entirely free from pollutions of any character, and as pure as possible, which he employed, very great care being taken that no pollution from farm buildings should get contaminated with it by its being placed under cover. With respect to the windmill for pumping purposes, he was afraid that it would not answer, for it could not be relied upon for all purposes, and he would not recommend its use.

Mr. E. C. Robins, at the wish of the Council, then read a communication respecting his use of the steam jet in cleaning the stonework of

Hanover Church, Regent-street. In the course of his remarks he said, that in the year 1867, he was walking near the Champs Elysée, in Paris, when his attention was arrested by what was to him a novel process for cleaning down the façade of one of the public edifices. Upon a suspended scaffold, commonly used in France, a workman, whose head and hands were sheathed in a protective covering, was holding the nozzle of a pipe, connected by tubing with a steam generator situated on the ground below. After watching the process, and observing the facility with which the sculpture and carving were effectually cleaned by the steam jet directed by the workman, and aided by the simple operation of brushing, he made a note of the circumstance for future use. Last year he was requested by the vicar and churchwardens of Hanover Church to undertake the renovation of the building. Acting upon his report of the necessity of restoring the external stonework, in the first instance, he was requested to do something to improve the gloomy appearance of the façade, which had become encrusted with a thick mass of black smoke. A strong party in the parish were most anxious that he should remove the portico altogether. He need not say that his respect for their first president (the late Professor Cockerell's) design caused him strenuously to oppose such an act of Vandalism, in which he was ably supported by their Hon. Secretary for Foreign Correspondence, who kindly consented to act on the Restoration Committee, but he pledged himself to clean down the front in such a way that the beauty of the details should become visible by the removal of the smoke and the resuscitation of the natural colour of the stone. To accomplish this end without injury to the building by any tooling of the surface, he called to mind the process he had seen in operation in Paris, and straightway went thither, taking with him his mason, Mr. Whitehead. For several days he could find no clue to the process, which had not been seen in Paris since the war. At length he was directed to the patentee, M. Nivert, from whom he obtained a prospectus, with a list of the buildings operated upon at the time of its publication. He learnt also, that though patented in France and England, financial difficulties had stopped its continued use. Arriving in London, he obtained the specification at the Patent Office, and was informed that the letters patent granted in 1866 had expired in 1869, and had not since been renewed. It was open to him, therefore, to employ the process on his own responsibility, which he at once did, obtaining from Mr. Sykes, of Bankside, the necessary apparatus, in the shape of a steam-generating boiler, fitted with tubes and nozzles for the supply steam, and an injector for raising a column of water, with which M. Nivert mixed chemicals. A constant supply of water from the main kept the feed-cistern at one level. The result of this experiment has been most successful, in the opinion of the competent architects who have inspected the process in action; while the appearance of the building, which is faced with Bath stone, will speak for itself. There has been no tooling or dragging of the surface of the stonework, except where new stone has been inserted in the place of stones absolutely decayed. This new stonework has received three coats of Ransome's preserving solution. The old stone facing, after being played upon by the steam-jet, and rubbed down with hair and wire brushes, and left quite clean, was so little affected by the process that it was found impracticable to use Ransome's solution upon it, since it remained on the surface, and had the appearance of whitewash, the weathered face being insufficiently porous to receive the solution,—an incontestable evidence that with a pressure of 56 lb. of wet steam, the surface of the stone has not been damaged. At first strong lyes were used in the form of awash previously to using the jet, but it was soon discontinued, the steam jet being found equally efficacious without any chemical aids. Care must be taken to prevent accidents from the pressure of the steam in piping, junctions, and nozzles. But in this and other practical details, the experience gained by Mr. Whitehead will be found eminently useful to any architect desiring to repeat the process. He had only to add that he had thought the result of this experiment sufficiently important to call the attention of the committee, and of the profession generally, not only to the means it offers for cleansing metropolitan buildings, but for the conservation of ancient monuments. Paint and whitewash may alike be removed by judicious operation.

And the interiors of our old country churches, so often irrevocably injured by too zealous restorers, might by this means be rid of the preserving whitewash without injury to the details of either stone, wood, or metal work,—superseding any necessity for tooling or dragging the surface of the stone, which has rained so many examples throughout the country, rendering them comparatively valueless for the purposes of study. The total cost of the experiment had been 285l.—6d. or 7d. per foot super., just the price of cleaning down.*

Mr. E. Hall thought that Mr. Robins was deserving of the thanks of the profession of architecture for bringing this matter forward; they had to congratulate themselves upon the fact that the experiment had been an entire success.

The President said that Mr. Robins's paper was of extreme importance. There was no doubt that dirt was a great element of decay, and in a process like Mr. Robins had tried, where dirt could be removed without injury to the stone, it was of the greatest possible benefit to the profession; and he trusted that the success of the process would soon be generally known.

ON WATER SUPPLY FOR COUNTRY MANSIONS.†

THERE are many very large establishments, such as hospitals, barracks, prisons, union work-houses, educational institutions, &c., situated in isolated positions and in which large numbers of persons are lodged and maintained, where a good and abundant supply of water is of the greatest importance and necessity, both for consumption and as a protection against fire. In addition to these objects of first importance, I may enumerate others, such as the many purposes of ornament or pleasure, served by an ample water-supply, as well as its absolute necessity for the successful prosecution of horticultural pursuits, and its great value in cases where large numbers of cattle and horses are kept in situations where great labour would be necessary in pumping the supply or conveying it from a distance.

The qualities of water vary very considerably. The softness of water is a quality much sought after. This property is found to vary according to the source from which it is obtained, some districts supplying soft water (which is the purest form), others affording hard water. Those waters which come from the chalk or limestone formation are invariably hard, varying generally from 16 to 20 degrees of hardness (Clarke's scale), that is so many grains of carbonate of lime in a gallon. These, upon boiling, will leave in a short time a thick deposit, or fur, upon the inside of boilers, kettles, &c.; but by this process the water becomes softer in proportion to the lime precipitated. Waters from the green sand and new red sandstone formations are probably the purest and softest of any of the kinds which are drawn from the earth; but the softest and those containing the least degree of hardness are those which are gathered from elevated and mountain countries, having 4 to 5 degrees of hardness only, but they usually contain inorganic substances, and are frequently tinted with the colour of the herbage or soil on the surface of the land from which it has been gathered. Except in appearance, however, this water is the best for clothes-washing, boiling, tea-making, brewing, &c.; while the hard and well-aerated waters are more sparkling, fresh, and agreeable to drink.

This leads me to the subject of filtration. The materials generally used for filtering purposes are sand and gravel and animal charcoal. It has been found, however, by experiment that the pores of the charcoal, although it absorbs organic matters for some time, will sooner or later become clogged, and will cease to arrest those matters; and not only does the charcoal cease to act, but it will return the matters which it at first absorbed. However, for small filters, where the material can be replaced or reburnt, it will answer the purpose. For filtering reservoirs, sand and gravel of various sizes have been found the best medium. The sand must not be too fine, lest it should become choked, and it must be freed from admixture with all ferruginous and other matters.

In the supplies that we are here considering it will rarely be necessary to provide filters in the reservoirs. It is worth while to mention a

* We gave particulars of experiments in London with the steam-jet some time ago.

† From paper by Mr. R. B. Grantham, C.E., already alluded to.

curious fact in connexion with open reservoirs. It has been observed that in shallow reservoirs there has been a growth of conferva, and on the decay of this, animalcules have sprung into existence; but this has never occurred in reservoirs containing a depth of 15 ft. to 20 ft. of water, or where they have been covered and kept in the dark: it is therefore necessary to bear this in mind when constructing service-reservoirs.

In order to confine the operation within the smallest possible limits, the filter may be so contrived on the premises as to deal only with the water to be used for drinking, washing, brewing, &c.; while for stables, cattle, gardens, house-washing, closets, flushing sewers, and fire-service, the water may be left unfiltered. It will be necessary to have the tank or reservoir occasionally cleaned out, and it should therefore be constructed in two parts, so that one part can be cleaned while the other is full, and a continuous supply be thus insured. Reservoirs or tanks should be left uncovered when they are in the open country and away from smoke, dust, leaves of trees, and other polluting sources; but if near buildings they should be covered, to keep these matters out, as water is very quickly impregnated by such, especially when shallow. As before stated, the greater the depth the less liability is there to this danger.

There are probably few towns supplied with such good water as London: all that is taken from the Thames and the Lea being filtered, and we know that in both cases the sources are chalk and the strata both above and below that formation.

As a rule, all the softest kinds of water are most injurious to and destroy iron more quickly than the harder water, but this is in a great measure prevented by Dr. Angus Smith's composition for application as a lining to iron pipes, tanks, &c.

Dr. Voelcker states that water which has been acted upon by lead is not so injurious as we have been led to suppose. The waters which act upon and dissolve lead are those which contain organic impurities, alkaline constituents, such as carbonate of soda and potash, and those in which carbonic acid is present. Fortunately, however, the lead may easily be got rid of. A small piece of zinc in the water will destroy the injurious effects, because zinc is more readily attacked than lead; also it will be precipitated by the carbonic acid which will be absorbed by the water on exposure to the air. An ordinary filter will arrest the particles of lead.

From the Report of the Water Supply Commission, it appears that moderately hard water, the hardness of which is due to the presence of carbonate of lime, when used for drinking purposes is not injurious to health. Persons, however, who are accustomed to soft water, might be disagreeably affected by changing it for hard water, and *vice versa*, but those who are in the habit of using hard water of that quality are not injuriously affected by it. But although there is no evidence to show that water which is hard, owing to the existence of sulphate of lime, is absolutely injurious, water of that quality of hardness is objectionable.

The evidence proves that for washing, soft water is far preferable to hard, and is also more economical.

Quantity of Water.—The next branch of the subject which we have to consider, is the quantity of water which it may be necessary to provide for a mansion and all its belongings. The basis of this calculation is, that of the number of persons who compose an establishment, and are dependent upon and require an ample supply, and in addition a considerable allowance should be made for storing it, to meet contingencies such as fire, the lessening or total failure of springs or streams in long droughts, and other causes at those particular periods, as in summer, when larger demands are made upon the supply than in other times of the year. In an establishment such as that of a nobleman or gentleman in the country, the personal requirements may not be more than ten gallons per head of residents per day, but for all other purposes, such as house-washing, also for horses, carriages, cattle, watering pleasure and vegetable gardens and roadways, fountains, cooking, brewing clothes, washing, and several other purposes, ten additional gallons should be provided, making twenty gallons per head as the probable consumption of the establishment, and in addition to this amount there should be provided in case of fire, a storage equal to three months' consumption in the event of the supply failing in dry weather. It would

not be safe, in the event of fire, to depend upon the pumping or other means of raising water, or gaining it by gravitation to check fire, as much time is lost in getting the pumps to work, and the quantity may not be sufficient, and the force inadequate to send it to the required height.

In some situations where farms and villages on an estate are situated at great elevations, and where water is difficult to procure, or probably not of good quality—and again, in the case of fire,—it may be necessary that the storage for the mansion should allow by a slight increase of its capacity to be extended to those localities, and it would be but reasonable that a small rent should be demanded. Another want sometimes arises, and that is the supply of ponds for cattle in the fields in summer.

For this a very small pipe would be needed. It may be found agreeable to form a skating-pond, which requires a very small quantity of water to keep it supplied.

Modes of Supply.—The modes of supplying water are by pumping either by steam or water wheels, turbines, horse-power, or by hydraulic rams, from wells or from reservoirs, rivers, or streams, at a lower level than the building to be supplied, and thus raising it so as to command the highest roof of a mansion and its surrounding buildings. In certain situations it is possible to gather and collect water in a tank or reservoir at such an elevation that it may by its own gravity be conducted to the premises by iron pipes at constant pressure, so that all parts of the buildings, gardens, &c., may be supplied without the expense of pumping or lifting. The latter mode of supplying water is far preferable to all others. The next best is that of pumping either by steam, horse, or water power, up to a reservoir constructed on elevated land so as to command the mansion where the mansion and buildings are situated on high land, and no higher can be procured within a reasonable distance, a tower should be erected which may be made more or less ornamental, according to the character of the architecture of the mansion. Upon this a tank should be placed; but a tank of this description is always objectionable, and must be limited in size, owing to the great expense of construction and the difficulty of combining a pleasing appearance with a large capacity. Where there is high ground a reservoir may be adopted, which may be constructed of brickwork or concrete and puddled. The increased cost to attain size is not the same in proportion as in the case of a tower. Even to the reservoir, and thence to the buildings, should not weigh against the adoption of the reservoirs built on high ground; at all events, it is beyond all question that as large a storage as it is possible to obtain high above the buildings, as in towns, is absolutely indispensable both for domestic purposes and protection from fire.

Details of Fire Service.—I now wish to call your attention to a short description of a case of water supply which has been successfully carried out, and which affords an illustration of what is necessary in a fire service. The case referred to is one which I have lately completed at Somerley, the seat of the Earl of Northampton, in Hampshire. It was at first proposed to erect a water-wheel on the River Avon and pump the water from that river to cisterns on the top of the house. This was afterwards abandoned in favour of pumping by steam from a stream on the north side of the house, the engine being further employed in sawing the timber of the estate, for repairs, &c. By attaching a home-steam, the engine could be made to work the chaff-cutting, thrashing, and other machines when not engaged in pumping. This plan was adopted, but the homestead was not built. Some springs of excellent water—soft, clear, and free from pollution—were found issuing from the sand and gravel, with occasional beds of clay, which compose the hills running north and south through the estate, and bordering the valley of the Avon. These contain a large body of water, forming, as it were, a natural reservoir. Their waters were collected in a service-tank at a high level, from whence the water descended to a pumping well near the engine. This well was constructed near the stream before alluded to, in which a dam was placed to keep up the water, so that, if necessary, the stream of water could be let into the well. This water is of good quality, but rising on a moor in peat soil is discoloured, and contains inorganic matter. The engine is of 12-horse power, and drives a large circular saw for cutting up native timber, which at times

absorbs all its power. The water is raised up a rising main of 3 in. diameter for 1,452 yards, to where it meets the 6-in. main, by which it is continued to a reservoir on Somerley-heath, a distance of 2,178 yards, altogether 2,630 yards, equal to 1½ mile at an elevation above the engine of 110 ft. The reservoir, built of concrete, on the highest ground that could be found within a reasonable distance of the mansion, is open, in a clear atmosphere, so that the water is well aerated and kept fresh. It is 10 ft. deep, 60 ft. square at the water line, and contains 150,000 gallons. The engine generally pumps for 2½ to 4 hours a day (according to the consumption at the mansion) at the rate of 50 gallons per minute, which is much more than is required. The height of the water in the reservoir is indicated in the engine-house by means of Bourdon's Pressure Gauge, so that the engineman can at all times see whether the water is falling, and when it is necessary that he should pump. From the reservoir to the mansion the distance is nearly one mile and a half, and the water is conveyed to it by a 6-in. main. The house has recently been raised one story higher and enlarged, with a conservatory, extensive terraces, with fountains, carriage-drives, and additional garden space, and all laid out with very great taste and elegance. The bottom of the reservoir is about 15 ft. above the tops of the roofs, or the surface of the water is 25 ft. above the roofs. The whole of the pipes are of cast iron, well jointed and lined with Dr. Angus Smith's composition, which prevents the corrosion of the iron by this kind of water. On its way to the mansion from the reservoir it supplies the flower and kitchen gardens, the stabling and landries. There are stop-cocks to shut the water off if necessary for repairs or additions to the pipes, taps, &c. I am indebted to Mr. J. McIvor Anderson for the block plan of the mansion, terraces, and stables which is exhibited on the wall, and upon which I have laid down the lines of the pipes and position of the hydrants round the house and to the stabling, and also the positions of the rising mains to the floors above. The sizes of the various pipes are also given. Outside the mansion the positions of the hydrants are all indicated upon the walls near or opposite to them. Stand-cocks can be fastened in the hydrants, and to them the lengths of hose are screwed on. The pressure in the pipes is sufficient to throw jets of water from the hydrants over and upon the roof of the mansion and gallery. Within the house the pipes are laid along passages, corridors, and under the drawing-room and saloon to the interior, under the picture-gallery, at both ends of which are hydrants immediately under trap-doors in the floor with hose, wrenches, and spanners ready at the shortest notice to turn the water on, and it can by these means be directed to every part of the gallery. The water is also raised by upright pipes to every floor of the house, and stand-cocks and hose are placed in recesses in the walls readily accessible and at such intervals that two lengths of hose from different stand-cocks can always reach and discharge into every room in the house. There are also large cisterns in the roof for supplying the closets and the warm-water apparatus, &c., all over the house. The working pressure on the mains at the house in this case is about 39 lb. per square inch, which causes a sufficient discharge through the nozzle of the hose if worked only from the engine, but if worked from the reservoir several jets could be worked at the same time. The cost of the whole service of pipes and the reservoir, but exclusive of the engine, which exerts power for pumping about 1-horse power, was about 2,000l., and the annual cost does not exceed 40l. The whole work was executed by Messrs. Easton & Anderson, of Exeter. The amount of property which is protected is very considerable, comprising the building and furniture, and the gallery which contains a very valuable collection of paintings, statuary, &c.

I may conclude by remarking, that unless proper attention is paid to the sources of supply being protected from pollution, the reservoirs, pipes, taps, pumps, &c., kept in working order, all the care expended in designing and carrying out the works may be abortive, and they may become a source of loss and disappointment, and even of positive annoyance and injury. Careful supervision and frequent exercise of all parts of a fire service are essential, and it should be practised say once a month, and a mechanic, such as a carpenter or smith, should be trained to work the system, making himself acquainted with all

its details, and with the premises, so that he might be able to superintend the service, make slight repairs, &c. Such a person could probably also attend to the drainage and such like matters of the whole of the premises. Most serious consequences have resulted from the want of a practised organisation, even with every appliance at hand, and experience proves what confusion and alarm prevail on the sudden outbreak of fire, when all concerned are generally tumbling one over another, forgetful of everything but self-preservation. This is quite natural, and can only be counteracted by the confidence which will result from the existence of an effective and well-ordered fire service, under the control of a person capable of directing its use to the best advantage.

MESSRS. M. B. FOSTER & SONS' NEW WAREHOUSES IN LISSON GROVE AND HAREWOOD PLACE.

THESE extensive buildings, just completed for Messrs. M. B. Foster & Sons, are in connexion with, and additional to their original stores at the rear of their offices, Nos. 242 and 244, Marylebone-road, and extending therefrom to Harewood-place.

The new buildings are divided into three blocks, separated by party-walls and iron doors, as required by the provisions of the Building Act. The two large blocks, which are three-story structures with basements, have together a frontage in Harewood-place of 130 ft., and one has likewise a frontage of 91 ft. in Lisson-grove, both abutting to the south on the playground of the Philological School.

The floor of the ground-story of these two blocks is constructed fireproof, with brick arches on iron girders, supported by iron columns; the latter are 8 in. in diameter, $1\frac{1}{2}$ in. thick, and cast in one length, with bases dovetailed to granite plinths, and spreading caps carrying cast-iron boxes, forming shoes to receive the wooden posts supporting the floors above. The skewbacks to the arches are formed of plain tiles and Portland cement, cast in a mould; these are in 1-ft. lengths, and are set on the bottom flanges of the girders and grouted solid with cement. The girders consist of 10-in. x 4½-in. rolled joists, with a wrought-iron plate 8 in. by $\frac{1}{2}$ in. riveted to the bottom flange for support of skewback, and a similar wrought-iron plate 6 in. by $\frac{1}{2}$ in., 10 ft. long, riveted on the top flange to increase the strength. These girders were first placed in position on the columns, and then fastened together with strong fish-plates, leaving a space of 2 in. between the ends for expansion; by this means every line of girders forms a continuous tie from wall to wall, materially strengthening the construction. The boxes before described straddle over the girders, and fit into a rebate in the cap, being run thereto with lead; oak wedges fill up the spaces between the sides of the box and the web of the girders. The girders were tested before fixing, and were found capable of supporting without appreciable deflection a distributed weight of 26 tons. The arches, having an average span of 10 ft., and a rise of 9 in., are constructed of two half-bricks rings of Cowley stocks set in Portland cement and washed sand, half and half, the first ring being well grouted with liquid cement before the other was turned over it. The haunches are filled in to a level of 4 in. above the crown of the arches with ground stone lime concrete; upon this are laid half battens, 5 ft. apart, as elevators, the intermediate spaces being filled with dry sand. 2½-in. battens, laid half an inch apart, secured to the sleeper battens, constitute the floor, the ½-in. spaces being also filled in with sand. This plan was adopted to lessen the vibration and concussion that would necessarily ensue from the rolling and pitching of heavy casks. The whole of the ironwork, prior to fixing, received two coats of anti-corrosive paint. The ground and basement stories are connected by a staircase of Craigleith stone enclosed within 18 in. walls, and with double iron doors of communication. The lifts also are enclosed in a similar manner, and with iron doors, thus rendering the basement a separate and fireproof structure. These two floors together provide for the stowage of 1,500 butts of beer.

In excavating for the foundations, the subsoil was found to be a bed of loamy sand, with an average depth of 10 ft. In order to distribute the weight equally over the surface, the concrete foundations of columns (7 ft. wide and 3 ft. thick) were made continuous between the main

walls, hydraulic lime being used for this concrete.

The two upper floors are of wooden construction, of a very substantial character. The girders are 12 in. by 14 in.; binders, 10 in. by 7 in.; joists, 7 in. by 2½ in.; and 1½-in. iron-tongued flooring. The binders are not placed directly in a line, but alternately to the right and left of one another; the continuity, however, is preserved by wrought-iron strap-ties. The posts supporting these floors are 12 in. square, carried alternately through two stories, the bearings of the girders being formed by corbel-blocks, housed to the posts and bolted to them (see sketch), the blocks having a key on top to secure the girders. By this arrangement the weight of each floor is conveyed separately to the upright supports, and continuity obtained vertically as well as horizontally. In thus adopting wood instead of iron, the architect was actuated by a conviction which has for some time been forcing itself upon the minds of the profession, that timber used in large scantling is safer, when exposed to fire, than iron; for the reason that, though it will soon char, it will resist for a long time the attacks of the flames, and if it should eventually succumb to them, it entails far less damage to the walls of the building. This opinion, it will be remembered, has been strongly supported by Captain Shaw, of the Metropolitan Fire Brigade. These two wooden floors, each 10 ft. high, are devoted to the storage of empty bottles, which are stacked in an upright position, six in height; great strength being therefore required to sustain the dead weight thus imposed. Space is provided for the stowage of three million bottles. The roofs, which are of ordinary king-post construction, are carried upon posts 10 in. square, with corbel-blocks on top, strongly strapped to the beams. The skylights are fitted with balanced levers, connected by rods to a quadrant, and are thus opened and closed simultaneously. The roofs are covered with slate, and wide parallel gutters have been formed to facilitate the removal of snow.

The ventilation of the two lower floors, used for the storage of beer, was a matter of paramount importance. In order to gain simplicity of working and efficiency of action, the simple valve system has been adopted, and found to answer even beyond the architect's expectations. The fresh air is admitted into the space formed by hollow walls, on two sides of the building, through large perforated panels, and thence distributed, at a lower level, by smaller grated apertures, 6 ft. apart, which are closed by valves attached to a rod that passes along each wall, and is turned by a handle affixed to it at right angles, by moving which through a greater or less angle the quantity of air admitted can be adjusted with great nicety. The sets of valves—one on each of the principal fronts—are distinct, so that one set only may be used when it is desirable to admit the air from the coolest side. The vitiated air is drawn off by stout zinc tubes, running along the soffits of the vaulting, with perforated apertures in each bay, immediately over each gas-jet, to carry off the products of combustion as soon as they are generated, and at the same time to quicken the up-current. These tubes are carried up in the thickness of the main walls, opposite the inlets, to the top of the building, and are fitted with valves 5 ft. below the external grated apertures, so as to ensure the collection of columns of heated air. These valves are worked simultaneously from the floors to be ventilated by a simple contrivance of rods and cranks. It has been found that by these means a nearly equable temperature can be ensured throughout the year, ranging from 58 to 62 degrees Fahrenheit.

The principal fronts of the new buildings in Lisson-grove and Harewood-place, which are faced with Gault bricks, and have dressings of terra-cotta,—this material being considered more durable than stone in a London atmosphere,—are treated in plain Renaissance style, care having been taken to preserve the purely commercial character of the building. The ground floor, unbroken by windows, is capped by a frieze and moulded cornice, the former pierced at regular intervals by reticulated panels for ventilation. This floor forms a podium to the two upper stories, which are divided into bays by terra-cotta pilasters, with moulded bases, and surmounted by an entablature and parapet of the same material, the cornice being fully moulded. The windows to first and second floors, which have lintels and sills of Douling stone, are 7 ft. wide, and are divided into compartments by moulded mullions and transoms, which com-

partments are filled in with ashes, alternately fixed and hinged, divided by stout bars into small squares, and glazed with fluted glass. Between the two rows of windows extends a moulded cornice, and under this is a broad frieze filled in with glazed Majolica tiles, displaying in raised and effective characters the trade and addresses of the firm. The whole of the bricks used, except the facings, are the best Cowley stocks.

The third and smaller block is a two-story building of similar construction, and contains, on the first floor, a foreman's office, label and cork rooms, and a large and well-ventilated dining-room, with coal-room attached, for the men engaged upon the premises.

The superficial floor area of the new stores amounts to 54,600 ft., and, together with that of the original stores, makes a total of about two acres. The cost of the new premises was 12,000*l.*, or about 4*d.* a foot cube.

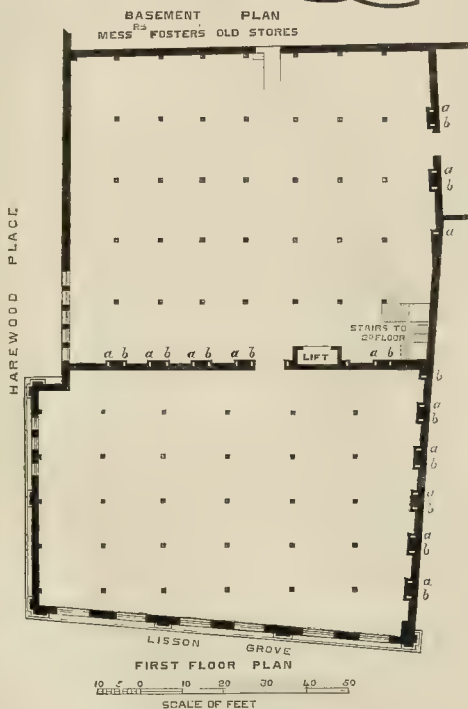
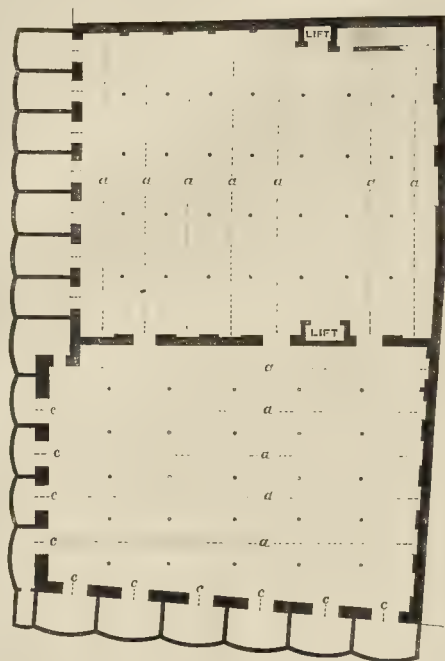
These extensive works have been executed by Messrs. Longmire & Burge, of Osnaburg-street, from the designs and under the superintendence of Mr. Thomas Harris, of Gray's-inn Chambers, High Holborn. The terra cotta was supplied by Messrs. Doulton & Co., Lambeth; the iron work by Messrs. Lindsay & Eastwood, of Pancras-street; and the gearing and fitting of ventilators and skylights, by Messrs. Richardson, Slade, & Co., of Brownlow-street.

THE CONVERSION OF CIRCULAR MOTION INTO RECTILINEAR.

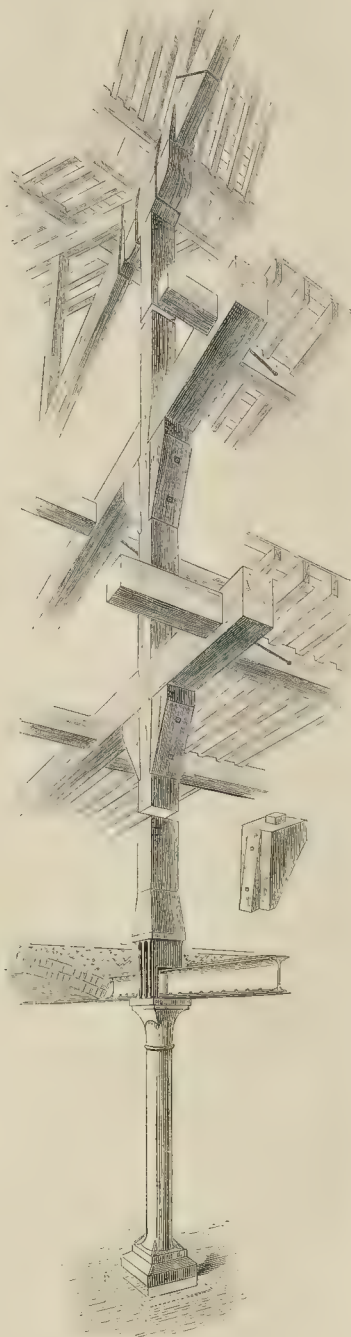
At the Royal Institution of Great Britain, the lecturer on Friday evening of last week was Professor Sylvester, who had selected for his subject "Some recent discoveries in the mechanical conversion of motion." His special aim was to make known the discovery of M. Peaucellier, a lieutenant in the French artillery. The attention of mathematicians has long been given to the study of the possibility of converting circular motion into perfect rectilinear motion without the aid of guides, and *vice versa*. Approximations have been obtained, but it was regarded as an impossibility to effect it with exactness. M. Tchebatcheff had for years laboured to demonstrate the impossibility of achieving it. The theory of M. Peaucellier was practically demonstrated by Professor Sylvester, who explained the working of several models which had been prepared under the direction of Professor Henrici, of University College. By means of the Peaucellier compasses or "cells," as Professor Sylvester prefers to call them, segments of circles whose centre is at any distance, as well as conic sections and an infinite variety of curves, can be drawn. The discovery is one not only of theoretic interest to the mathematician, but has important practical bearings. While in the hands of Professor Sylvester it opens up "an entirely new field of mathematical investigations, which associates itself with the most recent labours of modern analysts in connexion with the geometrical theory which forms the present basis of the integral calculus in its highest form," it places a new instrument in the hands of the practical mechanic. It is stated on authority that had the discovery been made known earlier, months of labour and much expense might have been avoided in the working out of curves in the Woolwich workshops. Not only so but, by a combination of cells, Professor Sylvester has made a "cube-root" extractor and an "angle trisector," so that the solution of important ancient problems by this contrivance marks it out as the greatest addition to mathematical and mechanical science that has perhaps been made for centuries.

A NEW METHOD OF STEAM TRANSIT ON CANALS AND SHALLOW RIVERS.

This proposal consists in laying a continuous wire-rope or chain, protected from rust, in the beds of canals and rivers. An *up* and a *down* line. The chain is held by a certain drum arrangement, worked by steam, in either the passenger or traction boat; is taken up and laid down as the boat progresses. The object is in a great measure to obviate the objectionable wash of banks caused by screws and paddles. The inventor has designs for overcoming the difficulties of bends in rivers, and for the arrangement of termini; and thinks the plan is peculiarly well adapted for the Suez canal. He deems it also capable of being adjusted with advantage to tramways.



a. Horizontal flue to upcast shaft of basement.
b. Upcast shaft of ground floor. *c.* Cold air inlet.



Sketch showing Construction of Floors.

MESSRS. FOSTER & SONS' WAREHOUSES, LISSON GROVE AND HAREWOOD PLACE.



NEW WAREHOUSES IN LISSEON GROVE AND HALEWOOD PLACE.—MR. THOMAS HARRIS, ARCHITECT.

RESTORATION OF MANCHESTER
CATHEDRAL.

WE have to record further progress in the restoration of Manchester Cathedral, particularly in the inside of the building, which hitherto has been much neglected.

The south porch internally has been for many years in a very unsatisfactory condition. By usage it has become the principal entrance, from the fact, perhaps, that owing to the exposed situation of the cathedral the west and north entrances when used prove too draughtily and cold. Externally this south porch has been restored, and is very ornamental in its design. The part adjoining is now in course of restoration, and will in a month or two be completed. The state of the interior has, therefore, forced itself upon the attention more than it has ever done before. The old lobby doors with their covering of dirty cloth, and the old lobby framing designed in the worst of all styles, form a wretched contrast to the rich stonework of the exterior, and, what perhaps is worse, have failed even with the additional protection of the heavy red curtains within to prevent the admission of draughts, that render the sittings near the entrances in the highest degree uncomfortable. The old gallery stairs placed near this entrance, and constructed in the same debased style as the lobby, but even less ecclesiastical in character, must have offended every eye that has looked upon them since the day of their erection half a century ago. The galleries are here so heavy and unsightly that we cannot help wondering at the indifference of those who have looked upon them Sunday after Sunday through so many years without making some attempt to improve their appearance. We have no doubt that the architect for the restorations, and, indeed, every other architect, would advocate their entire removal, and it is a pity that this cannot be effected; but there are almost insurmountable difficulties in the way, deficiency of accommodation without the chance of extension on the one hand, and private rights to pews and pew-ownerships that would require thousands of pounds to purchase on the other hand, so that the churchwardens have at present no alternative but to make the best they can of the existing galleries, either by alteration or by entire reconstruction.

To remove the objectionable features we have noticed, and to further secure the comfort of the congregation, the dean, canons, and churchwardens, conjointly have instructed their architect, Mr. Dawes, to prepare designs, and enter into contracts for the construction of new entrance porches, new stairs to gallery, and new gallery front to the westernmost bay on the south side. These designs are of an ornamental character, suited to the style and importance of the building, and when carried out will produce improvements both externally and internally. From the drawings and specifications already prepared, we gather the following description. There will be an inner and an outer porch arranged for the prevention of draughts, and constructed of wainscot oak, panelled with sunk tracery, and pierced where necessary for the admission of light. The glass for these open panels will be delicately stained and tinted, and will be fixed in lead quarries, arranged in patterns. The ceilings, also of oak, will be curved at the sides, and flat in the centre, and will be divided into panels by moulded ribs, carved at the intersections, or be ornamented with sunk tracery. The doors will be massive, and double hung, fitted with patent springs, and will therefore be self-closing. The upper portion of each door will be divided into four open panels, filled in the heads with tracery springing from shafts, with moulded caps, bands, and bases. The framing on each side of the doorways will be similarly treated, and the whole of the pierced work will be filled with stained glass, in lead quarries as before described.

The gallery front over the inner screen will have enriched panelling running along its length, in the form of an arcade, being divided by shafts surmounted by elaborate sunk tracery. Over this arcade there will be horizontal mouldings, with vine-leaves carved in the large hollow, and finished on the top by the projecting moulds of the bookboards. The newels will be moulded and carved; the larger one at the foot of the stairs will be surmounted by a massive lamp of polished brass, specially designed. The balusters will be of wrought iron, foliated and picked out in colour, and the hinges and handles of doors, and the lamps hanging from the porch ceilings,

will all be of polished brass. The floors of the lobbies throughout will be laid with encaustic tiles.

In addition to these works, numbers of minor alterations and repairs have from week to week been carried out within the last few months, and others are still being executed. The interior of the building has been so neglected that a considerable sum is required to put it in anything like repair, independently of the thousands that will be absorbed in the permanent work of restoration. There can be little doubt that the wealthy churchmen of Manchester will interest themselves in the movement, and aid the vigorous action of the dean and canons and churchwardens, towards completing the good work that has been begun.

ART MASTERS, DESIGNERS, AND THE
PUBLIC TASTE.

SIR,—The subject of art education is probably as utterly distasteful to the majority of your readers as it certainly is to myself; yet they, no more than I, can decline its consideration without in a measure repudiating the important questions therein involved. "By what system of culture shall we best develop the aesthetic faculties and any power of art latent in the national mind," has everywhere been asked, and nowhere yet been answered. Thirty years' discussion has only robbed it of all novelty, to leave it as far from a satisfactory solution as the Parliamentary inquiry of 1836; and the failures of our national schools have become conspicuous in proportion to the magnitude of their experiments; whilst the public impatience and disgust are the more just, and the greater that it has not only been soundly rated for its encouragement of meretricious art, but that under promise of better it was induced to give up that it had, and to pay in advance for results which have never been, and never can be, under the existing organisations, realised.

With an interval acquaintance with the workings of the old "schools of design," I was one of the earliest opponents of many of the principles asserted by the new management of 1852, and in my connexion with the Department of Practical Art, I ever sacrificed my own interests to a frank, too frank, expression of my opinions. In looking to the past, over a period of fifteen to twenty years, and reviewing the many changes of system which have occurred, I may, perhaps, feel that my opposition was indiscreet and premature, and that had I trimmed my sails to the wind I might have helped to bring the ship to port, and have served better the cause I had at heart. It is, however, too late to discuss the Department's early errors or my own, and I refer to my connexion with them only as evidence that the subject upon which I presume to write is one that has engaged my thoughts and labours for many years.

Nor would I have it supposed that I am insensible to the many good things accomplished in the history of art by the South Kensington authorities. Nothing that I have written and nothing I may write will, I trust, lay me open to any such suspicion; for if their triumphs have sometimes been achieved at seemingly disproportionate cost, I bear in mind that they were also won in the face of no ordinary difficulties. It may be true that the arbitrary spirit in which the early management worked not only excluded impertinent interference, but also made the tender of active sympathy and aid impossible; and that subsequent years of dogmatism and despotism, which admitted no error, refused all counsel, and ostracised all opponents, did not tend either to conciliate the paid subordinates within their walls nor the paying public without. But when the worst is said, there still remains due to the indomitable will and indefatigable labours of the heads of the institution the credit of forming a museum unsurpassed in any country of the world.

Yet I have a charge against the Department, and a serious one too. It is this: it has utterly failed to do that which it was originally organised to do, and that which it might have done had it not autocratically repudiated its obligations, and resented every suggestion prompted by public spirit or individual good will, as though it concealed some fell purpose subversive of its rights, liberty, and life. It has utterly failed to elevate the taste of the masses, and almost as entirely failed to improve that of the middle classes. Briefly it has not promoted the cause of popular art. What has been done in that

direction has been accomplished outside, by secessionists in spite of its influence, and by other agencies. But it has on the contrary systematically degraded the art-teacher before the public, the school committees, and in the estimation of the higher class of students from whom the best results might have been expected; and in so much it has in all cases seriously increased the difficulties of his position, and in many wholly annihilated his influence. In confirmation of my views as to the pernicious character of the system of "payment upon results," I cannot refrain from referring to two advertisements which have recently appeared in the *Builder*; for when the committee of the art-school of such a centre of manufactures as Sheffield makes the payment of a salary of 200*l.* to its headmaster conditional upon his agreement to decline all private teaching within a circuit of thirty miles; and Keighley, unconscious of any impropriety, makes it publicly known that its headmastership may be worth 250*l.* to an "active man," it will, I believe, be readily conceded that the position of high-class art-teachers is as unsatisfactory as any system could well make it.

Yet, I would distinctly state that I have no sympathy with the so-called "finer susceptibilities" of the professional temperament. I believe that the "labourer is worthy of his hire," and no more, whether he be poet or shoemaker. But I have considerable regard for education and honesty, and I think they have claims upon our respect, which even business men can ill afford to repudiate. But to return.

If "the arts open great gates of a future, promising to make the world plastic, and to lift human life out of its beggary to a godlike ease and power," it is safe to assert that this blessed revolution will not be accomplished by unworthy agents, and that those who are already so far advanced in artistic culture as to be safe guides to this elysium of the future, are entitled to our consideration, at least, as gentlemen. The humblest workman is believed to have an interest in his labours beyond his daily wages; but the Government system of payment upon results is based upon the assumption that the art-master can be influenced alone by mercenary motives. Giving him no credit for devotion to his art, professional pride, or social ambition, it has destroyed all confidence between all parties, and made every contract a mean system of bargain and barter—of speculation and gambling. The student, not without reason, suspects that his studies are shaped to produce the highest "results" to his teacher, who, in turn, is supposed to begrudge the time occupied by the unproductive element of his classes. The committee look jealously upon the master's private pupils, and the master feels that too large a proportion of the "results" of his teaching already flows into the hands of the committee. And as though this internecine conflict of interests were not sufficient to prove the rottenness of the system, a further antagonism is set up between the schools throughout the country by the invidious distinction drawn between them in the allotment of paltry "bonuses."

If, however, the position of the art-teacher is bad, that of the professional designer is still worse; for, during that protracted reign of terror which followed close upon the active promulgation of those principles of decorative design which limited nearly all ornament to the flat treatment, of highly conventionalised forms, our manufacturers found that in art, as thus ordered, a little more than enough was a great deal too much, and that the little really needed could be easily purchased, as wanted, from peripatetic artists. They, therefore, gradually reduced the number of their own staff from two or three to one, and thence to nothing; and when something like reaction set in, and more and better ornamentation was required, they had learned to believe that designers were costly luxuries, and that their places were already well and economically filled by trade apprentices, who had perhaps studied for a few months at the evening classes of the local art-schools.

Thus the arts of design and the designers of the nineteenth century, are reduced to the condition ascribed by Falissy to glass painting and painters of the sixteenth. "Both the art and the artist," says he, "are noble, but many amongst these, who are gentlemen by birth, would fain be plebeians in order to have money enough to pay their rent and taxes." Nor would I have it supposed that I am exaggerating facts, or making too general application of inference drawn from isolated cases. Mr. Muckley, with

twenty years' experience of the Manchester school, has replied to the reproach that he did not "turn out" designers, that students who had brain enough to design had enough to avoid the profession; and he might, I believe, have added that any school attempting to educate them would pauperise its head master.

To turn from the consideration of the artist to the art, I hold the fundamental error of the Government to have been that the system of education originally adopted by the Department of Science and Art, and with some modifications continued to the present time, was based upon the false and utterly unwarrantable assumption that the æsthetic faculties were already universally active, not only in the minds of the adult population, but also in the children of our primary schools; and that it was, therefore only necessary to enunciate in a few popular lectures, and upon the parish blackboard, the abstract principles of design, to inspire the minds of all comers, with an enthusiasm which would at once revolutionise the decorative industries of the country.

Now, the truth is, that sensibility to the beauties of nature and art comes late in life even to the wealthy and educated,—to England's poor and ignorant of the nineteenth century it comes not at all! The faculty is the result of observation, comparison, and reflection, and in the fashionable rush and crush of modern social life it is difficult, even with all the advantages of wealth and harmonious surroundings, to cultivate it,—to the poor city born and city bred, it is impossible! The great book of nature closed and sealed by the inexorable order of the task-master, the minds of the illiterate and indigent masses will assimilate such external food as is fed to them through the external senses. What this mainly is we well enough know,—the blasphemy and ribaldry of the streets and gin-palaces, the tinsel splendours of the lowest music-halls, and the naked ugliness of their own squalid homes; and as the eye will take in only that which it has the knowledge to see, and the ear carry only that which it has the power to understand, it will, I fear, be many years yet before the refinements of art, as taught in our national schools, will ameliorate their condition.

Whilst I write I have before me three large volumes, folio, of chromo-lithographs, which were ordered by the Lords of the Committee of Council on Education "to be executed by the best artists of any country," for the use of "the Schools of Art in the United Kingdom," and representing some of the principal works purchased for the South Kensington Museum. Amongst them I find a "rock-crystal ewer," 8½ in. high and 5½ in. in diameter; it cost 450l. I find that this precious "object is in the debased style of art prevalent in the tenth century," and that "the patient labour needful to the delicate task of hollowing it" is difficult to calculate. I find a small "silver casket of Limoges enamel," a sixteenth-century work, purchased for 1,000l.; and I find we are the fortunate possessors of twelve "Roundels" of Della Robbia ware, each 12½ in. in diameter, which cost 720l.

It is not my desire to revive the discussion as to the intrinsic value of these things. My purpose is simply to point out that the education of the masses would be more certainly promoted by a gratuitous distribution of penny drawer-plates of improved design in common delf as prizes in our national schools, than by the acquisition of any possible number of Della Robbia medallions at 60l. a-piece, Limoges enamels, or tenth-century rock-crystal vases, be the style of the latter ever so "debased," and though the "patient labour" expended in their production had been utterly beyond the power of Babbage himself, or his machine, to calculate. I have also before me five folio volumes of amateur etchings, executed by the students of the South Kensington Schools, also of objects in the national collection; and I do not hesitate to say, that if the same labour and money which they represent had been expended in the production of chromo-lithographs, of subjects in zoology and botany, for general circulation in our national schools, we should not then, as now, have expended much valuable time and money in vain. Then the Scriptural texts, which are now too often the only decoration of the whitened walls of the school-room, might have been displaced in favour of cheerful and instructive pictures; and the cant with which the minds of our national-school children have too long been poisoned might have given way to a healthy and curious inquiry into the wonders of creation, and

to a juster sense of God's providence on earth. My mind reverts also to the experimental frescoes, external as well as internal, which have for years engaged the labours of masters and students at South Kensington, and I cannot help reflecting that, had but a small part of the money which they have absorbed been expended upon the naked walls of our national school-rooms in the form of cheap and cheerful papers, the national mind would have been more surely enriched at a far less cost to the national pocket.

The British School Society, organised in 1808, laboured for twenty-five years before it so far allayed the fears and dispelled the prejudices of the nation against primary education as to gain for itself the substantial recognition of the Government; and it has taken us forty years more of experiment and discussion to fully realise that national ruin is not the logical and inevitable outcome of national education. At this rate of progress it may still be the middle of the twentieth century before we understand that if this free instruction is to rescue the children of our indigent population from the demoralisation of prison life and the gutter, schoolrooms must be made at least as attractive as penitentiary wards, and more so than the crime-reeking courts and alleys of their familiar haunts. When this preliminary knowledge is acquired, I am not without hope that some of the simple principles of mental physiology and social progress may be so far understood by the art directors of the period, that a repetition of the errors into which the present generation has fallen will then be impossible.

C. HENRY WHITAKER.

"* We have allowed our correspondent to express himself unreservedly with a view to discussion."

KENSINGTON: THE PALACE AND GARDENS.

LONG reposing in a state of somnolence, this royal town has of late years awakened from its lethargy. The erection of two ranges of spacious detached mansions in Palace-gardens, first conferred upon it an aristocratic dignity; then the opening out the straits of the main street, and the erection of a handsome church; and, lastly the removal of the old red brick building called Kensington House, and the substitution of a noble mansion within view of the old palace south front. This last will exhibit a frontage exceeding 200 ft., by a depth of nearly 100 ft., three stories high. There are four varied bows, with wings of one lofty story, connected by lowed corridors. The style, which is peculiarly light, may be termed Anglo-Romano. It is designed by Mr. Knowles, and carried out by Mr. Chappell. There is, however, one grievous blemish upon this otherwise fine position,—the old red brick palace garden wall, and the old gardener's house block out the view of the gardens for 250 ft.

Some fifteen years back the writer of this article urged in the *Builder* the demolition of the old barrack, which was *rescued*, and the beautiful flower-walk continued to the gardener's house; but the park railing terminates there, and an obscure wall bounds the whole western side, reducing the apparent extent of those invaluable grounds, and shrouding their beauty from without. There is, however, an incentive to induce the continuation of the railing up to the old palace-gate entrance, in the first place for the embellishment of the Kensington High-street; and secondly (if not primarily), because the new mansion in course of erection belongs to Baron Grant, who munificently bestows on the public the inclosure of Leicester-square, to be further adorned also at his expense!

Those who remember the old wall along Piccadilly, and the ranger's house within, can appreciate the improvement of the railing, the apparent extension and sense of enlargement from both within and without. Thus we can imagine the effect of a boundary railing, to inclose the waste green on the west of the palace, as far as the palace garden boundaries, extending to the Bayswater-road, and encompassing the long six-acre pasture, which is out of bounds, and occult!

As to the old brick hamlets and cottages close to and north-west of the palace, which stood in 1691 when William III. bought Nottingham House (formerly the property of Sir Heneage Finch) from his son Daniel, the Earl of Nottingham, surely these old crazy tenements ought to be demolished: including the gardener's house, there are in all four of these quaint and anti-

quated lairs, besides two guard-lodges of somewhat more modern construction; and if these were all cleared away a scope of fifty acres might be added to the gardens, in a strip westward of the old palace, and extending from Kensington to Notting-hill-road.

King William III. and his Queen Mary after him, constantly resided and held courts here; George I. and George II. frequently used the palace, in alternation with Hampton Court; and Queen Caroline there luxuriated in the gardens which she had planted, as well as extensions and improvements made in the palace by Kent, the painter and architect.

But as a royal palace it has long been in disuse, and the paintings, gilding, and decorations are decaying and smouldering. Is it, then, worth while to restore or repair the old pile?

One grand desideratum might be gained by taking in those outlying grounds within the *enclosure* of the gardens,—a traverse road from Kensington to Bayswater. At present for two miles and a half (between Park-lane and Addison-road) there is but one tortuous, uphill, and inadequate thoroughfare, by Church-street and Silver-street to Notting-hill-gate; for although there is a noble causeway through Palace-gardens, it is restricted to the occupants of those fine mansions, having gates and lodges at either end. Now, a spacious road from the old palace-gate to Bayswater would be to the million of inhabitants south and north a boon of inestimable value; besides that it would confer benefits of a solid and valuable character upon the growing and flourishing business residents in both Kensington and Notting-hill.

Kensington as a royal and residential palace is deficient. Still, there is no position in London equal to it,—90 ft. above tidal level,—commanding a vista of forest a mile and a half in extent. No other city of the world can equal it. Only let the palace be erected a few hundred yards inward, towards the Round Pond, upon a plateau 10 ft. higher, and you have the most open healthy, picturesque, and convenient site for the abode of royalty,—ay, even for *leudes*. It is surrounded by the aristocratic quarter of the town, and but two miles from Buckingham Palace and the Houses of Parliament: it would make an agreeable and healthy *sejour* for the British sovereign, either in summer or in winter; and the acquisition of the outlying borders as here designated thrown into park would more than compensate for any fifteen or twenty acres in a more central position, expropriated as the site of a truly royal palace.

QUONDAM.

CHINESE PROGRESS.

ACCORDING to official despatches, great improvement is being effected in many Chinese ports and cities. Thus with regard to the port of Chinkiang, we learn that its general condition is satisfactory. The marks of progress as regards material comfort throughout the place are very conspicuous. The houses are of a better appearance, and approach more nearly to the civilised idea of what such domiciles ought to be. The suburbs of Chinkiang are also increasing rapidly, especially in the direction of the British Concession. Land in favourable situations, it is stated, realises as much as 6000. an acre, and even 8000. have been known to be refused. It is further remarked that without the town farmhouses of substantial brick continue to be built, and replace the mud-plastered reed-hovels at first erected by the cultivators on their return to their ancestral soil. From Shanghai we also get news as to recent indications of advancing enterprise there. Telegraphic wires now intersect the settlements in various directions, and a scheme is also under consideration for facilitating passenger-traffic by means of a tramway, to be laid between the extreme limits of the American settlement of Hongkew and the native city. A concession has, moreover, been obtained for the construction of a public roadway, between Shanghai and Wusung, by a private company of shareholders, who have taken no particular pains to conceal their intention of eventually converting the line into a tram or railway for passenger and goods traffic. The Land Regulations, a code which has grown out of a series of modifications made from time to time as circumstances have rendered it necessary during the past thirty years, have lately been found defective, and a recommendation has issued from a public meeting of the ratepayers that the whole code should be reformed. The consul at Shanghai also alludes to the Chinese arsenal at Kao-Chang-Thiao, an

important establishment, employing a number of foreign artificers and about 1,300 natives. Considering that it has only been in working order for about five years, a remarkable efficiency has been attained in the construction of vessels and the manufacture of arms and machinery. The Chinese Government has also made great improvements in lighting and buoying the approaches to the port of Shanghai. Amongst other improvements, new bar-marks have been substituted for old ones on the Yangtze; a new lighthouse, with dioptric lights of the fourth order, has been opened at Wusung; and a buoy has been substituted for a blockhouse beacon, washed away at the entrance of the Yangtze. There are many coal-mines in the district of Kelung, but the way they are worked is most primitive. In fact, it is stated that the so-called mining is little more than a scratching of the surface in a few places, the real coal-beds being left practically untouched. The ventilation of the mines is left to itself, and it is said that no system of pumping out the water is employed. Firedamp is unknown, but accidents frequently occur, in consequence of the side or roof falling in. The quality of the coal has been favourably reported upon by competent engineers; indeed, it is stated that Kelung coal, for household purposes, has no superior. In China there is a great disinclination to utilising machinery in the working of these mines, enterprise being greatly wanting in this respect.

CHURCH OF ST. MICHEL, TROY.

THE Church of St. Michel, Troy, is in the diocese of Llandaff, in the county of Monmouth, and within an easy walk of the town of that name. This church, though extremely simple and unpretending, is full of interest being like its greater neighbour, Tintern Abbey, of one period, and the same geometrical type. It consists, or did consist, of a western tower, with spire, nave, north and south aisles, south porch, and well-proportioned chancel, which has just been restored preparatory to the larger restoration of the body of the church now in contemplation. To give an idea of the simplicity of the church, it has no clestory, but the nave and aisles are spanned in nearly one line of roof, which extends within 7 ft. or 8 ft. of the ground, giving a tent-like form to the structure. Notwithstanding this humility of conception, the arcades, chancel arch, and windows are all wrought in hard red sandstone, with great architectural propriety; the east window of the existing south aisle has a peculiar treatment consisting of three lights, with foliated heads, which stretch one above another in gradation, so that their crowning member forms a line parallel to the rake of the aisle-roof. The tower is of diminutive dimensions one face of its square measuring no more than 10 ft. 6 in. But, as if by way of correction, the upper belfry stage is made to corbel out rather wider to receive a small spire, which has shared the fate of the north aisle, or, as a legend has it—in its fall it carried the latter with it; in each face of the belfry stage is an effective two-light window, with trefoiled heads surmounted by a circle containing a graceful cinquefoil embraced by mouldings of two orders and a label.

But our attention at present is more particularly attracted to the chancel, which has lately been again devoted to its sacred purposes. It measures 28 ft. 10 in. long by 16 ft. 4 in. wide. In its south wall are two long single-light windows with trefoiled heads and perforated cusps, with a simple effective label opposite them. In the north wall are two similar ones, all excellent in expression, and well moulded. The "priest's doorway" is in admirable keeping with them, its arch having a cinquefoil cusping; but whether this is a close copy of an original, or the clever adaptation of a discarded window-head, is one of those many points which distracts archaeologists. The east window was unfortunately destroyed, but every care has been taken to replace it by one of three lights of an appropriate character, some portions of which are copied from fragments which were found near and about the church. It is filled with stained glass, the subject of which is our Lord's Ascension, admirably executed by Messrs. Ward & Hughes, of Fritch-street.

It was found to be absolutely necessary to rebuild the chancel entirely, but the windows, doorway, and quoins were built in stone for stone, when the opportunity was seized to line the internal walls with ashlar masonry of red and green colours from a neighbouring quarry of

old red sandstone formation, on the Duke of Beaufort's estate.

The roof, being quite modern, has been replaced by a wagon-headed roof of open timbers, every third principal being moulded with carved bosses at the intersection of the moulded horizontal ribs; while the last bay over the sacristy has been emphasised by a boarded ceiling, which it is hoped will be some day illuminated. The roof is covered with small green slates.

The floor is laid with encaustic tiles from Lugwardine, and appropriate seats have been provided for the choir, &c.; also a metal altar-rail. For convenience, a modern sacristy has been added to the north side of the chancel.

The architect is Mr. John Prichard, of Llandaff, diocesan architect. The clerk of the works is Mr. J. R. Banfield. The contractor, Mr. W. Simmons, of Monmouth, has carried out the work very substantially.

THE DESOLATION OF THE COLOSSEUM.

BESIDES such spots as the site for the Law Courts and Leicester-square (concerning which we now have some promise), there is yet another picture of solitude to survey, this time to the north of London. I refer to the building known as the Colosseum, in the Regent's Park, a perfect palace of desolation. Who cannot remember the delightful hours they have spent in this building, when some years ago it was employed as a literary and scientific institution? Is it possible that there is no purpose to which it can be applied? Many hints have been given and plans suggested for its utilisation, but year after year has passed away, and still the building remains absolutely rotting away for want of attention. It was proposed a year or two ago to make it a club for young men. The idea was a good one, as it was proposed to include baths, reading-rooms, billiard-rooms, and amusements of every description, with lodgings at a moderate rental. Then it has been spoken of as a new theatre (because we have not enough of them in London!). The building might possibly be made to answer as a public library and scientific institution. It contains lecture-rooms and theatres in abundance, and only requires a few energetic individuals to make it a successful undertaking once more. As it stands, it is a disgrace to the neighbourhood in particular, and to London in general.

Let us hope that in many more years have elapsed, we may find this, as well as other desolate places, beyond the reach of indignant criticism.

CHAS. FRED. FULLER.

LAND RECLAMATION.

SIR,—In reference to your article upon the above subject in last week's paper, it may be interesting to you and your readers to know that many thousands of acres have been reclaimed from the River Dee (Flintshire and Cheshire), and that the River Dee Company are now making an embankment several miles long to inclose another large plot of thousands of acres. Referring to the letter upon "Registering Steam-gauge," written by "J. W. Wilson," will Mr. Wilson state what its advantages are over the old-fashioned safety-valve inside the boiler, which it is impossible to tamper with without having the boiler empty? JOHN M. GIBSON.

NOTTINGHAM SCHOOL OF ART.

DISTRIBUTION OF PRIZES.

THE national medals, Queen's prizes, &c., awarded to this school of art by the Science and Art Department, for 1873, have been distributed by the Lord Bishop of Lincoln (Dr. Wordsworth). The room was well filled, a great number of ladies being present. The chair was occupied by Mr. Charles Seely, jun., late M.P. for Nottingham.

The Chairman congratulated the town and county of Nottingham on the very high position which this school of art had attained in the kingdom. He said that the Nottingham school had taken three more awards than any other school in the kingdom. South Kensington headed the schools, but that being in the metropolis, it could hardly be reckoned amongst the number. Now, Nottingham was by no means one of the largest towns in the kingdom. It might be that a deal of that success was owing to the fact that one of the great industries of Nottingham was benefited by the culture of art-

training, and that might also be said of other towns; but his impression was, that it was due to one quality which Nottingham people possessed almost above that of any other place in the country—and that was a very high and energetic spirit.

The Bishop of Lincoln, before distributing the prizes, said he congratulated the meeting on the prosperity of their school of art, and let him tell them that under God they owed it in a great measure to the skill and intelligence of the head-master, Mr. Rawle, whose merits had met with a substantial recognition and appreciation from her Majesty's Government. Their head-master had also been the cause and instrument of the success of other schools of art, because it was well known that Mr. Rawle had produced a book on "Practical Plain Geometry," which was used in all schools of art in England. As to numbers, he believed that at the present time they stood at a lower figure than last year by sixty-six. He believed they now numbered about 438 students. There was a diminution; but still, let them remember, that relatively to the population, Nottingham stood at the head of all the towns in England. Numbers were not everything. They were not there to count numbers, but to estimate and weigh merits, and he maintained that if with diminished numbers they produced better results, the diminution was itself, in some respects, a proof of excellence. This was the case with Nottingham. What they had lost in quantity they had gained in quality. In the present year they numbered 104 prizes, the largest number they had ever had since the school existed, and it was with diminished numbers that they had achieved the greatest success. In the present year they numbered sixteen national and Queen's prizes, the largest number on the register: so they saw that with diminished numbers as to students, they had achieved greater victories as to proficiency. He believed that the highest prize which had been gained for architectural design had been awarded this year to a student of the Nottingham School—Mr. Summers,—and he was thankful to say that it was the design of a church. Let them remember that the school of ecclesiastical architecture in England stood higher than at any period since the sixteenth century, and there must have been many distinguished competitors, and, therefore, the successful competitors must have had great merits. After referring to the architectural merits of Trinity and St. Thomas's Churches, his lordship expressed a hope that Nottingham churches would be built by Nottingham architects, and that the school might be fruitful in producing skilled architects, sculptors, and painters. Fifteen prizes, he believed, had been given for mural decoration, floral embellishments, and for oil-painting. With regard to mural decorations, we had a great deal to learn, as we stood far below other countries with regard to this matter. Fresco painting seemed to be extinct in England. We had some attempt in the Houses of Parliament, but with all our vaunted intelligence we were in a state of decline in this respect; and especially when we thought of the great achievements of painters in former days. We were much behind what we ought to be in this respect, and therefore he hailed with gladness the success of the students of Nottingham in this particular department. Why should not our walls be made eloquent, be made to stir up the people's courage and valour to do deeds of bravery in defence of their country? He could not understand why our walls should be so insignificant, and without utterance. He looked forward to the time when he should see the deeds of our ancestors recorded by pictorial art upon the walls of our council chambers, and where public assemblies were gathered together in order that they might learn to go and do likewise.

Mr. J. S. Rawle (head-master) offered his hearty congratulations to those students who had been successful in earning so many well-merited rewards for their hard and conscientious work. These congratulations were all the more hearty when he considered that the students in by far the great majority of instances, namely, those principally attending the evening classes, were engaged during the day-time in their various callings. He thought they should keep in view the primary object of schools of art, which was to make their artisans better art-workmen. They must recollect that art schools had only been on their trial in this country for some thirty years, whereas the French had shown their wisdom and foresight by establishing such schools more than a century

ago. They had also displayed similar wisdom in establishing art museums in the various centres of their art manufactures, a piece of foresight which he was thankful to say they had themselves commenced to see the wisdom of imitating. A great mistake was made in attempting to raise the standard of their art manufactures, without, at the same time, educating public taste. As long as people believed in the willow patterns on their plates, it was absurd to expect them to understand the beauty and refinement of the pattern of a majolica dish. Hence their schools became schools of art, the doors being open to the general public, that art education might become more widely diffused. That this had been a most wise proceeding was proved by the fact that it now paid a manufacturer to produce objects displaying the greatest amount of art-taste, rather than the monstrous pieces of ugliness in fashion some years ago.

Mr. W. G. Ward, referring to the museum scheme, said he could not see why they should not be allowed to have collections in the churches for such objects. The bargain made with the Corporation of Nottingham was that they should find 6,000*l.*, and that the people should find 6,000*l.* Now, they intended the people to find 12,000*l.* Mr. Ward then read out the following list of subscriptions:—Mr. Morley, 1,000*l.*; Messrs. A. & H. Heymann, 1,000*l.*; Messrs. Ward & Cope, 1,000*l.*; Mr. C. Seely, 250*l.*; Mr. W. Foster, 200*l.*; Mr. T. C. Hine, 100*l.*; Mr. James Carver, 50*l.*; and Mr. H. Cole, C.B., 20*l.*

THE LONDON SCHOOL BOARD.

At the last meeting of the Board, Mr. E. H. Currie brought up a report from the Works Committee, in which it was stated that on the 11th of June last the committee accepted a tender for the erection of the George-street (Marylebone) School. The site of the school was covered by old houses, and it was not expected that the foundations would have to be carried further than the ordinary depth. The removal of the buildings, however, revealed the existence of made-up ground and loose material, which had to be removed to obtain a proper foundation for the permanent building. The depths vary from 4 ft. 6 in. originally allowed for, to 6 ft. and 8 ft., and a maximum of 18 ft. in particular places. The work has been carefully measured, and the additional cost will amount to 447*l.* 16*s.* 8*d.* The committee recommended that this extra expenditure be sanctioned.

THE SANITARY INSPECTORS OF THE NORTHAMPTONSHIRE COMBINATION.

At the invitation of Mr. Haviland, the Medical Officer of Health of the Northamptonshire Combination of Sanitary Authorities, a meeting of the sanitary inspectors of the united area has been held in the county hall. The proceedings were opened by the inspectors being entertained to a luncheon by Mr. Haviland. They assembled afterwards, under his presidency, to consider the desirability of forming a Sanitary Inspectors' Association.

Mr. Haviland, in opening the proceedings, said it had long been his desire to bring them together. If they decided to form an association amongst themselves they could then determine the times and places of their meeting. What he wanted was, that when they did meet they should endeavour to improve each other by an interchange of experiences and opinions. Very often practices differed in the districts of different authorities over such a large area; and necessarily so, as the requirements of the districts might differ according to local circumstances. It was therefore impossible to lay down a rule for sanitary inspection in one district which might be perfectly applicable in another. As a medical officer, in studying the public health, he had to deal with different districts and different circumstances. Some districts had peculiarities of soil, or water-supply, or in population or manufacture, all of which had to be taken into consideration. Estimating the healthiness of a village or town by the length of life was a perfect fallacy. With regard to healthiness they would perhaps find persons saying, "We have not had a death in our parish for so many months." But without having deaths they could have illness. At Maidford, for instance, they had thirty-eight

cases of typhoid fever brought on by the poisonous state of the wells. He mentioned Maidford because it seemed to be public property. He was very loth as a rule to speak of particular cases, but he had no objection to state this with regard to Maidford, because it had been bruited abroad by a foolish letter in the *Times* newspaper. Here was a particularly small village of 363 inhabitants, with thirty-eight cases of typhoid fever, through bad water-supply. Happily, through the skillfulness and great care of the medical man, Mr. Arthur Hill, there had not been one single case of death from that epidemic. When he examined the death-rate of Maidford, it was not raised by typhoid fever but by other diseases. Yet the death-rate at Maidford was greater in proportion than that of Manchester or Liverpool, or any of those large towns, although not one death was to be ascribed to typhoid. People went about obstructing sanitary work by theories about typhoid. They must simply take that as an illustration, painful as it was, because they did not know how soon that village might have a pure supply of water, and be perfectly free. At the conference in London to which he had referred, there was a suggestion as to whether sanitary authorities should hold sole control over the sanitary inspectors, or whether sanitary inspectors should be put more under the control of the medical officer. He stated that his experience of sixteen sanitary inspectors did not lead him to wish to alter his relations with them at all. So far as he was concerned, his wishes were always carried out. It was a question which they might discuss amongst themselves. But he should advise them at the outset to maintain their relations to the sanitary authority. They had more power, and they would find their medical officer would be able to assist them. With regard to business, he advised them never to let it accumulate. He advised prompt action, and cited Oundle as an instance, where, by promptitude in locking up a polluted well, they had stamped out typhoid fever. By following up cases that needed attention and promptitude in dealing with them, they made the sanitary authority respected. Pointing to the value of geology in various departments of their work, he alluded especially to its value in well-sinking. In the conclusion of his address, which is reported at some length in the local *Herald*, to which we have been indebted for this notice, Mr. Haviland asked their opinion as to the advisability of forming themselves into an association. Some conversation ensued, and ultimately it was decided that the Sanitary Inspectors of the Combination should form themselves into an association. The inspectors were desirous that Mr. Haviland should be the chairman of the association, but he wished them to appoint a chairman from their own number, and Mr. Sansom, of Towcester, was appointed chairman, and Mr. Gardner, of Northampton, hon. secretary. The meeting closed with a vote of thanks to Mr. Haviland.

THE ELEANOR CROSSES.

A WRITER in the *Art-Journal* has furnished an elaborate paper on the three remaining Eleanor crosses, from which I condense the following notes:—

Queen Eleanor, wife of Edward I., died November 28, 1290-1, at Hardeby, Notts, a hamlet in the parish of North Clifton, close by a ford of the river Trent; her remains were removed to London with considerable ceremony, the widowed monarch accompanying the funeral cortege; and at every spot where her body rested for a night, it is alleged that a memorial cross was erected, the first being at Hardeby.

The route was circuitous, to include certain religious houses; and the journey occupied twelve entire days, viz., from the 4th to the 17th of December.

No. 2, December 5. The first stage was to Lincoln; there is no vestige of this monument.

No. 3, December 6. Grantham, no remains.

No. 4, December 7. Stamford, ditto.

No. 5, December 8. Geddingdon, Northants; the site of a former royal palace. The cross still remains, ornament of an obscure village near Kettering, but prettily situated in a sort of Dukery.

No. 6, December 9. Northampton; this cross also remains.

No. 7, December 10. Stony Stratford, where the procession joined the main highway called Watling-street; no remains.

December 11. Woburn; this stage is very

doubtful, there are no remains, but the dates appear to require it.

No. 8, December 12. Dunstable; no remains.

No. 9, December 13. St. Alban's; no remains.

No. 10, December 14. Wallham-cross; it still remains; a valuable relic, though poorly restored.

No. 11, December 15. Okechipsie; the cross stood at the west end, near St. Paul's Cathedral.

It was renewed 1459, rebuilt 1600, finally removed 1613.

No. 12, December 16. Westminster, at Charing-cross, named *Chère Reine*, from this circumstance; a "sporting" etymology.

December 17. The Abbey.

Many persons also include Tottenham, most erroneously; it has a cross, but not a true Eleanor cross. The parish of Tottenham High-moored its church tower. This place was an ancient look-out, a "looking place," to guard against northern *cattans* and *raiders*, the Picts and Scots of south England; and, most singularly, the manor once belonged to the Bailsors, who claimed the Scottish crown, while the stronghold is still called Bruce Castle.

A. HALL.

ENTERTAINMENT FOR LONDON.

We hear of a scheme to provide this on a large and comprehensive scale. A considerable plot of land close to the Westminster Palace Hotel has been bought or taken, and a committee is in course of formation to erect a sort of Crystal Palace, which is to include a first-rate club, the members of which will have the entrée to all the entertainments provided for the club. First-rate cooking, the best music, the best acting, and no forth are talked about, and the list of members is said to be already very numerous and influential.

THE ARCHITECTURAL ASSOCIATION OF IRELAND.

A GENERAL meeting was held on the 22nd ult., the president, Mr. J. J. O'Callaghan, in the chair. After the presentation of books to the library, and other routine business, Mr. T. H. Longfield (hon. sec.) read a paper on "Ornamental Design," to which we will refer hereafter. Mr. Mitchell proposed a vote of thanks, which Mr. T. Holbrook seconded, and it was carried unanimously.

MUNICIPAL GOVERNMENT OF THE METROPOLIS.

ON Monday evening last, Mr. Arthur Arnold read a paper on this subject, at the rooms of the National Association for the Promotion of Social Science; Lord Napier and Ettrick presiding. After dwelling upon the great importance of the subject to all the inhabitants of the metropolis, the lecturer proceeded to point out the peculiar and anomalous condition of the government of London, the administration of which occupied the attention of no less than thirty-nine bodies. It was not a matter of surprise that but few persons could enumerate even the names of these bodies, and to explain the entire system of our local government would be a nearly impossible task. The Metropolitan Board of Works, the various vestries, the police and the police-courts, the Conservators of the River Thames, the School Board, and the gas and water companies had each a share in the government of the metropolis, and such a system as this could not fail to carry with it inefficiency, extravagance, jobbery, and waste. To secure efficiency, economy, and publicity it was essential to diminish the number of centres of control, and Mr. Arnold would suggest the substitution of those Parliamentary divisions which were proposed in the Bills introduced by Mr. Mill and Mr. Buxton, and which were now adopted in the elections to the School Board. It would be a cardinal point, however, in his system, to maintain in its entirety the dignity and importance of the ancient majority of the city of London, and the lecturer would advise the extension of municipal government to the whole of the metropolis, the mode of election of councillors to be the same as that prevailing in all the boroughs of the kingdom. He had carefully watched the operation of the local government in Manchester, which city was divided into six townships, each having a town-hall, with a staff of officers for the execution of public works. To

a committee of the councillors was left the carrying out of the powers applying to objects which were paid for out of township rates, and his approval of this system was only qualified by the wish for a stronger central control to ensure greater uniformity in the execution of public works. With a government such as this we could fairly expect a more uniform observance of sanitary and other regulations, convenient constructions of new streets, and satisfactory provision of water and gas. At present there were hardly two of our thirty-nine governing bodies which performed any function in the same manner or at the same cost, and it was a very moderate calculation which placed the amount of 150,000*l.* a year as the saving which would be effected by establishing a corporation of London in place of the present system. If we could look forward to the time when a municipal government would control the supplies of gas and water, we should not only anticipate much larger reductions of expenditure, but expect a great improvement in the quality of these commodities. In conclusion, Mr. Arnold said it would be in accordance with his ideas that this corporation of London should perform all the functions of government which were not within the domain of State, and he was of opinion that the bad system from which we suffered would be much improved by a duly-elected corporation, and to citizens and ratepayers there was every inducement to press forward in this matter of reform, which was to them a subject of such great moral and pecuniary interest.

THE NATIONAL TRAINING SCHOOL OF MUSIC.

SIR,—I know that you, like me, are much interested in the successful foundation of the proposed Training School of Music, the building for which is making rapid progress in the Kensington-road, and I rely upon that in asking you to allow me to inquire what musical men are being consulted by the committee, and who will have the musical control? H.R.H. the Duke of Edinburgh takes great interest in the undertaking, Mr. Feske has acted very liberally in respect of the building, scholarships are promised in every direction, but I hear nothing of those on whom the success or otherwise of the institution must actually rest.

A LOVER OF MUSIC.

THE ECONOMIC CONSUMPTION OF COAL.

The Exhibition of Appliances for the Economic Consumption of Coal, which has been formed in the Peel Park, Salford, Manchester, by the Society for Promoting Scientific Industry, has been formally opened, but the success of the opening meeting was somewhat interfered with by the political excitement of the elections. Mr. Hugh Mason opened the Exhibition.

The machines, models, and other objects are arranged in a temporary structure of wood and glass. The main hall is 50 ft. wide, four times as long, and about 20 ft. high. At one end is a lesser building, 60 ft. by 20 ft., flanked on either side by other extensions of like character, but of minor length. To the right are three small annexes. Not far from these there is an enclosure of ground for such articles as could not be got into the building. The hall is simply decorated. The machines for the manufacture of improved fuel from peat are interesting. In one, Clayton & Howlett's, the peat is first cut up and pulverised, and then re-formed by pressure into blocks which have a greater specific gravity than coal. In Kidd's process the peat is dried or carbonised as a substitute for coke or charcoal. This machine not only produces a cheaper fuel, but effects a great saving of the heat by which the fuel is produced. The peat is deprived of its moisture, and when it leaves the machine it may be crumbled in the hand, like other kinds of charcoal. Peat charcoal is said to be peculiarly suited to the making and refining of iron, steel, and other metals, and its estimated cost to the manufacturer is six or seven times less than that of the charcoals in more general use. In Dauchell's machine there is another mode of charring, which has been applied with every appearance of success, to Lancashire peat. Of coal-cutting machines, two or three are shown. In the main, they are all on the same principle: they drive a toothed wheel or circular saw applied horizontally to the

surface of the wall of coal. Air compressors for the working of the coal-cutters are also shown, and in the two together we have the artificial miner of the future. On the left-hand side of the building are shown many inventions for the mechanical shifting of the grates of furnaces.

Several inventions for the [more economical and, we trust, for the more effectual heating of churches and other large buildings may be mentioned.

One department of the Exhibition will have especial interest for the general public. It contains some dozens of stoves, ranges, and fire-places, all intended to produce a maximum of heat with a minimum expenditure of coal. Messrs. Follows & Bates, with their gas-stoves and economisers made of fire-clay and the like, are represented. One contrivance is a small range, about 1 ft. square, which may be placed on a table, and there used for the cooking of a meal. Wood, or even paper, will serve as fuel; and the heat is so economised that a very small fire indeed will heat the oven and the stew-pan, and boil a kettle.

We may here remark that the "economic consumption of coal," and, above all, the wonderful mildness of the winter, are already bringing the coal interest to its senses. The coal trade is described as being "in a most feverish and unsettled state." The demand for house coal has been gradually declining, and at many of the collieries the output has been much reduced. The colliery owners have seen the necessity for a reduction in prices, the only perplexing point being how much they should drop. It is to be hoped both the fever and the drop will go on yet awhile.

WHO STOPS THE WAY?

SIR,—In a late number of the *Builder* a correspondent called the attention of its readers to the intention of the Metropolitan Board of Works to let the vacant land between Cannon-row and the Embankment for building. This ground is most especially required to connect two great thoroughfares in a continuous line from Chelsea to the City, as it would form the only straight thoroughfare in that direction. Therefore I hope some member of the Board will raise the question whether this short-sighted policy should be proceeded with, viz., the building on the only vacant ground that separates the Embankment from Victoria-street.

CONNECTICUT.

ROBBING EMPLOYERS.

At nearly each Criminal Court that has sat for the county of Middlesex, Surrey, and Kent, during the last twelve months, men employed by builders or building materials tradesmen have been charged and generally convicted of dishonesty. The crime has been of petty larceny and embezzlement; but these small thefts, continually practiced, amount in the year to ruinous losses to employers.

There is too great a reason to believe that when builders' tradesmen are watchful and take "stock," in any business the quantity of materials and goods sent out to building firms is deficient in weight, number, and measure, as compared with the delivery-books. In many instances goods to large amounts are delivered on the works in progress, and it is almost impracticable for foremen or clerks of the works to properly check the carmen, who care not whether their load is right or wrong.

The last case to hand came off at the Middlesex Sessions on January 25th, when John Nesson and Christopher Thomas Horne were indicted for stealing and receiving a quantity of glass, the property of Mr. Palmer, glass merchant, of 41, St. Martin's-lane.

The first-named prisoner was foreman cutter in Mr. Palmer's workshop, paid good wages, considered above suspicion, and had been for years in the firm. The time-table for January was for the prisoner and the workmen to come at eight o'clock in the morning, the clerk at nine, and Mr. Palmer, jun., to come when he liked; and up to the son's arrival the prisoner had sole charge of the business.

From private information given to the police, two detectives on the 7th of January kept watch on the prisoner and the premises, and they then saw the foreman leaving the warehouse with three pieces of glass. The prisoner was followed, and seen to speak to the other prisoner, Horne, a carriage-jump maker, but finding that he was watched, the foreman started off at full speed, was caught, and taken to Bow-street, and charged with the theft. At Bow-street the prisoner admitted the glass was taken from Mr. Palmer's warehouse, but he protested his intention to pay for it.

The answer to the charge at the sessions was that the glass had been taken for the purpose of making experiments in embossing, and a list of names of glass-cutters in the service of the Inland Revenue, stated that he had known the prisoner a great many years as a man of ability in embossing glass, and of high respectability and honesty. The jury found Nesson guilty.

Horne was charged with receiving a square of plate-glass, well knowing it to have been stolen. This was also the property of Nesson's master, Mr. P. Palmer.

After Nesson had been taken into custody, it was proved that he had been in communication with Horne, the same person the detectives saw him speak to when he was fol-

lowed and ran away. Other inquiries led to the discovery that Horne had sold a piece of valuable glass to a letter-writer in Long Acre, and this was proved to have been stolen off the prosecutor's premises.

Horne was found guilty, and sentenced to twelve months' imprisonment, with hard labour.

Mr. Palmer interceded very strongly for his late foreman, and succeeded in getting three months taken off his term of imprisonment.

CASE UNDER THE BUILDING ACT.

INSULATED BUILDINGS.

On the 3rd of February, at the Lambeth Police-court, before Mr. G. Chance, Mr. H. Jarvis, District Surveyor of Camberwell, summoned Messrs. Jacobs, of East Dulwich Nursery, for having built a greenhouse 100 ft. long and 20 ft. wide, without having given him notice, as required by the Act of Parliament. The defendants urged that the greenhouse was exempt, as it was more than 100 ft. from the public road, and over 30 ft. from the grounds of adjoining owners.

Mr. Jarvis drew the attention of the magistrate to the clause in the Building Act, which sets forth that any building, in order to be exempt, must be 30 ft. from any other building, as well as 30 ft. from the grounds of any adjoining owners. In the present case, it was clearly proved that there were large greenhouses within 7 ft. of the building in question, and the magistrate ruled that it was not exempt, as it was clear to him that the "nearest buildings" meant any buildings whatsoever, and not those only on the grounds of adjoining owners.

ACCIDENTS.

Bury.—A frightful accident happened at a crowded meeting of Mr. Phillips's supporters. The building gave way, and threw down the whole of the people. All the medical men in the town were summoned, and a large staff of police assisted in getting the dead and dying out of the ruins. On clearing the debris about forty persons were extricated. One was dead, and seven died immediately afterwards. Altogether, ten have been killed and about forty more or less seriously injured. The room was the top story of a building used as committee-rooms. The election agents were, it is said, warned of the insecure state of the building. Mr. Phillips escaped down a fire-escape, and was uninjured.

Tork.—An accident has occurred in the Corn Exchange during an electioneering meeting. A large frame filled with plate-glass fell from its position in the roof of the building to the floor of the hall below. In its course it struck Mr. A. Walker, of the Railway Plant Works, on the back of his head, and rendered him insensible, and pieces of glass also cut and injured a number of other persons. The injured persons were carried from the hall. One of these received a severe blow on the back of the neck, and lies now in danger; another had his nose partially cut off, and received a severe cut upon his eyes; another sustained a cut across the bridge of the nose. The immediate cause of the glass falling was the violent pulling of a string attached to it for opening it as a ventilator.

CHURCH-BUILDING NEWS.

Stevensbury.—The new chancel which has recently been added to St. Michael's Church, Castleforegate, has been opened for divine service. The original portion of the fabric was erected at a cost of 2,000*l.*, and was consecrated in 1830, as a chapel-of-ease to St. Mary's. The additions to the church consist of a sanctuary, built of Red-hill stone (unplastered), cased externally with Brosely light-brindled bricks, which match the rest of the church walling; it has a high-pitched open-timbered roof, covered with Ridge-hill (Staffordshire) tiles, and rises above the nave. In a niche over the east window outside, is a figure of St. Michael, carved in Bath stone, by Boulton, of Cheltenham. The dressed stonework to windows, buttresses, &c., is principally from Shelvok quarry. Internally the Red-hill stone walling is relieved with yellow Gimson's; the encaustic tile floors are from Maw & Son. The east end of the nave, which has been converted into a chancel, is separated from the rest of the church by a low stone screen relieved with pierced panels, from the south side of which rises a stone pulpit having a curved cornice, &c., and taceried panels inlaid with different coloured marbles. The metal lectern is attached to the screen. Within the chancel, which is raised two steps above the nave, and is, including the sanctuary, 38 ft. long internally, are oak stalls for the clergy and choir. An improve-

ment has been effected by the removal of the south transept gallery (that on the north side having been taken down not very long prior to the commencement of the late alterations, when the organ was removed from the west end into the transept). There is a reredos of Caen stone, executed by Larp, with sculptured central group, in high relief, representing the Crucifixion, with the three Marys and St. John. Mr. W. Done did the lead glazing to the new windows, and the underground hot-air stoves for warming the nave and chancel are provided by Mr. W. Dodwell. The carving, except the reredos, is executed by Boulton. Mr. Haycock is the architect, and the work has been carried out by Messrs. Bowdler & Darlington, at a total outlay of about 800l.

Bilbrough.—After a restoration of the parish church of Bilbrough, the edifice has been re-opened for worship. It had for long been in a dilapidated condition, and with the exception of the Fairfax chantry, has been entirely pulled down. It originally belonged to the Priory of Holy Trinity, York; but its dedication remains of the Norman work, as well as the Early English period. The east window was a three-light with square head, and the chapel has a three-light four-centred arch at the east end, and side windows of two lights. This portion has been repaired and re-roofed; the two arches separating it from the church are pointed, of two orders, springing from piers with a centre shaft, and are low; and although the floor has been raised it is still 2 ft. lower than that of the new church. In 1867 the church was reslated, and some other temporary repairs made. The tower contained three bells, said to have been cast in York; and there have been rehung in the new tower. The new church is of greater width and height than the old, about the same length, with the tower at the north-west corner of the nave forming the porch; and there is also a vestry on the north side of the chancel. The style is Norman, treated very simply with square recessed window-jambs, and sunk chevron work round the outside, and inside stone arches. The nave is seated to accommodate 170 adults and there are sittings in the chancel for sixteen more. The seats are all open, and have moulded and profiled ends of pitch pine. The passage floor and that of the chancel are laid with Maw's tiles; also, the Fairfax chapel. The nave is 54 ft. by 28 ft. wide, and is 33 ft. high to the apex of the roof, the walls being 16 ft. in. The chancel is 24 ft. long by 16 ft., and 25 ft. high, the walls 14 ft. The tower is 14 ft. square, and to the apex of the pyramidal roof is 60 ft. high. The roofs are open-timbered and boarded, arched principals resting on stone corbels, and covered with Welsh slate. The gables are surmounted by crosses. The churchyard has been extended and enclosed. The cost of the church has been defrayed by Mr. Fairfax, of Newton Kynne. The works have been performed by Messrs. Keswick, Cook, Hodgson, Carhill, and Goward, of York. Mr. Fryer supplied the hot-air warming apparatus, and the whole has been carried out from designs and under the directions of Mr. Fowler Jones, architect, York. Mr. Geo. Harrison acted as clerk of the works.

City of York.—The church here has been re-opened. The restoration was commenced in 1868. The nave and chancel have been newly roofed, the interior reslated, the seats in the chancel in oak, and the nave in deal varnished; a carved pulpit in oak on stone base supplies the old one. The arch in the tower has been re-opened. The Norman doorway has been restored and oak door hung. Three memorial windows, including the east, have been filled in stained glass, also one in the nave; the other windows have been reglazed with cathedral glass. The porch has also been restored, the chancel laid with Minton tiles, with border, and the nave with Peck's tiles. Mr. J. B. Pearce, of Norwich, was the architect; and Mr. Wright, of the same place, and Mr. J. B. Parker, Upton, the builders.

Newport.—A numerous and influential vestry meeting has been held at Edmond, to adopt plans for the restoration of the parish church, and to apply for a faculty to carry them out. The rector produced the plans which had been prepared by Mr. G. E. Street, R.A. The plans having been inspected, were adopted, and it was unanimously resolved to apply for a faculty to carry out the same. A large sum of money has already been promised for the restoration; and a parishioner is about to place a painted memorial window in the chancel, at a cost of 60l.

Twickenham.—A meeting of persons interested

in the construction of a new church at Cambridge Park, Twickenham, has been held at the Castle Hotel, Richmond. Mr. Bristowe, Q.C., M.P., in the chair. Resolutions were passed approving of the scheme, and it was announced that nearly 3,000l. had already been collected or promised.

Woodbridge.—At a vestry meeting held in St. Mary's, the plans were exhibited of Mr. R. M. Phipps, diocesan architect, for the restoration and benching of St. Mary's Church, which had been submitted to and approved by the bishop of the diocese, and a faculty for carrying out the proposed works had been applied for. The chairman, referring to previous proceedings to obtain subscriptions, and to carry out the plans agreed to at a public meeting of the inhabitants, said that upwards of 1,200l. had been obtained. The Bishop was in favour of the galleries being entirely removed, but that was found to be impossible without enlarging the church, which could not be done without destroying its character. It was estimated that the present accommodation was 1,010, reckoning four in a pew. The restoration as proposed would accommodate 950, and the largest congregation attending had been counted at 850. Much time was consumed in discussing the details, and ultimately it was resolved—That this meeting approve of the plans produced, and also of the application to the Archdeacon's Court for a faculty to carry them out in their entirety, and that the thanks of the vestry be accorded to the committee for their services.

Gloucester.—Barnwood Church, which is dedicated to St. Lawrence, having undergone complete renovation, has been re-opened for divine service by the Bishop of the diocese. Barnwood is one of the most interesting churches formerly connected with the Abbey of Gloucester. Prior to the commencement of the work now completed, the disfigurements existing in and about the church were numerous. The tower-arch was entirely stopped up, and an unsightly gallery extended across the west end of the nave; several modern windows disfigured the walls; pews of all sizes and heights existed; the floors, roofs, and walls were more or less dilapidated; and a sort of general ruin seemed to pervade the whole place. The north aisle has now been re-roofed and the wall partly re-built, while the south wall has been taken down and re-erected. Some of the old windows have been replaced with new mullions of similar pattern. The flooring of the nave is laid with Maw's red, black, and white tiles, in pattern. The ancient font, decorated with carving, is placed at the west end of the north aisle, having been removed from its modern position near the belfry. The new pulpit is of stone, with panelled crosses in its fronts; and the pews throughout are replaced with open benches of varnished deal. The restoration of the chancel was undertaken by the Ecclesiastical Commissioners. The carved oak screen has been cleaned; the stone staircase to the roof-loft is reopened; the chancel steps are relaid with freestone, and the flooring with ornamental tiles; a new altar-rail of oak, resting on iron standards relieved with gold and colour, has been erected; there is a new roof of varnished timber; and open benches of oak, carved, have been placed in the chancel for the choir. This part of the work has been carried out under the direction of Mr. Ewan Christian, architect to the Commissioners. During the incumbency of the Rev. G. S. Escott, and these remain untouched, except so far as was necessary to bring them in keeping with other parts of the fabric. The roof of the nave, of late date, consists of oak beams and rafters divided into panels with tracery. Stained glass has been removed from some of the windows on the south side of the aisle, and a memorial window has been erected by Messrs. Hardman, of Birmingham. It consists of three subjects: in the centre is the Ascension of our Lord; above, the Angel announcing the Resurrection to Mary Magdalene and Mary the mother of James; beneath, the Saviour, saying to Mary, "Touch me not." The lichen-covered tower bears many a rude inscription. During the restoration, the five musical bells were taken down, and have been rehung, with a new treble, the gift of Col. Dowling, who is a liberal donor to the funds. The ancient bells all bear either the name or the initials of Abraham Rudhall, and the date 1699, showing that they were cast by the famous old bell-founder of Gloucester. A much-needed improvement has been made by the laying out of paths and the planting of trees in the church-

yard. Messrs. Waller, the cathedral architects, were the architects of the restoration, and Mr. Albert Estcourt was the builder.

SCHOOL-BUILDING NEWS.

Dorchester.—The National Schools erected at the expense of Mrs. Hope Edwards, of Netley Hall, have been opened. Mr. Edward Haycock was the architect, and from his designs the contract was entered into with Mr. Richard Jones, of Dorchester, builder, to erect the buildings at a cost of about 600l. The site also was given by Mrs. Hope Edwards. The school consists of a room 30 ft. by 16 ft., fitted with convertible benches and desks, a porch with lavatory, and a class-room, &c. The roofs are open-timbered, and covered with Ridge-hill tiles. A convenient residence for the mistress is attached, the walls of which, as are those of the school, are built of red brick, relieved with bands of white and blue brick; on blue red, and white bricks are also used in the arches over windows and doors externally. The painting, staining, and glazing, were done by Mr. Robinson, of Dorchester and Shrewsbury.

Haslington.—A new school chapel has been opened in Oakhanger Moss, Haslington. Mr. R. E. Speakman, of Doddington, prepared the plans for a school-chapel and school-teacher's house, and the contract of Mr. E. Dannel, of Haslington, was accepted for the building. This last was begun on the 13th of July of last year, and the opening was celebrated on New Year's Day. The school, which is rectangular in shape, is 30 ft. by 20 ft., and is built entirely of red brick and entered by a porch. The windows, which are of Hartley's patent glass, are Gothic. The ceiling is open plastered work, showing the rafters and transverse beams, which are of varnished pitch pine. The roof is of tile, and is surmounted at the east end by a turret containing a bell. The school-teacher's house is under the same roof. The school is furnished with Phillips's desks, which can in a minute be converted either into a desk, table, or seat with a comfortable back. It is heated by Musgrave's patent slow combustion stove. When the school-room is used as a chapel, the desks are turned into seats; two large folding-doors are drawn aside, and a small chancel is at once disclosed to view. The east window, which is of three main lights, representing respectively the Baptism, Crucifixion, and Ascension of our Lord, is the work of Messrs. Wailes & Strang, Newcastle-upon-Tyne. Over these are three lesser lights, containing angels with scrolls and the typical lamb. The flooring here is of encaustic tiles, the work of Messrs. T. & R. Boote, of Burslem.

Litchurch.—The day-school in Rutland-street, Fear Tree, has been formally opened. The school building consists of a large room, capable of accommodating, according to the space allowed by Government, from 150 to 160 children. There are, in addition, six class-rooms at the sides, one of which has been fitted up for infants. The whole building is well lighted and warmed, Perkins's patent heating apparatus having been fitted for the latter purpose. Up to the present time the amount expended upon the building is 840l., and this has been incurred by the Osmoston-road Baptist Church; but that amount is exclusive of the land, which was given by the late Mr. Thomas Swingle.

Stapleton (Shropshire).—The school built in this parish was opened on Thursday, the 15th inst. The school-room, which provides for 45 children, has an open-timbered high-pitched roof; the walls are built of brick. Gringhill stone has been used for dressings to the windows and doors. A master's house adjoins the school. The roofs are covered with Staffordshire tiles. The work has been carried out by Mr. W. Jones, of Stapleton, under the direction of the architect, Mr. Haycock, of Shrewsbury. The total cost of the building, with fencing, boundary-walls, gates, &c., has been 502l.

Blakesley.—New National schools have been erected and opened here at a cost of over 1,000l., the contract for building being 1,040l. Mr. Megland, of Gloucester, was the architect, and Messrs. Coleman Brothers, of Chaxhill, the builders. The structure is of native stone, relieved with Bath stone dressings, covered with Broseley tiles, surmounted with ornamental cross. The front room gives a clear space of 60 ft. by 22 ft., a second is 36 ft. by 18 ft., with porches, lavatories, &c. The interior walls are plaster, and the roof between the timbers is to match.

VARIORUM.

The new number of the *Art-Journal* gives some instructive statistics as to shell-comes—“The value of the shell-comes cut in Rome is estimated at about 8,000*l.* a year. Paris possesses only about a dozen houses where stone comes are cut artistically. The rest of the workshops are occupied with shell-comes, or false comes, which are partly sold in France, and the rest sent to London. The stone comes are worth from 5*l.* to 40*l.* each, according to workmanship; the shell-comes from 1*l.* to 8*l.*, and the imitation comes only from 1*s.* to 10*s.* Professedly there are only four or five cameo-cutters in our metropolis, but there are many workmen employed by shopkeepers and vendors. Some very beautiful gems are carved on shells by British workmen, but the price obtained will seldom repay the time, patience, and skilful labour required to finish a good article; hence the workman can earn more at other employments. The manufacture of shell-comes has been carried on in Rome for upwards of forty years.” “A quarter of a century ago the value of the shell-comes which were cut in Paris amounted to about 40,000*l.*, and there were as many as 300 persons employed in the trade, earning wages ranging from 2*s.* 6*d.* to 1*l.* per day, according to their talent and skill. About half these comes were sent to England to be mounted in Birmingham, and shipped back to France, or else sent to America and the colonies. The entered value of these shell-comes at the Customs used to reach 8,000*l.* to 10,000*l.* a year; now it only amounts to about 4,000*l.* to 5,000*l.*—A paper in *Cassell's Magazine*, titled “Under our Feet,” ends with this suggestive picture,—“Listen for a moment. Imagine that you are alone, and far away from daylight and from human help, and that through those hideous galleries comes a sound of rushing waters—the first indication of a thunderstorm up above. Eagerly you scramble for a place of safety, but ten thousand pipes, and spouts, and gulleys are pouring down ‘storm-waters,’ and in a very few seconds the seething flood is rising around you. Wildly you struggle on, but the waters rise with merciless rapidity, and threaten to carry you off your feet. Higher and higher they surge; your light is extinguished, and then comes the end. One wild shriek, one frantic struggle, and you are swept away through that awful gloom! This is not merely an imaginary case; only at the beginning of last August two poor fellows died this dreadful death, and several others but narrowly escaped.”—In *Cassell's* new part of the *Household Guide* a caution is given about ivory:—“Articles made of ivory should on no account be exposed to heat or dryness. They should never be exposed to the direct rays of a hot sun, nor placed on the mantelpiece, as they are very apt to split in such circumstances. They also warp like wood when exposed to heat or a very dry air. It is said that when ivory becomes discoloured by being kept, the white colour it previously had may be restored by soaking the article in water, and then, when wet, exposing it to the action of light, while shut up in a well-closed glass case. When ivory has been long kept it diminishes, owing to the loss of the gelatine of which it is partly composed. This may be remedied by soaking the article in a solution of that substance. In consequence of ivory not always preserving the same length under all circumstances, it has been recommended that it be not employed in making very minute measurements.”

Ventilation in Iceland.—A rather amusing incident occurred during the night. The bed I slept in, though exceedingly comfortable in itself, was at the far end of the little chamber tenanted by all the male members of the family, and towards midnight I was rather naturally aroused by an intense feeling of suffocation, owing to the presence of so many large men in such a little air-tight box. I remonstrated, and our host, with the utmost good nature, jumped out of bed, exclaiming, “I understand,” and going up to one of the timbers which formed part of the supports of the wall, pulled out a cork from one of the knots, held it in his hand for about the space of half a minute, during which time I should think about six cubic inches of fresh air had come in; and then, shuddering horribly, he pulled a very face, said we should catch our deaths of cold, hammered the cork in tight, and jumped back into bed.—*Six weeks in the Saddle.*

Miscellanea.

Antiquities in Athens.—Antiquarian research is actively pursued in Greece, and Athens will before long become the European centre for the study of that antiquity which has already rendered her name glorious. The correspondent of the *Levant Herald* says, the interesting and most extensive excavations carried on in every direction of the ancient city, the careful manner in which the noble relics of the Acropolis are being preserved, and the large public and private collections of antiquities which are being formed, will draw to Athens large numbers of scholars, who will find here inexhaustible food for their favourite studies. The importance which the Greek Museum of Antiquities has already acquired has decided the Imperial Academy of Vienna, on the proposal of Professor Contze, to obtain copies of the Greek antiquities. That learned body has entrusted to Mr. A. Postoloca, curator of the Numismatical Museum of Athens, the work of collecting a complete set of new photographic representations of all statues, vases, inscriptions, and other ancient marbles in Athens. Mr. Postoloca computes that the album thus constituted will contain over 1,000 photographs.

St. Marie's (R.C.) Bells, Norfolk-row, Sheffield.—At another meeting of the committee, a report was handed in from Messrs. Hadfield & Son, architects, as to the cost of the new bells. Mr. Hadfield stated he had an interview with Mr. Stainbank, of the firm of Mears & Stainbank, at the bell foundry, Whitechapel, and that they had given in an estimate for seven bells, to complete a peal of eight, with the present bell of 20 cwt. as tenor, fixed complete, for the sum of 700*l.* Some discussion followed, and a resolution to the effect that an entirely new peal of eight bells, with a 25 cwt. tenor, be erected, the old bell to remain in the tower as a sanctus bell, was carried enthusiastically, and Messrs. Hadfield & Son were instructed to communicate accordingly with Messrs. Mears & Stainbank. We are informed that the estimate of these gentlemen has been accepted, and that the Duke of Norfolk has promised half the amount of the cost, which will be about 1,100*l.* The erection of the bells is to be completed by the 1st of July next.

The Ardwick and Ancoats Dispensary.—At the formal opening of the new building of the Ardwick and Ancoats Dispensary, the Bishop of Manchester proposed a resolution expressing the hearty concurrence of the meeting in the proposed addition of hospital practice to the dispensary, and pledging it to assist to raise the necessary funds. The proposition was adopted, as was also the following:—

“That the adoption of the provident plan, whereby persons will be enabled by a small periodical payment to secure medical attendance in time of sickness, is a measure calculated in a high degree to benefit the working classes, and this meeting expresses its earnest approval of the scheme, and seeks to encourage the committee to persevere in their efforts, feeling assured that their labours will be crowned with success.”

Metropolitan Drainage Works.—At the last meeting of the Metropolitan Board of Works, tenders were received for the construction of the Northern Low-level Sewer between Battersea Bridge and Crenorne Pumping Station, and for the setting of the four new boilers at the Crossness Pumping Station, already ordered to be constructed. The first ranged from 23,530*l.* to 17,442*l.*; and the second from 3,160*l.* to 2,238*l.* The tenders were referred to a committee of the whole house, who, in accordance with the usual practice, recommended the acceptance of the lowest in amount, namely, that of Mr. Joseph Chapple, at 17,442*l.*, for the Pumping Station, and that of Messrs. Waterson & Company, at 2,238*l.*, for the Crossness boilers, subject to the usual inquiries. The recommendation was ordered to be acted upon.

Public Park and Recreation Ground for Tooting.—The old gravel pits and belts of furze on the west side of Tooting-common are being cleared away, and the land is to be laid out as a public park and playground for the inhabitants of Streatham and Tooting. The excavation and conversion of the common into a park is undertaken by the Board of Works, who have purchased the manorial rights, and arranged with the commoners having rights to pasturage and other privileges. The other portion of the common, about which there has been very extensive litigation between the lord of the manor and the commoners is to remain in its present state.

Thames Embankment Boundaries.—A plan was submitted by the Works Committee at the last meeting of the Metropolitan Board of Works, showing the proposed boundary line of the Victoria Embankment and New Bridge-street, Blackfriars. They had had under consideration the report by the Board, signifying their wish to construct an appropriate resting-place where the Victoria Embankment joins New Bridge-street, Blackfriars, and inquiring as to the line of boundary to be determined on between the Board and the Commissioners. Ultimately a line of boundary had been agreed upon for the end of the balustrade of the Embankment wall to the point on the opposite side of the roadway, where the Board's vaults terminated as delineated on a plan.

Miss Harrison's Park, Sheffield.—A meeting of the park and general purposes committee has been held at the residence of the late Miss Harrison, for the purpose of making the necessary arrangements for the opening of the park. The committee made a minute inspection of the ground and house, and several suggestions were made for the erection of lodges and entrances. It was resolved to communicate with Mr. Marnock, of London, the landscape gardener, with the view of engaging him to lay out the grounds.

“Good Dog.”—Miss Louisa Swift, whose name as an artist has been heard of before to-day, has painted a remarkably good picture of a mastiff, life size. The head is singularly powerful and life-like. If the back-ground and accessories be completed as successfully as the main subject of the picture, it will, doubtless command attention in whatever exhibition it may be sent to. Very clever ladies are Mrs. Swift and her three daughters,—one of them now Madame Bischoff.

An Old Painter.—On the 29th of January, at 11, Kent-terrace, Regent's-park, in the 96th year of his age, of acute bronchitis, died Mr. John Christian Schetky, Marine Painter in Ordinary to their Majesties George IV., William IV., and Queen Victoria, and formerly Professor of Drawing to the Military and Naval Colleges at Marlow, Portsmouth, and Addiscombe. The interment took place at Paddington Cemetery, Willesden-lane, on Thursday, the 5th inst.

Wet Dock for Ayr Harbour.—It is understood that the trustees of Ayr Harbour have all but completed arrangements for construction of a dock on the north side of the harbour. Mr. Baird, of Cambusdoon, has generously agreed to advance the trustees for this purpose the sum of 120,000*l.*, and the Glasgow and South-Western Railway some time ago voted the liberal donation of 10,000*l.* for the same purpose.

Society for the Encouragement of the Fine Arts.—On Thursday evening in last week an interesting lecture, the opening one of the season, was delivered before the Society for the Encouragement of the Fine Arts, Conduit-street, by Mr. John Seddler, the subject being “Line Engraving.” Mr. John Warwick occupied the chair. A discussion followed.

Paddington Baths and Wash-houses.—Mr. J. Humphress “is disappointed to find his name omitted” in the account we gave of the Paddington Baths, as he has “the contract for the gasfitting.” When he had executed the gasfitting would probably have been time enough to mention the circumstance, but we accord him his request.

The Royal Archaeological Institute of Great Britain and Ireland, having fixed to hold their annual meeting in the city of Ripon, a meeting has been held, for the purpose of appointing a local committee to make all necessary arrangements. The Marquis of Ripon, K.G., presided.

Royal Academy.—At the last meeting of the Council of the Academy, Mr. Millais in the chair, Mr. J. L. Pearson, architect, was elected an Associate. Mr. Storey went to the ballot with him. Mr. Waterhouse's name was in the first list.

Royal Institution.—The discourse on Friday next, February 13th, will be given by Dr. Doran, F.S.A., on “The Opponents of Shakspeare,” at nine p.m.

Hungerford.—The Congregational Church here has been re-opened. The alterations are extensive, and have been devised and carried out under the direction of the Rev. B. Crowther.

TENDERS

For sewers and other works, Chelsea, for the Metropolitan Board of Works.

Moore & Co.	£26,000 0 0
Welster	21,000 0 0
Neave & Son	21,000 0 0
Pearson	22,900 0 0
Furness & Co.	10,000 0 0
Noel & Robson	18,000 0 0
J. & S. Williams	18,000 0 0
Chappell (accepted)	17,442 0 0

For firing four new boilers, Crossness Pumping Station, Kent, for the Metropolitan Board of Works.

J. & S. Williams	£3,160 0 0
Webster	3,000 0 0
Noel & Robson	2,800 0 0
Crockett	2,770 0 0
Pearson	2,552 12 8
Waterson (accepted)	2,538 0 0

Accepted for new schools for the Caldbeck School Board, Cumberland. Mr. Stephen Shaw, architect.

Quantities supplied:—

Hasket New Market School:—

Masonry and Draining.

Butterworth £380 13 0 |

Atkinson 218 0 0 |

Bailey 85 12 8 |

Messrs. Hampton 19 10 0 |

Smith 34 3 0 |

Fellside School:—

Masonry and Draining.

Butterworth £21 6 0 |

Atkinson 153 0 0 |

Bailey 80 1 2 |

Messrs. Hampton 17 9 1 |

Smith 31 16 0 |

Caldbeck School:—

Masonry and Draining.

Forsyth £12 0 0 |

Atkinson 126 2 8 1/2 |

Bailey 49 15 0 |

Hampton 0 5 0 |

Smith 22 1 0 |

Hastelule School:—

Masonry and Draining.

Harding 30 0 0 |

Messrs. Hampton 0 11 10 |

Smith 12 11 0 |

For public elementary schools, East Ham, Essex. Mr. Denison, architect. Quantities by Mr. Barnett.

Carter	£5,870 0 0
Ashmore	5,400 0 0
Rivet	5,100 0 0
Dones	4,800 0 0
King & Son	1,700 0 0
Adamson	1,000 0 0
Emm	1,000 0 0
Acher	1,000 0 0
Perry & Co.	1,000 0 0
Barnes	1,000 0 0
Dyce	1,000 0 0
Sheffield	1,280 0 0

For alterations to eleven houses, Well-street, Hackney, for Messrs. Smith & Gale. Mr. F. Boreham, architect.

Judd	£1,157 0 0
Bailey & Smith	1,001 0 0
Foxitt	880 0 0
Turner	700 10 0
Blackmore & Morley (accepted)	725 0 0
Lancaster (withdrawn)	600 0 0

For new farm-house, h. mstead, and lodge-buildings, at Pertenhall, Beds, on the estate of the Corpus Christi College, Oxford. Mr. J. T. Botte, architect. Quantities supplied:—

Jacobs	£27,980 0 0
Sharp & Rowing	7,845 0 0
Saint & Bunting	7,436 0 0
Lord	7,430 0 0
Clardge	7,359 0 0
Orchard	7,357 0 0
Darling	7,353 0 0
Waterson & Co.	7,339 0 0
Dover, Son, & Co.	7,217 0 0
R. H. Bailey	7,233 0 0
Page & Allen	7,161 19 8
S. & W. Pattinson	7,151 0 0
Yancey	7,133 0 0
Cornish	7,100 16 8
Hobson & Taylor	7,100 0 0
Chapell	7,100 0 0
Hayes	7,073 0 0
Wagner	7,015 0 0
Story	6,921 12 8
Hubbard	6,803 0 0
C. J. J. J.	6,323 0 0
Watkin	6,312 0 0
Chubbuck	6,300 0 0
Tyson	6,219 8 0
Smith & Son	6,161 0 0

For the erection of a dwelling-house, Watford, Herts, for Colonel Robertson, Messrs. Smith & Austin, architects:—

Cockell & Co.	£700 0 0
Fureman	675 0 0
Joyling & Co.	660 0 0
Chunck	630 0 0
Allen	630 0 0
Waterman (accepted)	608 0 0
Andrews & Son	607 0 0
Bulford	598 0 0

For a block of sixty-four offices in Telegraph-street, Moorgate-street, London, E.C. Mr. Edward Browning, architect. Quantities supplied:—

Thompson	£9,987 0 0
Browne & Robinson	9,477 0 0
Kilby (accepted)	8,980 0 0
Colla	8,878 0 0
Perry & Co.	8,816 0 0

For alterations and additions to the Cook Tavern, St. Martin's-court, Ludgate-hill, for Mr. George Gabb, Mr. H. G. Gribble, architect:—

Sharpington & Cole	£1,565 11 0
Hunt (accepted)*	1,455 0 0
Hunt (accepted)*	1,271 0 0

* Amended tender.

For reconstructing No. 5, Old Jewry, for Mrs. Charlotte Smith. Messrs. Bird & Walters, architects:—

Battings	£1,197 0 0
Harris & Son	1,089 0 0
Thompson & Smith	1,057 0 0
Mack	1,038 0 0
Brace	808 0 0
Newman & Mann	800 0 0
Williams & Son	887 0 0
McLachlan	774 0 0

For rebuilding Nos. 117 and 118, Leadenhall-street, for Mr. C. Skipper. Mr. E. N. Clifton, architect:—

Simpson	£23,577 0 0
Jackson & Shaw	23,200 0 0
Ashby & Sons	23,220 0 0
Corder	21,220 0 0
Smith & Co.	21,700 0 0
Holland & Hansen	21,500 0 0
Ashby & Horner	22,500 0 0
Brace	22,100 0 0

For public-houses, corner of Queen-street, Finsbury, for Mr. W. Aldgate. Quantities supplied by Messrs. Hammack & Lambart.

F. & F. J. Wood	£3,810 0 0
Heathcote	3,755 0 0
Cole	3,000 0 0
Newman & Mann	3,500 0 0
Smith	3,500 0 0
Wicks, Bangs, & Co.	3,500 0 0
Brace & K. J. J.	3,500 0 0

For new drainage and other sanitary works at Mid-dleton Park, near Epsom, for Lord Jersey. Mr. W. Eversden, surveyor.

Castle & Co.	£1,508 0 0
J. & T. Davis (accepted)	1,405 0 0

For the erection of buildings, Norton Folgate, London. First contract. Mr. Charles Fowler, architect. Quantities by Mr. H. Lovegrove:—

Glavin	£1,500 0 0
Heale	1,002 0 0
Kiddle & Son	1,158 0 0
Baily	1,147 0 0
Corder	1,137 0 0
Wall	1,107 0 0
Crabb	1,300 0 0

TO CORRESPONDENTS.

J. R. - W. C. H. - M. F. - K. D. - E. T. - S. S. - W. H. W. - W. C. T. - M. & T. - D. S. - A. - J. O. - P. V. - C. D. - L. Brose - Y. & Co. - S. W. - J. C. D. H. - G. T. C. W. G. S. H. L. - J. A. L. (we did not reach us until the letter had been delivered - J. A. W. (next week) A. H. (next week) H. J. S. our correspondence has not yet been received, but we fear he has no legal remedy.)

We are compelled to decline printing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

No responsibility is assumed for signed articles and papers read at public meetings, &c. of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

	Situations	Situations
	Wanted	Accepted
Six lines (about fifty words) or under	2s. 6d.	4s. 6d.
Each additional line (about ten words)	6d.	1s. 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to residents in any part of the Kingdom, at the rate of 1s. per annum, payable in advance.

Halfpenny stamps accepted for same rate under £5. Any larger sum should be remitted by Money Order, payable to the Proprietor, King-street, Covent Garden, W.C. DOUGLAS FOUNDRY.

Bath and other Building Stones

Of best quality.

RANDELL, SAUNDERS, & CO. (Limited),

Quarriesmen and Stone Merchants.

List of Prices at the Quarries and Depôts; also cost of transit to any part of the Kingdom, on application to Bath Stone Office, Corsham, Wilts.

STONE BROTHERS,

Bath Stone Merchants,

supply direct from their own Quarries:—

Box Ground, Corsham Down,

Farleigh Down, Combe Down,

AND STONE GROUNDS.

Prices on application at Bath-stone Office, Bath.

London Depot, G.W.R. Midway Station, Paddington.

Stone Dressings prepared ready for fixing. [Adv.]

The Late Fire at 70, Grosvenor-street.

In consequence of the above unfortunate occurrence, Messrs. MAYER & CO. have REMOVED to 37, CONDUIT-STREET during rebuilding of their premises. As all their objects are manufactured in Munich, and a large part of their stock having been saved, they are able to continue business as usual, and invite inspection of their STAINED GLASS, STATUARY, CHURCH FURNITURE, &c.

Bills of Quantities, Specifications, &c.

Lithographed by ROBT. J. COOK & HAMMOND,

29, Charing-cross, S.W., with accuracy and

punctuality. Plans and Drawings Copied,

Traced, or Lithographed. [Adv.]

Asphalte.

Seyssel, Patent Metallic Lava and

White Asphaltes.

M. S T O D A R T & C O.

Office:

No. 117, Cannon-street, E.C. [Adv.]

PERFECT DAYLIGHT.

WHY BURN GAS?

CHAPPUIS' REFLECTORS

IMPROVE NATURAL DAYLIGHT AND SUPERSEDE GAS.

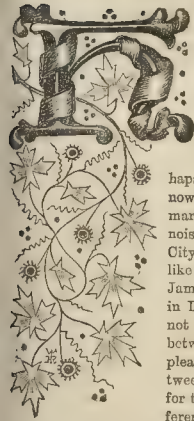
P. E. CHAPPUIS, Patentee and Manufacturer, 69, FLEET STREET,

LONDON.

The Builder.

VOL. XXXII.—No. 1619.

Pall Mall.



UGE London of today is spoken of as a whole, but the life lived at the two ends of it, respectively known as the East end and the West end, is essentially dissimilar, and perhaps the difference is nowhere more strongly marked than between the noise and bustle of the City and the unbusiness-like lounginess of St. James's. The contrasts in London, however, are not confined to those between business and pleasure, and those between poverty and riches, for there are strong differences between the

dull respectable streets which consist of little more than dirty brick walls with windows in them, and the picturesque splendours of Pall Mall, which is unquestionably the most architectural street in London. It is to the clubs which now form one of the special features of London life, and which have mostly been erected in the middle of this century, that Pall Mall owes its present magnificent character. It was always a fashionable street, as might be expected when it had a palace at each end, but one of these (Carlton House) has long since disappeared, and the palaces raised for the comfort of our upper and middle classes have quite overshadowed the palaces of our sovereigns. The street is still capable of improvement, and requires (1) the rebuilding of the War Office, (2) the pulling down of the houses to the south of the Thatched House Club, and the opening up of a view of the Green Park through Cleveland-row.

Pall Mall is the loved resort of the loungeur and the quidnunc, and there are many who agree in heart with the aspiration of Charles Morris when he sang:—

"In town let me live, then, in town let me die;
For in truth I can't relish the country, not I.
If one must have a villa in summer to dwell,
Oh! give me the sweet shady side of Pall-mall."

At the end of the sixteenth century Pall Mall did not exist, although a public roadway from Charing-cross to St. James's House or Hospital was of considerable antiquity. To the north of the road were open fields, in one of which was a conduit situated at a spot which would now be the centre of St. James's-square. At the east end of the road there stood previously to the Reformation a group of small monkish buildings belonging to the Westminster monastery; one of these was the Rookery; and the tradition has been handed down that in another a forge was erected for King Henry VI., who attempted to fill his empty coffers by an unsuccessful search for the philosopher's stone. Before these houses were swept away, they had a distinguished inhabitant in Erasmus, who lived there for a time by favour of Henry VIII. At the west end of the road, St. James's Palace, which Henry VIII. built when he abolished the old hospital for lepers, stood nearly alone, and was thoroughly in the country. In 1561, when Queen Elizabeth made a progress from Enfield to London, the

hedges along the road from Islington to St. James's were cut down and the ditches filled up, in order to make a way for her to pass.

Either in the time of James I. or in the next reign a portion of the St. James's-fields was laid out for the convenience of the players of the newly-introduced game of pall-mall. Games did not flourish during the years of the Commonwealth, and at the Restoration the courtiers found the Pall Mall less secluded than they left it. In consequence of the road being partly built upon, Charles II. set aside a portion of St. James's Park for the purposes of his favourite game. A game that has not only given its name to the handsomest street in London, and to the once fashionable promenade in St. James's Park, but has also left its mark on our literature, seems to be worthy of some little explanation. At one time most of the principal cities of Europe had their malls; and Evelyn specially mentions those at Blois, Tours, and Lyons; but now the game is nothing but an empty name. The mode of play has so thoroughly escaped us, that in two popular works the representation of a totally different game has been made to do duty for this. From dictionaries and other sources we are able to make out something about it, and Mr. Albert Way printed a paper on the subject in the *Archæological Journal* (vol. xi., 1854), which he illustrated by a figure of a mallet and ball found in the house of the late Mr. Benjamin Vulliamy, at No. 68, Pall-mall, but still it was not clear how the game was played. Dr. R. C. A. Prior, F.L.S., has been so fortunate as to find a curious little French work, published in 1717, and entitled "*Le Jeu de Mail*, par Joseph Lauthier," from which he has quoted largely in his own interesting "*Notes on Croquet*; and some Ancient Bat and Ball Games related to it," lately published. James I. mentions pall-mall in his "*Basilikon Doron*," among other exercises suited for his son Henry; and Sir Robert Dallington, writing in 1598, strongly advocates its introduction into England. The Mall, where the game of pall-mall (from *palla*, a ball, and *maglia*, a mallet) was played, was a long alley sometimes half a mile in length, and usually between rows of tall trees. The ground was made smooth, and prepared with great care, so that the ball should glide along its surface. Each player had a mallet between 3 ft. and 4 ft. in length, and a round box-wood ball of between 2 in. and 3 in. in diameter. Besides the ordinary mallet a spoon-mace was used when the ball was in a certain position. At each end of the mall was an arch about 2 ft. high and 2 in. wide, called "the pass," and the player who rolled his ball beneath this "pass" in the smallest number of strokes was the winner of the game. The directions given by M. Lauthier for the selection of mallets and balls are very minute. He says of the mallet:—"If it is too long or too heavy, it catches the earth; if it is too short or too light, it does not give sufficient force," and adds, that in Provence and Languedoc they used shorter handles than at Court and in Paris. He recommends the learner to use first a short handle, and to add to its length gradually. The mallet-heads most in use weighed thirteen or fourteen ounces. The balls were made from the roots of box, and great pains were taken to bring them to a state of perfection. M. Lauthier writes,—"*They are cut and allowed to dry for a certain time, and after that are turned in a lathe and beaten to a proper surface. At first they are only played with light strokes of the mallet on a gravelly soil; afterwards with harder; and they are always to be rubbed with peltitory before they are put away after being used. At last, by dint of blows from the mallet and rolling them about, they become hard. We notice those that go best, that is to say, which do not jump or turn from their track, or, to use the language of mail, which do not take the*

wind. These we must gauge when so finished, and store them in a bag with dirty linen, which is the best place, being neither dry nor damp, to keep them sound. We must weigh them, also, to know exactly the weight of those which go farthest, and which certainly ought to be regarded as the best." The balls appear to have been very unequal in merit, and there was one which gained an historic reputation and passed through the hands of several celebrated players. "A ball-merchant of Provence brought a large bag of balls to Aix. The players, who were in great number in this town, bought them all at thirty sous apiece, except one only, which, not being so pretty as the others, was rejected. A good player, named Bernard, came the last, and bought this waste ball, for which he would not give but fifteen sous. It weighed seven ounces and two drachms, and was of ugly wood, the half of it reddish. He played it a long time, finished it, and it became so excellent that when he had a long stroke to make it never failed him at his need, and led infallibly to his winning the match. It was called *La Bernarde*. The President of Lamanon, who has had it since has refused a hundred pistoles for it several times. Louis Brun, one of the greatest mall-players that there have ever been in Provence, who on a smooth ground, without wind or slope, used to drive a ball as many as 405 paces, wished to make trial of the Bernard. He played it several times with six other balls of the same weight and the same size, and his stroke was so equal that the five others lay nearly all together, with only a foot or two of difference. But the Bernard was always found fifty paces farther off than any of them; which led him to say in joke one day that, *with the Bernard, he would play at long shots with the Devil*. There can be no doubt that what this ball had peculiar to it was, that it was equally heavy throughout, from its surface to its centre, since it sustained itself so well in its roll; while the others—which did not do the same, although of proper weight,—were unequal in their circumference, being heavier on one side than on the other, and this made them run crooked, in jumps or in bounds." We have seen that judgment was required in the selection of the mallets and balls, but besides this it was necessary that the mall should be smooth and carefully preserved. The one in St. James's Park was strewn over with powdered cockle-shells, and the man employed to keep it in order was termed the cockle-strewer. Charles II. was very fond of the game, and appears to have been a good player. The poet Waller wrote in courtly fashion:—

"Here a well-polish'd mall gives us joy,
To see our prince his matchless force employ,
No sooner has he struck the flying ball,
But 'tis already more in his the mail:
And such a fury from his arm has got,
As from a smothering culverin 'twere shot."

Dr. Prior has added to the value of his little work by reproducing from the French account of the game four illustrations representing the mode of play. In the first the player has the mallet straight down in front of him, touching the ball, and is aiming and preparing to strike it; in the second he has raised the mallet above his head, and is about to strike the ball; in the fourth he is a few feet in front of the pass, and is throwing the ball through it with a spoon-mace; in the third the position of the hands on the mallet-handle is shown. It appears that there were four different ways of playing at pall-mall, and Lauthier suggests another mode which might be played according to the rules of billiards. The following description explains the points of variety:—"1. Playing *à roquet* is when each person plays by himself and on his own hook. In this case one only, upon passing to the pair, or at most when he finds himself in order, gains the prize agreed upon for the *pass*. 2. Playing *en partie*, or a match-game, is when several persons place themselves on one side to

play against others of equal strength and number. If the number is uneven, a player on one side may be allowed two balls till another player arrives to fill the vacant place. 3. Playing at *gauche*, or long-shots, is when two or more play at it, who shall drive a ball farthest, and when one is stronger than the other, the weakest asks an advantage, either in distance of trees or distances of paces. 4. *Chitane* is played in the open field, in alleys, on high roads, or anywhere that people meet. A player usually begins with a flying shot, after which he should send the ball into any place he can find, that is stony or encumbered. The match is ended by touching a tree or stone that is marked to serve for goal, or by passing certain boundaries upon which the parties are agreed; and the one whose ball, after having cleared this goal, shall be farthest off, supposing the players on the one side and the other to be even, will have won." This last game is really not pall-mall at all, but hockey.

It was made a long digression into the history of the game that gave its name to the street, we will now return to the consideration of the street itself. Shortly after the Restoration, a warrant was issued "for the building of the new street to St. James's, in the line of the old road: this was called Catherine-street, after (Queen Catherine, of Braganza; but the name never took root, and the most usual designation was the "Old Pall Mall." We have seen what was the state of the place at the end of the sixteenth century, so that it will be well now to picture it during the successive centuries. It took its place at once as a fashionable street, which was but natural, considering its agreeable situation, the houses on the south side having gardens leading down to the park. Physicians, philosophers, statesmen, painters, beaux, and king's mistresses flocked to Pall Mall. Dr. Sydenham was one of the earliest inhabitants, for he was here before the Restoration. The Hon. Robert Boyle, who refused the presidency of the Royal Society, lived with his sister, the Countess of Ranelagh, in this street for more than twenty years, and both died within a week of each other in 1681. Dr. Burrow, Sir William Temple, Jean Baptiste Monnoyer, the flower-painter, a roomful of whose pictures are to be seen at Hampton Court, Hindsome Fielding, who was found guilty of bigamy, but pardoned by Queen Anne, Mrs. Mary Knight, the singer, and Nell Gwyn, all lived here. We may easily imagine most of the noted men of the day walking along this street, but we know that in 1690, Pepps was to be seen frequently passing to "Wood's at the Pall Mall (our old house for clubbing)" where he stayed till ten o'clock at night. So early in its history was Pall Mall known for its clubs. Eleven years after this, Nell Gwyn might have been seen sitting at the end of her garden talking with Charles II., who would afterwards saunter along the King's garden (which extended from St. James's Palace to where Carlton-terrace now stands) to have a chat with the Duchess of Cleveland. The following advertisement from the *Postman*, April, 1703, shows us what these houses on the south side of Pall Mall once were:—"One, two, or three houses about the middle of Pall Mall, on the park side, with gardens and mounts adjoining to the Royal garden to be sold, or let by long lease." We now pass on to consider the state of the place in the eighteenth century. Gay describes it in glowing colours:—

"Oh! lead me to the paths of fair Pall Mall;
Safe are thy pavements, grateful is thy smell!
At distance rolls along the gilded coach,
Nor sturdy carmen on thy walks enroach;"

but he cannot write entirely in praise, and therefore adds:—

"Yet still I'on here, where rains the passage hie,
Of the loose stone sprits up a muddy tide
Beneath the careless foot; and from on high
Wherever is the scabb'd, ragged, or the
Mortar and gravel had time in showers descend,
And over thy head destructive tides descend."

John Macky (1722), whose contemporary sketches of London are very valuable, speaks of Pall Mall "as the ordinary residence of all strangers, because of its vicinity to the King's Palace, the park, the Parliament House, the theatres, and the chocolate and coffee houses, where the best company frequent." Our forefathers tolerated and even delighted in sports that would scandalise us now, so different were their habits and feelings to those of the present age. We read that in the year 1733, four women ran a race at three o'clock in the afternoon from one end of this fashionable street to the other. Sixty-one years after this a notorious woman

stood in the pillory in Pall Mall from twelve to one in the afternoon. During the hour she remained there she was pelted with mud, rotten eggs, &c., by the indignant spectators, and she left the place amid loud hisses from the people who had collected in large numbers on the occasion. We know that formerly the roads near London were infested with footpads and highwaymen, and it does not, therefore, surprise us to learn that in the middle of the seventeenth century when there were hedges and ditches on the side of Bond-street, a thief after taking a silver tankard from Dr. Sydenham's house in Pall Mall, though pursued, was lost sight of at that unfrequented spot, but it is a staggering fact that on the 7th of January, 1786, the mail was actually robbed in Pall Mall.

The present state of the street we all know, but its appearance was very different at the beginning of the century. Then Carlton House stood where the Athenæum and United Service Clubs and Carlton-terrace now stand, and most of the houses were commonplace and undistinguished. On the 26th of February, 1811, the Prince of Wales held his first levee in Carlton House as Regent, and on the 19th of June he gave a supper to 2,000 guests, some of these being the French princes and emigrant nobility. The preparations for this entertainment were of the most gorgeous character, and a stream of water filled with gold and silver fish was made to flow through a marble canal down the centre table. In 1827 the house was pulled down, and the gardens destroyed, when the old rocks that lodged in the trees migrated to New-street, Spring-gardens. The first exhibition of Winsor's system of lighting the streets with gas took place on the King's birthday, 1807, and was made in a row of lamps in front of the colonnade before Carlton House. Two years after this, Sir Humphry Davy gave it as his opinion that it would be as easy to bring down a bit of the moon as to light London with gas. One of the well-known characters of Pall Mall was "Big Sam," the porter at one of the lodges of Carlton House, who was 8 ft. high, and could peep over the gates into the street. Another was Sir Thomas Charles Bunbury, whose first wife was Lady Sarah Lennox, and who died on March 31, 1821, in his eighty-first year. He was for fifty-eight years engaged on the turf, and during fifty of these he was Steward of the Jockey Club. He was very abstemious, never drank spirits, and never wore gloves. We have no room to describe the various historical houses, such as Marlborough House and Schomberg House, nor the celebrities that have dwelt in them. We must not, however, omit to mention the intimate association of the street with art and artists. John Julius Angerstein, the founder of the National Gallery, lived here, as did Robert Vernon, the founder of the Gallery of British Painters. Gainsborough and Cowper lived at Schomberg House, Boydell founded his Shakespeare Gallery in Pall Mall, and the British Institution held their Exhibitions here for many years. At a house opposite Market-lane, and to the east of Carlton House, the annual exhibitions of the Royal Academy were held from 1768 to 1780.

Pall Mall can boast of more celebrities than would be sufficient to set up the reputation of many a city, and among its inhabitants have been the representatives of all classes and professions. Of royalty, there have been two Princes of Wales, a Princess Dowager of Wales at Carlton House, and a Queen Dowager at Marlborough House, a Duke of York, and a Duke of Cumberland, and in a private drawing-room a Duke of Gloucester was married to the Countess Dowager of Waldegrave (Married to the Duke of Devonshire, and the Duke of Devonshire's niece). Of soldiers, there were the great Duke of Marlborough, and the Dukes of Schomberg. Of statesmen, the great Earl of Chatham. Of doctors, Hoberden and Mrs. Mapp, the bone-setter. Of authors, Steele, Sterne, and Gibbon. Of booksellers, Dodsley and "honest Tom Payne"; and of auctioneers, James Christie, the *Specious Orator* in Dighton's caricature. The street still keeps up its ancient fame, and it will long continue to do so, with a popular Prince and Princess of Wales at Marlborough House, and rows of clubs that number on their rolls of members all the greatest churchmen, statesmen, soldiers, authors, and travellers of the day.

Southwater.—A small Congregational church has been recently opened at Southwater, near Horsham. The architect is Mr. Ranger, of Finsbury-pavement; the builder is Mr. J. Robinson, of Billingshurst.

DECAY OF THE BRITISH LION!

Long years before Lord Macaulay's interesting New Zealand shall pay this country that prescribed visit in order to contemplate the pagodas of our civilisation generally, and the shattered stones and pillars of St. Paul's Cathedral in particular, the observer who takes an interest in ruins will have an opportunity gratifying his taste by making a call at a spot which has been spoken of as "the finest site in Europe"—we mean Trafalgar-square. There he will observe the colossal and once majestic form of four lions, honey-combed, gashed, and knocked out of shape as much as a cast-off tin kettle which has been delivered over to the kicks of destructive boys. In plain words, Landseer's Lions are going to the dogs. The wearing, biting atmosphere of the metropolis is proving itself more than a match for the metal in which the statues are cast.

The truth of this statement may be tested by any one who will one morning examine the lion which keeps watch and ward over his opposite neighbour, the Sun Fire Office. A glance of two at the paw and foreleg of this afflicted animal will reveal the existence of a number of holes, which completely penetrate the very substance of the metal. This may be regarded as the first stage of the animal's complaint. In the second stage the symptoms are very severe and aggravated. The small holes are prolonged into an ugly jagged gash, not very wide, it is true, as yet; but, as Mercurio says, though "not so deep as a well, nor so wide as a church-door, 'tis enough, 'twill serve." On the first blush of the matter, this premature and much-to-be-deplored decay, would appear to be due to the inferior composition of the alloy which renders it prey to the oxidising and corroding action of the London air and weather. Again, the casting is decidedly too thin. Our examination of these statues has been only a passing one. A proper scrutiny will undoubtedly reveal even graver ravages than those we have described. The public will ask, as they have a right to ask for an explanation. Moreover, something should be done.

THE CENTRAL DOME OF THE VIENNA EXHIBITION BUILDING.*

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

To the Institute of British Architects, I, who am no architect, only an engineer, will not try to describe the architectural qualities of the great building which was provided at Vienna to welcome and shelter the scientific and artistic works of all nations in their world-wide Exhibition which has just been closed. That building was the largest, and possibly the most completely adapted to its aim, that has yet been seen. I am also of opinion that it possessed a high degree of fitness to the purpose prescribed for it; that it was a wise application of the peculiar resources, materials, and artificers, of the countries among which it was raised; and that its architecture reflects great honour on the architects of Vienna, and exhibits, in a remarkable manner, the specialties for which they are eminently distinguished. But I am not an architect, and therefore I hope that some member of your own Institute, who has visited Vienna and studied that remarkable building, will give you the benefit of describing it for your professional information, and will do the architects of Vienna that honour which only a professional judge can worthily bestow.

All that I as a professional engineer can venture to do, is to submit for your consideration those engineering principles and those mechanical expedients which I think may possibly be of service to your profession, in those great works which you and your successors will be called upon to undertake in the architecture of the future. Some of these principles are illustrated in the great building at Vienna, and some examples are there given of these inventive contrivances. These you may possibly think fit to approve in principle, and to adopt in your own future practice. My own special work is the great central iron dome.

So far I shall only be doing that which is strictly within my own province as a special professional engineer. Permit me, however, to say that I shall find it impossible not sometimes to express my feelings on matters of which I have no professional knowledge. I cannot help

* By Mr. J. Scott Russell, F.R.S., read on Monday, the 9th inst.

feeling admiration for a beautiful form, even when it has no mechanical merit, and I cannot help feeling a hideous deformity, even when it is held up before us as a useful and meritorious work. There are good strong bridges, built by us engineers in the City of London, and huge railway stations, which we find it useful to use, and both one and the other inflict sharp pain on me whenever they cross my sight, and remain on my mind as monuments of hideous deformity, which a people endowed with any slender sense of beauty ought never to have suffered to exist. These things, when I return from countries where the sense of the beautiful is the seventh sense, even of the uneducated mass, pain me much, and make me feel that if in some things we English appreciate the beautiful, we are totally wanting in a sense of the ugly! Hence, everywhere throughout London prevalent costly elaborate ugliness pains the eye and shocks the mind.

Now I do not blame architects for this—no engineer dare say so,—for we have created in the last fifty years, that is during my own professional lifetime, I say, we engineers have created a greater number of ugly structures throughout all the cities of England than have ever been built by all the architects of the world, from the tower of Babel downwards. I do not, therefore, blame the architects of England for the ugliness of our great public works, and the hideousities of our great cities. In our northern races, under our northern clouds, the sense of beauty is feeble, the sense of ugliness is null, and if we are ever to know, love, and enjoy the beautiful in the works of humanity all round about us, as we do love and enjoy the beautiful in the works of divinity all round about us, it must be accomplished by a great national movement, undertaken by the educated and skilled part of the English people, to initiate, communicate, and spread throughout the working classes as well as the thinking classes, a belief that there are principles of beauty and of ugliness as fixed and sure as other laws of nature, and that these principles are exhibited every day to us by the lovely handiworks of God in trees and mountains, clouds and leaves, and flowers, and insects, and shells, and stars; and that if we do not make all the works of man to resemble the works of God, in beauty of form, beauty of colour, beauty of proportion, and order, and play, and grouping, it is not because there is any impossibility of doing it, but merely because we have not been systematically educated to believe in the truth of beauty, and in the hatefulness of ugliness, and that we are not habitually trained from our youth up, to select the lovely and reject the ugly; that we have not governors and rulers, who hide ugliness as injurious to youth, and surround children in schools with all that is comely and graceful. These things are all wanting to our children, and so we grow up ignorant and prejudiced, insensible to ugliness, incapable of selecting the better from the worse, exposed to continual disgust and disgust.

It is not my intention to go into matters of taste and beauty in architecture at all in this paper; but these remarks I could not omit, because they are the motives which induce me to venture to occupy this evening. It is my opinion that in matters of education, and in matters of profession, you the architects, and we the engineers, have need of one another, that we can greatly benefit each other's work by sympathetic co-operation, that the public works of our country would be greatly improved if every public edifice were at once a model of architectural beauty, and an illustration of wise engineering construction.

What architects and engineers could do, and, after my mind, should do, is to come into cordial fraternal union in the creation of the great structures which are to form the architecture of the future from the beginning, to frame their designs together from the outset, and, by a sympathetic cordial adoption of each other's views, to contribute each his part to a perfect whole. I admit frankly that all architects and all engineers cannot work well together; we are each apt to be obstinate and pig-headed in our own way, and to yield little or ungraciously to the other. But that is also the difficulty of common life. In all human work we are bound to co-operate, and the permanent part of human life is imperfect half-hearted co-operation in the duty we must perform.

I propose to you, as the way to initiate this co-operation for the future, a close union of the two professions, in the education of the rising

generation of young architects and engineers, so as to co-operate intelligently with each other in the works of both professions. We ought to know something of each other's professions, we ought to know, not that superficial little which might make us fancy we should meddle each in the other's part of the work; but we ought to have that deeper knowledge which teaches us that we know nothing, or, at least, not enough to warrant our touching the other's work. When we both know that much of what the other has to do, we shall be sure to let it alone. Let, therefore, the young engineer be well trained in architecture, and the architect well trained in engineering principles, and both will give each other valued aid, and both abstain from harmful interference.

I feel it my agreeable duty, in laying before this meeting of the architects of England a description of my own work in the great building at Vienna, to say how much benefit the whole of that building, and especially my portion of it, owes to your profession. You all remember the marvellous excellence of the original Exhibition building in Hyde-park, and you all have recognised the distinguished merit of the Crystal Palace at Sydenham. As I am intimately acquainted with the story of these two buildings, which are the first types of a new nature of construction, I will venture to say that some of the ablest mechanical engineers of our time, and some of the ablest members of your Institute of Architects, combined their highest efforts to give excellence to their common work, that the two professions co-operated cordially and harmoniously, and that they and we are all proud of the result.

In like manner I have to say for my own iron building at Vienna, that from the beginning to the end of the design I am deeply indebted to members of your profession for kindly help and cordial co-operation. When I made the first sketches of the Vienna building, the designs were all drawn for me by Mr. John Crace, the worthy son of a father who had long before acted a distinguished part in beautifying our two first palaces. It was on his drawings that the design of my dome was first shown at Vienna. Where these drawings of his do not correspond to the work as executed, it is because the rest of the buildings all round my dome were decided to be of a quite different style, and because, as they were to form parts of one great whole, it became expedient that the same Vienna architects who designed the architecture of the surrounding portions, should design the architecture of that, so as to be in harmony as a whole. I have great pleasure in saying, that in Vienna I received as genial sympathy and as cordial co-operation in the great work in which we were engaged, as I have always received in any matter of joint interest from members of this Institute. The architectural features and decorations of the tomb, as now executed, are the work of M. Haesener, who, at an early age, has earned high distinction, and who inherits the traditions and talent of your profession from his distinguished father.

GENERAL DESCRIPTION OF THE CONIC DOME AT VIENNA.

The iron dome at Vienna is, I believe, the largest vaulted roof in the world. I think it covers nine times the ground of the dome of St. Paul's, eight times the area of the dome of St. Peter's, and seven times the area of the dome of St. Sophia, at Constantinople.

The dome is 360 ft. in diameter, and 1,080 ft. round. It stands on a ring of thirty columns, 36 ft. apart all round the circumference. Within this ring of columns there is no support. The upper dome, 100 ft. diameter, admits light by a series of windows, 40 ft. high and 10 ft. wide, between thirty columns which carry the upper dome. I fancy the English architect will get the best feeling of the magnitude of this interior by going into St. Paul's Cathedral, looking up to the inner dome, and then imagining all the columns that carry the roof done away, and the upper dome left suspended in the air, but sustained by a lower dome resting only on the outer walls. The area covered, the height, and the dimensions, are sufficiently near to give the true impression according to my feelings, and I hope, therefore, to you.

Although the dome is carried on these thirty columns at intervals of 36 ft. all round, and although the structure of the whole dome conforms to this symmetric division, two more columns are introduced by intercolumniation at the two entrances to the grand avenues, making in all thirty-two columns. These give beauty and do not destroy symmetry.

The slope of the cone is thirty degrees. The length of the slope on all sides is 200 ft. The roof is formed of 360 iron plates, tapering uniformly upwards from the circumference to the apex of the cone. They are riveted like the plates of a ship, each row of plates covers one degree of the circle, each bottom plate is one yard wide between the lines of rivets, and one metre wide over the lap.

The thirty columns which carry the cone stand round the circle at 12 degrees apart, except at the two intercolumniations. They are 36 ft. from centre to centre; each carries an arch and an upper gallery all round the inside. These columns are 80 ft. high.

The heights of the whole in round numbers are—columns, 80 ft.; cones, 100 ft.; windows, 40 ft.; lantern and crown, 60 ft.; say 280 ft. from floor to crown, besides foundations of 12 ft. to 20 ft.

This conic dome roof has no visible external wall; it is surrounded by a circular ring building, which consists of the great central nave of the longitudinal axis of the main building, carried circularwise round the cone, and forming, so to speak, a circular aisle, or series of side-chapels, all round about it. The conic roof, therefore, as seen from the exterior, crowns the large low buildings by which it is surrounded, and seems merely to grow out of them, and to group them round it, into one whole, of which it is the centre. The whole outside decoration of both was meant to harmonise them, and not to give predominance to part. This circular ring, nave, or arcade is 40 ft. wide by 80 ft. high, carried on a second ring of outer slender columns, and opening out into four enclosed courts, or gardens, by large semicircular windows and many doors. This arcade extends the circle of the central building to 440 ft. diameter. It has the great convenience of forming a continuous communication through the entire length and breadth of the building with all the main entrances, without disturbing the central area of the great dome,—a quality of much practical convenience.

I defer to a later point the further description of the rest of the building, in order to enter at once on the theory and mechanical principles of the conic dome structure.

MECHANICAL PRINCIPLES OF CONIC DOME STRUCTURES.

I think I shall bring this subject most clearly before you by saying at once that I confine my remarks to the peculiar principles which it seems to me should govern the proportions and indicate the structure of very large buildings, as distinguished from ordinary small ones.

The result of the investigations I have been occupied in making on this question, during some thirty years, is shortly this—that a certain conic form develops the strength of that modern material called wrought iron, on a large scale of structure, so as to attain the maximum possible of strength, economy, and endurance.

When I have satisfied you of the soundness of this conclusion—first by theory, secondly by experience—I hope that the result will be that you will adopt the conic dome, as one of those forms out of which you will develop combinations and proportions, satisfying to the mind of the spectator, sweet to the eye, as well as useful, economical, convenient, and durable.

The Nature of the Material.—The one characteristic of iron for permanent and powerful structures is that which is the criterion of good metal, viz.—that its tensile and compressive powers be equal, or that it should possess toughness as its characteristic. I have seen a select piece which had a tensile force 100 tons on the square inch, which would snap by the slightest concussion. Cast iron with a tensile force of 5 tons only may resist a crushing force of 20 tons. Materials for good iron construction may have as their measure 20 tons tensile and 20 tons compressive force, and be at the same time in a high degree tough. That, and that only, I call good building-iron. When I use the word "iron," I mean that I do not care if its mercantile name be steel, iron, or toughened casting. It is easy to see that it is this equality in power to bear two opposite kinds of strain that has made modern wrought-iron plate so rapidly displace cast iron in large structures. When I want a long girder, I find that the top breaks by one force, the bottom by the other, and if either is weaker, the excess of strength in the other is no good. True, an ingenious remedy is made in cast iron by making the tensile side of the beam fourfold in weight and size; that, however, means also fourfold cost. If, therefore, the

material is not more than double the cost, the advantage of cast-iron, and modern wrought-iron plate becomes lost or cheaper. The two opposite qualities should, therefore, in good building-iron be equal.

The Merits of applying the Method.—With good, well-balanced material as wrought-iron, the question as to the best mode of using it becomes more clear and precise, also its use becomes certain and reliable; and we can now enter upon the examination of the forms which best unite with those qualities of iron in producing a high result.

What I undertake, then, to demonstrate to you is,—that with modern iron as the material of construction, the conic form on certain proportions makes the cheapest, strongest roof, on the largest possible scale. It consists of the minimum of material all set the best way.

This is a large proportion, and in order to prove it, I fear I am obliged, like a proposition of Euclid, to go a great way round about the question, because, before I can show it to be the best way, I must show it to be better than the other ways hitherto called the best ways. That I will do as quickly as I can, by taking only the best known ways.

The Conic Way of applying the Method.—I take the first best modern way known to us, the iron beam, or straight girder, top and bottom alike, called a rail, a parallel beam, or a bridge girder. I take a pair of high walls, and I lay these girders across from wall to wall (or from wall to column, and from column to wall), and I get a simplest possible roof, perhaps the strongest of its kind.

Now, what is the case of this roof as regards strength? The top is all in compression, the bottom is all in tension; one is in danger of being crushed, the other is in danger of being torn. When either gives way, the other's strength is useless; the yielding of one half leaves the other half worthless.

This beam roof consists, then, in two separate halves, which are independent, even contrary in their action, as neither helps the other. But there is also a third, the middle web, which may, in a deep beam, hold as much matter as one of the others. This beam also is rendered useless the moment the top or bottom has given way.

Three things, then, do different work, in which neither can help the other with spare strength, to supply and make good its weakness: one broken, all three are gone. What, then, is the case of such a beam when breaking, that only one-half of its strength has been useful? But the case is worse than this, the beam is at least twelve times its depth in length. There are few uses for which it would not be more. Now, what does this leverage do? Does it help the beam to carry weight. No! it helps the weight to break the beam.

Let us examine the action of weight on our beam. Let us take, not half, but the whole as effectual leverage for strength. The length of lever then is six to one; in other words, the weight on the beam brings a strain on the top, tearing the iron asunder with sixfold its natural force per square inch of section. The strain brought on the top is sixfold that amount, also crushing instead of tearing it: neither helps the other, nor participates in its strain. What the third part or central web does is really to help the weight to tear the bottom asunder, and to help the weight to crush the top at the same time. The middle is a mere instrument for setting top and bottom against each other; it is really the fulcrum which ruins the mechanism. Around the centre acts the leverage. The resistance of the top tears the bottom; the resistance of the bottom crushes the top; the middle helps each to ruin both.

A lever, then, consists of two parts set against each other in antagonistic attitude to destroy each other. Whilst neither yields all is stable. When the weight, the leverage, and the antagonism united force one to give in, all give way. A lever is a combination of antagonisms. Its power of doing work is only a surplus, a balance, a mere difference of opposites. In a strong combination the result is a large vote with a feeble majority. This same waste of useful force in useless antagonism is characteristic of another set of combinations with which you are equally familiar.—I mean the whole group of trussed roofs. You take two walls, and instead of laying from one to another the straight girder I have mentioned, you lay across two girders, which we may call rafters. You lay them sloping opposite ways, in order that by opposing pressures they may balance each other. They do balance; and

if the angle is high, the harm is small. As you moderate the height or pitch of the roof you increase rapidly the waste strain. You soon make it manifold. The original weight, and the two beams meeting, push against each other with high destructive power. They do not only push against each other, but they push against the walls they should unite and support. These walls must be kept from falling by other walls supporting them, which you call buttresses, or more waste. To spare this waste you take another,—you take a set of new beams, which you call tie-beams, and you set a pair of tie-beams, joined in the midst, and you set the two tie-beams to undo the harm which otherwise the rafter-beams would do to the walls. You waste double material to stop harm of your own choice. A roof-truss is only, therefore, another form of waste,—waste aggravated by the smallness of the slope we select,—waste doubled by the precautions we invent to undo it.

First Principle.—Unity without Antagonism.—Lever roof and trussed roof are mere modifications of ingenious waste, in the ways in which they have been generally used. The question I now submit is this, whether this double waste may not be avoided?

In my opinion it is avoided in my conical roof. I think there is in it no waste. I think every atom of iron in that roof does its own work only. No particle does work of antagonism. In short, it is a congregation of atoms working together for the common support, without counteraction, disagreement, or waste of strength, or means, or work.

This one principle of perfect unity of co-operation in the atoms of iron, without antagonism and waste, is one principle, and the first peculiarity of the cone. There is a second peculiarity, which I place second, because it only grows in importance with the largeness of the scale of the structure. When a structure is small, as in a railway bar, a crossing girder bridge, a bridge of moderate span, the load it may have to carry may be manifold its own weight. A bar may weigh a hundredweight and carry a ton; a girder may weigh a ton and carry 10 tons; a girder may weigh 50 tons and have to carry 100 tons.

When, therefore, the scale of structure is small, its own weight may be the smallest element in its work. When the scale of structure is large its overweight becomes very rapidly its own heaviest load, and I may easily become its own heaviest cause of destruction.

Second Principle.—Wise Distribution of Structural Load.—The next principle to which I call attention is, therefore, the wise distribution of the load of the structure, and especially of that heavy load of its own material on the large scale.

This principle finds its happiest illustration in the cone. The distribution of the load of its own structure is the best possible. The cone gives an absolute maximum of sustaining power when on the large scale this principle rules the structure.

As an example of the contrary of this wise principle of distribution, I take the form of structure most approved in modern practice, and sanctioned by modern science, not always wisely applied. I take the elliptic or parabolic form, so frequently and within certain limits, rightly applied. In this form the depth is proportioned at each point of length to the strain at that point. This strain is greatest at the centre of length, and least at the ends. This is right on a small scale; on a large it commits a grave error. The error is this,—that exactly in the place where a load produces the greatest amount of destructive effect, there is the place chosen to place the largest quantity of destructive load; and just at the ends, where weight would produce the smallest amount of injury, that is chosen as the point where the least destructive load is laid.

On the small scale, where the weight of the structure may be insignificant, there may be an insignificant amount of inconvenience from it, and we may afford to neglect, though not ignore it. When the scale grows colossal the danger becomes formidable.

The distribution of the load in the cone is just the contrary of this, and is the wisest possible. We are entitled to remove all the heavy loads off from the points further from support, and to place all the heaviest weight on the points nearest the vertical support. Thus the strain on the matter is a minimum and the weight of the material is a minimum, and that minimum is in the place where more would be harmful, and the

maximum is in the place where maximum weight does minimum harm.

The second principle deserves the greatest attention, because the benefit it confers is twofold, and because it is the contrary of that most frequently taught, sanctioned by science, and generally acted on. It was well known as the Fish-bellied Rail, and as the Bow and String Form, but is chiefly distinguished as the Parabolic, or Elliptical Girder, once much made in cast-iron, and still largely copied in wrought-iron.*

THE TREASURE-TROVE OF PRIAM, AT TROY.

THE Constantinople correspondent of the *Cologne Gazette* writes under date of 28th January as follows:—As already known, the governor of the Dardanelles, Nassif Pasha, has had two workmen arrested and their domiciles searched, on the ground that they had, at the place of Dr. Schliemann's discoveries, likewise found valuable objects, and wrongfully appropriated them to their own use. This suspicion, as is now known, was well founded. Schliemann left the scene of excavation with his treasure in June of last year. Already three months before, one evening in March, two Greek workmen, Stathion Panayoti, from Kalafaty, and Lezeb Costandi, from Jenischetir, came, at a depth of 30 ft. and distant 20 ft. from an old wall, upon a pot, 6 in. high and 3 in. in diameter; the weight of which led to the conclusion, which proved correct, that it contained valuables. In the dead of night the find was moved, divided, and safely concealed. At the domiciliary visit lately made, Lezeb Costandi's share was found untouched; Panayoti, on the contrary, who was betrothed to the daughter of a dignitary of his village, had deposited the greater part of his treasure with his future father-in-law, and the latter had gone to a goldsmith in the neighbouring Renkoi to order jewelry for the bride to be made, and to have it melted down for this purpose. The following valuable objects were originally contained in the pot:—A gold plate, 1 in. thick and 2 in. square (melted down); two gold rings (disappeared); two pairs of gold eardrums (found at Costandi's); two gold brooches (found at Costandi's); two gold bracelets (found at Costandi's); a thin gold flat head-band (melted down); four rosaries of gold balls as large as hazel nuts (of which Panayoti's two have disappeared); a large number of gold rosaries, which have been found at Costandi's part, melted down; a large lump of gold, which had been found near the pot covered with coals, &c., and no doubt originating from objects which had been melted during a great fire (found at Costandi's); a number of small chains and several bars of gold (likewise preserved by Costandi). There is no doubt that we have, in this instance, before us real antiquities. In other respects the Orient, and especially Constantinople, offer most incredible examples of forgeries. Amongst others, it is now well known, that a Persian governor has in his castle a manufactory of antique stones and coins, supposed to date from the Arsacide. The inscriptions, only lately discovered, of the Homerides, of whose existence, language, and writing, hardly anything, or very little, is known as yet, are already offered for sale in Arabia. Even in Constantinople, where the propylæa of the Hagia Sofia are being pulled down and the ground undermined, the workmen offer to the traveller antiquities and coins, supposed to have just been found in the ground, which have been manufactured a few weeks ago in our suburb, Galata.

THE AMERICAN INTERNATIONAL EXHIBITION OF 1876.

We have already mentioned that in addition to the great temporary building for the intended International Exhibition in Philadelphia, a permanent hall was to be erected, though not during the period of the Exhibition, would constitute the department of the fine arts. We now learn from the Philadelphia papers that the design for the hall has been completed by Messrs. Collins & Audenreith, architects, of Philadelphia, and approved by the authorities. The two departments, technical and fine art, are to be connected by a broad covered way, 175 ft. long. The building will occupy a commanding site on

* To be continued.

a raised terrace, and all the surroundings are favourable to the effective treatment of the design. The ground plan is cruciform, the arms of the cross having a width of 123 ft. The length through the longer arms, the ends of which are semicircular, is 420 ft.; extreme depth through the shorter arms, the ends of which contain the main front and rear entrances, 320 ft. From the intersection of the arms rises a dome, having an exterior diameter at its base of 108 ft. The width between its supporting columns on the main floor is 87 ft. Height above the floor of the first gallery, 55 ft.; of the second gallery, 68 ft.; to the balcony of the lower lantern, 184 ft.; to the top of the lantern (inside), 216 ft.; to the balcony of the upper lantern, 230 ft.; to the top of the surmounting figure, 275 ft. Total height from the terrace, 284 ft. The dome is flanked by four similar engaged towers, two on each side of the main approaches.

The clear width of the nave is 58 ft.; the average height above the floor, 70 ft.; clear height at the ridge of the louvre, 94 ft.; clear width of the aisles, 22.6 ft.; average height of the aisles above the floor, 49 ft.; gallery floor above the first floor, 23.4 ft.

No partition will separate the aisles or galleries from the central nave, free passage being allowed between the supporting columns. It is proposed to use stained glass for the windows in the dome, and to use the central rotunda for a general resort for visitors, and not for exhibition space.

Four large stairways lead out from the rotunda up to the galleries, and the towers are utilised for additional stairs to the upper portions of the structure. The basement contains, besides quarters for the janitor, retiring-rooms, boilers for heating, and supplies for the building, also ample offices for the Park police, with entrance from the outside, as it is expected that the building will become one of the principal stations.

The *Polytechnic Bulletin* says the Grand Pavilion, or Main Exhibition Building, constitutes the Technical Department. This will have a length of 2,075 ft., and a width at the centre and ends of 1,000 ft. The length of the Agricultural Hall will be 1,400 ft., and of the Machinery Hall, 2,275 ft. The latter is located within a very short distance of the Pennsylvania Railroad-tracks. A siding will be made by which heavy castings can be run directly into the hall, while wagons containing machinery can enter the department from the street without traversing the Park roads. The Grand Pavilion has similar easy means of communication from the highway and the railroad.

The area of ground in the Park appropriated to the purposes of the Exhibition is 450 acres. Of these the Grand Pavilion will cover 30.5 acres, and the edifice is to be constructed with a capacity for expansion, so that it may be made to extend over 44 acres. The Machinery Hall will occupy 9.5 acres, and the Agricultural Hall, 4.5 acres.

THE PUBLIC LIGHTING OF RYDE.

The Town Council of Ryde, having received numerous complaints for a long time of the inefficient lighting of the street-lamps of Ryde, endeavoured to effect a better arrangement with the gas company in November last, for making a new contract with the company, the old one expiring on the 1st of January following; and having failed to do so, the council decided to allow the contract to expire, and to take the supply of gas for the future by meter, and resolved to adopt a positive meter system, not the average meter indication system adopted in other places, and which has not given the satisfaction expected. The council having been advised not to adopt wet gas-meters, and the old lamp-columns, which belonged to the company, not being suitable or of sufficient size for the application of a meter in the base, and some of them having been in use for very many years, it was decided that the whole of the lamps and fittings should be entirely new and upon the most improved principle, also that a meter should be affixed to every lamp.

The gas company are now only required to supply gas to the lamps, which they are bound to do by their Act of Parliament, at 5s. per 1,000 cubic feet, the town council lighting extinguishing, painting, and repairing the lamps and fittings.

Mr. G. H. Stayton, C.E., the borough surveyor, was instructed to prepare drawings and specifications

for the supply of 220 lamps and meters, fixed complete, and tenders were received on December 7th, for the necessary works, that of Messrs. Allen & Co., of Upper Thames-street, London, being accepted for the supply of lamp-columns, scrolls, and lanterns; and one from Messrs. George Glover & Co., of Ranelagh Works, Piccadilly, for the supply of and fitting dry gas-meters, fittings, &c., complete. These works have been completed, at a cost of about 1,415*l.*, and the workmanship has given satisfaction. The work has been carried out under the superintendence of Mr. Stayton. This arrangement is expected to save between 200*l.* and 250*l.* per annum.

NEW BATHS AND WASHHOUSES AT WREXHAM.

WREXHAM, in Denbighshire, is one of the most rapidly expanding towns in North Wales; and within the last few years building has been going forward at such a rate of progress that the population has more than doubled itself. Several public buildings have been erected, and large sums have been expended by the corporation in the construction of new streets, and in the widening and improving of others. In addition to other works undertaken by them, the corporation have just decided upon the erection of public baths and wash-houses, and, having secured a site for the same, the buildings are immediately to be proceeded with. They have also just purchased the waterworks which have hitherto belonged to a private company. Amongst the new public buildings now in progress in the town is an orphan home, the foundation stone of which was laid with much ceremony a few months ago. The architect for this building is Mr. Lloyd Williams, of Denbigh, and the contractor, Mr. Samuel, of Wrexham.

COMMERCIAL PRINCIPLES IN FARMING.

At the monthly meeting of the Farmers' Club held in the Salisbury Hotel, London, Major Lucas in the chair, Mr. J. J. Meechi read a paper "On the Commercial Principle as applied to Farming." He said that the main points for the application of commercial principles were fixity of tenure for tenants and facility in the transfer of land. How soon should they see an organised body of sworn land-brokers transferring land in a proper register-office as now done in the United States? It would be as easy and nearly as uncostly as a transfer of Consols if there were a register or map of each person's ownership and its conditions. Landowners had just as much right to deal with their property as the holders of any other property, and he desired to impress upon all parties who desired to give an increased value, and an increased use of improvements to the soil, the necessity for facility in the purchase of land. Their position in regard to food was becoming, and might become, more critical. They depended upon foreign nations for one-half the necessary supplies, and although their acres did not increase their children were steadily increasing. A war with the powerful nation which now supplied them might lead to disastrous consequences, but from the produce of their own farms the farmers knew that they could render themselves entirely independent of foreign supplies. Mr. Meechi then advocated the application of associated capital to agriculture, or the borrowing of it if necessary. He also suggested the extension of the credit system, and a better mode of book-keeping for farmers.

A discussion took place, in course of which Professor Wrightson said he cordially agreed with Mr. Meechi's observations. He was impressed with the idea that the commercial principle must be applied to agriculture. Security of tenure was the one thing wanted for the principle to be applied. What man would invest 5,000*l.* or 6,000*l.* in the improvement of land when in the event of his death his widow would lose the money, or in that of his failure that his interest in the lease would form no part of his assets? He also thought it would be better for the landholder, for the tenant, and for the labourer, if transfers of land were made easier. The outside public were clamouring for cheap food, and any barring of these improvements must become public questions. The tenant farmer must be placed in a proper and secure position, and the country looking to him for its

supplies of food would prevent his opposing any mechanical and chemical improvements.

Mr. Treahewy thought there would be difficulties in the way of transferring land as suggested. Mr. Bradshaw was at a loss to know how commercial principles could be applied to agriculture except so far as industry, energy, and intelligence might be applied to any pursuit. There would always be this difference between trade and agriculture, that the latter was, even after the exercise of the qualities named, dependent to a great extent upon the elements.

THE ROYAL GOLD MEDAL FOR ARCHITECTURE.

At the last meeting of the Institute of Architects, it was announced that the Council had nominated Professor Ruskin for the Royal Gold Medal of 1874, subject to the approval of the general body of members, and to Her Majesty's gracious sanction.

AN ANCIENT CITY.

AN interesting account of the ancient city of Angkor, discovered last year in Cambodia by the French traveller, the late Lieutenant Garnier, has been given at the annual meeting of the American Geographical Society. The ruins are of extraordinary magnificence, both in point of extent and of architectural splendour. The sides of the principal temple measure no less than two miles and a quarter in circumference, and the remains of endless roads, buried in forests and jungle, contain monument after monument, "each, if possible, more astonishing than the preceding." The architecture and sculpture of this forgotten city exhibit a very advanced knowledge of the arts, and the great temple is described as the masterpiece of some unknown Michelangelo. Angkor must have been one of the greatest cities on the globe, and yet of its history no account remains. Nothing is known of its past, save that a Chinese traveller in the year 1202 mentioned its splendour, and that 300 years later it was referred to by Ribodoneira as an ancient ruin.

DEDICATION OF A NEW MASONIC HALL IN BERWICK.

THE edifice, which is two-storied, and in the Gothic style of architecture, is at the eastern end of Walkergate-lane, and has an ornamental exterior, the facade and north side especially being sculptured. The doorway has small pillars on each side, and is surmounted by a carved arch, on the keystone of which is a representation of the square and compass. Directly above is an imitation of a scroll, with the Latin inscription, "Audi, Vide, Tace." There is also a large mullioned window, having two principal lights, and a circular one at the top, within which is a design of a double triangle. At the sides of the windows are two ornate pedestals, for the statues of the patron saints of Freemasonry, namely, St. John the Evangelist and St. David; and above these are canopies, carved. Over the window is a medallion, with a device of a triangle, enclosing an image in relief of the All-seeing eye. The lower ends of the gables are surmounted by carved ornaments, and a vane with the four cardinal points is placed upon the finial at the upper front extremity. On the north side there is a large central mullioned window, with three lights and a cinquefoil top. At each side there are two small pillars, with capitals, as supports of a small gable, above which is a finial, with the device of a globe on its top. Over the under window is a design of a Freemason's mallet. The other windows are either of one or two lights. On this, as well as on the south side, there is a moulding running along almost the entire length of the building, with carved work at each end. The internal arrangements are satisfactory.

On the left side of the entrance there is a cloak-room, and a wide corridor leads to a spacious banqueting-hall, where it is expected that a hundred brethren will be accommodated. Two gasoliers of a star-shaped design are suspended from two pateras in the ceiling, which is adorned with a cornice. Behind is the kitchen, fitted up with all the necessary appliances for cooking. At the west end of the corridor a winding staircase with an ornamental balustrade, leads first to an ante-room, and then into the grand hall, which is decorated

more than any other part of the interior. The roof is vaulted and supported by rafters, underneath which are corbels, these being representations of angels. At the east end is a dais. The cornice, which is of wood, is adorned with geometrical designs forming ventilators; pictures are also to be hung against the west wall. The upper hall is lighted with a sun-burner. The design is masonic, having the square and compasses, and All-seeing eye, encircled by a corona. There are six triangular lights, from which are suspended the six principal jewels of the craft,—that of the master, past master, treasurer, secretary, senior warden, and junior warden. The total number of gas jets is 120, over which is a reflector of silvered glass. The sun-burner is the design and work, as well as the gift, of Brother Geo. M. Lamb. The whole of the wood, which is pitch-pine, is to be varnished. The furniture is masonic in design.

The architect is Mr. W. J. Gray, Berwick; and the contractors were M. Gray & Sons, Berwick, for the masonry; J. Westerson, for the plastering; Brigham & Co., Berwick, for the iron railing round the structure; T. Bickerton, Ayrton, for the joinery; and J. Archbold, Berwick, for the plumbing.

STEER'S PATENT GRATE.

If a doctor cures you it is only fair to say so. We had a fireplace that troubled us, the smoke coming into the room, and damaging everything, and by introducing one of the grates patented by Messrs. Steer & Co., of Upper Thames-street, this has been remedied. We mention the fact for the benefit of others similarly annoyed. The patentees say,—“The object of this grate is to economise fuel and utilise heat: to obtain this, the grate is made to project from 4 in. to 6 in. before the chimney jamb, with side flues. The smoke and heat first rise to the top of the grate, and then descend the side flues, and pass away at the back in the usual way. The whole front of the grate is a heating surface, and a saving of 60 or 70 per cent. is obtained.”

In the particular case to which we are alluding, we have not found the saving so great as is here stated, but there is a saving, say from 30 to 40 per cent.: we used to burn three scutfuls of coal a day, and now only burn two.

In some of the grates made under this patent a hot-air chamber is formed, so that fresh warm-air may be brought into the apartment from without. The difficulty in this arrangement,—a difficulty not peculiar to this stove,—is that of cleansing the air so introduced. When this is overcome a great thing will have been achieved. We certainly think Steer's stove a very good invention.

ACCIDENTS.

The Fall of a Building at Bury.—The cause of the accident is said to have been the giving way of the centre beam, which ran from one side of the building to the other. On examination, the wood was found to present no appearance of rotteness, and was evidently broken by the weight on it, or with the vibration from the stamping of feet, and there being no pillar to support it in the centre. No blame, so far as we can learn, is attached to any one concerned, as it was never intended that such a meeting should be held in the room. An inquest is in progress.

Destructive Fire at Leith.—A fire of an extensive character, and entailing serious loss of property, has occurred at Messrs. J. Mitchell & Co.'s saw and moulding mills, Springfield, Leith Walk. The mills, when in full work, as they have been for some years past, afforded employment to between sixty and seventy men, and were fitted up with machinery. In little more than an hour after the commencement of the fire the range of shedding and mills had been entirely gutted, although for two or three hours afterwards the flames continued to burn in various parts of the ruined building. A large quantity of wool was got out of harm's way. The origin of the fire has not been ascertained, but as the flames were first observed to proceed from the boiler-house, it is supposed that some smouldering embers must have been the cause of the accident. As has been stated, the value of the entire property is estimated at 9,000l., but only 3,000l. of this were insured. The logs of timber which were lying in the open yard were

all saved. While a man named James Petrie was doing his best to render assistance, he fell from the roof of the burning building, and had his left leg fractured.

Chatham Dockyard.—An alarming accident occurred at Chatham Dockyard on Wednesday morning. About twelve o'clock the whole of the massive machinery in the metal mills was in full swing, when suddenly with a tremendous crash the monster fly-wheel of the engine broke. The wheel was of cast iron, and weighed nearly 35 tons. The pieces, from the great speed at which the wheel was revolving, were thrown in all directions, some of the fragments weighing as much as five and six tons,—one piece that weight being thrown a distance of nearly 30 ft., falling close by one of the workmen. One result of the accident will be that nearly all the work in this department will be stopped for four or five months.

THE TRADES MOVEMENT.

Witch.—The joiners and carpenters in this town gave notice to their employers that on and after Monday (the 9th instant) they should expect to be paid at the rate of 6d. per hour, and to work 56½ hours per week. If their request should not be granted, they said they would leave their work. The masters, to the number of twenty-one, met in the Corn Exchange on Monday, when Mr. Gilling presided. The demands of the men were fully discussed, and it was unanimously resolved that no increase should be made in the rate of wages, they being as high as the district can afford to give, but that the reduction of time should be agreed to.

Belford.—The journeyman painters have met at the Working Men's Institute to discuss the advisability of asking for an increase of wages and a reduction of hours. It was agreed that a conference should be held with their employers on the following Friday evening; that an increase of 1d. per hour be asked, and also a reduction of the number of hours from 58 to 56 per week. The wages paid at present vary from about 20s. to 28s. according to skill. It is in contemplation to form a branch of the Painters' Union.

Belfast Times.—The operative masons of Antrim, upwards of 100 in number, have come out on strike because the masters insisted on paying the wages fortnightly, with a “lie day,” instead of weekly.

The Strikes in America.—The New York correspondent of the Standard writes:—

“Strikes continue epidemic, not only in the United States, but in the West Indies. From Havana we have advices of the 21st, which represent the labour strike as still prevailing there, and that sailors on coasting vessels have combined to prevent the stevedores from working. Nearer home,—here in the United States, we have predictions of trouble: this both in Pennsylvania among the miners, and in Louisiana, as related last week, among the negroes. Trouble of a serious nature is feared. The National Miners' Union is rapidly completing its organisation, and meetings are held weekly. The union guarantees each member in good standing a sum sufficient to keep himself and family from want during the strike, and its treasury is said to be very strong. The *Pottsville (Pa.) Daily Standard* of the 18th says: ‘There is no longer any doubt of the fact that there is a general suspension of mining operations in this region, and unless the Philadelphia and Reading Coal and Iron Company recedes from the firm stand it has taken, the cessation of labour will be protracted, and costly alike to this community and to the operators and miners.’”

TICKHILL CASTLE.

TICKHILL is a place of high antiquity, and both before and for some centuries after the Norman Conquest its importance as a strong place and the head of an extensive lordship was very considerable. Mr. Hunter, the accurate and accomplished historian of the district, suggests “The-Wick-hill,” in allusion to the village mount, as a probable etymology for the name, and cites “Thunder-cliffe,” or “Th' Under Cliff,” as an analogous case. It seems that near Sheffield Castle was as well known called “The Wick-er,” and “Ticken-hill,” near Bewdley, was the seat of an early fortress.

Tickhill, however, though obviously an early name, is not recorded in Domesday, but is thought to be included in Dadesley, a name still extant in the immediate neighbourhood. In “Dadesley, Slatone, and Helton,” Elsi and Sward held eight carucates,—Roger de Buili held seven in demesne; there were also thirty-one burgesses, a class whose presence has been held to indicate a burgh or castle. Roger de Buili was tenant in chief of these and other manors, comprising the honour of Tickhill, a division certainly based upon an earlier fee, of

which Tickhill was the chief seat. The Norman Honour numbered sixty-five and three-quarters knight fees, and extended from Yorkshire into the shires of Derby, Lincoln, Nottingham, and Leicester, including one manor in Devon. Tickhill, which seems to have been sometimes called Blythe, which, however, was also the name of a place in the adjacent part of Lincolnshire, was the chief seat of the powerful house of De Buili during their somewhat brief career.

Roger de Buili received Tickhill from the Conqueror, who erected it into an honour in his favour. Roger had a choice in his wide Yorkshire domains of three ancient English seats, Laughton-en-le-Morthen, Mexborough, and Tickhill. He selected Tickhill; and the two other sites retain their English earthworks, unaltered by Norman masonry, and changed only by time. Laughton seems to have been originally superior even to Tickhill, probably as the residence of Earl Edwin, being named in the Domesday Survey. Roger himself probably fortified Tickhill with masonry, the gatehouse and much of the wall being probably his work. The foundations of the shell-keep look rather later, but may also be of this date. He was also the founder of Blythe Priory, in 1088. He died 1098, and was succeeded by his son Robert, who died childless in the reign of Henry I.

The descent of Tickhill now becomes obscure. Roger had a brother Ernald, who held six fees under Tickhill; and a sister, Beatrix, from whom descended the Earls of Eu. On Robert's death, however, Tickhill was claimed by Robert de Belesme as the next heir; and, as he was powerful, and supported his claim by payment of a heavy fine, or bribe, he succeeded. On his death, however, King Henry stepped in, and took possession. The castle remained for some time, with some brief intervals, in the Crown. William Fitz-Godric held it in 1142, and Stephen, Earl of Eu, for a time. Ralph, Earl of Chester, had it in 1151-3, and Lucy of Pontefract. Henry II., however, seems to have settled it upon Eleanor, his queen, who founded the “Chapel of St. Nicholas within the walls.”

It descended to Richard I., and in his absence was seized by Prince John, and besieged for Richard by Padesey, Bishop of Durham. When John inherited it as king, he annexed his mother's chapel to the chapter of Rouen. John was frequently at Tickhill, which is remarkable, as there was no park or chase annexed to it. He was here six times between 1200 and 1216 for at least eleven days. Early in John's reign, however, the Earl of Eu, being powerful, claimed Tickhill as the husband of Alice, heiress of Henry Earl of Eu, and representative of Beatrix, sister of Roger de Buili. Ralph de Lassoude, or de Lusignan, her husband, and earl in her right, in 1197, seems to have been son of Geoffrey de Lusignan, who was to marry a daughter of King John, in consequence of which the king agreed to restore Tickhill to Ralph and his wife, and John de Bassingbourn was ordered to give possession, which was supplemented by an order to the same effect, 1 Henry III.

Mean time another claimant appeared, in the person of Idonea, representative of Ernald, Roger de Buili's brother, and who had married Robert de Vipont, a baron much employed by John, and not unfrequently in connexion with Tickhill. Thus in 1204 he was concerned in certain repairs at the castle, as also in 1205, which included a barn and stables. In 1207 he was to be paid for these repairs, and he was also employed upon the king's castles of Nottingham, Bolsover, the Peak, and Scarborough. In 1208 five dolia of red wine, such as would keep, were to be sent to him at Tickhill, for the king, Idonea, Vipont's wife, held by descent six fees in Tickhill, and now claimed the rest against Countess Alice, 6th Henry III. Alice had the best of it; but in 9th Henry III. she went abroad, probably to her Norman estates, and in consequence Tickhill seems to have lapsed to the Crown.

Henry III., when king, granted it to Prince Edward, who in 1251 settled it upon Eleanor of Castile, but in 1259-60, Edward de Lacy, constable of Chester, used the phrase “Baronia mea de Tickhill,” as though also lord. Prince Edward, however, granted it to his cousin Henry, son of Richard, king of the Romans, in 1263.

In 1296, John, Earl of Eu, revived the family claim. He was grandson of Alphonso (son of John, king of Jerusalem), by a daughter of Countess Alice. His claim was speedily set aside, he being an alien. This was the last assertion of the right, but a century later it was

remembered, when Henry V. created William Bouchier Earl of Eu and Lord Bouchier of Tickhill, titles only, not connected with the property, which remained in the Crown.

In February, 1322, the castle was besieged for three weeks by Thomas of Lancaster, and this siege is one of the charges brought against him on his trial:—"Et misit homines suos . . . ad obsidendum castrum domini Regis de Tickhill; et quedam ingenia, ad projiciendum petras grossas super castrum predictum, et homines in eodem castris ex parte domini Regis existentes; qui quidem proditores castrum illud, per tres septimanas continué insultando et debellando, obsederunt, et quosdam homines Regis ibidem interfecerunt." The castle was defended gallantly by Sir William de Anne, and relieved by the king in person. Tickhill was again settled upon a queen, in the person of Philippa, who died in 1369. In 1362, Edward exchanged Tickhill with John of Gaunt, against the honour of Richmond, and it descended with the other estates of the duchy of Lancaster. In the Parliamentary struggle it was held for the king, but surrendered after Marston Moor, and was dismantled. When thus held, it was defended in advance by the moat and by the palisades on the counterscarp. The foundation of the chapel was dissolved, 1 Edward VI. The castle now belongs to the Earl of Scarborough.

Tickhill Castle is an excellent example of a pre-Norman or English earthwork, composed of mound, fosse, and lower ward, converted into a Norman castle. It exemplifies exactly the manner in which the Norman engineers treated earthworks of this description, and how such works gave rise to one of the two great types of a Norman castle, that with the shell-keep. Tickhill is Laughton on a larger scale, the only difference being that the ditch of the mound is not carried wholly round it, but is wanting towards the attached area. Either it was never formed, or, what is not improbable, was filled up when the Norman works were constructed, or, as at Cardiff, at a much later period. Something analogous to this seems to have taken place at Kenilworth.

In the original construction of this fortress advantage was taken of a knoll of soft sand-stone rock to form the base of the mound. This was scarped, and the ditch dug, and the material employed in forming the upper two-thirds of the mound. A modern cave in the side shows this natural base. The castle is composed of the mound, and a court or ward appended to its western side, the whole included within a ditch. The mound is conical, about 60 ft. diameter at its table-top, and about 60 ft. high, above the ward. The ward is a rounded and more or less circular area, save where it touches the mound, and includes about one quarter of its circumference. The exterior ditch follows the figure of this ward, and of the uncovered three-quarters of the mound: hence in plan it resembles somewhat a figure of 8, and it is this notch in the outline that makes it probable that the mound ditch was once complete, and the two parts of the fortress were, as at Barwick, distinct. The domestic buildings stood in the lower ward, on its western edge, opposite to the mound upon which was the keep. The gatehouse stands on the southern edge of the ward, between the domestic buildings and the keep. The curtain is broken down to the east, but elsewhere tolerably perfect. The ditch is filled up on the same side, and its place occupied as a kitchen-garden and by stables.

Upon the summit of the mound are seen the foundations of the keep, a decagon, the sides of which average 16 ft. 11 in., of which each angle was covered by a flat pilaster of 4 ft. broad, and very slight projection. The door seems to have been towards the south-west, of 4 ft. 6 in. opening. It lay between two sides of the exceptional length of 20 ft. The wall seems to have been, at the top of the plinth, 10 ft. thick. The shell was apparently faced with ashlar. The whole building has been taken down with some care to the top of the plinth, a mere plain chamfer, formerly about 6 in. above the ground, and now covered to its level. Thus the actual dimensions of the plan are preserved, and the position and breadth of the entrance. It is said there is a well within the area, a few feet inside the place of the door. If so, it is at present effectually concealed.

The keep at this time is ascended by seventy-five stone steps in a straight line on the western face. Possibly this was the original approach. If so, the path from the head of the stair must have passed for 20 ft. round the outside of the keep. The steps terminate below under the

shelter of the curtain. The two ends of the curtain ascend the mound about two-thirds of its height. Probably they were continued to the summit, but no foundations are now seen at the keep level, and the plinth of the keep shows there was no bond. The curtains which thus ascended these mounds rarely were bonded into the keep, and do not seem ever to have risen to its full height. On the contrary, they seem to have only risen to the level of the top of the mound or those of the keep, the parapet probably being continued so as to stop the passage round its base. This seems to have been the case at Tunbridge, Berkhamstead, and Tamworth. At Hawarden the curtain abuts against the keep about 10 ft. high, but with no original bond, and with a doorway in it opening outside the base of the keep. The curtain which enclosed the lower ward is here from 10 ft. to 13 ft. thick, and 20 ft. to 30 ft. high, with a plinth at its interior base. It rises out of a bank which forms a ramp or terrace 15 ft. broad, on both outer and inner sides. Inside, this ramp is about 8 ft. above the court-level. Outside, it forms a walk all round the fortress, being carried by a bridge over the gateway, and in a step or notch round the slope of the mound. The curtain is entire from the mound to the dwelling-house, about 240 ft., along the north front, but to the west it is concealed by the house which represents the domestic buildings of the castle. It also remains from the house to the gatehouse, and about 60 ft. or 60 ft. beyond it along the south front. Towards the south-east about 300 ft. are gone, but the last 78 ft., where it again ascends the mound, are tolerably perfect.

Where the outer wall skirts the mound, it has on its upper side a revetment wall, 6 ft. high, and which may have been higher, and crested with a parapet to defend this front.

The exterior ditch is broad and deep, and in part contains water. Formerly it was fed from an adjacent stream, which flowed all round it. Beyond the ditch was a bank of earth, of which traces and portions remain, especially towards the north. It is difficult to say whether there was a second ditch, owing to the encroachments of roads and buildings.

The gatehouse deserves special notice, as an original and early Norman structure. It is 36 ft. square, with walls 7 ft. 6 in. thick, and has a round-headed gateway at each end, of 12 ft. opening, with a plain rebate for doors, but no portcullis or chamber. The inner space was covered with timber, and there was an upper story. This may have been partially rebuilt; it contains in the wall over the inner door a large Tudor window, probably an insertion.

There is no staircase. The structure much resembles Porchester before the alterations. It is placed upon the curtain, with a bold exterior, and still bolder interior projection. The outer front of the first floor is ornamented with four stiff rude pediments, each a right-angled triangle, with a rude figure at the apex of each, and in the hollow angle or gutter, joining each pair. The tympana are filled with square blocks, each carved with an undeveloped dog-tooth ornament. A plain string marks the division of the two stages, and so far all is Norman.

But although the upper part is unaltered, the lower part has been marked by a Decorated gateway with portcullis groove and pointed arch, while in front of and flanking this arch two walls, 6 ft. thick, project 15 ft., and contained between them the drawbridge. Above and upon these, concealing the upper part of the arch of entrance, is a low flat bridge, which carries the exterior wall, or *chemin de ronde*, over the entrance, and from which the grate was worked. Had it not been for this bridge, and its Decorated connexions, it might have been supposed that the *chemin de ronde* was a mere modern pleasure-walk, whereas it is clear that it was a part of the defence, a work covering the foot of the wall, and no doubt strongly palisaded. There is no trace of a parapet.

The gatehouse seems Early Norman, probably with most of the curtain the work of Roger de Busili before 1089. The keep looks later, but it must have been part of the original design, and possibly the works begun by Roger were completed by his son. In the Decorated period there were probably considerable additions. Probably when the gatehouse was masked, and the bridge thrown over it, the curtain also was repaired, and a new parapet added, and the *chemin de ronde* formed. Leland speaks of a hall, now gone. Where the chapel stood is not known. A door case which may have belonged to it has been removed and set up inside the gatehouse,

and outside is an old oak door of the style of James I., on which are carved the words,—

"Peace and grace
Be to this place."

The entrance-way now leads up to the gatehouse across a modern bridge, over the wet ditch. To the south of the place is a tributary of the river Thorne or Thorne, which covered the front.

This is one of the most curious castles in Yorkshire, not only for its pure Norman gatehouse, and the undisturbed foundation of its shell-keep, but because it shows how the Norman lords availed themselves of an English seat, and how their architects or engineers accommodated their defences to the already existing earthworks. It should be studied in conjunction with Pickering for the general plan and the Norman works, and with Barwick-in-Elmet and Laughton-en-le-Morthen for the general resemblance of the earthworks. Unfortunately there is no plan.

G. T. C.

SIR GILBERT SCOTT AND THE TURNERS' COMPANY.

On Thursday in week before last an interesting ceremony took place in the Guildhall, London, upon the occasion of the presentation to Sir Gilbert Scott, R.A., of the freedom of the Turners' Company in recognition of the encouragement he had given in his professional works to the "art of turning in stone and marble." Professor Tennant presided.

Mr. J. Jones was the proposer of the resolution, and Professor Tennant said:—"Sir Gilbert Scott, I have long admired the excellent taste displayed by you throughout the principal cities of England in restoring our beautiful cathedrals. It is with great pleasure that I admit you to the Turners' Company, which for some years has endeavoured to encourage the apprentice and workman in the various applications of turning. The company is also desirous of recognising the services of those who create the designs for the workman. In the Prince's Memorial in Hyde Park, the St. Pancras station of the Midland Railway, and in numerous churches and other public buildings you have introduced materials existing in large quantities in the British islands, and not surpassed by those of Egypt, Greece, or Rome, for beauty and durability. I allude more particularly to the beautiful porphyritic granite from Shap Fell, in Westmoreland. This is likely to take a place of equal importance with the other granites, syenites, porphyries, serpentine, and marbles of the kingdom, thus extending largely the employment for the turner.

Sir Gilbert Scott, in acknowledging the honour conferred upon him, said,—I thank you, worshipful master, and all the gentlemen present, for the honour you have so kindly done me in electing me as a member of your ancient and honourable company, and yourself, sir, with Mr. Jones, for the very flattering terms in which you have informed me of my election. I may say, far more complimentary than I deserve. I feel great pleasure in being admitted into any of the ancient guilds of the City of London; but more especially one, like your own, which represents one of the arts connected with my own profession of architecture. The art of turning has, from the earliest ages, been one of the means made use of in the production of architectural forms. I do not know whether it may be proved, but I have no doubt that it was in some way resorted to in working the enormous columns of granite and other materials still remaining in Egypt as well as those of later date in Greece. It is known that it was by a process similar to turnery that those wonderfully close joints, which are seen in the columns of the Greek temples, have been formed. The stones were first worked with the utmost degree of accuracy attainable by hand, and then one being placed upon another with the finest sand between, the upper one was turned on its axis till the joint was wrought to that unequalled degree of fitness which we now see. I have recently noticed at Pompeii, in columns which are of a late variety of the Grecian Doric order, the marks of the tools by which the echini beneath the abaci of their capitals were turned still perfect and distinct. In our own Anglo-Saxon architecture, the baluster columns which form so marked a characteristic of the style, and of which I have found many quite entire, bear marks of the turning tools, and of the centres by which they were fixed in the lathe. Later on, we have the same proofs of the turner's art in our Mediæval buildings, while much of the

furniture of those periods was composed largely of turned portions. In the Cathedral at Hereford there remains a bishop's chair of the thirteenth century, which is almost wholly composed of turned parts fitted so as to form an excellent design. In modern times, we know what strides this art has made, from the mighty shaft of iron which communicates the motion from the engines of the man-of-war and the screw at her stern, to the exquisite ivory turning, which, next to actual carving, produces some of the most charming forms of ornamentation. The master has alluded to the uses made of turning in working granite columns, &c., and there are an infinity of other forms in which it is applied in modern architecture. I cannot call myself a turner, though I was, when a boy, a dabbler in the art; I can say, however, that I was at one time intimately acquainted with all its finest and most intricate processes, owing to an uncle of mine (the Rev. Samuel King—himself a member of one of your ancient City guilds) having been, probably, in his day, the best turner and the possessor of the finest and most perfect turning apparatus in the kingdom, and from having consequently had opportunities of watching all the most delicate processes of the art. I ought to add an expression of my gratification at finding that this ancient company, long perhaps severed from the art whose name it bears, has nevertheless returned to its own proper traditions, and become the patron of the art which its members formerly practised. I heartily congratulate them on this, and wish every success to their encouragement of the art.

ON ORNAMENTAL DESIGN.*

The works in ornamental design carried out in Paris, under the directions of MM. Percier and Le Fontaine, present to us a new treatment of ancient art; the luxuriance of the Roman style is eschewed, and Greek of the stiffest and coldest type is introduced. The works of those two men bear witness to the zeal with which they prosecuted their favourite style; their drawings are full of grace and refinement, and might be taken as examples of perfect draughtsmanship. After the extravagancies of the Louis Quatorze, Quinze, and Seize styles, it was but natural that the tide of art should change; the feeling that prompted the erection of a temple,—“Aux grands hommes, La Patrie reconnaissante,”—had to look to Classic times for a prototype. The direct imitation of antique forms is never a very healthy sign in art, and this style of the First Empire, as it is called, had soon to throw off its archaic stiffness. This style rivalled in trophies of arms, winged Victories standing on globes, candelabra, sphinxes, terminals, and such-like accessories.

Some years ago there was an excitement about a new style of architecture. I have seen some works published on the subject, and must say that nothing could be more disappointing than the results. I conclude that the new styles of ornament to decorate them would have been equally bad. We ought to be very thankful that such a dreadful conglomeration as Gothic form with Classic detail was never tried in these countries; such cross-breeds in art are not to be tolerated. One church, like Sainte Eustache, in Paris, is quite enough.

The arts of the Renaissance style are to be seen in perfection at Venice. There is of course a great deal of good and a large amount of bad ornament, so you will have to make a careful selection. The Scala dei Giganti, in the Ducal Palace, is ornamented with much refinement; a chimney-piece in the Ducal Palace also deserves careful study. Several of the palazzi are also refined in their decorations. As examples of the light and delicate style, the Church of Santa Maria dei Miracoli offers ornaments that grow gradually and gracefully out of each other—a general principle in ornamental design when good; but when we see on the top of a light and elegant composition a heavy basket of flowers, we have a great inclination to pluck it away as an incongruity, yet this is exactly what appears in some of the ornaments in this same church. I think that such ideas as dolphins turning into cornucopias on the flowers in which birds are perched, and such like extraordinary combinations, are unpleasing. The arabesques designed by Pintelli for the Church of St. Agostino, Rome, are very gracefully and well designed, and grow

gradually from the parent stem. In Pintelli's work we may see great elegance and refinement. In Renaissance ornament the centre line is often widened out to form vase-like excrescences, and also from it foliage may spring to make up the gaps. Some of the panels in the Church of San Michele in Murano are well worthy of adaptation; very often a tripod or other vessel forms the base, from which the centre stem springs, and off it the foliage grows; often heads with beards turning into foliage are introduced.

In good ornament a pattern should never be arranged so as to give you the effect of objects hanging exactly contrary to the fixed law of gravitation. What I refer specially to is the instance of an upright panel divided in two by a circular boss in the centre; from it, above and below, springs an arabesque pattern; from the curved foliage blossoms hang; this will be all right for the upper portion of the panel, but when you come to the lower one you find your treatment will not answer, and that naturally hanging objects must be expelled from your design. I have seen such a panel as I have mentioned to you in execution, and the effect, I assure you, was highly objectionable; it is quite as bad as scrolls being cut short to fill panels of a certain length. You could understand the possibility of such an expedient in room-paper, but I have seen the process repeated in oil-colour to imitate it; so dangerous is the result of a bad example. Frequently on the centre line is suspended a panel for inscriptions; this has a very graceful and good effect; birds are often introduced hopping naturally on the foliage, picking at berries on foliage springing from the principal curves. Acanthus-leaves are frequently turned into lions' claws in Cinque-cento ornament. Many of the ornaments of the Renaissance were infinitely superior to the clumsy and ungraceful overgrown acanthus inventions of the late Roman work. Some of the most beautiful Renaissance work is to be seen in the choir of a church in Perugia, executed by Stefano di Bergamo, from designs by Raffaele. In the best periods of the Renaissance the ground was not too much covered with ornament, which gave a great amount of repose, unattainable by other means. Many of the ornaments used by the Renaissance artists were unsuitable for ecclesiastical purposes; but, deprived of its tripods, altars, terminals, bulls' heads, and other remnants of a false theology, and confining the ornaments to nature and truth, this objection is entirely averted.

The Elizabethan ornamental designs have a great mannerism about them, but are frequently gracefully and well designed, though whence the “motif” was procured it is very often hard to see; in most cases I fancy it took its rise in the unbridled imagination of the designer. That many of the ornaments were taken from the printed books of the period, there can be little doubt; they abound with a large amount of the most extravagant ornament in this style. Any effect these patterns may have is greatly aided by a repetition of graceful if often unmeaning forms; nails, draperies, trusses, curves joined by lines, and hosts of other elements, are put under contribution by this style. The notion of covering the lower part of a column with arabesque, and fluting the upper portion, was quite a feature of the Renaissance revival. At Pompeii the same idea prevailed of having the bottom part plain, and colouring it differently from the upper portion, which was often fluted; by this arabesque and fluting much apparent strength was frittered away. The banding of columns, too—which, if done sparingly, has such a good effect—became so excessive that gradually the column disappeared, and bands only were to be seen; the pedestals, too, on which the columns rested were in the Elizabethan period panelled so as to leave but a very small amount of plain surface. The panel formed by having an oval in the centre, with the axes continued till they meet the sides, was a very frequent form. The designs for ceilings were bold geometrical ones: of these, those at Bramshill, Hampshire; Dean, Northampton; and the strange one at Broughton Malherbe, are good examples, which you will find illustrated in Mr. Shaw's work on Elizabethan Architecture.

Though it was not till the close of the fifteenth century that the Gothic style waned in England entirely, it had by that time worn itself out in the extravagance to be seen in Henry VII.'s Chapel, Westminster Abbey. The elaboration of its system of fan-vaulting and pendants almost approached the Rococo, and the mouldings and ornaments had become weak in the extreme; it

was then that Torrigiano, who had been brought to execute the monument of Henry VII., began the work of the Classic revival in England, which gradually gave Elizabethan art its origin. Torrigiano was not the first Italian who had come to work in Westminster. Peter, of Rome, with his companions, Odericus and others, were brought from Rome by Abbot Ware in the reign of Henry III. to construct the magnificent shrine of St. Edward,—a work that occupied ten years in its completion. In this relic the Byzantine guilloche ornament and other Byzantine elements are elegantly mingled with Gothic forms which had been taken from windows in the Abbey. These same workmen, I would conclude, also constructed the tomb of King Henry III., for which Edward I. brought home beautiful slabs of marble from the East on his return to England from the Crusades. This tomb, with the exception of the effigy, is entirely Byzantine in character. The beautiful pavements in the Chapel of St. Edward, and in front of the altar, were also produced at this period; the style, however, did not extend in England. These mosaic works of Westminster Abbey, though much destroyed, bear sufficient evidence, even in their present dilapidated condition, of their equality with anything of a like style in Italy. I think it a disgraceful thing that the royal monuments of a great country like ours should be allowed to remain in such a state of dinginess.

Albert Dürer greatly influenced the arts of the Renaissance in Germany; his powers of ornamental design were great indeed. You have only to look at his beautiful designs for the borders of a prayer-book to know how great an inventor he was. Some of his religious designs would seem to us inappropriate, but this drollery was very general in German art. Dürer could draw so many things well, that ornamental design was an easy matter to him.

The leaf ornaments and others of the Byzantine and Romanesque periods are well worthy your attention. The general simplicity and boldness of these patterns is much to be admired. The purest work of the Byzantine school is to be found in the church of Santa Sophia, at Constantinople; it was the Oriental manner of treating Classic details that gave rise to this style. This school of ornament was very abundant in its results and influences, the Byzantine gradually working into the Romanesque. The patterns are sometimes very ingeniously interlaced; their foliage partook more of the nature of the thistle than the acanthus, and was frequently indented with a deep angular cut: you may sometimes see patterns merely mated.

In the Romanesque period the variety of the ornament was very great; supports in this style were not frittered away with a superfluity or too deep sinking of ornament. The introduction of interlaced fabulous animals, after the manner of the Celtic, is also remarkable.

In our Early English period the conventional ornament is very pleasing, and the effort that was always made in the best period to show the stark wall in the capitals is much to be admired; like every other style, it loses much of its effect by mere copyism, as I have seen in some churches exact copies, as to their details, of existing examples, but this was done at the time when everything in the Gothic way should be supported by authority, like the similar era in Classic art, and works were considered perfect in proportion to their closeness of resemblance to some existing example. In the Decorated period leaves were more closely copied, while in the Perpendicular period they assumed a lumpy angularity, neither conventional nor natural.

The adaptability of Celtic ornament to ornamental design is very great; its construction should not be too intricate or crowded, as that often has the effect of confusing the work. For the truth of the assertion that it has got quite a grammar of ornament of its own, I would refer you to Mr. O'Neill's excellent work on the Ancient Irish Crosses. That the origin of many of the ornaments on these crosses was pagan I have no doubt; that the crosses themselves were Christian, is, I think, equally certain. When Christianity was proclaimed to the early inhabitants of these countries, and symbols of man's redemption were erected as memorials of the departed and edifying to the living, the ornament of the natives, though pagan in its character, was used to decorate them. As in early Christian times, in Rome and elsewhere, the architecture of the pagan was used until the Christian religion ultimately developed the Byzantine style for itself.

* From a paper, by Mr. Thomas H. Longfield, read at a meeting of the Architectural Association of Ireland, as mentioned on our last.

THE LANDS CLAUSES ACT. INSTITUTION OF SURVEYORS.

An ordinary general meeting of the members was held on Monday evening, the 2nd inst., the president (Mr. E. Norton Clifton) in the chair, when the discussion was resumed and concluded on the paper which was read some short time back by Mr. Philbrick, Q.C., on "The Lands Clauses Consolidation Act, with some Suggestions for its Amendment."*

Mr. Marriott, in re-opening the discussion, said that the meeting was called upon not so much to give expression to their views, upon which they were agreed, as to those upon which they did not agree. With regard to the tribunal, which was suggested to be established for cases under the Lands Clauses Act, the tribunal was either by jury or arbitration; and, in discussing the merits of either mode, it was necessary to consider the limits of the Act, and to bear in mind its character when it was passed, and what was its meaning. In the year it was passed (1845) the landowners were strong, and different companies, though powerful, were not so much so as now. In desiring to obtain amendments it was not advisable to struggle for anything that an individual might particularly wish for; but some practical amendments, that would have a chance of passing the House, should be considered. He was in favour of the system of juries, for he conceived that pathology and physiology were sciences as deep as that of land surveying, and juries had often to decide cases relative to those sciences; and even, also, in the matter of patents, juries were called upon to settle disputed questions in this respect. If it were attempted to go to Parliament to abolish the system of juries, he did not believe the attempt would be successful, as the proposed abolition of the system would be found to be impracticable. The proposal which had been urged to cause a tribunal to give its attention specially to cases under the Act, in the place of juries, he did not agree with. Judges, he thought, should not be confined to any one subject, as it tended to narrow their views. As a rule judges, mixing with each other, and exchanging ideas, were very large-minded men, and generally gave satisfaction in discharge of their duties. The tendency in England was now to dispense with special courts, because the tendency of such courts was to narrow the minds of the judges. He believed that, if a court were established such as that which had been suggested, there would be nothing left for the judges to do. With regard to the law costs, it was desirable that they should be settled more definitely than they were at present. The 92nd section of the Lands Clauses Act pressed hard upon companies in this respect. The question of costs, he thought, should be kept entirely from the view of the jury. In conclusion he said that, with regard to the Act, he was of opinion that it would be best to let well alone.

Mr. J. Cluett believed that, from a surveyor's point of view, the Act had been a good one, and had proved very valuable, not only for companies, but also for claimants. Trial by jury was very popular, and was the wisest tribunal before which a case of figures could be brought. The clause, however, in the Act, respecting arbitration, he did not think was as good as it was intended to be. It would be desirable, he thought, in large cases, that the umpire and the arbitrators should sit together; and if some amendment could be made, under the 92nd clause, it would be an improvement. He was of opinion that the arbitrary scale of 10 per cent. should not be strictly enforced in every case; this question was a difficult one to deal with, but he had always considered that it should be taken out of the hands of arbitrators to fix.

Mr. Ledgerd was entirely opposed to there being any appeal from the decisions arrived at by arbitrators in compensation cases. Although cases of hardship might arise, he thought that, practically, great benefits were derived from submitting cases to a tribunal of arbitrators. The great principle of arbitration, as it at present stood, was its finality, and this was a desirable object to be attained. He could not think any good would be derived from having an appeal from the arbitrators' decision, and no better tribunal could be found, he was of opinion, than that of magistrates. After objecting to the hard-and-fast line of 10 per cent. as an allowance for compensation, he concluded by observing that the practical working of the Act had been of the greatest utility; and little should be done,

he considered, respecting the amendment of the Act unless absolutely requisite.

Mr. Shaw fully concurred in the wisdom of preceding the assessment of damages by the settlement of liabilities.

Mr. Kerr said that there were two great divisions of the question—one with respect to the law, and the other with respect to its practice. As regarded the former, he thought that many of the surveyors present were well able to advise lawyers; and respecting the latter, he believed by far the greater number of questions raised were questions which surveyors could settle for themselves without an alteration of the Act of Parliament.

Mr. Stephenson had done all he could to do away with the usage of the allowance of the 10 per cent. in compensation cases. Tenants from year to year, in many cases, suffered considerable hardship, some of them being removed for the convenience of public companies, receiving but a mere dole of compensation. When, however, a portion of a person's land was taken, the benefits which sometimes accrued to it should not be ignored.

Mr. Philbrick, in reply, said that he had no idea that his paper would have elicited so much useful and friendly criticism. The Institution of Surveyors, he thought, were to be congratulated upon the tone the discussion had taken. Attention had been called to the difference between the effect of the Lands Clauses and the combined operations of the Lands Clauses Act and the Railway Clauses Act; and if that had been the subject of their discussion, much that had been said would have been quite relevant. Considerable divergence of opinion, however, had been expressed on many of the points raised, one of these being regarding the allowance of 10 per cent. He thought it should be known that although 10 per cent. was the amount of the compulsory percentage ordinarily allowed, yet, with regard to land, 25 per cent. was the ordinary amount. He did not recollect that he had said it down that there must be in any case a compulsory percentage; still more that it should be limited to a hard-and-fast line of 10 per cent. In some cases, 5 per cent. would not be too little to allow; and in other cases 10 per cent. would be an exorbitant sum. Regarding the court of appeal, it had been truly said that in all cases one of the desirable elements was the finality of the proceedings under the present conditions; and another desirable element was promptness. If they obtained a reasonably good tribunal; that did not afford an instance of "the law's delay," they might put up with a small amount of injustice for the sake of securing a fair and prompt decision. Any Act was greatly to be deprecated which enabled either party in a case to throw obstructions in the way of another by harassing them or by causing them a tiresome and expensive litigation. As at present constituted, considerable delay would be caused if, after the compensation had been assessed, a public body declined to pay the amount. In venturing to suggest another tribunal, he pointed out that the present tribunal did not so thoroughly deal with the case as one specially charged with the duty might do. It was difficult to limit a right for compensation even if it should be limited at all. Where a person had a claim there should be a clear and certain right shown to that claim, which ought not to depend upon the prejudice or passions of a tribunal. With respect to costs, he perfectly agreed that, as a rule, when a person had established a right against another, he should not have to put his hand in his pocket to obtain by law that which another fairly withheld from him. In the case where property was taken from a person by compulsion, he thought that all costs which were incurred in investigating the claim, should be borne by the party taking the land. It had been suggested that persons having short leases were hardly dealt with; but it was worth a person's while, rather than lose his business, to give a little extra sum to stay in the business; and if he was turned out he would be deprived of renewing his lease; and these interests should be considered and fairly dealt with.

Michelangelo.—It is intended to celebrate at Florence on the 6th of March, 1875, the 400th anniversary of the birth of Michelangelo Buonarroti. The committee appointed for the purpose are desirous of forming as complete a catalogue as possible of the works of the great master remaining in Italy or dispersed abroad.

MR. AITKEN'S BIRMINGHAM REPORT ON THE VIENNA EXHIBITION.*

It was Mr. Aitken, the author of the report under notice, who accompanied the ten Birmingham artisans selected for the Local Chamber of Commerce, and other artisans associated with them, to Vienna; and now his own excellent report to the Chamber has been issued in a printed form. It treats of a great variety of subjects related to the Birmingham manufactures and those of England generally.

In the general report he says:—"The wealth, power, energy, and industry of a nation are not best represented by its works in gold or silver, gems, &c., or its possession of mines of these metals, or precious stones; it is in its iron, and the coal with which it is smelted, the ability on the part of its people to convert the ores of iron into metal, and thence again into the thousand forms given to it, that the true wealth of a nation consists. Far, far ahead of every other nation is England; her production of iron may be said to equal that of all other nations put together. In 1871 the quantity of iron produced in England was 6,627,179 tons. France may be estimated at the same period as producing 1,500,000 tons (a very considerable quantity of which was made from imported ores); Belgium, 1,000,000 tons; Germany, 1,500,000 tons; Austria, 864,000 tons; Spain (1867), 125,242 tons. Russia, with rich mines of iron, produces but 400,000 tons annually; America, 2,000,000 tons. The produce of iron in Norway and Sweden is comparatively small. In proportion to the magnitude of its industry in iron, the iron of England was imperfectly represented, save in its manufactured conditions; chiefly then—as engines and machinery in the Machine Hall,—all the examples were exquisitely finished, good and true work, such as English engineers delight to, can, and do send out.

In the Manipulation of large Masses of Iron, England stands first.

In the power of manipulating immense masses of wrought iron, England exhibited a matchless example. In an armour-plate, to cover a portion of one of the turrets of the Prussian armour-clad *Bornossia*, the plate is 20 ft. in length, 6 ft. 10 in. in height, 10 in. in thickness, and bent to a radius of 13 ft. 6 in.; when taken from the furnace, it weighed 33 tons. In its finished condition, perforated for the cannon which it is intended to shield, it weighs 24 tons 5 cwt., and was produced by Charles Cammell & Co., Sheffield. Portions of armour-plates are also exhibited by John Brown & Co., also of Sheffield, which weighed 25½ and 26½ tons; proving that, in dealing with large masses of wrought-iron, England is unequalled. One of the great lessons taught by the Vienna Exhibition is, that the future of iron is steel, its conversion into steel, to be used instead of iron. Hundreds of examples of the converted metal applied to purposes where iron was formerly used, demonstrated the discoveries and progress made in metallurgical science, and their practical application to industry in iron, in converting it into its more valuable state as steel, better fitted for wear and purposes for which iron was formerly exclusively used.

To England is due all the great Improvements in Smelting Iron and cheaply converting it into Steel.

This change is chiefly due to English inventive skill; the fuel, except where wood is used, smelting furnaces, and machines employed are all of English origin, results of the discoveries of Dudley, the inventions of Cort, of James Watt, who supplied the power of steam to aid in the manufacture of iron, of Nasmyth, Sander-son, Bessemer, &c. If we are indebted to other countries for aiding us in imparting to our ornamental manufactures the graces of art, that benefit has been a thousandfold repaid by those countries assimilating our discoveries in reference to the smelting and manufacture of iron, the means by which they have been and are gaining ground upon us, as shown by the examination of their yearly increasing returns,

* Report presented to the Council of the Birmingham Chamber of Commerce on manufactures similar to those of Birmingham, represented in the Universal Exhibition held at Vienna, 1873; with remarks on the necessity for increased facilities in art education, museums of art objects, industrial scientific instruction, &c. By W. C. Aitken, the representative of the Birmingham Chamber of Commerce, who accompanied the artisan reporters selected by the Chamber to Vienna. Published by the Birmingham Chamber of Commerce.

* See pp. 44, 63, ante.

lessening the previous very great disproportion between their and our own total annual production, further indicating that in a few branches they have gone so far ahead as to rival, if not excel, us in quality and cheapness of production. In addition to taking advantage of English inventions, other countries possess the advantage arising from cheap labour; but the English workman is physically stronger, all other conditions being equal, capable of doing more actual work in the same number of hours than the foreigner.

Allusive to the Birmingham manufacture of gasfittings and chandeliers, the Report says:—

The extent and importance to which the manufacture of chandeliers and other fittings for gas has arrived in England, especially in Birmingham, of late years, render the display of those exhibited in the Vienna Exhibition by other countries of much interest. As at Paris in 1867, what is exhibited on the present occasion had all the characteristics which distinguished them there; if possible, their ornamental features were even more prominent. Unfettered by little conventionalities, the Continental designer ventures into paths which English designers of similar objects hesitate to tread. The former knows the whole history of ornament, is familiar with it from his earliest years; his resources are therefore more extensive, and he does not hesitate to dash in a graceful bit of ornament, even if it differs in style from that in which the chandelier as a whole is required or executed. This freedom is encouraged by the magnitude of the chandeliers made on the Continent for large establishments for business purposes—more so, for those in which refreshment, relaxation, amusement, or pleasure is sought. Four, six, or even eight ordinary English chandeliers "rolled into one" but faintly conveying an idea of an Austrian, German, or French object of the kind made for lighting music-hall, cab, or restaurant. To the freedom of design additional brilliancy and splendour of appearance is given by leaf gold, powder bronzes of various hues, colours, and burnishings on the brass, where it has been used,—that metal however, in large and even in small examples, is comparatively little used (that is to say, zinc cast into metal moulds, or sheet zinc, iron, or even in sheets cleverly cut out and stamped in dies, or beaten into form, is very frequently taken advantage of, out of which to form the ornamental features), brass being confined only to the tube which forms the branches, or arms, and the connecting parts. It may here be remarked that Continental gasfittings manufacturers appear to make a better use of English-made "Fearn" ornamented tubing than the gasfittings manufacturers of the country which supplies the former with it; and in metal chandeliers there is advantage taken of far more glass, to increase brilliancy of effect by the introduction of pendants, or "drops," than in England; our scrupulous sticking to the "correct thing" simply resulting in infinitely better work being rejected because overpowered by the surpassing brilliancy of inferior, but far more showy examples, and it may be added, for reasons already given, really more attractive. On the other hand, taps the "jump" on being turned, joints, the inferior fitting of which is largely dependent on white lead, or soft solder (for preventing the escape of the subtle fluid, gas), contrast, so far as mere workmanship and practical usefulness is concerned, very badly with English examples, the majority of which have taps which work sweetly, joints secured to internal bodies, taps attached to "arms" by means of hard solder, also tight and well-made ball joints. Having already pointed out the stronghold of foreign gas chandeliers, i.e., the brilliancy of their *tout ensemble*, and the means by which that feature is secured, it will easily be understood why, to the eyes of many Continental purchasers, the English gasfittings exhibited seem tame in comparison.

On the subject of industrial education and its advantages, Mr. Aitken says:—Wherever compulsory education exists, leading up to scientific technic instruction, as in Austria, Germany, &c., by reference to the annual returns of their industries, it will be found there is a growing increase. Such education means increased national prosperity; it means not only that,—it means elevation of the public mind, higher thoughts, and nobler aspirations. A nation like our own, blessed with abundance of raw material and the best of artisans, most skilful in manipulation, but comparatively uneducated, competes unsuccessfully with another nation where even a

considerable proportion of the raw material is imported, but manipulated by educated artisans (as those at the Crenset, guided by their more highly educated superintendents), trained in such institutions as France, Germany, and Austria possess, the latter in the Royal Polytechnic Schools at Vienna and at Brunn; all the education in these countries leads up to practical usefulness; the education given is not an abstraction, it points to and prepares for the business of life.

The care evidently bestowed in illustrating the lessons given in Elementary Trade Schools, in Technical Institutions, or University, on the Continent (Austria, &c.), is illustrated in the Vienna Exhibition in the class of exhibits which embraces within its limits all objects used in education, teaching, and instruction. Within the Exhibition grounds were also buildings as school-houses, furnished with every appliance for teaching, which illustrated the care bestowed on education generally, and industrial and scientific education, in particular, by foreign countries and states. "Ignorance may walk in the path dimly lighted by advancing knowledge, but she stands in dismay when science passes her, and she is unable to follow, like the foolish virgin having no oil in her lamp." It is to be hoped that England is now beginning to trim her lamp; the oil is not beyond the means of purchase; its price, *study and application*, embracing the means of scientific instruction provided, imperfect as these may be, are, up to the present time in England, in comparison with what they are in other countries.

"ELMSLEIGH," LEICESTER.

This house, the residence of Mr. John Stafford, J.P., is situated about a mile and a half from Leicester, upon the London road. The site commands beautiful views of the surrounding country, and is in proximity to some fine elms, which are always valuable in preventing a nude or raw appearance round a new house. The existence of these trees suggested the name given to the house.

The vestibule, 9 ft. square, opens into an entrance-hall, having a waiting-room with lavatory and water-closet on the right; beyond which is the staircase-hall, 23 ft. by 20 ft., two stories in height, having a gallery leading to the bedrooms, and lighted by a lantern-light. Entering from this hall are the library, 19 ft. by 15 ft.; drawing-room, 31 ft. by 19 ft., with conservatory adjoining, connecting the two rooms; breakfast-room, 20 ft. by 18 ft.; and dining-room, 26 ft. by 19 ft. The breakfast-room is connected with the billiard-room by a glazed arcade, roofed with glass, and having an entrance-door from the gardens.

A corridor on the left leads to the domestic offices, having on the right a store-room, 17 ft. by 14 ft., fitted with strong-closet; and on the left a butler's pantry, 17 ft. by 13 ft., beyond which are the kitchen, 22 ft. by 19 ft., with cook's pantry and scullery, 19 ft. by 15 ft. The billiard-room, lighted from the roof in addition to the windows, is 28 ft. by 19 ft. 6 in., with water-closet and lavatory adjoining. The kitchen court is surrounded on two sides with outbuildings, containing laundry, wash-house, boot-house, and places for wood, coals, and ashes.

On the first floor are four principal bed-rooms, two dressing-rooms, five ordinary bed-rooms, bath-room, housemaid's closet, and water-closet; in addition to which, and over the kitchen offices, are four maids' rooms, box-room, and water-closet. The upper story of the tower is made into a smoke-room, and commands an extensive view over the adjacent country.

In the basement are dairy, wine and beer cellars, larder, &c.

The external walls of the house are faced with white Diseworth bricks, with red stone dressings from Alton. The roofs are covered with blue Welsh slates, relieved with bands of green. The staircase is of wainscot oak, with pierced balustrade and newels. The library is fitted with oak panelling, with a parquet floor.

The doors and casings to the principal rooms are of pitch pine, with linen panels, French polished.

The contract for the house, including conservatory, was 6,500l. Messrs. William Neale & Son, of Leicester, have carried out the works, from the designs and under the superintendence of Messrs. Picton, Chambers, and Bradley, of Liverpool; Mr. R. Beaver, of Leicester, acting as clerk of the works.

DELHI CLOCK TOWER.

THE Municipal Commissioners of Delhi have effected many improvements in that city since the mutinies: the streets are now amongst the cleanest and best drained, and repaired, of any native city in the upper provinces. A town-hall, with a ball-room, museum, lecture-room, durbar-hall, measuring 80 ft. long and 40 ft. wide, and an extensive Serai for the accommodation of native travellers, may be specially mentioned amongst the works that have been constructed by the municipality. Trees have been planted along the road sides; cast-iron pillars from England have superseded the old wooden posts that formerly supported the street-lamps; large tanks have been constructed; and new gardens have been formed.

The latest improvement is the new clock-tower, which stands in the centre of the Chandnee Chowk, opposite the town-hall. Of this a photograph is given in "Professional Papers of Indian Engineering," and from that we have prepared the accompanying engraving.

This building is erected on an appropriate site, at the crossing of four streets, and stands 110 ft. high, exclusive of the gilt vane and finial. The lowest story is about 20 ft. square externally. The materials used in its construction are brick, red and yellow sandstone, and white marble. The capitals surmounting the main corner pillars are 4 ft. 2 in. wide at top, and 4 ft. 6 in. deep; they are carved out of solid blocks of white sandstone, and each of them weighs about two tons.

The dials of the clock are sufficiently elevated to be visible from the East Indian Railway Station, and from other prominent points in the city. The clock is constructed to work five bells, placed in the open canopy above it; these give out a different peal for each quarter, the largest bell striking the hours.

The building was completed in eighteen months, at a cost, including clock and bells, of 28,000 rupees, the whole of which amount was provided from municipal funds.

The tower was designed and built by Mr. E. J. Martin, Executive Engineer, Rajpootana State Railway, and the clock and bells were supplied by Benson & Co., Ludgate-hill, London.

The following was the specification for,—

The Clock and Bells.

The bells to be fixed above the dials, with a clear open space round them, in order to let out the sound. The hammers to be very strongly screwed to the beams of the bell-frame, the largest hammer to the largest bell, care to be taken that they do not touch the bells when at rest, but yet give a good firm blow when in action. The bell-frame to be constructed as shown on plans, with a sufficient space between it and the walls to afford room for the descent of the weights.

Immediately below the bell, and on a level with the centre of the dial, will be fixed the level-wheel work.

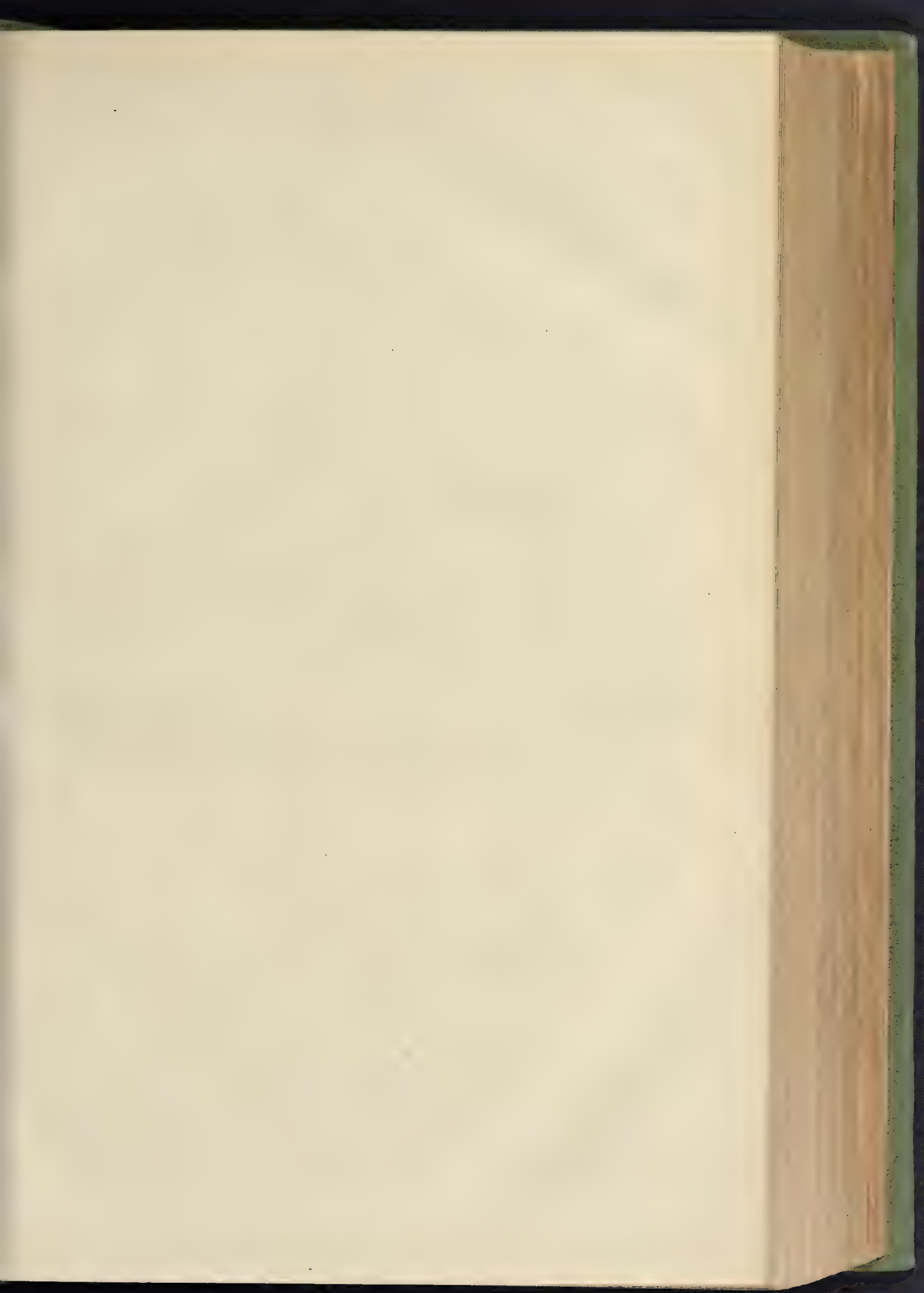
Behind each dial screwed to a shelf will be placed one of the motion works, communicating with the level-wheel work by a rod. Below this will come the movement of the clock, the shaft of which shall rest on a stool about 3 ft. high, and connected by a rod with the level-wheel above. The single hammer-tail at one end of the clock should then be connected with the largest hammer, which strikes on the largest bell (No. 5). The hammer-tail at back of clock (the back of clock is where the pendulum swings), will be connected with No. 2 bell; the next tail to it with No. 3, and so on.

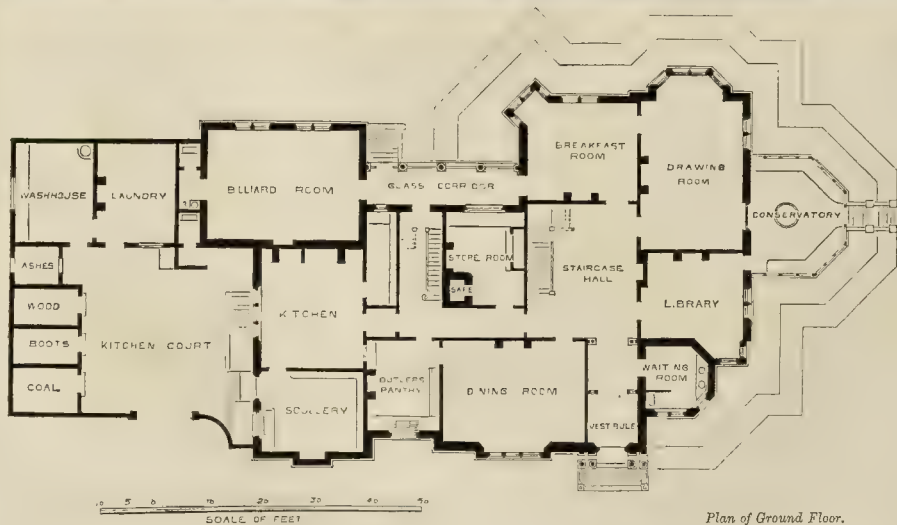
The hour-striking part and the going part each takes 7 turns to go for eight days, the chime part 75 turns. Double lines should be used as shown on diagram. The going part takes one 8-inch weight, and 4 shifters, the going part a small weight, and 2 small shifters, the chime part one 8-inch weight, and 9 shifters, as 75 ft. cannot conveniently be obtained for the fall of the quarter weights, this part of the clock will have to be wound twice a week. A distance of 50 ft. down which the going and striking weights can descend will be sufficient to enable these two parts to perform for eight days.

MEMBERS' SOIRÉE: ARCHITECTURAL ASSOCIATION.

THE evening of Friday, the 6th inst., brought together a roomful of members to the annual secret convale. Happily no very binding catbs are exacted of those not blessed with a passion for delictency. It may therefore be stated that the shows were approved, the laughter involuntary, and the squib at things professional, not without wit, nor wisdom. It might indeed be remarked by a too critical person, that if the eccentrically costumed "Perfect Candidate" (labelled Pseudo Queen Anne) has not yet found his feet, the foothold of the other candidates ("V. Orders" and "V. Periods") seems very precarious. But surely this is not also the intention of the allegory!

* No. VIII. Edited by Major A. M. Lang, R.E. Printed and published at the Thomson College Press, Roorkee.





Plan of Ground Floor.

"ELMSLEIGH," LEICESTER.—MESSRS. PICTON, CHAMBERS, & BRADLEY, ARCHITECTS.



DELHI CLOCK TOWER.—MR. E. J. MARTIN, ARCHITECT.

MIND AND MECHANISM IN WORK-MANSHIP.

MODES and methods in art and handicraft are undergoing rapid transition, accelerated by the instrumentality of mechanical appliances and the division of labour. So long as the supply of the rough material is afforded from the bowels of the earth in sufficient quantity for the ever-increasing demand, further mechanical agents will be introduced, and still further divisions and sub-divisions of man's labour will take place. The obvious tendency of this state of things at first sight appears to lead to cheapness and plenty, and to place luxuries in the future in the hands of the many, instead of as in the past, when they only reached the hands of the few. To the mind of the present age the future disturbs little; but if there be one more serious problem than another, it is that connected with population and its increase. We may succeed in making two blades of grass grow where only one has grown before, and nearly double our present corn-crops, but we never can make two acres out of one, or double the area of any of the British Isles. Population everywhere, and particularly at home, is increasing with a marvellous rapidity, and the food supply, though, perhaps, ample enough still, is, in the matter of cost in cities, at least growing dearer and dearer. Mechanism has, indeed, cheapened our food, and given us cheaper and more accommodating houses for our industrial classes, although we must acknowledge a very large per-centage of the homes built are unworthy of the name. Leaving aside for the present the serious question of life and living in view of the future, let us look calmly on the subject of mind and mechanism in what we have in the past looked upon as skilled labour. Manual skilled labour in contradistinction to mechanical, is mental labour to a great extent, although the hands are employed in performing it. The sculptor that sets to work with his mallet and chisel on the rough marble from the quarry, and ends his task by leaving it the perfect piece of statuary he intended it should be, exerted a large amount of thought, and the delicate touches given with his hand show the latter acting in unison with his mind. Were failure to result instead of a success, it is possible that the fault might be attributed to manual manipulation instead of to any lack of mental culture. In the execution, however, the mind of the educated artist or workman, through the eye, is the great corrector. As it is with the artist, so it is with the skilled workman who sets out his own piece of work and completes it in all its parts so far as it is connected with his trade. The value of technical education to the workman is never fully illustrated, and never works such a benefit to the worker as when there is scope for its display on an undivided piece of workmanship. It is immaterial what trade we select, but let us take the building-trade as one more in keeping with our channel of thought and observation. A staircase and hand-rail hand, if he knows his business thoroughly, may be said to have some share of technical education. Give him a plan or no plan, save telling him a certain space is provided, or that he will have to provide it himself by alterations, it is required of him to put up a good stair and a handrail to range over it free of constructional defects and undeniable in point of workmanship. If he lay down his own plan it will cost him a good deal of thought; if he work according to another person's plan, it will also cost him some careful thought, particularly if the plan is a new one, and the construction intricate. In such a case as this the workman may, like the artist, get other help to do the rougher portions of his work under his direction, reserving to himself the entire responsibility. No regular division of labour takes place here, and the impress of the workman's mind and the skill of his hands will be found to have worked harmonious and agreeable results. It is not a case of pin-making or modern shoemaking, where one trade is chopped into from six to a dozen of so-called branches, which, no matter how far they cheapen, have certainly the effect of dwarfing the intellect of a large number of workmen.

A carpenter was both a carpenter and joiner once; but now a carpenter—at least in London and other large cities,—is a roofing and flooring and heavy-framing hand. It would be difficult to tell exactly what a joiner is since wood-working machinery has come into operation. The sub-divisions are many and are extending. Roughly speaking, we have machine hands, who saw, mortise, tennon, rabbet, mould, and perform

other operations. Then we have the bench hands, who put doors, sashes, shutters, and other framings together. Next we have the building or outside hands, from the humble "floggers" to the more intelligent "fixers."

Technical education will not make any material alteration in the position of workmen engaged on any one of these divisions of labour; but it will, in the workman who is, or aims to be, a complete joiner, a master of all the branches. In fact, house joinery is only one branch after all, and the old ordinary apprenticeship of seven years afforded ample time for the intelligent youth to acquire the trade. We have reached a strange transition in the building art when the sash or door framer, or fitter, the trimmer or fixer, calls himself a joiner. A joiner is only he who can execute everything with readiness, from the making of a simple four-light sash to the putting up of a respectable staircase or handrail. He should not only know how to make these framings and joinings and put them up, but he should also know how to set them out on a drawing-board.

Take the more limited case of the boot and shoe maker. Formerly, the man who could make a good Hessian, Wellington, Blucher, or hunting boot, could also make a good pair of shoes, whatever might have been the current fashion of the day; and he could also make a lady's boot. Boot and shoe making, since the advent of machinery particularly, is not only divided into men's and women's hands alone, but is subdivided into a dozen sections. There are closers, lasters, clickers, riveters, peggers, finishers, and quite a number of intervening workers of various names, to whom the work is parcelled out, and the workers embrace boys, girls, and men. There is but little room for the display of intellect, or the exercise of technical knowledge on the part of any sectional worker in the craft of shoemaking, and except for the presence of the known and living mind of the workers, we might almost say that the artificers in these instances were the automatons and the machines the master workmen. Our great market supply of boots and shoes, apart from the older form of individual or customer order, might be termed the cast or moulded boot and shoe branch in nearly the same sense as the casting iron and metal branches are termed, so as to distinguish them from wrought-iron work. A designer or pattern-maker is needed in both instances, and he will in the case of metal-work, have room for the display of thought; but the mere moulder, maker, or putter together of sectional work, in either trade, is but a mechanic in part, useful as a unit of the aggregate of divided labour, where it exists, but useless in another country or state of society when thrown upon his own resources to make a living by the pursuit of his calling.

The stucco-plasterers of old, in connexion with the building trade, were, to a certain extent, art-workmen. The ornamentation they executed was wrought by a careful and delicate manipulation of the hands and by a trained and educated eye. The plasterers of to-day are, in general, mere casters and fixers of work they do not design, and, except in a few instances, they are unable to design, from lack of a knowledge of drawing. One object in this paper is not to disparage the benefits that the introduction and use of machinery has brought us, but to show that we may be led to over-estimate the value of mechanism to the dwarfing of the human mind, and that we may in consequence lay the foundation of a fearful reaction at a future period. Mechanism is the product of the cultivated mind. The steam-engine was not invented or perfected by a race of bores. Wood-working machinery is not the growth of a year, nor the outcome of minds who knew nothing of the trade they were to be engaged in or the materials that were to be operated upon. Practical mechanics have invented and perfected machines belonging to their own trades and other cognate ones, and the result of their labour, though it may have benefited themselves, worked a revolution, for the time being, disastrous or unfavourable to their fellow-workmen. That was foreseen and expected, and sometimes, under very erroneous notions, was rebelled against by workmen who feared to be displaced, and could not readily, through age or other causes, turn their hands or direct their energies to a new calling. We see accomplished facts that must be acknowledged; we observe fresh and growing tendencies in a mechanical direction, and we can almost anticipate the results of many of them. The mind of man is not only active, but feverish; our wants are still many, and the age is impatient. The one great thought,

however, which is uppermost in the brain of many capitalists—the thought and the wish of superseding manual labour as far as possible—is not altogether a healthy or wholesome thought. Though we say it is not a healthy thought in view of the possible future, it is nowise a dishonourable one, as thoughts go, in a state of society where every one is supposed to watch his own personal interest. Manual labour will, of course, continue to be superseded by mechanical appliances, and various skilled branches of trade will, by its application, be cut up into fragments complete; master-workmen will die out, and be replaced by men whose skill will be limited to a small sectional area, and quantity of workmanship will, we fear, in many instances, be the output of the individual workman to the loss of quality, and quantity will possibly become a necessity on the part of the workman to maintain the rate of wages that the altered state of his trade renders it more difficult for him to obtain as a sectional worker. Mechanism is a multiplier in respect to quantity, and, by leading to the subdivision of labour, it ought to lead to quality also on the part of the sectional worker; but it is not doing so, for a love for his art can scarcely exist to any large degree in the heart of the workman, who may neither begin nor finish the piece of work that he may be engaged upon.

The cultured mind is the most powerful active and living piece of mechanism in our possession, and it is our duty to utilise it and develop its capacity. Civilisation has come through its exercise, and barbarism is possible through its neglect. We cannot dwarf it in the person of our workman without injuring ourselves and society in the future. Let us lighten the labour of the toiler by all means, but let him have food and exercise for the true scope of his brains and hands. We cannot manufacture thought, like doors or sashes, or boots and shoes; but we can create food for thought, and prepare minds for its digest. As invention is the outcome of the thinking mind, the aim of mechanism should be to elevate.

It can never be pronounced successful in its results so long as the two extremes—wealth and pauperism—are begot of its application. The former is its own safe guardian, for the latter needs the public as its watcher. The poor can only injure the wealthy by acts of lawlessness, such as incendiarism and revolt. The wealthy can injure the industrious poor by perfectly legal acts, and the law does not hold the rich man amenable for reducing with one blow 100 of his 300 workmen to a state bordering on pauperism. We cannot close our eyes to these contrasts; they have occurred before, they are occurring now, and they will occur on a larger scale in the future. The action of the mind in inventing mechanism has produced a partial evil, and the same mind will have to provide a compensatory action. As the prime object of all good government should be the greatest happiness for the greatest number, it will eventually have to devolve on wise administrations how far good government is rendered impossible in a state of society where every man is allowed to do what he likes with his own, be his property of a mental or mechanical kind, or the outcome of both. No interest should stand alone: where such is made possible, evil is created. Dependence upon each other is the strong bond of society, by which man to man is united for the general welfare.

THE ELEANOR CROSSES.

THE Eleanor Crosses are of so much interest, both historically and artistically, that notices of them constantly crop up; and although the subject has been discussed in our pages before now, a somewhat fuller notice than that given by Mr. A. Hall in our last will not be out of place, more especially as the abstract made by that gentleman is not quite correct in one or two particulars.

In the year 1841, Mr. Beriah Botfield printed in his "Manners and Household Expenses of England in the Thirteenth and Fifteenth Centuries" (Roxburghe Club) the very interesting rolls of payments made by the executors of Queen Eleanor, which contain notices of the sums paid for nine of these crosses. The Rev. Joseph Hunter had previously used these rolls for his very full and valuable paper "On the Death of Eleanor of Castile, Consort of King Edward I., and the Honours paid to her Memory," printed in the *Archæologia* (vol. xlix., p. 169). It is from these two sources that all

trustworthy information on this subject must be obtained. Former antiquaries, not having proper documents, and they differed much among themselves as to the original number of the crosses. Stow gives it as nine, Camden as ten, Stukely as eleven, and Gough as fifteen; the last writer is the only one who admitted Hardy (for which there is no kind of authority) on the list. The nine crosses mentioned on the rolls are those at Lincoln, erected by Richard of Stow, mason; at Northampton, Stoney Stratford, Woburn, Dunstable, and St. Alban's—all five by John of Batlle (de Bello, or de la Bataille); at Waltham, by Roger de Crundale, in conjunction with Dymenge de Legeri, or de Reynolds; at West Chesap, or Chesapeake, by Michael of Canterbury; and at Charing by Richard de Crundale, and completed after his death by Roger de Crundale. The three crosses not on the rolls are those northern ones at Grantham, Stamford, and Geddington, and they were probably erected after the year 1294, later than which date the accounts do not come down. The authorities for Grantham are tradition and Camden; those for Stamford the same, and in addition a native topographer; the cross at Geddington still remains. The decorated portions of all the crosses appear to have been worked in London and then sent to their respective destinations. The sculpture was by William de Ireland and Alexander le Imaginator, called also in one place Alexander de Abyngton. We thus see that the principal artists employed were Englishmen, for the rolls entirely disprove Walpole's supposition that they were foreigners. Cavalini, to whom Charing Cross was attributed, was not born until 1279, and was therefore about eleven years old when the Queen died. Those crosses that were nearest to London are supposed to have been the richest, as the most money was spent upon them. The one in Chesapeake cost three hundred pounds, and was more magnificent than any of those before it. It stood in the middle of the street and was the intermediate resting-place between Waltham and Charing. This appears to be a strange position, and it has been suggested that the body rested in St. Paul's. Charing Cross was the most sumptuous of all, and the architects received £500 for it. Mr. Hunter writes:—"What house there could have been near the site of Charing Cross, is a more difficult question; but an answer is not far to seek, for the Hospital and Convent of St. Mary Rouncival, founded by William Marshal, Earl of Pembroke, in the reign of Henry III., stood on the site of the present Northumberland House. Of course Mr. A. Hall intends a joke when he refers to the absurd derivation of Charing from *Chere Reine*, which might have been acceptable to the hap-hazard etymology of former times, but could hardly be put forward now as a possible one. Peele seems to refer to it in his "King Edward I."—

"Erect a rich and stately carved cross,
Wheron her statue shall with glory shine,
And bear forth see you call it Charing Cross,
For why, the church the chiefest queen,
That ever did delight my royal eyes,
There dwells in darkness."

There are other Charlings in England, and the place is referred to in the executors' accounts as Charynges. These facts, and the unlikelihood of a name equally applicable to all the crosses being attributed to one in particular, make such an etymology impossible. Eleanor, the daughter of Ferdinand III., and half-sister of Alfonso, King of Castile, was in her fifteenth year when she married Prince Edward at Burgos in 1254. The marriage was an unpopular one, as there was at the time a great jealousy of foreigners among the English, owing to Henry III.'s constant advancement of them. The princess, however, gradually obtained the love of the people, and when she died, after a married life of uninterrupted happiness for thirty-six years, she was sincerely regretted by all. Her death took place at Herdeby, or Hardy, a little village in Nottinghamshire, five miles west of Lincoln, on the evening of the 28th of November, 1290. Her body was removed to Lincoln to be embalmed, and the bowels were interred in the cathedral. The dates of the succeeding events are not positively known, but can be guessed by the king's signatures to writs. On December 2nd and 3rd Edward was at Lincoln; on the 5th, at Casterton (on the road from Grantham to Stamford), on the 9th, at Northampton; and on the 13th, at St. Alban's and London, from which it is supposed that the funeral cortege started from Lincoln on the 4th, and that the king, who

accompanied it as far as St. Alban's, there left it, and proceeded to London through Barnet, in order that he might meet it at its entrance into the city. The body appears to have arrived in London on the 14th, and to have been entombed in Edward the Confessor's Chapel, Westminster Abbey, on the 17th. The head, which had been separated from the body, was deposited in the Church of the Blackfriars in London. Mr. Hunter writes:—"The ordinary route was from Stamford by Walmesford to Huntingdon, and thence by Royston, Puckeridge, and Cheshunt. But it was intended that the august procession should pass through the more frequented part of the country where the queen was well known. It was also part of the plan to take some of the greater religious houses by the way, and to have suitable places at which to rest. Hence the deviation from the direct line from Stoney Stratford to Dunstable in order to include Woburn."

The varied fortunes of the different crosses are very remarkable, three still remain, viz.—Geddington, Northampton, and Waltham, some have decayed away with age, and others have been destroyed. The fate of the one in Chesapeake is perhaps the most noteworthy. The original stone cross was found to be in a bad state in the year 1441, and a new one was therefore commenced which was not finished until 1486. This was replaced in 1600 by a third cross which was finally demolished in 1613 by order of the Parliament.

The idea of erecting an architectural cross at every place where the funeral procession stopped for the night is a very beautiful one, and we could have wished it to have arisen spontaneously in the noble King Edward's own heart. But Mr. Hunter seeks for a precedent in the case of St. Louis (Louis IX.) of France, whose body was carried on men's shoulders to be buried at St. Denis, and wherever the banners rested on the way from Paris crosses were afterwards erected. The respect and love exhibited by the king, however, were not less because the idea may not have been original, and we find him unsatisfied until he had done all that he considered right. He was not content with the erection of crosses in the highest art of his day, but gave money for masses to be said for her soul in perpetuity, and in accordance with his will the anniversary of her death was kept for two centuries with splendour and ceremonial.

THE MAKING OF ARCHITECTS.

It will be readily admitted by all who possess a knowledge of the subject, that the architectural profession is in an unsettled state, or at all events that the art is in a state of transition. There is no lack of energy or enthusiasm on the part of its votaries; there is an evident desire evinced by many to further the development of the art; but no unity as to the means. A great deal has doubtless been done, and up to a certain point, the desired object has been attained. The point reached appears to us to be a critical one; indeed, to be the turning-point of a new era. We have now attained a certain mastery over every existing style, and to have repeated with correctness the forms used of old, and in some instances to have given them a new expression. But reiteration of even the most graceful expressions becomes tiresome; the ear, the eye, and the mind alike become satiated by continued repetition, and a craving for something new is engendered, so that even an inferior production is prized if it possess the quality of freshness. The work of the architect is a reflex of his mind, but his mind is naturally biased by the requirements of the age, and his intellectual status is shown by the manner in which he meets these requirements. On the other hand, he may be in advance of his age, the leader and former of a new school of art, whose works command the admiration of the public; but such men are rare indeed, the advent of even one such cannot be counted upon.

The Gothic revival originated from outside the profession. The literary productions of the romancers, especially those of Sir Walter Scott, stimulated by the conditions (framed by the representatives of the people) of the competition for the Palace at Westminster turned the tide in a new direction, and it now seems to be ebbing in another.

But this shifting of position will not satisfy the pressure from without; the demand is for something entirely new in style, and if that demand is

ever to be responded to the answer must come from within the profession and not from without. Is the response to be a discordant babel of unanited voices? How can unity of action be brought about when there is no recognised authority to appeal to? If the public really wish what they call for they must provide the means; and the best and only means we can think of is the formation of an architectural college, where systematic teaching will be provided for the students of the art.

State patronage has been bestowed upon the sister arts of painting and sculpture; and a new school of painting is rapidly developing itself. The decorative arts have also received a stimulus by the formation of schools of art throughout the kingdom. Architecture is surely as deserving of State help; it is an art which concerns every one, from the highest to the lowest; its productions are not stored up in saloons and cabinets, but are open to all as a means of cultivating and improving the taste; the beauty and amenity of our cities and towns depend upon the architect,—his works affect both the physical and the moral welfare of the people.

True it is that much has been achieved without aid from the State, but as a country becomes more populous, and its social relationships more complicated, the greater is the necessity for State interference. Numerous pretenders have arisen, and by dint of sheer impudence and perseverance have succeeded in deluding men into the belief that they are architects, for there are no means of distinguishing the quack from the proficient.

To obtain proficiency in the art is now a most difficult thing. An apprenticeship in the office of a first-class architect does, indeed, provide a means of education to the student, but the teaching is not of a catholic or systematic description; he has to grope his way without a guide, and he picks up what he stumbles against in the narrow path to which he is restricted. Victory cannot be gained if each recruit is allowed to skirmish on his own account; drill and discipline must be enforced by a competent staff of officers, else there will be nothing but a rabble rout. A solitary professor of architecture cannot, in the nature of things, even touch upon the various branches,—historical, æsthetic, technical, and scientific,—which should form the curriculum of an architectural education. A correct taste can only be founded upon a substratum of knowledge; there is a fixed standard of truth, and the taste or appreciation of what is really good can be cultivated to a high degree.

There is no lack of books treating upon architecture, but the same may be said of every other science and art. These books are generally profusely illustrated, and are relied upon by designers as a means to which they can resort for whatever they require. The common course of procedure is after this wise. The young architect, after having fixed upon the style he is to adopt, selects from his collection of prints or sketches what he considers the most beautiful pieces of detail. These he applies, as profusely as circumstances will permit, to the proposed structure, confident that the result will be eminently satisfactory; for how can it be otherwise when he has used not a single item which in itself is not really beautiful? But the result is not what was anticipated; he is in the position of a child who has satiated itself with sweets. By experience he learns that the acid and the bitter give a peculiar relish to his diet, and are quite wholesome. His conglomeration of prettiness he finds to be a mistake; he finds out the value of mass and breadth of surface, and in course of time his works may possess a special individuality, and exhibit that power inherent to the true artist, whether he be poet, painter, sculptor, or architect.

This is good so far as the individual architect is concerned, but it does nothing towards the formation of a national school of architecture, a result which can only be brought about by united action, proceeding upon recognised principles, and by such united action only may it be possible to expedite the growth of a new style.

SIGNET.

Institution of Surveyors.—The next meeting will be held on Monday evening, February 16th, when a paper will be read by Mr. Ralph William Clutton, entitled "The Self-sown Oak Woods of Sussex." The council are seeking to form a geological collection, illustrative of the rocks and soils of various districts in which they reside.

SUBSTITUTES FOR COAL.

PREVALENT high prices have brought out various suggestions of more or less merit for economising the prime article of fuel, and there has been some serious talk of a Stock Company for the manufacture of a patent article compounded of earth and fine coal. As many of these suggestions have been criticised as novelties, and are being experimented upon as such, it will probably surprise some of our readers when we state that precisely similar compositions were actually in use for domestic purposes, and suggested for manufacturing use, nearly 250 years ago.

Our two first extracts are taken from pamphlets published in or about the year 1644. The first bears the heading, "Good News for the Poor; or, An Expedient humbly offered for supplying the Want and bringing down the Price of Coales," and proceeds thus:—

"This certain, necessity is most times the parent of ingenuity. To pay 40s. or 50s. for a chaldron of coale went deep into a poor tradesman's pocket,—especially those that were forced to use great quantities. Whereupon some plodding industrious heads that had seen fires of turfe or peat in the country, or been in Holland, where (as one saith pleasantly) they fetch fire out of water, burning a kind of mud taken out of their ditches, and dried, began to think of mixing clay with their coales, which they found to succeed so well that several eminent victuallers and coffee-houses (particularly near the Royal Exchange) made it their common fuel, to their advantage. The manner of doing it is this:—Take two loads, that is to say, a chaldron of coales, and cause them to be sifted in a wide hole sieve, that so all the dust and small coales may go through, and the great round coales remain behind. Then take a load of clay (for siftings of a chaldron of coales are generally enough for so much), and cause it to be mixed well together with the said dust or small coales; for which purpose, if your clay be not moist enough to work up well, you may wet it a little, then make them up, either in round balls or like bricks, but let them be not above half so big every way; and then letting them lie some time to dry well, they will be fit for use: for having laid a small thin bottom of coales, you must then lay on these pieces, intermixing now and then one of your great round coales: it shall continue fresh and in good order, with very little trouble, a whole day, and is not offensive in smook, smell, or otherwise. Nor let any think this to be a trouble of too much trouble or charge; for first you may have a load of clay brought home to any place in London for 4s. 6d., and any common labouring man will sift your coales, and make up in balls as aforesaid, in three days at furthest, which, at 1s. 6d. per day, is 4s. 6d.; so that the whole charge will amount to 9s., and this being done, it shall do you more service, burn better, and last longer, than any three chaldrons of coales you can buy. You may easily work them in a cellar or shed, and when they are made up they will lie conveniently in small room, provided it be but dry."

Our second extract is of more pretension, and its author evidently looked beyond the domestic to the manufacturing interests of his country.

"A *Recipe of These Coales for Rich and Poor.*—This being the offer of an excellent new invention by Mr. Richard Gosling, engineer (late deceased), but now thought fit to be put in practice,—Read —Practice—Judge. First provide a piece of ground where the sun lies upon it, and for the better ordering take a brickmaker or a labourer to do it. Doe it thus:—Take three loads of red mortar, such as you make your bricks with, double loads, half a chaldron of good sea coales of the smallest and best, three sacks full of the best small coales, four bushels of sawdust, four trusses of straw chopped; work all these together with water stiff as bricks; then when it is worked altogether very well, take four sacks of dust of small coal, and with that used as they do the sand for casting of bricks; then cast the ingredients as you cast bricks, but half so thick, and dry it as brick is dried, or you may make it up in round balls not too big, with charcoal or small coales dust on the outside, and so laid to dry; when they be thorow dry, burn them with a little Scotch coales or wood, or any combustible matter so fire it, or with two or three wooden chips to kindle your fire withall, and to keepe in the life of the fire, and these cast a most excellent heat, and keepe fire for any use, to roast, boile, or bake, or the richer sort, but be sure to lay them not so close."

Then follows a formula "for the poorer sort," of which we shall simply remark that it includes in its composition the sweepings of cow-sheds, stables, and the offal of slaughter-houses!

We also learn it was "said" that "Greenwich Heath, or Honnslow Heath, turf, well dried, is very good fellow, with a little Scotch coales burnt with it."

It is also stated by an author writing late in the eighteenth century, that "balls of small coal mixed with clay are very much used all over South Wales, particularly in the counties of Pembroke and Carmarthen. They are formed about the bigness of a man's fist; great in the middle and verging smaller toward the ends. They are generally made up and put upon the fire quite wet, in the form of a pyramid, and when thoroughly lighted, make a most brilliant appearance. One of these fires, if made up with skill, will last ten to twelve hours. Those who live near the sea, instead of clay, use mud taken from under flood-mark at low water, which, from the quantity of salt it contains, makes the ashes a valuable article in agriculture for the husbandman, and in horticulture to the cottager. . . . The balls, mixed with mud, emit no disagreeable smell in burning."

The same author says, that "kindling balls might be used with great advantage for lighting fires, particularly in London, where the expense of billet-wood, which is used for the purpose, is very great." Their composition is thus stated: "Equal parts of coal, charcoal, and clay; the two former reduced to fine powder, well mixed and kneaded together with clay, moistened with water and then formed into balls of the size of hens' eggs, and thoroughly dried. They may be made so inflammable as to take fire in an instant and with the smallest spark, by dipping them in a strong solution of nitre, and then drying them again."

It is remarkable that all three of the compositions intended for fuel are said to have the most essential qualities brilliancy, heat, endurance, and freedom from objectionable odour; qualities which are sadly wanted in many sorts of cheap coal.

WOOD-WORKING MACHINERY.

SIR,—Having had more than twenty years' experience on wood-cutting machinery as operator, manager, and builder, I will endeavour to answer "B. J. A.'s" questions in your issue of the 31st of January.

Why, he asks, does not wood-cutting machinery pay as well in England as in America? and why do they fail to make it a success here? I have found that why they have failed in their wood-machinery here is solely the fault of the masters not knowing what machinery is best suited for their work. Seeing a piece of work that has been done, they buy the machine, and find out, when it is too late, that it is not the machine that they want at all, or that some other building firm makes a machine far superior to the one they have. Therefore, I contend, it is from the want of knowledge that they do not succeed with their machinery. Why, sir, I could name cabinet firms in London that have machinery, and some of them are executing their work 15 per cent. cheaper than others. You may say, "How is that?" There is only one answer, and that is, from better management. Give the machines the work they should have, and give it to them properly, and then there will be no such thing as failure. I know of a master cabinet-maker that has recently put in a machine that takes up at least 8 ft. of room, and room that he could hardly spare, when if he had asked a practical man he could have been told how to put up a machine that would have done his work, and not taken up above 18 inches square of room, nor cost half the money, and been entirely out of the way; of course, I can only say it is from the want of knowledge of machinery. Put in the right machinery, and give them the wood; then we can make machinery pay as well in England as in America: put in your shop the right machinery and have it properly managed, and then we will have no more Belgium doors and sashes. We had a specimen of them a short time ago in building one of our new hospitals: they could not use half of them, and I am surprised to think that some enterprising capitalist does not take it in hand, for I am positive we could make as cheap as we could import.

Now one word to "B. J. A." on machinery in general. You say that England leads the world

in wood-cutting machinery, which was proved at the Vienna Exhibition; but, sir, you do not say whether they are copies of Richards, Thorne, & Co.'s, of Philadelphia. Now let us give our American cousins what praise is due to them, for I have seen some as good machines in America as I have here; and I have a piece of work with me now that was done on an American machine, and I have not seen or heard of a machine like it in England, and it is a machine that every master cabinet-maker ought to have. Machinery will pay as well here as in America if it is properly managed; but buy the right kind for your work, not of A, or B, or C, but of A, B, and C, and then you can get the machine that is best adapted to your work.

W. C. H.

FROM POMPEII.

PROFESSOR CHURCH, of Cirencester, writing from Naples, says:—

The condition of the streets, temples, and houses at Pompeii is far more perfect than I had expected to find it. The climate is far more favourable to the preservation of such remains than that of England. The rich colours of arabesques and pictures remain upon the walls, and one can see through the windows of the houses the very views of Vesuvius and of the Bay which the Pompeians saw, and for which it is evident the arrangement of the windows was originally planned. One great point of difference between the works of the Romans here and in Britain strikes one at every turn. If we compare the walls and pavements of Pompeii with those of Corinium and Chedworth, we perceive how skilfully the Romans in England changed their modes of building and decoration to adapt them to the altered condition and different materials of the new country. The substitution of baked clay and of colic and liassic stones for the rich and abundant marbles of Italy, is one point which may be noted in this connexion.

The museum of Naples contains the best treasures of fine art and all the more interesting objects of domestic life and of civilisation which the excavations have yielded. Here are marbles and bronzes, leaves of bread, with olives, walnuts and figs, jewels and vases of gold and silver, papyrus rolls, 4,000 specimens of ancient glass, and I know not how many thousands of painted earthen vases. The inscriptions, the mosaics, the wall paintings, and the sgraffiti (or wall scribbles) are of the deepest interest. Two matters here suggest themselves for remark in connexion with the remains of Roman art at Cirencester. In the Corinium Museum is a fragmentary head carved in stone, one of the eyes of which has traces of the black enamel which represented the pupil. This mode of treating the eye is quite common amongst the works both of bronze and of marble found here. Another point is this: my observations on hundreds of wall-scratchings at Pompeii and elsewhere in this neighbourhood have confirmed my conviction of the genuine Roman origin of the example of squared words which was found at Cirencester: I now feel it impossible to doubt its authenticity.

HOUSE-TOP GARDENS.

For some time past, an idea has obtained that the garret story, now the least attractive, might, without much extra expense, be made the pleasantest in the house. It was suggested in the *Builder* years ago. The roof itself should be as easy of approach as any other floor in the house, and, with a flat properly-constructed roof, surrounded by an ornamental railing, the lounge would, in fine weather, prove an agreeable airing place for the household. A step further, and we have the house-top garden, or the house-top conservatory. There can be no doubt that the proper carrying out of this idea, in a variety of ways, would prove one of the most agreeable innovations ever made in gardening. To Mr. Lascelles, the horticultural builder, of Bunhill-row, Finsbury, says the *Builder*, belongs the credit of showing what may be done in this way, even in the heart of London. The roof conservatory forms the roof-story of Mr. Lascelles's offices; the floor of the conservatory, which is on a level with the bottom of the cornice shown in an illustration given by our authority, forms also the roof of the story beneath, is formed of concrete, with iron imbedded in it, to secure all the needed strength. Brick beds have been

formed round the sides of the house, and these contain earth for vines, which cover the roof. The surface of these beds forms a convenient standing-place for plants in pots. The house is of wood, bent by the aid of steam, and well, but not expensively, constructed, and the effect from the street is described as being very good. The glass is not bent, although it is so in appearance. With dense shade overhead, a house of this kind would form a fernery, and without such shade, fruits that endure a dry atmosphere might be grown after the orchard-house fashion. Abundance of water would, of course, be required in any case, but this would not lead to much inconvenience, as the ordinary supply to the house could be made available by the cistern being placed on the conservatory floor. The roofs of large public buildings, such as theatres, would afford capital sites for winter gardens on a large scale; water in abundance is required on such roofs, and that is the chief requirement of the plants. In such cases, the winter-garden would form a new and attractive feature of the establishment. As regards business houses, a modification of the same plan might be desirable, where very good light was required in the upper story. Such a pleasant innovation in the City naturally suggests many ways in which a like kind of glasshouse might be made to add to the comfort and elegance of private houses of every class, from those who could afford a well-furnished winter-garden to those who could only use the upper story as a playground for children. The architectural difficulties are surmountable. The ordinary square type of glasshouse would, of course, be unendurable over any handsome house. Suppose a builder is about to erect a row of a dozen or so of good large houses, each of these might be furnished with its conservatory on the roof, communicating with the conservatories of the houses on both sides, so that the whole would form one continuous greenhouse, uniform in height and architecture, and so presenting a much more pleasing appearance, when viewed from the road or street, than if the conservatory of each house was detached and built in a different style. This would form a very fine winter-garden, common to all the inhabitants of the row or block of houses, much in the same way, as is at present the case with many London gardens.

THE INFLUENCE OF EASTERN ART ON EUROPEAN MANUFACTURES.

At the conclusion of the paper on this subject, read by Dr. Dresser at the Society of Arts, part of which we printed in our last,—

Mr. Christian Mast, remarking on the observations of Dr. Dresser as to the origin of Oriental art, thought that religion was really at the bottom of all high art, and that was the cause of different kinds of art being represented in different countries. Mosaic art clearly had reference to the Mosaic religion. They could not have produced a style of art like the Greeks, who were taught to honour men, and which resulted in their producing the most beautiful forms of a beautiful idea, as exemplified in their fine statues, which were the most perfect creations of beauty the world had seen. The same observation would apply to Christian art, as seen in the Gothic architecture, in which our cathedrals were constructed. His opinion was that the perfect art of the Greeks, and the art of the Moors, and the Gothic art could never be surpassed. They were perfection. He agreed with Dr. Dresser, that our object must be to learn from the East, and to endeavour to reproduce from our own midst a new art, and not to imitate. The whole nation must work at it; and if the religions of the nations of old led them to progress in art, so it would be amongst ourselves, for religion was the primary cause of a higher degree being attained in art.

Dr. Heinemann, having been to Vienna, and paid special attention to the works of art, could bear testimony to the correctness of the observations of Dr. Dresser. Not only England, but Germany, was also persuaded that there was very much to be learnt from Eastern art. In almost all the books of art, especially in those giving a history of painting, it was stated that the infant standing in the vesica-shape, was of Christian origin. He thought it was not of Christian origin, but could be traced to other sources. Even the cross, the symbol of the Christian religion, had nothing to do with Christianity, so far as its origin was concerned. Mr. Pearsall ventured to suggest that the

lecturer should on another occasion give an account of the works of English manufacture and art which were introduced into the East, of those which were successful and those which were rejected, for there were always two sides to a question. We had sent art productions to the East, and it would be very satisfactory to English capitalists to know what works go to Eastern countries, why they go, and why they were esteemed. In Eastern countries, where the Mahommedan religion prevailed, the precepts of the Koran were carried into ordinary life, and the people were not permitted to make a representation of any living thing; and therefore everything was distorted or converted, or conventionally represented, and was not a liberal representation at all. They were not allowed to give a direct representation of nature, save those of royalty, the sun, and so forth; and even certain colours were tabooed. English ladies in Constantinople had been laughed at and been subject to annoyance for opening a green umbrella, green being a sacred colour. It was necessary, therefore, for the English manufacturer to have some knowledge of what would be acceptable; for what was the use of attempting to design a thing for the East, which, though it might be beautiful to our eyes, would be of no use. In illustration of the lack of English art which was suited to Eastern tastes, he instanced the difficulty which had been experienced by the English Government in the selection of suitable presents which it was desirous of making to certain Eastern persons at the close of the Crimean war, owing to the great difficulty of obtaining suitable designs. Eastern people had prejudices which must be consulted, and it was necessary to avoid hurting them.

The Chairman (the Rev. Dr. Lee) said it became his duty, as it certainly was his pleasure, to convey the thanks of the meeting to Dr. Dresser, for his most interesting, able, learned, conclusive, and argumentative paper. One point seemed to have been brought out with great clearness, both by the lecturer and by those who had spoken, the intimate connexion of religion with art, not only with ecclesiastical architecture, but with poems of domestic manufacture. The greatest poems ever written were religious poems. The most important buildings were erected for purposes of religion, whether in Egypt, or in Persia, in India, or in our own country. And he was quite sure that the style of architecture which was most agreeable, most remarkable, and he might say the most telling, was what he might reasonably call the Christian style—the Gothic. This had been revived in the present day, and he saw no chance whatever of our arriving at any kind of composite style. Of all the styles of architecture, we were returning to that which was peculiarly English, essentially Christian, and inherently beautiful. He would defy any one to point out any building in London, notwithstanding its deficiencies, which so attracted the foreigner as the Houses of Parliament. It was a delight to look upon, though he was perfectly certain we should have even a finer specimen of that kind of architecture in the new Law Courts.

Dr. Dresser, in replying, said he had expected to receive a severe criticism on his paper, but was agreeably mistaken. He did not think Mr. Ford had quite comprehended his remarks as to the ugliness of certain bridges; but he still maintained that many engineering structures were insufferably ugly. Engineers had no taste as a rule, and the manifestation of an ignorance in this respect our engineers were continually thrusting upon us, till it was absolutely painful. But he did not see how it was possible for them to become acquainted with the laws of beauty and utility, for it seemed to him that a lifetime was almost necessary to learn his part—the laws of beauty. As to the remark that we had done much for the East, by sending our manufactures out there, he would ask, what had we done for India compared with what they had done for us? We derived a vast number of most valuable hints from the East. But what had we done for them? We had established schools of art in Calcutta, Bombay, and certain other places, and what was the result? In the Exhibition of 1862 were to be seen carpets manufactured in India by those who had been taught in our art schools, which, being exhibited by the side of native manufactures, were an utter national disgrace to us. We had done a vast deal to vitiate their taste, but he denied that we had done one single thing to raise them in a knowledge of decorative art. Instead of spending money in establishing such schools, he would rather spend

money in studying under those native artists, who, he contended, were the greatest ornamentists in the world. From a utilitarian point of view, he certainly admitted we were, as manufacturers, the first in the world. He would observe that in Persia they frequently used figures and represented living objects, such as the human figure, beasts, and so on; and, although the Koran did not allow it, it was continually done. As to the remarks of the chairman, he would say that Christian art was essentially heathen. He was prepared to demonstrate that the nimbus came from fire-worship, and he could trace it all through from its origin. He was prepared to show that the vesica shape had its origin in heathen religion, that the winged cherub also was of heathen origin, and that the cross was a symbol in Egypt. Indeed, he would even go so far as to say that every Christian symbol was of Pagan origin, and that Christianity, as it united Classic and Gothic architecture, adopted all those forms which it found already prepared, and which were suitable as peculiarly striking expressions of the new faith. And he was also prepared to show that it adopted all those elements which were peculiarly striking as symbols. It was a subject which had for twenty-five years occupied his attention, and he felt himself prepared to prove it, and that the very best flat ornaments of the world have resulted from fire-worship.

GAS WORKS, PORTSLADE, SUSSEX.

INSTITUTION OF CIVIL ENGINEERS.

On February 3rd the Paper read was a "Description of the Brighton and Hove General Gas Company's Works, Portslade, Sussex," by Mr. John Birch Paddon.

The site of these works was the widest, most level, and highest part of a tract of shingle lying between the sea and the canal forming the eastern entrance to Shoreham Harbour. Excellent material for concrete was found in the excavations, and the foundations of the walls were extended so as to make the proportion of the weight of the superstructure to the bearing surface 15 cwt. per square foot. The concrete bed under the retort benches was 7 ft. 6 in. thick.

The retort-house was 284 ft. 6 in. long and 80 ft. wide, inside measurement. The chimneys were constructed with the lower parts of brick, and the upper parts of wrought iron, and were sufficiently light to be placed on the benches, so that no floor space was occupied. They were 71 ft. 6 in. high, 3 ft. square at the bottom, and 3 ft. in diameter at the top, the least sectional area giving 1 square inch for each linear foot of retort, a proportion which had been satisfactory. In consequence of the exposure of the roof to storms of great violence, and to rapid corrosion from the proximity of the sea, it was considered desirable that it should be of great strength, and that its parts should be few and accessible. Accordingly, the roof was designed to sustain a weight equal to 60 lb. per square foot of external surface, or 72 lb. per square foot of plan covered. With that weight no piece of metal was subjected to a tensile strain exceeding 5 tons per square inch of section, and the strains on the parts in compression varied from 2 tons to 4 tons per square inch of section. The roof consisted of ten Warren trusses of 84 ft. span and 14 ft. deep, placed about 30 ft. apart. Across the top beams were laid four lines of latticed purlins, and upon these purlins rested the bars carrying the skin of the upper portion of the roof. The lower portion of the roof was formed with the framed struts of trusses, and some lighter intermediate framed struts were joined to the bars immediately over them. Thrust on the walls was prevented by a series of ties, with screwed couplings, placed between the feet of the intermediate rafters and principal trusses. The laths were of channel-shaped section, and Dutchess slates were fastened thereto with screwed clips, two to each slate. Four wrought-iron rudimentary shafts, 10 ft. in diameter, enclosing the tops of the chimneys, allowed the smoke to escape; there was also a protected opening, 5½ feet wide, along the ridge for its entire length, for the same purpose. The roof was constructed by Messrs. Newton & Chambers, of the Thorncliffe Iron Works, and its cost, ready for slating, was £7,106, per square of 100 ft. There were twenty-four benches of these retorts. Each bench had eight long retorts, and there being two mouth-pieces to a retort, made three hundred and eighty-four mouth-pieces in all.

The engine-house contained four exhausters, each exhauster being driven directly by an independent engine. Two of these exhausters were for the purpose of removing the gas from the hydraulic mains and driving it through the scrubbers and purifiers. A self-acting by-pass was carried from the inlet of the exhausters to the inlet of the purifiers, and each exhauster was connected with a governor, which also acted as a by-pass. Only one of these exhausters was in use at a time, the other being in reserve.

The scrubbers used at these works were the first of the kind erected. They consisted of a series of perforated discs or screens, which revolved slowly, in a tank half filled with liquor, so that the gas might pass through the portions of the screens above water.

The collective internal capacity of the purifiers amounted to 22,600 cubic feet. The station meter, one of the largest yet made, was erected, by Messrs. Parkinson & Son, to pass 100,000 cubic feet of gas per hour, and was placed next to the engine-house. The gas-holders were all at Hove, and their tanks were about 34 ft. above the level of the works at Portslade.

The entire cost of the works was about 72,000*l.*; and when the proposed second retort-house and coal-store were erected upon the site allotted for them, the total expenditure would amount to 100,000*l.* The works would then be capable of producing 600 million cubic feet of gas per annum at a cost of 166*l.* per million on the capital so expended.

TROWBRIDGE DRAINAGE AND SEWAGE WORKS.

The works for the drainage of Trowbridge, commencement of which was reported in the *Builder* in the beginning of last year, are now rapidly approaching completion.

The Local Board have lately been discussing the best method of dealing with the sewage of the town, and on recommendation of a committee appointed to visit the sewage work at Warwick, Leeds, and other towns, have resolved to adopt the principle of precipitation, and at the last monthly meeting instructed their engineers, Messrs. Gault & Beesley, and Mr. A. W. Estridge, to prepare the necessary plans and estimates for a precipitation and filtration scheme.

IMPURITY OF THE LAMBETH COMPANY'S WATER SUPPLY.

DR. FRANKLAND, in his last report just issued, as to the water supplied to the metropolis during the past month by the several metropolitan companies, states that the water supplied by the Southwark and Lambeth Companies is inferior in quality to that supplied to any other part of the metropolis. In his report, he describes the amount of organic impurity, during the last month's supply, in a given volume of the Kent Company's water as unity, and states that the proportional amount in an equal volume of water supplied by the New River Company was 1.1; by the East London, 1.5; West Middlesex, 2.3; Grand Junction, 2.6; Chelsea and Southwark, 3.0; and Lambeth, 8.8. He further states in his report that the water of the Lambeth Company had deteriorated, whilst the river water of all the other companies had improved.

THE WORD "WYK."

In reply to the first query of "Civis" in the *Builder* of 10th January, about the signification of the word "Wyk," I can tell him that it is in Holland a very well-known name for quarters or neighbourhood, into which cities are divided, either for municipal government or for the administration of the poor. The *ij* in *wijk*, formerly written *wyk*, is not pronounced as in *Wych*-street, but as the sound in *NINE*, *WISSE*, &c.

Via de Ald Wyk must have had once the signification of the "way of the old quarter," but *wyk* means not "vions," a way.

I cannot say why a Dutch name is given to a way or village. Was it a Dutch colony of workmen? or may it be taken as belonging to the large number of Dutch and English names and words which are in both languages alike, or almost alike, especially in the old *Fries* language, which is still universally spoken in Friesland, one of the provinces of Netherlands.

Amsterdam? D. J. VAN DEN BRINK.

NEW CHURCH TO THE SACRED HEART, PARIS.

THE Cardinal-Archbishop of Paris has invited competition for plans of a new church, to be dedicated to the Sacred Heart. The competition is open to all French and foreign architects, and plans must be sent in before the 30th of June. The structure is to include a crypt, the church proper, several sacristies, and a residence for the sacristan. The plans must be detailed, and accompanied by an estimate according to Paris prices. The total cost is not to exceed seven millions of francs. The plans will be exhibited during twenty days, and submitted to a jury consisting of twelve members appointed by the archbishop and six members selected by the competitors. Three premiums will be given,—the first to be 12,000 francs, the second 8,000 francs, the third 5,000 francs; seven sums of 1,500 francs will be given as a compensation to unsuccessful competitors. The archbishop is not bound in his choice to the plans submitted, but reserves to himself entire liberty of action. Full particulars for the guidance of architects may be had in the *hôtel* of the archbishop at Paris, from the 1st of February.

THE DESOLATION OF THE COLOSSEUM.

SOME remarks by Mr. C. F. Fuller appeared in the last week's *Builder* under this head. Allow me to suggest what I think would be a better appropriation of this building than those put forward. The frehold belonging to the Government, I have no doubt but that the present lessees would be glad, for a small sum, to part with the remainder of their interest in so unprofitable a property; and then, with very little adaptation, that portion of the collection of the British Museum which has for years been hidden away, might be removed there, to the great advantage of the public. I believe that almost every one would be sorry to see this building pulled down, which is one of the landmarks of London, and, if it were so appropriated, it would be of easy access from any part of London, and an ornament to the Regent's Park retained for a very useful purpose. R. L. ROUMIEU.

HANOVER CHAPEL, REGENT-STREET.

In reference to the remarks made at the Institute last week as to the late cleansing of the stonework, it appears to have been forgotten that the front was paved over with boiled oil, which I recollect perfectly, being done soon after its completion, and the sombre brown effect it produced until it became begrimed with dirt and soot; but no doubt this had the effect of preventing the absorption of the moisture, and the skin thus formed will account for its not being affected by "Ransome's solution." C. EALES.

WEIGHT OF MATERIALS.

SIR, I am wishful to know what the weight is of a cubic yard of blue lime, also of screened ashes. The latter will, no doubt, vary very much, especially where they have been burnt again, and have become red. Would any of the readers of the *Builder* kindly enlighten me? G. E. W.

DISHONEST BUILDERS' FOREMEN.

AT the last Middlesex sessions, Charles Canham, one of the foremen carpenters in the employ of Messrs. Cubitt, builders, was convicted of a very serious robbery, and his sentence was postponed with the hope of his giving some information of the valuable property stolen.

The facts of the case are, the prisoner was left in charge of a job in Brooke-street, Park-lane, a nobleman's house, and the family being away, the prisoner had the care of the pictures and furniture on the premises. Messrs. Cubitt had the highest confidence in the man, and he repaid it by robbing the house of several pictures and other property valued at over 200*l.*, which were found and pledged and otherwise got rid of. A portion has been recovered, but the remainder is missing.

Messrs. Cubitt were in hopes that Canham would state where the missing property was to be found, and the Judge did his best to assist the firm, who were placed in an unpleasant position by sending a thorough rogue to an employer's house; and Mr. Sergeant Cox told the prisoner it would depend materially on the information he gave to recover the valuable property, as to the term of sentence he would get.

On Monday last, on being brought up for judgment, the policeman in charge of the case said it was understood that the prisoner would write to the prosecutors and make what amends he could, but he had remained silent.

The Judge said the case was a very serious one, and he wished the law allowed him to send the prisoner to penal servitude. The utmost he could do was to sentence him to two years' hard labour, in the House of Correction.

Another serious case, in which a plumber has been convicted of robbing his employers, was heard at the Surrey Sessions last week.

ATTRACTION.

SIR,—One of your correspondents would render me a signal service, by indicating the mode of solution in such a problem as the following:—What length of time would a body occupy in falling to the earth from the distance of the moon under the influence of terrestrial attraction alone? I can calculate separately the time, supposing the continually gravitative force to be constant, and can reckon the increased power of that force at each diminished distance from the earth; but cannot combine the two results, so as to feel a certainty of accuracy. I should prefer an explanation by a simpler process, rather than the integral and differential calculi if possible.

CARLO F. JOHNSON.

STEAM TRANSIT ON CANALS.

SIR,—In the *Builder*, p. 109, I read a short description of a (so called) new method of steam transit on canals, &c.

In the autumn of 1869 I saw the plan you mention in operation in the neighbourhood of Brussels, on driving from that city to the Palace of Laeken. A drag-boat or tug had a following of several barges, and the endless chain was taken up and laid down just as you describe.

The objection to the system that occurred to me at the time was the bow of the tug being so much submerged by the weight of the chain (which traversed the deck from stem to stern) as to evidence great waste of power. This might possibly be overcome to some extent by passing the chain through a compartment at the bottom of the boat, and not lifting it clear of the water.

The canal on which I saw it at work had sloping banks, and there was little wash, but the rate of progress was very slow.

Colliery tramways have been worked by means of endless chains in this neighbourhood (Birmingham) for years. E. BETTMIDGE.

* * A similar arrangement is used on the Seine, Paris.

CHURCH-BUILDING NEWS.

KIRBY-LE-SOKEN (Essex).—The re-opening of St. Michael's Church by the Lord Bishop of Rochester took place on Friday last, when there was a large gathering of the local clergy and gentry. Some forty years ago the church was "restored" in the worst fashion of the day.

The original roofs and nave arcades were taken down, and a low-pitched slated roof with flat ceiling took the place of the early ones. The removal of the nave arcades greatly weakened the lower at the west end, and in the present restoration their rebuilding on the original foundations was the first work to be done. The nave and north and south aisles are covered with open-timbered roofs, and the entire area of the church has been benched in pitch pine. A stone pulpit and oak reading-desk have also been provided. The north wall of the church has had a moulded stone parapet added, and the south wall has been refaced with rubble. The tower has been strengthened at the base, and the staircase turret and battlements are partly rebuilt. A new north porch replaces the old one, and an organ-chamber is built on the site of the modern vestry. The entire cost of the restoration (2,000*l.*) was generously contributed by Mr. Richard Blanchard, whose absence at the opening ceremony was greatly regretted. The architect for the restoration was Mr. Henry Stour, of London; and Mr. Joseph Grimes, of Colchester, was the builder.

EXWICK (Exeter).—Exwick Chapel has been reopened. This chapel was built in 1842, under the auspices of Bishop Medley, then Vicar of St. Thomas. When Exwick was constituted a parish it was found necessary to enlarge the chapel, and the same architect who built the edifice (Mr. John Hayward, of the Cathedral-yard) was consulted by Mr. V. Gibbs, of Tyntesfield, and the work was carried out under his supervision. The additions consist principally of a north aisle, chancel, vestry, and organ-loft, the church being thus considerably extended to the north and east. The new aisle is divided from the nave by an arcading of three bays. These are supported by clustered columns of polished Devonshire marble, and are surmounted by carved capitals, the type of foliage used for the decorations being semi-natural. The line of the sanctuary is defined by polished marble columns, surmounted by carved capitals running up to and adding support to the roof. The chancel and other avenues are laid with encaustic tiles, from Messrs. Morris & Co's, of Broseley. The stone-dressings are all of Bath, the window labels and the roof corbels being stopped by carved heads. The stone-carving is by Mr.

Harry Hems, of Exeter. The new seating is all open, and of oak. The seating in the chancel and the other wood-carving were executed by Mr. Sendell, carver, Southernhay, the devices in connexion with the heads of the seats being passion-flowers, vine, oak, ivy, and hawthorn leaves. The reredos and altar have been refixed, and a new altar-rail supplied, from the design of the architect, by Messrs. Richards & Co., of Coventry. A new warming apparatus has been fitted up by Messrs. Garton & King. The contract has been carried out by Messrs. Moass & Son, of Exeter, under the personal superintendence of the architect. The whole of the expense will be defrayed by Mr. Gibbs, and he would have built a tower to the church had it not been for a difficulty respecting adjoining property. Mr. Gibbs has provided an endowment of 200*l.* a year, and built a parsonage-house.

Wokingham.—St. Paul's Church, Wokingham, has been re-opened. This church, which was erected by the liberality of Mr. John Walter, M.P., has been considerably enlarged by the addition of a north and south aisle. The south aisle was opened on Whit Sunday, 1873, and the north aisle has now been opened. Mr. Woodyer, of Grafton, near Guildford, is the architect; and the work has been carried out by Mr. Walter's own workmen, under the direction of Mr. Deacon, clerk of the works. The increase of accommodation has been considerable, 240 additional sittings having been provided. The nave roof has been enriched and strengthened by tracery in spandrels in the principal trusses, and the substitution of intermediate trusses, purlines, and ceiling down to the original purlines in the old roof, which makes the nave roof 41 ft. 6 in. in height, and the wagon-shaped roof being substituted for the pointed has improved the acoustics. By far the major portion of the cost has been borne by Mr. Walter, and the parishioners have contributed 500*l.*

SCHOOL-BUILDING NEWS.

Stockport.—The Primitive Methodist Schools, situate in King-street West, have been completed. The schools were built from designs prepared by Mr. T. H. Allen, of Stockport, architect, and have been carried out by Mr. Henry Derbyshire, mason and contractor. The brickwork was executed by Mr. Henry Barlow, builder; the joiners' and carpenters' work by Mr. John Davies; the slating by Mr. Charles Clarkson; the plastering and painting by Mr. John Stokes; the plumbing and glazing by Mrs. Thompson; and the ironwork by Mr. John Worrell. The contractor and sub-contractors gave a supper at the Canning Inn, to their workmen and friends, on the completion of the work.

Wheeler.—New day and Sunday schools have been opened at Wheeler. The schools, which are for infants and girls, are in connexion with the Wesleyan Chapel, now in course of erection, but they are not to be devoted exclusively to the teaching of children whose parents belong to the Methodist body. The entire cost of the chapel and schools will be 2,800*l.*, towards which about 1,500*l.* have already been received or promised. The schools are situated underneath the chapel, and are lofty and well ventilated, also fitted with Grindell's patent warming apparatus. Mr. J. B. Ford, of Burslem, is architect, and Mr. William Martin, of Haslington, is the contractor for the erection of the building.

Murley.—The recently-erected National Schools here have been opened by the Bishop of Oxford. These schools have been erected, in accordance with the requirements of the Education Department, under the provisions of the Act of 1870, by voluntary rate, to accommodate eighty-four children, upon a site given by Mr. E. J. Athawes, at a cost, including boundary walls, bell, architect's commission, &c., of something under 600*l.*, from a design of Mr. E. Swinfen Harris, of London and Stony Stratford, architect; the builder being Mr. Matthews, of Winslow. The building is of red brick and tile, with layers and rows of black bricks and tiles at intervals, of modern design. The roof is open polished deal, the walls painted and skirtoed to a depth of 3 ft. The school-room is 35 ft. by 16 ft., with boarded floor, and contains a grate, hooded with stone. A class-room, 11 ft. by 12 ft., is similarly furnished, and, in addition to offices, a residence for master and mistress is attached. There is a large garden to the residence, and

playground for the scholars, the whole occupying about half an acre in area.

Chelsea.—The new schools for the parish of Holy Trinity, Upper Chelsea, which were formally opened by Earl Cadogan, on the 27th ult., are situated in Draycott-street, with additional frontages towards Pavilion-road, and Draycott-place. Accommodation for 400 boys is provided, in accordance with the regulations of the Committee of Council, in two school-rooms, 75 ft. by 20 ft., and 58 ft. by 20 ft.; and two class-rooms, 19 ft. by 15 ft., and 17 ft. by 15 ft. The principal entrances are in Draycott-street and Draycott-place, each with class-room adjoining, while lavatories and the usual conveniences are provided at the back, the playground being in front. The style is Gothic, pretty freely treated in stock brick, relieved by a few red and white cornices, and moulded ones, in bands, arches, and plain, and some Bath stones, in windows, doors, and fireplaces. The roofs are covered with slates, and finished with ornamental buff tile crests. Inside they open to the ridge, stained and varnished, and plastered between the rafters. The lighting is prettily effected by pendent gas stars, from the centres of each pair of arched principals. Webb's encaustic tiles are used to floor the porches and hearths, and the grates have been provided and fixed by Mr. Penfold. The sanitary, warming, and ventilating, arrangements have had consideration, and the desks in the largest school-room will be "reversible," with hinged seats, to allow of a free passage, while in the smaller room they will be those with enclosed shelves below, divided off for each boy. The playground will be covered with tar pavement, provided with gymnasium, and enclosed with dwarf wall and railing. These schools having been carried out for only 4*l.* 10*s.* per child (exclusive of a special extra item of foundations, caused by building over ground excavated by the Metropolitan District Railway), are amongst the cheapest that have been erected in London as yet. The architect was Mr. E. H. Lingen Barker, and the contractors were Messrs. Thom & Co.

Books Received.

Ecclesiastical Antiquities of London and its Suburbs. By ALEXANDER WOOD, M.A. London: Burns & Oates.

WHEN one finds on the title-page,—

"O, who the ruins sees, whom wonder doth not fill
With our great fathers' pompe, devotion, and their skill,"

and that in the preface the book is presented "to the reader as architectural and antiquarian only," a little more architectural matter might be expected, and we might add, a little more architectural knowledge too. Mr. Wood is scarcely posted up in modern researches either, or he would not say "There is a tomb of a boy-bishop at Salisbury," that legend having been destroyed some years ago. Nevertheless, it is a very pleasant and readable book so far as it goes.

The City of London Directory for 1874. W. H. & L. Collingridge, Aldersgate-street. MESSRS. COLLINGRIDGE improve their Directory year by year, and have rendered it indispensable to a large number of persons. The present issue includes a large map of the City proper, which would be clearer if it were coloured on a different principle.

A Dictionary of Artists of the English School. By SAMUEL REDGRAVE. London: Longmans, Green, & Co. 1874.

MR. SAMUEL REDGRAVE has had much to do with art and artists for many years past, and is well qualified for the task he undertook. He claims in his preface, and with some reason, that "the present work appears to be the first to combine, in a dictionary form, some account of the artists of the English school exclusively, and to include the painters, sculptors, architects, engravers, and ornamentists," and he adds, "the number who have been thought deserving a place is probably ten times greater than will be found in any other work."

The book is a valuable one, and will be made more so in succeeding editions. So difficult it is to obtain accuracy in such a work in the first instance, that, dipping promiscuously into the Dictionary, we found an error under each of the first six heads looked at. For example, Joseph Gandy "did not" make the drawings for Britton's

architectural publications (he made very few of them); Francis Goodwin was not the architect of Hungerford Bridge (Basing); nor was Captain Brown the engineer, but J. K. Brunel; the Hakewells, of whom seven are mentioned, did not spell the name Hakewell; Sir W. Tite was not the architect of the Woking Cemetery (but Mr. S. Smirke); and so on.

Nevertheless, we are very much obliged to Mr. Samuel Redgrave for his book.

VARIORUM.

MR. C. F. AUDLEY has done good service in translating "Count Montalembert's Letters to a Schoolfellow, 1827-30." They are remarkable productions by one then little more than a schoolboy, and in these days of sneer and frivolity should recall a few readers to thought and work. We agree with the translator that "they do credit to human nature, and, as such, ought to be held out as a stimulus to the rising generations of every nation,"—always remembering the Church to which the writer belonged.—Canon Kingsley, in *Good Words*, refers to the true remedy against Drunkenness. "I said just now that a probable cause of increasing drunkenness was the increasing material prosperity of thousands who knew no recreation beyond low animal pleasure. If I am right—and I believe that I am right—I must urge on those who wish drunkenness to decrease, the necessity of providing more and more refined recreation for the people. Men drink, and women too, remember, not merely to supply exhaustion; not merely to drive away care; but often simply to drive away dulness. They have nothing to do save to think over what they have done in the day, or what they expect to do to-morrow; and they escape from that dreary round of business thought in liquor or narcotic. There are still those, by no means of the hand-working class, but absorbed all day by business, who drink heavily at night in their own comfortable homes, simply to recreate their over-burdened minds. Such cases, doubtless, are far less common than they were fifty years ago; but why? Is not the decrease of drinking among the richer classes certainly due to the increased refinement and variety of their tastes and occupations? In cultivating the æsthetic of man's nature; in engaging him with the beautiful, the pure, the wonderful, the truly natural; in painting, poetry, music, horticulture, physical science—in all this lies recreation in the true and literal sense of the word, namely, the recreating and mending of the exhausted mind and feelings, such as no rational man will now neglect, either for himself, his children, or his workpeople. But how little of all this is open to the masses, all should know but too well. How little opportunity the average hand-worker, or his wife, has of eating of any tree of knowledge, save of the very basest kind, is but too palpable. We are mending, thank God, in this respect. Free libraries and museums have sprung up of late in other cities besides London. God's blessing rest upon them all. And the Crystal Palace, and still later, the Bethnal-green Museum, have been, I believe, of far more use than many average sermons and lectures from many average orators."—"Debrett's Peerage, Baronetage, Knightage, and Titles of Courtesy, of the United Kingdom of Great Britain and Ireland" (Dean & Son, St. Dunstan's-buildings, Fleet-street), is too well known as long a standard work to need any special recommendation from us. It is edited by Robert H. Mair, LL.D., and G. Harrison, Windsor Herald, and is under direct personal and annual revision and correction. There is much information respecting the immediate family connexions of the peers, &c., added to the main subjects of the work. It also contains biographical details, and amongst its other information, particulars as to the younger branches of the families of the peers and baronets, and the addresses of widows. The work is said to contain in all upwards of 100,000 facts respecting the nobility of this country and their immediate connexions; while the annual alterations number upon an average upwards of 16,000. It is notable, we may add, in respect to the number of the children of peers and baronets, that in the preface of the work under notice, it is stated that the number of these children was singularly small during the past year; but the number of marriages recorded among the younger scions of the nobility were also far below the average. That the poorer classes, at any time, are much more prolific than the upper, or at

least the more ancient families of the upper, is well known, and that without the infusion of fresh blood from beneath,—that is, from new families among the upper classes,—our ancient race of nobles would actually soon become extinct. It seems, indeed, to be a law of nature that where animal life is maintained under difficulties, as respects food, &c., and where the life of the individual is thus curtailed, the perpetuity of the species at least is secured by an increase of progeny; and it would seem that where the security of the individual is ensured by abundance of means, the species incurs the liability of diminution or extinction. How does this law bear upon the Darwinian principle of favourable circumstances securing the perpetuity of the species? It certainly seems as if the welfare of the individual and the perpetuity of the species bear an inverse ratio to each other. Sheep, it is said, when half-starved, become exceedingly prolific. Human beings who are consumptive are well known to be more than usually prolific, and the symptoms of the disease will even be greatly diminished for the time in child-bearing, to be afterwards, perhaps, increased in an accelerated ratio.

Miscellaneous.

The New Thoroughfare.—The Metropolitan Board of Works, under the powers conferred on them by the Metropolitan Streets Improvement Act, 1871, are proceeding with the settlement of compensation claims preferred by owners and occupiers of property required to be demolished for the purpose of constructing the new street from east to west. Hitherto London has lacked a direct thoroughfare from east to west, and *vice versa*. This want the Metropolitan Board are about to supply, but the commencement of practical operations is, of course, impeded by the settlement of compensation claims. The new street will be formed in a direct line from Vernon-place, Bloomsbury, to Shoreditch. On Wednesday Mr. Penfold was engaged as umpire, appointed under the Lands Consolidation Act, in arbitrating upon the claim of Mr. Gates, a furniture-dealer, of Curtain-road, Shoreditch, who sought compensation in respect of his compulsory dislodgment, consequent upon the construction of the new street. He claimed about 3,000*l.* damages. Mr. Philbrick was counsel for the Metropolitan Board of Works, and Mr. Horatio Lloyd, instructed by Mr. James Boulton, solicitor, of Northampton-square, Clerkenwell, appeared for the claimant. After an investigation of the facts, the umpire took time to consider his decision.

The Unwholesomeness of Cast-iron Stoves.—MM. Morin, Payen, Deville, Bernard, Bussey, and Rémy, have been commissioned by the French Academy to investigate this subject. Experiments were instituted with stoves of cast and wrought-iron, using soft coals, with the view of learning under what condition stoves of metal become unhealthy, through the presence of carbonic acid and carbonic oxide, in the rooms heated by them. Rabbits were made to breathe the air passing over stoves of cast and wrought iron heated to redness, and afterwards chemical examination of the blood of the animals was made, to ascertain the presence of carbonic oxide. The following words are used in giving the results of the experiments:—"If the summary of the experiments made upon rabbits does not permit us to fix with any precision the proportions of carbonic oxide absorbed by their blood, nor that of the oxygen which has been expelled from it, the results all agree to show that the use of stoves of cast-iron, heated to a red heat, causes, in the blood, by the presence of carbonic oxide, a gas eminently poisonous, changes whose repetition may become dangerous; while the same method of investigation has not revealed analogous effects when the heat has been produced from stoves of wrought or sheet iron."

Railway Matters.—The report of the Metropolitan District Railway Company is again looked upon as unsatisfactory, the slight increase of 2,294*l.* in the receipts having been concurrent with an increase of 11,550*l.* in working expenses. To meet all charges the revenue is deficient to the extent of 9,177*l.* The directors point to the oppressive and invidious character of the passenger duty as one of the chief among adverse influences, but say nothing on the consequences of the non-amalgamation of the line with the Metropolitan.

Indian Art.—At the meeting of the Indian section of the Society of Arts last week, a paper was read by Dr. Zerffi entitled "Indian Art." The chair was occupied by Major-General Sir Vincent Eyre, C.B. Dr. Zerffi, in his paper, gave a minute account of the progress of art in India, which he traced from the earliest symbols, representing fire, water, and air, and to which he attributed the introduction and worship of a triple-headed god. The stupendous religious temples existing were so many evidences of the earliest style of art, and were in themselves tokens of the painstaking and wonderful care then bestowed, although very often on a grotesque or incorrect principle. The Indian mind required total reformation from an artistic point of view, as talent was there dormant, and only required proper instruction to bring it into exercise. In one description of decorative art the Indian was not to be excelled, and that was in the colouring or ornamentation of plain surfaces and in work where his taste in the selection and juxtaposition of colour could be used. All efforts made towards the elevation of art in India could not fail to ennoble the innate taste possessed by the natives, and would also have an influence in reformation in a moral and religious direction. A discussion followed the reading of the paper.

A Relic of Ancient Bristol.—Many who have traversed St. Michael's-hill, Perry-road, and Colston-street, during the past few weeks, says a correspondent of the *Bristol Times*, have doubtless noticed an octagonal tower which is being pulled down. It stands on the south side of the junction of the above-named streets on a shelf of the hill, and from a height of nearly 200 ft. looks down upon Lewin's-mead, and the covered course of the ancient river Frome. This tower is a relic of the old White Lodge, which may be seen depicted in Millard's large map of Bristol, A.D. 1673. Therein it is drawn as a house of considerable size, with turrets at each angle of its southern front (the one shown in the picture). Built early in the sixteenth century, it stood upon the site, in all probability, of the North Lodge of the grounds and gardens of the Bartholomew Hospital, a religious edifice, whose southern arched entrance in Christmas-street, close by the steps, is an antiquarian gem of the city of Bristol.

Swimming Baths on the Thames.—A capital of 100,000*l.* is required by the Floating Swimming Baths Company, of which 50,000*l.* are now issued in shares of 2*l.* each,—payable, 5*s.* on application, 5*s.* fourteen days after, and 1*l.* a month after allotment. Of this amount 12,500*l.* have already been allotted. It is intended to establish the baths on the Thames, with convenience of place and safety from accident, and the directors expect to have the first bath at Charing-cross ready for opening at the end of June. The sanction of the Thames Conservancy and the Metropolitan Board of Works has been obtained for a site on the river, close to the Charing-cross station, in the position now occupied by one of the landing-stages at Hungerford Bridge; and the sanction of the Thames Conservancy and of the Office of Works has been obtained for another site on the Thames, off the Embankment, near Finsbury pier.

The Leicester Patent Brick and Tile Company.—The workmen and others connected with this company have dined together at the Blue Boar, Southgate-street. The chair was occupied by Mr. Alleyne Bosworth. Mr. G. F. Harrison, in proposing the toast of "The Directors of the Company," said he had the honour of filling the office of secretary. The company was started with a double object. It was started with the motive and intention of benefiting the town of Leicester by providing it with a superior quality of bricks and tiles, and so forth; and it was also for the purpose of producing honest employment for respectable men at remunerative wages, which would be beneficial to them and their families, and to the directors. In this business the directors had embarked a large capital. He was afraid it had not been going on so rapidly as it should, but now they thought they were in the right way for a successful and prosperous business.

District Surveyors.—At the meeting of the Board of Works on Friday, 6th, an application was received from a district surveyor, requesting that a deputy might be appointed in his stead for three months. It having been discovered that the surveyor wished for leave of absence in order to transact some business on his own account in Egypt, the application was refused.

Gift of a Free Library to Macclesfield.—At the last quarterly meeting of the Macclesfield Town Council, the mayor read an offer in writing by Mr. David Chadwick, the junior member for the borough, to build and furnish a free library for the town, at a cost of 5,000*l.*, and to provide about 10,000 volumes as a commencement. The building and contents he proposed to vest in the corporation. He asked the mayor to consult the council as to whether they would be prepared to obtain the authority given by the Free Libraries Act to maintain the building. The council unanimously accepted the offer, and passed a resolution authorising the mayor to convene a public meeting to consider the adoption of the Free Libraries Act.

Improved Industrial Dwellings Company.—The Directors of the Improved Industrial Dwellings Company (Limited), which was founded in the year 1863, and is still presided over by Sir Sydney Waterlow, bart., have just issued their half-yearly report and balance-sheet to the 31st of December, 1873, and from it we gather that the total expenditure on capital account has reached 256,973*l.*, and that 1,577 dwellings have been erected. The profit for the half-year was 6,166*l.* 8*s.* 3*d.*, and after carrying the proper contributions to the leasehold, redemption, and repairs funds, and adding 2,500*l.* to the reserve fund for equalising dividends, the directors recommend the payment of the usual dividend at the rate of 5 per cent. per annum.

"Howard Medal."—The council of the Statistical Society have given effect to the suggestions of the president, Dr. Guy, F.R.S., by founding a medal, under the above title, to be presented, in the name of the society, to the author of the best essay on some subject in "Social Statistics," a preference being given to those topics which Howard himself investigated, and illustrated by his labours and writings. The title of the essay to which the medal will be awarded in November next is as follows:—"The State of Prisons, and the Condition and Treatment of Prisoners in the Prisons of England and Wales, during the last Half of the Eighteenth Century, as set forth in Howard's 'State of Prisons' and work on 'Jazaretos.'"

The Sewage Farm at Northampton.—A report on this subject was read at the last meeting of the local Improvement Commissioners. It stated that the committee were much gratified at the progress which has been made in the different works. The main culverting is all completed. The drainage, too, as far as the mains are concerned, is complete. No more will be done for the present, or until a necessity for doing it is developed by the use of the sewage on the crops. The committee have considered the advisability of planting a small experimental plot of osiers, which, if they can be grown well in sewage, would be sure to prove a profitable crop. The report was adopted.

The Persian Concession.—Baron Reuter has published a letter in reply to some recent statements respecting the Persian concession. He says that the railway works were commenced six weeks before the date stipulated in the convention; that the Persian Minister of Works, in a letter dated September 11th last, expressed the satisfaction of the Shah at the commencement of the undertaking, and promised to afford all the assistance that might be found necessary; and that the railway works have since been proceeded with without interruption. Baron Reuter's latest advices, by telegraph from Teheran, lead him to anticipate a satisfactory understanding.

Accident at Pere-Lachaise Cemetery.—The tunnel by which the circular railway passes under the cemetery of Père-Lachaise, Paris, has for some time past caused uneasiness, as portions of the arch occasionally fell. The vault was carefully shored up, leaving only a passage for the trains carrying goods; but the insecurity was so evident that all traffic had at last to be suspended. Active measures were at once taken to restore the work, but on Saturday night a slip occurred, and the crown of the vault fell in with a tremendous crash, carrying with it some forty graves, and an extent of ground about twenty yards long, ten wide, and eighteen deep.

London and County Banking Company.—An advertisement in our columns shows that the directors of this company have again declared a dividend of 10 per cent. for the half-year. The account, as stated in the advertisement, deals with millions.

T. TRELOAR & SONS,
 SUPERIOR
COCOA-NUT
 FIBRE
MATTING
 AND
MATS.

Manufacturers and Warehousemen,

69, LUDGATE HILL, E.C.

GOOD
FLOOR CLOTH.
 KAMPTULICON
CORK
CARPET.

The Builder.

VOL. XXXII.—No. 1620.



The "Revue Générale de l'Architecture."

THE last six numbers of the journal conducted by our esteemed contributor, M. César Daly, sustain its reputation in regard to sound criticism and literary merit in the text, as well as first-rate execution in the illustrative engravings. Among the subjects included in these numbers are reports of the proceedings at some of the *Conférences Nationales de la Société Centrale des Architectes*, in which matters are touched upon of general interest to the profession in all countries. The third and fourth meetings of the *Société* (on the 12th and 13th of June last) were occupied by a lecture from M. Daly himself, on the subject of "the inti-

mate alliance and influence of the double study of archaeology and architecture on the history of civilisation;" and we have a pretty full report of a meeting just previously to this, at which the subject of public competitions was discussed, which so largely occupied our own central society not long since: one or two of the ideas on the subject we may note. M. Coisel, among other points, objected entirely to "international" competitions as nonsense, on the ground that each people had its own architecture suited to its own climate. Most of us will agree with the editor of the *Revue* that this is stretching a principle rather too far. The following general principles are quoted as meeting with the concurrence of the assembly:—

That competitions were not always desirable, but when held they should be open to all comers.

That foreign architects should be admitted to them, with some exceptions, "*que peut dicter, aujourd'hui le patriotisme*." (That is to say, of course, that no German architect may compete. We can only lament that "*le patriotisme*" should thus be allowed to override common sense, although we may we may not feel much surprise that it should under the circumstances.)

The architect who has the first premium should always be employed to carry out the work.

The competition should be decided on sketches accompanied by a detail to a large scale. (This is not a bad idea, and has been suggested in England.)

The jury should be composed partly of members named by the administration, and partly of persons elected by the competitors. This latter clause seems to have been contested, one member asking, "whether criminals named their own judges?" but the sense of the meeting was with the proposal.

It is comforting to find that, in spite of these admirable notions of what is right, the competing architect in France has his grievances; for in

an article in the same number, criticising the competition for the rebuilding of the Hôtel de Ville, it appears the competitors were directed to provide considerably more space in every department than existed in the old building, while at the same time they were strictly enjoined to utilise as much as possible of the remains of the former structure. Here was the point then;—to build on the old walls, which were perfectly good as foundations, and at the same time to provide the extra space;—about as ingenious a "competition" dilemma as we have heard of. Sixty-six architects endeavoured to solve it.

In No. 7.8 we find a long and useful practical account of the construction of the "*Dépôt des Forges et Fonderies du Val d'Osne*," in the Boulevard Voltaire, and a geological and chemical analysis, by M. Detain, of the building stone obtained from the Korsanton rock (near Brest harbour), a stone which has been much used for three or four centuries back in the building of churches in its neighbourhood, and has, we are informed, shown weather-resisting qualities almost superior to those of granite. M. Pascal furnishes his impressions of architecture at the Vienna Exhibition, in an article more occupied, in fact, with the architecture of Vienna itself, of which he seems to have imbibed a righteous horror. M. Pascal preaches against cement in a strain that Pugin need not have been ashamed of, and observes that a town which had variety enough of building material to furnish every suggestion for a special originality of treatment had thrown it all away for an expression of grandiose vulgarity. "Age will tarnish these structures" (the dwelling-houses of the new town) "instead of embellishing them," a remark which embodies a great deal. The art of growing old in a dignified manner is confined to true architecture as well as to true men. The whole aspect of Viennese modern architecture is pitifully summed up in the words, "*constructions menées, fausses, peu durables, sans puissance d'aspect*"; and with the latter attribute the inhabitants are content. As "certain quarters of new London," we read, present the same aspect, the criticism must be taken home to ourselves also. The same writer contributes to No. 9.10 a criticism on *Les Envois de Rome en 1873*, a subject on which a very lively article was contributed in a former year by M. Garnier, to which we made reference at the time. *Les Envois de Rome*, our readers may not all be aware, are the studies annually sent to Paris by those students (*pensionnaires*) who have obtained what we should call an "exhibition," which provides them funds to go and study in Rome. Comparing this with former articles on the same topic, we are not surprised to find M. Pascal thinking a word of apology necessary for the sameness of subjects and studies turned out year after year by the successive generations of students. The restoration of the Temple of Vesta appears to be one of the prime objects of ambition, varied by similar efforts in regard to other remains of Roman architecture. "Work on your own account," says our critic; "forget that your neighbour was working at the same study yesterday; they" (the ruined temples) "may teach you something different from what they taught him." This may be; but one cannot help feeling that there is something very frigid and academic in the nature and manner of the studies here indicated.

The paper by M. Ravon, "*De la Responsabilité des Architectes*," a criticism on a paper on the subject read by M. Hermant, at one of the "conferences" above referred to, goes very fully and ably into the question of the extent to which the architect should be held responsible for failures in buildings erected from his designs. The writer sums up in the phrase, "*La responsabilité est la sanction du devoir*;" it is "responsibility" which raises the character of the archi-

tect, gives him the consideration which he desires, and is the safeguard of public life: a conclusion which may be carried too far, perhaps, but which errs at least on the right side, and has a healthy sound about it. The argument seems to have been complicated by the fact that the words "architect" and "contractor" (*entrepreneur*) are, in France, constantly used interchangeably and as if synonymous, a difficulty we have not to contend with here. In the most recent number before us, M. Planat (engineer) commences a series of articles on railways, the first being occupied mainly in an inquiry into the rate of increase of railway traffic and railway work and expenditure in various countries and under various circumstances. The diagrams showing by means of curves the relative progress of different nations in the same periods of time, are very interesting and suggestive; and will be still more so, as the writer hints, if studied in conjunction with the political and social history of the governments referred to. He calls attention to the contrast between "*la brusque courbe prussienne*," turning up sharply at a greatly increased angle about 1864, and the "*nonchalante ligne anglaise*," following a somewhat uneven but in the main regular direction, at a low rate of increase. In England the curve is an almost regular and unbroken one, at a high rate of increase, up to 1850, where there is a break, and a somewhat lesser inclination is assumed; at 1864 there is another more sudden bend, and the progress becomes considerably slower. The line showing the railway progress in the United States is significant enough; it shows an almost unbroken curve of parabolic character, starting at nearly the same angle as the English, but increasing rapidly after 1848, between which year and 1861 the increase is from 9,000 to 2,400 kilomètres of iron road. Progress in England, however, is more rapid than in any other country, except America. In England, says M. Planat, "in the interior of that great laborious workshop, where everything must pass in haste from hand to hand, where every one wishes to hurry, means of transport could not be slow to multiply. . . . There is no hesitation with the English, when once they are convinced that they will, in the end, reap profit and advantage from their efforts." Perhaps the compliment savours a little too much of the old "shop-keeping" theory in regard to this island and its inhabitants. From what we gather, M. Planat intends, in continuing his essay, to indicate the relation between the architectural profession and railways. So far as it has gone it is a very interesting contribution, and its author has the art of presenting facts and statistics in a lively and picturesque manner, not unenlivened by wit and humour.

In the same number, M. Daly signals a "new way of encouraging the arts," invented by the "*Société d'Encouragement pour la Propagation des Livres d'Art*," who decided, in solemn conclave, met to consider the question, that the plates of all engravings distributed as premiums or prizes to their members should be destroyed, by way of enhancing the value of the engravings! We can only echo the bewilderment of our colleague (himself a member of the Society in question) at what he calls this "*logique des collectionneurs*," and hope that his efforts to set the matter in a right light have met with success.

Among the illustrations of these numbers, the most interesting, perhaps, on some accounts, is the engraving of the monument to M. Duban, designed by M. Viollet-le-Duc. The design is not, as English students of its designer's works might expect, Gothic; it assumes the sarcophagus form, terminated at the head by an upright memorial stone, with surbase and cornice, and "nook shafts" in the shape of fluted columns, with "Temple of Vesta" capi-

tals; the final above is decorated with the Greek honeysuckle and acanthus in relief on the face. Below (between the shafts) is the bas-relief profile of Duban in a medallion, with the legend, "*A Felix Duban ses Amis, ses Admirateurs,*" and (in a modest corner below the surbase) "*ses Elèves.*" A festoon hangs obliquely across the face, caught on an angle of the surbase; a palm-leaf, lightly sculptured, appears to lie on the sarcophagus. The design is one which, as the reader will gather, would not find much favour amongst English architects of the present day, and goes against more than one accepted canon of architectural design among our "modern school." Without echoing the criticisms of the said school, we may confess to a little disappointment in this monument of one eminent French architect to the memory of another. "*Honneur de tels hommes, c'est honorer soi-même,*" said M. Baltard appropriately in his short address at the inauguration of the monument: we might perhaps have wished the designer of it had honoured himself a little more decisively in this case; but, of course, we must judge of such a thing in the light of French architectural taste and association, which in these matters is different from English. Of the buildings illustrated, we cannot say that the design is always equal to, or worthy of, the beautiful engraving expended on them. Such buildings as the "*Bibliothèque Nationale*" and the "*Poêle d'Equitation*" illustrate the weakness of the modern French artificial style, which can deal but ill with buildings of a simple practical character, where ornament would be out of place. The front of the "*Dépot des Forges et Fonderies*," by M. Ferre, shows some very refined and elegant detail; and the iron gates from the same building, shown in larger drawings, are admirable specimens of ornamental ironwork, treated in a "Classico" manner, but completely in character with the material. One of the finest illustrations (in No. 5-6) is a large double-page engraving of two carved table supporters found in the "house of Rufus" in Pompeii; the design consisting of griffins *dos-à-dos*, common enough in idea, but executed with a breadth and vivacity of treatment and execution rarely found in modern work.

The leading architectural periodical of France deserves, let us be permitted to say in conclusion, more attention in England than it at present receives, as a thoroughly trustworthy and well got-up publication.

A BUILDING ACT IN UTOPIA.

THE truly right honourable gentleman who now presides over the art-councils of Utopia is not only fitted for the post he occupies, but he maintains that the best way of promoting the greatest happiness of the greatest number is to do his duty by the country in general, and the art-world in particular; by the department he rules; and by himself. A master of language, he dispenses with both literary slang and political invective. Naturally an artist, he harbours neither jealousy in thought, nor utters personalities in speech. Between the stools of style, fashion, or conceit, he never falls, because his chair is placed upon an eminence above them, which enables him to enjoy a wide expanse of observation and exercise a broad range of criticism. While meaner men of meaner nations are floundering and foundering in the straits betwixt a Scylla which one has plundered, and a Charybdis where another has blundered, the Utopian administrator performs his part for the common weal silently and gracefully; and, a Ulysses of travel, uses his profound acquaintance with men and countries for the public good—never obtruding it, however, or indeed anything except the fact, which he is unable to conceal, of being a gentleman to the manner born.

So complete are the reforms lately effected that the metropolis of Utopia is now the one city in the universe where the sun shines without oppressing summer revellers; where the wintry rain falls to clean, not to soil, the streets; where mud is never formed, because the materials to make it are not permitted to collect; where the smoke of chimneys, instead of polluting the homes of the rich, helps to comfort those of the poor—since the consequent economy of its methodical consumption has reduced the price of coal; where there is a government to rule localities, not a wrongly constituted local board to misgovern; where vestrymen are the only occupants of the workhouses they once helped to fill; where poor-rates aid the

poor, for there are many poor, though only the deformed in body or mind are paupers. Sanitary legislation, which originally consisted in providing comfortable sinecures for an army of "inspectors," now penetrates the homes of the multitude; nearly four million souls, who once dwelt in ignorant security over a volcano of sewer gas and boiler steam, now court the breath of life instead of battling with the poison of death; the most extensive system of town drainage in the world has been systematically ventilated, yet not before the disadvantages of non-ventilation were successfully proved by the death of many innocent persons; because, although ventilation was theoretically known to be a necessity, nothing used to be accepted or discarded by Utopian society until it had been practically tested. To be one of a dinner party now is an agreeable treat, since the guests no longer sit on each other's laps, nor, in the absence of other air, inhale the contents of each other's lungs; the clubs are now places for the social enjoyment of the members, not for the exclusive profit of speculative proprietors; the courts of law still disinfect the land from moral plague, but they are no longer plague-spots themselves. In the churches the worshippers can see and hear, and understand both "storied pane and animated bust;" and since people have gone there exclusively to obtain spiritual consolation they have ceased to take interest in the dissensions concerning stools and chantries, chaises and candles, tables and baldachins.

This consummation was not accomplished without an infinity of contradiction in art misunderstood and science misapplied, engendering a vast amount of bad blood, which of old was called party-spirit. Before sanitary legislation of any description was mooted, a new Building Act was introduced into Parliament, because it was felt that any attempt to drain, warm, ventilate, and generally improve human dwellings must begin at the beginning; and that the root of the then existing evils lay deeply imbedded in the prejudices and habits with which three centuries of artificial architecture and imported art had imbued men's minds. It had been the custom in framing legislative Acts concerning building to trust to the mother-wit of lawyers, doctors, eminent brewers, and railway company chairmen; and the argument in favour of such a jury consisted in the supposed fact, that very few people, professional or otherwise, knew anything at all of the subject; and that an indiscriminately collected commission would be just as likely to succeed in the matter as a technically chosen one. But the present administrator having carefully watched the proceedings of those of his countrymen who gained a livelihood as architects and engineers, fancied he perceived through the thick covering of conventionality which, in their works, hid their real thoughts from the world, a vein of reality and a cynical contempt for the degradation they were compelled to undergo from sheer personal necessity, and the public inability of judging artistic truth from falsehood. So he called together the heads of the two professional bodies, and, it must be owned, had a sorry time of it while the commission sat. It was a babel of "mutual scorn." The architects and engineers not only despised each other's handicraft, but each member of both professions depreciated the other. Some of the engineers belied the great deeds of their earlier brethren by seeming to be ashamed of the materials with which they worked, and attempting to hide with theatrical appliances even the metal which forms the machine whence is derived their name. In the ultimate appeal to Parliament their opinions, however, prevailed, because they had principle and reason to support them; and common sense is a sure touchstone with educated communities. Some of the architects, too impetuously obtuse to perceive the ruin impending over their heads, came to the meeting attired in the masks and dominoes of a forgotten carnival. Happily there were among them others whose education as gentlemen was superior to their acquirements as architects, and it was eventually discovered that a basis could be formed on which to erect a superstructure of principles and laws mathematically accurate and logically unimpeachable. With this to aid them, they dissected the carcass of an old-fashioned dwelling-house, and built up in theory a modern and more habitable one; but not without a formidable opposition from all classes of the population, and more especially from those who experienced most acutely the evil influence of the original Building Act. The old laws which related to the thickness of walls, the

protective guarantees of party-walls, the height of chimneys, the frontage of houses and the projections upon them, were good enough in their way; but they in no wise afforded assistance to the promulgation of true art or scientific construction. The skill of practitioners, both in Utopia and in the adjoining country, used to be wasted in futile experiments for evading the clauses of their Building Acts. It was the custom in those days to give opportunities of employment to all classes of inventors. The architect, for instance, designed a fireplace, which, with the simplest calculation, required a flue of certain size. The builder constructed one for it at half the necessary dimensions. The architect then called in a grate-manufacturer, to remedy the defects of the fireplace, and the builder ordered a chimney-pot-maker to ameliorate the condition of the flue, the result being satisfactory while the wind remained in three out of four points of the compass, the other being that particular corner in which the wind is said to cause all chimneys to smoke.

It is well known that the peculiar constitutions of Utopians compel them to pass a great part of the day on the stairs and in the passages of their houses. They often breakfast in the basement story, and dine on the ground-floor; they receive visits on the first, sleep on the second, and keep their children on the third floors of their residences. Yet the stairs, even in the expensive quarters of the metropolis, were made of inferior wood (often of the most inflammable sort), about twice the width of a builder's ladder, with the disadvantage of the steps at intervals winding round a pivot, so that great nicety of balance was required on the part of any gentleman conducting a lady from one floor to another. As it was usual for one or more incendiary fires to occur every night of the year,—and as the first part to burn of a house was the staircase,—there used to be stationed at the corners of the streets a machine, consisting of a man-shoot, or ladder on wheels, called a fire-escape. But as this machine was never long enough to reach higher than the third floor of an ordinary house,—and as some of the more modern dwellings were often five and six stories high,—it was customary to devote the upper portions of such residences to the less important members of a family, such as servants, poor relations, or bachelor uncles who had made their wills, because all escape in the event of fire was acknowledged with Spartan simplicity to be impossible. Some of the great hotels were even worse situated, since a conflagration in the lower portions of those huge buildings rendered escape by the internal fireproof stairs futile, while the portable exterior fire-escape could afford no assistance above the second-floor windows. But since it was tacitly understood that only bagmen and foreigners were allowed to inhabit the upper rooms of those hotels, the authorities had not deemed it necessary to interfere, and the old laws were felt by the conservative sentiment of that time to answer the purpose for which they were intended.

The original Building Act having been framed in the palmy days of jocular legislation, it had been enacted that every habitable room should be 7 ft. high, from floor to ceiling, the joke being that no room of such a height could possibly be habitable. In the capital of an adjoining country, no room was ever allowed to be less than what, in Utopian measure, is 2 in. more than 9 ft. The culminating joke of the Act, however, was the law regarding cornices and rain-water pipes. In the barbarous Middle Ages strong projecting roofs protected the foot-passenger from the sun and the rain; and often a grotesque gargyle cast the contents of a carefully constructed medieval gutter into the roadway. People knew the gargyle was there, and could avoid it if they chose; but the ratepayers, since the Reformation, and the passing of the original Building Act, were differently treated. As it was difficult to get them to pay any local taxes at all, the first object of a municipality was to make the streets as dirty as possible, in order that there might be no excuse for refusing to pay rates to clean them. It had consequently been enacted that an iron pipe should convey the rainwater from the roof of each house to the level of the foot pavement, and discharge it thereon, under the soles of pedestrians. At the same time every presumption was taken to cause a small but constant dripping of rainwater from the cornices and ornamental features of the house fronts. These cornices were so constituted as to catch the falling rain, and thus moisten the external walls; the dust and soot

settled upon them, and these were quickly converted by the rain and mist into mud, which was once thought an unavoidable accessory to civic ease and metropolitan elegance.

Philosophers say that, amongst virtuous communities, one half are usually ignorant how the other half live; and amongst vicious communities one half are always occupied in making life unpleasant to the other half. So the majority of the ruling powers in old-fashioned Utopia, being married men, succeeded in making unmarried men as unhappy, though in a different way, as themselves. The happiness of a married man, which consists in having a home, is often marred by the person with whom he is compelled to share it; and the happiness of a single man, which consists in undivided enjoyment of life, is equally often marred by having no home in which to enjoy it. Consequently it used to be enacted, that unless bachelors inhabited a building containing more than 125,000 cubic feet of space, the floors of lobbies, corridors, passages, landings, and flights of stairs, should consist of inflammable materials; and that unless sets of chambers, or "flats," covered 3,600 ft. square in area, they were not to be divided by party walls, party arches, or fireproof floors. It resulted, therefore, that the great mass of the metropolitan population of Utopia, whose incomes did not exceed 300*l.* per annum (and who paid income-tax), incurred the risk of nightly destruction by fire; while those, whose incomes did not exceed 100*l.* per annum (and who did not pay income-tax), experienced certain death in the event of an incendiary outbreak. In the business portions of the metropolis, the lower stories of the houses are often devoted, now as before, to trade purposes, and the upper stories to residences for small families and bachelors; but these last are no longer compelled to transact the whole business of life in rooms expressly constructed for sleeping purposes only. Before the present Building Act was passed, "flats" were unknown to the many and discountenanced by the few. Indeed, when merchants and tradesmen used to build houses for themselves, in the city or its neighbourhood, they paid attention to the planning of those parts they intended to use as business premises, but no more. As they proposed to let the upper floors, and as lodgings of every description were eagerly sought after, they used to be perfectly careless of the distribution of the upper rooms and offices since they were certain to let them, no matter what they were, at a considerable profit. As the gaspipes belonging to one story of such houses could not be repaired, or even examined, without removing the wood-flooring of another, leakage was seldom heeded, each lodger preferring to inhale the other's gas to incurring pecuniary damages. None of the staircases used to be lighted at night, because, being common to both landlord and his tenants, they belonged to no one,—the landlord carefully stipulating his rights in an agreement which as carefully ignored his duties. A housekeeper, being provided with a room to live in as wages, was expected to live on the lodgers; and often the breakfasts of half a dozen bachelors were consigned for the night to a shelf over the bed upon which she slept. Yet, within a day's journey of Utopia, there was a large city, the majority of whose inhabitants lived in "flats"; and where a quantity of both small and large families managed to subsist in comfort, economy, and security under one roof, in perfectly distinct sets of *appartements*. That which made the Utopian capital so expensively disagreeable a residence was due, in a great measure, to the perpetual disregard of the simplest sanitary laws, and the misapplication of taxes levied for the purpose of enforcing them.

The original Metropolitan Building Act of Utopia permitted ancient dilapidated buildings to be repaired with the same description of materials as those used in the original structure. Consequently an old house could be made to harbour generation after generation of vermin, noxious diseases, and every element of decay, unless fire providentially destroyed it with those of its inmates and neighbours who had escaped the infection of its previous existence. Regulations respecting iron were not included in the old Act, or, at best, only dimly referred to. There used to be nothing except moral persuasion to prevent the introduction of iron girders too weak to support their own slenderness, or of wooden beams so heavy as to succumb beneath their own weight. The projecting oriel or bay window, which is intimately associated with the national manners and traditions, was, until lately, an

impossibility in a metropolitan thoroughfare, through the illogio of laws which harassed more than they protected. It is now to be seen in every house-front at a certain distance from the street level, and is the most agreeable corner of a town room. The railway-tunnels beneath the carriage-ways are now ventilated by brick shafts carried up at the street corners; and these enhance the effect of the sky-line. The great and small drains (which used to emit their noxious gases in the public thoroughfares) and the private closets of the inhabitants are now ventilated by a specially-constructed flue built into the wall of each house, which serves as a vertical drain to receive the water-closet and other pipes; and it is prolonged to 6 ft. above the top of the highest chimneys. To each water-closet is attached a flue ascending above the roof, and this is prescribed by law. The size of windows and doors is determined in proportion to the dimensions of the rooms to which they belong; and the width of staircases by the number of stories they serve; while the rise and tread of steps follow a mathematical rule. Gas is not permitted to be used in any chamber unless means of exit for it in case of its escape be provided, and the discovery of leakage has been simplified by forbidding the insertion of gas-pipes into the plaster of walls and ceilings, or their concealment between the floors, on any pretext whatsoever.* The state of the roads and footways is also improved. There is no longer an open gutter on either side of the carriage-way; a sunken channel has been constructed, and covered with perforated iron plates, so as to facilitate the immediate disappearance of the rain-water; while the house rainwater-pipes discharge themselves into it by means of a small drain constructed under the foot pavement. Rainwater-pipes are now always isolated 1 in. from the wall to which they are fixed, and they are never permitted to be placed inside a building, while the eaves-gutters which they drain are each provided with an overflow gargoyle in case of obstructions in the rainwater-pipe. An iron or a zinc ladder follows the slope of each roof, and iron *déchelons* are fixed to each chimney and ventilating-shaft. The new Building Act is as much an assistance to architects as the old was an annoyance to builders. Under the old system, each fresh building added to the ugliness of the metropolis; under the new, each addition tends to improve it. Balconies upon which none dared venture; balustrades to protect roofs to which no one ascended; cornices to spread, not to throw off, moisture; consoles to hold up entablatures which were supported by the counter weight of the wall over them; lintels made of voussours, and arches of lintels; pierced gables and divided pediments in solitary prominence above houses innocent of roofs, or, at best, with low-pitched roofs of a shape totally at variance with them,—these were the chief architectural features of the old metropolis. Now that they are swept away, none care to regret them except those whose day departed with the horrors they had helped to accumulate. The national architecture at last reflects the national thought, and the intelligent treatment of architects by the State is assisted by the serious attempts of the former to reconcile their art to the demands of modern society. In the capital of Utopia, the arts and sciences are no longer divided; the engineer is an ancient architect, and the architect a modern engineer. Common sense now reigns in professional councils, and reason has mounted to its throne again.

THE CENTRAL DOME OF THE VIENNA EXHIBITION BUILDING.†

Third Principle.—Co-operation of Independent Parts.—The first principle I have enunciated as guiding our choice in forms of large structures is—unity or absence of antagonistic action in different portions of the structure, each tearing, crushing, or otherwise counteracting the effect and destroying the use of the other.

The second is the disposition of the useful load of the material of the structure in those places, forms, and quantities; in those places where the injurious effect of its inevitable weight will be the least possible.

There is a third principle allied with these two, in the cone, and perhaps it is most important

* Many of the provisions of the present Building Act, it has since been discovered, have been in force during the last twenty years in the capital of a neighbouring country.

† By Mr. J. Scott Russell, F.R.S. Read at Institute of Architects, See p. 122, ante.

of the three, that in every large structure every part of the whole should be ready and able to render assistance to every other part in the performance of its duty, or in the case of imminent danger. Each part should not merely do its own duty, without hindrance or impediment from another part; but it should be placed in circumstances which enable it to lend all the reserve of its own strength to each other part that is exposed to severe, excessive, or exceptional trial. This principle is rarely well carried out, or recognised at its full value. As I consider it one of the most important principles of the future of large architectural structures, I will illustrate it as fully as may make it clear.

Allow me to promise that the antagonistic principle of independent action of parts is a tradition of your profession and of mine. One of the most beautiful scaffolds I ever saw was made thus for the building of a large elliptic arch. The whole of the centring sprang from two points, to every small portion of the arch went two long beams from the two springing centres. The pair met, and they too sustained one stone, or one group. A second pair, starting still from the same centres, sustained a second group, and so on, till perhaps some fifty independent pairs carried the whole arch. This had the great advantage that the giving way of one pair did no harm to any other pair; it was the principle of perfect independence carried out in timber struts. In like manner, you may have seen iron bridges, of the nature of wire suspension bridges, where, instead of the single centring chain, successive points of the bridge platform were carried by pairs of ties going straight to the summits of the two piers, and thus suspending their portions independently, so that weight on one should not affect the others. By this independence it was intended that the oscillations of the swing-bridge should be prevented.

But even without referring to structures in which this independence of parts was a special aim, I may observe that the traditions of your profession and mine, and the practices we have seen, introduced this independence into general use. When I learned shipbuilding we used to put what amounted to three ships one inside the other. The first consisted of outside planking, intended to keep out the water; the second consisted of a complete vertical frame, to keep the pressure of the water from forcing in this planking; the third consisted of another series of planking, to keep these two discordant elements in position under the action of the waves. These ships were each in general heavy enough to make each a ship; but when it came to a large one, all the three were too weak, and the triple ship went to the bottom.

Well, it was one of the early studies of my life to try to remedy these evils. I found the same absurd notions of independent action of parts of a ship, which had ruined wood ship-building, were being rapidly introduced into iron ship-building, and if I was instrumental in contriving and introducing a new principle of construction into modern naval architecture, on which our best ships are built; it was the system of making the whole of the particles of the iron in a ship do effectual work, not in one function, nor in one way only, but by making all the parts of a ship help all the other parts to do their work, as well as each part its own. It is for this reason that the *Great Eastern*, the lightest built ship in the sea, the cheapest built and the strongest, although the worst treated, has proved able to save herself and her crew and freight,—when left helpless to the storm, when torn open by being steered on the rocks, and when distorted by internal explosion; she owes her strength to the principles enunciated as Nos. 1 and 3. All the parts of the *Great Eastern* are one, with the whole and with each other. The skin keeps out the water, but it also supplies the place of a frame, which in her is wanting. Bulkheads divide the ship into water-tight compartments; but these bulkheads carry the decks, give shape to the ship, and form part of the masts. The decks carry the goods and keep out the water; but they too are of iron, are integral parts of the hull, and give the strength against the sea required by her great length. The coal bunkers, which once were loads to a ship, are now mere spaces left between her integral portions of iron in the hold. Even the engine-frames are built up parts of the ship, and equally save the engines from being strained and the ship from straining. The very divisions of the cabins are partitions of iron welded as integral portions of the ship, and when you sit down on a velvet

sofa, or sleep on a luxurious couch, you will find that the bottom of the sofa is welded to the ship, and forms there a part of the general support of the strain. Thus the ship is a great whole, each part helping each, and so neither the hate of her foes, nor the folly of her friends, have yet been able to destroy the *Great Eastern*. It may, perhaps, seem to some of you to be unnecessary for me to have done more than state so axiomatic a truth, as that a great structure should form of all its parts a complete united helpful whole, that its strength should not be frittered away by making it a mere assemblage of multitudinous parts, each performing some petty function apart, and contributing little or nothing to the general strength, or to the security of each other. But, in truth, the great difficulty to be overcome in the introduction of such modern structures as we are now considering, is to obtain the recognition of these principles as imperative laws of practical construction.

Mechanical Nature of the Iron Cone.—The *Crushing Strain*.—An iron cone may be examined and tested in two ways,—it may be exposed to pressure from within on the hollow side, or to pressure from without on the round side. I have never seen a formula which explains and predicts the result either way. My conical roof can be best understood by adopting a method of thought, which is, possibly, very different from that generally followed. Nevertheless, as men of eminence, who have looked at it in ordinary ways, have failed to comprehend it, and even been led to false conclusions, you will excuse me if I take you a short, simple, but unusual way, to the bottom of this deep well, or to the top of this high cliff.

To understand my conic roof, I ask you to fancy a ring or cylinder of wrought-iron plate homogeneously riveted together into one upright plate, 200 ft. high, and 360 yards round, and say 1 in. thick. This huge ring, say a few hundred feet high, would be like a large ugly gasometer of unusual hugeness. Let us use this idea to calculate our strength.

Every yard high of this ring, for each inch round, would weigh 10 lb.; it would, therefore, take 224 yards high to bring a weight of one ton over each inch of ring. The maximum strain possible on the lowest heaviest strained part of this ring, is one ton on the square inch,—any one-fifth, one-tenth, or one-twentieth of the safe, or yielding, or breaking strain; therefore perfectly safe, and far within the widest practical margin. But 224 yards high for one ton of strain is far beyond my wants: I only want for my use less than a third part of that least strain. I take a ring exactly 200 ft. high,—strained, therefore, to less than one-third of a ton per inch; I ask you to conceive clearly this ring resting on a smooth, flat, level base: you will see that the strain came, by any invention, be made greater or less than simply the weight per square inch, due to the upright column of metal standing above each inch of base and diminishing gradually upwards to the summit, ending in O. I next ask you to follow me while I cut this cylinder into pieces, but leaving all the pieces in their places; I now cut the cylinder vertically into couples of triangles, an upright triangle, and an inverted triangle, turn about; I now remove all the inverted triangles, and leave all the others standing upright in a ring, as before, points up. I have taken away half the whole iron. I next incline all these triangles inwards towards each other, and they all then touch each other along the edges from heel to point.

These triangles, say thirty in number, form my cone; they are slightly curved one way, their upright axes remaining straight when inclined, their curvature being diminished exactly in the ratio of their diminishing width. While these triangles lie in that shape, allow me to put perfect solder on all the joints, and to fuse it by electricity. My cone is complete.

Now the conclusion as which I arrive is, that in this state the matter of my cone is nowhere more or less strained than it was when it had not yet become a cone, and was the original upright cylinder; in other words, the strain on my cone is everywhere less than one-third of a ton per square inch. The proof is simple. The inclination I give the cone being eighty degrees, doubles the upright pressure; but the triangles I have cut away remove half the weight. Half the weight, therefore, with double the pressure, leaves the strain on the material unchanged.

This is the speciality of the cone, looked at as a self-sustaining roof-structure. But I can still go much further in economy of material. I have

taken away half the cylindrical weight, I am going to take away more of what remains; this I do by diminishing the thickness of the plate uniformly towards the top: when I have done this, only one-third of the whole material of the cylinder remains in the cone, and the maximum strain is still everywhere less than one-third of a ton to the inch. My cone is, therefore, in material only one-third of a vertical round ring on the same base, having the sloping radius of the cone for its height, and its strength and strain per square inch are nowhere greater, and are everywhere less, than in the vertical ring. The crushing strain along the slope of the cone is, therefore, extraordinarily small.

The Tearing Strain.—The strain that architects most fear in roofs and domes is the stretching, or tearing strain, which stretches or tears asunder the supporting walls, buttresses, arches, or ties. This tearing strain is readily conjectured to be the great danger in the cone. That this roof should stretch and tear asunder, especially at the lowest ring or outer edge, seems the general first impression made on mechanical minds. That impression leads naturally to the wish to make the outside of the cone extremely strong. Some of my mechanical friends think that there are buttresses all round to resist this. They are not aware that the things they think buttresses are really hung from the roof they seem to uphold.

A simple way to think out the tensile strain of the cone is to study its change of shape as it is conceived to be flattened out. Take my original formation of the cone—thirty triangles soldered together in one; now lay them out flat by pushing down the top and swelling out the bottom, and watch the changes: 1st. The radius of the cone here is increased. 2nd. All the conic triangles are sundered, the spaces left between being triangles all with a common summit. The base of the cone was 1,080 ft. round, it is now 1,256 ft. round; it has stretched 176 ft., or the vacant space forming the base of the triangles of extension is near 8 ft. Call then each of these triangles 8 ft. at the base. If the cone had been india-rubber, each triangle of 36 ft. material would now be stretched 8 ft. out, or have got a base of 44 ft., i.e., stretched $\frac{1}{4}$ a side. Now, mark the variation of this stretching. Outside it is 8 ft.; but 25 ft. up it is 7 ft.; 50 ft. up it is 6 ft.; 75 ft., 5 ft.; and so on, 4 ft., 3 ft., 2 ft., and 1 ft. In other words, the stretching out is perfectly equal on the triangular web all the way up. In exact proportion as the web narrows does the quantity of stretch diminish. Everywhere, therefore, along the web, from side to centre, the stretch is the same proportion to the length of web stretched.

This is as true of a stretch of 4 in. as of 4 ft. In all degrees of stretching of this cone, in its descent from 30 degrees to a dead flat, the stretching consists in an opening up, which is perfectly uniform along the whole of the cone, from bottom to top. In other words, a force putting the whole cone into stretch by bringing down the top and swelling out the base, makes a perfectly uniform stretch of the whole matter of the cone, from apex to circumference.

In short, the whole material is in uniform stretch throughout; but if all the material suffers uniform stretch, that is equivalent to saying that the whole material equally co-operates in resisting this strain. That is so: every atom of matter in the cone is equally strained; every atom of matter in the cone helps every other equally to resist the common strain; each bears its own share of the common burden. Thus, then, there is neither waste, defect, nor antagonism; the whole cone is in uniform tension, from top to bottom, and all round.

Supposing, then, a uniform pressure of water, or a uniform fall of snow, to press down the cone top and press out the cone base, it would meet everywhere a uniform tension of iron ring opposed to it. On each ring of iron would press a ring of water or snow, smaller as the ring was smaller, larger as the ring was larger, and as in my cone the thickness changes with the distance from the top, so will the pressure thicken, the weight and the stretch go together in permanent proportion from summit to base, each ring carrying its own load by its own strength, and all equally strong and equally strained.

I have asked myself what is the greatest strain its own weight could bring on my cone to stretch it. I hang up my cone in the air so that one half shall carry the other. I find 2,000 tons carried 2,400 inches, a gain not 1 ton to an inch; but that is an extravagant case.

We thus see that the whole cone is a series of

straight-lined tapering bars, starting from a circle and meeting in a point, all of them in compression underway by their own crushing weight. We see that at the same moment the whole cone is a series of circular hoops, increasing in thickness as in diameter, and carrying a strain as hoops, all ways proportioned to the size and strength of each hoop, and increasing uniformly from top to bottom—in size, in strain, in thickness, in strength.

The Combined Strains.—The third important view of this subject consists in looking at these two strengths and strains together.

(1). Note. It is the same matter which bears simultaneously the two strains. Each bit of iron is a bit of the straight tapered bar, and stands a crush, and is a bit of the round hoop, and stands a tear. Now these two are neither in the same direction so as to conspire, nor in opposite directions so as to counteract each other; one is at right angles to the other; each does its double work, without interference. This is very remarkable.

(2). Note. Each atom is crushed one way, torn another way. The same atoms work two ways at once.

(3). We may now see how this might end. Let us suppose the cone a perfect whole of homogeneous metal perfectly constructed, uniformly loaded, mathematically and physically uniform. Let us next suppose it to be systematically and intentionally loaded to destruction. What would happen?

This is the answer: there would be a loud explosion, every atom would be crushed to dust one way and dispersed into invisible particles the other way. Whether what remained would be a liquid or a gas we cannot say, only as iron it would have disappeared; its cohesion ended and its repulsion ended, we have its complete exhaustion and annihilation.

In other words, we should have used up all its possible powers of substantive matter. What more than this can you ask philosopher, or engineer, or architect to do with the matter God has given us? Can more be possible? This cone then gives the greatest possible amount of working power out of a given quantity of matter.

Applications and Modifications: Conic Skeletons.—Forms, uses, and modifications of this conic principle of structure are manifold, and as they all receive from and throw light on our discussion they deserve study.

I. **Difference.**—What is the relation of a perfect cone to a conic skeleton?

It is one of the peculiarities of the cone that it is a "self-contained" structure; in other words, that much of it may be taken away, or injured, or displaced, without destroying it. I may take my perfect cone, and pierce it full of round, square, or triangular holes all over, and it remains stiff, stable, strong, and self-supporting. Nothing is harder than to destroy my cone. You may cut away its centre, i.e., take out the keystone, it will stand all the same. You may cut the outer ring through in many places, the cone will stand. Its power of enduring abuse, distortion, and destruction is surprising. I do not think the artillery of an enemy could, in any reasonable time, destroy it. Nevertheless, I am obliged to say that all modifications of it are weaker than itself. One modification I very early made. I think it good for many uses, especially on a small scale. I call it the skeleton cone. It may be very simply derived from the continuous cone by the following method:—

Suppose you choose to cut away a large portion of the surface of the cone, leaving the intermediate parts all connected together, no matter what the size or shape of the apertures, you may still leave a perfectly balanced self-contained structure. This skeleton cone may be very conveniently formed of iron; or of iron and glass; or of iron, glass, and wood; or of iron and wood, in a variety of ways, and will admit of an infinite range of fancy in its applications.

One of the earliest applications I made of my discovery of the conic structure, was to communicate it to an esteemed architectural friend who had a probable occasion to use a large span roof. We designed it together on the skeleton principle; but it was not executed, for the ground was otherwise utilised.

Now I have to observe of skeleton conic structures, that they are light, strong, and convenient for a multitude of purposes; that I recommend them as stronger, cheaper, and nobler than common trussed roofs; but as the scale grows larger, the continuous conic roof increases in value, and the other loses.

To explain the true principle of the continuous roof and the skeleton, it will be best to cut out the skeleton from a continuous cone. Take the cone already given. Select a portion of it covering say nine square yards, making (nearly) a square three yards on the side. Cut out the central square, you get an opening of nine square feet, with eight yards of continuous material all round it. Let us say you save a yard of iron, or one-ninth of the whole.

Let us now see by how much this saving of one yard weakens the structure. In the vertical direction which endures the crushing strain, you have removed one-third of the whole strength. In the circular or stretched horizontal strain, you have also removed one-third of the whole strength. Your saving is one-ninth; your loss is three-ninths, in a two-fold use. You have, therefore, done harm and made waste.

In this example I have cut away only a small opening. Let us next make it great. Instead of 1 yard in 3, let us make it 9 ft. in 11 ft. I cut away 9 ft. in 11 ft. I leave $\frac{2}{11}$ of the strength first vertically, second horizontally. My saving of material is 40 in $121 = \frac{40}{121} = \frac{4}{11}$. I save $\frac{4}{11}$ of the material. I cut away $\frac{9}{11}$ of the strength. In round numbers, the saving is $\frac{4}{11}$; the loss is $\frac{9}{11}$. I save 22 and lose 29. The saving is also in only one item,—weight, 22. The loss is in two items,—stretching strength, 29; strutting strength, 29. Much, therefore, as skeleton cone is a stronger, simpler, cheaper structure than a trussed roof structure, it is always inferior in strength, stability, endurance, and economy, to the perfect cone.

There is another way of looking at this, which is even more striking,—not to try to save material, but to gain strength. For this purpose, I cut away the same material out of the cone, and add what I cut away to the skeleton. In the first case, I cut away $\frac{9}{11}$; I spread that $\frac{9}{11}$ over the eight surrounding squares; I therefore add $\frac{1}{11}$ to the strength, from which I cut away $\frac{9}{11}$ —in other words, I take away $\frac{8}{11}$ of the strength, and add $\frac{1}{11}$ of dead loss! In the second case, I cut away $\frac{9}{11}$ of the strength. If I add this matter to the remaining $\frac{2}{11}$, I make it $\frac{11}{11}$, so I weaken it by $\frac{9}{11}$. I strengthen it by $\frac{1}{11}$ —a dead loss of $\frac{9}{11}$ or 40 per cent., in the strength. It is plain, therefore, I trust, that the continuous cone is the maximum of strength; that the skeleton cone, although much stronger than the common structures, is much weaker than the continuous cone. The conic family, nevertheless, presents manifest advantages, in different degrees.

Practical Application of the Cone of Vienna.—As all structures are not perfectly adapted to all purposes, it is manifestly the duty of the architect and engineer to use each to the end it serves best. Practical duty is a compromise between what one would like to do and what one has got to do. One makes knowingly and reluctantly a sacrifice of what one cannot help, for what one is bound to achieve; whence there are many cases in which one may sacrifice the perfection of the cone for the convenience of the uses. For some such aim I have been willing and ready to use a mixed structure of continuous cone and detached skeleton on large structures. My Vienna cone is such a compromise. It has the merit of a complete continuous cone. It has also the convenience of a skeleton cone. It will be necessary to go into much further detail before explaining how and why this is done.

COLUMNS, WALLS, FOUNDATIONS, AND ACCESSORIES.

There are two different ways in which a conic roof may be applied. It may cover a round building, with a continuous brick or stone wall, as was first intended at Vienna; or it may have to stand on the summit of detached masses of masonry; or it may have to rest on mere isolated columns.

1. If the cone is carried on a level, even mass of continuous masonry, all its peculiar virtues in strength and economy are utilised to the utmost. So long as the foundations do not give way, and the surface on which the cone rests is true to the surface of the cone resting on it, the effect corresponds to the theoretical result we have examined of best possible. If, however, the surface becomes irregular, if the foundations or wall give way, the case changes, and must be met.

2. If the foundations or the walls give way, the cone may be employed to give them strength, to keep them in place.

3. If the walls are removed, and the cone has to be carried on columns, the cone may be so formed as to give the supports and columns

which carry it all the stability and strength they require.

This last case is the actual case of the Vienna cone. It was meant to have continuous stable walls of brickwork or masonry. This became difficult from want of materials and time. It was next to be supported by columns having narrow filigree between, giving them lateral stability. This, too, was abandoned.

Finally, it was settled that the cone must carry itself, must rely on itself alone for stability, must also carry all the strains of every thing round about it. As for foundations. It has to rest on alluvial soil, and all it can obtain is a concrete footing for each isolated column to stand on. The cone, therefore, has not merely to stand itself, but to give stability and strength to everything else, and to stand the stress of all about it. How a conic roof shall be so constructed as to maintain its own continuity and strength against the yielding of foundations and feebleness and discontinuity of support, and how the cone shall communicate its own strength and continuity to its supports and annexes, is a large new problem.

4. If we take first the case that the edge of our cone has to rest on detached points, set 36 ft. apart from each other, we must soon see that a plate of iron half an inch thick in a round ring will at once be bent into an elastic drooping curve between the columns; in short, that the cone is no longer a cone.

5. The problem becomes this, therefore:—How to prevent the cone from ceasing to be a cone under the distorting forces now brought to bear on it. To do this we have to provide that at all the points where the distorting forces may be applied it may find the cone too strong for them.

6. Fortunately for us the very nature of the cone supplies the simple and methodical means of doing this in a way of most easy execution. The cone is straight one way, circular the other way. We have only to see that the straight lines are held straight and the round ones kept round, and all the strength in the cone remains.

7. As regards the straight line strength. Each detached column will tend to buckle up the cone at the place where they meet, or to bend the straight ridge into a curve. To counteract this we must place a stiffening plate running up from the top of the column, and pointing towards the summit of the cone. This need only be an ordinary stringer or straight girder.

One of these straight stringers must go from the head of each column and point towards the summit of the cone. It is convenient to call these Ridge Girders, to distinguish them from a second sort to be called Ring Girders.

8. As to the circular strength. Each detached column will tend to distort the cone, by giving it a curious and interesting form, which is very beautiful, but wastes its strength. This distortion would be repeated at every column all round.

Happily there is a geometrical and mechanical resource, which is the direct antagonist to this distorting force. Each cone has what I may call a supplementary cone. A small ring of this supplementary cone counteracts the distorting power of each column in the circular direction. All the ring girders in my cone are rings taken out of this supplementary cone. The supplementary cone is geometrically one whose vertical angle makes, with that of the chief cone, a complete sum of 180° .

Ridge-girders and ring-girders are therefore the antidotes to the distorting and destructive forces which unreliable foundations, irregular support, or detached isolated columns apply to destroy the continuity and geometry of the cone.

Earthquakes, Hurricanes, Avalanches.—There is yet another set of forces distorting and destructive of the cone to be kept in mind—an earthquake, a hurricane, an avalanche.

Earthquakes, as far as I have watched their effects in the East, are the architect's most deadly enemies. Nevertheless, the dome of St. Sophia, at Constantinople, has wonderfully withstood them. This I attribute to the fact that, in my view, the dome is built on an entirely different principle from what is generally considered as the principle of the masonry dome. I am not aware that there is much to fear from earthquakes at Vienna; nevertheless I have done my best to strengthen my cone even against them. The means, however, are of the same nature as strengthening against a hurricane.

The hurricane and the earthquake are in some

respects the same in their mode of destruction. The earthquake shifts the ground from underneath horizontally away from under the roof weight, so as to leave some load in a position of instability. The hurricane shifts the roof weight away from over the supports, so as to cause instability. The practical effects of both are analogous.

There is one way to ensure the stability of a dome roof resting on columns; that way I have already in part described in the structure I have given to the roof, in ring-girders and ridge-girders traversing the cone through the summits of each column. These I applied to prevent distortion of the cone by the columns under the action of local disturbing forces.

I must now open up a somewhat larger view of the subject by showing how I can bring all the strength of the cone to bear on the columns, so as to give them and itself perfect stability independent of bad foundations, shifting foundations, shaking earthquakes, and shaking hurricanes. My cone is so contrived, that if you knock away the foundation of a column, the cone will support the column in its place, and the column will support the arches that spring from it and the outer roof that hangs from it, even when the foot of the column hangs in air! My cone is sufficiently strong to carry even two or three adjacent columns with their foundations fallen away. My cone is so contrived, that if by an earthquake the foundations were moved horizontally, the columns would not follow them, but would maintain their upright positions in their correct places under the dome. If a hurricane could be conceived strong enough to shift bodily along out of place the whole 4,000 tons of dome, the columns would shift place with the dome and carry it as secure as ever in the right place!

The secret of this quality consists in a principle I have not yet adverted to. The perfect homogeneous cone has a remarkable characteristic which is well known geometrically since the early ages of geometry. This characteristic is, that its whole surface consists in a continuous series of parabolic chains, or approximate catenaries, in places parallel with the slope of the cone.

Now, these parabolic catenaries have this quality, that they connect the summit of each and every column with the whole of the opposite, as well as with the adjacent, side of the cone. Each column is, therefore, held in place by the equivalent of a countless number of chains ending in the summit of the column, and pressing with a uniform, even-spread, gentle pressure on the skin of the cone, on one side, and also on the opposite place. The weight of the cone on one side answers the columns on the other, by a series of "iron chain cables," or parabolic catenaries.

But further: each vertical section of the whole conic surface is a hyperbola, approximating closely to the inverted catenary, or catenarian arch. If, therefore, you knock away one, two, or three columns, or their foundations, the mutilated cone still stands upright on all the other columns, standing on a series of catenary arches, extending across the whole skin of the dome to the surviving columns, and supporting the roof by catenary equilibrated pressure.

My conical roof, therefore, contains within its strength enough to resist all the strains which can fall upon its supports and connexions, and that strength communicated to them through the best possible ways. To utilise this strength one more condition is necessary, which I have not yet pointed out,—that is, the perfect unity of the superior structure, or roof, with the inferior structure or supports. In a common building the supports, columns, arches, walls, find their strength in broad and deep foundations, whence they carry stability up to the roof. In my building all the stability is derived from the roof, and is given off into the supports by a connexion to which I must now direct attention.

The roof rests on thirty, or say thirty-two, columns, for there are two small side arches at the main entrance. These thirty main columns are neither square nor round. They are 10 ft. through one way, 4 ft. through the other way, and 80 ft. high. They are of the same material as the cone itself, combined in the same proportions, and united in the same way. They are in structure, though not in shape, part of the cone.

The reasons for the position and proportions of the columns are the following:—If the columns had been placed the broad way round the circle, they would have formed part of the wall inclosure, and would also have given more

direct support to the edge of the cone. But in this case they do not form an outer wall, they are inclosed in the circular aisle or alley, which is 40 ft. wide, 80 ft. high, and goes right round the building, enlarging its diameter from 360 ft. to 440 ft. In this position they do not serve as walls, and placed circular-wise the columns would obstruct the view of the dome from the aisles, and of the aisles from the dome. This is one reason for their radial position. But there is a weighty mechanical reason for this position, which will be recognised by studying the top of the column at its junction with the cone. Here it will be seen that the column carries the cone, and also carries the outmost ring-girder, and in this way extends its support continuously round the edge of the roof, and thus dispenses with wall support. Its longer dimension stretches radial-wise towards the cone axis, and spreads out from 10 ft. to a breadth of 20 ft., where by a circular curve it joins the cone. Not only does it join the cone at 20 ft. within the circumference, but throughout this distance it becomes incorporated with the ring-girder, through which it is continued along the slope of the cone upwards towards the apex. Besides, at the same place there is placed a second ring-girder, expressly set there to receive the pressure of its inner edge, and spread its pressure round the cone. The column thus becomes one with the cone itself, one with the system of radial girders, one with the system of ring-girders. Thus each gives strength to all, and all give strength to each.

Destruction of the Cone.—It is now, I hope, plain why the whole structure, which merely rests its weight on the ground derives no lateral strength, or stability, or power of resistance from its foundations. These are mere slabs of concrete which rest on the alluvium of the Danube, and prevent the weight of the dome from sinking down into it. The columns, spreading out above by ribs and rings over the surface of the cone, may be said to grow downwards from spreading roots above, and merely to rest on the ground, as a lame man's crutches, or as the legs of a table on a smooth floor. Their strength comes from above, not from below. They lend their strength to save the strain of all above them, and they get in return the strength and strain of all above them to maintain their position below. No parts can fall unless all else fall along with it.

To conclude this exposition of the special principles involved in the construction of this Vienna cone, I must beg leave to ask you to take a parting look at it from quite another point of view from that in which I have thought it necessary to introduce it to your consideration. I may in some points have failed to make the principles I have laid before you convincing to your reason,—I may, perhaps, have failed to make you feel quite certain of the inevitable strength and permanent stability of my structure as a whole. I beg you, therefore, to accompany me to a new point of view, and thence to look back on the whole cone as a completed structure, and from the outside let us look at it as mechanical critics, and see if we could invent a plan how to make the building fall. For this purpose I shall "defy" the enemies of the building to make it fall. Let them imitate the enemies of the *Great Eastern*. They blew her up, but she held together! They ripped open her bottom, but she safely crossed the ocean! They abandoned her to a hurricane, but she rode it down! Now, in the same way let us conceive the enemies of the dome trying to destroy it. A friend of mine and myself have already performed that war on a small model. We got it made of metal, true in all its proportions. We blew it up; we squashed it down; we tore it asunder; we buckled it in. At last, by the use of forces out of all proportion to its own weight, we cruelly defaced, deformed, and distorted it. Nevertheless, this deformed, defaced, diabolically-injured form remained one complete, self-relying, self-contained structure, and satisfied me that it might be cannonaded, blown up, cut down, undermined, and would still retain strength, stability, and endurance.

Looking, then, at it from the outside, let us suppose it cannonaded by a naval battery of shot and shell. What would they do? They would simply go through, exploding within, and leaving large holes behind them. And these holes, what harm would they do? They would merely do this, make out of the continuous cone a skeleton cone. The skeleton cone would, as I have already shown, be a weakened cone, but still stable and self-sustaining.

We will next allow the enemy, become savage by failure, to scale the dome, and at leisure with hatchet, hammer, and chisel, try to cut it down. Led on by scientific engineers, they will attack the stronghold and try to destroy that at its weakest point. Now, the enemy think that the cone takes all its strength from the outer round ring. They think that is the one hoop of the cask, and that when that is cut through all the other parts of the edifice will fall asunder like the staves of an unhooped cask. Let us, therefore, give them full swing and follow their work of destruction. They mount the roof. They use an army of hammers. They cut through the entire outer ring between the two entrance columns, over the centre of the arch, and they expect then to see the keystone of the arch fall out, and the whole series to tumble like the Barenin viaduct—a similar succession of arches. There one arch broken brought down all. Here, as we stand still, we see the main arch cut through; but everything stays as it was! Why? Because all the other parts conspire jointly to keep it where it is—it is firmly held there and cannot budge!

Let us now try another plan. Let us cut off these other arches and columns from coming to the rescue. Let the enemy go on and sever arch after arch all round the outer ring until the outer ring is cut through into thirty separate parts! Of course it is no more a ring—it no more does work as a hoop. Why do not the arches fall? Why are not the columns upset? Why does not the roof go squash down? The reason is, it cannot budge. Reserve forces far behind of which the enemy has no conception of the existence or whereabouts, come into play, and the wounded abused building holds its ground.

Perhaps you will say this is the severest test it can be put to, and no more can be done. It can stand still more. You have cut away the outer ring, and it stands. You may go further, and you cut in thirty pieces the second ring. The building stands. You cut through finally the outer cone itself into thirty sections, where it lies between the outer rings; leaving, if you think, thirty clear wounds of 80 ft. long each, right through cone, rings, and all. The whole building still stands fast. The enemy, disappointed in his aim, will not yet say he is beaten. He will say that he has only proved too much. He thinks that he has shown that the severed rings and the severed cones were no use as the building stands without them! He will not, however, get you, I trust, to agree with him. He has only shown that my reserves of strength were too powerful, and that he did not know they were there.

The secret of these reserves I now betray to you—it was the roof at the top of the columns, and the catenary chains and arches in the central body of the cone, which were the secret reserves he was not of, and they held all in place after his destruction was done. These saved the cone, and with these it is still in shape and perfect structure. The cone, therefore, will stand after it is pierced through all over; after its outer and inner rings are cut through; after the outer chain of the cone itself is severed. Indeed, after it is severed into thirty detached fragments it will still stand. Only complete disintegration can bring it down. Indeed, it would cost more time and labour to cut it to pieces than to build it in place.

DESTRUCTION OF THE PANTECHNICON, BELGRAVIA.

The destruction of this very large building, of which every one has by this time heard, is complete; nothing remains but the walls, and these are for the most part so weakened as to require to be taken down. The evil of wood board and plates, often before alluded to, is again made obvious, every bit of such introductions being burnt out, of course to the injury of the walls.

The *Times*, quoting its issue of May, 1831, says the building was at that date divided into two main blocks, communicating with each other, and occupying over an acre and a quarter of ground. Since that time much of the adjacent property has been absorbed, and added to the Pantechnicon, so that the area of occupation was not much less, if at all, than two acres. The north building, which was the first finished, was, on competent authority, said to be the completest thing in its way ever constructed, and neither ingenuity nor expense was spared to render it perfect for the purposes for which it was in-

tended. By means of peculiarly-formed and solid iron pillars, a complete iron support was produced from the ground through the intervening floors to the roof. The whole of the ceilings were lathed with iron rods, and covered with a composition which, as was then hoped, would resist the fiercest fire, and would not crack or fall down if water was thrown upon it while hot. The boarded floors were covered with iron plates laid upon patent felt to preserve the under side of the iron from rust, and to deaden the sound. The rooms were separated from each other by brick walls and wrought-iron doors, and the stairs were all of stone. All the chimney flues were lined with cast iron, and there was not a piece of wood exposed in any part of the building itself. Some hundreds of tons of iron were used in the erection of that portion of the premises. The south building was afterwards similarly and as substantially constructed.

Where is the iron now? Strawing the ground in bent and broken pieces; the iron shutters, where they remain, twisted up like a sheet of brown paper: not a floor saved.

We have so often after great fires sought "to improve the occasion," that nearly all that can be said on such a subject may be found in our volumes. And quite recently we have printed useful observations of others on the subjects. Still we shall have to come back to it before long.

The amount of loss at the Pantechnicon has not yet been correctly estimated, but will be found enormous; part of it being property of that character, namely, works of art by old masters, for which no amount of money can compensate. Year by year the priceless treasures of past time are swallowed up, to the loss of the world.

Directly the new Parliament meets it is to be hoped that some member will move for a precise return of the measures adopted in all our public buildings and galleries for the prevention of damage by fire, with a view to the adoption of the most complete arrangements possible in that direction.

Sir,—This is another instance of the danger of storing valuable goods in large quantities in one building; had it been erected in separate blocks a portion only would have been destroyed.

In the rebuilding I would recommend that it be divided, having an open passage-way between each division of about 5 ft., and not any openings in flank walls.

In the large fire in Tooley-street a few years since, the warehouses were only divided by party-walls and iron-doors, hence the great extent of that fire and immense destruction of property.

At this time there are dozens of warehouses by the river-side filled with inflammable goods and only separated by party-walls, and fireproof floors, as they are called; these, in large fires, get red hot, and the fire extends to the building adjoining till there are no more goods to burn, and the enormous body of fire carries all before it.

THE ARCHITECT OF THE IRISH PARLIAMENT HOUSE.

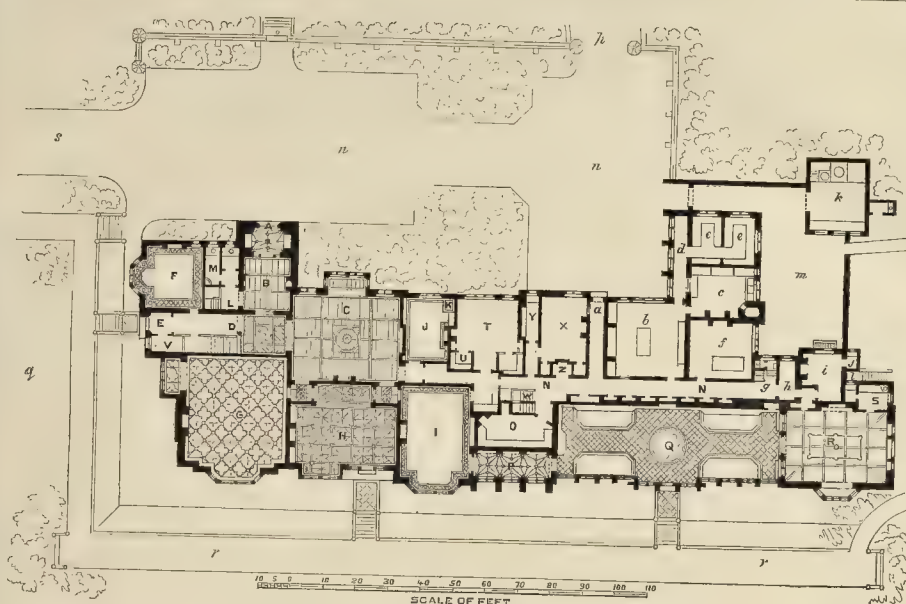
Sir,—About two years since one of your correspondents inquired of you for information as to "Sir Edward Pearce," and I wrote to you that he was a brother of General Sir Thomas Pearce, who was governor (mayor) of Limerick, and commander-in-chief in Ireland; and, further, that he was architect of the Houses of Parliament. I spoke only as according to the traditions of the family; you were wise enough to describe him as *one of the architects, &c.*

Recently, I have come across a book, entitled "Limerick: its History and Antiquities. By Maurice Lenihan." In this work the author relates that Governor Pearce, according to an Act of Parliament then recently passed, sentenced to death and hanged the "first" priest who was found guilty of the "crime" of marrying a Protestant Man to a Roman Catholic woman.

At the foot of the page is a note by the author, as follows:—

"This was a stain on the reputation of General Pearce, who was the brother of the distinguished Sir Edward Lovel Pearce, the architect of the magnificent Irish Parliament House. Sir E. L. Pearce was at this time engineer and surveyor-general of the Irish works. He obtained a sum of £1,000 from the Commons, and an address from the House of Lords, in Ireland, 'for his skill, true ability, and good workmanship, in building the Parliament House in College-green,' an edifice which was then, and which continues to be, the admiration of Europe. He had been a captain in Nevill's regiment of Dragoons, and sat in the Parliament of Ireland for the borough of Balaclava."

J. P.



REFERENCES.

A. Entrance-porch.
B. Vestibule.
C. Hall.
D. Principal staircase.
E. Garden entrance.
F. Boudoir.
G. Drawing-room.
H. Library.
I. Dining-room.
J. Own room.
K. Safe.
L. Servants' stairs from basement (to open front door).

M. Lavatory, &c.
N. Corridor.
O. Gun-room.
P. Groined cloisters.
Q. Old conservatory (re-arranged).
R. Billiard-room.
S. Lavatory, &c.
T. Butler's pantry.
U. Glass.
V. Hats, &c.
W. Servants' stairs.
X. Housekeeper's room.

Y. Stores.
Z. Lift.

a. Servants' entrance.
b. Kitchen.
c. Scullery.
d. Passage.
e. Larders.
f. Servants' hall.
g. Men-servants' stairs.

h. Entrance.
i. Knives and boots.
j. Men's W.C.
k. Brewhouse and washhouse.
l. Steps to vaults.
m. Courtyard.
n. Entrance courtyard.
o. Steps to high ground.
p. Back road.
q. Croquet-ground.
r. Terrace and flower-garden.
s. Principal entrance (roadway).

NUTFIELD PRIORY, NUTFIELD, SURREY.—Ground Plan.

NUTFIELD PRIORY, NUTFIELD, SURREY.

In a recent Number,* we gave a view of this mansion, which has been erected for Mr. Joshua Fielden, under the direction of Mr. John Gibson, architect. We now give a plan of the ground floor, as then promised, with such references as will sufficiently explain the appropriation of the various rooms.

NOTES FROM DUBLIN.

THE planting of the trees (the *platanus* or plane tree) in Sackville-street, the widest and finest of the Dublin thoroughfares, is nearly complete. It is thought that when they are in proper trim and foliage they will add much to the appearance of the street, by giving it the features of the Parisian boulevard. The specimens selected do not seem to be of the best, as not a few of them are far from being clean-stemmed. They are put down close upon the gas mains, and stand about 10 ft. high and 15 in. from the flag-way. An iron guard protects them. Rich fibry loam for the roots to ramify in, was supplied from the Phoenix Park, for which the committee were indebted to the kindness of Mr. Hornsby, of the Board of Works.

The corporation are busily agitating for the removal of Nelson's Pillar, situated half-way in the centre of Sackville-street, near to the General Post-office. This triumphal column was erected in 1808, three years after the Battle of Trafalgar, and was from the design of William Wilkins, architect, of Caius College, Cambridge. The original cost of the erection amounted to the sum of 8,856*l.* William Kirk was the sculptor of the statue of the Admiral that surmounts the column. Some are for removing the pillar to St. Stephen's-green, the largest square in the

city, and others think it should be placed in the Phoenix Park. A third party advocates a new site at the head of Sackville-street, near to the Rotunda. A subscription for the removal is proposed, which it is computed could be accomplished for about 1,500*l.* Like the Northumberland House proposal, some over-sanguine individuals are suggesting the American screw-jack and rolling principle, forgetting that the total height of column and statue is 134 ft. 3 in. The column certainly obstructs the view of the entire street, and dwarfs the proportions of the Post-office, the work of Francis Johnston. The certainty of its removal is, after all, a very doubtful question in the present generation.

New Epidemic Wards at the Meath Hospital have been completed at a cost of 800*l.*, and alterations and additions are in progress for converting the flax-mills, situated at Chapelizod, belonging to Messrs. Dargor & Co., into a distillery. Extensive alterations to the collector-general's office, Fleet-street, are also taking place. These with some other minor public and domestic works proceeding, are from the designs and under the superintendence of Mr. E. H. Carson, architect.

At a special meeting of the corporation, a matter was brought forward by Mr. Norwood, that it be referred to a committee of the whole house to prepare a memorial to be presented to her Majesty's Government praying the application of a portion of the Surplus Church Fund to the effectuation of the rebuilding of Carlisle Bridge, Dublin, the formation of the new street from Cork-hill to Christchurch-place, and such other public works and improvements as have already had the sanction of the council, or may in their judgment be necessary for the adornment and improvement of the metropolis, and also to the drainage of such districts in Ireland as may require the same, the purchase and reclamation of waste lands, and such other purposes as may be useful. The motion was carried,

but the citizens will have to wait long before they see the realisation of the projects, if they do not themselves move.

En passant, the Lord Mayor, on being congratulated on his election as M.P. of the city, administered a quiet but pertinent rebuke to some members of the town council, whom the cap fitted. He hoped that, during his year of office in the civic chair, no one would know his politics as far as his duty lay in the corporation. The municipal body, he considered, was not the place for the discussion of politics, and that such matters ought to be left in the background by members. It is to be hoped that the corporators will take the advice, and devote their energies to the sanitary wants, and other urgent improvements the city stands so badly in need of.

At an inquest held upon the bodies of two children, the father of whom was an Englishman, it appeared that the premises held were lately occupied as offices by the Registrar General, and by the father of the children, and that for some time a wholesale corset manufactory had been carried on by him. The manufactory had been discontinued, but the father with his wife and three children continued to reside on the premises. The ground-floor of the building consisted of a series of fire-proof rooms, fitted up for keeping records. The landlord availed himself of these rooms and stands for the purpose of forcing mushrooms, and beds of stable-manure were placed on the floor, and on the stands in tiers, and it was alleged that the emanation from these beds penetrated the flooring into the rooms above and so vitiated the atmosphere as to accelerate the children's deaths.

At a general meeting of the Royal Irish Academy, held this week, among the papers read was one by Mr. R. R. Brash, architect, "On an Ogham Inscription from Mount Masic, County Cork"; and another on the same inscription, by

* See pp. 50, 53, ante.

Samuel Ferguson, LL.D., Vice-President and Deputy Keeper of the Records.

The city is still in a very unsanitary state, and scavengers are few and far between.

GREEK ARCHITECTURE IN ROME.

At the meeting of the British and American Archaeological Society of Rome on January 23rd, Mr. Pullan chose Greek Art as the subject for his lecture, because it had some claim upon those who are studying the antiquities of Rome, since it was the source whence Roman Art was derived. The literature, painting, and sculpture, and more especially the architecture of Rome were derived directly from Greece, and the finest buildings of the eternal city were designed by Greek architects, and executed by Greek workmen, as for instance the Forum of Trajan by Apollodorus. The Romans were not a people possessed of inventive genius, but they understood the art of borrowing, and had the power of adapting in a high degree. They borrowed the arch from the Etruscans, and the orders from the Greeks; and by combination of the *arcuate* and *trabeate* principles they formed a style of their own, of which there is a perfect example in the Colosseum. The west coast of Asia Minor was colonised by Greeks, who invented the Doric and Ionic orders, and who carried their architecture to such perfection that the edifices erected by them were ranked amongst the seven wonders of the ancient world. These were the tomb of Mausoleus, king of Caria, and the temple of Diana of Ephesus. It was Mr. Pullan's lot to be appointed by the British Government, to take part in the disinterment of the remains of the former, and subsequently to take charge of three other expeditions of considerable importance, which resulted in the discovery of the temple of Bacchus at Teos, in 1861; of the temple of Apollo Sminthos, in 1865; and of that of Minerva Polias at Priene, in 1869. As in these explorations he had to take notes of every fragment found, he had the handling of the constructional stones of the principal Greek temples; therefore he was better acquainted with Greek than with Roman art. Hence he had chosen it in preference, and in describing the various buildings which had come under his observation, he would give some account of his visit to several of them, and the system adopted in the excavations; and he trusted that those details would tend to enlighten what would otherwise be a dry dissertation upon a somewhat dry subject. The lecturer then briefly described the circumstances which led to the discovery of the site of the mausoleum in 1857. He read Pliny's description of the building, and, aided by a drawing, explained the manner by which he arrived at the restoration, which coincides exactly with Pliny's description. He then referred to the subsequent removal of the expedition to the city of Onidus, and described the Lion Tomb, which seemed to have been the prototype of the mausoleum. He mentioned the manner in which the pyramid had been supported by a domical vault or *tholus*, constructed on the horizontal principle. He said that on examining the lower chamber of the so-called prison of St. Peter, he found that it had been originally a *tholus* of similar character, with the upper courses removed in Imperial time; and as a wall of the kings was built partly upon it, he concluded that it had originally been a tomb erected before the foundation of Rome, and, therefore, that it was the earliest piece of construction in Rome. Mr. Pullan then proceeded to give an account of his excavations on the sites of the three temples before mentioned, particularly alluding to the last, that of Minerva of Priene, where, though the difficulties he had to contend with, such as the interruption arising from fever and storms, were greater than in the former cases, the results were the more satisfactory. A Greek temple of a good period, that of Alexander the Great, had been laid bare (of this a photograph was handed round), and several inscriptions and pieces of sculpture were recovered, which are now in the British Museum. These expeditions were sent out by the Dilettanti Society, which was founded in 1736, partly with the object of promoting the study of Greek art. In conclusion, the lecturer advocated the study of Greek architecture as the ground after which the architecture of the future could be based.

The Ruins at Ephesus.—The Reverend Canon Ridgway being appealed to by Mr. Pullan as one who had visited the ruins of Ephesus, said that

he unfortunately had been there before Mr. Wood had discovered the true site of the Temple of Diana; he had watched, however, the progress of the excavations, and had kept himself in rapport with what Mr. Wood had done, so far as could be gathered from printed communications. That building was of very great interest, both on account of its having been the culmination of Greek art, and the acme of Greek idolatry. He thought it would be a most profitable subject of discussion, "To what extent Greek Art and Mythology had influence in the Art and Mythology of Rome." It must have struck others who had visited those two countries that the ruins of temples seen at the present day in this city were built after Greek models, and there could be no doubt that as soon as the Romans had subjugated Greece and Asia Minor, they became enraptured with the superior excellence of the architecture and sculpture, with which they saw those cities adorned, and at once they set themselves at work to remodel their capital. Art, taste, and religion became, in consequence, speedily elevated in tone. The rude massive temples of the republic were levelled to those foundations, whose recent discovery has been due to the indefatigable perseverance of Mr. Parker; their places occupied by more elegant structures copied especially from the Greek cities of Asia Minor, and a new ritual of worship to gods, hitherto strangers to Western Europe, accompanied a new era of architecture. Ecclesiastical buildings in Rome, of Imperial times, can hence be as certainly distinguished from secular as those of our own day. It was from this consideration that he was inclined towards Mr. Parker's opinion that the so-called temples of Venus and Rome had been misnamed, the existing ruins exhibiting less of the features of temples than of baths or market-halls; in fact, they seemed more Byzantine than Greek. The chief characteristic of a religious edifice amongst the latter was the colonnade. The Ionic column perfected, if not originated in the Asiatic colonies, was said to have owed its first conception to the contemplation of the female figure: the double roll on each side of the capital representing the plaits of hair on the head, and its gradual spread to the base, the flow of the garment that draped the human figure, the folds of which were subsequently portrayed by the fluting of the columns. He has been struck with a statue in the capitol, a copy of the Ephesian idol (so utterly unlike the Latin Diana) showing that both the form and culture of the Asiatic goddess had been imported into Rome. It was a very beautiful specimen in which the progress of art from one epoch to another was very visible; for the statue of Diana had advanced from the shapeless trunk, that was said to have "come down from Jupiter," into a most artistic figure. Its head was supporting a castellated entablature and the trunk was almost blossoming into an ornamented pillar, while the folds of the drapery were collected round the ankles (as if by an incipient string-course), and these fell in a bell-shaped roll, covering the feet, precisely like the torus above the square plinth of an Ionic column, revealing only the toes, which seem described as resembling the alternate keys of a piano. Not only had Greek architecture revolutionised Roman taste, but also, he felt convinced, the fanatic devotion of Asiatic archaeologists would know how it was esteemed the highest honour amongst those Ionic colonists to dedicate endow temples; how kings vied one with another, in such gifts and endowments; how whole cities sought for the privilege of being styled "Guardians" (Neokoroi or humble door-keepers) of this or that deity; how when the Roman power became supreme in the Archipelago, and the centre of the government was drifting towards Asia, its emperors easily coveted the distinction of presiding at the annual festival which prevailed during the month of May, called "Artemision," from Artemis, the Diana of Ephesus. This president (officially styled Jupiter) was invested with Divine honours and attributes, was required to live for the season in complete seclusion in the temple, and to simulate immortality. It is recorded that one Roman emperor, having been thus treated with godlike reverence for a month, declined to return to mortality, abdicated the throne, and ended his life as a recluse. Thus flattered by their Asiatic subjects, they multiplied temples in their city, and we find on the Neokor medals (struck to commemorate these annual festivals) the head of the reigning emperor on the one side, the shrine of the deity on the other, while after the time of Augustus

the old title of "Pater Patrius" gave place to "Divus." This fanaticism spread to the citizens of Rome itself. An apotheosis, and subsequent temples dedicated to emperors, followed in due course, and one relic has survived unaltered to our own times, the present pope historically owing the title "Pontifex Maximus" less through being the ecclesiastical successor of St. Peter than to his being the political descendant of the Caesars.

THE PATHS BY BUCKINGHAM PALACE.

FOR several years past there has been an increasing traffic through the park from Buckingham Gate across the front of Buckingham Palace to St. James's Palace, and also by way of the footpath leading to the steps opposite Devonshire House, Piccadilly. This open space by Buckingham Palace is as disagreeable as could possibly be for foot passengers, always either mud or dust: it is worn into ridges and furrows and hollow places,—in wet weather the surface is probably the dirtiest in London; in dry, windy weather it is all dust and grit,—when watered in summer it is mud again. It has lately had a small sprinkling of broken granite, which soon becomes worn down and dispersed. The footpath to Piccadilly is used more than any other in the park, yet it is the very worst for mud, &c., and, though used necessarily long after dark, there are no gaslights, and too frequently there are disagreeable people loitering about. The lights are in those paths where few persons ever walk. If our new Government will make this thoroughfare safe and agreeable, they will confer a public benefit, and remove what is now discreditable in front of a palace, which should set an example to owners of property in London. Private persons are expected to keep their frontage clean, and it is not too much to ask of the guardians of royal palaces to do their share of a public duty.

H. C.

FIREPROOF CONSTRUCTION.

COMBINATION OF MATERIALS.

SIR,—General Pasley, in his observations on limes, water cements, &c., clause 184, records an experiment on a segmental half-brick arch, with span of 15 ft. 4 in. and rise of 9 in., being built between the walls of a casemate.

The 4½-in. arch was loaded with fourteen courses of bricks loosely laid and dry, estimated to weigh 8,960 lb., before it gave way; the containing walls gave the abutment.

Mr. J. H. Owen, in the *Builder*, p. 48, suggests a division of floor-space into areas of about 15 ft. or 20 ft. square, carrying the bearing-points with cushions of brick standards, formed either with an iron skin grouted with concrete, iron of a cross section filled in with brickwork, or brick supports chamfered, the ceilings supported by an iron beam of rolled iron,—ceiling formed on the centre with tiles laid to the curve of the arch; the space between them and the tiles forming the surface of the floor it is proposed to fill in with concrete.

I venture to suggest the policy of forming the beam which carries the floor with brick arch at least 9 in. deep at the crown, kept from spreading by 1-in. iron rods of Lowmoor iron, if considered necessary, which rods should be kept at least 6 in. from the lower surface of the brickwork. Being thus cased by brick, which is a bad conductor of heat, and not easily damaged by fire, it would be nearly, if not quite, fireproof. If the appearance of the brick is objected to, it might be rendered with plaster of Paris, which is found to resist the action of flame.

The intermediate beams, like those in an old wooden floor, might be made of greater depth than the average thickness of the ceiling.

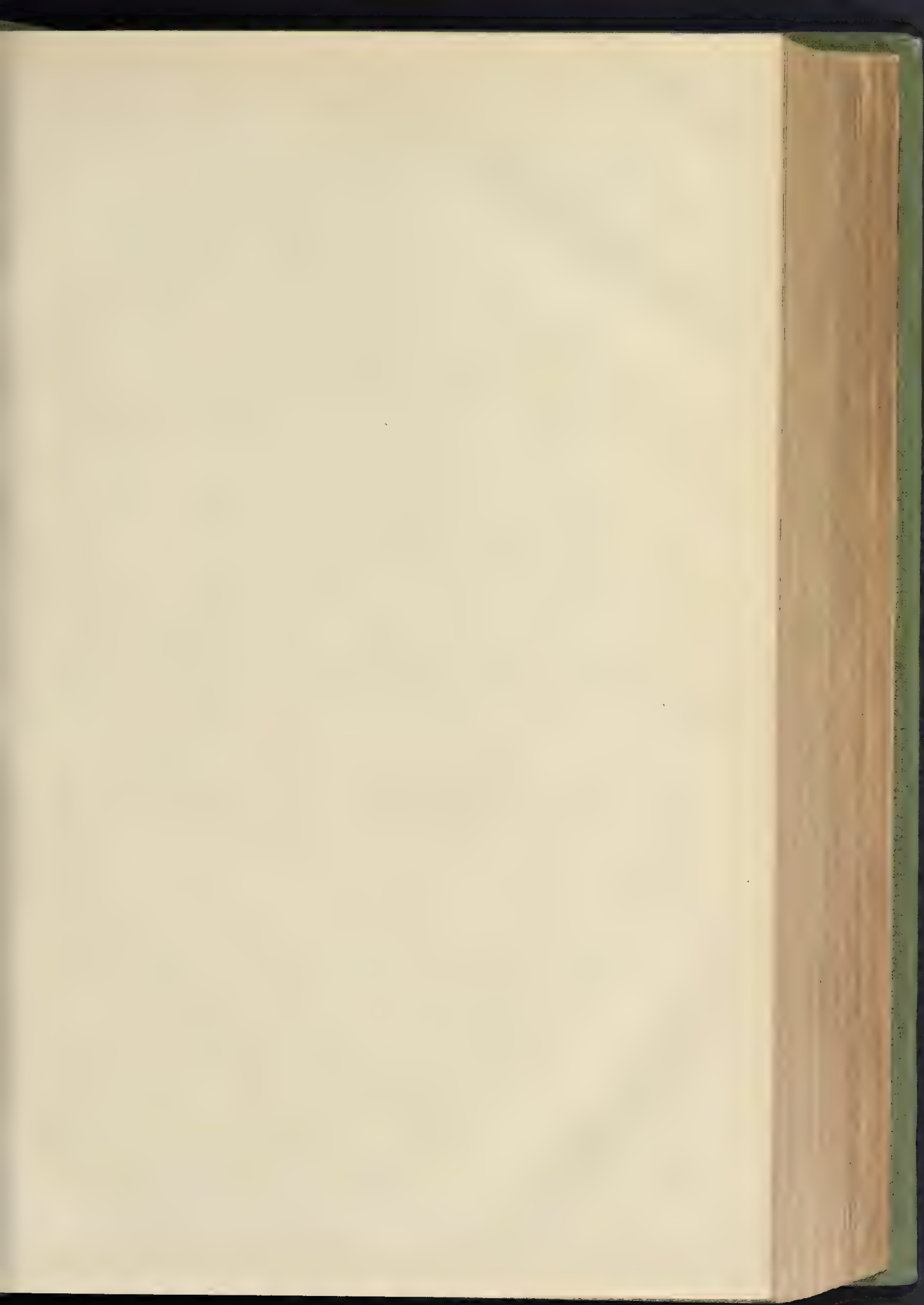
Portland cement, swelling rather than shrinking in setting, would tighten the retaining rods.

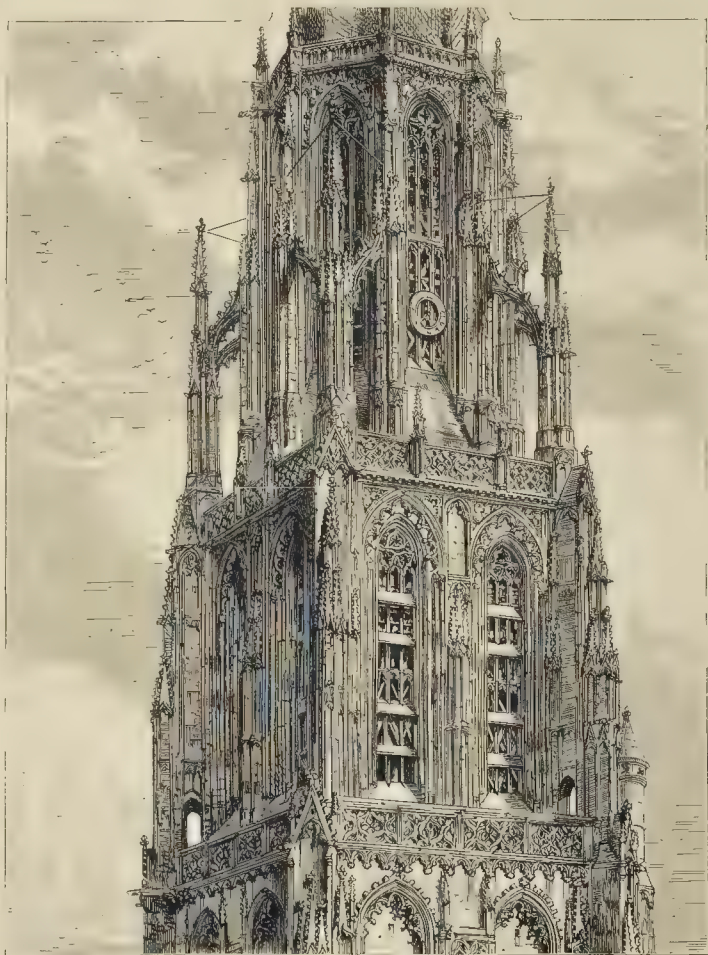
Probably working on this plan, the span of the arch might be largely extended with safety.

I suggested to the Society for the Organisation of Charity the erection of a few blocks of buildings for the lower strata of the wage classes, built on the same principle, i.e., the ceiling and floor of the ground-floor room in one concrete and brick slab, the upper ceiling and roof in another. I thought the demand for cheap houses for labourers might thus be met.

If the retaining plate, through and against which the retaining ties tighten, have against them anjet for external air, they cannot heat, as the draught will prevent it.

JOSEPH CHRETIEN.





TOWER OF THE PROTESTANT CHURCH IN BRED, HOLLAND.

TOWER OF THE PROTESTANT CHURCH
IN BRED, HOLLAND.

THE Protestant Church, formerly the cathedral, at Bred, in Holland, is a most noble building of the latest Decorated, with a considerable admixture of the Flamboyant or Third Pointed style, and some fine additions of the earlier Renaissance period. The choir of this church was consecrated in 1410, and it is probable that the magnificent tower and lantern are of a later date than this. Of course an Englishman looking at them for the first time would be inclined to give a much earlier date, but it must be borne in mind that the Netherlands were far behind us in the development of Gothic architecture, and retained it in great purity far longer than we did; indeed, many Gothic churches in Holland, and especially in Belgium, which appear at first sight to be works of the fourteenth century, were in reality only erected a few years before the close of the sixteenth century. It is, therefore, highly probable that the tower of the church at Bred was not commenced before the year 1450 or

1460, and the graceful lantern is twenty or thirty years later in date. This tower is the most beautiful in all Holland. Originally, there were two other lanterns superimposed above the lofty lantern shown in our drawing, but these were injured by a storm in the latter part of the seventeenth century, and replaced by a bulbous spire covered with lead and copper, which, although slightly out of place on a Gothic tower, is very pleasing in outline and has a good effect. The church to which this tower is attached consists of a nave and aisles, very deep transepts, and a long choir and aisles, terminating in an apse. Originally, the aisles did not surround the apse, but at the latter end of the sixteenth century arches were cut in the sides of the apse and a regular "chevet" with radiating chapels constructed.

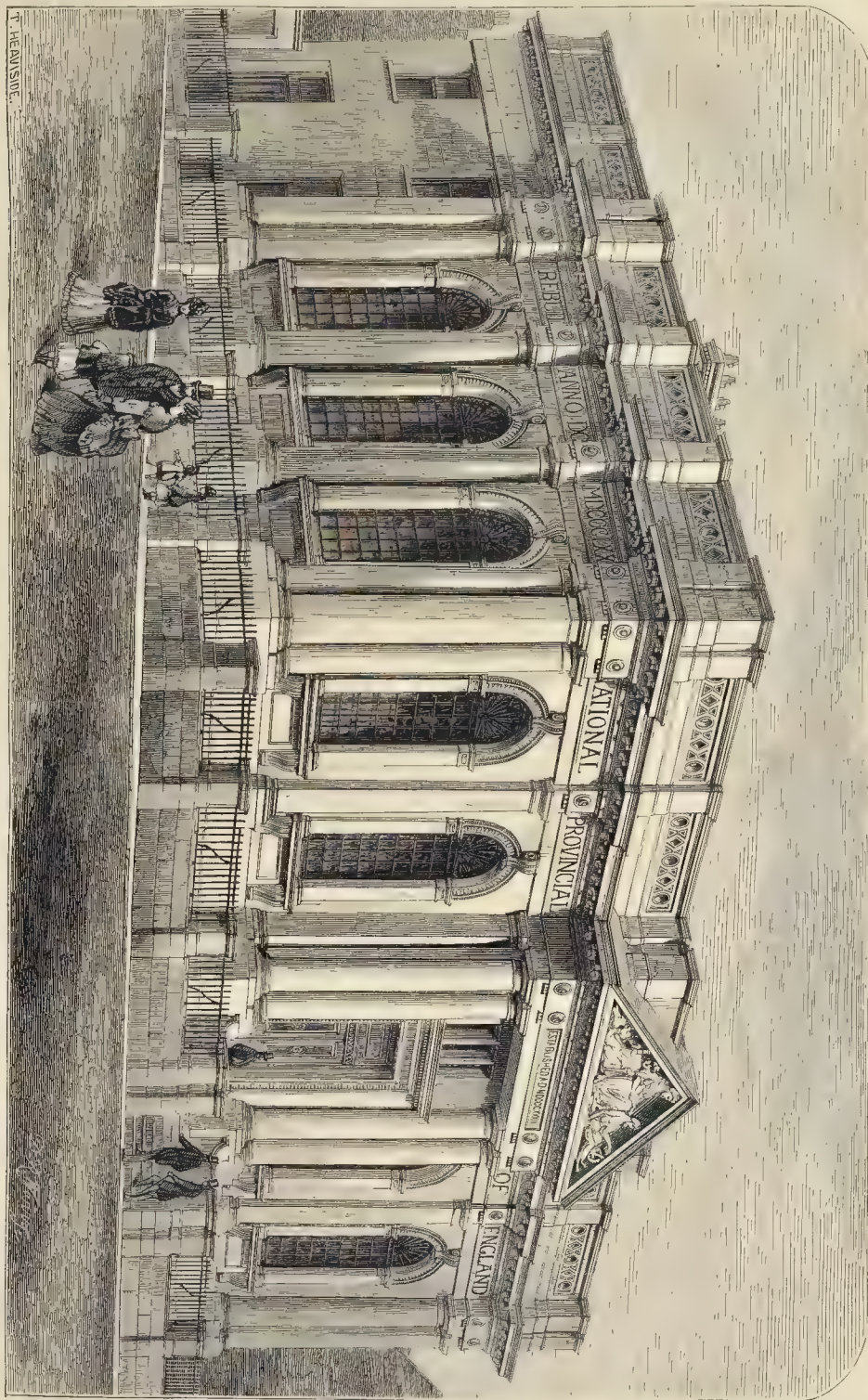
There are many fine brasses, and a splendid late Gothic monument to the Nassau family, which has been most carefully restored by Mr. Cuyper.

We have previously spoken of the disgraceful way in which this church is kept, and of its present neglected condition.

NATIONAL PROVINCIAL BANK OF
ENGLAND, MIDDLESBROUGH.

Our view represents the premises recently finished (upon the former site) for the above important branch of the National Provincial Bank of England, having the principal entrance front to Cleveland-street, while the flank elevations are towards Gosford and Garbut streets respectively.

The exterior is faced with Stainton stone on the three fronts, enclosed with stone piers and an iron palisade. The pediment over the entrance doorway is filled with sculpture,—a female figure holding a shield, representing Middlesbrough, with the badges of the town, and motto, "Erimus," thereon. On either side respectively are figures of a miner, with pick and Davy lamp, and an iron-worker, with hammer, and wheels, these being indicative of the vast mineral wealth and employment in the district. The banking-room is about 66 ft. long, and 30 ft. wide, affording an ultimate accommodation for more than forty clerks, and is approached from the entrance-lobby by glazed double swing



NATIONAL PROVINCIAL BANK OF ENGLAND, MIDDLESEX.—Mr. JOHN GIBSON, ARCHT.

doors. The manager is so situated as to be able to see over the entire room. There are also a waiting-room, manager's, and consulting room adjoining.

The principal strong-room and treasury are near the centre of the building, and adjoining to the strong-room for books in use; while underneath are spacious book and plate rooms, which are fitted up in a most secure manner with metal shelving and fireproof materials. The treasury has an iron room inside its fireproof vault, and is fitted up with every requisite against fire and burglars. Above these are the resident's apartments, whilst over and under the manager's room are those of the messenger.

The banking-room is lighted by eleven large windows, glazed with embossed plate-glass, in single squares, to the transoms, the lunettes above opening for summer ventilation. These windows are protected externally by ornamental wrought-iron grilles.

The artificial lighting is by three sun-burners, surrounded by ornamental pierced zinc pendants, which effect the extraction of the vitiated air. The warming is by hot water from the basement story, from which the fresh air is emitted through specially provided channels. The fittings are of Honduras and Spanish mahogany, and the public spaces paved with ornamental tiles.

Below the banking-room, besides the accommodation already mentioned, are the clerks' luncheon-room, lavatories, and so on.

The building was contracted for by Messrs. Potter & Wilson; the sculpture in the pediment by Messrs. Mabey; and the fittings were done by Messrs. Punch, Brothers.

The whole of the works were executed from the designs and under the direction of Mr. John Gibson, of Westminster. Mr. Glover acted as clerk of the works.

SOME OF THE SANITARY ASPECTS OF HOUSE CONSTRUCTION.*

The architect is an artist, in that he has to beautify the structures which he erects; he is an engineer, in that he has to consider the strength and qualities of the materials to be used, and to apply those materials according to definite rules; he is a sanitarian, in that, in the construction of domestic buildings, he has to consider the conditions affecting health,—and the conditions affecting health are as much the subject of accurate rules as those which regulate the strength or beauty of a structure.

My remarks on this occasion will be limited to that portion of the architect's functions which relate to what may be termed healthy construction. Most of the facts and conditions are well known to the members of this Institute, but it seems advisable at the present time, when Parliament is directing its attention to sanitary measures, of which the construction of healthy dwellings forms an important branch, to lay the subject before your Institute in a connected form, with the object of showing the considerations which regulate the construction of human dwellings in reference to the health of the occupants, rather than to their architectural features. Moreover, a large number of houses are built by speculative builders without reference to architects, and, in these, considerations of health are little thought of.

The conditions necessary to secure the health of the inmates of a building should be present to the mind of the architect in the formation of his original design, as much as the strength and qualities of the materials with which he has to build; and upon these conditions should be engrafted those of comfort, convenience, and beauty. Palladio somewhere says that architecture, being grounded upon rules taken from the imitation of nature, admits of nothing that is contrary or foreign to that order which nature has prescribed to all things. This remark is peculiarly applicable to healthy house construction; for nature prescribes that stagnation breeds putrefaction, and that health depends on the absence of stagnation; in other words, air must be kept in motion, and water must not stagnate.

The requirements for health may be classed generally under the heads of:—

1. The purity and cleanliness of air.
2. An equable temperament.
3. Sufficiency of daylight.
4. Purity of water.

* From a Paper by Captain Douglas Galton, C.B., Director of Her Majesty's Public Works and Buildings, read at the Royal Institute of British Architects, as already mentioned.

The last consideration I will leave untouched on the present occasion, as it depends rather upon considerations outside the house, than upon the constructional arrangements.

Sufficiency of light is a material element of health; sunshine acts as a purifier of the air. In uninhabited rooms when the shutters are closed there will be found a close musty smell. This smell will be removed by the admission of sunshine, and thus daylight and sunshine assist in obtaining purity of air, which is the cardinal point in the construction of a healthy house.

The other two conditions fall naturally under the four chief heads of, first, *The site*, which should be dry, and not malarious; secondly, *The general arrangements* of the building, which should prevent stagnation of the air, and provide for the speedy removal of refuse; thirdly, *The materials*, which should insure dryness of foundations, walls, and roof, and be retentive of warmth, so as to prevent rapid changes of temperature; and fourthly, *The ventilation*, which should carry off the emanations constantly given off in respiration, &c. At first sight, these propositions appear so obvious as to render it unnecessary to enforce them by an essay. It may be urged, for instance, that no person who has studied the subject would build a house in a wet situation, where the purity of the air would be injured by moisture; that no person would select materials which would permit the wet to penetrate the walls; that the ventilation would be contrived so as effectually to prevent the smell of cooking from pervading the house. Yet how numerous are the houses in which every one of these obvious rules are transgressed!

A further condition of health is the maintenance of perfect cleanliness within the dwelling. This, no doubt, properly belongs to the occupiers of the house, but the architect is concerned in it to this extent—that cleanliness is promoted by abundance of light, and by the absence of dark corners. A dark house is an unhealthy house, an ill-aired house, and a dirty house.

Site.—It having been assumed as an axiom that no stagnant water should be allowed in the vicinity of any building site, either above or below the soil, it follows that surface drainage should be provided round all building sites. Houses should never be placed against the side or foot of a slope. Such a position is a fertile cause of fever, and is especially to be avoided when a bed of clay crops out near the foot of the slope. Houses should not be built on or near accumulations of refuse, as so frequently happens in the case of houses built in and near London.

In connexion with these considerations, houses may be classed under four heads or divisions:—

- (a.) Large houses in their own grounds.
- (b.) Houses of a similar class in towns where the influence of elevation, position, and external ventilation cannot be depended on.
- (c.) Cottages in the open country.
- (d.) Artizans' dwellings in towns.

The first division, viz., large houses in their own grounds in the country, may depend for pure air upon their elevation, position, and exposure; and the owner who has control of the land around can take all necessary measures to secure purity of the surrounding air. In selecting sites for barracks, the general suitability of the place is certified to by the commanding officer of the district; the capabilities for water supply and drainage, by the engineer officer; and the healthiness of the locality and exposure, by the medical officers. In civil life it is generally the architect who decides all these questions.

In the case of the other three classes enumerated above, viz., houses in towns, and cottages in the country, it is difficult for any member of a community to separate his interests in the matter of health from that of his neighbours. The air may be contaminated by the action of persons over whom the owner of a house can have no control. The health of the community is thus dependent upon a proper supervision being maintained over the proceedings of the several members constituting it. This control, to be effective, must be vested, to a great extent, in persons possessing architectural knowledge; and it is almost a certainty that before long Parliament will have recognised the necessity of placing upon qualified surveyors the duty of seeing that sanitary requirements, including the internal arrangements, the use of proper materials, and the drainage, are adequately provided in all new houses and cottages over the country. There is at the present time a supervision established over certain matters of construction, in the case of houses in some of our principal towns, but in very

few cases are these requirements connected with the health of the occupants.

General Arrangements.—I have already shown that an abundance of light and direct sunshine are necessary for maintaining purity in the air. In hot weather the inner temperature of the house should not be raised by the heat of the sun passing through the roof or walls. The purity of the air in hot weather is generally maintained by open windows and open doors; but to insure this, it is necessary to design the house so that a free current of air may be passed through all parts of it. Hence back-to-back dwellings are not advisable. In towns there should be at the back of every house a clear air-space from the level of the lowest part of the basement along the whole width of the house, between it and the next building, and the doors and windows should be so arranged that, when they are all opened, they allow a current to pass through the rooms, and do not leave any portion of the air in a stagnant condition. In cold weather, on the other hand, the air of the house is required to be maintained at a higher temperature than the outside air. The heat generated in the house should not pass away through the roof and walls. Arrangements for maintaining purity of air are chiefly required for cold or damp seasons. The upward movement of air, warmer than that of the outside air, will draw up air from the basement: consequently the purity of the air of a house in cold weather will depend on the purity of the air in the basement, unless the basement is entirely cut off by solid arching from the house. The air of the basement, if it be below the level of the ground, will be rendered impure by fumes from the kitchen (if in the basement) and the cellar, and it will be derived partly from the adjacent soil. This air is generally impure.

The deleterious character of the air in the soil is chiefly due to the large proportion of carbonic acid which it contains. Dr. Pettenkofer's experiments show that at a few feet below the surface, the proportion of carbonic acid in the air is greater than that in the worst ventilated dwellings, and that the proportion of carbonic acid in the air taken from the soil is twice as large as that found in water collected from the same place. He showed that the quantity of carbonic acid at a depth of 15 ft. from the surface was greater than that found at 5 ft. from the surface during the whole year, except during June and July, when the proportion of carbonic acid was greatest at the higher level.

But there are other causes of impurity in the air which permeates the subsoil. In inhabited districts the organic matter left to putrefy in or on the soil injuriously affects both the air and water in the soil. In towns the emanations from the gas-pipes are a serious source of impurity to the air in the soil; so, also is the leakage from sewers. From both these causes the air in the subsoil is eminently polluted. Consequently, the purity of the air in the basement will depend partly upon the arrangements in the basement itself, and partly upon the purity of the air in the subsoil under and around the house, unless the basement has been entirely cut off from the surrounding ground by a sufficiently thick and continuous bed of concrete or a layer of asphalt laid over the whole surface covered by the house, and by sufficient areas carried below the level of the basement, cutting it off by an open air space from the adjacent soil.

The floor of the basement, whether it be of wood, of stone, or of tile, should be from 1 ft. to 18 in. above the level of the surface of the area or ground surrounding it, and it should have a space under it for the circulation of air, and a damp course, either of asphalt, slate, glazed pottery, or other impervious material, should be laid below the level of the floor. By such means only can the floor of the basement be maintained in a dry condition.

As regards drainage, water will always be found to be the most convenient carrier of faecal refuse. The dry earth system is convenient in some cases, and in cottages in the country districts water-closets would be expensive and inapplicable. All drainage arrangements, as a rule, should be against the outside walls of the house; but where it is absolutely necessary to carry a drain under a house, special arrangements should be made for access to and inspection of the drain-pipes, which should be water-tight in themselves, and they should not be buried. No cesspit should be allowed in or near any house. In large country houses it is possible to utilise the sewage for agricultural or horticultural purposes. In cottages in the

country sinks and washhouses should be outside the dwelling-house wall; the privies, or dry-earth closets, should be in out-houses separated by an air space from the house. If a cesspit cannot be dispensed with it should be at least 20 ft. or 30 ft. from the house, it should be made watertight, be ventilated, and be small to compel frequent emptying. In towns cesspits should never be permitted. If sewerage is not provided the midden refuse should be removed daily. Ashpits and receptacles for stable manure should never be below the surface of the ground. They should be paved and drained, and they should be small to compel frequent removal of their contents. Between any cesspit or any main sewer and the house, there should be a trap in the drain to cut off communication between the house and the main sewer or cesspit, and there should be an air-pipe carried up from the drain between the trap and the house to above the roof level to ventilate the drain. There should also be a ventilation from the cesspit, or in the main sewer, so as to render their ventilation independent of that in the house drain. Further, all down-pipes of house-drains should be carried up to above the roof, and left open at the top, and be carried down into a trap at the bottom. Waste-pipes from cisterns or sinks should not be carried into a down-pipe connected with the drain, but empty into a trapped grating so as to leave an air space between the waste-pipe and the trap; and so prevent the possibility of the waste-pipe acting as a conductor of sewer gas into the house. Water-cisterns always give off moisture; it is, therefore, undesirable to place them in or near the occupied part of a house; but all cisterns and water-pipes should be so placed as to render their freezing impossible under any ordinary circumstances, because where the safeguards against sewer gases mainly depend upon the security of water-traps, any interruption to the flow of water is a source of danger. Water-pipes laid underground in the open air will not be safe from freezing at a less depth than from 20 in. to 30 in.

Plans for houses must necessarily vary with the wants of individuals; it is, therefore, only possible to lay down some few general principles which should be observed in the design. Amongst these, perhaps the most important for living rooms are those concerning windows, in the arrangement of which sanitary principles are frequently sacrificed to the design of the façade of a building. The model selected is frequently that of an Italian house; but in Italy windows are few and deeply recessed to keep out the heat and the brilliancy of the sun, whilst here the clouded sky makes an abundance of light necessary. For sanitary purposes the windows should be carried as near the ceiling as possible, and the lower the room the greater the necessity to observe this rule in order to freshen the air. Moreover, it is an element of cheerfulness in a room for the sills of the windows to be brought down near to the floor.

The proportion of window surface to the cubic contents of the room is of great importance, but it must to some extent depend on the aspect; instances could be pointed out of houses where architects have given to rooms of the same cubic contents, of the same form, the same aspect, and to be used for similar purposes, a window area twice as much in one room as in another to suit the façade.

In this climate adequate light will not be secured with less than one square foot of window surface to about 100 to 125 cubic feet of the contents of the room. This should be a minimum allowance, and assumes that the windows in all cases are of clear glass, but greater cheerfulness will be secured by more light. The effect of different qualities of glass on the diminution of light is shown by the following results of recent experiments:—

Polished British plate glass, $\frac{1}{4}$ in. thick, intercepted 13 per cent. of the light; 36 oz. sheet glass, 22 per cent.; cast plate ditto, $\frac{1}{2}$ in. thick, 30 per cent.; rolled ditto, four corrugations in an inch, 53 per cent.

The most convenient form of window for ventilation in this country is the sash window opening top and bottom. This mode of construction enables a current to be maintained, fresh air passing in below, whilst the vitiated air of the room passes out at the top. It is an absolute necessity for a healthy room that the window should open at the top, and it is most extraordinary in how many houses, even of the better class, windows are still found with fixed upper sashes.

MRS. BOWES'S MANSION AND MUSEUM, BARNARD CASTLE.

THE placing of the first roofing timbers at Mrs. Bowes's remarkable Mansion, of which we gave a view and plans in our volume for 1871, pp. 28 and 29, has been celebrated by a dinner to the workmen, more than a hundred in number. The dinner was held at the Goliath's Head Inn.

The Mansion is situated at the east side of the town, adjoining the Westwick-road. The walls have now reached such an elevation as to make the edifice a conspicuous object in the landscape from various points of view at several miles' distance from the town. The style of the building is that of the French Renaissance. The south or principal front is no less than 300 ft. in length, and the central dome will be carried to the height of 150 ft.; the rest of the front will have an elevation of 85 ft. East and west are wings, the length of each being 130 ft., the front being set back 38 ft. within these wings. Under the basement are twelve cellars, each 45 ft. by 15 ft., the walls and arches being of masonry. On the basement-floor there are seven rooms, exclusive of the principal staircase and entrance-hall. The entrance-hall is 42 ft. square by 31 ft. high, the walls being of polished freestone. The main doorway is 24 ft. 6 in. high, by 12 ft. 6 in. wide. The height of the principal staircase is 56 ft., the width 32 ft. The steps are fifty-four in number, of red Aberdeen granite, hanging out of the wall 8 ft. The landings are of stone from Craigleith quarries, Edinburgh, most of which are 11 ft. by 10 ft., and 6 in. thick. Twelve polished red and grey granite column support and ornament portions of the staircase.

On the first floor there are seven rooms, one of which is 42 ft. square and 25 ft. high. On the second floor there are eight rooms, one of these also being 42 ft. square by 25 ft. high. The number of rooms in the third or attic story is fifty, with dormer and other lights more than 100 in number. In the central dome is an observatory.

The number of lights on the basement-floor is sixty-four; on the first floor, sixty-eight; on the second floor, seventy. The three picture-galleries in the north front are, together, 200 ft. long, by 45 ft. high; they are lighted from the roof by means of glass fitted in iron; each light is 41 ft. 6 in., by 20 ft., with a rise of 15 ft. The sculpture galleries are of the same dimensions as the picture galleries. The main walls of the building are 3 ft. thick, of ashlar; the dividing walls are of the same thickness; the solid to the angles are 8 ft. thick. In each wing there is a staircase, composed severally of 102 steps of Craigleith stone. The building contains two apartments each of which has twelve windows. The cantilevers, corbels, semicircular and pedimented windows are to be elaborately and richly carved. Some of the beams of timber used in the floorings are 49 ft. long by 14 in. square. The beams for the floor of the picture-galleries are 48 ft. by 18 ft., by 14 in.; they are strengthened with iron flitches $\frac{3}{4}$ in. thick.

Adjoining the mansion will be a chapel, ornamental water, fountains, gardens, shrubberies, &c. From the summit of the building there are extensive and picturesque prospects. The building has been in progress for about four years, and is two-thirds completed. We understand that the work would have gone on with greater rapidity had it not been for the delay in procuring stone of the requisite dimensions for the numerous massive columns and entablatures. The architect of this great edifice is Mr. J. E. Watson, of Newcastle-upon-Tyne; the contractor, Mr. Joseph Kyle, of Newcastle and Barnard Castle.

Mr. Watson, at the dinner, said, in regard to Mrs. Bowes, that he had many times been professionally engaged in works of considerable magnitude in different parts of the country—in England, Ireland, and Scotland—but he had never, in the whole course of his experience, met with a lady like Mrs. Bowes; and when he took into account, the good and excellent ideas of buildings which that lady possessed, he declared that he never met her equal. They must know that she not only understood plans and elevations, but she thoroughly understood details, and it was under a sense of obligation that he remarked that she had given him many a practical and useful hint, and had helped, to no inconsiderable extent, the progress of the work.

THE COLOSSEUM AND THE ENGLISH STAGE.

SINCE the appearance of the letters as to the appropriation of the Colosseum, three correspondents have urged the use that might be made of it as a National Theatre, conducted on principles advocated in this journal. One of them writes thus:—Some time ago it was suggested in the *Builder* that a school of Dramatic Art would be of great advantage to the English stage. Here, then, is the school-house, with its theatre, &c., ready to hand. Mr. Godwin, who originated the movement, Mr. Planché and Mr. Tom Taylor, who followed suite, and Mr. George Rose, Mr. Charles Reade, Mr. Duffus Hardy, Sir Coutts Lindsay, Mr. Wigan, Dr. Doran, Mr. Alfred Thompson, Mr. Hare, Mr. Bancroft, and others, who with the first-named three gentlemen, met several times in committee to see what could be done to forward the scheme, have only to speak, to announce that a subscription-list is open, and the thing would be done. The Colosseum would bloom again in restoration if this suggestion were carried out, and henceforth be not only a land—but an art-mark, in this great city.

CAN ART BE TAUGHT?

THAT is the question? The question which has to be solved before we can sit in judgment on the means of instruction provided by the Royal Academy and South Kensington, or pronounce the organisation of their schools defective and their teaching inefficient. I myself believe that art cannot be taught; that it can be taught, has been, and still continues to be, one of the great fallacies of the age. Hence, at a great expense, the nation has established the Art Department, and I think few persons will dissent from the verdict that Mr. Cole has left nothing undone that possibly could be done to make the Art Schools at South Kensington perfect in their arrangements and appliances. The machinery is complete. If the results, therefore, have not been satisfactory, it is because the public have expected that South Kensington could do what is impossible—breathe into untempered dust the breath of genius.

A favourite motto of the Royal Academy is "Labor et Ingenium." The Art School is open to the "Labor," both with and without the "Ingenium." It is, however, only the "Labor" in conjunction with the "Ingenium" that can turn the best of schools to account.

We have long been floundering, too, in the error that art is a great teacher, whereas it has always been the outcome and index of the intellectual characteristics of a nation. It shows what has been taught. That kind of education which will make a nation truly great, will also make it correct in taste.

Let me endeavour to place this last proposition in its true light. Imagine man as first created, perfect in mental constitution, perfect in body, perfect in sensibility. For a being so constituted possessing the "ingenium," the perfect mechanism of an art-school is adapted. That art which is not the offspring of and adapted to healthy sensibility, will exhibit morbid characteristics, and is not worth having. And neither the schools of the Royal Academy nor South Kensington will ever completely answer public expectations till the human intellect, physique, and senses be developed nearer to the standard of perfection. If the general opinion should be that this cannot be effected, either shut up your art-schools, or leave them open as now to the few whose exceptional and more perfect organisation can fully utilise them. If, on the other hand, organisation can be raised, improved, let us leave the art-school alone for a time, and direct all our energies to what should be the prior and more important work of general culture, resting assured that in due season the good husbandry will produce, among other grand results of the harvest, fine art. When that season comes, the art-schools of South Kensington will be appraised at their proper value. Let us endeavour to bring art out of men, instead of vainly endeavouring to pour it into vessels marred in the hands of the potter.

W. CAVE THOMAS.

THE WORD "WYK."

THERE was a very excellent system of teaching the etymology of English words in vogue, many years since, at University College School, and I fancy that it was then taught that "wyk," "wyk," "wyke," were transmutations of the Latin, *vicius*, a village.

EXHIBITION OF THE ROYAL SCOTTISH ACADEMY.

The forty-eighth exhibition of the Royal Scottish Academy, comprising 1,043 works, is in many respects a satisfactory one, all the more so that it owes nothing to extraneous aid, but consists, with one or two trifling exceptions, of the productions of native artists. There are few works exhibited which can be considered great, either as regards subject or invention; there is steady progress, however, shown in the manner of treatment and power of execution; but a lack of seriousness and depth of feeling. There is much to delight the eye, but little to touch the heart or exercise the mind,—we look for the embodiment of ideas as well as technical excellence.

The mere choice of a great subject does not show that the artist is great; he is only so when he embodies and gives expression to the higher emotions; he may, if he is gifted with the faculty, throw into an every-day occurrence an amount of feeling which will raise it above common-place and vulgar associations; but the subject must be interesting, and worthy of being dwelt upon; it should not only impress the beholder by its beauty of colour and execution, but by the effect it has upon his imagination and nobler sentiments.

The most popular of Scottish artists is Sir Noel Paton. His subjects are not trite and common-place, but partake largely of the imaginative element. They are pleasant to look upon, the product of an amiable and highly refined nature,—the refinement of the boudoir rather than that of the saloon; redolent of sweet odours and softest music. No. 163, "Oak and the Elk Maids," is a characteristic example. A knight on horseback is beset by visionary figures floating in a phosphorescent light, who "proffer him all manner of solace and pleasure." The "fair demoiselles" are the best part of the picture; the knight is a "carpet knight"; his "stout horse," weary from a long day's journey,—a lady's palfrey ambling gracefully along. A hard metallic glitter pervades the whole, which is far from pleasing. Beside this work is one by Hugh Cameron (173), "Age and Infancy," and no greater contrast could be found than there is between these two works. The poetry here is that of humble life, unaffected, simple, and refined, without being weak in execution, and it is delicious in colour.

The hand of the president, Sir George Harvey, has not lost its cunning. No. 188, "Port Sonnachan, Loch Awe," is equal to anything he has hitherto done in landscape art, and that is saying enough.

No. 210, W. Pettie Douglas, "The Midnight Despatch: Cromwell receiving Notice of 'The Start' the Invasion of England by the Scots previously to the Battle of Worcester," is one of the works that make one sigh. The scene is a dark night, with the stars twinkling overhead. The messenger who brings the despatch is wonderfully like a night-policeman as he stands with his lantern giving light to Old Nell to read. Very curious is the reflection of the light on the eye of the said messenger; it looks as if a hole had been bored through his caput, and one of the stars was seen through the aperture. Melancholy it is to behold the bloated character intended to represent the great Protector, and pity it is to see the sloppy manner in which the paint is laid on. Mr. Douglas has done, and can do, better than this.

A ray of sunshine gladdens our eyes as we catch sight of "The Clyde" (244). It is one of the most successful works of James Cassie, whose eagle-eye does not succumb to the meridian sun. Faed's "When the Day is done" (261) next attracts attention: it has already been exhibited and commented upon, and need not therefore detain us. William Macgarratt presents us to three graceful damsels "At the Fair" (342), who are engaged in contemplating a photograph of one of their sweet selves. The work is elegant in composition and harmonious in colour.

No. 346 "The Holy Well, Lough Atalia, Galway," is a well-chosen subject by W. F. Vallance, and it is well delineated too. It represents one of the phases of superstition—relics of water-worship—which linger in the remote parts of the United Kingdom. The different observances of peregrinating round the well, picking up pebbles and dropping them into the water, &c., culminating in the final act of devotion, are all graphically rendered.

Of lofty aim, conjoined with excellence of representation, there is nothing in the exhibition equal to No. 361, "A Conventicle Preacher arrested and brought before a Court of Justice," by Robert Herdman. No period of its history has made a deeper impression upon the people of Scotland than that from which the incident is taken, and the times abounded with such. The stern, unflinching enthusiasm of the preacher; the cruel, cynical expression of the judge; the contemptuous look and attitude of the cavalier; and the cool indifference of the myrmidons of the law, are all rendered with truthfulness and force, and yet without exaggeration.

No. 439, "The Duet," is the largest work yet produced by R. P. Bell. The duet is being performed by a beau and a belle, elegantly attired in the Queen Anne style. They are a handsome couple, well matched, and the artist has done them justice.

Nos. 459 and 460 are two bits of nature, freshly and deftly painted by Alexander Fraser. In passing, we remark that Walter Paton is more reticent than usual in the use of purples. A little more force and vigour are still wanting in his works.

J. B. Macdonald has given up figure subjects and taken to landscape. No. 12, "Strathyre," is a large and powerfully-painted view of a Highland strath. It will bear comparison with the works of Graham and Smart, which have attracted so much attention in Burlington House.

It is not often that we see a portrait of a gentleman in modern costume which we would desire to possess as a work of art, pure and simple; but such is No. 41, by G. Paul Chalmers. Portrait-painting seems to be his forte, and to that he appears now to devote his attention.

No. 59, "Medea in the Island of Circe," is a subject which enables William B. Hole to contrast a graceful classical figure (hardly original) and the "many beasts" with which she is surrounded.

Architectural drawings hereafter.

NEW STONE-DRESSING MACHINE.

In August, 1869, an American stone-dressing machine, Holme's, was exhibited at work at the west end of the Victoria Embankment, and was noticed in the *Builder* at the time. The action of the cutting-tool in that machine was eccentric, but it was really a cutter. Other machines for cutting and dressing stonework operate by continuous pressure. A new machine, on a perfectly distinct principle, is inviting the attention of builders and contractors. It is the invention of Mr. G. Stacy, of the State of New York, and has been exhibited by Messrs. Lawrence Brothers, of Holborn-circus.

The machine is double-acting, the travelling-table and the parts moving in either direction as may be most convenient. The machine exhibited is the first of its kind that has been made, and requires to be perfected in some of its details. It was constructed by Messrs. Hoe & Co., of New York, under the direction of the inventor; it is quite sufficient to illustrate the principle of the invention, the essence of which lies in the substitution of a mechanical contrivance for the human hand, for holding, applying, and directing the working tool. In this machine the chisels are made to imitate the action of stone-dressers' hand-tools, that are operated on by percussion rather than pressure.

In the machine the stone to be dressed is laid upon a travelling-table that is moved by a rack and pinion; by means of a ratchet-wheel and catch, the table may be moved by stops of from $\frac{1}{4}$ in. to $\frac{1}{2}$ in., or, by disengagement of the detent-catch, a continuous movement may be given. The working parts are raised and lowered by an arrangement of bevel-gear. These parts consist of two horizontal rotating shafts, that are furnished with series of spirally-arranged hinged hammers. The hammer-heads have slots into which steel chisels are fitted, and fixed by semicircular wedges. When the machine is in action these chisels strike the part of the surface of the stone, with which they are brought into contact in precisely the same way as a surface is attacked by the stone-cutter's chisel and mallet. Only one chisel strikes at the same instant, and the machine may be so adjusted that a chisel may be made to pass over the same portion of the surface from one to six times before the table moves on. The *debris* in working is precisely the same as is made by the stone-cutter, stone-dust and thin flat chips.

There are two rotating shafts fitted with

hinged hammers and chisels; the one that first comes into action does the rough hewing, the other finishes the work. The stones operated upon in the exhibition of the machine have been Yorkshire flagging, Portland and Bramley Fall. We have seen it at work upon the two sorts last named. On Saturday last it was put to work upon a block of Bramley Fall stone 7 ft. long and 21 in. square. The supply of power, abstracted from the ordinary work that the engine was doing, was irregular and defective, although this machine requires very light power considering the work it can turn out. The first shaft took off about $\frac{1}{2}$ in., which was a severe strain, and enough, we would have thought, to have stripped off the whole of the chisels to the roots, but every one of them passed through the ordeal cool and unharmed. The speed, after both shafts with their tools came into operation, was 9 in. lineal per minute of the 21 in. wide surface. With command of the power from a 3-h.p. engine, the machine is equal to from 15 in. to 18 in. lineal per minute of a piece of freestone 18 in. wide. The chisels are arranged on the shafts so as to embrace every portion of the surface of the stone under treatment. When they come into contact the hammer-head is solid upon its rest, and recoils as soon as the stroke has been delivered, carrying the chisel over the unheaved portion. Each rotating shaft is fitted with eighteen chisels, and at ordinary speed the shafts make 200 revolutions per minute. Taking the speed at 150 per minute gives the action of 2,700 chisels upon the stone in that time.

The finished work is produced, as may be seen, at very low cost. From the mode of working, one tool only strikes at a time. The power required is very light, and the tear and wear are said to be inconceivable.

NEW MUNICIPAL BUILDINGS FOR BIRMINGHAM.

At the meeting of the Birmingham Town Council, the Estates and Buildings Committee recommended the acceptance of a tender amounting to £83,220l. for the erection of a suite of new municipal buildings. The Council approved of the report. The proposed buildings, which will now be proceeded with on the site adjoining the Town-hall, will include spacious council-chambers and offices for all the borough officials. The Assize Courts will be erected adjoining the municipal buildings as soon as Birmingham is made an assize town. Mr. Thomson, of Birmingham, is the architect.

THE PROPOSED AQUARIUM FOR LIVERPOOL.

MR. BEALE has obtained from Mr. C. H. Driver, architect, plans of a building such as he desired. A suitable plot of land has been conditionally secured in Myrtle-street, and on this it is proposed to erect the new institution.

The building which it is proposed to erect will comprise in itself an aquarium, a concert-hall, a conservatory, a restaurant, and a photographic saloon, thus embracing, in one building, the most popular portions of the Sydenham Palace. These are to be so arranged that the whole can at the same time be thrown into one, or, as occasion may require, they can be kept separate and distinct. The principal entrance to the building will be in Myrtle-street, and will be in the centre of the block of buildings, opening into a large porch and vestibule, giving access to the aquarium and concert-hall on the right and left. The aquarium, which it is proposed to place at the west side of the block, will be entered from the main entrance vestibule by a doorway opening directly into the aquarium. The aquarium itself will be of ample size, containing various tanks varying from 6 ft. to 70 ft. in length, and containing in the aggregate nearly 100,000 gallons of sea-water. This water will not be required to be pumped into the tanks; for when once the tanks are filled there will be no occasion to renew the supply. The tanks, it is intended, shall be so constructed as to adapt them to containing larger specimens of animals than are usually to be seen in the present aquaria, and which may from time to time be brought as curious specimens to such a large seaport as Liverpool. In addition to this considerable provision will be made for a large number of store tanks, experience having demonstrated that these are most useful and necessary for the purpose of reserve. They will also answer the purpose of hospitals

for sickly specimens, as these may present themselves, and may also be utilised for scientific observations. It is also contemplated to provide table-tanks, for small specimens needing to be carefully got at for feeding, and which cannot so well be inspected in the larger tanks. The central table-tank in the large hall is intended to have rockwork, ferns, foundation, &c., with a view to making it a pleasing object of sight, besides its being a useful adjunct to the aquarium proper. The reservoir engine and boiler rooms will be situated in the basement, under the aquarium, which will also be devoted to work-rooms, stores, &c. The seawater reservoir will be constructed to contain 400,000 gallons of seawater, or, as is computed by most scientific authorities to be desirable, four times the quantity contained in the tanks. The architecture of the aquarium it is proposed to decorate with a moderate amount of judiciously-applied colour. The columns, arches, &c., are to be in cast-iron, of an ornamental design, and the floor will be inlaid with encaustic tiles. The concert-hall, the entrance to which it is proposed shall be from the main entrance-hall and vestibule, will be on the same line, in the principal avenue of the aquarium. By this arrangement an uninterrupted view from the front of the orchestra in the concert-hall to a rocky to be placed in the aquarium will be gained, a length of 225 ft. This hall will be a *fac simile* of the St. James's Hall, London.

THE TEMPLE OF DIANA, EPHEBUS.

Mr. J. T. Woon writes,—"The ground has now been cleared and thoroughly explored on all sides for about 30 ft. beyond the lowest step of the platform on which the temple was raised. A considerable length of the step itself was found in position. I have, therefore, ascertained the exact length of the platform; I have also ascertained the dimensions of the temple itself with greater accuracy, having found in the part recently opened up the remains of piers connected with the foundations of the columns of the peristyle.

The temple is found to measure 163 ft. 9½ in. by 312 ft. 6½ in.; the platform on which it was raised 239 ft. 4½ in. by 418 ft. 1½ in., measured on the lowest step. The length here given nearly accords with that given by Pliny—viz., 425 Roman feet; the ascertained width exceeds Pliny's dimension of 220 ft., which dimension must have therefore lost something in transcript from the original.

An element of great beauty had almost escaped discovery—i.e., the plentiful use of gold in the decoration of the temple. One fragment was fortunately found composed of two astragals between which a narrow slip of leaf was doubled in, in the fold of which was inserted a narrow strip of gold, which formed a fillet of gold between the astragals.

The beauty of the temple was, moreover, heightened by the use of brilliant colours, remains of which are found in numerous fragments, blue, red, and yellow being readily distinguished—blue for the background of enrichments and sculpture in relief, red and yellow for the parts requiring greater prominence.

A number of the columns are inscribed on their bases, showing that they were dedicated to Artemis by various persons or communities. The question whether the pronaos was fenced off from the peristyle has been decided by the discovery of some of the mortises for the iron standards.

COLUMBIA MARKET AND THE CORPORATION.

We regret sincerely that the correctness of the opinion we expressed on the opening of Columbia Market as to the mistake that had been made, is more and more confirmed as time rolls on. The establishment which was some time ago handed over to the Corporation by the Baroness Burdett Coutts, with the view of its being converted into a fish-market, is destined to be a failure. At a meeting of the Corporation held last week a report was presented by the markets committee to the effect that although advertisements had been inserted in numbers of newspapers on the fishing coasts, and in the daily papers, stating that the Corporation were ready to receive applications for the sale of various articles of food, they had not received a single answer, and that although the stands were offered at nominal rents no one

applied for them. It was further explained that the cost of the proposed tramway between the market and the Great Eastern Railway would be 34,000l., whereas the original estimate was only 10,000l.; and upon this an animated discussion took place, in the course of which the abandonment of the tramway, as well as the market itself, was suggested.

In answer to Mr. Isaacs, architect, Mr. Rudkin, the chairman of the Markets Committee, stated that the committee had not consulted their own architect prior to bringing up their report, estimating the cost of the tramways at 10,000l. It was on the estimate of Mr. James Hassard, the engineer employed by the Baroness, and Mr. Hassard, solicitor, that the scheme went through Parliament, and the committee took Mr. Hassard's advice.

Mr. Colls said the making of the market was impossible, and the sooner that fact was recognised the better.

Mr. Bontems, adverting to the construction of the tramway, said he would have been quite willing to lay out 10,000l., while he was not willing to spend 34,000l. Therefore the court should consider whether the expenditure of 34,000l. would be likely to make the market more successful than at present. He proposed a resolution to the following effect, which was adopted:—"That the markets committee be requested to report the rates of carriage, both by water and rail, for the various kinds of fish sent to Billingsgate Market, and the estimated rates to Columbia Market, in the event of the tramway being made; and also to report the opinion of the committee as to the expediency of making the tramway."

It will, therefore, be seen that, although the Act for the construction of the tramway has been obtained with a view to develop and utilise the market, the chances of the works being carried out are at present rather doubtful.

GRINDING MONEY.

Messrs. JACKSON & SHAW, contractors, were summoned at the Westminster Police Court by a carpenter, named Morgan, for 9d. one hour's money, allowed, as he alleged, by the rules of the trade, for grinding his tools on discharge. A number of witnesses were called, who deposed that in all the large firms in London—Myers, Holland & Hannen, &c.,—two hours were allowed for grinding, and one witness deposed that, having been in the service of the defendants at the new Foreign Offices and discharged, he was allowed two hours by the foreman, and paid. The rules for the guidance of the trade, passed and allowed at the last meeting in connexion with the strike, were produced, but they contained nothing about the grinding. Mr. Woolrych was of opinion that the claim had not been substantiated; it was a pity a more general practice did not prevail, and that the rule had not been printed. He dismissed the summons.

A NEW POLICE-STATION IN KENSINGTON.

The handsome church of St. Mary Abbott, Kensington, has a new architectural neighbour in the shape of police-office buildings. On the north side of High-street, a building of this character has just been erected on the angular piece of ground at the rear of a tavern opposite to the churchyard, the north boundary wall of the new police buildings being immediately adjacent to the churchyard area. It is not surprising that when the building was first contemplated some objection was raised to a structure of that character being erected there, on the ground that it would mar the effect of the edifice adjoining; but we understand that, in order to meet such objections, it was decided that, in its architectural design and character, the building should present a more ornamental appearance than structures of this nature usually do, and be made to harmonise as far as possible with its ornamental Gothic neighbour. The main frontage of the building, which is Late Gothic in character, is to the east, and is seen to considerable advantage when viewed from the junction of Church-street with High-street. It is upwards of 40 ft. in height and 30 ft. in width, and, in addition to a basement, contains the ground-floor and story above, together with gables in which there are small dormers and an upper-floor. The materials used are red Farnham brick, interspersed with blue brick, Bath

stone being freely introduced for dressings. At the south-east angle of the elevation there is a lofty covered archway, leading to the entrance into the building. The windows on the north side of the elevation are in three lights, with stone dressings. A string-course of stone is carried across the elevation at the head of the windows of each story, and at each angle there are stone quoins carried up to the top of the building. The elevation on the north side fronting the church resembles in its general features that already described, with the exception that it is not surmounted by gables. It is of a somewhat irregular projecting character, being semi-hexagonal in form in the centre, with stone quoins at each angle, uniform with the east frontage.

The basement of the building contains the officers' mess-room, washing-room, store-rooms, and the officers. On the east and west sides of the entrance are the officers' day-room and library, the inspector's office being at the front of the building on the north side, and the charge-room in the rear, communicating directly with the cells. The inspector's apartments are on the first floor, and the beds for single men are in the several rooms in the upper story. The ground in the rear of the building is limited in its area, but will nevertheless admit of being used as a parade-ground on a small scale.

Mr. Caiger, the metropolitan police surveyor, is the architect of the building; and Mr. McCullum, of Camberwell, the contractor.

"TICKHILL."

I WOULD suggest that Tickhill might be classed with Tichbourn, as a topographical name derived from the propinquity of water.

Tickhill is situated near the source of a tributary of the Trent, called variously Torne or Thorne, and old Don or Doon; indeed, it is the only considerable place in this unimportant river.

The root word "ick," "ich," or "itch," is a form of "ock," and very widely distributed; we have Ick-ford, Oxon; Ick-ham, Kent. There are Ickings in Gloucestershire, Hants, Sussex, and Warwickshire.

With the article it would be "Tick," and I have no doubt, if we had the original settlement before us, we should see that Tick-hill was a natural moated eminence, very suitable for defence. A. H.

PRE-HISTORIC REMAINS IN ISTRIA.

LONDON ANTHROPOLOGICAL SOCIETY.

At the last meeting of this society, held at 37, Arundel-street, Strand, Dr. R. S. Charnock, F.R.S., president, in the chair, a paper was read by Capt. R. F. Barton, her Majesty's consul at Trieste, entitled, "Notes on the Castellieri of Istria." These were hill-forts, of which a perfect military disposition was effected, so that on all occasions two points were in sight always, for convenience of signalling. The experienced eye can always detect at a distance the traces of an earthen ring or ellipse, formed by levelling the summit and the gradual rise of the roads, or rather camps, which are, as a rule, comparatively free from trees and thickets. A nearer inspection shows a scatter of pottery, whose rude sandy paste contrasts sharply with the finished produce of the Roman kilns, and the more homogeneous materials of modern times. The contours of these castellieri are distinguished by a definite deposit of black ash from the surface soil of "red" Istria around them. As a rule, the castellieri occupied the summits of the detached conical hills and mounds, which appear to have been shaped and turned by glacial action. Some Istrian towns have been built upon the prehistoric sites. Viewed from below, they appear to be perched upon the summits of inaccessible stone walls. They can scarcely be called villages, but rather towns in miniature. The whole peninsula was at one time studded over with these villages, and fate has treated them with her usual caprice. They are in process of disappearance, being found useful for villages, and on the heights for the rude huts of the shepherd and the goatherd. Capt. Barton gave a minute description of fifteen castellieri in the territory of Albano. The Cunzi Hillcock was the chief of these. It is about a mile long, disposed north-north-east to south-south-west. The crest of the cone has been evidently cut away in one or more places, leaving part of the original earth.

slope to form the parapet base. Upon this foundation were planted large blocks of limestone, sometimes of 2 cubic yards, in tolerably regular order, invariably without mortar, and never of cut or worked blocks, the *tout ensemble* forming a rough architecture, of the style known as Cyclopean. The inner thickness of the parapet was apparently filled with smaller stones, and the thickness varied from 18 ft. to 31 ft. The inner scarp was steep, and clear of rubbish. The *encinte*, where probably were kept the cattle and goats belonging to the villagers, was mostly grass-grown. In another of the castellieri were found some interesting specimens of stone weapons, all belonging to the polished category vulgarly called "neolithic." None of the presumed older and ruder type have been found in Istria.

An interesting discussion took place on the paper, in which Dr. R. S. Charnock, Dr. Carter Blake, and Messrs. Leitner, Carmichael, and Lewis, took part.

BRADFORD CORPORATION MARKETS.

CONTINUING the development of the markets scheme, the corporation of Bradford has authorised the construction of the new Butchers' and Fish Market, in Rawson-place, at a cost of about 10,000*l.* for this portion of the scheme. The present covered Market Hall has only been completed upon about one-half its intended area, and will, when finished, have Godwin-street for its northern boundary. On the upper side of Godwin-street the new fish-market is to be located. The principal entrance will be from Godwin-street, and two side entrances are arranged from Rawson-place. Fronting these streets a belt of sixteen shops has been planned, which will have external frontage and approach, and open into the Market Hall. Internally, sixty-three shops and stalls have been arranged on the plans; so that in all about eighty new shops and stalls will eventually be provided. The building is of somewhat plainer character than the Kirkgate Market, but will correspond with it in style. Internally there will be an open-timbered roof instead of iron, as in the Kirkgate Markets, on account of the cost.

When completed, the Kirkgate Markets scheme will comprise an outer set of shops, offices, and club buildings, Market Tavern, and Trevelyan Hotel, having frontages to Kirkgate, Darley-street, and Godwin-street, and enclosing on three sides the spacious market-hall, which will be chiefly used for dry goods, and immediately adjoining will be the new fish and meat market. A new street, 45 ft. in width, will be formed from North Parade to Godwin-street.

The new St. James's Wholesale Markets are rapidly approaching completion, and will be served with railway facilities in direct communication with the Great Northern Railway, and ample accommodation for wholesale dealers in potatoes and fruit. These premises are on the ground adjoining the Corporation abattoirs, off Leeds-road.

These various works are in hand for the Fairs and Markets Committee of the Bradford Corporation, and are under the superintendence of the architects, Messrs. Lockwood & Mawson.

SURVEYORSHIPS.

At the last meeting of the Chester City Council Alderman Little moved the recommendation of the Corporate Estate and Improvement Committee, "that the assistant surveyor, Mr. Isaac M. Jones, be appointed surveyor to the council, in the place of the late Mr. Richard Davies, at the salary of 150*l.* per annum. The motion was carried unanimously. It was also agreed that Mr. Jones be appointed inspector under the Contagious Diseases (Animals) Act, 1869. A foreman of the works was to be appointed under the surveyor, at 1*l.* 15*s.* per week. The sub-committee thought it advisable to leave this appointment open so far as the nature of the duties were concerned.—At the last meeting of the Daresbury Highway Board, Mr. John Darbyshire, Stretton, was appointed as surveyor to the Board.

At the last meeting, the Council of Sheffield proceeded to the election of a borough surveyor. On the first voting, Mr. J. A. Bryson, deputy borough engineer, of Newcastle-upon-Tyne, had 25 votes; Mr. Coghlan, C.E., of Margate, 21; and Mr. Vawser, borough engineer, of Warrington, 5. Mr. Vawser was then struck out of the voting. On the second voting, Mr. Coghlan

had 26 votes, and Mr. Bryson 25. The former was consequently elected. The salary is 500*l.* per annum. The loss of Mr. Coghlan seems to be regretted in Margate.

WHOLESALE ROBBERY.

We have seen a copy of a scoundrelly trade paper addressed to builders in which the whole of the readable matter is stolen from the *Builder* without the slightest acknowledgment of the source. The same course appears to be pursued every week, other journals who honestly provide original matter being treated in a similar manner. We give the thieves notice that if this conduct be repeated we will see what the Court of Chancery can do with them.

HANOVER CHAPEL.

SIR.—It was distinctly stated at the Institute, by Mr. Cookerell, that the stonework had to be coated with oil. And I added that where so coated the stone had been remarkably preserved. I also stated that the towers had not been so coated, and had so seriously decayed that a large quantity of stone had to be cut out and renewed. This new stone was treated with Rausome's solution, which received it remarkably well. Thinking the old stone of towers which had not been coated with oil might be benefited by the solution, I ordered its application, but the solution which entered the new stone would not penetrate the old, and remained on the surface, although the old had been subjected to a very severe process of cleansing with the steam jet with a pressure of 56 lb. of wet steam.

That portion of the front which was originally coated with oil has not been treated with Rausome's solution at all. It has simply been cleaned without any abrasion of the weathered surface of the stone. ED. C. ROBINS.

ARCHITECTURAL WORKS FOR LONDON INTERNATIONAL EXHIBITION, 1874.

THEIR Majesty's Commissioners will feel greatly obliged for any information as to the present possessors of drawings and pictures by the following artists:—

J. Cuney, who died in 1833.
J. S. Cootman " 1842.
A. W. Pugin " 1832.
F. Mackenzie " 1842.

The subjects of works by these artists are for the most part architectural.

BUILDING WITH CONCRETE BLOCKS.

INSTITUTION OF CIVIL ENGINEERS.

THE paper read on the 10th inst. was "On the Construction of Harbour and Marine Works with Artificial Blocks of large size," by Mr. Bindon Blood Stoney, M.A.

The author described a method of submarine construction, with blocks of masonry or concrete exceeding in bulk anything hitherto attempted. The blocks were built in the open air on a quay or wharf, and after from two to three months' consolidation they were lifted by a powerful pair of shear-legs, erected on an iron barge or pontoon. When afloat, the blocks were conveyed to their destination in the foundations of a quay wall, breakwater, or similar structure, where each block occupied several feet in length of the permanent work, and reached from the bottom to a little above low-water level. The superstructure was afterwards built on the top of the blocks in the usual manner by tidal work. There was now being built in this manner an extension, nearly 43 ft. in height, of the North Wall Quay in the port of Dublin. Each of the blocks which composed the lower part of the wall was 27 ft. high, 21 ft. 4 in. wide at the base, 12 ft. long in the direction of the wall, and weighed 350 tons. The foundation for the blocks was excavated and levelled by means of a diving-bell, the chamber of which was 20 ft. square and 6½ ft. high. When the men were at work the bell rested on the bottom. A tube or funnel of plate iron, 3 ft. in diameter, rose from the centre of the roof of the bell to several feet above high-water level. An air-lock on the top of this funnel afforded a passage up or down, without the bell having to be lifted out of the water. The material excavated was cast into two large trays, suspended by chains from the roof of the bell; when these were filled, the bell

was lifted a few feet off the bottom, and the bell-barge was drawn a short distance away from the line of the wall where the stuff was discharged, by tilting the trays, and the bell returned to its work again.

The method of making concrete and mortar, adopted by the author, differed in some respects from that in ordinary use. He preferred a rapid mixture of the ballast or sand with cement or lime, to the slow triturating process of the mortar-pan with edge-runners. The concrete mixer, devised by him, driven by a 3-h.p. engine, would turn out from 10 to 12 cubic yards per hour.

The author believed the application of the new system of gigantic blocks to the construction of breakwaters would, in many cases, be cheaper, more rapid, and more permanent, than the ordinary methods of construction.

SANITARY MATTERS.

Leeds.—The medical officer of health for Leeds (Dr. George Goldie) has issued to the Sanitary Committee his annual report as to the sanitary condition of the borough during last year, from which we give the following:—For the year ending December 31st, 1873, the death-rate was 27·2 per 1,000 of the population, being 0·8 less than the previous year. The number of deaths in one week ranged from 98 in the 28th week to 182 deaths in the 44th week, yielding relative rates, varying from 18·8 per 1,000 to 34·8 per 1,000 per annum. The fourth quarter was exceptionally the most fatal one in the year, during which the principal cause of the prevailing mortality was scarlatina and bronchitis. Among the sanitary works done was the closing of ninety-five cellar dwellings.

Alcester.—At the last meeting of the local Sanitary Committee, some cases of deadly overcrowding in Feckenham parish were brought under notice by Mr. Fosbrooke, the medical officer of health. His report dealt more particularly with Astwood Bank, where there is an absence of any system of drainage, and the cesspools in most cases require covering, and are too near the back-doors of the houses; and the water supply, although in quantity sufficient, is derived, in many instances, from wells placed too near the cesspools. The report also commented upon the prevalence of scarlet fever in the place during the last six years, and recommended the adoption of some means for isolating cases in order to arrest the disease. Mr. Fosbrooke was directed to make inquiries respecting the cost and other particulars of a movable hospital; and Mr. Gander was directed to make a plan of the present drainage of Astwood Bank, with a view to some complete system of drainage being carried out. The committee empowered the medical officer to order the ashpits of all new houses to be enclosed and covered over.

COMPENSATION CASES.

YOUNG v. THE LONDON SCHOOL BOARD.

THIS was a proceeding in the Sheriff's Court, Red Lion-square, to determine the value to be paid by the London School Board to Mr. George Adam Young, an architect, in respect of seven freehold houses, required for the formation of a new school under the compulsory powers of the Education Act, 1873, situate in Tower-street and Lumber-court, Seven Dials.

The jury went to take a personal view of the spot where the houses stood before they heard the evidence. The houses had been pulled down to erect a school, and Mr. Under-Sheriff Burchell took occasion in the course of the case to suggest that, where a jury was likely to be summoned to try the question, the property should not be interfered with until the compensation was settled.

The only evidence given was on the part of Mr. Young. The three surveyors on his behalf were Messrs. Clark (of the firm of Farebrother, Clark & Co.), Mr. Edwin Fox, and Mr. Shoppee. The claimant was not called. The houses were let out in weekly apartments, and in order to arrive at a value one third was deducted for repairs, losses, &c., and the net value was calculated, and the sum brought out 6,480*l.*, to which was added 6½*l.* as the customary 10 per cent. on a forced sale. The houses were built about 150 years ago, and let to poor but honest persons, as stated by the collector, and he added that sometimes not only had a bad tenant to be forgiven his rent, but to be paid for going away. Mr. Clark estimated the ground to be worth 1*s.* 6*d.* per foot per annum, which would nearly realise the value he had put upon the houses.

On the part of the School Board no evidence was given. It was denied that the property was of the value described, and evidence, it was alleged, which might have been given had not been produced.

Mr. Hawkins submitted that he had shown the net value to be 6,680*l.*, and with the usual percentage under compulsory powers, the sum to which Mr. Young was entitled was 7,125*l.* He had, after conferring with his learned friend, not called Mr. Young.

Mr. Bidder, on the part of the School Board, invited the jury to arrive at a different conclusion from the state of evidence before them, and intimated that for such property let out in weekly tenements an inflated scale had been used to ascertain the proposed value. The property was not required for a public company to make profit, but to build a school, and the ratepayers would have to pay whatever value the jury assessed.

The jury retired, and on their return gave a verdict as to the value, &c., at 5,239*l.*, adding 1*s.* as damage for severance of the property.

ROUNDHAY PARK COMPETITION.

We are requested to print the following protest, addressed to the Mayor and Corporation of Leeds:—

In answer to your invitation contained in an advertisement in various papers, we entertained the idea of competing for the above, but, before doing so (seeing that many of the competitions in which we have engaged have resulted in most unfair and biased awards), we, for our own satisfaction, wrote to your town clerk, suggesting that as a protection to strangers against local interest, the plans should be marked with a motto; and in reply to which Mr. Curwood, on the 17th of April, 1873, wrote as follows:—

"I thought of the motto arrangement, but as a stranger will be called in to decide, there will be no prejudice." Upon the faith of this assurance we decided to compete, and in order worthy to do so, we have spared neither trouble nor expense to produce a creditable set of plans.

We were, therefore, much surprised, in reply to our query as to the name of the strange professional gentleman whom the council had consulted, to receive a letter from the town clerk, dated the 6th of February, 1874, informing us that the committee had decided not to call in any professional gentleman to assist them in this competition, but to make the selection themselves, rather trusting to their own judgment.

Whilst entertaining the greatest respect for the members of the committee personally, yet seeing that a question like this can only be settled by a competent and impartial professional gentleman, we regret that in justice to ourselves, and other strange competitors, we must protest against any award being made, unless by the advice of some well-known and unprejudiced land agent, gardener, civil engineer, or architect, who would come under the term of the "stranger" referred to in your town clerk's letter of the 17th of April, 1873.

J. WALLACE FROGS,
GEORGE WM. UNLI,
G. WALLACE WILCOCKS.

CAUTION TO CONTRACTORS AND BUILDERS USING UNSAFE MACHINES.

A CASE of trade interest has occupied the attention of the Court of Exchequer and a special jury the whole of two days.

The action was brought by a stonemason, named Shell, against Messrs. Webster, the contractors, to recover compensation for serious personal injuries sustained in consequence of the alleged negligence of the defendants or their servants; but, as will be seen, the cause of the action arose from an alleged defective trolley.

Messrs. Webster having contracted for the erection of a large hotel, at the low level of the Holborn Viaduct, Mr. Daniel Shell, was employed on the job as a skilled stonemason.

On the 8th of last June, the plaintiff, and his labourer, were engaged in preparing to lift a large block of stone, nearly weighing 3 tons, to be placed upon a pier to hold the girders, when the trolley, which the stone was placed suddenly tipped up. The effect was to pitch the mason over the rails beneath, with the stone partially upon him. He escaped with his life, was extricated from the stone, and at once taken to St. Bartholomew's Hospital, where he remained in a very critical state until August 26th, when he became an out-patient until the 4th of December. Up to the time of the accident, he was in the weekly receipt of two pounds and upwards wages.

The plaintiff attributed the misfortune to the employment of an unsuitable or defective trolley, and unfitted for the work. He stated that he had never known any such stone trolleys used for stonework of the heavy kind he was at work on; and the bed of this trolley being on the same level as the platform, close to which it was placed at the time of the accident, prevented him seeing the axle or wheels. The piers were being constructed of large stones prepared on the platform and sliding close by. They were then put separately on the truck or trolley, to be subsequently dressed, lifted, and placed upon the piers that were to receive them on the low level.

The Hon. A. Thesiger, counsel for Messrs. Webster, said his clients deeply commiserated the plaintiff for his sufferings, and did not dispute the nature and extent of his injuries, but Messrs. Webster and their foreman considered that the trolley complained of was a proper and suitable one for the purpose, and that it had been in daily use since the plaintiff was in defendants' employment, early in last May; and that the plaintiff's injuries were tributory to the accident by standing along with his labourer on such a part of the trolley as, by their additional sixteen-stones weight, the proper centre of gravity was changed, and caused the machine to tip over.

As usual in disputes of this kind, the evidence was conflicting, especially as to the trolley's fitness for heavy stonework.

The judge, Baron Amphlett, having summed up, the jury gave a verdict for the plaintiff, with 250*l.* damages and costs.

In connection with the above, it was stated that the unfortunate man is a member of the Operative Stone Masons' Society, from which he has been allowed 10*s.* a week sick money for twenty-six weeks, and 5*s.* per week as long as his illness continues. If Mr. Shell's injuries prove to be of a permanent nature, the Society will award him the liberal grant of 150*l.* Had he been killed his friends would have received 50*l.*, besides 12*l.* for funeral and other grants. At the wife's death 10*l.* would have been granted for her funeral. Grants would have been made to the orphans and, all honours to the members of the Operative Stone Masons' Society, St. Bartholomew's Hospital will be recouped for affording a "brother" relief.

BUILDERS' CONTRACTS.

SIR,—Will any of your numerous readers kindly favour us with their experience with respect to the legality of builders' contracts?

We, some time ago, tendered for a job of about 2,500*l.*, in conjunction with two other builders, and our tender, being the lowest, was accepted, and the contract signed by us, but not by the employer. The latter alters his mind, and has since carried out the works by employing his own workmen, and paying them weekly, under the supervision of his architect and a clerk of the works. As we had incurred considerable expense in obtaining quantities (they were not supplied), we are of opinion that we have a claim, not only for the expenses incurred, but also for out of our loss of time and profit through the works not having been executed by us. We have taken two opinions on the matter, the one favourable and the other not, the lawyer in the latter case being of opinion that the contract is illegal. We think, however, that the custom of the trade would make it otherwise (the employer's signature being rarely affixed to the agreement); and should he glad if any of your numerous readers could supply us with a case in point.

BLANDFORD & JONES, Builders.

FOURTEEN LIBELS ON A SURVEYOR.

A SINGULAR action has been brought in the Court of Queen's Bench, by Mr. Gray, surveyor, against Mr. Jones, a supposed agent. It appeared that the General Post-office had rented premises in which Mr. Gray was interested, in Gresham House, for telegraphic purposes, and the Post-office wished to get rid of the tenancy before the legal expiry.

The defendant was promised a commission of 30*l.* if he could procure 300*l.* from the Post-office for the release, and he got offered that sum. Mr. Gray, however, negotiated himself direct with the Post-office, and got 350*l.* for the acquittance of agreement, and then refused to pay the 30*l.* commission to the defendant, alleging that the arrangement had been put an end to.

This repudiation riled the temper of the financial agent, and he sent him a post-office order for 300*l.*, and he got a smart bit of his mind in no measured language.

Mr. Gray now brought his action to recover damages for fourteen alleged libels.

The jury eventually found that some few of the cards were libels, and found for the plaintiff, one farthing damages.

STEEL BARS INSTEAD OF BELLS.

SIR,—I have been informed that, in some cases, steel rods struck by hammers have been lately substituted for church bells. If the plan is a practicable one, I have an opportunity of introducing it in two churches in Dorsetshire. I have made more than one attempt to procure the particulars of this invention, and the cost of fitting in any of your correspondents can furnish me with the requisite information, I shall be glad to receive it.

CHARLES TURNER.

* * We have received several similar letters lately.

OLD PARTY WALLS.

At the Guildhall, Colonel Croll, the lessee of Nos. 27, 29, and 29, Coleman-street, and the occupiers of Nos. 1, 2, and 3, Mason's-avenue, were summoned before Alderman Ellis by the Commissioners of Sewers to show cause why a party-wall between the two properties should not be pulled down and rebuilt.

Mr. Straught appeared for the Commissioners of Sewers, Mr. Besley for Colonel Croll, and Mr. Weightman, solicitor, for the occupiers of Nos. 1, 2, and 3, Mason's-avenue.

The frehold of the whole of the property belonged to Christ's Hospital. Colonel Croll held a lease of 27, 29, and 29, Coleman-street, and other persons the lease of the other three houses. Colonel Croll pulled down his three houses to build a large warehouse. He gave the usual notice respecting the party-wall, but very little attention was paid to it. It was found that the party-wall, which was over 200 years old, leaned inwards at the top towards the houses in Mason's-avenue. Colonel Croll wanted to have the party-wall rebuilt, but as nobody would make himself responsible for any part of the expense, he underpinned the old wall, ran up an outside wall for himself, and abandoned the party-wall altogether. The consequence was, that when his wall was finished there was a space of 1*ft.* between the two walls.

Mr. Woodhouse, surveyor to the Commissioners of Sewers, stated that the party-wall was dangerous in the event of a fire, or the flooring giving way. The upper part of the wall was rotten on Colonel Croll's side, but there were no signs of decay on the inside of the walls. He considered that the party-wall was dangerous, and ought to be repaired, as the floors and roofs were hanging up the wall instead of the wall holding them up.

Mr. Thomas Kenton, the surveyor to Christ's Hospital, said he did not agree with Mr. Woodhouse that the wall was in a dangerous state.

Alderman Ellis made an order for the upper part of the wall, which was admitted on both sides to be rotten, to be taken down and rebuilt.

CASES UNDER THE METROPOLITAN BUILDING ACT.

LAISE OF TIME.

At the Greenwich police court the representatives of Mr. W. Fisher, deceased, late of the Gloucester Tavern, Greenwich, were summoned at the instance of Mr. Tabberer, the district surveyor, appointed under the Metropolitan Buildings Act, for having a building erected on such premises, the same not being enclosed with walls built of stone, brick, or other incombustible material.

The building in question consists of a long verandah, used for accommodating visitors in the summer months. It was discovered in the course of erection in April of last year, in the lifetime of the deceased.

Mr. Pook, who appeared for the defence, submitted that there was an omission from the Metropolitan Buildings Act of any provision making the representatives of a deceased person liable for the consequences of an act done by the deceased person in his lifetime.

Mr. Patterson said that the summons must necessarily be dismissed, as the law required information of the irregularity to be laid before a magistrate within six months of discovery.

The summons was then dismissed.

THE UTILISATION OF WASTE STEAM.

On a recent evening, at Stafford House, Mr. Spence exhibited to a distinguished audience a plan by which he proposes to employ the heat of waste steam as a substitute for fuel. This method is founded upon a discovery made by the father of the inventor, and announced by him to the British Association at its meeting at Exeter in 1869. The discovery was that steam liberated at atmospheric pressure—that is, at a temperature of 212 deg.,—and passed into any saline solution having a boiling temperature higher than that of water, would raise this saline solution to its own boiling point. Thus, as Mr. Spence showed experimentally, if we take a solution of nitrate of soda, which boils at 250 deg., and if we blow into that solution steam at 212 deg., the temperature of the solution will be raised to 250 deg., the steam being condensed and yielding its heat. The explanation seems to be that the salt has a stronger affinity for the water in the steam, as water, than the heat has for its vapour. The water is therefore seized by the salt, and the latent heat is evolved as heat of temperature.

The solution having been to some extent diluted by the condensation of the exhaust steam, its capacity for heat will be reduced in a corresponding degree; and if steam at 212 deg. were again blown through it, it would not reach the same temperature as before. It is therefore passed into another boiler of ordinary construction, where it takes the place of water, and is concentrated by steam being generated from it. In this way its original capacity for receiving heat is restored.

Mr. Spence maintained that if, by taking advantage of his father's discovery, a mode of utilising the large amount of latent heat contained in the steam now thrown into the atmosphere could be brought into practical operation, so that this latent heat could be made to do actual work, the discovery, especially at the present price of fuel, would be one of enormous value, and he announced his intention of speedily trying the experiment on a manufacturing scale.

VARIORUM.

Long Ago has this month a variety of readable matter, among which are papers on the olden laws of England,—sanitary laws, —by the late Mr. R. Andrews; on old English modes of burial, by Mr. Llewellyn Jewett, F.S.A.; on our National Anthem, by Mr. T. L. Southgate; on Pevens and St. Olave's, by the Rev. W. J. Loftie, F.S.A.; and others. "Nature" for the week ending 12th February, has a leading paper on "A Minister for Science," and others on that interesting planet Mars, in which past and doubtful interpretations of its telescopic appearances are discussed, by Mr. T. W. Webb; on the polarisation of light, by Mr. W. Spottiswoode; and a new classification of birds.

Miscellaneous.

Technical Education.—At a meeting of the Master, Wardens, and Court of the Painters'-stainers' Company, held at the Guild, on Wednesday, the 4th of February, with a view to promote the important subject of Technical Education, they have determined to invite competition, and offer prizes for the year 1874, in the following subjects:—decorative painting in ornament, in oil or tempera, first prize, 5*l.*; second prize, 3*l.*. Painting from natural foliage or flowers, first prize, 5*l.*; second prize, 3*l.*. Free-hand drawing and design, first prize, 3*l.*; second prize, 2*l.*; in pencil, chalk, or shaded in water-colours. It has been the object of this Guild, from their first effort in the year 1852, to promote to the utmost extent in their power technical education; and they hope by thus giving an early intimation of rewards to induce competition among the operative and industrious classes in the above branches—open to young men under thirty years of age. Specimens in competition to be sent in by the middle of May.

The Ventilation of Ships.—At a meeting of the Royal Civil Service Institution, Whitehall-yard, a paper has been read by Staff-Surgeon J. P. Macdonald, R.N., assistant professor of naval hygiene at Netley Medical School, on the ventilation of ships, more especially of low free-board and hospital ships. Admiral Sir Spencer Robinson was in the chair. The lecturer dealt with this subject on the nomination of the Director-General of the Medical Department, and with the sanction of the Admiralty. It was a subject which had always been an important one to our navy, and it was more particularly so at the present time, owing to the rapid march of the science of naval architecture of late years in view of the requirements and exigencies of modern warfare. As far as his own suggestions were concerned, the lecturer said, the simple statement of the case was this, that under existing circumstances, while much valuable space was lost, instead of turning it to good account, ascending currents of impure air were constantly rolling into the cabins of the officers, and the sleeping-places of men to mix with air already contaminated with the products of respiration, combustion, &c., and for the escape of which no rational provision was made. It occurred to him, that, as iron box keels and keelsons had already been introduced to answer the purpose of parts requiring great strength as an essential condition, a hollow iron or box shelf-piece might be substituted for the ordinary one of wood. Thus, without making any noticeable alteration in the normal appearance of the ship's side, either within or without, the great desideratum of a continuous air-tube just below the beam ends, and holding communication with all the openings immediately below it, would be obtained. The ventilation or the removal of the heated air of each deck could be provided for through the intercostal channels of the next deck above. The practicability of the lecturer's proposal, and some of the advantages he claimed for it, appeared to be generally admitted.

Tidal Action as a Geological Cause.—Mr. T. Mellard Reade, C.E., F.G.S., has read an interesting paper before the Liverpool Geological Society, containing a series of novel investigations on the action of tides on the sea bottom. A study of the drift-beds of the north-west of England originally led him on the track of these discoveries. Mr. Reade entered elaborately into the phenomena of the tides in the Irish Sea, English Channel, and surrounding seas. Charts were exhibited showing the course of the stream tide in the Irish Sea, the lines of equal range calculated for a 30 ft. tide at Liverpool, and the set of the outgoing tides in the Irish Seas, Bristol Channel, and the English Channel at the same instants of time. The character of the sea bottom surrounding the British Isles was minutely described, and shown in the Irish Sea to be either mud, sand, shells, gravel, or stones, or mixtures of some or all of these materials in varying proportions, and the assertive power of the tidal currents was dwelt upon. It was also shown that there are pits or gullies excavated in the bottom, in both the English and Irish Channels, and that these depressions have generally their major axes conformable in direction with the set of the stream-tide; and that the contour lines of the bottom approximately follow the same direction. In conclusion, Mr. Reade expressed his conviction that the diurnal and semi-diurnal movement of the tides acting down to the profoundest depths of the ocean, accounts for the preponderance of life in it over that exhibited by the fauna of the Mediterranean.

London International Exhibition, 1874. The committee for architectural designs held its first meeting on the 18th inst. at the Royal Albert Hall. The following gentlemen were present:—Mr. James Fergusson, F.R.S., Mr. A. Waterhouse, Mr. T. Hayter Lewis, Mr. T. R. Smith, Lieutenant H. H. Cole, R.E., attended the meeting. The committee recommended that a special collection of designs for scholastic buildings be invited for this year's Exhibition, the collection to include designs for colleges, schools, museums, and libraries. It was further suggested that this be followed in future years by commercial, ecclesiastical, municipal, and domestic designs, in order that each year should have a special feature in the class of architecture.

The Royal Hibernian Academy.—The Lord Lieutenant and Lady Spencer have opened the Exhibition of the Royal Hibernian Academy at Dublin. There was a large attendance.

The Manufacture of Ice.—Tons of ice are being made by Messrs. Siebe & West, at their engineering manufactory, in Mason-street, Lambeth, and a large number of gentlemen (prominent amongst whom was Sir Robert Peel) have been witnessing the process of ice-making patented by the firm, and purchased by the International Ice-making Company (Limited). The principle upon which the ice-making machine is constructed is the production of cold by the evaporation of a volatile liquid, such as ether, *in vacuo*, by means of a refrigerator charged with the liquid ether, and in that vessel an intense degree of cold is produced by means of an air-pump, by the constant evaporation of the imprisoned ether, the vapour from which, being pumped into a condenser, becomes liquified, and returns through a pipe to the refrigerator, for another course of evaporation. The cold being thus obtained is utilised for the making of the ice. In this way from 1 ton to 10 tons of ice can be made in twenty-four hours, according to the size of the machine. The ice is transparent and beautiful to look at.

Improvement of Portland-place.—Messrs. W. & R. Powell write,—"We have often thought that it would be a very great improvement to Portland-place if the roadway were lined with trees, like a Parisian boulevard, or with belts of shrubbery, like Westbourne-terrace, Hyde Park. Unquestionably Portland-place is a grand thoroughfare, the broadest open street in London, but it must be confessed that it is rather bald and dismal. Formerly its aspect of respectability was almost funereal, but of late years the decoration and modernising of the houses have made it look more cheerful; still a row of green trees on either side we think would add a great charm to the perspective. It would also make it a pleasant fashionable promenade and comfort to all adjacent Londoners cooped up within four brick walls so many months of the year. The expense of making this improvement would not, of course, be much, especially if done in a reasonable and economical spirit, and we presume it would rest with the parish, as curators of public ways, to carry it out; but the resident inhabitants and neighbours should commence the movement by memorialising the vestry."

Indian Antiquities.—Dr. J. W. Leitner, of Lahore, has delivered a lecture before the members of the Royal Asiatic Society, Albemarle-street. Sir Bartle Frere presided. The lecturer, in speaking of his works and discoveries in India as regards its antiquities of art and literature, disclaimed any intention of establishing theories. His researches had been confined principally to Northern India, and he had discovered 184 specimens of Bhuddist sculptures which he had brought to England. They showed that there had been a much closer connexion with the Greek school of art than was generally supposed. In fact, Greek art was distinctly to be seen in most of the sculptures. He had paid great attention to the literature of Cashmere, and had discovered many interesting and valuable manuscripts of obsolete languages. He had also, quite by accident, discovered that the shawl weavers of Cashmere had a distinct dialect of their own. The goldsmiths, likewise, use a peculiar dialect, while a "thieves' Latin" was in use, even under the very nose of the deputy-commissioner, without that functionary being aware of it.

Messrs. Lawrence & Sons.—Mrs. Jane Lawrence, whose death on Saturday, in her 80th year, has been announced, was the widow of Mr. William Lawrence, the founder of the well-known building firm of Wm. Lawrence & Sons. He was elected Alderman of Bread-street ward in 1845, served the office of Sheriff of London and Middlesex, 1849-1850, and died in 1855. Mrs. Lawrence had the gratification of seeing two of her sons, Aldermen William Lawrence and Sir James Clarke Lawrence, Lord Mayors of London and members of Parliament for the City of London and borough of Lambeth respectively. She survived, by only ten days, her daughter Emma, who occupied the position of Lady Mayress to Sir James Clarke Lawrence in 1868-1869. She retained the full possession of her faculties to the last, and died peacefully without a struggle.

Drainage of Torquay.—Mr. William Pook, of Torquay, engineer, has been appointed by the St. Marychurch Local Board of Health to prepare plans for a new system of main drainage. There were four applicants for the office.

Royal Institution.—Dr. Doran's discourse last week, titled "The Opponents of Shakspeare," gave great pleasure to those who heard it. Commencing with Dryden, as the first opponent, and then speaking of his many followers, men who afterwards polluted the English stage, the speaker showed by delicate analysis how entirely they overlooked the real moral of the several plays with which they dared to meddle, instancing especially "Macbeth," "Romeo and Juliet," and the "Merchant of Venice." The criticisms of Voltaire were alluded to, and the comparative merits of the classical and natural school discussed; the speaker in his peroration dwelling admirably on the value and the rarity of the real poet—a rarity so extreme that the truly great poets of the world might be counted on the ten fingers with one or two to spare. The discourse, which was equally eloquent and wise, was listened to throughout with fixed attention by a critical and distinguished audience.

The Case of the Public Parks.—A large meeting of the inhabitants of Battersea was held to protest against the order which has recently been issued directing the withdrawal of the park-keepers from Battersea Park, and handing over its custody from the 1st of April next to the Metropolitan police. It was contended that the duties of park-keepers were well performed by the men at present employed, who were old soldiers with very small pensions, and that the police would be better engaged in looking after criminals and preventing crime. It was also contended that the cost to the ratepayers, if the change was carried out, would be more than doubled. At the conclusion of the proceedings, which were very enthusiastic, a committee was formed to make arrangements for a great demonstration, to be held in a few days, "to keep the police out."

A New Police Station in Islington.—The population of the northern portion of the parish of Islington having greatly increased of late years, Upper and Lower Holloway wards alone containing nearly 70,000 inhabitants, without having any police station within a considerable distance, a temporary station was opened about two years ago in Seven Sisters'-road, and placed under the charge of Inspector Stanford. But experience showed there was an urgent necessity for a much larger building, and a plot of ground has been obtained in Hornsey-road, near the Wesleyan chapel, for the site of a new police-station, which will be built according to the plans of Mr. J. H. Caiger, surveyor to the police receiver. The ground is now being cleared for the purpose of commencing the erection of the building.

The City Pavements Question.—On Wednesday, at a meeting of this commission, held at Guildhall, Mr. W. Sutton Gover, their chairman, presiding, Mr. H. E. Knight, pursuant to notice, brought forward a motion in relation to the question of asphalt, wooden, or granite pavement, which more than ever is engaging public attention in the City, as elsewhere. The motion was founded upon an elaborate report by Mr. Haywood, the engineer to the Commission, on the subject, the preparation of which, together with the preliminary inquiries in relation to the matter, is said to have cost the Corporation far towards 1,000*l*. After discussion, the motion of Mr. Knight was adopted, to the effect that, under proper conditions, asphalt, granite, and wood might continue to be laid as pavements in the city of London.

Untrapped Sewers and Blood Poisoning. At an inquest held at Oldham, on Tuesday, on the body of a child who had died of blood poisoning, the coroner (Mr. Molesworth) said that in that part of his district where the slopstone pipes are not connected with the drains, and where there is a population of 9,400, there has not been a single case of the sudden death of a child for the last three years; whereas at Oldham and Rochdale, where the pipes are connected with the sewers, there has been on an average one death every fortnight, the children dying from blood poisoning caused by bad gases emitted through the slopstone pipes.

Mount Sinai.—Dr. Beke reports from the Gulf of Akaba that he has found the true Mount Sinai one day's journey north-east of Akaba. It is called by the Arabs Jebel el Nur, or Mountain of Light. Its height is 5,000 ft. On the summit Dr. Beke found the remains of sacrificed animals, and lower down some Sinaitic inscriptions, which he copied. (?)

Thorndon.—The new schools in connexion with this parish have been opened by the rector. The designs and general arrangement of the building were furnished by the rector, and they have been carried out by the contractor, Mr. George Grimwood, builder, Weybread. The edifice is of a plain Gothic character, and, next to the church, near which it stands, is a most conspicuous object in the parish. The entrance is through a wooden porch at the south-west corner. The principal room is 40 ft. by 18 ft., and, with a class-room, 18 ft. by 18 ft., will accommodate upwards of 100 children. The walls are of red bricks, and the windows and dressings and buttresses are of white bricks, roofed with red and grey ornamental tiles. The internal fittings and open-timbered roof, and the external woodwork of the porch and decorated gables, are of red pitch pine, stained and varnished.

Self-acting Water-valves in Fires.—The fire in Belgravia has brought under notice an invention of which some particulars were given in 1865. It is called Harrison's self-acting pressure valve, for the protection of life and property from fire; and consists, it may be remembered, of valves of fusible metal, which melt at the heat of boiling-water and liberate a water-supply to the protected buildings. It is intended that the valves and pipes be supplied to various parts of the building, wherever there may be any risk or chance of fire. The apparatus can also be arranged so as to give an alarm either on the spot or by telegraph to a distance.

Chopping through the Telegraph Wire between Australia and Europe.—An Adelaide telegram states that the commander of some vessel, having fouled the cable between Singapore and Penang with his anchor, deliberately severed the wire with an axe, in order to save, perhaps, half an hour's trouble. The Australian colonies were thus deprived of their ordinary channel of telegraphic communication with Europe for some days, so that an ignorant or an ill-natured sea captain might not suffer a little temporary inconvenience. In what savage wilds could worse be expected? The name of this hero deserves commemoration!

The London General Omnibus Company's Dividend for the last half-year is at the rate of 8 per cent. per annum, or the same as for the previous six months, but it compares with 10 per cent. in the corresponding period of last year.

Plain Rules for the Management of Infants.—A flyleaf, prepared by Dr. E. Lankester, on this subject, has been published by Hardwicke, of Piccadilly. It contains some simple and useful rules, and is well adapted for distribution among the poorer classes.

The Bury Accident.—The inquest has been held on the bodies of nine persons who met with their deaths through the floor giving way during an election meeting at Bury, Lancashire, on the 2nd inst. Mr. Howe, builder, of Bolton, stated that the building was a very weakly constructed one, and although the timber was not rotten, it was going in that direction. After other witnesses had been examined, the jury returned a verdict of accidental death.

Drainage of Richmond, Surrey.—In consequence of a report from Mr. James Abernethy, C.E., the Vestry of Richmond have resolved, "That it is not expedient to proceed further with Messrs. Russ & Minns's scheme," of which they had previously approved.

The Institution of Civil Engineers.—The annual dinner has been fixed for Saturday, the 21st of March, at Willis's Rooms, St. James's.

Royal Literary Fund.—At the approaching anniversary dinner of this corporation, to be held in May next, Lord Coleridge will preside.

TENDERS

For completing new schools and north aisle of the church of St. Mary the Virgin, Crown-street, Soho, Mr. R. Herbert Carpenter, architect. Quantities supplied by Mr. W. H. Barber:

.....	£3,657 0 0
Nightingale	3,093 0 0
Cocke & Green	3,076 0 0
Downs & Co.	3,073 0 0
Emor	3,011 0 0
Sheppard	2,998 0 0

For the erection of additional servants' offices to Elm stone Court, near Wingham, Kent, for Mr. W. J. G. Barrett. Mr. Richard Martin, architect:—

Jarrett	£314 0 0
Smith & Martin	690 11 3

For additions to Bromesbury Park-villa, Willesden, for Mr. F. Machin. Messrs. Satchell & Edwards, architects:—

Sanders	£1,345 0 0
Hockley	1,291 0 0
Chessum	1,211 0 0

For alterations and additions to the Britannia public-house, Limehouse. Mr. Wm. Scott, architect:—

Sheffield (accepted)	£1,450 0 0
----------------------------	------------

For Birmingham Municipal Buildings. Mr. Yeoville Thomas, architect:—

Barnsley & Sons (accepted)	£83,220 0 0
----------------------------------	-------------

For alterations at the Barbican, Barbican, E.C. Messrs. Nunn & Green, architects:—

Cole	£1,118 0 0
Wagner	1,030 0 0
Battley (accepted)	970 0 0

For alterations at the Marlboro' Head Tavern, Bishopsgate-street Within. Messrs. Nunn & Green, architects:—

Wagner	£420 0 0
Taylor & Gurney	408 0 0
Cole	330 0 0
Hanley (accepted)	318 0 0

For alterations at 16, James-street, Buckingham-gate. Mr. J. T. Christopher, architect:—

Rehman	£595 0 0
Wilks, Bros.	567 0 0
Reading	402 0 0
Wagner (accepted)	400 0 0

For work to be done at Nos. 10A, 11, 12, 13, 14, 15, and 25, South-villa, Camden-square. Camden-square, Camden.

Carter	£2,360 0 0
W. & A. Smith	2,064 18 0
Warne	1,500 0 0
Wagner	1,350 0 0
Low	1,630 0 0
Allen	1,637 0 0

For offices and dwelling-house at Dyer's court, Allport-mauery, for Messrs. Bradbury, Greatorex, & Co. Mr. W. G. Bartlett, architect:—

Cole	£4,936 0 0
Brown & Robinson	4,803 0 0
Asby & Son	4,753 0 0
Asby & Horner	4,640 0 0
Pritchard	4,505 0 0
Wood	4,569 0 0
Conder	4,568 0 0
Brass	4,568 0 0
Downs & Co. (accepted)	4,590 0 0

TO CORRESPONDENTS.

A.B.H.—G.W.U. Dr. L.A.H.J.C.W.C.A.—C.R.S. Messrs. A. & Co.—J.C.—E.W.P.—S.—E.—E.W.—R.C.E.—W.G.E.—R.Y.—C.—E.—H.E.W.—G.—E.M.—N.S.D. (declined)—H.T. (not used).

We are compelled to decline pointing out books and giving addresses. All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

	Situations	Situations
	Within	Outside
Six lines (about fifty words) or under ..	2 6d.	4 6d.
Each additional line (about ten words) ..	0s. 6d.	0s. 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the office, to residents in any part of the United Kingdom at the rate of 15s. per annum, *postpaid*, in advance.

Advertisements accepted for payment on 1st day. Any larger sum should be paid by 1st day. Money order payable at the 2nd of the month. King-street, Coventry, W.C. to DOLGESS FOR BIRMINGHAM.

Advertisements cannot be received for the current week's issue later than **THREE o'clock p.m.** on **THURSDAY**.

NOTICE.—All communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent Garden. All other communications should be addressed to the "Editor," and not to the "Publisher."

Bath Stone of best quality.
RANDELL, SAUNDERS, & CO. (Limited),
Quarrymen and Stone Merchants.
List of Prices at the Quarries and Depôts; also cost of transit to any part of the Kingdom, on application to
Bath Stone Office, Corsham, Wilts. [Advt.]

STONE BROTHERS,
Bath Stone Merchants,
supply direct from their own Quarries:—
Box Ground, CORSHAM DOWN,
FARLEIGH DOWN, COMBE DOWN,
AND STOKES GROUND.

Prices on application at Bath-stone Office, Bath. London Depôt, G.W.R. Mileage Station, Puddington, Stone Dressings prepared ready for fixing. [Advt.]

Tisbury Stone of the best Quality,
Worked, Sawed, and in Block, at
JOHN ALFORD'S
TISBURY STONE QUARRIES, WILTS. [Advt.]

Bills of Quantities, Specifications, &c.,
Lithographed by **ROBT. J. COOK & HAMMOND**,
29, Charing-cross, S.W., with accuracy and punctuality. Plans and Drawings Copied, Traced, or Lithographed.—[Advt.]

Asphalte.
Seyssel, Patent Metallic Lava and White Asphaltes.
M. S T O D A R T & C O.
Office:
No. 117, Cannon-street, E.C.—[Advt.]

To Brickmakers, Cement Manufacturers, Ballast-burners, and Others.—**GAS BRESE FOR SALE.**—Fine Gas-Breese (already screened, and free from clinker), of the Regent's Canal, free on board barges.—Apply to **WILLIAM WOOD & SON**, Woodgreen Station, Great Northern Railway. [Advt.]

PERFECT DAYLIGHT.

WHY BURN GAS?

CHAPPUIS' REFLECTORS

IMPROVE NATURAL DAYLIGHT
AND SUPERSEDE GAS.

P. E. CHAPPUIS,

PATENTEE AND MANUFACTURER.

No. 69, FLEET STREET, LONDON.

The Builder.

VOL. XXXII.—No. 1621.

Our Knowledge of Hydraulics.



KNOWLEDGE of the science of hydraulics is one of the most difficult and important of all the acquisitions of the engineer. The subject is one of which the delicacy is equal to the importance. It lends itself, on the one hand, to the most profound mathematical investigation; while, on the other hand, it often presses for the most rough-and-ready solution in daily practice. It is the key of sanitary engineering. The supply and flow of our rivers, the amount of rainfall, and (what is of far

more moment than the actual descent) the quantity of that fall that betakes itself to the ascertainable water-way of river channels, are matters of vital importance to be known and understood.

Let none of our readers think that we are speaking on theoretic grounds alone. It is from no wish to insist on the mathematical form of the problem, and to undervalue the importance of the practical part, that we now write. We will mention one fact, which is more eloquent than any argument we can frame, in stating that we have yet our A, B, C to learn as to the hydraulic system of this country. The quantity of water that is annually drawn from the Thames by the five great water companies that supply London from that source, is pretty accurately known. Is it credible that there should be a doubt, not in the minds of those unacquainted with engineering subjects, but in the minds of those who write to instruct the public upon them, or who offer evidence before commissions of inquiry, as to the proportion of the total volume of the river borne by the quantity of water thus abstracted? Yet such is the case, and that to an extent that is perfectly wild. It might be tedious to give all the details which lie before us as we write; but the upshot is, that while the eighty millions of tons of water that are thus abstracted form, according to the Report of the Royal Commission of 1869, only about 1.25th part of all that falls over Teddington weir, they amount, according to another statement, to fully an eighth part of the quantity that so falls when the Thames is at its lowest. So prodigious a discrepancy is enough to show that the subject of river hydraulics is not one as to which the engineers of Great Britain have any great reason to feel satisfied with their acquaintance.

In fact, we have far better opportunities in this country for studying tidal phenomena than for mastering those of rivers. Our coasts are swept by tides of almost every variety known

to observation. About Yarmouth, and the eastern part of Norfolk, they are so feeble as to some extent to resemble those of the Mediterranean. Yet in the estuary of the Thames they attain a considerable height. Again, in the Wye, at Chepstow, occurs a tide higher than is known to rise on any shore whatever, except it be that of the Bay of Fundy. From that formidable and destructive phenomenon which is known as the surf, and which, on the Madras coast, rushing up in a single and unexpected wave from the sea, inflicts such sudden damage, we are for the most part happily free. It is within our knowledge that, now some years ago, when tenders were asked for the construction of an iron pier on the Madras coast, it was required by the specification that three engineers, each competent, in case of need, to take charge of the erection, should come out together with the ironwork. The main reason for that unusual demand was said to be the risk, not so much of the climate, as of the carrying off the directing officer by the surf. But even in this aspect the shores of Great Britain are not without their occasional phenomena of magnitude. Although of rare occurrence, yet one of the most striking of estuary movements is sometimes to be observed in the Severn. When south-westerly winds coincide with equinoctial spring tides, a *flot*, or bore, such as that which occurs on the Seine, is visible below Gloucester, on the Severn. And the stone pier that runs out near the castle cliff at Scarborough was swept, a few years ago, by an unexpected wave from the north, that carried off a gentleman, whose death produced much sensation at the time.

The great points which are of value for the acquisition of positive knowledge as to river phenomena are less ascertainable on our island. For, although we are accustomed to regard the Thames, Severn, and other sister streams as large rivers, such is not their position in regard to the river systems of the world. The area of our island, if its whole water-shed were emptied by one large funnel, is small compared with the collecting grounds of some of the vast rivers of the New World; to say nothing of that which keeps up the African marvel, the perennial flow of the Nile; while at the same time supplying the no less mighty stream of the Congo. Over the smaller area, again, the rainfall is insignificant, compared with that which deluges the Equatorial mountains. At one spot, indeed, which is known by the quaint name of Styhead Pass, a register of rainfall gives an annual depth that is almost tropical. But our physical maps divide the surface of the country into districts receiving from 25 in. to 45 in. of annual rainfall. Of this comparatively small amount of water, which runs by three versants to the sea, and which thus nowhere accumulates in one river outlet of a length of more than some 200 miles, the proportion which actually thus discharges itself is, at this moment, unmeasured and unknown.

Great changes of condition are among the elements of physical observation which are the most precious to the observer. But no less important are the phenomena of permanence and of durability. There is yet another element which, in hydraulics, is of extreme importance, and that is magnitude. The volume of a river is a subject of extreme importance. From an accurate study of a really great river it is possible that facts may be ascertained, which will throw light on obscure phenomena in the behaviour of smaller rivers. To reverse the method is less satisfactory. And when, as is but too much the case, we commence the study of hydraulics on yet smaller proportions; when from the flow of water through pipes, or narrow artificial channels, we construct *formule*, which we afterwards apply to the movement of great masses of water, we follow an absolutely non-

scientific method. Our present theories as to river hydraulics are tentative and empirical, to a degree that greatly impairs their value.

Our absence of thoroughly sound knowledge on the subject of river hydraulics is unfortunately illustrated by the opposition which is often raised to the reclamation of low-lying land from tidal waters. On the banks of the Forth, the Tay, and the Clyde, many hundreds of valuable acres have lately been added to the area of Scotland by embankments. The drainage of thousands more has thus been rendered practicable. The great obstacle to the extension of this truly national and patriotic work, has been the fear of the vague and undefined rights of the Crown to the foreshore. But this legal difficulty would, there is good reason to suppose, have been removed by this time, but for the fallacious arguments brought forward, to the effect that the channels of the river would be silted up if the funnel-shape of its mouth were interfered with. The very reverse is the outcome of experience. Still, we have no man, and no work, of sufficiently eminent authority, to lay down, on this subject, the law which is not that of Parliament, but that of nature.

We have repeatedly called attention, in these columns, to the general problem of the right distribution of the most precious gift of Providence, next to the light of the blessed sun itself, to this country,—an abundant and neglected rainfall. Very lately a writer, dating from beyond the Forth, has been attacking in detail that which we have attacked in mass. The valley of the Blackwater is the spot to which attention is thus called, by one who is acquainted with its nature and condition. Twenty thousand acres in that valley, which are now worth about 15s. an acre of rent, would be worth 3l. per acre if drained. As it is, one half of this area is submerged by every flood; and the other half has the water so dammed back upon it that all the ditches are stagnant during winter, and the herbage is all sour accordingly. During the summer, this land will scarcely carry cattle; and the hay made from it is only fit for half-starved, hungry beasts; while the inhabitants live in cottages where the water is often level with the floor. For some forty miles above its junction with the Thames, the valley of the Kennet is liable to very similar remarks. Reeds and rushes grow, owing to the barbarous method of flooding, or rather swamping, the undrained meadow lands, where the richest grass would repay ordinary care. The waste of productive power in what might be land of extraordinary fertility, entirely independent of drainage from a season of drought, is positively lamentable. The whole cost of deepening and straightening the river, in the case of the Blackwater, it is estimated, would be recouped by the increased production within five years. We cannot doubt that the same would be the case with regard to the valley of the Kennet. For men who wish to make money, not by wild speculation, but by the profits of assured industry, invested on English soil, these valleys offer the means with absolute certitude.

We have given an instance, in a variation of more than two hundred per cent., in professional estimates of the volume of the Thames, of the backward state of our practical knowledge of hydraulics. If we look at the rules and *formule*, as given by our best text-books, we shall see that they do not advance the student beyond guess work. "To find the *volume of flow* of a stream," we are told to "multiply the mean velocity by the sectional area." That, of course, is irreproachable. But how to find the mean velocity? That question is one that demands a series of well-connected and perfectly-performed experiments; experiments that can only be satisfactorily carried out by special instruments, and with the utmost care. But so far from this important truth being indicated in our text-

books, we can there only find theoretical rules as to the "relation between head and velocity." This is expressed in a *formula*, which we suppose that we may regard as the basis of our actual river engineering. We find no reference to observation in the *formula*.^{*} The force of gravity expressed by the head of water, is all that is brought forward. When the "factor of resistance" is introduced into the equation, the same purely theoretical mode of treatment is still continued. But this is not the worst. We find positively erroneous statements added. We have a rule, thus conceived, "In a stream like a river channel, the ratio of the mean velocity to the greatest velocity (which occurs at the middle of the stream) is nearly equal to the greatest velocity plus 7.71 ft. per second, divided by the greatest velocity plus 10.28 ft. per second." Now it is not only the empirical and utterly unscientific vagueness of this statement which we condemn. The few words within the parenthesis contain just one of those mischievous assumptions which are the parents and propagators of error. Nothing can be more wide of the mark. The velocity may be greater at the centre of the stream than elsewhere. But, on the other hand, it may not. The actual fact is, that the inclination of the surface of a river being given, its velocity is a function of its depth. So far as we are aware, we shall exhaust all our English textbooks on the subject without finding this primary element of calculation anywhere distinctly intimated.

We are indebted to a member of the Institute of Civil Engineers of Vienna, Mr. J. J. Révy, for a great amount of practical light on a subject of so much interest to the sanitary and to the agricultural interests of this country. It is not as a matter of theory that Mr. Révy criticises our hydraulic *formula*. Nothing can be more modest; but at the same time nothing can be more thorough, than are the observations of this very careful engineer. It seems that Mr. Révy has been employed by the Government of the Argentine Republic to report on the estuary of the Plata, and the gigantic rivers which pour into it. Of these, the mother stream, the Parana, is, with the exception of the Amazon, the largest in the world. In twenty-four hours it sends down to the sea a volume of water equal to that discharged by the Thames (as at present estimated) during an entire year. It soon became evident that theoretical *formulae* were absolutely nowhere in presence of these circulating seas of water. No basis of calculation was to be arrived at from estimates of velocity due to head. Nay, more, it became apparent that it was no simple matter to ascertain what that head actually was. We are accustomed to place considerable reliance on the spirit-level. With a good instrument, in good repair and adjustment, a calm day, an experienced and careful observer, and the rigid use of equi-distant back and fore sets, considerable accuracy may be thus attained. We should say, as far as our own practice bears upon the subject, that a level thus obtained may be relied on to about three-hundredths of a foot per mile. That would be considered a fair check. In setting out masonry by the spirit-level, perhaps a greater degree of accuracy may be attained; but the process is slow and tedious. We can remember an instance in the case of the setting out of the retaining walls between Camden-town and Euston-square, on the line of what was then called the London & Birmingham Railway, in which, although unusual care was taken, and the levels were read on iron wedges driven into the joints of the brickwork, day after day they would come three-hundredths of a foot wrong! The fact was extremely perplexing. Every endeavour was made by careful adjustment of instrument, and laborious detail of observation, to detect the source of error; but day after day it recurred. At last it caught the attention that the error was always of the same amount, and always in the same direction. This led to a renewed investigation. The result of this was, that the error was not cumulative. Although it recurred in the work every day, it did not augment. This led to the running of a new series of levels along the plinths of all the pilasters that were completed. The fall was exact in every instance. At last, by reference to a bench mark fixed for the purpose, it became evident whence the difficulty arose. It was due to nothing but the *expansion of the concrete* on which the wall was built! The levels were always given at the same period of the

growth of the wall; that is to say, on its arrival at the plinth. The same degrees of expansion in equal thicknesses of concrete had thus always taken place. This was, as it turned out, at once a beautiful proof of accuracy of work, and a valuable note as to the behaviour of concrete. But it is an instance of the mode in which, with all the appliances of modern civilisation, we may approach the limit of instrumental accuracy in the use of the spirit-level. Over long marshy districts, jungle, swamp, or fen country, such as we find in Norfolk, the level becomes almost useless. We do far better to trust to a natural water-level, if this is shown, by the absence of current, to exist, than to rely on the use of the spirit-level, even in many parts of England. By the side of the vast rivers of America, or of Africa, such levelling is altogether out of the question.

We have spoken of three-hundredths of a foot per mile as being as fair an approach to accuracy as we can expect under ordinary circumstances. In our fen districts the *spirit level* fall allowed for the water-channels is 4 in. per mile. The wind will stop the flow of water through the dykes, if propelled by a less head than that. The constant service of windmills, pumping day and night, and the entire system of polders, dykes, sluices, and outfall, are calculated on that gradient. Its ascertainment is, as we see, within the limit of instrumental accuracy.

Now the surface inclination of the La Plata River happens, by a remarkable coincidence, to fall within a very minute fraction in that very limit of instrumental accuracy. Three-hundredths of a foot is the same thing as thirty-six hundredths of an inch. The surface inclination of the La Plata was ascertained by Mr. Révy to vary from .312 to .111 in. per mile, and with a gradient that in our fen districts would not overcome the opposing force of a moderate wind, the mighty volume of that great river has a surface velocity of more than 100 ft. per minute.

Into the further investigation of this great problem our limits will not allow us now to enter. But we hope that we have said enough to call the attention of all those who take interest in hydraulic knowledge to the fact, that a problem exists, and that its solution, if attained, is not to be found in our text-books, or expounded by our professors. It is no vagary of nature that impels the mighty stream of the Plata down an incline almost imperceptible to our instruments, and which our fen-draining engineers might afford to neglect. In fact, they might neglect it with safety. The cause of the apparent anomaly lies in the great depth of the American river,—a depth of 24 ft. at the section observed. To this depth is due the velocity of the current, and the constant displacement of an enormous mass of water under the solicitation of a minute gravitating force that would prove inadequate to overcome resistance in a shallower channel. We cannot give, in a few words, a more distinct proof of the importance of regarding depth of channel as a function of the velocity of rivers; and the fact that this function is entirely disregarded by our *formulae* may perhaps account for the fact, that one hydraulic authority (as things go at present) tells us that the flow of the Thames is considerably more than double of that at which it is stated by another engineer.

HOUSE PROPERTY IN ENGLAND AND THE CENSUS COMMISSIONERS.

It will be remembered that an estimate was made some time ago, in the pages of this Journal, as to the value of house property in England and Wales. We now have, in the fourth volume of the Census returns, just published, the official estimate of this class of property. It will be seen that though the official figures are not the same as ours, the difference, considering the vastness of the total and the difficulty of obtaining precise data, is comparatively trifling. The Commissioners observe:—"A census of a civilised nation,—which is always a nation living in houses,—is scarcely complete without a full classified account of those various structures. That distinction and classification are required is evident; for what differs more than a mud hut, a thatched cottage, a farmhouse, the squire's hall, a shop occupied by a tradesman, a public-house, a lodging-house, and a dwelling-house, well fitted with all modern appliances, in the best end of a city? One dwelling barely affords shelter against the weather, has a hearth and a floor; another has fire, light, and water at command in all

seasons, cooking apparatus in kitchens, sweet cleanliness in all the offices, stores, pleasant chambers, libraries, and rooms—some fitted for hospitality, and others for the bright gatherings of society. Houses in towns like London differ extremely in form, cubical content, windows, apartments, doors, and sanitary appliances in different quarters; but in England, we have not under the Act, the same power of inquiry as was conferred under the Irish and Scotch Acts. The enumerators were, however, supplied with books in which they were requested to describe the houses at which they left householders' schedules prior to the Census-day, and to state whether they were private houses or public-houses, bakers', grocers', or any other shops; schools, coach-houses with rooms over, lodging-houses, and the like; those books thus contain information which may be hereafter analysed with advantage.

The Census returns of England since 1801, distinguish only inhabited houses, uninhabited houses, and houses building.

The enumerators of the United Kingdom were instructed as in 1861, in conformity with the decision of the Statistical Congress, to class under "house" every habitation, "each separate house comprising by definition all the space within the external and party-walls of the building." The confusion arising from counting "flats" as houses it was believed would be thus obviated.

The popular use of the word "house" is quite in conformity with the above definition, and the word has probably been applied in the same way at all the Censuses. Assuming this to be so, the mean number of persons to a house rose from 5.64 in 1801, to 5.75 in 1821, when the increase of population was at a maximum, and then declined to 5.33 in 1871. Thus in 1821, there were 575 persons on an average to 100 inhabited houses, and 533 in 1871.

This average gives a very imperfect notion of the actual house accommodation, and some such further inquiry may be made as was commenced in the Census report of 1861, showing in only fourteen selected sub-districts how many houses contained 1, 2, 3, 4, up to 81 inhabitants. The importance of the determination is apparent: of 48,273, 2,417 were uninhabited, leaving 45,856 houses inhabited by 5,938 persons on an average; but 1,501 contained only one person, 5,361 contained two persons, 7,048 contained four persons; 16 contained from 61 to 64 persons; and one lodging-house was filled by 81 people. The facilities for the spread of zymotic disease and the morality of the people are very much influenced by the accumulation of large numbers in lodging and other houses. The importance of minute information of this kind to the Legislature may be illustrated by a single instance: if the same proportion of English houses are occupied by one person in 1871, as in the houses inquired into at the previous census some 10,000 or more houses are inhabited by one solitary person. These hermits of the century in town and country sometimes die in their solitude, and occasionally no witness under the present state of the law can give such information as authorises the registrar to record their deaths. Such deaths consequently remain unregistered if the coroner refuse to hold an inquest on their bodies.

Although we have not been able to classify the houses adequately, the Inland Revenue returns supply the means of determining the number of houses of 20l. annual value and upwards, subject to the house duty, in 1862 and in 1871. The number of such houses was 519,991 in 1862, and 748,719 in 1871; the increase was 228,728 in ten years. The increase in the number of such houses was 44 per cent.; while the increase in houses below that annual value was 290,884, or only 9 per cent. on the ten years. This may be accounted for by a general rise in the price of houses, which has lifted many out of the lower into the higher category; by a rise in the assessed value; or by an increased proportion of good houses in the numbers newly erected.

The variation in the value of houses will give a general notion of the variety of those structures, and we find that while only 778 were valued at 1,000l. a year and upwards, 68,787 were valued at 100l. a year and upwards. Some may be surprised that the number of such houses is not greater; but conjecturers are often much mistaken in their guesses at numbers of this kind. So impressed is the mind by a few singular instances of magnitude that it translates it into multitude. The number of houses of 50l. annual

* The formulae are $h = \frac{v^2}{2g}$ and $v = 8.025 \sqrt{h}$.

value and upwards is 221,632; of 20l., and under 50l., is 527,057.

Concerning the rental of the 3,510,398 houses under 20l. of annual value, the return gives no direct information; but the series of numbers increases so regularly as the value descends from 200l. to 20l. that we have ventured to continue it from 15l. 50s. to 10l.—15l. . . . to 3l.—5l., and subjoin the results to the table, which makes the number of houses of 10l. and upwards 2,146,367, or rather greater than the numbers below that annual value. The mean annual value of houses of 20l. and upwards was 53l. 16s.; while the estimated mean value of houses below that figure was 9l. 2s. The mean annual value of all houses thus determined was 15l. 10s. In 1861, and 16l. 18s. in 1871. The mean rental of a house rose from 6s. a week in 1861 to 6s. 6d. in 1871.

The estimated annual value of the houses is 72,170,365l. Means should be adopted, as they easily might, for determining exactly the relation between the annual value and the capitalised value of this vast mass of property: this has not been done, but, taken at fifteen years' purchase of their annual value, the houses of England and Wales are worth 1,082,645,475l. It was considered a sign of prosperity when houses were fully occupied and new houses were built: so at each Census since 1811 the number of houses "building" has been returned. The number increased from 10,207 in 1811 to 27,141 in 1841, and remained nearly the same in 1851-61; but in 1871 the number ran up to 37,803. One house was "building" or being built to 114 standing inhabited and uninhabited in 1811; to 105 in 1831; to 144 in 1861; to 120 in 1871. The number of houses "building" on the Census day, as we pointed out in 1861, depends not only on the number erected annually, but on the *time* employed in the process, so that a decline in the number enumerated on one day does not imply a decline in the number of houses built yearly. The architect there cited is of opinion that houses on an average are built in six months (1861), but that is by no means certain. The houses building vary with the season; and with the facilities small builders find of obtaining advances of money. But as we know that houses are built in as short a time now as in previous censuses, and as the season of the year has been the same, it is quite certain that the increase of "houses building" to 37,803 on the last Census-day, implies a rapid increase in the number of new houses. This is proved, too, by houses inhabited and uninhabited in ten years having increased by 596,263, that is, at the rate of 59,626 new houses yearly. But new houses were also built in the same period to replace the houses out of 3,924,199 existing in 1811 that fell to decay, or were taken down.

Assuming, as was done in 1861, that houses last about a hundred years, and perish at the rate of 1 per cent. annually, then at the end of the ten years 375,223 houses must have disappeared. The new houses built in the ten years replaced these houses, and added 596,263 to their number; so about 971,186 new houses have been built in the ten years, of which about 920,194 inhabited were of the annual value of 14,907,143l., and worth, at fifteen years' purchase, 223,607,145l.

While the number of houses "building" increased, so did the number of houses "uninhabited"; the numbers were, 184,694 in 1861, and 261,345 in 1871.

LONDON, BRIGHTON, AND BENGAL.

BETWEEN British poverty at home and Bengal destitution, it would not as a matter of conscience be difficult to choose. Our object in the few words that follow is not to stay the hand of sympathy or benevolence, no matter in what outward or inward direction it may be extended. Strange contrasts are, however, staring us in the face east and west of the great metropolis, and north and south of the kingdom. We are a proverbially charitable people, but our impulses and actions are wayward. The benevolence of London is mighty, but her destination is still gigantic, and neither outworkhouse indoor nor outdoor pauperism affords us more than a partial reflection of it. The readers of the *Builder* have often been introduced to scenes and pictures of London life that few indeed ever suspected had an existence. London is weighted with an aggregate of indigence that has not, and we fear never will have, a register. It is an indigence begot of forced idleness or want of employment,

and if ever human sympathy and practical benevolence were exercised rightly in the interests of helpless misfortune, it is in this direction it needs be shown. Want of work means as much want of bread to the poor as a failure of the harvest does.

We learn from Brighton that the pressure of local poverty is so severe that the General Social Charity has been brought into action, and a public meeting to raise funds has been held on the first day of this week. *Possess* with this announcement, in Brighton a meeting is called in the "Queen of Watering Places" to aid the movement in alleviation of the Bengal famine. How passing strange it is that the gay and fashionable resort of our aristocracy and gentry, Brighton,—with its museums and aquarium, with its reviews and its countless cheap trains, with its two seasons for visiting sightseers and dwellers, and with its goading numbers of well-to-do shopkeepers and traders,—should echo with the mournful cry of poverty. Four years ago we pointed out the wants of Brighton in view of the future, and showed its weak points from its lack of established industries almost of any kind. This is not the first cry of distress from Brighton. Again and again in winter seasons for some years the workhouse and the homes of the workpeople in the town told plainly the tale of want. Local industries are needed for the Brighton of the future; for birds of passage, no matter how great the flock, will never be sufficient to permanently maintain a town. Fashion, too, is fickle and changeable, and the local authorities of the town had better look forward, and, if possible, for the present, find the permanent body of the unemployed some public work.

What is being done now, or about being done, for Bengal, is the very thing that needs to be done, not alone in London and Brighton, but in many places over the country, viz., providing work for the unemployed, under careful arrangement. Besides the ordinary measures of relief, we learn in different districts the Commissioners have been specially authorised to make advances for the digging of wells, and in twelve of the partially distressed districts, and in fifteen of the more exposed, municipalities may apply for loans, and landholders for advances, on easy conditions, for improvements. Where there are village works undertaken before the end of July next, we learn that the State will bear one-third of the cost, if they are likely to prove beneficial to the people,—such as works for water supply. The next two instalments of land-tax may be postponed for two years, while arrears of the first instalment are not to be exacted by legal process. Finally, in all districts, including those where distress shows itself, the Commissioners are at once to provide labour on the roads at whatever cost, to lend to the municipalities and to advance money to landholders under the usual rates.

Very many thousands of pounds will be collected in England for the relief of those suffering from the effects of the Bengal famine, but it never should be lost sight of that as Christians, citizens, and inhabitants of a civilised country, it is our duty to act fairly by our brothers at home while assisting our more distant kindred and strangers abroad. We have had partial famines in these countries once, but, thank Providence, we have not suffered for many years through a failure of our harvests. What a terrible amount of destitution latent and unknown, as well as ascertained, in this country, and particularly in the metropolis. Charity organisation schemes have their abuses, and, where honest, their action is but as drops of water to the thirsty. Work alone, employment remunerative and useful, affords the safest, the wisest, and the most honest method for relieving the distressed and would-be industrious workers, because it enables them to preserve their self-respect, and prevent the stigma or ban of pauperism being fastened upon them to their own discredit or to the injury of their children.

An Australasian Monolith.—As one result of the recent explorations of Mr. Gosse and his party in Western Australia, we learn that they have discovered a huge monolith, 1,100 ft. high, and six or seven miles in girth at its base, and the interest in the discovery is heightened by the fact that a stream of water fed by a spring in the centre of the conglomerate flows from the rock.

THE INQUEST AT THE PANTECHINICON.

At the inquest recently held, and which we regret to have to say was altogether insufficient and unsatisfactory, Mr. T. Marsh Nelson, who had examined the ruins at the request of the coroner, made a report upon the occurrence. We print the concluding portion:—

"The internal arrangements were most defective. There were no cross walls, no classification of the contents, and combustible material was scattered throughout the building. No appliances for the extinction of a sudden outbreak of fire existed, and there were no hand-pumps, hydrants, or hose, or means of apprising the nearest fire-engine station by telegraph wire. No firemen were kept on the premises, and no organised watchman, and tell-tale clock. The wall which fell upon Sydney Scott was on the western side, abutting upon the Lowndes-square and Lowndes-street houses. Part of the upper portion of the wall had fallen during the fire. On the day after the fire, about six o'clock on the Saturday evening, a large portion of it came down, killing Scott, who was on the Pantechnicon side, and destroying the kitchen, pantries, libraries, &c., on the Lowndes-square side. This wall, particularly after the warning given by part falling during the fire, ought to have been shored up the first thing on Saturday morning, and there was no difficulty in doing it from the cross walls of the Lowndes-square houses. Under the 'Dangerous' clauses of the Metropolitan Building Act the authorities were empowered immediately to do so. On the Monday following, he was informed, a notice was served on the proprietors of the Pantechnicon, and on Tuesday the Metropolitan Board of Works' surveyor and their contractor proceeded to take down the remainder of the wall. Had the wall fallen in the night-time a more serious loss of life would probably have occurred, as the men-servants in the Lowndes-square houses usually sleep in the garrets. His opinion was that there was no need yet not immediately having this wall shored up in the morning of Saturday. If it had been saved a large destruction of property and loss of life. He was also of opinion that the Pantechnicon was a most imperfect structure, although it was built under the provision of the Metropolitan Building Act. He could not conclude his report without referring to an opinion he gave on an inquiry of a similar nature—viz., the Tottenham-court-road accident (where, unfortunately, six lives were lost). It was extracted from his report to the Coroner for Middlesex, printed, by order of the House of Commons, in July, 1865, and was as follows:—"I think the Government incur a great responsibility in continuing in force an Act of Parliament in the face of freely-expressed opinions of all parties, from the humblest builder to the judges of the land. It is an Act which legalises bad buildings; it has made London as inferior to many Continental cities as it was formerly superior; and, by its shuffling, and in many cases absurd and contradictory regulations, it defeats the only object that a proper Building Act should have in view, viz., the substantial construction of all houses and buildings, without any exemptions whatever, the prevention of the spread of fire, and the protection of the inhabitants of the metropolis from such accidents as the painful case now under investigation." Since that date nothing had been done to repeal or alter the Metropolitan Building Act of 1855, notwithstanding the representations which had been made by, and to, the Board of Works, and which had signally failed to provide any efficient remedy. It was to be hoped that the new Government would be led to give their immediate attention to a subject so important to the metropolis."

A correspondent, signing "One on the Spot," writes to know if it is not obvious that Messrs. Smith & Radermacher have been practising for years a gigantic imposition on the public, and calls for the institution of such measures as may lead to the application of a proper punishment.

We have a strong opinion to the same effect. Depositors have been misled to their ruin. The country itself is damaged by the losses, beyond repair.

THE CENTRAL DOME OF THE VIENNA EXHIBITION BUILDING.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At an ordinary general meeting of the Institute, held last Monday evening, the 23rd inst., Sir Gilbert Scott, president, in the chair, the following gentlemen were elected:—Mr. Charles Bayly, Fellow; and Messrs. H. C. Boyes and Ernest Carritt, Associates.

The Secretary (Mr. Eastlake) said that ten candidates had submitted sketches in competition for the Pugin studentships for 1874, and in the opinion of the council Mr. R. C. Page was the successful competitor. In consideration of the excellence of the drawings of Mr. R. J. Munt, he was awarded the medal of merit, Messrs. Buchanan and Wilson being also honourably mentioned.

The candidates' sketches were exhibited.

Mr. Oliver called attention to the case of "Timms v. Kerr," a report of which had appeared in the *Times* of that day (Monday), and thought that it would be some satisfaction to the members of the Institute if Professor Kerr could give some explanation of it.

Professor Kerr, after going fully into the facts of the case, said that the profession were, under existing arrangements, at the mercy of the clients; and he hoped that he would be the last man to suffer under the present state of the law; and that when the new Judiciary Act came into operation, matters would be somewhat

changed; for, under that Act, professional cases would be tried, after the present year, by a jury of paid assessors.

The adjourned discussion on Mr. Scott Russell's paper on "The Central Dome of the Vienna Exhibition Building," which was read at the last meeting, was then resumed.

Mr. Tarn, in opening the proceedings, could not understand how the great strength of the dome was obtained, though Mr. Russell's dome was not the first erected in the conic form, Sir Christopher Wren having made use of it in the building of St. Paul's Cathedral. The same principle might be carried out in the curved form, although it would not have quite the strength and resistance the straight line would have; but that might, however, be overcome. He thought that there might be domes of three conic sections.

He did not at all doubt that there was enormous strength in the cone, as could be seen from the way in which it was constructed. A dome was generally considered a curve, both inside and out; and he thought that mode of construction was of the very best that could be used.

Mr. Morris thought there was no doubt but that the conical form of roof was of the most ancient character, and he believed that it was even of earlier origin than the spherical form. So far as the architectural form was concerned, he thought that the cone must be decided to possess the greatest possible inferiority to the spherical form. Perhaps the finest example was the Pantheon. There were now such fine examples in iron construction that they would probably mark a new stage in the architecture and construction of domes. The grandest design must be formed of the iron skeleton case, and it would be advisable, perhaps, not always to be too exacting in showing the skeleton, but they should be content to take the iron for skeleton, and case it with stone and other material which seemed best.

Mr. Curzon said that it seemed Mr. Russell's paper was divided into two parts. The dome of Mr. Russell did not exist in the first portion of the paper, but was rather such a one as was described in the second part, which treated of the history and practical execution of the dome. He (the speaker) thought that it was a building altogether different from the theoretical dome described in the first portion of the paper. The building appeared to have very good foundations, although in the paper they were held in light esteem.

Professor Kerr said that a new light had been thrown on the subject, for he had discovered that the central part was, after all, a dome of vertical and cross ribs, and it seemed that they had got back to the ordinary principle of construction of wooden or iron domes. He objected to many of the points raised in the paper, especially dwelling upon Mr. Russell's depreciation of the ordinary way of using girders and roof-trusses in large buildings. Referring to Mr. Russell's principle of antagonism of agencies, he said that if the skeleton was one agency, and the cone another, if one were to fall, the other must go also. The Albert Hall was built on the elliptical plan, and he had been told that it ought to have fallen long ago, but that it was sustained by some occult principle, which, however, had been contradicted from other sources. He then fully discussed and explained his idea of the usual and accepted mode of employing girders and roof-trusses, and combated very strongly Mr. Russell's portion of the paper in which the advantages of the usual method of using girders was alleged as a "mere modification of ingenious waste."

Mr. Fowler thought that the description in the paper of the actual building was rather more scanty than he should have desired; and he had not come prepared to see, as he had that evening seen, drawings showing that the construction had very large ribs and circles in proportion to the actual surface covered. He thought that the description of the theoretical portion had occupied rather too much space.

Mr. Grace said that Mr. Russell had asked him (Mr. Grace) to draw out such plans as he had described. The principle upon which Mr. Russell proceeded was entirely one of making his construction consistent with what was outwardly shown, and *vice versa*; and the first design which was submitted by Mr. Russell at Vienna showed a *façade* which, if one might say so, was entirely constructional, and in which elements of plaster and stucco were entirely absent. The whole system upon which the original design was founded was one of brick and stone, supporting

the iron cone. The present construction was more or less a sham, and the view presented by the substructure of the dome, as carried out, was quite a sham.

Mr. Bell could not understand what Mr. Russell meant by saying that he could take away a column, or even two or three columns, supporting the cone without the stability of the cone suffering. If such a statement as that were true, they would soon arrive at the period when they would be able to build in the air.

Mr. Penrose said that it was very difficult to apply the pure catenary in any structural theory, for it did not practically exist; and in any arch of almost any shape they could imagine a catenary. He would suggest that the best possible form for a cone would be to give its sides an almost imperceptible entasis, such as was given to the Greek column.

The President said he had been extremely pleased with what he had heard from the speakers, and he thought that the Institute were greatly indebted to Mr. Russell for the ready manner in which he had come forward for their benefit.

Mr. Scott Russell said that the Institute would do him a great favour if, on some future occasion, they would allow him to be the vehicle of conveying some slight compliment to the architects of Vienna who had co-operated with him in the works; and also to explain how the designs that they had made of the building were appreciated; for he was sure that this would be a source of gratification to the architects at Vienna.

FALL OF A FLOOR.

An accident occurred last week at No. 42, Queen's-garages, Bayswater, which might have been attended with very serious results, and should serve as a warning to builders. Friends had been invited to spend the evening, and were gradually gathering together in the third room on the ground floor, at the back of the house, when—twenty-two persons being present—the floor broke away from the back wall, and descended to the room beneath. The other ends of the joists, being on a partition, remained in their place, and most fortunately no person was hurt. The room is 20 ft. by 18 ft. The cause of the disaster was not far to seek, and the only wonder is that the floor had not yielded long before.

The joists were carried by a fillet 3 in. x 2 in., fastened most insecurely by a few nails to the bressummer, which forms the heads of the windows of the room below, and carries the back wall. The practice of nailing on a fillet at the side of a girder or other beam to carry the ends of joists is of most common occurrence, and too often it is done as if with a full conviction that a temporary nail will carry St. Paul's. In fact, looking at the grossly ignorant manner in which work is done in the large proportion of houses built in and round the metropolis, it is surprising that more accidents do not occur. It may be as well to inform some of our readers that the Building Act gives the District Surveyor no power over the timbering of a house.

MAINTENANCE OF ASPHALTE ROADS.

In reply to their advertisement offering a premium for a good practical mode of cleansing asphaltic pavements, the Central Committee of the Asphaltic Companies have received over fifty designs, worked out with more or less care. Many of them are merely suggestions, without drawings or models; but there are several well-considered designs, which it is proposed to exhibit, and some of which it may be hoped will answer the desired purpose.

For watering alone, "Engineer," of Baltic-chambers, submits sketch of a central pipe, laid in the middle of the roadway; and Mr. Daniel, of Brighton, proposes to distribute the water from under the curb; both ideas being apparently founded on Mr. Brown's patent, who has put his system in action in the City.

Mr. Smither, of Hackney-road, proposes a hydrant with a hose, which is wound up inside the pillar, and whatever may be said of the value of hydrants for many purposes, it may be questioned whether, in our narrow footpaths and crowded streets, a hose would not be inconvenient, and it appears more likely that the water distributed by merely turning on a tap in the manner proposed by Mr. Brown, is not only more convenient for road-watering, but cheaper, saving labour and horse-keep, in which case the numerous ingenious designs submitted,

which combine the water-cart with contrivances for brushing, cleansing, and even drying the asphaltic surface, will be found less suitable than may at first appear; at the same time, many of them may be disconnected with the water-cart, and may be for cleaning purposes just as efficient when water is provided in another way.

The designs submitted by Mr. Vincent Caratte, of King's-cross; Mr. Greenstreet, St. Saviour's district; M. Delano, of Paris; Mr. Waddell, Gravesend; Messrs. W. & A. Arber, of Leytonstone; Mr. Wood, Birmingham; Mr. Muniz, Fetter-lane; Mr. Huntley, Walthamstow; Mr. Harding, of King's Lynn; and Mr. Weaver, of Kensington, are of this character; and some of them provide for lifting and removing, and thus keeping the mud and slush from running into the sewers.

Mr. D'Elro, of the Lambeth-road, moreover, cleanses the surface without the necessity of a water-cart; and so does M. Blot, of Paris.

The committee hope to be able to exhibit the designs.

WOOD UNDER FIRE.

CAPT. SHAW, of the Fire Brigade, has described some experiments made on a "story-post, with a section of the beams, and other parts surrounding it, above and below," which had been removed from a warehouse destroyed by fire:—

"This post had been subjected to the full action of the fire during the whole of its duration, as already mentioned, or making full allowance for everything, including the delay of the fire attacking the particular spot on which it stood, and the time at which the cooling process commenced, certainly not less than 4 hours.

As we had used large quantities of water, and it was probable that the wood might have been somewhat saturated, I had it carefully dried for several days before a strong fire, until not a trace of moisture remained in it. I then set it on in an open yard, exactly as it had stood in the warehouse, with the pedestal underneath, the cap above, and the beam across the cap, placed upon it, and after saturating the whole heap with petroleum, applied a light to it. After this I kept men pumping petroleum and turpentine on it until my stock was exhausted.

At the end of two hours and a half I withdrew the post, beam, and other parts from the fire, and within a few minutes from the time at which they were withdrawn they ceased to burn.

I then sawed off horizontally a few feet at that part which had suffered most from the flames, and afterwards split the same piece longitudinally with steel wedges in order to examine its condition.

The post was of pitch pine, about the most inflammable wood I know, and yet, after exposure for seven hours to the fury of which could not be exceeded except in blast furnaces, it contained, and still contains within it a quantity of perfectly unburnt and apparently fresh wood, probably capable at this moment of supporting the whole weight which the original post can have been designed to carry."

The lesson the writer draws is this:—"A massive story-post of even the most inflammable wood is absolutely and perfectly proof against any heat which can be applied to it, will not of itself burn at all, but requires a continual supply of highly inflammable substances to keep it burning, and, when this supply is withdrawn, ceases to burn; and, lastly, after being exposed for seven hours to flames of very great intensity, is not injured to a greater depth than about 2 in. from the original outer surface, and still shows a centre as clean and fresh as when it was first put in."

NEW GOVERNMENT OFFICES AT POPLAR.

SOME years ago the late Mr. Richard Green, shipbuilder, of Poplar, erected an extensive pile of buildings at Poplar, which was for some time known and occupied as "Green's Sailors' Home." Since the death of the owner it was generally believed that the "Home" was about to be taken down and a number of more modern dwellings erected on the site. But it now appears that the building is to remain, the Government having obtained possession of it, with the view of converting it into offices in connexion with the Board of Trade department, which has secured the premises under a long lease. Amongst the alterations which are to be made in the building is the construction of a spacious Court for the trial and settlement of questions connected with maritime law.

Architecture at the Royal Academy.—The Professor of Architecture at the Royal Academy, Mr. E. M. Barry, R.A., will deliver lectures at Burlington House, on March 5th and March 12th.



References to Plan of Carlisle Castle.

- | | | | | |
|----------|----------------------|----------------------|-------------------------------|------------------|
| A. Keep. | B. Inner gate-house. | C. Outer gate-house. | D. Queen Mary's Buildings. | E. Norman tower. |
| | F. Wells. | G. Ditch. | H. Richard the Third's Tower. | |

CARLISLE CASTLE.

The city of Carlisle appears first early in the ninth century, in the history of Nennius, as Cair-Luadit, or Lulid, or the Castra Luguballia, one of the "octo et viginti civitates. . . cum innumeris castellis ex lapidibus et lateribus fabricatis," enumerated by that respectable authority. The fame of Carlisle, however, is due neither to this early mention, nor to the subsequent gift of the place by King Egfrid to St. Cuthbert, but rather to its name as a centre of the early cycle of Arthurian romance, well supported by its subsequent celebration in Border tales and ballads. In truth, whether in fable or in fact, Carlisle enjoys no mean reputation. It played a part in the British, Roman, Saxon, and Danish occupations of the island, and after

having been held as a frontier-fortress by the Scots against the English, became, in its turn, the great stronghold of northern England against the Scots, and the scourge of the wild tribes of the debateable land.

City and castle are naturally strong. The castle occupies a bluff, projecting towards the north, in a position which no doubt created its early, and caused its long-continued importance. Across its front flows the deep and rapid Eden, here seven miles from the sands, and a score from its final disappearance in the Firth of the Solway. Above the city, and covering its eastern flank, the Petterill comes down to reinforce the Eden, which river, close below the city and beneath its walls, receives, by two branches, the waters of the Caldew, which thus covers the flank of the post towards the west.

The city, so protected on the three sides on which it was most liable to be attacked, is built upon ground about 60 ft. above the Eden, and which, slightly rising, terminates to the north in the prominence occupied by the castle, about 50 ft. above the river, and which no doubt is the site of the "Caer," whence, whether of British or Roman origin, the city derives the first half of its name.

Luguballia, or Caer Luel, does not stand upon, but about a mile within, the line of the Roman wall. This great work, coming from the direction of Wallby, and in the line of Linstock and Drawdykes, passed by Stanwix, across the river, to terminate on the Solway, at Dykesfield, near Burgh-upon-Sands.

The castle thus occupies the northern, highest, and strongest part of the city, about 60 ft. above

the river. It is built upon the new red sandstone rock, and to the east, north, and west the slopes are very steep towards the meads, which fringe to a considerable breadth the left bank of the Eden, and the right of the Calder. In plan the castle area is nearly a right-angled triangle, of which the right angle is to the south-west, and the long side, somewhat convex, and 256 yards in length, is presented towards the north and east. Of the other sides, that towards the city, on the south is 200 yards, and that to the west 143 yards in length. The space within the walls is rather under three acres.

The outer defence towards the city is an artificial ditch, 240 yards long, 30 yards broad, and about 10 yards deep, cut across the high ground from slope to slope, and stopped at each end by the wall connecting the city with the castle, which thus, though an independent work, is made to form part of the general *enceinte*. Between the castle and the city is an open space, about 78 yards broad, which contains the ditch and a broad glacis, and which, with the castle, lies outside the municipal boundary. On the west side, about 45 yards within this boundary, is Irishgate-brow, the site of the Irish gate of the city. The Scottish gate stood on a somewhat similar position on the east side; and the third or English gate, guarded by the citadel, was at the opposite or south end of the city.

The castle is composed of an outer and an inner ward, the keep standing in the latter. The inner ward forms the eastern end or apex of the area, of which it occupies about a fifth, and it is divided from the outer ward by a cross wall, 90 yards long, upon the low salient of which is the inner gate-house. The other side of this ward are the east, 95 yards, and the south, 73 yards. The keep stands in the south-west angle, about 20 ft. from the two adjacent curtains, of which the south is thrown out about 18 ft. to gain space, and to form a shoulder flanking the outer gate.

The main entrance is from the city in the middle of the south front, 40 yards west of the keep, through the great gate-house. The drawbridge across the ditch was removed in the last century, and is replaced by a bridge of stone, which crosses the ditch and leads up to the gate-house, called John de Ireby's or Irby's tower. It opens into the outer ward.

The plan of this gatehouse is peculiar. It may be conveniently described as a plain structure, 44 ft. square and of 20 ft. projection in front of the line of the curtain. It is composed of a basement and upper floor, but the entrance, instead of passing, as usual, through the centre of the building, is at its east end. The south-east angle of the building is hollow, forming a nook or recess of 18 ft. each way, the two outer sides being walls 6 ft. thick, and about half the height of the main building. These walls are provided with parapets front and rear, so as to form a covered way, which communicates with the east curtain. In front of this inclosure is the outer gate, of 11 ft. opening, with a drop-pointed arch, placed in a sunk square-headed panel, intended to lodge the drawbridge when lifted. This entrance leads into an open chamber 12 ft. square, commanded by its outer walls. It is, in fact, a barbican, niched in a hollow angle of the gatehouse, with outer walls the height of the curtain. The barbican leads to a second archway, with a portcullis in a square groove, and a gate. Then follows a vaulted passage ending in another gate which opens into the ward. In the passage, on the left, is a lancet doorway opening upon a rising well-staircase, and beyond it a drop-arched door opening into the lodge. On the right hand is a shoulder-headed door, which leads, or did lead, into a staircase. In the front wall of the gatehouse are two corbels, which seem to have carried a small oriel, commanding the approach. Appended to the east side of the gatehouse, but entirely within the ward, is a smaller building, fitted on obliquely, as though an addition.

Entering the outer ward, the wall is seen at 40 yards' distance. The buildings within the ward are modern, of various degrees of ugliness, and painfully substantial. Some are detached and harmless; others are built into the old curtain, so as to conceal and more or less injure it. The curtain, which is extremely curious, and most of it original, is best seen from the outside. Besides the gatehouse, it carries but one mural tower,—an original one, open in the gorge, in the centre of the west front.

The gatehouse of the inner ward is placed upon the salient and central point of the cross curtain. It is called the Captain's Tower.

It is rectangular, or nearly so, about 32 ft. each way, with a projection from the curtain of 18 ft. There is one floor above the portal, which is central. The gateway is a low drop-arch, flanked by a pair of buttresses. The passage is vaulted, and has a door at each end, and at the inner end also a portcullis. Over the outside of the inner gateway is a ring of tracery, unusual, but effective. Much of this gatehouse is decorated, but the buttresses seem Norman.

Probably there was originally a ditch in front of this wall, and gate with a drawbridge, all now gone. In later days, a small half-moon battery was thrown up about eight yards in advance of this gate, and protected by a ditch of its own. This battery was connected by a light fieldwork, which extended from it to the outer gatehouse, laid in a zigzag form, so as to cover and protect a communication between the two gates, supposing the outer ward to have been breached and entered from the north-west side. These works have been removed and the ground made level.

The cross wall of the inner ward is original, strong, and well built, and backed by a ramp of earth and masonry, containing casemates, one of which has a perpendicular doorway. These were no doubt added, perhaps by Henry VIII., to enable the wall to carry cannon. In the front of this wall, a little north of the gatehouse, is a large pointed arch of late Norman aspect, now walled up, and which may have been the original entrance.

The keep is rectangular, 66 ft. north and south, by 61 ft. east and west, and as present only 68 ft. high. It is very plain. There is the common high and stepped plinth, from which rise pilasters, 12 ft. broad and 1 ft. projection, two on each face, meeting at and covering each angle, which is solid. There are no intermediate pilasters. The walls do not batter, but are reduced slightly by one set-off, at a different level on each face. The window-cases, though in the original positions, are not original. The parapet has been removed, and the summit thus lowered, vaulted, and converted into a platform for guns laid *en barbette*. The south wall is 8 ft. thick, the west rather more, and the east and adjacent part of the north wall, 15 ft. The interior contains a basement and two upper floors. It is divided by the usual cross wall, laid north and south. The presumption is greatly in favour of this wall being a part of the original design; it has, however, been so much altered that it is difficult to speak positively as to its age or original height. It is at present confined to the basement; but may have been removed when, in very modern times, the upper floors were vaulted.

The original entrance was on the north face, near the centre, the cill being about 4 ft. above the floor, and 3 ft. above the outer level. This was a plain flat-sided round-headed arch. It is walled up outside, but still open within as a recess. The present entrance is at the ground level, at the north end of the east face. It has a portcullis, and is probably the work of Edward I.; but it evidently takes the place of a deep original internal recess, for from its jamb on the left, a straight stair ascends in the east wall to the south-east angle of the first floor, as at Chepstow and Ludlow. The basement has been subdivided, no doubt when the new door was opened, into four compartments, which are vaulted in stone. One is a passage against the north wall, entered by the new door, and terminating in a well-stair in the north-west angle. This stair, now disused, is original, and led to the first floor, but probably no higher. From the passage doors open on the left into two vaults, divided by the cross wall of the building. The east vault is one chamber; the west subdivided by a cross wall into two, the inner entered through the outer. The vaulting is a plain pointed barrel, very evidently an insertion. In the smaller vaults are lancet stone seats. One of the doorways is of Perpendicular date. These vaults were evidently prisons, intended no doubt for the custody of Border rievors.

The first floor, about 16 ft. high, is vaulted in modern brick, and used as a mess-room. In its north side was a very large fireplace, flanked by Norman columns; but this is now walled up. This floor is now entered solely from the south-east angle, but formerly had also a door near the north-west corner, from the well-stair. There is also a door near the south-west angle, which opens into a second well-stair, which probably led to the upper floors and the battlements. This is now closed, and there is no direct way from the first to the upper floors.

The second floor is reached, at this time, by an exterior door in the west wall, approached by an exterior stair on the north face, and from the rampart on the east. This door is not original, and has been broken through at the place of a recess, probably looped, which led from the second floor into a mural chamber and garderobe in the east wall, and which are seen on the right hand of the door on entering. This second floor is about 16 ft. high, and has a timber ceiling. In the east wall, over the present entrance door, is a mural chamber, on the walls of which are some curious carvings by prisoners. One represents the Percy crescent and fetterlock, and another a coat of arms. From this floor a ladder leads through a trap into the upper floor,—a modern arrangement.

The third or upper floor is vaulted in modern brick to support the gun platform above. This platform is formed of large slabs of stone, laid down in 1812, which may also be the date of the vault. The walls above are 11 ft. thick all round.

The well of the keep is reputed to be Roman, though this is quite as likely to be true of the larger one in the outer ward. When the keep was built, the well, whether new or old, was included within the north wall, between the doorway and the north-east angle, and its pipe was carried up in the wall, no doubt with a lighted chamber at each floor, as indicated by a line of loops still seen in the wall. To make the well available when the keep was shut up as a prison, a hole was cut in the outside of the north wall, near the ground level, into the pipe of the well, and through this the water is still drawn up. The well is 75 ft. deep, and its present cill is 92 ft. above the sea level.

A curious external stair, probably Edwardian, has been built against the north face of the keep, and leads up, by the wall, to the ramparts of the curtain, and so to the door of the second floor of the keep. No doubt its original use was to lead to the ramparts only.

The keep, though much disfigured to make it carry artillery, and much obscured by its conversion into prisons, a mess-room, and store-rooms, is for the most part original, and if cleared, as it should be, of the vaultings of the sea-upper floors, would be a tolerably perfect specimen of a Norman keep, with a full share of mural chambers and appendages.

The hall and other domestic buildings, including what was called Queen Mary's Tower, most of which were standing at the close of the last century, were ranged at the south-east angle, upon the adjacent walls, as shown in Grose's view. All are now gone save a fragment of paneled work, part of the shell of a grand staircase of early Edwardian date, which led to the chief apartments.

It appears that in the east wall, near its south end, and, therefore, under the midst of these apartments, was, in the last century, a Norman postern with chevron mouldings and a portcullis groove, leading from the inner ward into the field, independent of the city. These details are shown in some of the late views of the castle. Grose, in 1774, shows, obscurely, the position and size of the gateway, and the Norman pilasters by which the adjacent wall was strengthened. The upper part of this curtain seems to have been Early English. All about this angle is now modern.

The space between the keep and its adjacent curtains has been filled up with earth, kept off from the keep by a sort of area wall, and thus the ramparts here, as well as along the cross-wall, are made wide enough for cannon. The upfilling is modern, and should be cleared out.

A walk, called the "Castle Walk," or Castle Bank, has been laid out at the foot of the curtain outside, whence its details may be conveniently studied. The south-east angle, as has been said, is modern, but proceeding north and westward the old Norman part comes into view, and on the north side of the inner ward the Norman pilasters are seen rising from a plinth, but partly concealed by six enormous stepped buttresses of great projection, and decorated or Perpendicular date, no doubt a great support to the wall and very curious, but, in a military point of view, very much in the way.

From near the centre of the north front there was a spur work, composed of a strong curtain wall, carried down the slope and ending in a round tower. This was of course intended to annoy the enemy should he attack on the west side. The whole is now removed, possibly it was an addition. The north face of the curtain and its north-west corner have been much restored in the Decorated period, but most of

the west wall is original. Near its centre is a small tower, like the Alnwick Garnet Tower, 28 ft. broad by 15 ft. deep, and about 9 ft. projection, and open at the gorge. It is wholly Norman, of the date of the keep. It has a stepped plinth about 10 ft. high, with six sets-off of 2 in. each, and on the front face is the central pilaster, dying into the wall at the base of the original parapet. In its north face, high up, is the shoot of a garderobe flush with the face of the wall, and lower down a stone water-spout. About 10 yards south of this tower are traces of a small postern. The wall connecting the castle with the city on this side is of Norman origin, but has some buttresses apparently Edwardian, in one of which is a garderobe shoot, similar to that of the garnet tower. Upon this wall, south of the ditch, is King Richard III.'s, or *Tile Tower*, 26 ft. broad, by 20 ft. deep, of no internal projection. This looks Edwardian, but probably is altered to Norman. It stands about thirty yards north of the city boundary. It is said that a few years ago a subterranean passage was discovered between the tower and the keep, and was at once closed up. This is stated in the "History of Carlisle, 1838," and should be true, but it seems improbable, for the passage must have dipped deep to pass under the wall.

The south wall of the castle is for the most part original, the Norman pilasters being seen west of the gatehouse. East of it, as far as the keep, the wall seems Edwardian, but beyond that, where it belongs to the river ward, it is Norman.

The wall between the south-east angle of the castle and the city, about 90 yards long, is mixed Norman and Edwardian, and as it crosses the ditch it makes a zigzag or shoulder, in which is a large round-headed gateway, either original or in the place of an original opening, intended, probably, to allow of cattle being driven on to the esplanade and ditch from the meads on the approach of an enemy. Probably there was a way from this gate along what is called the Lady's walk, at the foot of the south wall, as far as the great gate. South of the postern, near what is called the City stone, are traces of a large bastion, probably a part of the city defences. The postern is now walled up, and a bank of earth raised against it behind.

The *envelope* wall of the castle, being built against the natural slope, is outside about 28 ft. and inside 18 ft. high. It varies from 8 ft. to 10 ft. thick.

The plan of the castle—a headland converted into a detached camp by a cross-ditch—may be British or English, but the general outline of the masonry, which follows the lines of the earth-works, is Norman. The Norman engineer evidently built the *envelope* wall along the edge of the slope, planned the inner and outer ward, and the keep. The castle is generally attributed to William Rufus, who was here in 1092, when Carlisle, from a Scottish, became an English frontier place. The sea was created by Henry I., and the first bishop consecrated in 1183, when probably the city wall, of which a part may still be seen below the deanery, was built. Carlisle was taken by the Scots, and besieged by Stephen and by John. The latter most fidely sovereign was here four times in the years 1201-6-8, and 1212. In 1204 the constable of Chester was ordered sixty marks for fortifying the castle. In 1205 certain grass out in the neighbourhood was to be stored there. In 1215 Robert de Ros was custos of the castle, but in 1216 Robert de Vipont seems to have been in charge of the repairs and the garrison.

In 1222 Henry III. ordered the houses within the castle to be repaired, and two ballists of horn and two of wood were to be sent there. Walter Manclero was in charge. In 1222 the garrison was continued, and in the king's pay.

Edward I. used Carlisle in the Scottish wars, and was here to 1293, after the great fire, which much injured both city and castle in the preceding year. Between 1293 and 1307, he was here seven times, often for many days. He kept his last birthday here in 1307, and went forth hence to die in the immediate neighbourhood. To his reign are to be attributed most of the Edwardian additions, repairs of the wall and keep, the gatehouses, and the domestic building, of which only traces remain. In 1302, Bishop Hatton, then governor, expended 275l. 4s. 11d. in works. The Great Hall, supposed to have been then erected, needed repairs in 1344.

Camden says that Richard III. repaired the castle, and the six marvellous buttresses may be

of that date, though they look earlier. Henry VIII. appeared to have much altered the castle, probably to make it carry artillery. He built the block-house or citadel at the south end of the city, and armed it with cannon, and he repaired the city walls. His work was probably done in haste; for, in 1563, the whole was in great decay, as appears from a survey made by the queen's order, printed by Grose. Three sides of the keep were in a dangerous state. The Captain's Tower wanted parapets, as did much of the inner curtain, and all the glass of the great hall and great chamber was decayed. In the outer ward was an open breach, 70 ft. long, where the wall had fallen in 1557. The result of this survey was the building a chapel and barrack, and no doubt the reparation of the wall and keep.

Mary Queen of Scots found some sort of accommodation here when she fled from Scotland, and gave name to the lodgings lately pulled down. The castle suffered somewhat during the great rebellion, but escaped being dismantled. It was battered from the west, and taken by the Duke of Cumberland in 1745.

Probably the greatest and most destructive changes are those of modern date. The hall was taken down in 1827, and the chapel and other buildings in 1835.

There are traces of two light field-works in the meads north of the castle, the smaller in the rear of the other, evidently prepared for the reception of the Scots, in 1745, as they approached over the brow at Stanwix.

The castle is far too confined and too much a part of the city for the purpose to which it is applied. The military should be removed, the modern buildings cleared away, the keep restored, and the area laid out for the pleasure of the people of Carlisle, and so as to show off the remains to the greatest advantage.

In the neighbourhood of Carlisle are other military works deserving notice. Such is, at Hayton, Castle-hill, a mound 12 ft. high, and 100 ft. diameter at the top. Linstock Castle was built before 1133, but is now little more than a farm-house, into which it was converted in 1768. Scaleby Castle was built by Robert de Tilhol, who had licence to crenellate it in 1307. It was largely repaired in 1596, but retains much of its original character, and has always been inhabited. Naworth Castle was the chief seat of the English Barony of Gilleland, at the Conquest granted to Hubert de Vaux, from whom it descended through the Dacres to the Howards. The present structure was the work of Ralph Lord Dacre in 1335, and is a good example of the quadrangular castles of that date. Ross Castle was in the Barony of Dalston, and is attributed to 1380, when Bishop Kirby had a licence to crenellate. It was also a moated quadrangle. Highhead Castle, on the Iva, is drawn by Buck. Here was a castle in 1326, but the licence is dated in 1342. The castle was rebuilt in 1714. Dalston Hall is a castellated house, probably of the middle of the fourteenth century.

The Roman wall may be traced at various points, both east and west of the passage of the Eden. It is well seen in a field close to Draydykes, a stiff, square farmhouse, built on the site of a Roman Castellum, and possibly of a later period. The inscription "Dis Manibus," built into its walls, is said to have been dug up in Carlisle, near the old citadel. G. T. C.

THE LONDON AND WESTMINSTER BANK BUILDINGS, TEMPLE BAR.

DURING the last few months the Temple Bar Buildings of the London and Westminster Banking Company have been undergoing extensive alterations and improvements, both externally and internally, from designs furnished by Mr. Edward Barry, R.A. The works, which have been carried forward under circumstances of considerable difficulty, especially those in the interior of the building, are now nearly completed, and whilst the architectural ornamentation of the structure externally has given to it a striking appearance, and rendered it a prominent feature amongst the buildings adjacent to it in this part of the Strand, the extension and re-arrangement of the banking-house within have given greatly increased facilities for carrying on the business of the bank itself.

The former unpretending brick elevation to the Strand has been replaced by a new frontage in Portland stone, which is carried up to the first-floor windows. The old entrance to the

bank in the centre of the elevation has been removed, and in its place an additional window has been substituted. A new entrance has been erected at the east angle. This entrance consists of a handsome porch, brought forward several feet beyond the main body of the elevation of the building, and extending to the Strand footway. On each side of the porch entrance there are rusticated piers, from which springs an arched headway moulded, in the centre of which is a large carved key-stone, representing a colossal figure-head, and over this is the word "bank" in stone letters, intertwined with carved ornamental foliage. The porch entrance has a vaulted ceiling, divided into three compartments, which are surrounded with carved mouldings, composed of fruit and flowers. The return frontage on the west side of the porch to the main elevation, as well as the elevation itself, is uniform with the front of the porch, rusticated piers being carried up between each window, which have arched headings with covered key-stones, representing large figure-heads, similar to that over the entrance. The porch and window-heads are all enriched with carving. The west side elevation of the porch is surmounted by a carved panel containing the bank monogram supported by cornucopias containing symbols of trade and the various sources of wealth, whilst above this again there are a cornice and five small ornamental panels. The carving was executed by Messrs. Mabe, of Storey's-gate, Westminster.

The banking-room has been increased to double its former size, and now contains an area of about 2,300 superficial feet, being 23 ft. in width by 85 ft. in depth from the Strand frontage. This greatly-increased space has been obtained by utilising what was formerly an open courtyard at the rear of the building, and by also taking in a portion of the old strong-rooms. The banking-house, so enlarged, at the rear, is lighted by lantern light, which also ventilates the apartment.

The new strong-rooms which have been constructed in the basement of the building have been one of the heaviest portions of the work, and also that which has been attended with the greatest difficulty. It has already been stated that formerly these were on each side of an open courtyard, but that along with the latter they have now been added to the banking-house. The former strong-rooms were constructed of brick with vaulted ceilings, but the new apartments for this purpose, which have just been erected in the basement of the building, have been constructed upon an entirely different principle so as not only to be fire-proof, but also burglar-proof. Before proceeding with the construction of these strong-rooms the drainage under the building was re-arranged, the drains being lowered 2 ft. 6 in. below the foundation, and in order to effect this the walls of the building had to be underpinned. In carrying out this portion of the work the drains were diverted in order that none of them should pass immediately under the floor of the strong-rooms, the object being effectually to prevent damp. This suite of rooms contains an area of 1,200 superficial feet. The floors are 2 ft. 9 in. in thickness, and are composed of brick inverted, upon which rests a layer of Portland cement concrete. Resting upon this again is another layer of asphalt 1 in. in thickness, the more effectually to prevent the books and documents of the bank from being affected by damp. The surface of the floor is then laid with 4-inch York stone. The walls and ceilings are composed of hard brick and Portland cement, the outer surface being faced with wrought-iron plates $\frac{1}{2}$ in. in thickness, the entire thickness of the walls being nearly 2 ft. The roof is vaulted in hard brick, the spandrels being filled in with Portland concrete cement. The entrances to the different strong-rooms are fitted with Chubb's iron doors and locks, with external doors, together with outer grided gates in addition. There is a powerful hydraulic lift communicating with the banking-room above, for the purpose of carrying the books and bullion of the bank to and from the strong-rooms. This lift is capable of carrying several tons weight if necessary. It was supplied by Messrs. Owens & Co., of Whitefriars.

The whole of the works have been executed by Messrs. Cubitt & Co., of Gray's Inn-road, under the superintendence of Mr. Cook, as clerk of works, and Mr. Rowe, as foreman for the contractors.

It may be mentioned that the building is associated with several recollections of historical interest, as being one of the oldest banking-houses in London, and second only in age to that of the

Messrs. Childs. It is said originally to have been in the occupation of Messrs. Snow & Walton, who, during the period of the Commonwealth, carried on business there as pawnbrokers, under the sign of the "Golden Anchor." This firm suspended payment about 1670, as did also several banks, owing, as was said, to the tyranny of Charles II. The occupation of the bank by Messrs. Strahan, Paul, & Bates in more recent times, is identified with contemporary history.

ARCHITECTURE AT THE ROYAL SCOTTISH ACADEMY.

ONLY one side of the small dimly-lighted octagon, to which the architectural drawings are relegated, is occupied by them. As a whole they are far from being attractive to the general public; none of them are got up in brilliant colours; and supreme efforts at unattainable grandeur of effect are not attempted. Neither are there any of the wild attempts at originality which appeared last year, but generally the designs are appropriate and are characterised by repose and refinement of treatment. None of them are remarkable as regards subject (the buildings illustrated being comparatively small and unimportant), with the exception of the "Interior View of the Catholic Apostolic Church, drawn by Mr. A. H. Haig, now building at East London-street, Edinburgh,"—Robert Anderson. This church was the subject of a limited competition. Last year Mr. Anderson exhibited a Gothic version of the interior, but as the instructions to the competitors were to the effect that the style was to be Norman, it must have been only an alternative suggestion. Stately and graceful as that interior was, that which has been decided upon will be even more remarkable and uncommon. A wise discrimination has been displayed in eschewing the use of zig-zag mouldings, cushioned caps, &c., and fixing upon the last phase of the style as used in France just before the introduction of the Gothic style, although none of the openings are pointed. The baldachino, canopied throne, and pulpit have a Lombardic leaning, and their light richness acts as a foil to the massive simplicity of the general design. The church consists of a spacious nave, without aisles, lighted by plain, deeply-recessed windows high up in the walls, in the thickness of which a triforium passage is shown. The chancel, which terminates in an apse, is of unusual size; it is flanked by aisles of two bays; and shafts, statuary, &c., are used in the clear-story, the richness of effect increasing as the eyes travel eastward. The drawing is a work of art far superior to most of the paintings in its immediate vicinity; and had it not appeared amongst the architectural drawings, it might have been mistaken for a view of an existing ancient edifice.

Mr. William Leiper is largely possessed of the inventive faculty; he never repeats himself, and his designs exhibit careful study and chastened taste. "Bank-street United Presbyterian Church, Brechin," is a small, sober, unpretentious edifice. The architect has not, as is too often done, overstrained the means at his command, and attempted to make much out of little. "Proposed New Established Church, Glasgow," has a gracefully-proportioned spire skillfully united to the body of the church, which is simple and effective both in outline and detail. "Design submitted in Competition for Church, Glasgow," of which there are both exterior and interior views, seems to be founded upon the Santa Chapelle in Paris. There are very low aisles, used only as passages, carried along the sides and round the apical east end; the whole light is derived from the large windows of the clear-story, and the roof is vaulted. If adopted, it would have been an appropriate and dignified edifice. If "Free St. Enoch's Church, Glasgow,"—Campbell, Douglas, & Sellar,—is the successful design, we have another example of the manner in which committees are swayed in their choice. The body of the church is starved, poor, and commonplace, the whole effect being concentrated in a tower terminated by an open crown taken from that of St. Nicholas, at Newcastle.

"Evangelical Union Church now being erected in West Cross Canseway" (Edinburgh),—R. Thornton Shiells,—is a badly-drawn perspective of a very poor design. The site of the church is a circumscribed one, jammed in between tall houses in a narrow thoroughfare. The vestries and other accessories are placed on the ground-level, above which is the church (with galleries)

which is reached by two flights of stairs. This arrangement is good in the circumstances, inasmuch as height is given to the elevation, preventing it being swamped by the surroundings; but the raking windows of the stairs are poorly managed, and the general aspect is anything but ecclesiastical.

To design a Gothic church with galleries is a problem to which Mr. John Russell Walker has set himself, and he has done so in a satisfactory manner so far as the exterior is concerned. There are several other designs for churches, all of them extremely commonplace. A "Suggestion for an Altar-piece," by Arthur Clyne, is an artistic production possessing considerable breadth of treatment. The detail is carefully and not lavishly applied, and the general effect dignified and appropriate.

The "New Buildings for the Scottish Amicable Life Assurance Society, St. Vincent-place, Glasgow,"—Campbell, Douglas, & Sellar,—are Italian Renaissance in style, the semicircular-headed arch being used throughout. The building is a handsome one, and is conscientiously carried out without any attempt at originality of treatment.

"Cargen House," and "Treave House, Kirkcudbrightshire," are two compact, comfortable-looking mansions, in which Messrs. Peddie & Kinnear have given to the Scottish Baronial style a modern aspect, without detracting from its picturesque qualities.

"The Mansion House of Glenapp, Ayrshire," is one of those stately châteaux so many of which it has fallen to the lot of Mr. David Bryce to design, and it bears a strong family resemblance to some of his kin.

The "Mansion House erecting in the Queensferry-road, Edinburgh," displays some of the peculiarities which characterise the designs of Mr. Frederick Thomas Pilkington, with somewhat of an Italian leaning, and less effort at picturesque effect.

"Sketch Design for a Block of Mansions, Mayfair, London, 1868,"—William Scott Morton,—if carried out would certainly have been a marked feature in the Domestic street-architecture of the West-end. Lanky turrets, high-pitched gables, and pointed roofs form conspicuous features in the elevation.

"Designs for Improvements on Married Soldiers' Quarters, Edinburgh,"—R. Moreham, jun., shows how an ugly, deformed row of buildings may be converted into a picturesque and interesting group. We hope that the alterations which are being carried out will be as good as this, but we have doubts on the subject, considering the quarter from which they emanate.

MICHELANGELO BUONAROTI.

In a paragraph of the *Builder*, p. 129, it is announced that the four-hundredth anniversary of the birth of Michelangelo will be celebrated in Florence, and the committee for carrying out the arrangements were seeking assistance. Such being the case, it may not be out of place at the present time to glance briefly at the works of one who is known, by name at least, to the veriest tyro in art. His first attempt in oil-painting was a representation of the Temptations of St. Anthony, and the effort drew praise even from Ghirlandajo, who was jealous of his young pupil. About this time Lorenzo de' Medici, better known as the Magnificent, resolved to set up a school of sculpture in Florence, and to that end made a garden which he supplied with antique statues and busts. This garden was free of entrance to all Florentine students of art. The sight of the works which adorned it so wrought upon his mind that he resolved to renounce painting, and devote himself to sculpture. Lorenzo was so pleased with the work of his garden-visitor, that he made him an inmate of his house during the remainder of his life. Lorenzo died in 1492, and his brother Piero, who succeeded him, treated the artist in a different spirit. Of the prince's insulting command thus writes Mrs. Browning:—

"I do believe, dearest Angelo,
That winter hour in Via Larga, when
Thou wert commanded to build up in snow,
Some marvel of thine art, which straight again
Dissolved beneath the sun's Italian glow,
While thine eyes still burnt with the plastic passion,
Thaw'd, too, in drops of wounded manhood,
Since
Mocking alike thine art and indignation,
Laugh'd at the palace window the new prince."

But the laughter was not for long. Angelo exiled himself to Bologna, where he contributed

two statues to the church of the Dominicans, and in a year after returned to Florence. His statue of a Sleeping Cupid, which he had executed in the meantime, so attracted the attention of Cardinal Giorgio, that he was by him invited to Rome. During his residence in Rome he devoted his entire time to the study of sculpture. From Rome he was recalled to Florence to assist in carrying out several important art-works projected by the Government of the latter city. Among these was the completion of a gigantic statue of David, which was left uncompleted by Simon da Fiesole, who found the task beyond his powers. During this visit to Florence his pencil also came into play; as a companion cartoon to one executed by Leonardo da Vinci, for the hall of the ducal palace, he produced his cartoon representing an episode in the wars of Pisa. Of this grand work nothing remains but a few dismembered fragments, yet while it existed in its entirety it was the study of artists from all countries. Angelo had not entered on his thirtieth year when he was again recalled to Rome by Pope Julius II., and by him commissioned to make his monument. Every monument under certain conditions requires a shrine. Angelo looked round Rome, and saw no fitting depository for his work when finished; he then existing St. Peter's was an old church not at all adapted for so superb a mausoleum, and, therefore, he proposed the erection of a new St. Peter's, and this he began by substituting for the Saracenic design of San Gallo, the architect at first employed by Pope Julius, a more Christian and becoming model in the shape of a Greek cross. Fuseli, speaking of Angelo's design, says, "This fabric scattered into infinity of jarring parts by his predecessors, he concentrated; suspended the cupola, and to the most complex gave the air of the most simple of edifices." To the completion of St. Peter's, which he never saw completed, he devoted the remainder of his life; but yet during the time he could find hours of leisure, which he spent in adorning the Capitol with magnificent buildings, finishing the Farnese Palace, furnishing many architectural designs, and directing the construction of the fortifications of the Eternal City and of Florence, the chief town of his own Tuscany. The latter years of his life were embittered by circumstances connected with the building of St. Peter's. It was requisite, among the many men employed in the undertaking, to dismiss some and promote others, and on this account he was beset by cabals and harassed by opposition, and even combinations were organised to oust him from his office, but on all occasions he met with the support of the Pontiffs. He died on the 17th of February, 1563, and his last words were,—*"Remember in your passage through this life the sufferings of Jesus Christ."* The committee in charge of the celebration is desirous of making up a catalogue of all his works, as an architect, a painter, and a designer. These works, it may be said, are spread over the civilised world. Rome and Florence contain many; Munich, Dresden, Berlin, Paris, and the public and private galleries of England are the happy possessors of others. What amount of art-work he did no one knows. A slight hint as to its multifariousness may be gleaned from the headings of some of the chapters of one of his biographies,—*"Finishes a Basso-relievo of the Battle of Hercules with the Centaurs"; "Completes a Statue of Bacchus now in the Florentine Gallery, La Pieta in St. Peter's, and other works"; "Paints a Holy Family for Angelo Doni"; "Is employed to make a grand Mausoleum for the Pope"; "Makes a Bronze Statue of the Pope"; "Paints the Ceiling and Walls of the Sistine Chapel"; "Builds a Library and new Sacristy to the Church of St. Lorenzo, also two Monuments for the Dukes Giuliano and Lorenzo"; "Is appointed Military Architect and Master of Ordnance to the Republic"; "Paints the Last Judgment in the Sistine Chapel"; "Is appointed Architect to St. Peter's,—accepts the Appointment on the express Condition of receiving no Salary." &c. These are but a tithe of what he accomplished. Considered either in relation to the degree or the variety of his talents, the man to whose memory Florence is to do honour in the March of the coming year holds a foremost place among the great men of an age which has left the most durable impressions upon the arts and literature of Europe. As a painter and sculptor he created his own style, which, by its originality, has remained unapproachable either by rivalry or imitation. As an architect he con-*

verted the incongruous structure of St. Peter's into the grandest temple ever designed for the worship of the Eternal. As a painter, despite his proclivities towards sculpture, his reputation is, perhaps, more permanently based on his paintings in the Sistine Chapel. As a poet he was great, but not among the greatest. To apply the opening of one of his sonnets to himself—

"How shall we speak of him, for our blind eyes
Are all unequal to his dazzling rays?"

Michelangelo was one of the few great men who have been honoured in their own country and generation. The writer of the above has before him many letters (the ink has faded, but the characters are legible) written to, or answered by, Michelangelo. In one of these he is addressed by Benvenuto Cellini as "*Eccellentissimo o divino preceatore mio Messer Michelagnolo*." ("To my most excellent and divine preceptor, Master Michelagnolo")—and the great master Cellini meant not this for flattery.

It seems strange that the 400th anniversary of the birthday of Buonarroti should be celebrated in 1875, seeing that he was born in 1474. Of this there cannot be the slightest doubt, Ascanio Condivi, his intimate friend, who wrote and published "*Vita di Michelagnolo Buonarroti*," ten years previously to the death of the great sculptor, painter, and architect, says, "This same Podesta of Chiusi and of Caprese nel Casentino, found himself the father of this little boy (Michelangelo), on the 6th day of March, on a Monday, at four in the morning, in the year of our salvation, 1474."

MARSHAL MAC-MAHON ON PUBLIC WORKS IN PARIS.

THE speech of the President of the Republic at the Paris Tribunal of Commerce was something more than a mere rhetorical declaration of abstract principles. It promised definitely a rapid revival of the building interest in Paris, and consequently a renewal of activity in all the vast correlative branches of industry. The indication of such a perspective was the surest way of demonstrating the stability of the Government. The work commenced by Baron Haussmann is to be completed. The large population of builders, masons, stone-cutters, &c., allured to Paris by the famous imperial prefect, will again be conciliated by the 6 francs per day of the Cæsarian epoch. Not only has this population contributed during the last four years 25 per cent. to the indigent classes of Paris, but the State itself has suffered in a somewhat similar proportion. In 1869 the tax on the measurement of stones for building yielded more than 900,000 francs per annum. Last year the receipts did not amount to 200,000 francs! The eloquence of these figures has convinced the President of the Republic that an immediate resumption of public works in Paris is necessary, not only to save Parisian industry from utter stagnation, but to preserve the present Government from hopeless collapse.

A summary description of the works proceeding, or about to be undertaken, may give some idea of the magnitude of the Presidential programme. Several important changes are to be effected in the buildings of the Hôtel Dieu. The hospital has never yet been completed, and already alterations are judged necessary by a committee of medical authorities and municipal councilmen. The hospital is situated in the island of La Cité. Its ventilation has been condemned; a considerable portion of the internal walls are to be levelled, and the number of beds reduced from 800 to 450. It is estimated that these alterations cannot be completed before the end of next year. The second great work announced is the construction of a bridge across the Seine, which, starting from the axis of the Boulevard Saint Germain, shall cross the island of Saint Louis, and abut on the opposite Quais des Celestins. Across the point and narrower arm of the river the bridge will be composed of one cast-iron arch of 66 metres span; at the larger arm it will number three arches of 44 metres in width each. The bridge will rest on free-stone abutments. The contracts for the different portions of the work have just been advertised. The cost is estimated at 2,840,000 francs, of which the State will contribute 1,390,000 francs. The works will be commenced early in May. Two railway stations are to be constructed; one at Grenelle and another at the Glacière-Gentilly. Moreover, the President of

the Republic has announced that a new circular railway is in course of projection.

Another decision arrived at in the interest of the building trade is that which has just been taken with regard to the state lands in Paris. These lands are the sites of buildings destroyed by the Commune: the Ministry of Finances, the Palais d'Orsay, the Luxembourg, and the Grenier d'Abondance. They are to be disposed of to contractors at an early date, and in order to fulfil some of the Presidential promises, a clause will be inserted in the contracts which shall compel the possessor to build immediately. A credit of 700,000 francs has been obtained with some difficulty from the Committee of the Budget for the completion of that wing of the Tuileries known as the Pavillon Marsan. This and the Pavillon de Flore are the only portions of the ancient palace that can be preserved. The capital question for most Frenchmen is that of the new forts. The works necessitated by the decisions of the Committee of Fortifications will be commenced on the 1st of March. The new armed circle will attain a minimum of 170 kilometres. The present circle of forts will be retained as a second line. The outer circle will be composed of smaller forts, constructed according to the polygonal system recently modified by a colonel of engineers. They will shelter 800 men at most, and be protected by iron-clad turrets. These new constructions are twenty in number, and will be situated at a distance of from nine to ten kilometres from the old enceinte.

M. Alphand, the well-known Director of Public Works of Paris, will have the general supervision of nearly all these undertakings. The chief architects employed are MM. Diet, Duc, and Daumet.

THE SOUTHWARK AND VAUXHALL WATER COMPANY'S NEW WORKS AT NUNHEAD.

FOR more than two years past new works of great magnitude have been in course of construction for the Southwark and Vauxhall Waterworks Company. They include four immense reservoirs situated on the high ground at Nunhead, together with a spacious engine-house, containing powerful direct-acting engines, and four boilers, each 30 ft. in length, by 6 ft. in diameter. The engines and boilers are being supplied by Messrs. Harvey & Co., of Hayle, in Cornwall. The works also embrace the laying of no less than fifteen miles of main pipes, 3 ft. in diameter, in order to connect the new reservoirs at Nunhead with the company's intake on the banks of the Thames, near Teddington Lock. These mains have been laid by Messrs. Aird & Son, of Belvedere-road, Lambeth, who have also executed some of the heaviest portions of the work in connexion with the construction of the reservoirs. The new mains from the neighbourhood of the company's intake, are carried under and along several main thoroughfares in a northerly direction, and after being carried for a considerable distance through the Wandsworth and Clapham roads, are thence continued along Acree-lane, crossing Brixton-road, into Coldharbour-lane, passing along its entire length to Camberwell, at the foot of Denmark-hill, just above High-street.

We have already stated that the reservoirs are four in number, and it may be added that, together with the engine-house and other buildings, they cover an area of upwards of 14 acres. They are constructed on different levels, two on the high level and two on the low level. The high level reservoirs are four acres in extent, with a storage capacity of six million gallons of water; whilst the area covered by the low level reservoirs is double that of the others, namely, eight acres, and equal to a storage of twelve million gallons, the aggregate capacity of the four reservoirs being eighteen million gallons, thus giving some conception of their enormous extent. The engine-house and other buildings, noticed below, have been erected on a plot of ground situated between the higher and lower reservoirs. The extreme depth of each reservoir is 20 ft., and the floors are made perfectly watertight by a surface of concrete and puddle 12 in. in thickness. The embankments of the reservoirs are built in terraces, each 16 ft. wide, with a slope between each equal to the width of two. They are faced and made dry with red ballast, and drained with pipes. All the reservoirs are firmly covered in, with the view of securing the water from the action of the weather and atmospheric impurities, and on the outer surface above a turf will be laid down, which will answer

the double purpose of still farther promoting the purity of the water, and also rendering the area above capable of being utilised for grazing purposes, or ornamentally laid out. The coverings or roofings are supported by brick arches springing from piers, the space above and between the arches being filled in with puddle and soil. Each reservoir has one inlet, together with an overflow pipe of 30 in. in diameter, and in the construction of the works a system of valves has been introduced, which will admit of the whole of the reservoirs being quickly run dry, even should they be fully charged with water. The good quality of the water is further provided for by gravel and sand filtering-beds, through which the water will pass in its course from the inlet to Nunhead.

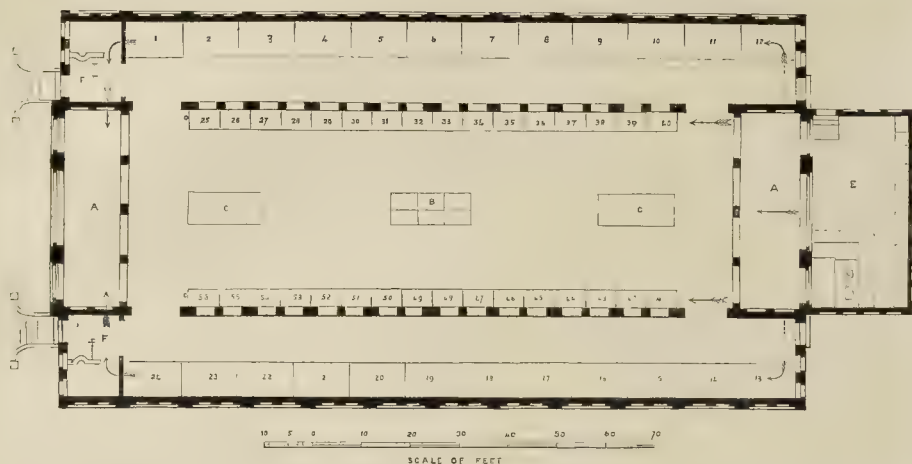
The engine-house, situated between the lower and the higher reservoirs, is already built. It has a water-tower, 70 ft. in height, prominent for several miles around. The materials used in the structure are white Suffolk brick, with stone and red brick dressings. Almost immediately adjoining the engine-house is the manager's residence.

The whole of the works are now fast approaching completion, and it is confidently expected that all will be in readiness for commencing the supply in the course of the ensuing summer. The laying of the great mains, already referred to, which has been a heavy portion of the undertaking, has just been completed, and the reservoirs themselves are now almost finished; whilst the boilers have also been fixed in the engine-house, and the engines themselves are expected to arrive in the course of a few weeks. The estimated cost of the works, exclusive of the value of the land, is about 220,000l.

The works were designed by Mr. Just, C.E., in conjunction with Messrs. Joseph Quick & Son, who have carried out the undertaking, assisted by Messrs. Aird & Son, as contractors for the building portion of the work.

MOUNT SINAI.

Forty years ago Dr. Beke published a small pamphlet which was devoted to the consideration of the particular localities of Horeb, Mount Sinai, and Midian. The two former places, so memorable in the history of God's chosen people, are usually considered to be situated within the peninsula formed at the head of the Arabian Gulf, or Red Sea of modern geographers, by the two gulfs of Suez and Akaba. According to the hypothesis of Dr. Beke, the gulf of Akaba is to be regarded as the Yam Suph, or Red Sea of Scripture, and consequently the sites of Horeb and Mount Sinai must necessarily be placed eastwards of that sea. In support of his hypothesis, Dr. Beke, although beyond the allotted "threescore years and ten," has this year, through the kindness of the Khedive, been enabled to explore the country eastward from the gulf of Akaba, and the telegraph briefly reports that he is confident in having discovered the true Mount Sinai, which is known to the Arabs as Jebel-el-Hur, or the mountain of light, which, even at the present time, is held in such high veneration that, whenever an Arab comes in sight of the mountain, he kneels down and prays with his face towards it. So far Dr. Beke; but Lepsius, and he is supported in his theory by Burckhardt, finds Mount Sinai in Jebel Serbâl. Serbâl is the most magnificent mountain of the peninsula. The earliest traditions are in its favour,—its identity is asserted by Eusebius and Jerome. A second theory is that of Ritter, the geographer, who credits Serbâl with the reverence of an early sanctuary, but claims that Jebel Mûsa is Sinai, and that the wady or valley which its highest summit overhangs is the camping spot of the Israelites. There is one objection which applies equally to Jebel Serbâl and Jebel Mûsa, namely, insufficiency of ground at their bases to accommodate the multitudinous wanderers. Upwards of twenty years ago Robinson advanced his theory that the modern Horeb of the monks, the lower face of the Jebel Mûsa, crowned with a range of magnificent cliffs, the highest point of which is called Ras Sasafah, is the scene of the giving of the Law, and the mountain peak into which Moses ascended. The matter, as yet, is one of mere conjecture. Should Dr. Beke have succeeded in finding a mountain and a valley which meet all the requirements of the local description in Holy Writ, he will deserve the thanks of all who take an interest in the important subject of Biblical Topography.



Nos. 1 to 24, Deep-sea Tanks; and Nos. 25 to 56, Tidal Tanks. Reserve Cisterns under.
A. A. Ocean Tanks. B. Table Aquaria. C. C. Fresh-water Tanks. E. Engine-house and Reserve Tanks. F. F. Offices and Entrances.

THE MANCHESTER AQUARIUM.—Ground Plan.

THE MANCHESTER AQUARIUM.

THIS Manchester aquarium, which is just on the eve of completion, though widely different in character of structure from its now celebrated predecessors at Brighton and Sydenham, combines much that is excellent in both of these exhibitions. No more admirable site in an inland town could have been selected for its erection. Alexandra Park, of which it forms the chief and most important feature, fronting its beautiful lawn, is one of the most delightful retreats in the west-end portion of the busy city of Manchester and the borough of Salford. It is easy of approach, omnibuses running constantly at low fares from the centre of the city.

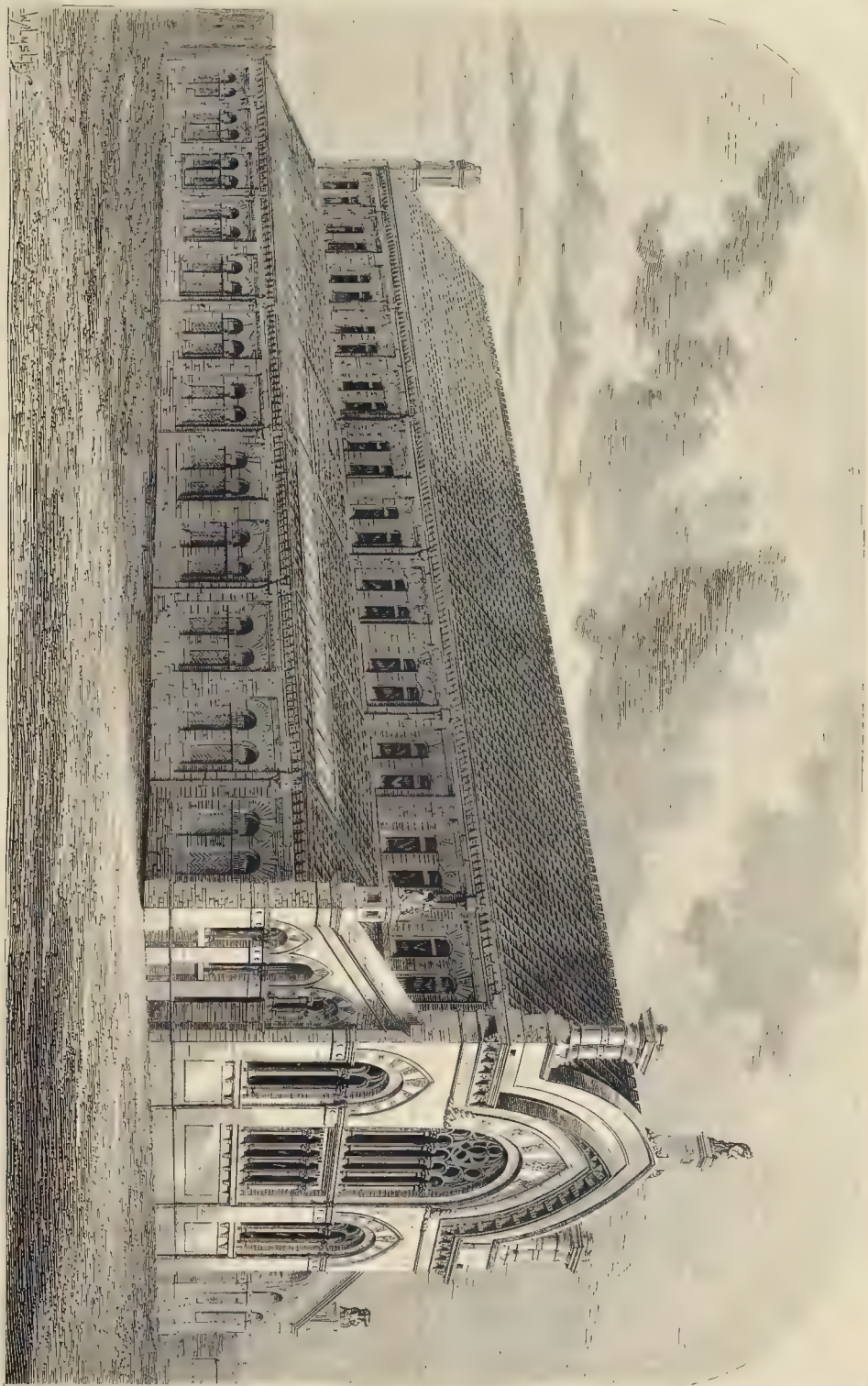
Our first impression, as it sprang fully into view, when we crossed the park to the chief entrance, was its ecclesiastical appearance; it might be mistaken for a gigantic temple, erected for some popular preacher. Its Italian-Gothic frontage, with rows of clearstory windows, and roofs at side, somewhat confirmed these impressions; but on entering its interior they were quickly dispelled. The building extends 174 ft. in length. It is built with white Ruabon brick, enriched with red Runcorn stone dressings, carved in various designs and figures. The roof is of Taylor's patent red and black tiles, formed into a pattern, which renders the building a conspicuous object throughout the surrounding district. But these tiles perform a more important office. They are nonconductors of heat. "I was in this building," the curator told us, "the hottest day we had last summer, when the thermometer stood in the shade more than 100 deg., and it was then full of workmen. All were broiling outside, but here it was as cool as a spring evening."

Passing through the lobby we enter the north corridor: it is nearly a repetition of that at the Crystal Palace, — a long row of glass-fronted tanks on the right-hand side, and a row of arches or bays on the left. These tanks are very capacious, eleven of them measuring 10 ft. 6 in. by 5 ft. 6 in. in depth, and from front to back, 6 ft.; the central tank of the row being 21 ft. long. Doubtless the experience gained both at Brighton and Sydenham was a valuable aid in the designing of these tanks, and also those of the south corridor, which is similar. They are a medium of their prototypes, avoiding the gigantic size of the first-named, and the general miniature size of the second. These twenty-two

receptacles which Mr. Hooper, the curator, properly names the deep-sea tanks, are those in which it is proposed to keep the numerous tribes of the familiar and well-known forms of marine life that are captured in British waters. From each extremity of these corridors, which run the full length of the building, we enter its central and principal portion, a saloon or hall of large size being 150 ft. long, 40 ft. wide, and 54 ft. to the roof principals. Down each side of this hall, beneath the arches which divide it from the corridors, are placed the tidal tanks, of which more presently. Perhaps one of the most pleasing features is the arrangement and decoration of these arches. It is absolutely necessary that little or no light should pass through them to the transparent fronts of the corridor tanks, therefore it is intercepted by filling these spaces with growing evergreen ornamental plants, placing them on black marble sills, supported by carved bracket-heads, which form fountains for the tidal tanks below them. Again, above these arches are the clearstory windows reaching to the cornice of the open-pannelled roof of polished pitch pine, supported by eleven principals of the same timber. Beyond this and its tanks there is no attempt at decoration whatever; all is plain and simple, and well adapted for the purpose for which it is intended. At each end of this hall we detect a copy of some portion of the Brighton aquarium, in two of the largest tanks, 40 ft. by 10 ft., with a depth of water of about 8 ft. It is easy to perceive the care with which these tanks have been designed. Possessing a transparent frontage similar to the largest of the Brighton tanks, and fully equal to them in extent, the serious error of a great breadth of from 30 ft. to 40 ft., from back to front, which renders the most pellucid waters semi-opaque, is avoided; these are only 10 ft., and the rays of light, in addition to entering at the surface of the water, and passing through it to the spectator, enter also through three apparently submarine caverns at the back. These are formed by encasing 4 ft. of the lower portion of the east and west end large windows with strong plate-glass, built in the rock-work. The east-end tank is the receptacle for the full body of water, about 5,000 gallons per hour, drawn from the reserve-cisterns, which extend to a depth of 6 ft. below the entire series of exhibition tanks. It enters this tank from an elevation of 14 ft., forming a thin sheet or cascade of water 13 ft. wide, falling on a ridge of rocks, dashing its spray in all directions, and

then, by two overflows, to the right and left, passes to the corridor tanks, and, finally, enters the west tank, and returns to the range of cisterns below. Independently of this regular circulation of the water through every tank, other means are adopted for its perfect aeration. A portion, as it leaves the pumps, is diverted, and driven through rows of pipes placed above the corridor and tidal tanks, and passes through fine roses or jets, in the form of rain, to the surface of the water in each tank; this, independently of oxygenating the water, has a pleasing effect, the minute globules of water descending to a great depth again rise to the surface like effervescent bubbles of quicksilver, sparkling and giving it a lifelike appearance. Every visitor to the Crystal Palace aquarium will remember the shallow tanks in the side rooms stocked with our lovely sea anemones and other littoral forms of marine life. Very similar are the tidal tanks of the Manchester aquarium. They are constructed of polished black enamelled Welsh slate in two rows of sixteen compartments, 6 ft. long by 3 ft. in width, with a uniform depth of water of 12 in. The animals which these tanks will contain are seen not only through glass frontage, but in precisely the same way as the contents of the glass cases in our museums are. By simply opening a valve the water can be drawn from these tanks and returned to them either in a few minutes or hours, forming a perfect ebb and flow of the tides, and exposing the creatures they contain to the alternate action of exposure to the atmosphere and submersion of the tidal wave. We must not omit the arrangements for the preservation and exhibition of the denizens of our lakes, ponds, and rivers, and those animals that require to be kept in still water. The large fresh-water tank occupies the central portion of the hall or saloon, and is 16 ft. by 6 ft., 2 ft. 6 in. deep, divided by plate-glass into six sections; at each of the centre angles of these divisions is a crystal fountain, causing a constant fresh supply and flow of the water, by which means it is hoped the most delicate of fresh-water fish may be kept for an indefinite period in full health and vigour. At a short distance from each end of this tank are twenty smaller ones, known as table aquaria, which will be appropriated for the purpose we have named. In addition to the public tanks in the aquarium proper, provision has been made for twelve large store-tanks at

* The total tank frontage is 750 lineal feet.



THE MANCHESTER AQUARIUM.

present in use in the company's temporary building, for the purpose of acclimating marine animals after their reception from the different parts of the coasts.

Upwards of 200,000 gallons of pure sea-water will be required to maintain the whole series of tanks in full working condition, two-thirds of which will be constantly flowing from and into the reserve subterranean cisterns.

So successful has been the mode adopted by Mr. Lloyd at the Crystal Palace Aquarium of circulating the waters, and its general management, that there has been seen no reason to deviate from it in any of its important features.

In this aquarium provision has been made for such accidents as breaking of glass, leakage of water, failure of a pump, and other contingencies; so that in no event, it is thought, will they for one moment interfere or disorganise the general arrangement.

The building has been erected under the personal superintendence of Mr. B. Hooper, the curator, assisted by Mr. M. Seaton, architect, of Manchester. The contractors, Messrs. James Herd and William Healey & Sons, Cordingley and Stafford, have satisfactorily performed their part. The slate and ornamental tanks were supplied by Mr. John Robertson, of 48, Market-street; the gas and other fittings by Messrs. Lloyd & Bridge; and the plate-glass was supplied by Messrs. Winder & Horrop.

ARCHITECTS AND THEIR LIABILITIES.

AFTER a protracted hearing, a case was finished on Saturday, in the Court of Exchequer, which is of great interest to architects and builders. The case referred to is that of *Timms v. Kerr*. The plaintiff, Mrs. Timms, employed Professor Kerr to superintend certain alterations in two houses, situate in Jernyn-street, which belonged to her, and she contended that he omitted to bring proper skill to the work; alleging, in fact, that he had been guilty of negligence in the performance of his duty. In consequence of this, she complained that she had sustained damages, and the action was brought to obtain compensation. Professor Kerr, as she wanted to throw her two houses into one, agreed to undertake the work at 5 per cent., in addition to remuneration for the drawings, the total cost she intended to spend not being more than from 500*l.* to 600*l.* The work being commenced, was carried out very slowly, and she lost lodgers, her business being that of lodging-house keeper. In the course of evidence given, Mr. White, the builder employed, said that he submitted an estimate for 1,616*l.*, which was not accepted, but ultimately he commenced the work upon a new set of plans. A chimney was built, which caused Mr. Daniel's (adjoining) wall to give way, for which Mr. Daniel brought an action, and got 100*l.* damages. Mr. Cremer, surveyor, gave evidence to the effect, that the old wall ought to have been condemned by the architect. The damage was caused by the new wall resting upon it. The defendant, Professor Kerr, also gave evidence. He said that he told Mrs. Timms that the expense of the alterations would be about 1,500*l.* He denied the statement that she did not wish to go beyond 600*l.* as the limit of expenditure. It was quite impossible that the damage could have been caused by the new wall according to his plans. Mrs. Timms did not adopt his plans as originally drawn out. As an indication of the sort of labour architects had to undergo, he further stated in cross-examination, that during the period from the 31st May until January last, he had no less than 120 interviews with the plaintiff. The architect ought certainly to see that work was properly carried out. Further evidence of no great importance having been given, his Lordship summed up the case. He pointed out that if an architect were employed to carry out a work of this character, it was professionally incumbent upon him to bestow a reasonable amount of care and skill upon the duties entrusted to his management. In the event of his neglecting such duties he must be held responsible. Had the defendant been in any way negligent in this case? He had drawn up certain plans, which were not carried out, but the work was commenced before he had drawn up others. The plaintiff contended that Professor Kerr had so prepared his plans that the chimney hung upon Mr. Daniel's party-wall and did it injury, and that he ought to have had the old wall rebuilt. As to the time in

which the work was to be completed there did not appear to have been a definite contract. It would be for the jury to decide whether the works had been carried out under the defendant as architect, and if they were of opinion that he had not exercised proper skill, he must be responsible. If the builder, however, undertook to carry out special work on his own account during the absence of the architect, the latter surely could not be held liable. Eventually, the jury, after having retired for a short time to consider their verdict, found for the plaintiff as follows:—45*l.* on account of damage caused to Daniel's property; 200*l.* for loss of time.

* * * The verdict in part appears so extraordinary and involves so serious a principle, that the profession generally are as much interested as the defendant in obtaining a proper reconsideration of the case.

A RAMBLE IN NORMANDY. ARCHITECTURAL ASSOCIATION.

At an ordinary general meeting of the members, held last Friday evening, the 20th inst., Mr. E. J. Tarver (president) in the chair, the following gentlemen were elected members: Messrs. E. Overall, A. J. Martin, F. Wheeler, W. N. Pogson, F. J. Banister, and H. Tupper.

Votes of thanks were passed to the two architects, Messrs. Gruning and Harris, who respectively conducted the members over the Royal Hotel, Blackfriars; and over the premises of Messrs. Foster & Sons, Lisson-grove, Marylebone-road.

Two drawings, submitted in competition for the title-page of the seventh volume of the Transactions of the Association, were exhibited, the secretary believing that Mr. Vialls's had obtained the prize offered.

Mr. T. Blashill then read a paper entitled "A Ramble in Normandy." In the course of his remarks he said that the ruins of the Castle of Arques, four miles out of Dieppe, had been fully illustrated by M. Viollet le Duc in his "Dictionnaire de l'Architecture," but its characteristic Norman keep, its formidable ditch (almost unique in design), and the additions made to its defences at successive periods, were a good study to select for students. Half a dozen miles from Dieppe was Varangeville, remarkable for its sixteenth-century manor-house, chiefly in brick, and its richly-decorated circular dovecot. Rouen was first described to him as the oldest-looking place and the dirtiest in the world; but since then whole blocks of ancient timber houses were missing, having made way for new streets; but even now it seemed to him the oldest and the most picturesque of the cities of the west. It was full of buildings over which one desired to linger long,—longest over the cathedral, where there was work of the purest as well as of the most florid period of art. Rouen, though the ancient capital of Normandy, was not rich in twelfth-century buildings. However they might spend the day, the evening would find them drawing towards the quay, with its cheerful *cafés*, and crowds of people enjoying their pleasant stroll under the trees; and students would probably think of the dreary mile of the Thames Embankment which only wanted houses, shops, and people to make it by day or night one of the most charming promenades in Europe. Leaving Rouen for Les Andelys, they came across the ruins of the most interesting castle in Normandy, the Château Guillard of Richard Cœur-de-Lion, which stands upon the top of a high chalk rock; and, whatever might be thought of its precise age, it would be for ever famous in the history of Medieval military architecture. At Grand Audely was a fine church, with the western towers disfigured by immense staircase-turrets, with a north aisle of Italian design. The "Grand Cerf" was a fine timber building, with a good old fireplace; and if travellers stayed there, a wainscoted room, hung with ancient tapestry, was placed at their disposal. His recollection of Louviers by night was of dark and narrow streets, with the sound of water rushing through the numerous mills. A dark mass, which was the cathedral, with its fifteenth-century south porch of rich open work, with a central stone pendant, they could distinguish; the ranges of the thirteenth-century columns, carved statues, and the little lamp, like a bright star, in the distant chapel, were also of great interest; and the solitude of the silence reminded one of a dense forest on a still night. Evreux was another manufacturing town, kept lively by many swift streams which ran towards the Evre. It had many timbered

houses, not very ancient nor very picturesque. The town lay in a hollow, amongst green and wooded hills, very pleasant to behold. In the cathedral the nave arcades were of rigidly plain twelfth-century work; and it was said to have been built by Henry I. of England, who burnt the town. It was a finely-proportioned building, although the work varied much in date. Near the deep and wide moat of the cathedral precinct were remains of the old Roman wall, exposed by alterations in progress, consisting of small square stones, with courses of tile between. Passing on to Lisieux, they came to the keep of the ancient château of Eouches, which stood out firm. Lisieux was the last of the cities in the valley that he saw; those who desired to study ancient timber construction should spend some days here, there being whole streets of picturesque wooden houses.

The Manor House of Mesnil-Manger, west of Lisieux, was one of the best examples of timber framing in Normandy; and from the railway one saw many quaint-looking houses, some churches, and circular stone dovecots, with old manors, which would repay a visit. Falaise, the birth-place of William the Conqueror, stood most picturesquely between two different kinds of country, but the town was more for the antiquary than the architect; but there was no one who might not profitably turn out of his way to see its picturesque old streets, with their sparkling fountains; the half-ruined gateways of its ancient walls; its churches; and principally its castle, which was, after Rouen, the residence of the Duke of Normandy. The roofs of the houses at Avranches generally were covered with shingles, cut out of the sweet chestnut, which abounded here; it weathered of a nice silver-grey colour, and formed a better compromise between the picturesqueness of thatch and the neatness of slate than he had seen. Many of the poorer houses were thatched, the straw being afterwards shorn neatly in diagonal lines a couple of inches apart, which gave an excellent finish to the surface. At Avranches were to be seen good remains of old ramparts, and nothing besides of any antiquity. At Mont St. Michael, a visit to the castles and the abbeys would be very advisable. The Hall of the Chevaliers was the most striking apartment; but everything was in some way worthy of special study; and not the least noticeable thing was that the whole was of a hard dirty brown granite, in which the most delicate mouldings and tracery had been carved, without regard to time or cost.

Mr. Spiers was glad that Mr. Blashill had brought the interesting subject before their notice. There was, however, some difficulty in describing such a tour as he had done, to make those who had not seen the various buildings thoroughly appreciate and follow the remarks. It was fortunate, he considered, that Normandy was so close to England, as he was of opinion that it was the best country in which to travel in order to obtain an idea of the development of Pointed architecture, which could easily be traced; and in some places visited by Mr. Blashill perfect gems of Pointed architecture could be seen. Some of the purest in France were those in the doorways of Lisieux. At Rouen there were some beautiful and perfect specimens of the fifteenth-century style of architecture; and as they were led from church to church, each specimen seemed finer than the preceding. Glancing at the chapel at St. Pierre, one could easily understand how the French architects, who probably at that time visited Rome, became imbued with the beauty of the old Classical work and with the Renaissance work of Italy, the chapels at St. Pierre being the finest specimens of Renaissance work that the student could see.

Mr. Quilter, who had visited many of the places alluded to, said that the reading of the paper revived in his memory much of what he had seen ten years ago. He was astonished to find at Bayeux, Caen, and the country north of these places, so many churches worth seeing.

The Chairman thought one of the most delightful things persons could do, was to put a 10*l.* note in their pockets, and a knapsack on their back, and make a tour through Normandy. He then alluded to the mixture of wood and stone in the structures at Bayeux, and to the chapels at Caen, and other places.

Mr. Blashill well illustrated his lecture.

New Town-hall for Limehouse.—The local authorities of the parish of Limehouse have resolved on building a new Town-hall, with public offices.

THE QUESTION, FROM ONE POINT OF VIEW.

CERTAIN conditions of climate, and certain phases of faith and opinion, have a paramount influence upon the architecture of a country. So marked is this influence, that we find that where the conditions are similar there is a similarity in the style of architecture; thus the ruins of ancient temples lately discovered in Mexico have a remarkable resemblance, both in form and detail, to certain Indian examples, and it appears undoubted that no intercourse subsisted between Mexico and Hindostan.

Given the conditions, the result may be arrived at. This being admitted, it is open to us to conjecture what the style of the future may be.

The tendency of the age is towards positiveness. We are eminently a practical people, not given to much display, but delighting in comfort, a thing so little understood by our neighbours that they have no word equivalent to it. When an idea is once seriously entertained by us we stick to it with remarkable tenacity; and so long as it is permitted to remain in quietude, and the absolute necessity of a change is not pressed upon us, we are contented to allow things to remain as they are. It is only of late that art has been looked upon in a serious light, as having an influence upon the material and social welfare of the community; and, strange to say, architecture has been the last of the arts to which public attention has been directed. Hitherto we have been content with a *resumé* of Classical and Gothic work, but now the demand is for something more.

In our fitful climate and varying light, the fine outlines and broad surfaces of Greek architecture lose their effect. The requirements of the climate, and the materials at command, are elements of insurmountable difficulty towards the true realisation of the effects of the style. The Greek ideal was as near perfection as possible; but it fails to touch the heart. Imperfect ourselves, we feel somewhat uneasy in our connexion with what is perfect. We admire it, but there is a coldness about it which does not lovingly attract. A monotonous repetition of the same features, however beautiful, becomes tiresome; formality and staidness pall both mind and eye when there is nothing left for the imagination. A single inspection of a Greek temple enables the spectator to carry away with him a tolerably accurate recollection of its features and general aspect, and when seen from a distance its effect is poor, unless it be situated on a height.

A Gothic cathedral may be visited again and again, and still new beauties be discovered; it is a landmark seen from afar. The nearer it is approached the more impressive it becomes; its strongly-marked features and redundant details are required to produce effect against the grey sky. The grand west portal, with its flanking towers, is not repeated at the east end; but nave, transepts, choir, lady chapel, chapter-house, and cloisters, each tells a different tale; the eye wanders from one plane of surface to another, from buttress and pinnacle to clearestory and heaven-pointing spire; each window presents a differing maze of tracery; grotesque figures raise a smile here; a boss of foliage calls forth admiration there. Time's effacing hand only adds to its beauty; nature strives to enhance its loveliness; a gargyle is rendered still more grotesque by a tuft of feathery grass hanging from its distended jaws; a coating of green moss upon a band of sculptured foliage adds to its beauty. Wild flowers bloom in sheltered crannies, and the birds of the air are at home amongst its bristling pinnacles and lofty towers. Enter the grand cavernous portal, and "the long-drawn aisles" stretch away like the glades of a forest; the clustered shafts, the deeply-recessed triforium, the light and graceful clearestory, and the vaulted roof, all bathed in a sea of glory shed around by the richly-tinted glass alive with strange imagery, form a picture of grandeur and beauty, combined with variety, not to be found in any other structure. The admiration of the people could not be destroyed by the teaching of pedants, and the revival of the style was received with acclamation.

When classical architecture was revived, much learning was displayed in discovering the laws by which its designers were governed, elaborate treatises were published, and rules framed, for the instruction and guidance of the profession. The effect of this was, that these rules were slavishly followed by those who could not think

for themselves. The desire of being great at small cost, and the vulgar desire of excelling in profusion rather than in good taste, led to the vulgarising of the most beautiful ornament which came to be associated with the gin-palace and the casino. Admirable structures, erected in durable and costly materials, were reproduced in mean and perishable sham work. A reaction was inevitable, and the Gothic revival ensued.

The Gothic style is eminently constructive in its forms, and cannot be adequately carried out in any but durable materials. The architect is compelled to think; he has to throw the arch over a void, and to provide for the consequent strain. No definite rules were framed, or particular proportions insisted on, and he was thus left to produce new combinations, and develop old forms. The pointed arch, the leading and guiding feature of the style is, in certain circumstances, a source of embarrassment to the architect. This is especially the case in designing street fronts of several floors. The ancient examples of such amongst us were so few as to give the modern works of this class an aspect of entire novelty. The novelty has now lost its charm, and a feeling in favour of a more tractable style has arisen,—a style combining the truthfulness, variety, and picturesqueness of the Gothic with the common sense of the Italian, and the Queen Anne style appearing to some to possess these qualities, has been adopted by them. The style is one with few resources, and, judging from precedent, the continuance of its use will be of short duration,—a mere fashion of the day, with no solid basis upon which to build a superstructure,—and its influence upon the architecture of the future will be infinitely small as compared with the Gothic revival. The mere substitution of one style for another is no great achievement; much greater would have been the gain if one step in the direction of developing the styles already in use had been overcome.

One of the greatest faults of the modern architect is in his inconsistency in matters of detail, and the new examples of the Queen Anne style are no exception to this rule. An architect's work, truly, is only successful to the extent that it is homogeneous, but it may certainly be so without a slavish adherence to precedent. The motive, the ideal of the designer is often extremely shallow, exhibiting merely a superficial cleverness. A poor idea, however strongly expressed, is worthless. When every sentence, and every word in a sentence, is attempted to be made emphatic, the effect is exaggerated, and fails to impress (and, *per contra*, it may be remarked in passing that diffuseness is equally unimpressive).

In works upon a grand scale symmetry is desirable; but in those on a less ambitious scale convenience is generally the primary object, and this naturally leads to picturesqueness of effect. If the ornament is judiciously concentrated, leaving a sufficiency of wall-surface, so as to produce that repose and dignity which are essential to the production of a good design; if the various parts are appropriate and follow in harmonious sequence the building will be good, but not necessarily original: to be so, it must be the expression of the mind of the designer appropriately applying Nature's materials to man's use. He must work with a determined end in view, learning rather than attempting to appear learned, endeavouring to give birth to new thoughts and to embody new ideas. The purpose for which a building is intended being first ascertained, the function of each member should be predetermined, and not left to chance, the demands of utility being the first consideration. Although to a certain extent a sacrifice of convenience to æsthetic effect is highly commendable, yet, as a general rule, the effect should be evolved from the necessary conditions, and what is non-essential left for after-consideration.

To those who have carefully watched the progress of the art a development in a certain direction seemed to be unfolding itself, and may yet grow into greater proportions and bear good fruit. This growth was more apparent in the case of secular than of ecclesiastical architecture. The Pointed style is so thoroughly associated with our ideas of a church, and can be so readily and appropriately used in that class of buildings, that, in all probability, it will long continue to be used in such. But in secular buildings, composed of several floors, the Pointed arch is less traceable, and is often a source of embarrassment to the architect; the point of the arch cuts up into the ceiling, leaving little space between its apex and the eill of the window above; and the flow of lines is apt to get con-

fused if not carefully attended to. The expedient of filling up the upper portion of the window and making the opening square is somewhat of the nature of a makeshift, and the other expedient of imparting to two tiers of windows the effect of one, and arching the upper one only, is untruthful in expression.

The semicircular-headed arch is not open to the same objections; its crown can be kept well down, its frequent repetition produces a rhythm and flow of lines which harmonise better with horizontal lines than the Pointed arch; it may be used singly or in groups, on a large or on a small scale, and it is capable of receiving a great degree of enrichment, which may, with perfect propriety, partake of a Gothic character. Shafts, mullions, and tracery may be made to perform a part in filling up a void, if too great to be left entirely open. It combines delicacy with strength, alternation of lines with breadth of surface, and may be made to produce a fine effect of light and shade. In every class of buildings it may be used with perfect propriety, from the cottage to the palace, whether the effect aimed at is breadth and massiveness or lightness and grace. Here, then, is a feature which the architect may use with the greatest freedom in any material, a feature which has never been used to the extent and in the manner which its capabilities are fitted to call forth;—a feature destined, we believe, to play a more important part in the architecture of the future than it has yet done.

The half in the rule will be but a short one; it will but slightly disturb the progress onward; the shadow has been mistaken for the substance. The ideas of the day must be told in a living language, the babel of tongues must be reduced to order, superficiality be superseded by substantiality, if architects are to hold their proper place in the estimation of their fellow-men.

SIGNET.

SOME OF THE SANITARY ASPECTS OF HOUSE CONSTRUCTION.*

Materials.

THE nature of the materials used in house construction has an important influence on the sanitary condition of the dwelling, and the health of its inhabitants. Walls are generally permeable to air. Professor Graham, in his experiments on the diffusion of gases, showed that this tendency to diffusion was not arrested by enclosing gases in cells with thick solid brick walls. Dr. Pettenkofer and others have made experiments on the passage of air through various materials. He states that in a room with brick wall, of 2,650 cubic feet of space, the temperature inside the room being 68 deg. Fahrenheit, and 82 deg. Fahrenheit outside, a fire being lighted in a stove, but all openings and crevices in doors and windows being thoroughly pasted up, a volume of air of 1,060 cubic feet per hour passed out of the room up the flues.

Dr. Pettenkofer also shows that with a difference of temperature inside the room to that outside of 9 deg.: 5 deg. Fahrenheit, the spontaneous ventilation through each square yard of a brick wall surface was about 7 cubic feet per hour; he does not mention the thickness of the wall.

Milner and Schultze, with the same proportional difference of temperature, found the spontaneous ventilation was as follows, per square yard of surface in walls of similar thickness:—

Sandstone.....	4.7 cubic feet.
Quarried limestone...	6.5 "
Brick.....	7.9 "
Tuffaceous limestone	10.1 "
Mud.....	14.4 "

This spontaneous change of air through walls is impeded if the walls are damp. Damp walls cause a great absorption of heat from the evaporation of the moisture from their surface. This absorption of heat of course affects persons near the wall, by absorbing the heat from the side of the individual nearest the wall, leaving the other side unaffected. This one-sided cooling of the body, or some part of it, is similar in effect to what is caused by draughts of air. It is dangerous from the local disturbance it occasions in the heat economy of the body. The emanations from the human body consist of a considerable quantity of watery vapour, which passes off

* From a paper by Capt. Galton, read at the Institute of Architects. See page 157, ante; and previously for report of discussion which followed.

from the lungs and skin. In a room with damp walls, and without means for frequent renewal of the air, this is confined, and the atmosphere of the room remains at a point of complete saturation. This in newly-inhabited houses is frequently the cause of the moisture seen on the walls. The quantity of water which will be contained in a new wall is very remarkable.* Suppose that 100,000 bricks are used for a building, each weighing 7 pounds; a good brick can suck up nearly 15 per cent. of its weight in water, but we will put down at 7 per cent. what gets into it by the manipulations of the brick-layer. We will assume that the same amount of water is contained in the mortar, a quantity certainly much understated, although the mortar forms about one-fifth of the walls; we have thus nearly 100,000 pounds of water, equal to 10,000 gallons, which must have left the walls of the house before it becomes habitable. This water must be removed by spontaneous evaporation into and by the air. The capacity of the air for receiving water depends on the different tension of the vapour at different temperatures, on the quantity of water already contained in the air flowing over a moist body, and finally on the velocity of that air. Assume the average temperature of the air to be about 50 deg. Fahrenheit, and the average hygrometric condition of the air to be 75 per cent. of its full saturation. At the temperature named, 1 cubic foot of air can take up four grains of water in the shape of vapour, but as it contains already 75 per cent. of these four grains, which amounts to three grains, it can only take up one additional grain. As often then as one grain is contained in the 10,000 gallons of water mentioned above, as many cubic feet of air must come in contact with the new walls, and become saturated with the water contained in them; or about 700 millions cubic feet of air are required to dry the building in question. The effect of a fire in drying the walls of a room will be seen from the following instance.—Take a room of 3,530 cubic feet, and the temperature and humidity of the air at the above given mean averages; as one cubic foot of such air is capable of taking up one additional grain of water, the air of the whole room will take up 3,530 grains, or about half a pound of water. Should there be no change of the air, matters would remain so. But by every fresh 3,530 ft. of air coming into the room another half pound of water would be taken up, and so on. Suppose the change amounts to 353 cubic feet per hour, all the moisture we get rid of would be only 353 grains per hour. But if we heat the room to 68 deg. Fahrenheit, for instance, we increase the tension of the vapour, *i.e.*, the capacity of the air for taking up water from four to seven grains per cubic foot, so that each cubic foot of fresh air entering the room is capable of taking up seven instead of four, that means four grains in addition to its original humidity. In consequence of this increased capacity the 353 cubic feet of air take up 1,415 instead of 353 grains of water. But by the increased difference of temperature between the room and the open air the ventilation will rise from 353 to 2,100 cubic feet per hour, and in this way we get rid of more than twenty times as much water as if we left the room unheated.

The damp having been expelled from the walls when the house is new, it is their proper function to prevent it entering from the outside. Damp should be precluded from rising into the wall from the ground, as before stated, by means of a damp course, and it should be prevented descending into the wall from above by an impervious coping of eaves. Improperly laid copings will act as conductors of wet into the wall, rather than as protectors against it. Damp should also be prevented from penetrating into the inner part of the wall, either by an adequate thickness of material, in the first instance, or by an impervious outer coating, or by an outer wall, separated from the inner wall by an air-space.

The quality and construction of the wall has an important bearing on the maintenance of an equable temperature in a house. The retention of heat is of as much sanitary importance as the prevention of damp. A cold, damp house is productive of draughts, and is the cause of rheumatism, bronchitis, catarrh, colds, &c., and a house that requires a great expenditure of money for warming apparatus and fuel betrays a want of skill in the architect. The conducting power of different materials for heat has some

bearing on this question, but the difference in the heat-conducting power of different materials used for wall construction soon disappears when the thickness of the wall is increased, and has little importance when a layer of air is introduced into the middle of the wall. Air when confined in a space between two walls is a most efficient retainer of heat, and therefore hollow walls not only prevent damp entering from the outside, but they retain the heat within the house; consequently, economy, dryness, and warmth would be best secured by the use of hollow walls, combined, if necessary, with an outer impervious coating. Any arrangement for ventilating the air-space in a hollow wall would destroy its efficiency as a non-conductor of heat. The wall, if of brick and plastered over, more or less admits air into the room, or allows of the exchange of air between the room and the outside. It also absorbs the moisture exhaled from the human body, and with it the particles of injurious matter which are constantly being given off from the lungs. Workmen employed in scraping down the walls of wards in hospitals are frequently taken ill from the effects of the deleterious matter they scrape off the walls. Attempts have been made to discover an impervious material for hospital ward walls. The use of glazed tiles for the wall covering is open to the objection that the numerous joints become receptacles of putrefactive matter; parian cement has been tried, but in proportion to the imperviousness of the wall, the watery vapour which emanates from the lungs becomes condensed upon it; and no cement is actually impervious, consequently it is a mere question of time how soon saturation will take place. Probably a plaster wall, of which the face is frequently scraped off and renewed, would be the safest wall for a hospital ward. In private houses the same conditions of impurity exist on a smaller scale. The wall, in process of time, becomes saturated with organic matter, and this is the cause of the musty smell which is found in rooms and houses which have been long in occupation without a thorough renewal of the wall covering. It is this which makes it essential to health that when the wall covering is renewed the surface should be scraped off and a new surface put on, especially in rooms which have been long inhabited.

The materials in common use for roof covering vary greatly in their properties: thus a roof covered with slates, supported on laths, throws off water, but is not impervious to air; if the slates be supported on boarding and laid on felt, or if bedded in mortar, the interchange of air is much more obstructed; if the covering be metallic the roof may be considered practically impervious; and if of asphalt absolutely so. Now, while a roof should be impervious to moisture from without, experience shows that it is unhealthy to live directly under a roof impervious to air. Therefore, whilst the outer covering of the roof should be impervious, and the roof should be so laid as to be retentive of heat, there should be a ventilated air-space between the porous ceiling and the impervious roof.

As regards floors, one of the most important conditions to be observed in the materials for floors in this climate is that they should not be cold to the feet; consequently wooden floors are desirable, unless the tiled floor is arranged so as to be warmed on the old Roman plan. The floor of whatever material it be should always have an air-space under it, so as to insure dryness. The floors should be laid with close joints. If wood floors they should be tongued, so as to prevent the accumulation of dirt liable to putrefy either in the joints or under the floor. This precaution, which in some parts of the country is adopted in work of the commonest class, is generally neglected in London. The frequent saturation of wooden floors with water to keep them clean, has the objection of diffusing damp through the atmosphere of the house; consequently a closely-laid polished floor possesses great sanitary advantages.

For windows, thick, clear glass is of great importance, because a window, if of thin glass, affords a large surface for cooling down the air of the rooms, and causing draughts. The loss of heat from 1 square foot of crown window-glass, of best quality, has been estimated to be equivalent to a loss of heat from 14 square feet of 14-in. wall. Of course, this is a mere approximation. I hope at some future time to lay before you some facts on the loss of heat through different kinds of glass. Glass is, however, a bad conductor of heat; and thick plate-glass is a great

safeguard against the rapid cooling down of the air. Double panes have been inserted in sashes, to save heat by means of the air-space between them; but the difficulty of cleaning their inner surfaces is a bar to their adoption. Double sashes are universally adopted in the north of Europe, and are a most efficient means of preventing loss of heat.

Ventilation and Warming.

There are two terms applied to ventilation, *viz.*, natural ventilation and artificial ventilation, which it is desirable should be clearly understood, as the difference is not very apparent. Ventilation is a movement of the air. Anything which disturbs the equilibrium of the air produces movement. The most usual cause of movement in the air which is apparent to us is heat. Heated air expands and moves upwards. Every breath of wind is the result of a disturbance of equilibrium by the upward movement of air, produced somewhere by the air being warmed. The sun shining will produce this effect. A fire lighted at the bottom of a shaft will cause the direct upward movement of the air over it, therefore this is natural ventilation. If the fire, instead of being applied directly to heat the air, is applied to a steam-engine, to turn a fan or to send steam into a shaft, and produce draught, partly by the vacuum it creates in condensing, partly by the velocity of its movement, and partly by the heat developed, it is called artificial ventilation. In houses it is generally more convenient to confine the arrangements for producing a movement in the air to the effect of the difference of temperature within and without the house.

The principles of ventilation, as regulated by the difference of temperature, are very simple, *viz.*, heated air will ascend, and its place requires to be supplied by air admitted from the outer air. The reason why difficulties are experienced in the application of these principles is because of the various and complicated forms of house construction. A simple case of the difficulty of ventilation is that of smoky chimneys. In some cases the form of the house is such that its staircase acts as a large shaft, in which a large volume of air is being drawn upwards, and this draws in air from every available opening, and therefore, if adequate provision is not made for the admission of fresh air, it checks the draught which is intended to be established in the chimneys of adjacent rooms. I merely cite this as a simple case. The variety of ways in which the ventilation of one part of the house interferes with that of another are innumerable. It is the province of the architect so to correlate them, that either the ventilation shall act as a whole, or that the ventilation of each part shall act so as not to affect injuriously the ventilation of any other part.

The air of dwellings is rendered impure by the emanations continually given off from the human body. These emanations consist partly of carbonic acid gas, and partly of organic matter, very liable to putrefy. It is, moreover, polluted by the various processes of cooking, which diffuse a quantity of organic matter into the air; and when artificial light is used, if it be not burned in a vessel separate from the room, it seriously deteriorates the air. It is found, as a rule, that the deterioration by carbonic acid gas from breathing affords a very safe index of the total deterioration of air in a room by its occupants. The following facts should be borne in mind in considering this question. A man breathes, on an average, 16.66 cubic feet of air per hour, and produces from $\frac{1}{2}$ cubic foot to $\frac{3}{4}$ cubic foot of carbonic acid, besides about half as much watery vapour, with organic matter, liable to putrefy. Each cubic foot of gas burned produces about 2 ft. of carbonic acid. Numerous experiments have been made upon the amount of fresh air which should be supplied to replace the deterioration of air. In England, the Army Sanitary Commission has been foremost in this matter, and very valuable experiments have been made by Dr. de Chaumont and by other members of the Army Medical Department. The Army Sanitary Commissioners considered, that for barrack-rooms, in which, by the custom of the service, the windows are kept open during most of the day, it was sufficient to provide for the renewal of the air during the night at the rate of 1,200 cubic feet per hour per occupant. The calculation was based on the nominal number of occupants; but in barracks men are nightly absent from every room, for guards or other purposes, and thus the volume of air renewed per man

* See Dr. Pettenkofer's lectures.

sleeping in the room was, in reality, much more than the nominal amount fixed.

Some of the general results obtained by Dr. de Chaumont and other members of the Army Medical Department, and by M. le Blanc, in Paris, have been collected into a paper, read last August, by General Morin before the Academy of Sciences in Paris.

He arrives at the following general conclusions. He assumes that the amount of carbonic acid and watery vapour which is exhaled per individual in ordinary health per hour, and which requires to be removed in order to maintain the purity of the air, is 1.06 cubic feet. In hospitals the average amount is 1.41 cubic feet. For lying-in women 2.12 cubic feet. The amount of carbonic acid assumed to be present in the fresh air out of doors is 0.0005 cubic feet; of course this is subject to variation, it is found to be as low as 0.0003 and as high as 0.0006. The amount of carbonic acid which it is assumed may be present without injurious effect in a room is 0.008. The volume of air which should be removed and replaced by fresh air per individual per hour, in order to obtain a uniform degree of impurity in a room, will thus vary with the cubic space of the room occupied by the individual or individuals whose emanations are rendering the air impure. But after the normal degree of impurity in the air in the room has been obtained, then the amount of fresh air required to keep up the equilibrium will be uniform.

The following table shows the amount of fresh air required according to General Morin's conclusions for bringing the air of a room into the normal condition of impurity, viz., to contain the proportions of 0.0008 of carbonic acid:—

Room containing cubic feet.	Amount of vitiated air to be extracted, and of fresh air to be admitted per hour for each individual in ordinary life.
353.2	3178.80
423.84	3108.16
565.12	2966.88
706.4	2825.60
1059.6	2472.4
1412.8	2119.2
1766.0	1766.0
2119.2	1412.8

Thus a bed-room 12 ft. by 15 ft., and 9 ft. high, which is generally considered a sufficiently large room for one person, requires, if a proper degree of purity of air is to be maintained in it, that the air should be renewed at the rate of about 1,880 cubic feet per hour for each individual occupying it. In a common lodging-house, six persons could, under the Act, sleep in such a room; the air to be removed and the fresh air to be admitted for this number, will be 11,200 cubic feet per hour. If the room had a fire at bed-time the velocity of air in the flue at about three or four o'clock in the morning would probably, with an ordinary average outside temperature, be about 2 ft. per second. An ordinary flue of 14 in. by 9 in. would under such conditions remove about 6,500 cubic feet per hour; but the law makes no provision for flues in sleeping-rooms, except in the case of cellars; and, moreover, the absence of inlets for fresh air to replace that drawn off by the chimney-flue materially checks the draught in the flue. If in such a room no arrangement is made for the renewal of the air, in a ten-hours period of night occupation of the room, the amount of carbonic acid and other emanations from each occupant diffused through the air would be ten times as great as the usual amount in fresh air, and with the six occupants might be fatal. The safeguard in practice against such extreme vitiation is the badly-fitted doors and windows, through which some exchange of air takes place, and the exchange is much accelerated by the lowering of the temperature of the outside air during the night.

In rooms occupied as living-rooms the air deteriorated by the burning of lights must be provided for in addition to that due to the occupants, and (as shown above) an ordinary gas-burner deteriorates the air as much as six individuals at least. These facts bring home to the mind the importance of providing in a systematic manner for the renewal of the air of all inhabited spaces: that is to say, the removal of the vitiated air, and the introduction of fresh air.

In this country the main engine for the removal of air from our rooms is the open fire-

place. With an open fire-place, having a flue 14 in. by 9 in., a velocity will frequently prevail in the chimney of 10 ft., and in some instances of 15 ft. per second, thus causing the removal of from 30,000 to 45,000 cubic feet of air per hour. But as a rule there is no provision whatever made for replacing the air thus removed. It is allowed to find its way into the room as best it can, by crevices in doors and windows and through the walls. We therefore perpetually hear complaints of draughts, of cold, &c. Our open fireplaces merely warm us by direct radiation of the fire. The hotter we make the fire the more heated air do we send up the chimney, and the more cold air do we bring in to supply its place; thus we are roasted on the one side and frozen on the other, and at least five-sixths of the heat generated by the coal passes up the chimney. All our fireplaces on this construction are simply barbarisms. In some houses, especially those of the better class, fresh air is admitted to the rooms to supply the open fire, and to the staircase after it has been warmed at some central warming apparatus. But this system is wasteful of fuel, as it allows the heat from the fireplaces to pass up the chimney unused, except for the purpose of creating more draught than is required. Consequently the most sensible form of construction for open fireplaces, is one which will utilise some portion of the spare heat which otherwise passes (entirely wasted) into the chimney-flue, in such a way as to warm the fresh air required for replacing that which is being carried up the chimney. This fresh warmed air should be admitted into the room in some part where it will flow in without causing a sensible draught. It was on these grounds that the ventilating fireplace adopted in barracks and military hospitals was designed by me.

In a room in which there is an open fire, the air near the floor-level is drawn towards the fire, a portion passes away up the flue, but the remainder is carried up in front of the chimney-breast, and thence it passes along the ceiling to the end of the room opposite the fire, when it is drawn out to supply the place of that which is passing along the floor to the fire. The air is thus in continual circulation, and the place at which fresh warmed air can be admitted with least disturbance to the currents and least perceptible effect is high up in the chimney-breast. I therefore selected that place for the admission of the fresh warmed air, because, any inflow of air, even at a temperature of 70° or 80° will be felt as a draught if it impinge on any part of the body. It will thus be seen that this fireplace, whilst it provides for the extraction of a sufficient volume of air from the room, provides also for the admission of an adequate supply of fresh warm air to replace that which has been removed. It preserves an equable temperature in all parts of the room; it will afford the same amount of heat as a well-constructed ordinary fireplace, with one-third the amount of fuel; it will not smoke, and when there are two fireplaces in the same room, of which only one is lighted, it will prevent down-draughts in the unused chimney-flue.

In towns, and especially in London, the air is rendered so impure by soot and other matters, that any current admitted continuously at one place soon blackens the adjacent walls and ceiling. The only remedy for this is to pass the fresh air to be warmed in the chamber at the back of the fire, through a filter of cotton wool, to remove the blacks and other impurities.

THE ADVANCE, CRAB FASHION.

A good deal is being written and said about the economy and goodness of wooden houses, and doubtless under some circumstances, and in certain positions, such erections may be very usefully adopted. It cannot surely be denied, however, by any person of sound judgment that we should return to wood as a building material? If we must retrograde it would be safer to go back to "wattle and dab." When the present pattern-books have become a little stale some enterprising young architect might find it worth his while to write a few smart letters as to the desirability of returning to the Ancient British style, and dwell with gusto on the usefulness and truthfulness of the native Wiggam. If he can succeed in getting another young architect or two to write about him, either with praise or ridicule, it is immaterial which, he may become quite a notoriety in his circle before the public find out the sad weakness which is at the bottom of it all.

ROUNDHAY PARK COMPETITION.

The Town Council of Leeds have awarded the first premium, 200 guineas, to Mr. Geo. Corson, Leeds; the second, 100 guineas, to Messrs. Hornblower & Son, Liverpool; and the third, 50 guineas, to Messrs. W. Perkin & Son, Leeds. Descriptive particulars of these and all the other designs will be found in our last volume (xxxi.), p. 739. The council spoke well of the design submitted by Mr. Milner and Mr. Hennell.

THE DUBLIN SCHOOL OF ART.

THE annual distribution of prizes to the Schools of Art in connexion with the Dublin Society, took place on Friday in last week. The prizes were delivered by the Lord Lieutenant, Earl Spencer, and it was also the last public appearance of the Viceroy as a representative of her Majesty, before his departure. From the report of the head-master, Mr. Edwin Lyne, it appeared that the works in drawing, painting, modelling, &c., representing nearly every stage of art-instruction, were forwarded to London in April last. The total amount of such studies was 593, as compared with 581 similar works forwarded in 1872. The number of students attending the schools during the past year has been 452, of which number 222 were males and 230 females. The total number of artisan studies amounted to 274, of which number 215 were males, and 59 females.

The results of a comparison made between the Dublin Society school and the schools in connexion with Glasgow, Edinburgh, Birmingham, and Manchester, showed that in the highest grade in Glasgow school, the highest prizes had been awarded as follows:—In Glasgow, to 1 student in 53; in Birmingham, to 1 in 26; in Edinburgh, to 1 in 14; in Manchester, to 1 in 17; and in Dublin, to 1 in 8. A similar result, applied to other grades, showed the favourable comparison the Dublin school could bear with the other large schools in connexion with South Kensington.

His Excellency in his address complimented the Dublin Society on the success of its school, and paid tribute to the ability of the head-master. Comparing the past with the present, he said:—"I think, if we look back at high art in ancient days, we shall find a great difference from the present. In old days we would see one great master with a school of artists following his particular style of treatment. In the fifteenth century we find almost all the great works of art treating of religious subjects. Now, I think we see a great difference. I do not know whether it is that we decorate and do honour to God in our churches in other ways than in painting, or whether artists of the present day are timid in trying to follow the footsteps of the great men who painted in former days; but we see on the walls of our picture-galleries every kind and description of art. We find the independence and originality of English and Irish thought breaking out in all directions; and, if we lose somewhat of symmetry from one particular school, we gain much in originality and thought. This is especially shown in the works of the great man who died during last year—Sir Edwin Landseer. In former days Wouverman and Snyder delineated with great force, great grace, and great vigour animal life, but where can you find the wit, humour, or touch of feeling which appears in the pictures of Landseer?"

Earl Spencer, having on a former occasion advocated the formation of a Central Museum of Ornamental Art in Dublin, expressed his regret that the project was not realised during his tenure of office; but he hoped that his successor would see a City Museum of Ornamental Art established, which he deemed a matter of importance to all lovers and students of art.

The Loan to the Metropolitan Board of Works.—In response to the proposal of the Metropolitan Board of Works to borrow 2,500,000, offers in one day were made to lend them 21,236,750! The Board, therefore, at once completed an issue of Metropolitan Consolidated Stock to the required amount. Does the extraordinary abundance of capital, one may ask, indicate fairly the prosperous state of the nation, or does it imply the existence of any check to the application of capital to other purposes or in other directions?

METROPOLITAN WORKHOUSES.

THE guardians of St. George's, Hanover-square, have determined to adopt the suggestion of their architect, Mr. H. Saxon Snell, for enlarging Little Chelsea Workhouse, to accommodate the whole of the inmates of this union. For this purpose additional ground will have to be purchased adjoining the workhouse, and the guardians have determined to put in force the compulsory powers of purchase conferred upon them by the Poor Law Act of 1867. The estimated cost of the land and buildings is 77,000*l.*, exclusive of the chapel. A receiving-house and casual-wards, with relieving-offices and dispensary, in some central position of the union, will also be erected when a suitable site is obtained; but, for the present, the Mount-street Workhouse will be utilised for this purpose.

The St. Marylebone Board of Guardians have received the assent of the Local Government Board to the immediate erection of new administrative offices and board-room, on the site of their workhouse in the Marylebone-road, and they have given their general approval to the proposed reconstruction of the whole workhouse, according to the designs of their architect, Mr. Snell. As soon as a suitable site can be obtained the infirmary will be removed to a new building for this class of inmates erected elsewhere.

Tenders will shortly be invited by the St. Marylebone guardians for the erection of a new dispensary and relief-office, in Little Union-place, Lisson-grove, from plans prepared by the same architect.

The Local Government Board have authorised the erection at St. Luke's workhouse, in the City-road, of an additional block of buildings, for chronic and infirm inmates, at a cost of 15,000*l.*, as estimated by Mr. Snell. When these works are completed, half of the intended new buildings will have been erected, and the remaining portion will no doubt be proceeded with in the early part of next year. The administrative block of buildings for this workhouse, now in course of erection, will very shortly be completed.

The St. Olave's Board of Guardians will receive tenders this week for the enlargement of their infirmary at Rotherhithe, in accordance with the designs prepared by the same architect, and at an estimated cost of 15,000*l.* The new buildings will contain novel features in the way of ventilation. Tenders for casual wards adjoining the above workhouse will be received at the same time. These wards, which are designed on the cell system, likewise contain novel features which have received the special commendation of the Local Government Board.

THE CHURCH AND THE PEOPLE OF KENSINGTON.

SIR,—In no parish of England do we find a church better sustained than that of this royal town. A very large sum has been lately expended on the erection of a good specimen of modern Gothic architecture; but no equivalent concession has been made to the inhabitants for the large outlay dedicated to ecclesiastical purposes.

The churchyard railing, which forms the segment of a circle, obtrudes upon the High-street at its junction with Church-lane (the only traversed road northward for two miles from Piccadilly), reducing the carriage road to a width of only 18 ft., and yet the interior portion of the cemetery has had no tombs or interments within 12 ft. or 15 ft. of the boundary rails: thus leaving ample space for the due enlargement of this important thoroughfare, if the spiritual authorities would only pay a little more attention to the worldly interests of their parishioners. This, however, is not the only inconvenience long endured by the large and growing population, as there is quite as much a necessity for a very short footway of only 160 ft., between Palace-garden-terrace, Camden-hill, and Kensington Palace-garden-road, leading to the gardens. There is a footway across this small angle of the vicarage grounds (close to the iron church), having a doorway at each end of the 160 ft., but these doors are only open for public use during divine service.

There are five acres of meadow and plantation bordering the most valuable precincts of the park and palace, of little use as pasture, but perhaps indispensable to the retired meditations of the pastoral incumbent.

Seeing that so large an area belongs wholly

to the church, surely it might reasonably be expected that some small concession of free user be made to the public over this short footway of 160 ft. in length by about 7 ft. in width.

The solace of such an assent would be an inestimable boon to all the inhabitants of the highly-valued and yet improving neighbourhood of Camden-hill; and it would be more consistent with the spirit of our reformed creed to "open wide the gates and make the way straight," than to obstruct public requirements, and withhold a privilege of necessity, seeing that the whole parish petitions for it.

QUONDAM.

BUILDERS' CONTRACTS.

SIR,—The case stated by Messrs. Blandford & Jones, in your issue of the 21st inst., is one on which there should be no doubt whatever.

A builder's tender is merely an offer to do certain work at a price stated. He may withdraw it at any time before the acceptance by the principal for whom the works are to be executed.

The tender itself is therefore no contract; but so soon as the tender is accepted in writing by the principal, or by the architect, being so specially instructed on his behalf, the contract is complete.

If the form of tender prepared by the architect states that "the builder agrees and is willing to contract to perform the works," it implies that the principal does not intend to rely on the contract as perfected and completed by the tender and its acceptance, but that a more formal contract is to be executed.

If the written contract as prepared by the solicitor acting for the principal is tendered to the builder for execution, and he signs it, the presumption is very strong that the principal is prepared to execute it also; and if he does not execute it, it is too late for him to withdraw.

The builder would doubtless be entitled to claim, at his option, either for the expenses incurred in preparing his estimate, or for loss of prospective profit, but not for both.

WILLIAM ELLISON.

FIREPROOF WAREHOUSES.

SIR,—The total destruction of the Pantechnicon by fire will bring you a great many letters from architects and others, suggesting different modes of constructing fireproof buildings. If you can find room I should like to give you my opinion, as a builder, as to the best mode of doing so.

The failure of the Pantechnicon, and many of the so-called fireproof buildings, has arisen from the use of iron, stone, and other materials which are not fireproof, and also from the contents of such buildings taking fire and burning for some time before attention has been called to it, and inability to deal with the fire when found. What is therefore wanted, is a building entirely constructed of fireproof material. This can be done by using the best and cheapest, viz., brick. It is also necessary that any building used for the purpose of warehousing goods of a combustible nature should be divided into separate compartments, having no communication with each other, and being under immediate control in case of fire. There should be no windows, and but one door, and that in the external wall. This door should be made to fit airtight. There should be in each compartment, for ventilating, one air-shaft, formed in the solid brickwork, and leading to the top of the building, projecting above the roof about 2 ft., and numbered. Gas should be used for lighting, a stop-cock being placed on the outside of the building, close to the door. There should be also another series of pipes following the direction of the gas-pipes, having the outlet close to the stop-cock on the outside.

The mode of construction would be as follows, viz.:—A range of warehouses side by side, say each 25 ft. wide, by any length, the ceiling constructed of an arch of one span, with a springing sufficient to carry the weight of the floor above (the spandrels of this arch being filled up level with the crown of the arch, and finished in Portland cement, would form the floor of the warehouse above); similar buildings may be ranged side by side, and in any number, one above another: the last in height would be weathered on the top to form the roof; heavy goods would be stored on the ground-floor, and light goods on the upper; light iron staircases would give access to the upper ones on the outside of the building.

We will suppose such a compartment as here described filled with goods of the usual description, and a fire breaks out from spontaneous combustion or otherwise. The first indication would be smoke; this would find no escape but through the ventilating-shaft, and would be detected at once by the watchman (whose duty it would be to patrol the roof of the building day and night to watch the condition of the ventilators); on the smoke emerging he would immediately stop up the shaft with a stopper at hand for that purpose; the door being shut, and fitting airtight, the fire would soon be smothered. On the outside of the building, near the door, a fire-annihilator would discharge gas into the building through the pipes provided for that purpose, and following the line of the gaspipes, which would put out the fire without destroying the goods.

The advantages of this mode of constructing fireproof buildings would be cheapness, the absolute certainty of dealing with fire, which has hitherto baffled all attempts to control, and would supersede the very expensive system of water hydrants, which are seldom of use at the proper time, and which do as much damage as the fire.

J. P.

BARS INSTEAD OF BELLS.

SIR,—Will you allow us to state in your next impression, in reply to your correspondent, Mr. Chas. Turner, that we have made inquiries through various channels, but cannot find that steel bars have been successfully, if it all, used instead of bells in churches. In one case we know of, they were used in an organ, but without success, and bells were substituted for them. Iron bars and large flat pieces of wood are, however, used in some parts of Turkey, instead of a bell, in Christian churches, bells not being allowed by the Mohammedan authorities. In each case they are loosely suspended by the centre, and a man strikes them with a wooden mallet. We are, however, using hemispherical bells, which are very much less costly than the ordinary church-bell, and machinery, instead of ringers, with great success. Our Mr. Lund is going to read a paper upon the subject before the Society of Arts on the 4th of March next.

LUND & BLOCKLEY.

ARCHITECTS' ACTIONS.

FUGIN V. MOLLOY.

This trial, which has been before the court for the last two years, was called on for hearing on Friday last before Mr. Justice Brett, at the Guildhall.

Mr. Willis appeared for the plaintiff, Mr. Hopwood, Q.C., M.P., and Mr. Bullen for the defendant.

In this case the plaintiff sought to recover a sum of 2,240*l.* for designs and work and labour done in connexion with some buildings at Hanley, in Staffordshire. The plaintiff's counsel stated that the contract for the buildings actually erected was under 1,000*l.*, and that three sets of plans and specifications had been prepared for the same buildings. In the last set, a considerable number of reductions had been made by the direction of the defendant, in order to reduce the cost of the building. It was also contended that, after the contract which referred to the reduced specification or quantities was signed, the defendant, unknown to the plaintiff, had substituted the specification prepared for the first set of plans, in place of the quantities which he himself had ordered to be prepared; the defendant having the power to do this, acting, as he did for some time, as clerk of the works. This substitution involved an additional outlay of some 600*l.*, which at one time the plaintiff was willing to settle for a nominal sum of 80*l.* This, however, was not acceded to by the defendant, and the matter was then referred by plaintiff to the sole arbitration of the Bishop of Birmingham. For various reasons the Bishop declined to act; hence the action. For the defendant, Mr. Hopwood stated that he depended for his defence upon a point of law, and contended that the contract was binding, inasmuch as it referred to the first specification above alluded to, which, according to the terms of the contract, should have been signed and marked A. When, however, the specification was handed in, it was found that it was neither signed nor marked A. At this stage, his lordship ruled that the plaintiff had a just and valid claim for the difference between the actual specification or

nancies and the amount of work which had been executed and said, as it referred to measurements it was clearly a matter which could not be tried in that court, but must go to arbitration. He therefore gave a verdict for the plaintiff, which carried the costs of the cause, which on both sides are said to amount to over 1,000*l*.

An offer of compromise was made to the plaintiff, through Mr. Willis, when he replied, "I will not now accept 10,000*l*.; in fact, I will accept no terms. The case must be tried out."

LONDON WATER SUPPLY AND FIRES.

RECENT calamitous occurrences were scarcely needed to impress the public with a sense of the importance of constant water supply at high pressure, readily accessible by hydrants, as a means necessary for the speedy extinction of accidental fires. The Metropolitan Water Act of 1871 provides powers to compel the water companies to give constant supply, but either the public authorities, or the companies, or both, seem supine in carrying the provision into effect. It appears from the last monthly report, just presented to the Local Government Board, and sent to the Mayor, that the water supply in the metropolis are constantly charged, and hence available for being fitted with hydrants, that have not as yet been substituted for fire-plugs. The extent of the mains in the different districts of the metropolis to which hydrants could be fixed at once, such mains being constantly charged, is as follows:—Kent Company, 61 miles; New River, 168; East London, 70; Southwark and Vauxhall, 100; West Middlesex, 65; Grand Junction, 41½; Lambeth, 90; Chelsea, 50; making a total of 648½ miles. Hydrants fixed at 200 yards apart over this aggregate lineal of mains would give a total of more than 5,700 hydrants, whereas the number fixed is only 2,360, with thirty in course of erection, or a trifle over half the proper provision.

THE NEW POST-OFFICE IN CARLISLE.

The alteration in the Athenæum for the purpose of adapting it to the use of the Carlisle Post-office and Telegraph Department has been completed, and the business removed there. The entrance to the public office, in which money orders are also granted, is through swinging doors at the south entrance, formerly the way into the Assembly-room. The dimensions of the public office are 31 ft. 6 in. by 19 ft. 5 in., and in provision is made for the writing of telegrams. There is a doorway in the public office leading into that of the Postmaster, whose room is 16 ft. 6 in. by 14 ft. 6 in. Another door from the Postmaster's office leads into the lobby of the old lecture-hall, to the front door of which the letter-boxes have been fixed. The floor of the lecture-hall has been raised to the level of the front entrance, and the ceiling having been removed, the assembly-room is also taken in, and the two form a large and lofty sorting-room, with retiring-rooms for the clerks, telegraphic battery-room, and mechanics workshop underneath. The dimensions of the sorting-room are 56 ft. 4 in. by 46 ft. 6 in., and the height to the top of the skylights 41 ft. 6 in. The telegraphic office is in what was formerly the old museum, the gallery of which has been removed, and light obtained from the roof. The dimensions of this room are 22 ft. 9 in. by 25 ft. 3 in. The retiring-rooms for the clerks are large and lofty.

SCHOOL BOARDS.

London.—The new school in connexion with the School Board of London in Westmoreland-road, Walworth, is opened. Mr. E. H. Currie, vice-chairman of the Board, presided over a public meeting in the boys' school-room, and in the course of his remarks he said that the cost was rather heavy, amounting to 8*l*. 5*s*. 9*d*. per head. The rooms would accommodate 314 boys, 320 girls, and 152 infants. The architects, Messrs. Jarvis & Son, were selected by competition. In London there were at the present moment 88 schools, either opened or building by the School Board, and by the end of the present year the Board would have provided accommodation for 80,000 children.

* This report comes to us with authority, but certainly does not make the merits of the case very clear.

Leeds.—At the last monthly meeting of the Leeds School Board, Mr. John F. Hennessy, pupil of Messrs. William Perkin & Sons, architect, Leeds, was appointed second assistant in the office of the architect.

Middlesbrough.—The foundation-stone of a school to be erected by the Middlesbrough School Board at Linthorpe, has been laid by Mrs. Bolckow, of Marton Hall, in the presence of a good attendance of spectators. The locality seemed to be surrounded by brickyards and fields under tillage, but by the time the school is completed it is believed houses will be springing up around it, so rapid is the progress made by this town. The schoolroom to be erected now will hold 300 children, and two wings will be added as the population of Linthorpe increases. At present there will be room for 300 infants, with four class-rooms. Mr. Blesley is the architect of the Board and of the school.

Lincolnshire, Co. of Lincoln.—The School Board of Louth have formally opened their new school on Monday last. The school has been erected from the plans of the architect to the Board, Mr. Walter W. Thomas, Liverpool.

STRONG ROOMS.

Sir, In your notice of the new branch of the National Provincial Bank at Leighton, at Mill-dean, you truly describe the structure and its various details, and you omit to mention that the strong room, constructed of hard steel and wrought iron, was executed by us.

CHUBB & SOUS.

LIGHT AND AIR CASES.

ARDEEN V. MEERING; GRIGG V. MEERING.

THESE were light and air suits at the Rolls Court, before the Master. The first of the bills was filed by the owner of Nos. 75 and 76, Fetter-lane, for an injunction to restrain Messrs. Charles Meeking & Co., the linendrapers, from raising a portion of the great pile of buildings they have been for some time past erecting in Holborn and Fetter-lane to such a height as to interfere with the access of light and air to the plaintiff's windows opposite.

The other bill was filed by a tradesman renting the premises alleged to be injuriously affected. As Fetter-lane is only 22 ft. wide at the spot in question, the defendant's building is intended to be 72 ft. 6 in. high, being about 32 ft. higher than the houses which used to stand on the site, and clear at their tops of the observation of the ancient lights. The evidence as to the question of injury was wholly theoretical, as the building complained of has not yet been carried up to the height of the old buildings.

The Master of the Rolls, without hearing a reply, said he disliked having to decide the case on the only material facts, namely, the height of the proposed building, and he felt a natural inclination not to stop the march of improvements and prevent the erection of one of those splendid buildings which were now to be seen rising everywhere in the streets of London. But it was settled that the Court ought to grant an injunction wherever it was satisfied that a building would materially obscure that amount of light which the plaintiff was entitled to receive by law—namely, sufficient light for the purposes of his business. In a narrow London lane, such as Fetter-lane, there could be no reasonable doubt that all the light that reached the windows of a house would be recovered, and sufficient for the enjoyment of the house according to the ordinary notions of mankind; so that practically the occupier of a house in such a situation would be entitled as of right to all the light he enjoyed. It was admitted that the proposed building must obscure some portion of the sky area, and the only question was whether the effect would be materially and substantially to obscure the light. The evidence as to this was contradictory; but taking a mean between the two extremes, it would seem that as much as 10 per cent. or so of the light would be obscured. This could not be a material interference with the rights of the plaintiff. He must therefore grant an injunction in both suits restraining the defendants from erecting any building on the site of the old buildings in Fetter-lane, beginning at a point 17 ft. north of the plaintiff's houses, to a greater height than the old buildings, so as to darken, injure, or obscure the ancient windows of Nos. 75 and 76, Fetter-lane, Costs to follow the event.

CONTRACTOR'S LIABILITY.

In the Court of Exchequer (Nisi Prius sittings, at Guildhall, before the Lord Chief Baron and a special jury), the case of *Zellwood v. Pearson* was an action for damages for personal injury sustained by the husband of the plaintiff in consequence of the alleged negligence of the defendant's servants.

The circumstances of the case were rather peculiar. The plaintiff was a widow with six children, who complained of being deprived of her husband and her means of support by the act of the defendant's servants. The deceased was an army accoutrements maker, residing in Union-street, London-road, and on the 6th of August, soon after leaving his own house, he was greatly startled and alarmed by a loud explosion in No. 16, Union-street, immediately opposite to him. The house was completely blown up from its foundations, and several persons inside were seriously injured. After the shock he rushed over to render assistance to the injured, but on returning to his house he was taken alarmingly ill, and in consequence of weeks' illness suffering died raving mad. The defendant was a sewer contractor, carrying on business in the Borough, and had been employed some days before

repairing the pipes in Union-street, in front of the house in question. His men were engaged in removing the smaller pipes, and replacing them with 6-in. drain-pipes. In the course of their operations they dug out a quantity of the earth underneath the pavement, and in the process of replacing it with gravel. A cart which they were using at the time having been backed over this particular spot, the gas percolated through the drain and entered the house referred to. Coming in contact with fire, the explosion was the result.

A coroner's inquest was held upon the body of the deceased, when a verdict of accidental death was returned; the medical officer, however, observing upon the negligence of the defendant's men, and his responsibility in consequence.

Dr. D. Wilson, parish surgeon, stated that the cause of death was a severe shock to the nervous system by reason of the explosion. There was an effusion of lymph on the brain.

Mr. Serjeant Parry, on behalf of the defendant, submitted that, even assuming there was negligence proved, this action could not be maintained, as there was no evidence to show that there was an actual injury inflicted on the deceased by the explosion, and that the fire caught on the 6th of August by the gas in the drain, and that it might have conducted to his death, was not actionable. It appeared that the deceased had suffered a mere mental shock.

The Lord Chief Baron overruled this objection. The learned Serjeant, having then consulted with his client, stated that he would consent to a verdict for the plaintiff—damages 10*l*.; that was, 10*l*. for the widow, and 50*l*. for the four younger children. Verdict accordingly.

THE DELIVERY OF WATER AT FIRES.

Sir,—The present plan at a house on fire is for the fireman to hold the hose so as to send the water in a straight line into the building on fire; by this method it would seem that the water is lost, because not distributed sufficiently. This suggests the idea that if a fireman was elevated on a high platform, so as to send a stream of water straight into the rooms of a building on fire, it would be more effective. To give a rough description of such a high platform, suppose a wooden structure, 10 ft. high, 30 ft. long, 30 ft. wide, and two or three ladders at distances of 10 ft. or 12 ft. for men to stand on; the hose, being held in the air, could deliver water straight upwards, and I imagine by this process the successive shots of water would command a larger surface of fire than the present system of shooting the water upwards in a shooting stream.

* * * Not very practicable.

ILLX.

DISHONEST WORKMEN.

Messrs. Crompton would appear to be rather unfortunate in the selection of their workmen, but in consequence of a very late make, the firemen have taken up detective duties, and very cleverly has Mr. W. J. Hoskins, a vagrant, been discovered in the employment of the firm, by means three labourers in the employ of the firm, Messrs. Crompton, Messrs. Crompton, have been detected in stealing a large quantity of new lead from the roof of Fetter-lane, in the course of erection in Broad-way, Lambeth.

Mr. Hoskins stated to the Court that he was foreman of the job at Fetter-lane, where the work was being erected by Messrs. Cubitt, and the three prisoners were employed as labourers. On Saturday afternoon, after they had left work, he entered a public-house in Hatfield-street, near to the works, and noticed the three men talking to a man, a sailor, who he said was a sailor. As soon as they caught sight of him they suddenly disappeared; but witness followed up, and saw the three men, and the sailor, who he said was a sailor, had been stolen from the roof of the buildings, which had only been laid down ten days before. In consequence of his having given evidence against them, he was apprehended the three men at the bar.

The magistrate at once committed all three of the prisoners to the County Prison for a trial, and committed Messrs. Cubitt's foreman for his ability as an amateur detective, and his vigilance in looking after his employers' property.

POURING SEWAGE INTO RIVERS.

In the Court of Chancery, before the Lord Chancellor and the Lord Justices, the appeal of the Attorney-General v. The Mayor, Aldermen, and Burgesses of Barnsey, has been concluded. The appeal was brought by the Corporation of Barnsey, who are also the local Board of Health of that town, against an injunction, granted by Vice-Chancellor Hall, on the 11th December last, restraining the defendants from continuing, after the 23rd of May next, to permit the discharge into the River Deane of any sewage or other noxious or offensive matter from the borough, or any works within it, either by the defendants themselves, or by any persons under the control of the defendants. The defendants were also ordered to pay the costs of the suit. The suit was commenced in 1871, by information and bill, the relators and plaintiffs being Sir Fitz John Hall, Bart., and Messrs. R. Micklethwaite and F. H. Taylor, who are owners of land on the banks of the Deane.

The Lord Justice James, in the case made by the plaintiffs, and supported by a mass of evidence, was that the water of the river is polluted to a great extent; that there is a great mass of foul deposit; that the water is rendered unfit for domestic use, and indeed for almost any use whatever; that fish cannot live in it, and that a very foul stench arises, which is destructive of comfort, and tends to render the neighbourhood unhealthy and epidemically pestiferous. It was admitted by the Corporation that the river is extremely offensive, and that it produces injurious effects; but they said that they are taking every step in their power to prevent the pollution of the river, and that they are not willing to be troubled by the interests of the complainants with those of the ratepayers, forgetting apparently that they themselves represent the ratepayers, and are not independent to decide such a question, and forgetting that the rights of inhabitants and landowners outside the town of Barnsey are paramount to those of the ratepayers. This was the position assumed

by the Corporation before the suit, and their defence to the suit did not substantially differ from it.

The medical evidence on behalf of the defendants was to the effect that there is no great nuisance except in hot and dry weather. There is often hot and dry weather in this country, and the inhabitants are entitled to have their air and water pure whatever the weather may be. A defence of prescription was set up, but it was admitted that there was no prescription in favour of the public nuisance, and that the nuisance was the private right. If fouling a river for miles was not a public nuisance, it is difficult to say what would be one. But there really was no nuisance in this case for saying that there was any person upon whose property was shown by the evidence which gave the history of what had been done. Formerly there was no system of drainage; the modern system had been adopted under the statutory powers since 1853, and mainly since 1862. The evidence on this point was uncontradicted, and after that it would be idle to say that there had been any previous enjoyment of a right to create a nuisance, either public or private in this river. It was, however, said that some of the landowners knew of the works which were being constructed, and did not interfere to stop them; that they stood by and allowed great expense to be incurred without objection. It was quite clear that no person is obliged to file a bill until he knows that an injury is being caused to him; he has a right to assume that local authorities will take such steps as will oblige them to take to prevent a nuisance. The plaintiffs' case was wholly made out, and that of the defendants wholly failed. The appeal must be dismissed with costs.

The Lord Chancellor was of the same opinion. His Lordship thought that, without undoing what had been already done in the present case, the nuisance could be abated.

Lord Justice Mellish also concurred in dismissing the appeal.

A PROJECT FOR RAILWAY ENGINEERS.

SIR,—There appears to be much necessity for railway communication in the West End of London north and south. A glance at the map of the Metropolitan and District Railways shows at once ample communication east and west, and if one happens to be near one of their stations the journey to or from the City is all that can be desired. But suppose you are midway between these railways, say in Oxford-street, in Mayfair, in Piccadilly, or in Bond-street; these railways afford very little accommodation, for while you are walking to them you may be far on your way by omnibus, east or west. Again, suppose you arrive by the London, Brighton, and South Coast, or the London, Chatham, and Dover railways at Victoria station, and wish to reach North London, say Regent's Park, or even the central portion of Oxford-street or Regent-circus, you may walk or take a cab. No omnibus attempts to explore the labyrinth of Mayfair; none takes any route except thereon to the Marble Arch and the yellow ones to Tottenham-court-road; thus a long range of important and populous streets have no conveyance whatever, except cabs, and these at points (a mile and a quarter asunder) and the great Victoria station. Railway engineers might do more than counter this, to remedy this, and one way appears possible, viz., to construct a railway from Victoria District Station underground, northwards under Grosvenor-place or the gardens of Buckingham Palace, under part of Hyde Park, or Park-lane and Mayfair, thence to Baker-street or Portland-road, and thence northwards to Chalk Farm or Camden Station.

At first sight the objection would be the sewers and main drainage and the junctions, but let us also remember how that line was made under the Thames at Tower-hill; the level at Victoria is so low, to pass under everything else, and if openings are wanted for air, &c., there are parts of Mayfair, or Hyde Park, and elsewhere eligible for the stations, &c.

Thus, there is to be a railway some day from Euston to Charing-cross, but that leaves the western area untouched, and the map will even then present a long space without any useful connection between north and south. This may be worth considering by engineers, and if they want to know where to deposit the earth when excavated, there are abundant opportunities for mounds and landscape gardening in the parks close at hand.

H. C.

THE MILL MONUMENT.

SIR,—As I am not aware that any site has been definitely fixed upon for placing the statue of John Stuart Mill, I would suggest the pretty garden which is situated between Westminster Abbey and the Houses of Parliament. I think a more suitable spot than this could not be found in London, it having the advantage of being in the very heart of the district which he at one time represented in Parliament.

A READER OF HIS AUTOBIOGRAPHY.

PUBLIC HEALTH ACT.

A MISPRINT in a recent review of "A Manual of Public Health," p. 103, *ante*, has brought us two or three letters. The reviewer is made to say, "In the case of epidemics the Act confers the powers to prevent people from visiting infected houses." It should be "confers no powers." One correspondent, a medical officer of health, goes farther, and says, the succeeding statement, that the Act gives no power to prevent overcrowding, unless there is more than one family occupying one tenement, is incorrect. "By the Sanitary Act, 1866, any house or part of a house so overcrowded as to be dangerous or prejudicial to the health of the inmates, is made a nuisance." Has he enforced this?

The "Digest of the Statutes relating to Rural Sanitary Authorities," published by command, dated from the Local Government Board, March

19th, 1873, and which is a text-book, says, "The sanitary authority, upon the certificate of the medical officer of health that any house is so overcrowded as to be dangerous or prejudicial to the health of the inhabitants, consisting of more than one family, must cause proceedings," &c. Sanitary authorities find themselves powerless on account of the interpolation, "consisting of more than one family." We know of towns that have had fever in cases almost by the hundred, in large overcrowded families,—well-to-do pitmen and many others—living in one room; but the authority would take no action on account of the overcrowding, because the inmates belonged to one family.

SCHOOLS OF ART.

The Warrington School.—The annual meeting of the subscribers and friends of this school has been held in the local Museum. The chair was taken by Mr. Pierpoint, J.P. The secretary (Mr. Milner) read the report, which stated that the number of persons receiving instruction in drawing, in or through the agency of the school, during the year ending July, 1873, was 371. This number includes 166 students who have attended the school. The school received one bronze medal, one prize of books at the national competition; 10 third-grade prizes of books were awarded to students whose works were sent up for inspection, and 16 second-grade prizes were awarded at the local examination; 109 students sent 387 works to the annual examination in London; 92 candidates presented themselves at the annual examination, of whom 60 were successful in passing one or more exercises. An exhibition of the students' works took place in April, and was attended by 2,075 visitors. Free studentships were conferred by the Department of Science and Art on Benjamin Jameson, and John A. Sherlock for sufficient and satisfactory works during the year. Free studentships are renewable, unlimited in number, but only obtainable by artisans. Mr. J. C. Thompson, the master of the school, has received the grant of the Department each year since its commencement. In addition to the above, Mr. Thompson has also been awarded, being the fifth year in succession, one of the bourses offered to the head-master of the art schools by the Committee of Council on Education for the general amount of work, as tested by examinations, considered with reference to the number of students under instruction, being most satisfactory. Mr. John A. Sherlock, decorative painter, has obtained a national scholarship at South Kensington, value 50*l.* per annum. He availed himself for four years of the advantages offered by the instruction given in the school. During that time he has obtained several third-grade and national competition prizes at South Kensington. In addition to the above, he has received from the Department of Art free studentships in the School of Art for the year commencing August, 1870, '71, '72, '73, for satisfactory and successful work and attention to his studies. The report was adopted.

The Sheffield School of Art.—The annual convocations of this school took place in the building in Surrey-street. There was a numerous attendance. The council of the school have succeeded in obtaining a collection of oil and water-colour drawings, mainly from local galleries. The *accreditation* commenced at six o'clock, and at eight o'clock an adjournment was made to the lower class-room, where the distribution of prizes took place. In the unavoidable absence of the Rev. Rowley Hill, the chair was taken by Mr. W. Bragge, Mr. Bragge, in opening the proceedings, said he wished to congratulate the people of Sheffield on the real, thorough progress which that school had made. It was earning higher premiums, and more in number, than ever were earned before. Still, the school was a great deal too small for the town. There ought to be many such schools in the town, instead of one, and many worthy masters and teachers, instead of the half-dozen who were now engaged. He wished to say a few words on behalf of what had long been a plan and a project cherished and entertained by him with all his heart. He wanted to see established in Sheffield a metal-work museum. If they could get in Sheffield, which he was sure they could, a metal-work museum, where the cutler shall see the most original, the earliest cutlery that the world can show; where he shall see specimens of the whole of the historic period, of the Medieval period, and come down to the present time; where he shall see every article dissected and

laid before him, so far as they could be, did they not think that that would cause the cutler to entertain a much higher opinion of his art than he did before? He appealed to the gentlemen of Sheffield to help him in carrying out his object, which he so earnestly desired to see fulfilled. Of course there were great difficulties in the way; and the first difficulty was to find a place. They had in the house in Miss Harrison's grounds a building which, with very little internal alteration, could be made a very useful building. Behind it could be thrown out galleries to any extent they desired, and there were the building materials upon the premises. The expense of doing this would be really quite within the means of any private gentleman who chose to undertake it. The house was the property of the municipality, and he hoped before they met in that room again it would be altered and devoted to the purpose for which they desired it. The money which they had spent there would come back to them in Sheffield tenfold. He had a strong desire to get their help and co-operation in carrying out this metal-work collection at as early a period as possible.

The Maidstone School of Art.—A correspondent of the *South Eastern Gazette* calls attention to the declining state of this school. "At first sight (he says) it does not appear why the school declines; it certainly is not for the lack of local talent, for by the reports printed by the committee for the last few years, it is proved that, in proportion to the numbers of the scholars, our school has taken as many prizes from South Kensington, and more than the generality of schools in the United Kingdom. I think the secret is in the management of the school; for although there are the names of many influential gentlemen down as committee-men on the first page of the report for this year, I am sorry to say that, with but a few exceptions, they take no active interest in the welfare of the institution. In fact, almost the whole of the work devolves upon Mr. Collis, to whom the students owe a deep debt of gratitude for his energy, and the interest he takes in the affairs of the school." He thinks it is "very plain that unless the gentlemen of the committee use their influence more vigorously to promote the interests of the School of Art, it must shortly do what most good things do in Maidstone, that is, die a natural death."

VARIORUM.

"ELECTRO-SYMPATHETIC Clocks and Time Signals," by F. J. Ritchie, Leith-street, Edinburgh (Neill & Co., printers). This is a pamphlet comprising a paper read before the Royal Scottish Society of Arts in April, 1873, and awarded the Read and Auld Prize for Session, 1873. The subject is one which has received much attention from Mr. Ritchie and others at Edinburgh, where electric clocks and time signals have been long in practical use. According to *Iron* our Antipodes has just revealed a new mineral—a white coal—which is fibrous, easily combustible, and burns with a light flame and no smoke. Nor is the material rare; large districts are covered with it, and it lies on or very near the surface. The coal is a species of lignite, and the colour is most likely due to the absence of bitumen.

Miscellaneous.

Projects in Parliament affecting the City of London.—A report on railways, tramways, and other projects affecting the City has been made by Mr. Haywood to the Sewers Commissioners. There are nine projects:—1. Metropolitan inner circle completion and Eastern Extension Railway; 2. Aldgate and Cannon-street Railway and completion of inner circle; 3. Great Eastern and South-Eastern Junction Railway; 4. Great Eastern Railway, additional lands; 5. North London Railway, additional powers; 6. New Mint building site; 7. North Metropolitan tramways; 8. South-Eastern Railway, pneumatic tube; 9. General Post-Office plan. The railway projects will much interfere with the sewers, and to insure a position for the Commissioners, must be objected to by them, and arrangements as to replacement of the sewers, &c., secured, if the projects are not otherwise interfered with. The completion of the inner circle railway will go by tunnel from the District Terminus, by Queen-street, Cannon-street, Gracechurch-street, and Fenchurch-street, to Aldgate Pump and Harrow-alley.

The Condition of Worcester Townhall.—At a recent meeting of the Worcester council, Mr. W. Holland read a report of the survey of buildings and property committee, which stated that, at the last meeting of the committee, Mr. Rowe presented his report on the works done to the townhall, under the recommendation of the council on the 25th of August last. He also stated that the cost of the repairs, up to the present time, including those to the roof, now nearly completed, would amount to about 2600*l.*; and that further repairs were necessary to the extent of 120*l.*, besides the painting of the external wood and iron work. Mr. Holland, after reading the report, went on to say that Mr. Rowe had found the dilapidations to be so much greater than he expected, that the sum originally voted was not sufficient, and stated that even after the 120*l.* had been spent, he would not guarantee that the building would be safe for the ordinary uses of a guildhall,—for instance, for the holding of large meetings. Having gone so far, however, it was a question, Mr. Holland said, whether they would be wise in declining to authorise the further expenditure, leaving the hall in an unfinished state. Mr. Longmore moved that the necessary work be proceeded with, and the extra sum of 120*l.* be granted. As to the safety of the building, he said there was an enormous meeting held in it the other night with perfect safety, and he heard several persons remark that if it would stand that it would stand anything. After a discussion Mr. Longmore's motion was put to the meeting and lost by ten to nine, the mayor's vote deciding the question.

Ashantee Architecture.—The special correspondent of the *Times* sends some items of information on this subject which may be usefully recorded.—“My house is plain and primal— a house stark naked, so to speak; for no part of it is clothed with plaster or clay. Two stout posts, notched at the upper end, support a horizontal beam, from which eight palm rods slope down on either side and rest upon the walls. A layer of palm leaves placed upon these constitutes the thatch. The walls are of split pieces of palm, bound together with the fibres of the tree. The door is of the same material, the fibrous cord being adjusted as a hinge.” . . . The traveller Bowditch has often been accused of using too much colour in his descriptions of this country, but I do not think that he has exaggerated the merits of Ashantee architecture. It has more of the old Egyptian than of the Arab character. An Ashantee mansion is composed of courtyards, which are thoroughfares leading into one another, each courtyard is square in shape, with often a tree planted in the midst. Round the yard are rooms or alcoves raised above the ground, and thatched overhead. The front of the alcove looks on the yard, and a drop curtain of mat-work obtains seclusion for its inmates. The dais or platform which forms the floor of each alcove is painted with a coating of clay, in colour a deep rich Etruscan red, with a beautiful polish. The walls are washed with white clay, which the natives of the Gold Coast often take as a medicine in water or chew as a sweetmeat. The walls are also decorated with strange and tasteful designs. Gutters on the ground and wooden pipes between the sloping thatched roofs are neatly arranged for carrying rainwater away.”

Opening of a New Moravian Sunday School at Fulneck, Leeds.—A public tea meeting to commemorate the opening of a new Moravian Sunday School for boys at Fulneck has been held, under the presidency of Mr. W. Middleton, J.P., the chairman of the Leeds Board of Guardians. There was a large attendance. The new school, which has been erected on the side of the hill at the back of the settlement of the Moravian Brethren, has a frontage of 33 ft. 6 in., and a uniform depth of 87 ft. Its height is 17 ft. from floor to eaves line, and it is faced with pitch-faced wall-stones, with ashlar dressings. The style of architecture is Italian, in harmony with the present buildings at Fulneck. The general school-room is 51 ft. by 30 ft., and there are two class-rooms, 15 ft. by 11 ft., approached from the principal entrance, which is 6 ft. wide. There are also two rooms at the west end, 16 ft. by 14 ft. 6 in., one of which will be used as an infants' class-room, and the other as a tea-room. The total cost has been 1,500*l.* The works have been executed under the superintendence of Messrs. C. S. & A. J. Nelson, of Leeds, architects.

The Inventors' Institute.—A meeting of this society has been held at the offices of the Institute, 4, St. Martin's-place, Trafalgar-square, for the purpose of hearing a paper read by Mr. P. A. Blake, on “Suppressing Fires by novel automatic means, indicating the presence thereof in buildings.” Mr. Yates occupied the chair. After a few introductory remarks from the chairman, who pointed out the importance of the subject, Mr. Blake proceeded to read his paper. He stated that 2,000 fires occurred in London annually, and that through their means many scores of lives were lost. This state of things required to be remedied. The late money panic in America had been ascribed to fire, and it was estimated that the amount of damage done by it in that country would reach the sum of 110,000,000*l.* or 120,000,000*l.* If fires were taken at their commencement, it was easy to extinguish them, but if they were not, it was exceedingly difficult to check them. What he proposed was to have an apparatus which would give notice of fire from its commencement, and thus enable it to be easily extinguished. He proposed to have the inside of buildings hung with fuses, easily ignited, connected with maroons. Directly a fire occurred in a house, the fuse would become ignited by the heat, and ignite maroons, the explosion of which would immediately give an alarm. If this safeguard were adopted, he believed there would almost be an end of the dreadful calamities which had occurred of late. At the conclusion of the reading of the paper a short discussion ensued.

Belfast Architectural Association.—At a meeting on the 16th inst., Mr. Robert Young in the chair, a paper was read by Mr. John Boyd, architect, on “The Effects of Water, Wind, and Frost, on Public Buildings.” The first portion of the paper referred principally to damp, arising from different sources—1, from below, or foundations; 2, from above, or the roof; 3, from the sides, or walls; and, 4, from incidental sources—in which the varied causes were pointed out, and remedies suggested. With regard to the effects of wind on buildings, Mr. Boyd pointed out a number of recent cases where accidents took place from various erections falling during a gale. He also gave examples of how to calculate the effects of hurricanes on buildings. In the third case, the effects of frost on stone were shown to be greatest on the north and north-east sides of buildings, and on the under side and beneath cornices and projections, from the fact of the sun not shining on these so much as on the south and west. After the frost has commenced the disintegrating process, the various acids in the atmosphere of London and our large manufacturing towns come to its assistance, and the work of dissolution progresses.

Munificent Bequest to Barnard Castle.—Since the death of Mrs. Bowes (wife of Mr. John Bowes, of Sireatham Castle), which has just occurred at the family residence in Paris, it has been stated on authority that the magnificent building now in course of erection at Barnard Castle, and of which we recently spoke, together with the park and a large and valuable collection of paintings, statuary, and other works of art and curiosity, which have been selected by Mrs. Bowes (Countess of Montalbo) and her husband during the course of a long series of years, will ultimately be given to the inhabitants of the town. The name will, it would appear, be “The Josephine and John Bowes Museum and Park.” In accordance with the expressed wish of Mrs. Bowes, her remains will eventually repose in the chapel which is to be erected in connexion with the museum. The natural appreciation and acquired knowledge of art with which this lady was gifted were well known, and by her death there has been removed one of the most refined and able advisers in the undertaking. It is not improvable, considering the amount of carving and ornamentation to be carried out internally, and externally, that some years will yet elapse before the museum is thrown open to the public.

Road Paving.—Sir: In macadamising a road, which is now done with broken granite, water, fine gravel, and the steam-roller, if *hot tar* were used in the place of the water, would it not make a smooth clean road, both free from dust in dry and mud in wet weather; not slippery in dry, wet, or muggy weather, and easily cleaned? Footpaths in the suburbs made on a somewhat similar method have proved satisfactory, being pleasant to walk on in all weathers, because of their clean even surface.—E. J. B.

The Oxford Architectural and Historical Society.—This Saturday, Feb. 28, it is proposed to meet in the Ashmolean Museum, where in the absence of the keeper, Mr. J. P. Earwaker (deputy-keeper) will receive the members and their friends, and will give a short account of the museum and its recent re-arrangement. Mr. W. S. W. Vaux will describe the Arundel Marbles, and Professor Westwood will describe the ivory, &c.—Saturday, March 7th. Headington and Marston Churches. It is proposed to assemble in the parks, by the lodge of the New Museum, and to walk thence, crossing the Ferry from the University walks to the meadows, to Marston (two miles). Marston Church is, as regards the main structure, of late twelfth-century date, with alterations and additions of the fifteenth century. From Marston the party will walk to Headington Church. At the evening meeting, February 24th, Mr. J. P. Earwaker will give an account of the recent archaeological discoveries in the neighbourhood of Oxford, illustrated by a fine collection of Roman remains from Dorchester, and many other objects of interest, Saxon and Mediaeval.

The City Courts of Justice.—A proposition has been laid before the court of aldermen to abolish the Mansion House as a police-court, and to concentrate the whole of the City business under one office at the Guildhall. The present police-court at Guildhall would be found totally inadequate for the additional business that would be brought to it, supposing this arrangement to be carried out, and a large and commodious court would be built, either upon the present site of the Guildhall police-court, or in some other portion of the building. The present Mansion House would then be devoted entirely to the purposes of a private residence for the Lord Mayor, and the justice-room and other places now applied to the purposes of the police business would then be made available for occasions of grand receptions, banquets, &c. It appears to be the opinion of many persons well acquainted with the subject, however, that there would be difficulty in carrying out the proposed plan.

The Hospital for Sick Children.—The festival of this deserving charity was held on the 11th inst., at Willis's Rooms, under the presidency of Sir Francis Goldsmid, bart., who stated that the new buildings in Great Ormond-street are progressing rapidly, from the designs of Mr. E. M. Barry, R.A. Eloquent speeches were made by Lord Gort, Sir James Paget, Mr. Goldwin Smith, Dr. West, Sir F. Goldsmid, and others; and in proposing the Press, allusion was made to the *Builder* as having forwarded the interests of the charity by its illustrations, which had even attracted notice in Russia, where the erection of a children's hospital is in contemplation. A list of subscriptions was announced, and urgent appeals were made to the public for further assistance, to enable the committee to complete the new hospital, part of which only has, as yet, been commenced.

On Glass.—A lecture on “Facts and Fancies connected with Glass,” was delivered in the Reading-room of the Runcorn Literary and Mechanics' Institute, by Mr. W. Lyon, on Friday evening last. The lecturer reviewed the history of glass, its manufacture, materials, uses, and the great service it has rendered to various scientific pursuits. He affirmed that glass existed some hundreds of years before the Christian era, and named several Eastern countries in which articles of glass were esteemed and treated as of great value; and said that as recently as three hundred years ago, the sons of noblemen in France thought it a great honour to be permitted to learn the art of glass-making, and so highly was the privilege esteemed that the wealthiest families in the land were eager to court the acquaintance of those engaged in the trade.

Restoration of St. Martin's Church, Birmingham.—The committee for the restoration of St. Martin's Church, at their last meeting, determined to proceed with the erection of the chancel, chancel aisles, and vestries, and thus complete the whole of the building according to the architect's designs. The amount required for this purpose, however, far exceeds the total sum as yet subscribed, 2,000*l.* have already been received on account of the voluntary assessment, and the committee hope that, as the whole of the work is now in progress, those who have not paid their assessment will do so, and thus help to defray the large outlay for which the committee has become responsible.

An Electric Thermometer for Fire Alarms.—At the last week's meeting of the Metropolitan Board of Works, a letter was submitted from Mr. Charles P. Clyatt, consulting engineer of the Signals Telegraph Company, offering to lay before them a simple invention applicable alike to public buildings and private houses, which would convey an instantaneous alarm at the very earliest commencement of a fire. This end is gained by fixing to every floor of a building an electric thermometer, connected by wires with a central point in the building, and also with the nearest fire-brigade station, conveying at once an alarm the moment the slightest degree of heat above the ordinary temperature is reached. The cost of fixing the apparatus would be only small. The letter was referred to the Fire Brigade Committee for consideration and report.

International Exhibition of 1874.—The Council of the Society of Arts have resolved to offer the Society's Gold and Silver Medals in connexion with the International Exhibition of 1874. These will be offered in each class, and for any object exhibited which, in the opinion of the council, shows paramount or very great excellence. M. Ozenne and M. du Sommerard have arrived in London to make final arrangements for the representation of French art and industry in the present year's exhibition. They state that French artists are making large demands for the admission of their pictures and works of art. The city of Paris will exhibit an extensive illustration of the municipal works of Paris, accompanied by models of public buildings, sanitary appliances, &c. This display excited much interest at Vienna.

Lincoln Tower of Christ Church, Lambeth.—At a temperance meeting, recently held in Surrey Chapel, the Rev. A. Cay, vicar of Whetstone, who presided, said that he had read some censures on the proposal to erect a tower to cost 7,000*l.* in commemoration of the emancipation of the slaves in America. For his own part, he rejoiced in it. Surely it was not too much to spend on a monument to commemorate the greatest philanthropic event of our day, and he wished to give the price of a dozen bricks. The tower in question is international. Half the amount has already been given by American citizens for this express purpose; and 2,000*l.* have already been specially contributed in this country towards the English contingent of this token of international goodwill.

Opening of a Working Men's Reading Room at Flimby.—A new building, intended for a Working Men's Reading Room, has been opened at Flimby. The foundation-stone of this building, which is a concrete one, from a design by Messrs. C. Eaglesfield & Sons, of Maryport, architects, was laid in July last. The edifice consists of a reading-room 13 ft. by 12 ft., a committee-room, 16 ft. by 9 ft.; a public hall, 40 ft. 10 in. by 23 ft. The estimated cost of the structure, including the furniture, is upwards of 715*l.* The contractors for the concrete and joiners' work were Messrs. Banks, Mandle, & Co., of Maryport; for the plastering and cementing, Mr. Waller, of Cockermouth; and for the plumbing and glazing, Mr. Piele, of Workington.

Ossett Main Drainage.—On Monday evening, the 23rd inst. at a meeting of the Ossett Local Board, Mr. M. Paterson of Dewsbury, presented working plans and sections of the proposed main drainage of the entire district. It is intended to provide for manufacturing refuse water, as well as the house sewage and road drainage; and the works involve two separate main outfalls, besides four outlying sewers which cannot be otherwise dealt with. There are about twelve miles of brick and pipe sewers. The method of sewage treatment proposed is that of rough precipitation in settling tanks combined with land filtration. The estimate is 22,272*l.*, and includes the cost of the sewage works, land, &c.

Gravesend and the Duke and Duchess of Edinburgh.—The Gravesend Reception Committee have accepted tenders for the erection of about 1,300 seats on the Terrace Pier, and about 1,000 seats just outside the pier. The Decoration Committee met to decide upon tenders for decorations. Messrs. Defries, Davis, Edgington, and two local tradesmen, Messrs. Bird & Cooper being in the field. The Committee, having considered the proposals and plans submitted for a couple of hours, were unable to come to a decision, and referred the matter to a sub-committee.

Institution of Surveyors.—The Duke of Bedford has presented the following costly works to the library:—Eyton's "History of Shropshire," Thornton's "History of Nottinghamshire," Warner's "History of Hampshire," Gilbert's "History of Cornwall," Atkyn's "History of Gloucestershire," Suckling's "History of Suffolk," Bridge's "History of Northamptonshire," Sarsse's "History of Durham," Thoresby's "History of Leeds," Dallaway's "History of Sussex." At the next meeting to be held on March 2nd, a paper will be read by Mr. D. Watney, entitled "Timber"; and the discussion on the paper by Mr. Ralph William Clutton, entitled "The Self-sown Oak Woods of Sussex," will be resumed.

The Preservation of Clapham-common. The Metropolitan Board of Works have purchased the manorial rights and privileges of the lord of the manor in Clapham-common, and the interests, &c., are to be conveyed to the Board for the purpose of securing the common as an open space for the public in perpetuity. The common comprises 250 acres of land, and the sum demanded was 33,000*l.*; but after much negotiation the interests of the lord of the manor have been purchased for 18,000*l.* The Board of Works will deal with the rights of the commoners having the privilege of pasturage, &c., and the common will remain intact and will not be built upon.

The Proposed Tunnel under the Tees.—At the half-yearly meeting of the North-Eastern Railway Company, it was stated that the result of Mr. Harrison's examination had been to show that there is a stiff bed of clay under the Tees, where there would be no difficulty in putting the proposed tunnel. The line would be about six miles. Including the tunnel, which would be 2,310 yards in length, the short line across the river would be three miles. The cost of the line was estimated at 387,000*l.* In respect of the tunnel, which would cost nearly half that sum, they sought power to charge tolls as for four miles.

Tunnel at Cowes.—Works are now in progress under the direction of Mr. Vignoles, engineer, with a view to ascertaining the practicability of a submarine-tunnel to connect the Isle of Wight with the mainland. The spot selected is the narrow part of the Solent just to the westward of Cowes, the actual width of the sea here not being more than one mile and three quarters. Experiments are now being carried on by Mr. Frichard, the contractor, to ascertain the nature of the soil through which the tunnel would have to run, and up to the present time the results have been eminently satisfactory.

Lecture on the Goldsmith's Art.—In connexion with the exhibition of the Goldsmith's Company's competition drawings (now open, a lecture will be given on this, Saturday, February 28th, at the Architectural Museum, on Ancient and Modern Goldsmith's Art, by Mr. F. A. Skidmore, — a good authority. The Fishmongers' Company have lately made a donation of fifty guineas to the museum towards the maintenance of the art-workmen's evening drawing and modelling classes carried on in the building.

The Free Libraries Act for Macclesfield. Last week a public meeting, convened by the mayor, was held in the Town-hall, Macclesfield, and the Free Libraries Act, 1855, was adopted, on the motion of Mr. Alderman Bullock, seconded by Mr. Nicholson. The question was brought forward in order to enable the town to take advantage of an offer of 5,000*l.* for the erection of a building, and furnishing it with 10,000 volumes of books.

New Gaol at Portsmouth.—At a meeting of the Portsmouth Town Council held in the Guildhall, on Monday, it was resolved, on the motion of Mr. Howell, seconded by Mr. Murrell, to adopt the report of the Gaol Committee, which recommended the building of a new gaol at Copnor, upon the plan furnished by Mr. G. Rake, at a cost of between 30,000*l.* and 40,000*l.*, and authority was given to raise the necessary funds on loan.

The St. Gothard Tunnel Blasting.—It is stated that a plan has been successfully adopted for firing at the same moment various blasts in the St. Gothard Tunnel by means of electricity. Hitherto there has been loss of time from the difficulty in adjusting the length of the fuses so as to accomplish the explosion of all the blasts at once; and a loss of power, moreover, from the want of simultaneous action.

The Sub-Wealden Boring.—In the *Sussex Express*, Mr. Peyton states that the Diamond Rock-boring Company commenced work on the 12th inst., and they had reached a depth of 363 ft., giving a total of 40 ft. in three days' work. Whilst looking on they bored down 6 in. in ten minutes! The cores are 9 in. in diameter, and are brought to the surface in perfect condition, one being no less than 7 ft. long, still from the Kimmeridge clay.

Royal Humane Society.—Next April, a hundred years will have elapsed since the foundation of this Society, and the committee have decided on holding a Centenary Festival, at which His Royal Highness the Duke of Edinburgh has expressed his intention of presiding, to celebrate the great success which has resulted from its exertions.

Art Founders' Trade Book.—Messrs. Allen & Co., late Turner & Allen, of Upper Thames-street, have issued a trade-book prepared at some cost. It includes a large number of designs for lamps, lamp standards, candelabra, pillars, gates, railings, and fountains,—mostly "Classical" in style. Some of the designs are very good of their kind.

Workmen's Dinner.—The roof of the large mansion now building at Hill-head, opposite Cones, on the banks of the Solent, being successfully fixed, the owner, Sir Frederick H. Sykes, bart., invited the whole of the employees to dinner on the 19th inst. Mr. Goodchild, of the Adelphi, is the architect, and Mr. George Baines Pussen is the contractor.

Competition.—Designs have been sent in for Board Schools at South Norwood for the Croydon School Board by four architects out of the six invited; namely, Mr. Rubson, of the London School Board; Mr. C. Henman, Mr. C. Rutley, and Mr. Mullett. The designs are sent in under mottoes.

Sale of a County Prison.—The very unusual occurrence of a prison being sold by auction occurred the other day at Abingdon. It was built some sixty years since for 26,000*l.*, and was in sound preservation. The reserved price was 2,000*l.*, and it fell to the bid of Messrs. B. Clarke & Co., the clothiers, of Bristol, for 2,700*l.*

Fatal Fall of an Ice-House.—The Philadelphia correspondent of the *Times* telegraphs that a brewery ice-house, in Philadelphia, while being filled, has fallen in from over-pressure. Thirty persons were buried in the ruins, of whom eleven were killed and seventeen injured. Two were still missing.

Sewer Ventilation required at Cambridge.—The Cambridge Urban Sanitary Authority having instructed their surveyor "to report what steps should be taken to provide ventilation for the town sewers," Mr. Stephenson has prepared his report on the subject, with practical suggestions, especially as to cleansing and flushing the sewers forthwith.

Hospitals and Ventilation.—On Monday evening next, the 2nd of March, Dr. Charles Shrimpton will read a paper at a meeting of the Social Science Association, to be held at their rooms in the Adelphi, on "Hospitals, Cottage Hospitals, and Ventilation," at eight o'clock.

The National Gallery.—Mr. F. Barton is announced as the successor of Sir W. Boral, R.A., who retires from the directorship on the ground of ill-health.

TENDERS

For Board Schools, at Warlingham, Surrey. Mr. C. Rutley, architect:—	
Peckett & Taylor.....	2,987 0
Jarrett.....	373 0 0
Taylor & Son.....	331 0 0
Hearle.....	867 0 0
Ward (accepted).....	552 0 0

For New Farm buildings, Northern Woods, Woburn, Bucks, for Mr. A. Gilbey. Mr. A. Vernon, architect:—	
Woodbridge.....	2,025 0 0
Hunt.....	692 0 0
Williams.....	699 0 0
Corby.....	676 0 0
Webb.....	637 10 0
Baughurst.....	618 0 0
Sexton (accepted).....	564 0 0

For the erection of additions to the St. Peter's Schools Hackney-road. Mr. Rogers, architect:—	
Boales.....	2,710 0 0
Forest.....	659 0 0
Judd & Hawkins.....	610 0 0
Hall & Wick.....	487 0 0
Bradford.....	496 0 0

For Channelsea Schools, for the West Ham School Board, Mr. J. I. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Charlton & Martin	£2,145 0 0
North	2,750 0 0
Abraham	1,800 0 0
Parry	1,987 0 0
King & Son	1,852 0 0
Wicks, Bangs, & Co.	1,870 0 0
Rivett	1,887 0 0
Knight & Dunslow	1,838 10 0
Webster	1,927 0 0
Hodgkins (accepted)	1,757 0 0

For new factory at rear of No. 50, Leadenhall-street, City, for Messrs. Field & Tuer, Mr. J. I. Newman architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Foster	£1,340 0 0
Sharpley & Cole	1,377 0 0
Cooke & Green	1,259 0 0
Wicks, Bangs, & Co.	1,249 0 0
King & Son	1,254 0 0
Elkington (accepted)	1,130 0 0

For Licensed Victuallers' Asylum, Old Kent-road, for repairs to be done to the houses, and to the external stone paving, &c. Mr. W. F. Potter, architect:—

Maxwell, Bros.	£2,190 0 0
King	2,100 0 0
Burningham & Co.	217 6 0
Hall & Son	198 0 0
Hayworth	190 0 0
Horsco	180 10 0
Stace (accepted)	122 10 0

For the erection of a villa residence, at West-hill, Southport, for Mr. P. Rothwell, Messrs. Balmer & Gassie, architects. Quantities supplied:—

Durfield	£1,450 0 0
Wishart & Irving	1,450 0 0
Nixon	1,455 0 0
Wilkinson	1,400 0 0
Russell (accepted)	1,370 0 0

For forming new road on the Mile-Mead Estate, Guildford, Messrs. E. W. Lower & Son, architects:—

Mitchell & Son	£1,807 0 0
Martin, Wells, & Co.	1,250 0 0
Garter	1,210 0 0
Symonds	1,180 0 0
Gardner (accepted)	1,078 0 0
Haynes	885 0 0

For alterations and enlargement of premises at 70, King's-road, Chelsea, for Messrs. Edmunds & Butler, Mr. C. L. Link, architect:—

Manley & Rogers	£2,483 13 0
Little	478 0 0
Strimmon	150 0 0
Hockey	150 0 0
Porter	585 0 0
Perrin	334 0 0
Brass & Sons	358 0 0
Clark (accepted)	335 0 0

For Bond End Schools, Messrs. Giles & Brookhouse, architects. Quantities supplied:—

Hadfield	£1,388 0 0
Slater & Vernon	1,371 10 0
Potter	1,911 5 0
Smith	1,910 0 0
Fox	1,822 8 0
Chamberlain	1,792 0 0
Bowler & Beck	1,740 0 0
Mason	1,628 0 0
De Ville	1,592 0 0
Madlocks	1,553 0 0
Bennett	1,514 10 0
Wileman (accepted)	1,530 0 0

For Cattle Sales Company's yard and premises, exclusive of road and foundations, Burton-on-Trent, Messrs. Giles & Brookhouse, architects. Quantities supplied:—

Chamberlain	£3,670 0 0
Mason	3,498 0 0
Love & Son	3,438 0 0
De Ville	3,480 0 0
Bowler & Beck	3,368 0 0

For Victoria-road Schools, Burton-on-Trent, District School Board, Messrs. Giles & Brookhouse, architects. Quantities supplied:—

Wileman	£5,159 0 0
Madlocks	5,053 0 0
Slater & Vernon	5,038 0 0
Potter	4,981 0 0
De Ville	4,828 0 0
Farnell & Son	4,730 0 0
Bowler & Beck	4,737 0 0
Chamberlain	4,730 0 0
Evans	4,622 0 0
Mason	4,515 0 0
Duanoy (accepted)	4,448 0 0

For Branstone School, Messrs. Giles & Brookhouse, architects. Quantities supplied:—

Smith	£1,161 0 0
Chamberlain	1,131 0 0
Bennett	1,115 0 0
Mason	1,010 0 0
Slater & Vernon (accepted)	925 0 0

For Winsill Schools, Messrs. Giles & Brookhouse, architects. Quantities supplied:—

Slater & Vernon	£1,999 10 0
Potter	1,939 0 0
Smith	1,910 0 0
Fox	1,871 10 0
Hadfield	1,850 0 0
De Ville	1,767 10 0
Mason	1,750 0 0
Madlocks	1,733 0 0
Wileman	1,730 0 0
Chamberlain	1,717 0 0
Bowler & Beck	1,717 0 0
Bennett (accepted)	1,677 10 0

For new billiard-room, at Ridgeway Oaks, Enfield, Mr. T. J. Hill, architect:—

L. & W. D. Patman (accepted)	£540 0 0
------------------------------	----------

For new offices in Edmonton, Mr. T. J. Hill, architect:—

Bayes & Ramage	£370 0 0
L. & W. D. Patman	270 0 0
Ward	278 0 0

For building a villa at Richmond-hill Rise, Surrey, for Mr. G. Hart, Mr. W. Burnet, architect. Quantities by G. Guidon Statham:—

Brass	£1,781 0 0
Clark & Bracey	4,759 0 0
Chamberlain	4,560 0 0
Ockley	4,450 0 0
King & Son	4,080 0 0
Adamson & Sons	3,833 0 0
Sweet	3,594 0 0
Newman & Mann	3,888 0 0
Manley & Rogers	3,882 0 0
Carless	3,853 0 0
Simms	3,760 0 0

For farm buildings at Brinkley, near Newmarket, Mr. F. Thomson, architect. Quantities by Mr. W. Barnett:—

Mitham	£905 0 0
White	885 0 0
Mason & Son	890 15 0

For repairs and alterations at the "Cricketers," Lower Wandsworth-road, Battersea Park, for Mr. J. G. Poole, Messrs. Pain & Clark, architects:—

Sawyer (accepted)	£592 0 0
-------------------	----------

For new warehouse for Messrs. Hudson & Sons, 75 and 76, Whitehall-st., W. Mr. A. E. Hughes, architect:—

Richardson	£1,865 0 0
Scriveners & White	1,926 0 0
Simpson & Baker	1,910 0 0
Longmire & Burge	1,910 0 0
Thorne & Co.	1,900 0 0
Taylor	1,897 0 0
Watson	1,842 0 0
Perkins	1,819 0 0
Fairchild	1,810 0 0
Hatchman	1,784 0 0
Hyde	1,770 0 0
Jossein & Co.	1,628 0 0

For proposed stables, &c., Dagman-terrace, Islington, for Mr. R. Silver, Mr. J. Miller, architect:—

White	£2,200 0 0
McCamal	1,850 0 0
Watson	1,940 0 0
Taylor	1,930 0 0
Elbs	1,775 0 0
Hyde	1,772 0 0
Bishop	1,885 0 0
Higgs	1,500 0 0

For alterations and additions to 99 and 92, Fulham-road, S.W., for Mr. Kingsbury, Mr. F. A. Dorey, architect:—

Langmead & Wey	£535 0 0
Evers	520 0 0
Taylor	463 0 0
Wagner (accepted)	470 0 0

For re-building No. 2, Upper Roper-street; repairs to No. 28, Princess-street, adjoining, and new shop fronts, Messrs. Newman & Hewitt, architects. No quantities:—

Tremble	£2,548 0 0
Patman & Fotheringham	2,598 0 0
Hobson	1,769 0 0
Hide	1,767 0 0
Foxley	1,718 0 0
Timms	1,687 0 0

For decorations and other works to Nos 137 and 139, Tottenham-court-road, and No. 233, Euston-road, for Messrs. E. Moss & Son, Mr. H. H. Collins, architect. Quantities not supplied:—

Foxley	£2655 0 0
Pool	627 0 0
Perry, Bros.	600 0 0
Newman & Mann	467 0 0
Yennal	458 0 0
Cole & Sons	450 0 0

For alterations and additions to Bedford Lodge, Hampstead, for Mr. J. Maple, Mr. H. Woodrall, architect. Quantities supplied:—

	Alterations.	New Windows.	Total.
Cole & Sons	£2,273 ..	£25 ..	£2,298
Fish	2,226 ..	24 ..	2,250
Emor	2,193 ..	26 ..	2,219
Cooke & Green	2,178 ..	24 ..	2,202
Newman & Mann	2,170 ..	28 ..	2,198
Scriveners & White	1,988 ..	23 ..	2,011

For alterations and repairs to No. 1, London House-yard, St. Paul's Churchyard, for Miss Keating, Mr. H. Woodrall, architect:—

Scriveners & White	£143 0 0
Newman & Mann	138 0 0
Child	115 10 0

TO CORRESPONDENTS.

A Batepaper—R. & M.—E. J. W. & S.—H. R. W.—Mr. G. A. Leasholder—L. Y.—W. & J. H.—T. M.—C. R.—J. D.—J. N. G. A. R.—J. H. T. L. D.—S. C.—C. H. J.—C. H. W.—J. E. M. P. & Co.—W. F. P.—F. B. O.—P. & H.—T. H.—J. T. C.—S. & M.—T. M.—W.—W. B.—D. & Co. (reports did not reach us).—Messrs. V. L. & T. who sent only for the account. It is possible that Victory Club—G. S. (next week) Metallist (next week)—H. M. (next week).

We are compelled to decline pointing out books and giving addresses. All statements of facts, lists of traders, &c. must be accompanied by the names and initials of the sender, and be sent to the publisher, not to the printer, and be sent to the publisher, not to the printer, and be sent to the publisher, not to the printer.

For Bath Stone of best quality, RANDALL, SAUNDERS, & CO. (Limited), Quarrymen and Stone Merchants.

List of Prices at the Quarries and Depôts; also cost of transit to any part of the Kingdom, on application to

Bath Stone Office, Cornham, Wilts. [Advt.]

STONE BROTHERS,

Bath Stone Merchants,

supply direct from their own Quarries:—

Box Ground, Cornham Down,

FARLEIGH DOWN, CORNHAM DOWN,

AND STONE GROUND.

Prices on application at Bath-stone Office, Bath,

London Depot, G.W.R. Mileage Station, Paddington.

Stone Dressings prepared ready for fixing. [Advt.]

Whitland Abbey Green Slates.—These

Quarries are now fully opened out, and are

producing Slates in all sizes, and in any quantity: sound, and of choice green tint. Orders

can be executed without a day's delay.—For

samples and further particulars, apply to the

MANAGER, at the Quarries, Narberth-road,

R.S.O. [Advt.]

Bills of Quantities, Specifications, &c.,

Lithographed by ROBT. J. COOK & HAMMOND,

29, Charing-cross, S.W., with accuracy and

punctuality. Plans and Drawings Copied,

Traced, or Lithographed.—[Advt.]

Asphalte.

Soyssel, Patent Metallic Lava and

White Asphaltes.

M. S T O D A R T & C O.

Office:

No. 117, Cannon-street, E.C.—[Advt.]

To Brickmakers, Cement Manufacturers,

Ballast-burners, and Others.—GAS-

BRESE FOR SALE.—Fine Gas-Breese

(already screened, and free from clinker), on

the Regent's Canal, free on board barges.—

Apply to WILLIAM WOOD & SON, Wood-

green Station, Great Northern Railway. [Advt.]

T. TRELOAR & SONS,

SUPERIOR

COCOA-NUT

FIBRE

MATTING

AND

MATS.

Manufacturers and Warehousemen

69, LUDGATE HILL, E.C.

GOOD

FLOOR

CLOTH.

KAMPTULICON

CORK

CARPET.

J. L. BACON & CO.

MANUFACTURERS OF

IMPROVED HOT-WATER

APPARATUS,

FOR WARMING AND VENTILATING

Private Houses, Churches, Schools, Hospitals,

Manufactories, Greenhouses, &c.

OFFICES AND SHOW-ROOMS:—

476, NEW OXFORD STREET, London, W.C.


From FARRINGTON ROAD.

Publishers of a Pamphlet on "Hot-Water Heating."

The Builder.

VOL. XXXII.—No. 1622.

Fire.



OR the second time, within little more than six months, the Metropolis has been the scene of one of those great calamities which, in our happily situated country, may be said in some degree to correspond to the ravages of the earthquake in the South. It is not merely in the magnitude of the destructive power, so far as its activity extends, or in the sudden nature of the mischief, that a parallel exists. We shall see, if we look a little into the matter, a sound architectural reason for the fact that those seats of the great building races that are liable to devastation by earthquake, are, comparatively speaking, but rarely desolated by fire; unless when it occurs after earthquakes. This combination of disaster is, however, not infrequent. We speak, moreover, of building races. Especially we refer to the Italians. In other southern climates, as at Constantinople, where earthquake is not a unknown visitor, fire is even more unchecked in its ravages than amongst ourselves. The columns of our contemporaries have not failed to be filled, not only with detailed accounts of the great fire at the Pantheon, on the 13th of February, but with suggestions, recommendations, and warnings, many of which are highly deserving of attention, and have, before now, appeared in our pages. It cannot fail to strike a reflective mind, that the three most lamentable fires that have been witnessed for some time in the immediate vicinity of London, have occurred in those very buildings which might have been naturally regarded as least liable to such a calamity. At Sydenham, it might almost be said that water-works took fire. A building, the superstructure of which consisted mainly of iron and glass; which contained open tanks and fountains, fed by abundant supplies of water; and that was connected with the most powerful artificial head of water, stored for the purposes of a magnificent display of fountains, might well have been regarded as incombustible. At Muswell Hill, the vast airy expanse of the building, and the extreme improbability that fire would ever be kindled in the vicinity of the dome, seem to have lulled the apprehensions of the architect, and allowed of the introduction of materials that were desirable for lightness, and probably for cheapness, but that proved fearfully combustible in the unforeseen case of danger. In each case, however, as at the Pantheon, occurred the same instructive phenomena. First, safety was a question of minutes, or rather of seconds. Secondly, it seemed to have been forgotten that to make a building in itself incombustible, if that can be effected, is not to prevent it from acting in the capacity of a furnace. For all purposes in which intense heat is required, it is essential to build incombustible furnaces. That remark is not

without direct application to each of the three great disasters to which we refer.

It would be a strangely humiliating fact if, in the present state of architectural splendour and of engineering skill, we were compelled to admit fire to be, with earthquake, a non-preventible evil. Practically, indeed, we may be told that such is the case. But, if so, it must be because our practice is bad. There is a certain borderland of unexplained phenomena, to which speculation is wont to resort, with singular pertinacity, on almost all occasions of great fires, by way of laying the blame, not on carelessness, or on want of foresight, but on "the nature of things." "Spontaneous combustion" is a verdict which may be compared to the "found dead" of a coroner's jury. We do not deny that, in some cases, such a source of danger exists. In the bunkers of a steam-vessel, where the disengagement of carburetted or sulphuretted hydrogen from a mass of coal may be stimulated by the motion of the vessel, the occasional outburst of self-originated fire is certain, but the occasions are rare. Many supposed cases disappear on investigation, and it must not be forgotten that the mere acknowledgment of the possibility of such a source of danger is enough to call for the exercise of precaution of an adequate nature.

Without denying, then, the occasional occurrence of fires, which may be said to originate, only in the second degree, from carelessness, we cannot doubt that, in the great majority of cases in mines, ships, farmyards, churches, or other great buildings, the actual cause of fire is pure and inexcusable carelessness. We know that, in mines, and we suspect that, in many other instances, the habit of smoking has had much to answer for. But that is not the point to which we now wish to call the attention of our readers. Asserting that fire is, in itself, a preventible calamity, and holding, in consequence, that the detection of the cause of any great fire ought to be made serviceable, in the way of indicating more precautions for the future, we look for the practicable outcome derivable from this last, in some respects irreparable calamity.

There are three modes by which human care and skill may attempt to prevent the ravages of fire. Of these we are familiar with the first and with the third. But we are of opinion that we most inexcusably neglect the second. The modes to which we refer are: prevention; circumscription, or limitation; and extinction. Each demands thoughtful consideration.

Prevention of fire is a matter of personal and individual conscientiousness. It is thus a matter on which the public writer can hope to exercise but little favourable influence. Nor can legislation be expected to come much in aid. Arson, indeed,—or wilful fire-raising,—is one of those detestable crimes to which, as to the attempt to upset a railway train, the utmost rigour of the law should not only be applied, but in reference to which it might well be whetted and sharpened. But that fire-raising which is to be compared, not to murder, but to manslaughter, is less easy to bring under criminal purview. Very frequently the knowledge of the cause is confined to the breast of the culprit, as seems to have been the case at the Alexandra fire. We can thus rarely hope to ascertain the actual truth. And when we see how inoperative is that which is usually considered the most powerful of all motives, the loss of life itself, to deter the miner from the perilous luxury of a forbidden smoke,—how we find an unguarded lamp, or a box of lucifer matches, in almost every instance after an explosion of fire-damp, we can only conclude that a certain amount of gross, fatal, ineradicable carelessness, is one of those certain elements of danger against which we have to provide in contemplating protection from fire.

This leads to the consideration of one of those safeguards which have been suggested in the

course of the discussion as to the recent conflagration. The employment of a watchman in a great building has been urged as a safeguard against an unsuspected outburst of flames. Now, this is a subject on which we cannot afford to experiment. We may draw, and ought to draw, the fullest lesson from the calamities that take place beneath our very eyes; but we must attempt no remedies that are at all of a questionable nature. A watchman is one of these. A watchman must have a light. If he be not openly provided with one, he will, according to the general experience of human nature, provide himself with surreptitious means of obtaining one—at all events, in case of alarm. Here, then, is a new source of danger open. The most careful and trustworthy watchman may have a fit. He may fall asleep. If he be any but the most reliable patrol, he may be drunk. If two men are stationed in a building they may quarrel. Thus while the only service to be expected from a watchman is an early detection of fire, and of fire that must arise from some want of care or of structural protection, in the first instance, his presence involves an actual source of danger. This ought to be well pondered before a night-watchman is introduced to the interior of any important and non-inhabited building.

While, therefore, we are of opinion that it is a mischievous fallacy to seek to attribute the origin of mysterious fires to the automatic action of chemistry, we think that the builder must regard fire as one of those evils to which the carelessness, the stupidity, the misfortune, or the malice, of man, is tolerably certain to expose his work within the period calculated for its durability. If we rely on such care that no spark can fly or fall so many times in a century, we shall certainly be in the wrong. We ought, therefore, as sane men, to regard the matter in another light. We must provide for limiting the mischief, if it unfortunately make its appearance. Let us take every care, indeed, that a muslin curtain or a crate of straw shall not take fire. But let us, none the less, look in the face the fact that it may do so; and let us provide and prepare accordingly. In a word, let us not trust to moral safeguards. They may be good, but they must be imperfect. Let us look for a more perfect, because a self-acting, means of protection.

This, there can be no denial, is to be found in wise precautions, calculated to limit the ravages of fire, if it should once gain a head. The destructive element is not a mysterious enemy. Its mode of growth is well known. One function of its fury, indeed, is capricious, and incapable of prediction. We mean the force and direction of the wind. But in that fact we have one of those limits which only the fatuous neglect to improve. We must remember that fire is a familiar. It is, all things considered, the most potent and serviceable of those energies of nature which have been subdued to the service of mankind. It is an essential minister in every house. But, in domestic life, we have the habit of confining the elemental spirit within safe bounds. We limit our combustion to the grate. We allow a free and wasteful radiation of heat from open stoves into our rooms, in a manner unknown to our Continental neighbours, and we do this with a great amount of practical safety. The occurrence of a fire from a sitting-room or bedroom fireplace, is an accident which, if we calculate the number of household fires daily lighted, is of almost inappreciable rarity. If the simple precaution of a fireguard be adopted when a fire is left unwatched, domestic safety from this source of danger is almost absolute.

This is the case because, instead of taking it for granted that fire will not occur, we take it for granted that it will occur; and, in so doing, we limit the field of its operation. What every architect does, in every house, the principles of

architecture, no less than those of common sense, prescribe as right to be done in store-houses, museums, libraries, and all those places where great stores of combustible materials are notably accumulated.

The only absolute safety, then, lies in regarding each apartment, containing or intended to contain such combustibles, as a furnace, and as a furnace that may at any moment be lighted. The duty of the architect in that case is clear. It is to provide such a backing, and roofing, and flooring for the furnace that its contents may consume without inflaming the contents of the neighbouring furnaces. Viewed in this light, the problem becomes one of great simplicity, and the more so because it is not the duty of the architect to provide for the free consumption of these possible furnaces, but the very reverse. Ventilation is not required to be free and constant; on the contrary, the less ventilation the better. No chimney is required—no air-flue is required. The chamber of which we speak is reduced to the condition of a simple cell. Ingress must be given by a door. Light must be admitted, and if this can be done by glazing the door, so as to make only one aperture in the chamber so much the safer. In a word, the safety of a great building can only be secured when that building is divided into compartments, so arranged that if fire occurs in either of them, it will burn itself out therein, without communicating to the neighbouring chambers.

There is no difficulty in carrying out this principle. With regard to buildings that are erected for the purposes of display, such as palaces, theatres, churches and the like, of course special circumstances demand large and lofty apartments, and free means of common action. Even in public museums something of this nature is requisite. But we are now regarding chiefly the warehouse or store-room. We recall the case of that fearful volcano into which a lofty water-side flour-mill was converted not long since. We refer, and that not without a shudder, to the lofty private warehouses that are growing up around St. Paul's Cathedral. They almost emulate the height of the nave. If one of these were converted, by a few minutes' neglect, into a furnace vomiting flames, the cathedral would be in imminent danger. The lead on its roof would melt, if the winds set in that direction. And the results of the fall of molten lead into a building rarely stops short of its destruction.

It is quite true that the London of 1666 was far more exposed, from its wooden gables, and its occasional thatched roofs, to the contagion of fire, than is the London of 1874. But it is also true that the source of danger—the vast piles of combustibles that are liable at any moment to be converted into living centres of destruction—have increased in a ratio at all events equal to that of the existing structural power of our buildings. Our floors are still, as a rule, of wood. Our roofs are of wood, but thinly covered with slates, materials themselves far less protective than the ancient tiles, unless in so far as their joints lie closer. The slate is far more readily destructible than the baked earth of the tile. All is question of head; of the head gained by the furnace power. Water itself may be turned into the fiercest of all combustibles. There seems to be little doubt that if the wind had been other than it was, a great part of the most costly district of London would have been destroyed by the conflagration of the fire, that attained such fearful energy at Moatcomb-street. It is a case to come home to every man who has a bed, or even a skin, to sleep in.

We do not wish now to enter into any constructive details. We are aware that materials and provisions such as cast-iron columns and stone staircases, which forty years ago were considered fireproof, have been found, by experience, to be sources of more danger than ruder and more old-fashioned appliances. But our choice of proper fireproof materials is ample, if we bear in mind that it only is by such a division of any great accumulation of combustible materials as will allow of a portion burning without inflaming the rest, that urban safety can be secured. No man ought to be allowed to rear in a city a building in which, if fire once attains a head, an irresistible centre of conflagration will be established.

This leads us to the third question, that of extinction. We are aware that, on this point, for one matter that is satisfactory there are many that are quite the reverse. The chief feature that befits the enlightenment of the day, and that may well be a matter of natural pride,

is to be found in the organisation, the skill, the tried courage, and the unflinching devotion of our Fire Brigade. All honour to those noble men; nor should we omit to bear testimony to the great amount of neighbourly feeling, and good old English helpfulness, evinced for the most part by the crowd. Under an emergency, such as that of a great fire, the national spirit comes out in a form not unworthy of our history. But when we go a step further, when we inquire into the water supply, always short for that first five minutes in which a drop is worth more than many a bucketful a little later; when we think of municipal regulations, of the organisation of the interchange of aid between police, troops, firemen, and assistants of all kinds, we must admit a very wasteful and blind administration of our powerful machinery for extinction.

As to the necessary replacement of the relics of institutions, intended for a much sparser population than that of London, as it now exists, by a municipal organisation worthy of the name, we have not now to speak. It must come, sooner or later, unless we are altogether drifting backwards toward cannibalism; a tendency which some circumstances might almost be held to indicate as possible. But we have to point out the propriety of the addition of a new element to our protective organisation. It is one of very alarming dimensions, but the efficacy of which would be invaluable. To our fire-brigade should be added, we suggest, a supplementary body of men, bearing the same relation to the active service that the detective police bears to the ordinary police. We want a small, picked, well-appointed body of fire detectives. Fire preventives would perhaps be a better title. We mean men whose duty would be to visit, unexpectedly, any great warehouse, or other centres of danger, and to give the alarm of fire; not an unnecessarily false alarm, but such a call as should at once show the state of the water supply, and of provisions of any kind for extinction or limitation of fire.

We have an admirable illustration of what we suggest, or rather we had, a few years back. If there was one artificial unit of which the European races ever had cause to feel justly proud, it was the first-rate man-of-war of the beginning of the present century. Englishmen regarded such a vessel with the greater veneration, because in her service and handling, the old national vice, that lost England to the Norman, seemed to be exterminated. There was no unreadiness in a man-of-war; the very contrary was the case. And of all the institutions of the service nothing tended more strongly to keep up the characteristic alacrity of the English sailor than the fact that, at least every year, the captain of a man-of-war was taught to beat unexpectedly to quarters. It might be by night—it might be in the still and dreamy afternoon. The best time was the most unexpected. Then, from the first note of the signal, the number of seconds that elapsed before bulkheads were drawn, hammocks swung, portholes open, and the great war-ship fully prepared for action were exactly noted. If we would secure as much readiness, both of men and of means, on the alarm of fire, we might sleep in peace.

Something of this kind might be effected by the means we propose. There are establishments in which we can note an ostentatious display of buckets and other provisions against fire. We do not undervalue such a display. Far from it. But it would be well for them, as well as for their neighbours, to have the actual and instant effecting of these means tested at unlooked-for times. We should take warning from the almost universal complaint of want of water at the outbreak of a fire. It is a question, as we said before, of seconds. We do not think that that question will ever be satisfactorily settled except by some such means as we propose. Quiet care is admirable; constant supervision is admirable; but the question always exists, whether the watch-dog may not go to sleep? It is only by means of an unexpected call that we can learn whether safety is actual, or only superficial. That call may be given by a wise organisation, such as that which we suggest. If not, it will be given, and given by the enemy. When it is so given, we are, in nine cases out of ten, unprepared. We prepare quickly, no doubt; that is a national virtue. But a constant normal state of preparation is not our habit. It is in such a state that alone is safe, as regards the extinction of fire. When we consider the enormous losses that annually occur—we will say nothing of the consumption of silk and linen, of wood and metal, of anything that living art can replace,—

but the irreparable destruction of paintings and objects of antique beauty and history—what would be the comparative cost of such a small squadron of protectives as we suggest? The insurance companies, the great merchants and warehousemen, the citizens and householders are all interested in the matter. Parliament might have to be asked to clothe the new force with some little power of inquisition, in the interest of public safety. We ask how many fire-extinguishers would be practically dispensed with for every fire-preventer that may be thus employed?

PROPORTION AND SYMMETRY.

A PLANE may intersect a solid figure in any direction. In mechanical and architectural drawings, we are in the habit of drawing such imaginary sections, as they are called, for the guidance of the workman, because this method of delineation frequently allows of a more ready determination of the ruling dimensions of the figure required than any other. The outline of this section, or imaginary plane, is properly called a profile.

The simplest form of solid is a sphere. In a sphere every section is a circle, and every section that passes through the centre is an equal circle. In the cube, numerous sections may be drawn through the centre, the form of each of which will vary according to the angle which it makes with the sides of the cube. But the sections which are drawn parallel to the sides, that is to say at right angles with each other, are all equal squares, and are identical in size with the sides of the cube.

When Nature first commences a definite structural work, she builds up certain elements in definite geometrical forms, which we term crystals. In crystals the inclination at which the three axes, which in a cube are at right angles to each other, are dispersed, vary according to the nature of the crystal. The beautiful little fragments of rock spar which strew the ground at Matlock, as if with a broken mosaic of purple glass, are examples of a simple and beautiful form of obliquely-formed crystal.

The measurement of the three axes, and of the angles at which they intersect, gives the accurate form of every regular solid. In ordinary cases, we consider these axes to be at right angles to one another, and we call the three dimensions, according to their respective magnitude, length, breadth, and thickness.

In all organic bodies, and in all structural works of the human artificer, the relation of these three dimensions is termed proportion, or symmetry. It is not arbitrary, but is the result of law, however much or how or little we may be able to trace the operation of that law. But, even when the mind may be unable to grasp the reason, the eye has an instinctive sense of the fitness of the proportion, and we find, by the test of actual measurement, first that the eye can appreciate an incredibly small difference of proportion, and, secondly, that the most beautiful proportions, both in nature and in the highest works of art, are exactly divided so as to hold distinct numerical relations to one another.

It is a highly instructive experiment, in order to realise the truth of the above statements, to measure a number of eggs. Those of the hen are at once the most easy of access, and the best adapted to illustrate our meaning. The normal proportion of the major and minor axes, that is to say, of the length and greatest breadth of the egg of the hen, is as seven to five. If a series of eggs are measured by a pair of callipers, on some delicate scale (that of 30 to the inch is one of the best adapted to the purpose), it will be found that the slightest deviation from this proportion is readily appreciated by the eye. The experimenter will be at first surprised by the accuracy of his perception. An egg will be selected as unusually long, or unusually round; but it will be found on measurement that the difference from 68 to 72 thirtieths of an inch in length, and from 48 to 52 in breadth, is very rarely exceeded, and that those which seem to be the most disproportionate usually come within these narrow limits.

If we extend our study beyond the egg of the hen, greater disproportion will be found; the form of the bird being often, though not always, indicated by that of the egg. Thus, in the owl's eggs we have the nearest approach to the sphere. Among the stilt birds, or waders, we have generally an elongated egg, tapering to a point

at one end, as if to allow room for the growth of the long tarsi of the embryo chick. Yet the egg of the ostrich, the great stalker of the desert, is nearly as round as that of an owl. Of all eggs, however, that of the hen most closely approaches the proportion of the most beautiful human face, as determined by Greek art.

The absolute accuracy with which the Greek architects followed numerical proportion in their works is, of course, well known to the student. We may cite the regularity of the intercolumniations of the different orders, and the reference of each work to its own modulus, as an example. The diameter of the column is the modulus, or unit, of the entire building. In each distinct order the slenderness of the column,—that is to say, its height in proportion to its diameter,—is connected, by ascertainable laws, with the spaces at which the columns are set apart. Thus, these spaces are not only equal to one another, but definitely proportioned to the diameter of the column. A very remarkable exception to this general rule (if we can absolutely rely on the inferences drawn from the relics discovered *in situ*) is afforded by the famous Temple of Diana at Ephesus; the recent discovery of which does such honour to Mr. Wood. In the sketch plan, which our contemporary the *Athenæum* published of this great fane, the intercolumniations at the ends differed from each other, becoming wider towards the centre. This anomalous disposition is probably to be associated with the unusual decoration of the columns themselves, by sculpture in very bold relief and of the size of life. By the time of Alexander the Great, sculpture had passed its most lofty phase, and the executive power of the art was then being developed at the expense of its sublimity. It is far from impossible that the completion of the excavations on the site of the Temple of Artemis may convince us that architecture, like sculpture, gained in splendour at the expense of purity. It is hardly conceivable that an irregular intercolumniation such as that to which we refer should not detract from the harmonious grandeur of the elevation of the fane; especially when seen from such a distance as to prevent the eye from being seduced from its natural instinct by the picturesque effect of the sculpture.

It may be thought, and no doubt it generally is thought, natural, that architecture, as dealing with structures composed of rectangular blocks and beams, may have a definite relation to the laws of numeric proportion, from which the sculpture, as dealing with the exquisitely varied attitudes of the human form, is altogether free. Few but those who have deeply studied the subject will hear without surprise that the contrary is the case. The canon of numeric proportion, as regards the human form, which has been followed by the sculptors of the noblest era of Grecian art, has been as definite and exact as any that is exemplified by the orders of Classical architecture.

Two of the most famous artists, each in his own school, of modern times, have attacked this problem. Leonardo da Vinci has indicated the importance of the study in his treatise on painting, and has further left, scattered through the voluminous MSS. which he never reduced to systematic form, many empirical rules. Thus he tells us, "A man has the length of two heads from the extremity of one shoulder to the other; the same from the shoulder to the elbow, and from the elbow to the fingers; but the child has only one." Again, he says, "A man, in his infancy, has the breadth of his shoulders equal to the length of his face, and to the length of the arm from the shoulder to the elbow when the arm is bent. It is the same from the lower belly to the knee, and from the knee to the foot. But when a man has arrived at the period of his full growth, every one of these dimensions becomes double in length, except the face; which, with the top of the head, undergoes but very little alteration in length. A well-proportioned and full-grown man, therefore, is ten times the length of his face; the breadth of his shoulders will be two faces; and in like manner all the above lengths will be double." But in another place he says, "In general the dimensions of the human body are to be considered in the length, and not in the breadth; because, in the wonderful works of nature, which we endeavour to imitate, we cannot in any species find any one part in one model precisely similar to the same part in another." In the writings of Leonardo on this subject, then, we find far less by way of guidance than we do in his noblest pictures. In his *Leda*,

for example, there is a delicacy of proportion far in advance of the rough mechanical rules above indicated.

Albrecht Dürer gave great labour to the investigation of human proportion. There is a folio volume, printed in 1528, of his drawings and calculations. He took for his guidance the principle of the equipose of the living form, and thus entered into the investigation of the volume of the different portions of the frame. But he entirely loses his way in the multiplicity of details, and especially as regards the relative proportions of the sexes he arrives at results which may apply to German models, but which are altogether opposed to the examples of the finest Greek art.

The whole subject of human symmetry has been very fully discussed in a series of papers in the columns of a contemporary, which has, we believe, ceased to appear.* The various questions are treated in a systematic and condensed form, and we shall not scruple to make use of some of the definite results at which the writer has arrived, from the actual measurement of the most famous examples of the art of the Greek sculptor.

We wish, however, first to call attention to a subject to which we have more than once had occasion to refer, although it has never yet, to the best of our knowledge, been dealt with on exact geometric principles. We are the more interested in the investigation from the close relation that exists, or that ought to exist, between this particular branch of sculpture, and the science and skill of the architect. We refer to the treatment of a seated figure, sculptured in the round, and especially to the treatment of such a figure when it is of heroic or colossal size. For the framing or setting of such a figure the service of the architect is indispensable. The more thoroughly the sculptor is the master of his own art, the more fully will he be aware that such a figure, if executed with exquisite skill, can only be seen with advantage from certain points of view. In work of a truly colossal size, such as the gigantic statue of Memnon, the grandeur that results from that one element of size, is such as to fill the mind, and to divert the eye from any too curious admeasurement of the details of the figure. In all Egyptian sculpture conventionalism is dominant. Each figure, and each part of each figure, is designed on definite geometric scale, and displayed after certain fixed conventional rules, which are not those of perspective. Nor are the proportions of the figure those of nature. The feeling of the Egyptian artist is one of an entirely different order from that of the Greek. Nor do we judge his work by the same rules. Instinctively, whether educated in art or otherwise, do we perceive the difference. We never think of comparing the mighty shoulders, the impossible waist, the flat feet, and the spectacle-like eye which are repeated incessantly on the tombs of Karnac, with the living form, or with the superhuman grandeur attained by Phidias. We are content to appreciate the eternal calm, the undisturbed smile, the superiority, alike to human cares and to head of human opinion, which are expressed by the conventional art of Egypt. Let our readers study the grand examples contained in the British Museum, which are now placed within the reach of every one by a series of admirable photographs, which may be obtained at low prices (involving, we are sorry to learn, considerable loss to the publishers) of Messrs. Mansell, of Percy-street.

To the colossal Memnon we only refer in anticipation of any reference, to that archaic wonder by way of set off to the definite point we have now to bring forward. It is impossible, we hold, for the sculptor to produce a colossal figure, visible from the four sides, that shall not be a failure from at least two points of view. We are not about to make this assertion as resting on authority, whether our own, or that of any one else. It is a simple geometric necessity. If we take the height of the human figure, according to the scale suggested by Mr. Conder, as consisting of 960 lines, when standing erect, the height of the same figure, when seated on a support level with the under side of the patella, will be 780 lines. This method of measurement is applicable to every figure, which is thus measurable by aliquot parts of its own height, and allow of the accurate comparison of figure with figure, as in perspective drawing. Now, if the observer stands in front of the figure, the eye of the former being on the level of the feet

of the latter, and the distance of the point of vision being three times the height of the figure (or 2,880 lines), the face of the statue will occupy different planes if we compare the standing and the seated figure. Let us consider the foot, in each instance, to be planted on the same space. In taking the seated posture, the figure which we are regarding will have lost, as we before stated, 180 lines, or six thirty-secondths of its full height. But, at the same time, the face will have been removed further from the spectator. The length between the two perpendicular lines which fall in front of the knee, and behind the head of the seated figure, if its proportions are correct, is 320 lines, or one-third of the height. And it will be found by a very simple diagram that the difference between the scale, a size apparent to the eye, at these distances, is not much less than one-twelfth part. In other words, if the proper height for the face, the figure being erect, were 12 inches, it would require to be made 13 inches long by the different distance of the plane which it was made to occupy by the change of posture. We have given the difference rather in excess, for the sake of clearness, as the face will not be removed to the full distance named, which is that of the back of the head, but the figures are near enough for our purpose.

If the matter be looked at geometrically, it will be found that the angle introduced between the feet and the head of the figure, if seated on the plane nearest to the eye, is 15° 9'. The removal of the object from the distance of 2,880 lines to that of 3,200 lines, which is the result of changing the posture, demands a vertical height of 860 lines, in the more distant position, to preserve the same angle of vision.

We allow, as before stated, that the plane of the face will be somewhat nearer the spectator if the seated figure be quite erect. If, on the other hand, the foot be thrown forward, and the hand back, as in the woful instance of Mr. Peabody's figure, the difference will be greater than we have stated. The face and trunk, in fact, must be treated on a scale of one-twelfth larger size than the fore leg. This, of course, is easy to effect.

But when we come to regard the same figure in profile, the circumstances are altered. Then the planes of face and foot coincide, or nearly so. And then the head, which we have been obliged to raise to the height of 860 lines from the ground in order to satisfy the exigency of perspective, for the front view, will be visibly out of place, being 80 lines higher than its proper level of 780 lines from the ground.

We have gone into this detail, not so much for the purpose of showing the ready application of an automatic division of the human figure, which so readily lends itself to the service of calculation, and so much simplifies any perspective reduction, as in order to prove that, from the simplest optical law, the attempt to form a seated figure, of colossal size, which is to be seen from the face and from the profile, must result in failure. Actual visual proportion forbids the success of the attempt. We have said nothing of sculptural composition. The difficulty here is not less; but it is no less capable of being geometrically demonstrated, or reduced to numerical rule. We know how the Greek artists dealt with this branch of composition. In the finest seated figures of the Elgin Collection, the height of the thigh is determined, not by the usual proportion of that limb, but by the effect on the eye of the spectator from the point where Phidias intended that his sculpture should be placed. It is most evident that when a sculptural fore-shortening, or it might be fore-lengthening, of any portion of a figure is introduced, the limitation of the point of view must be absolute. And no sculpture, worthy of the name, can exist without close attention being paid to these niceties of composition. Our case may thus be made stronger. But we wish to bring it to the test of actual figures. It cannot be denied that incompatible dimensions are required for the profile, and the full-faced view of a seated colossal figure.

The Derby Portrait Memorial.—The committee of the Derby Portrait Memorial have purchased of M. Louis Desanges his portrait of the late Earl in his robes as Chancellor of the University of Oxford. The portrait—a *chef-d'œuvre* of the artist—will become the property of the nation. Colonel W. Nassau Lees acts as hon. secretary.

* "Art, Pictorial and Industrial," February to July, 1872.

THE GREAT WESTERN ARCADE, BIRMINGHAM.

The long-talked-of arcade from Monmouth-street to Temple-row, Birmingham, over the Great Western Railway is at last about to become a reality. It was the original intention, when the railway was made, to cover over the line between the two streets mentioned, and to utilise the space thus secured. The idea was never carried out, and one of the principal streets has been disfigured for many years, and the opportunity for making a much-needed addition to the street architecture, and providing a popular place of resort, as the arcades are in other places, has not been taken advantage of until the present time. Active operations, however, for the construction of "The Great Western Arcade" are now going on. The site has been purchased of the Great Western Railway Company by Mr. E. W. Simkin, and it is his speculation. The designs for the building have been prepared by Mr. W. H. Ward, architect. Mr. H. Lovatt, of Wolverhampton, has taken the contract for the first part of the work, consisting of the removal of the present iron girders, which were placed over the line by the late Mr. I. K. Brunel when the railway was constructed, and have become, through long exposure to the weather, totally unfit for building upon. In the place of the girders, a series of arches will be constructed, forming, in fact, a continuation of the present tunnel, and thus a site will be created on a level with Monmouth-street and Temple-row. The frontage to the two streets is nearly 100 ft., and it is intended to erect, as entrances to the arcade, an arch at each end, with shops on either side, and suites of rooms over in about four stories. The street elevations will be of stone, and the shop-fronts fitted with plate-glass. On each side of the arcade proper there will be shops of various sizes, between fifty and sixty in number, and especially adapted for fancy trades. Show-rooms will also be attached, and above the shops the necessary offices will be provided. The arcade is to be covered with a light construction of wood and glass, the circular ribs or principals of which will spring from pilasters between each shop. In the centre there will be an octagonal dome, rising some height above the roof, and the shops in that part will also be arranged in a similar manner. The total length of the arcade will be nearly 400 ft., and the width of the promenade between the shops about 25 ft. The Great Western Arcade will thus exceed in extent the Burlington Arcade, in Piccadilly. The whole of the work will be carried out under the superintendence of Mr. Ward.

ARCHITECT TO THE CHILIAN REPUBLIC.

It seems nothing will come of the hope expressed by one of our last year's correspondents, that the appointment of an English architect might extend our knowledge of earthquake-proof building. We are informed that out of ninety-six architects, who nearly a year ago responded to the advertisement in our columns, the selection fell last June on Mr. William Young. For some unexplained reason the appointment has been till now suspended; and last week the Chilean Government definitively abandoned all intention of engaging the architect advertised for.

SANITARY ARRANGEMENTS IN BARRACKS AND CAMPS.

In the presence of a large audience, Major-General Millington H. Sygne has lectured at the Royal United Service Institution, Whitehall-yard, "On Suggested Improvements in the Sanitary Arrangements in Barracks, Camps, &c." The chair was taken by Surgeon-General Mount, V.C.

General Sygne began his lecture by observing that he had to set before them truths discovered not by himself but by others. Dealing first with the subject of dwellings, he remarked that a house should be dry and warm, and have a pure atmosphere. He then called attention to those cases which affected the community most largely, namely, infectious cases. Water, in any form, rendered the vehicle of contagion, impregnated everything with which it was brought into contact. He quoted Mr. Hassall, to the effect that no hospital should discharge into any sewers, and proceeded to say that a ready means of vitiating the atmosphere was found in the pollution of water. In the words of Dr.

Letheby, "The vengeance which nature takes does not confine itself to figures of arithmetic." The same authority asserted that the quantity of water annually fouled amounted to 30 gallons per head per day. The first point which he pressed upon his audience was that it was wrong to remove corrupting impurity by water, more especially in the case of hospitals, and most particularly in all infectious cases; secondly, it was right to provide for use and application a carrier, an effectual deodorant, in all such cases, whereby cleanliness and comfort would be given in a sick-room, ward, or bed, thus guarding against the spread of infection. Dealing next with the military part of his subject, he observed that if they laid their hands upon a healthy spot they would find it was a station not occupied by our troops. Sanitary law might be summed up something like this:—You may not pour corrupted water into rivers; you may not release destructive gases into the atmosphere. If it could, be shown that liquid could be drawn off innocuously, according to General Scott's plan, a very great step in advance would have been taken. In concluding, Major-General Sygne recommended charcoal as the best possible means of deodorisation.

The Chairman observed that the question was, How was this sewage which was supposed to be contaminating our rivers to be rendered innocuous? Major-General Sygne said that charcoal was the panacea; but the question was how it was to be applied.

Mr. Rawlinson remarked that he had never heard so many fallacies uttered before in a given time as those which had come from the lecturer. If the public health was not to be secured until all sewers and drains were done away with, the reform would be a very long time in coming. London, in point of health, stood at the head of all cities, the mortality being from 22 to 26 per thousand, while in our large towns it was from 30 to 40 per thousand. He had gone through hospitals and other public buildings where the dry-earth system had been introduced, and found that so long as there was some enthusiastic person to watch over it, it was successful; but let them make out a balance-sheet of the cost, and they would see that the expense was as ten to one over water. He could not accept the gallant officer's paper; if he did accept it the next thing he would do would be to jump into the Thames and drown himself.

Dr. Gordon contended that hospitals and barracks ought to be so constructed as to prevent as far as possible the introduction of disease.

Colonel Murray affirmed that sewage irrigation was the only thing likely to be effectual.

Major-General Sygne replied, adhering to his belief that fire was an instrument which destroyed the germs of disease, and that water disseminated them.

ANTIQUITIES OF MALTA.

SOME explorations of considerable interest have been made in the island of Malte, by Lieut. Wadham Terry. According to the *Morning Post*, a large number of tombs were opened, all beautifully cut in the solid limestone rock, each one closed with a slab of stone securely fixed in. The result of Mr. Terry's work has been the formation of a large collection of pottery, and other objects of interest, comprising between four and five hundred specimens. No such collection has ever been made before. The only one approaching it was made by Captain J. S. Swann, F.G.S., who communicated a paper to the Society of Antiquaries on the subject, which was published by the Society in 1870. Captain Swann's collection was not a very large or important one, and he appears to have been satisfied with his discoveries without going into the question of their origin or the period of their deposition.

It is the impression of Lieutenant Terry that the tombs he opened were the work of early Phœnicians, and that the objects found in them were deposited by that people. His reasons for that belief would occupy too much space here, but it is his intention to take some practical measures to bring his collection and views before the public shortly. Among other grounds which point to the highest antiquity of the tombs opened are such facts as the discovery of a scarabæus of a date at least 900 B.C., and the non-discovery of coins, which last is almost sufficient proof of a period anterior to the Ptolemæic. Time had further destroyed all but a few rusty traces of anything in the nature of a sword or

other weapon. There were a few bangles found, but of a material calculated to resist rust. The marks on the various amorphous and vases can hardly be the work of a people possessed of no alphabet, except a primitive one of numerals, similar to the Irish ogham, and it is doubtful if such marks are more than merely ornamental. The forms of everything, including a large number of lachrymatories, lamps, and articles of glass, are of a most primitive character.

MICROSCOPIC EXAMINATIONS OF THE AIR.

In a review of a work by Mr. Douglas Cunningham, under this title, published in Calcutta, *Nature* describes the apparatus used by Mr. Cunningham and the results. No connection, it seems, can be traced by these experiments, between the numbers of bacteria, spores, &c., present in the air (at Calcutta), and the occurrence of diarrhoea, dysentery, cholera, ague, or dengue; nor between the presence or abundance of any special form or forms of cells, and the prevalence of any of these diseases.

In alluding to the subject generally, *Nature* says:—"Although these observations may not appear to encourage the hope of success in discovering the presence of atmospheric particles connected with the origin of disease, it must not be forgotten that they only refer to bodies distinguishable from one another whilst in the air, the possibility remaining that many of the finer molecules present in it are really of different natures, and may yet be distinguished from one another by means of their actions or developments. Many interesting questions are suggested in connexion with the fact of the presence of such considerable numbers of living cells in the air. What becomes of them when drawn into the respiratory cavities of animals? Is their vitality destroyed, and if so how are they got rid of? Are they ever capable of undergoing any development within the organism, and do they then exert any prejudicial influence on the recipient? These and similar questions can only be answered by means of patient and extended experiment; but even such imperfect and superficial observations as the present will, I trust, serve a useful purpose in clearing away a few of the preliminary obstacles from the path of investigation."

THE ENGLISH GLASS TRADE AND FRENCH DUTIES.

IN consequence of the heavy duties levied by the French Custom-house on English manufactured glass, particularly upon glass used for building purposes, an official deputation of English manufacturers, introduced by Mr. C. M. Palmer, met at the Foreign Office on Wednesday a representative of the French Minister of Commerce, for the purpose of urging upon the French Government the desirability of obtaining a reduction of the heavy duties on glass imported from this country into French ports.

Mr. Palmer, who is President of the English Glass Association, and who spoke in French, urged the importance of at once reducing the duty upon window glass, which was a necessary of life. Other gentlemen followed in English, and the French representative assured the deputation that their remarks would receive every attention from his Minister of Commerce.

The English Foreign Office, it is stated, were rather surprised to learn that French builders were so dependent upon England for window glass; and why Mr. Cobden, in his treaty, did not hold out against the heavy duty, is a query.

"ARCHITECTS AND THEIR LIABILITIES."

SIR,—I fully agree in your remarks in your last issue, and think with you that the profession should share the expense of the "proper reconsideration" of so extraordinary a verdict.

I am sure, sir, you will not mind the trouble of acting as treasurer, and I believe you will find we shall all give you something to do.

I shall have much pleasure in sending you 5s. 6s. as my contribution. B. F.

Architectural Museum.—Mr. Skidmore lectured on Saturday last as arranged, Mr. E. B. Denison in the chair. We postpone our report at the lecturer's request.

MITFORD CASTLE.

This is one of the most remarkable and most ancient of the Northumbrian castles. It is situated about two miles above and west of Morpeth, on the right bank of the Wansbeck, which here makes two very sharp bends, the larger and higher of which include the castle, the church of St. Andrew, the new Hall, and the ruins of the old one. The church, the nave of which was long roofless, has been repaired, and is now in good order. It is the burial-place of the ancient barons and modern lords of Mitford. The chancel is Early English; the nave rude but good Norman, with a pointed south door in the same style. The old Hall, of which a tower is standing, was a Tudor building, constructed by the Mitfords, in part from the materials of the castle. The present Hall, the Mitford residence, is modern.

What remains of the castle occupies the summit of a knoll of sandstone rock, rising about 70 ft. on the north side abruptly, and elsewhere more or less steeply, from a marshy meadow, which on the north, east, and west is encircled by the folds of the Wansbeck, and on the south by a sweep of a tributary stream, which joins the river just below the castle. Each water-course flows beneath a steep and high concave bank, thickly wooded, and the result is a sylvan amphitheatre of great seclusion and much beauty.

The castle knoll, at its summit, is about 80 yards across, irregularly circular. Along its brow runs the *encinte* wall of the place, much broken down, but which seems to have been about 20 ft. high and 7 ft. thick. It may be traced all round, save at one point on the south face, where it is encroached upon by a quarry opened for the materials of the new Hall in 1810. Towards the north the wall is tolerably perfect, though more or less riven, and without its battlements. The inclosure is now an orchard.

The northern portion of the area is somewhat higher than the rest, and has been parted off by a cross wall, creating an inner ward, of small dimension, semicircular plan, and considerable strength. In this ward stands the Norman keep, a square of about 36 ft., but having its north side in two oblique faces, forming a salient. It has, therefore, five sides, a rare and certainly original departure from the usual Norman plan. The walls are about 7 ft. thick, and the interior area 22 ft. 6 in. square. This space is divided by a cross wall, north and south, into two equal parts, each barrel-vaulted, with a plain round-headed arch springing from a plain chamfered abacus. The north face of each chamber is oblique, to match the exterior salient. Of these chambers, one has a loop in the north gable, and the other, in the corresponding place, two small stone apertures, about 3 ft. from the floor, as though for the admission of water. Both chambers are ruined at the south end.

All the keep above the ground-floor walls is destroyed, and the rubbish conceals the exterior wall face, but the whole is clearly of excellent ashlar. From and within the west wall, a small mural stair descends, turning the south-west angle to a door in the south wall, opening into the west vault. This door has a flat segmental arch. The outer entrance seems to have been in the west wall in the floor above the basement. It is said that an exterior stone stair is concealed by the rubbish. This keep stands upon the rock, here perhaps 20 ft. above the rest of the area. It blocks up the triangular, or rather segmental inner ward, standing about 50 ft. from one angle, and 30 ft. from the other. Its salient extends to within 10 ft. of the northern, or corresponding salient of the ward, and its southern face is about 6 ft. within the cross wall. In the curved outer wall of this ward, towards the north-west, is a very remarkable window recess, 8 ft. broad, and of the same height, to the plain Norman abacus, whence springs its round-headed arch, over which is a hood-moulding of the same pattern, the only attempt at ornament. The wall here is 8 ft. thick, but as the outer 2 ft. are not original, the window-case is gone. It was probably of two lights, and opened upon the cliff.

Close south of this window, in the inner face of the same wall, are a number of curious holes, irregularly placed, more or less rounded, as though half a soda-water bottle had been thrust into the green mortar. They occur at the joints, and the best mark are where three joints meet. They are certainly not putlog holes, being too irregular and too shallow.

The inner ward was entered from the outer by a small strong doorway in the cross wall, now much ruined, a few feet west of the keep.

The outer ward had probably a chapel on its south side; many graves, some covered with slabs, and one containing a stone coffin, having been laid open when haring for the quarry. In the west wall is a good plain Caernarvon-headed postern door of 5 ft. opening, below a pointed relieving arch. The main entrance to this ward was on the east side, near the inner ward wall, and commanded by the keep. The gateway, said to have been 15 ft. deep, is now a ruin, but it opened upon a small platform, a little lower than the ward, and which was defended by a wall, under cover of which the road wound up from below. Some broken ground on this side is said to indicate an ancient quarry, probably that employed when the castle was built.

On the north-west quarter was also a spur from the hill, but lower and narrower than the former one. This has been converted into a thin falconiform bank, concave to the castle, by the cutting of a deep ditch in its rear, probably to provide a covered way to the postern, up which cattle could be driven with safety.

The castle hill seems to have been girt, a few yards from its base, by a wet ditch, in part artificial, which covered its north-west and south sides, and communicated at each end with the Wansbeck, which completed the circle on the east side. Whether there was a wall within the ditch is uncertain, probably not, but it was guarded towards the north-east by a gatehouse and enclosed space, in front of which, below the present bridge, was the old fosse-bridge, by the tenure of guarding which Walter de Swinhowe, in the reign of Edward III., held forty acres of land.

A knoll so defined as Mitford, so secluded, and so protected by a river and by marshy ground, was likely to have been a British camp as well as a Saxon or English dwelling-place, and there is high probability of the truth of the tradition that asserts the Barony of Mitford to have been held in the reign of the Confessor by John of Mitford, whose daughter Sybil is said to have carried it in marriage to Richard Bertram, a follower of the Conqueror, and of the stock of Balliol. The first recorded lord is however Roger Bertram, who held the Barony in 1155, and certified to its having been held by his father and grandfather. At that time the Barony extended over five parishes, and received payment of castle-guard from nine manors, itself paying scutage to the castle of Newcastle.

The Bertrams who, like the Balliols, bore an orle for their arms, retained Mitford for eight generations, when Agnes, their heiress, sold the estate in 1275 to Alexander de Balliol, from whom it passed by various changes to de Valence, and thence with part of his estate to the Earl of Athol, one of his heirs general. There remained, however, in the district, a family who bore the surname of Mitford, and claimed descent from a brother of John, whose daughter married the Bertram. Their representative, William, in the tenth generation, held lands in, and his son was actually of Mitford, and seems to have recovered the castle, and to be the direct ancestor in the male line of the present Mr. Mitford, of Mitford, and of his distant kinsman Lord Redesdale.

The castle, though of no great magnitude, played, from its position and strength, rather an important part in Border warfare. William the Lion, who reigned from 1165 to 1214, dated a charter from hence, 28th December, 1215. King John is said to have burned the vill, though whether he took the castle is unknown. The public records, however, make him visit Mitford from Berwick in 1216, and stay there the 24th, 25th, and 26th January, going on the latter day to Newcastle. Alexander, King of Scotland, failed to take the place in May, 1217, when he lay in laager before it for seven days. Local history is silent concerning it during the active reign of Edward I., but in the wild times consequent upon Bannockburn, a notorious Border Freebooter, Sir Gilbert Middleton, made Mitford his stronghold, and here imprisoned Henry Lord Beaumont, while his brother, Lewis Bishop of Durham, was shut up in Morpeth Castle.

The castle, by its present condition, affords evidence of the vicissitudes it has undergone. Still, ruined as it is, careful observation finds much from which its original plan, and even part of its details, may be ascertained. Its general plan, the keep, and the most part of the *encinte* wall, are evidently original, and Late Norman, probably the work of Richard Bertram,

early in the reign of Henry II. The postern is of course later, either Early Edwardian or of the reign of Henry III. It is unusual to find so small a keep divided by a cross-wall, or to find any Norman keep with an original vaulted basement, though of this there is apparently an example in the Late Norman Keep of Norham. The salient on one side is unknown elsewhere.

A good ground-plan and photographs on a large scale of the masonry are much needed, and a very moderate amount of excavation in the inner ward would probably throw light on the original structure of the keep. In point of recorded history the very complete account of Mitford, given in "Hodgson's Northumberland," leaves nothing to be desired; it is only to be regretted that a corresponding industry and critical acumen have not been brought to bear upon its architectural remains. G. T. C.

HORSE-SHOEING AND THE PAVEMENTS.

The state of our streets is a matter of importance in which everybody is concerned: it is not merely a question for ratepayers; but for every man, woman, and child who has to pass from one house to another, it is a material consideration whether the paths and roads present a clean surface for walking, or are covered with a greasy compound of water and powdered dust and granite. It is an important point whether a lady can safely enter a Hansom-cab without fear of soiling her dress against the wheel, or whether every vehicle that passes her is to send a shower of particles of mud on all sides as it drives by. The vastly increasing traffic of London and other great cities has demanded that some more lasting material for the roadways should be employed than is presented in the natural state of the ground. Mr. MacAdam, whose name is immortalised by its connexion with all the principal roads of the country, invented or applied the process of coating the roads with a layer of granite chips, which, when compressed, form a firm and fairly even surface. In the still more crowded thoroughfares of London, every one is familiar with the still more solid paving of blocks of granite of the size of a brick, forming the "stones" by which the cabbies of a few years ago were wont to calculate their distances. But neither of these modes of road-making is perfect. Both are attended with a considerable amount of noise; both are more or less "ragged," and the granite has the reputation of presenting a bad foothold for horses, especially when dry, while in wet weather the Macadamised roads are very rotten, and easily worn into mud. During the last two or three years two new modes of paving have come into general use. Blocks of wood, prepared in various ways, have been employed instead of granite, and asphalt, a bituminous rock, heated and laid on the surface of the ground in a semi-liquid state, has taken the place, to a certain extent, of the "carpet" of broken flints, or granite chips. The advantages of both these inventions lie in their greater cleanliness and in the diminished noise which is caused by traffic passing over them.

Any one driving through certain streets in London will meet in his course with a succession of very varied travelling. Passing from the moderately elastic, and somewhat noisy and uneven macadam, he will come to the inelastic granite, where the two last characteristics will be heightened, and soon pass on to the springy and nearly noiseless wood pavement. On reaching the asphalt, however, the perfection of travelling will seem to be reached,—a perfectly level surface, over which the wheels noiselessly glide, and which does not degenerate into mud in the winter nor dust in the summer; such will probably be the feelings of the traveller on two wheels throughout the varied streets of our busy metropolis.

But, then, the feelings and experiences of the horses have to be taken into account, and recent observations have shown objections to both these improved pavements, to the removal of which attention is now being directed. In the meantime, it is worthy the attention of the owners of horses whether the danger of injury from falling, either on asphalt or granite, could not be obviated or diminished by improved methods of shoeing. A shoe is, at the best, but an artificial innovation; if it is fitted to the foot it is highly beneficial, by saving the hoof from wear and injury; but, generally speaking, the *hoofs* are fitted to the *shoes* by being pared down, and burnt away by applying a heated shoe to the foot. In the cause of humanity this

practice ought to be abandoned, and it is to the interests of the owners of horses to discontinue it. A shoe prepared with a substance which will prevent slipping on asphalt in its most dangerous state has lately been invented, and appears to do all that is required of it; but the existing pattern of shoe may be made much more safe if horses are shod on scientific principles, and if the natural formation of the hoof is consulted, and assisted, instead of being ruthlessly destroyed by careless farriers. In the question of street-paving, the consideration should be not the maintenance of uncomfortable roads, because a smooth pavement is not adapted to improper modes of shoeing horses, but rather the attainment of the most perfect shoe, so as to admit of safe travelling on level roads.

INDIVIDUALISED SCULPTURE IN LONDON,—SOME PHASES OF IT.

AMID the almost endless multitude of addresses, lectures, papers, and disquisitions generally, that are poured into the public ear by those who move and guide the art-world, it must surely be a matter of surprise that in them no systematic attempt has as yet been made to analyse the fine art in London, and to point out its distinctive qualities. We here allude more especially to the *open air* art, to the public statues, and to those specimens of the sculptor's art to be found every where and there attached to, and forming parts of, buildings. It would be difficult to overrate the importance of this subject, for how can the public mind be so well instructed in matters artistic as by the great fact of some one or more specimens of it meeting the passer-by at every turn? This was the way in past days. Art was for the public, and the wayside; and even the "Streets of Tombs," in heathen times, afforded continually recurring spots on which art could and did find resting-places. Passing to the Gothic days, and missing much in such towns as Rome, Nuremberg, Paris as it was, and in a host of others all over Europe, we find that every house was a new design in itself, and was as often as not full of expressive sculpture and carving, expressive of the purpose to which the house was devoted, and with the coat of arms or sign of the owner on it. Nothing could be more fertile in principle than the Mediaeval system of art action; every idea was utilised, and so to speak, materialised, and to run was necessarily to read, for you could hardly do otherwise. Every old Continental town shows this unmistakably. Nor, we may make quite sure, was this over-present art confined to the Continental cities. In the London of the Middle Ages must the streets, however much wanting in other ways, have been full of what may well be termed the picturesque in so far as house arrangement went, and of the sculpture in the fullest degree. The houses, each one an individuality, differed from its next-door neighbour, and many of them, as we know from contemporary records and prints, and even from some few actual remains, were ornamented with sculptures and carvings both inside and outside. A Mediaeval street was a picture in itself, and full of fine art, and the mind of the passer-by was touched and often enough instructed, even if his body suffered some inconvenience, as, without doubt, it often did. We wish most heartily that we could refer to some specimens of the secular sculpture in London of the early centuries; but what is left is, alas! so little that we may but too soon exhaust the list of it. First, in the magnificent roof of Westminster Hall, the fine wood-carving of the figures which terminate the hammer-beams may be noticed and studied, and then the carving on the heraldic shields, so very boldly and cleverly cut. It would be difficult to find in London a better art-study than this roof, and the evidence it affords of the executive power of the workmen, at the time it was executed, is as complete and suggestive and individualised as well can be. Every part of it exhibits the hand of the workman. We might here suggest to those who are now thinking over a coming exhibition of timber and timber construction in the next year, to add to it a cast of one of these end beams, with its terminal figure and shields. It would be interesting to see the work a little closer than is possible from the floor of Westminster Hall.

Another most noteworthy example of the sculptor's art in this fine hall are the figures in the niches in the south wall—right noble specimens of the sculptor's art. They are six in

number, three on each side of the archway leading into St. Stephen's Court, or Hall, on the site of the famous chapel that was there in times of yore. There were three others situated midway between these; but they were removed when the hall was altered, and are now, we believe, either at South Kensington, with the collection there, or at the Architectural Museum with other fragments from the old chapel. Quite a little story of antiquarian and artistic interest, by the way, is attached to these figures, worth perhaps one day noting. These really magnificent "figures of kings" are in fine preservation, and though the crowns be broken, yet the heads and faces remain. One of these heads, with its bushy hair, has a strange Gothic sort of resemblance to the Jupiter of Phidias. It is well worth study and drawing from. It shows how fine touches of noble nature make "the whole world kin," and will bring together even those so far apart as the antique Greek and the old Goth. It seems a pity to have disturbed these; and perhaps the time may yet come when the true idea of "restoration" will restore them to their own proper place. Westminster Hall is historic ground, and the noblest room perhaps in all Europe. It is full of artistic work, and was feller. Their sculptor understood his work.

We have here purposely omitted cathedral and church work as deserving of other special notice, and would fain seek for other evidences of ancient secular sculpture yet remaining; but, truth to say, old London is gone, as far as house-building and secular building are concerned; and it would be difficult, if not impossible, to find visible to open eyesight another example of it. The total disappearance of the old sculpture in London is a singular and notable fact, and lamentable to think of. A Mediaeval street yet in existence, untouched and unrestored, would be a remarkable sight, and would be a museum of antiquities in itself, and a studio for architects and sculptors and carvers. But this not being so, we must need come down to the Renaissance days, in its commencement, under Inigo Jones and Christopher Wren, and their more immediate successors, for further examples of the sculptor's and carver's individualised work, and some of these are the most remarkable art objects London can as yet boast of. They cannot be said to have had justice done them. And, first, let us note, not in the order of time, the admirably designed and equally admirably executed animal forms at the base of the Monument, on Fish-street-hill. They are four in number, one at each corner, and represent the conventional winged dragon. They are not all alike, but are all different in attitude, and with open jaws, would seem to inhale the burning air of the burnt-out city, as the huge reptiles are said to do on the banks of tropical rivers, admirably conceived and executed. These fine conceptions of animal forms, quite worthy of the best of Gothic animal designing and cutting, were the work of one Edward Pierce, jun.—all honour to him as a true and able artist-workman! They cost 50*l.* each. It would be a little curious to ascertain what such "ornaments" would now be estimated at, and who could be found best to emulate the feat, not by the attempt to reproduce these, but by going to work in the same way, and by the—"go then and do likewise" principle. Wren was a good architect, and full of artistic and mechanical resource, but in no one thing did he better display his powers as an artist-architect and working man than by his finding out the true man who could do for him what he could not do for himself—the carved and sculptured work in his buildings. This monument of his shows it, and so does St. Paul's, and so do Wren's churches everywhere. The carvings of festoons, with the Royal and City Arms, and trophies between those figures, are cleverly managed, and sure to keep the dragon forms together, and to chain them to their places. It may be noted that the Great Fire of London occurred in the year 1666, on the "fourth day of the month of September," and originated eastward of this column 202 ft., the height of the column. The sculptured panel facing westward, is not such fine work as the dragons by a long way, though it was executed by Charles Gribble, and represents allegorically the destruction and restoration of the City of London.

It is impossible to glance, however slightly, at this important subject of London statuary art without notice of one or two modern works, which have all but, if they have not quite, come to grief from some unfortunate accident or other. Fame does not always depend upon true merit,

and it is quite certain that true merit in a work of art cannot always save it. Marochetti's fine equestrian statue of Richard the Lion-hearted, in Old Palace-yard,—not a little awkwardly placed, by the way,—all but lost to London at one time. It did not seem as if a place anywhere could be found for it. Its merits were seen, and pleaded for it at the time. It is a noble and idealistic idea of the warlike monarch, and a something to pause for a moment and look at. It is well worthy of a better pedestal; a simple block of rough granite, may be. And here may it be noticed that wide open spaces do not seem to be the best of places for statues, whether equestrian or no. They are apt to look like *lags* in the wide empty spaces; court-yards seem to be the places specially fitted for them. There is *there* a certain sense of quietness and repose; and the surrounding buildings, even if they be not altogether architectural, form a sort of background and framework for a good statue, be it what it may. Modern architectural designing ignores to a great extent these enclosed courts. A great mistake; a good deal is lost thereby, and the easiest road to the picturesque in street architecture missed. This statue is one of the Italian sculptor's best works, and was executed at a fortunate moment. We feel a little personal interest in it, from kindly recollections of the artist-sculptor himself, and his quaint "studio."

We cannot, of course, attempt now to go through, one by one, all over London the statuary and carving remarkable for individuality of treatment, and work and expression; and we have cited the Marochetti figure in proof of the art-power of the day, and as showing that this individuality of art-power is still rife among us. And there is yet another work which we would gladly see again in some place or other. We refer to the lamp-standards at one time "on view" opposite the Temple Gardens, on the Thames Embankment. The subject of them, as well, perhaps, be recollected, represented two figures, well modelled, in the act of climbing the lamp-stand and lighting the lamp with a torch, or rather struggling to light the lamp. It was a clever idea well wrought out. These standards, however, were removed to make way for those now on the Embankment, and the last we saw of them was on the waste ground close to the goods station of the London, Chatham, and Dover Railway. They would seem to have been thrown aside as rubbish. Would it not be as well to put them up somewhere—where they may be seen—in the place of a common street lamp-post, if nought better offers?

BUILDING IN ASHANTEE.

In building a house in Coomassie, a mould is made for receiving the clay by two rows of stakes and wattle-work, placed at a distance equal to the intended thickness of the wall. The interval is then filled up with a gravelly clay mixed with water, with which the outward surface of the framework is also thickly plastered, so as to exhibit the appearance of a thick mud wall. The houses have all gable-ends, and three thick poles are joined to each; one from the highest point forming the ridge of the roof, and one on each side from the base of the triangular part of the gable. These support a framework of bamboo, over which an interwoven thatch of palm-leaves is laid, and tied with the runners of trees, first to the large poles running from gable to gable, and afterwards (within) to the interlacing of the bamboo framework, which is painted black and polished, so as to look superior to the usual rude ceiling of barbarians. The pillars which assist to support the roof and form the proscenium or open front, are thick poles, afterwards squared with a plastering of swish. But the captains alone are allowed to have pillars. The steps and raised floor of these rooms are clay and stone, with a thick layer of red earth, which abounds in the neighbourhood, and these are washed and painted daily with an infusion of the same earth in water. This earth has all the appearance of red ochre, which very probably it is, as an abundance of iron ore is found in the country.

While the walls are still soft, there are formed moulds or framework of the patterns in delicate strips of cane, connected by grass. The two first strips (one end of each being inserted in the soft wall) project the relief, commonly mezzio; the interstices are then filled up with the plaster. The poles, or pillars, are sometimes encircled by twists of cane intersecting each other, which,

being filled up with thin plaster, resemble the lozenge and cable ornaments of the Anglo-Norman style. The quarterfoil is very common, and by no means rude, from the symmetrical bend of the cane which forms it. Occasionally may be seen a few pillars (after they have been squared with the plaster) with numerous slips of cane pressed perpendicularly on the wet surface, which, being covered again with a very thin coat of plaster, closely resembles fluting. In forming an arch, the builders insert one end of a thick piece of clay in the wet clay of the floor or base, and bending the other over, insert it in the same manner, the entablature being filled up with wattle-work plastered over. Arcades and piazzas are common. A whitewash, very frequently renewed, is made from a clay in the neighbourhood. Of course the plastering is very frail, and in the relief frequently discloses the edges of the cane, giving, however, a piquant effect auxiliary to the ornament. The doors are an entire piece of cotton-wood, cut with great labour out of the buttresses of that tree; battens variously cut and painted are afterwards nailed across. The locks used are from Housa. Where a first floor is raised, the under one is divided into two by an intersecting wall to support the joists for the upper room, which are generally covered with a framework, thickly plastered over with red ochre. Few attempts are made to make a flooring with plank, but when the natives do they use cotton-wood, shaped entirely with an adze, and placed so as to look like a ship's deck. The windows are open woodwork, carved in fanciful figures and intricate patterns, and painted red; the frames are frequently lined in gold, about as thick as cartridge-paper. What often surprises travellers in this most remarkable country, and is not the least of the many circumstances deciding the great superiority of the Ashantees over the generality of negroes, is that every house has its convenience, besides the common ones, for the lower orders outside the town. They are generally situated under a small archway in the most retired angle of the building, but not unfrequently upstairs, within a separate room like a small closet, where the large hollow pillars also assist to support the upper story: the holes are of small circumference, but dug to a surprising depth, and boiling water is daily poured down, which prevents the least offence. The rubbish and offal of each house are burnt every morning at the back of the street, and the inmates are as cleanly and particular in their dwellings as in their persons.

The late king made frequent inquiries about the architecture of England, of which some drawings were given to him. He or his father was very fond of referring to a project which he declared he would carry into effect directly the Geman war was over. This was to build a house for his own immediate residence, roofed with brass pans, beaten into flat surfaces, and laid over an ivory framework, appearing within. The windows and the doors to be cases in gold, and the door-posts and pillars of ivory. Whether it was that the king was encouraged in this extravagance by the Arab traders who found their way to Coomassie, or whether it was a scheme after his own heart, it is hard to say; but it is certain that he was disposed towards magnificence and novelty, and was heartily bent upon carrying out this new scheme. The dwellings of the nobles and great men are built in a hollow square, into which the female apartments open; the roofs project over the sides fronting the street, under which there are lounges, and here the master of the house receives his visitors.

LAMBETH PALACE LIBRARY.

ARCHDEACON THROLOPE, president of the Associated Architectural Societies, has lately presented a complete series of their reports and papers to the Archbishop's Library, Lambeth Palace. The proceedings contain valuable architectural and archaeological descriptions of churches and antiquities in the counties of York, Lincoln, Worcester, Leicester, &c., and as some of the volumes are becoming very scarce, the donation is one of more than ordinary importance. Our readers will remember that the Lambeth Library is open every Monday, Wednesday, and Friday, from ten a.m. to three p.m., and that it contains some choice illuminated MSS. of the Anglo-Irish, English, French, and Flemish schools of art, besides many early printed books of great rarity.

THE WATER SUPPLY OF DUBLIN.

THE INSTITUTION OF CIVIL ENGINEERS.

On February 24, Mr. Thos. E. Harrison, president, in the chair, the paper read was "On the Water Supply of the City of Dublin," by Mr. Parke Neville, C.E.

The water supply to the city of Dublin was for several centuries derived from the river Dodder. In 1775 this source was found to be insufficient, and the corporation entered into contracts, for a term of sixty years, with the Grand and Royal Canal Companies for a supply equal to from six to seven million gallons per day. Under the terms of this contract the city was mainly supplied up to the time when the Vartry water was introduced. The level of the water in the old city basins, from which the canal and Dodder waters were distributed, was only from 76 ft. to 78 ft. above the Ordnance datum, while some portions of the city of Dublin were on an elevation of about 100 ft. The water also was hard, and subject to pollution. From 1850 to 1857, the question of obtaining a better supply was constantly under consideration. The plan most advocated was to take water from the canals from a high level, and to construct a large distributing reservoir; but the corporation, after promoting a Bill in Parliament to obtain a supply from the river Liffey, near Newbridge, called the Coyford scheme, ultimately agreed that the whole question should be referred to a Royal Commission, and Sir John Hawkshaw, Past President Inst. C.E., was appointed by the Government as commissioner. He held an inquiry in Dublin, in October, 1860, and examined into the merits of all the schemes, the result being that he recommended the river Vartry as the best source. In the session of 1860-61 an Act was obtained for carrying out the works in accordance with the Royal Commissioners' Report, and the works were commenced in November, 1862, and finished in 1868.

The source of the river Vartry was at the base of the Sugar-loaf Mountain, in the county of Wicklow, and it flowed in a southerly direction, through a thinly-populated country, into the sea at the town of Wicklow, being a distance of 17½ miles. The geological character of the country was clay slate. The water flowing off the catchments was peculiarly soft and pure, and, by analysis, was found to be almost identical in character with the Loch Katrine water with which Glasgow was supplied. The rainfall over the district, from observations during the past thirteen years, varied from 40 in. in depth in 1873, the driest year, up to 60·87 in., the greatest rainfall registered; the average might be taken at about 50 in.

The place selected for the storage reservoir was near the village of Roundwood, about 7½ miles below the source of the river. The bed of the river at that point was 632 ft. above Ordnance datum, and the drainage area above it was 14,080 acres. The embankment across the valley was at the deepest point 66 ft. high, and it was 1,640 ft. long on the top. The greatest depth of water impounded was 60 ft., and the average depth 22 ft. The area of the reservoir was 409 acres, and it was capable of holding 2,400 million gallons of water, equal to 200 days' supply for the city of Dublin and suburbs, taking the population at 400,000, and allowing 25 gallons per head per day for domestic and public use, and 2,000,000 gallons for manufacturing purposes. The level of the water in the reservoir when full was 692 ft. above Ordnance datum, and 580 ft. above the highest parts of the city of Dublin. The corporation had acquired by purchase all the water-rights of the mill-owners and riparian owners; accordingly no compensation water had to be given, the entire property in the water being vested in the corporation. The quantity of the rainfall discharged over the bywash was about two-fifths of the entire fall, so that by constructing additional reservoirs the storage would be increased 60 per cent.

Two mains, 48 in. and 33 in. in diameter respectively, were carried through the bank in a tunnel excavated out of the rock and arched over. The 48-in. main, which terminated in the bye-wash, was a provision solely for the purpose of being able rapidly to lower the water in the reservoir if necessary. The 33-in. main conveyed the water to a circular receiving basin, situated at the outer toe of the embankment, and from this basin the water was distributed by side canals on to seven filter-beds. After being filtered the water was collected into two pure-water tanks, from whence it was carried for

about 700 yards in an iron pipe, 42 in. in diameter, with a fall of 6 ft. per mile, until it reached the tunnel, into which it was laid for 120 yards. The tunnel was 4,367 yards long, and conveyed the water from the natural valley of the Vartry, under a range of hills separating that valley from the districts sloping towards the sea to the east. The natural course of the Vartry was from north to south, but by curves in the tunnel it had been turned to flow north towards Dublin. This tunnel was extremely difficult to execute, from the character of the rock bored through and the quantity of water met with. It was from 5 ft. to 6 ft. high and 4 ft. wide. To facilitate its execution, twenty-one shafts were sunk, varying from 90 ft. to 180 ft. deep. The gradient of the tunnel was 4 ft. in a mile. At Callow Hill, the northern or Dublin end of the tunnel, there was a circular relieving tank, 90 ft. in diameter, and a gauge weir for registering the quantity of water flowing into the city. From this tank, the surface water in which was 602 ft. above Ordnance datum, a main, 33 in. in diameter, conveyed the water to the distributing reservoir at Stillorgan, a distance of about 17½ miles. There was a self-acting stop-valve at the junction of the main with the tank, to prevent flooding in case of a pipe bursting. Three tanks relieved the pressure at different points, viz.: at Kilmurray, level above datum, 472·2 ft., distance from Callow Hill, 11,809 yards; at Kilkrony, level above datum, 414 ft., distance from Kilmurray, 6,121 yards; and at Rathmichael, level above datum, 341 ft., distance from Kilkrony, 6,444 yards; which latter was 7,431 yards from the Stillorgan Reservoir. At each of the tanks there was a self-acting drop-valve, to shut off the water in case of a pipe bursting. The pipes had been laid for 9,894 yards along the public roads, and the rest 21,048 yards, across the country, which, for part of the distance, where the Dargle River, the Cookstown Valley and the County Boundary Valleys had to be crossed, was of a difficult and rugged character.

The two distributing reservoirs at Stillorgan were 4 miles 5 furlongs 150 yards from the city boundary at Eustace bridge. The top-water level in the upper one was 274 ft. above Ordnance datum; it contained 43,057,414 gallons, and was of the average depth of 20 ft. The lower one was 271 ft. above Ordnance datum, or about 250 ft. above the quays in Dublin, and contained 43,166,518 gallons, the average depth being 22 ft. The total quantity of land occupied by the reservoirs, caretakers' residence, &c., was about 26 acres. At the south-east corner of the lower reservoir there was a handsome screen chamber, of ashlar granite, octagonal in plan, and 49 ft. in internal diameter; the depth of the water was 27 ft., and to the floor-line 31 ft. 6 in. The pillars and framework were of cast iron, and the screens had an area of 1,500 square feet, and were fitted with copper wire gauze having thirty strands to the inch. Seven 33-in. valves, two 27-in. valves, and one 15-in. valve in this chamber regulated the distribution of the water. There was also a scour pipe and valve, 12 in. in diameter, and the overflow was through a vertical pipe, 27 in. in diameter, with a bell-mouth. The valve gearings were all fixed to the side walls, leaving the centre of the chamber quite clear. All the valves in this chamber and on the large mains were worked by slow-motion gearing, to prevent the possibility of closing or opening them too rapidly; and indices, graduated to inches and turns of the screws, were attached to all to secure accuracy in working. Two mains, 27 in. diameter, conveyed the water from the screen chamber to the boundary of the city at Eustace Bridge. They were carried through the embankment of the reservoir in a culvert. At the toe of the embankment a vaulted chamber was built, in which self-acting stop-valves were placed. The mains were carried along the Stillorgan road. At Merrion avenue, at Simms-court, and at Eustace Bridge, groups of valves, in vaulted chambers of easy access, enabled the water to be turned from one main to the other, so that in case of accident a short section of the injured main could be emptied for repair without interfering with the supply to the city; and at those points also branches were taken off for the supply of the Pembroke and Blackrock townships. On the city side of Eustace Bridge, at Leeson-street, the 27-in. mains separated right and left, and were carried through the streets (being gradually diminished in size to 18 in.), until they were united on the north of the city, forming a zone encircling the central parts of the city, and from this zone all

the service mains diverged. Screw valves at the intersection of the streets enabled the water to be turned off or on, either to repair the mains, or to concentrate the pressure in case of fire. Hydrants were placed in every street at intervals of 100 yards, and the system was so perfect, that since the introduction of the Varty water no steam or hand fire-engine had been used to extinguish fires. The supply of water at high pressure, to be obtained from the mains by simply attaching a stand pipe, with hose, &c., to the hydrants, had proved sufficient to throw powerful jets of water over and on to the highest building, rapidly extinguishing fires, and preventing them from spreading. A length of 51 miles of new mains had been laid within the city boundary, and 60 miles of the old mains had been utilised. The number of hydrants was twelve hundred and nineteen.

The corporation supplied water in bulk to eight extra municipal townships, viz.:—Pembroke, Blackrock, Kingstown, Dalkey, Ballybrack, Bray, Kilmainham, and Clontarf, for which they were paid at the rate of 31d. to 51d. in the pound on the valuation of the townships; the quantity of water the corporation were bound to supply being at the rate of 20 gallons per head of population per diem.

The total cost of the works, including every item for compensation, purchase of lands, law and Parliamentary charges, also the old pipe-water debt of 72,000*l.*, had been 610,000*l.* or at the rate of 1*l.* 16*s.* 6*d.* per head of the population.

THE NEW SCHEME OF THE ENDOWED SCHOOL COMMISSIONERS FOR DULWICH COLLEGE.

It will be remembered that about two years ago, in 1872, there was a considerable amount of agitation caused by a scheme put forward by the Endowed School Commissioners for the future management of Dulwich College. The scheme, amongst other things, contemplated the appropriation of a large portion of the income and capital of the Dulwich College estate, for the purpose of founding and erecting new schools in Camberwell and other parishes interested in Alleyn's Charity, the scheme including a proposal to sell property to the extent of 80,000*l.*, in order to carry out this object. A strong opposition to the scheme was manifested in several quarters, and it was urged against the scheme, on the advice of counsel, that under the peculiar terms of Alleyn's bequest it would be illegal for the governors to dispose of the property as proposed by the Endowed School Commissioners. The result eventually was that the Commissioners withdrew their scheme, with the understanding, that after reconsidering "the subject they would draw up a revised scheme. This they have done within the last few days, and the scheme as amended has now been published for the examination of those interested.

The new scheme differs from the former one, in so far as the sale of the college estates for building and maintaining schools in the several parishes is concerned, but the principle of establishing and supporting such schools out of the income of the college estates is retained. According to one clause in the scheme the income of the college is to stand charged with a capital sum of 70,000*l.* for the building and maintaining of Alleyn's High and Middle Class Schools for girls; for Wilson's schools at Camberwell; for St. Saviour's Free Grammar School, Southwark; for St. Botolph's Bishopsgate Ward Schools; and for Alleyn's St. Luke's Schools; the sums appropriated to the several schools respectively being 15,000*l.* to Alleyn's Schools for girls; 15,000*l.* to Wilson's Schools, Camberwell; 10,000*l.* to St. Saviour's Free Grammar School, Southwark; 10,000*l.* to the Bishopsgate Ward Schools; and 20,000*l.* to Alleyn's St. Luke's Schools; in addition to 1,000*l.* a year each out of the income of the charity to Wilson's, St. Saviour's, Bishopsgate, and St. Luke's School; and 500*l.* to each of the girls' schools. Other clauses provide for the minimum and maximum fees to be paid at these schools. Further clauses provide for separating the chapel from the College, and making it available for the parish use, and, if necessary, altering, enlarging, or rebuilding it out of the general income of the College. A further clause provides that in the event of a new chapel or church being required, the management of the present chapel shall revert to the governors, and that, in addition, they are empowered to pull it down. There is

a proviso that if it remains standing the fabric is not to be devoted to secular uses, unless with the approval of the bishop of the diocese. A further clause provides for the retention of the eleemosynary endowment and the almshouses. Part 8, containing several clauses, is exclusively confined to the future arrangements of Dulwich College proper, and provides that the endowment of the College for the purposes of supporting the buildings and maintaining the grounds is to be 2,200*l.* a year, in addition to all the buildings and land attached to the school. Another clause fixes the income of Dr. Carver, the head master, at 2,400*l.* a year. A special clause provides for the maintenance of the picture gallery, in order to promote art education. There are several other clauses as to the appointment of chief and representative governors, the course and subjects of instruction under Dr. Carver and assistants at Dulwich College, and several other matters, but those indicated in the foregoing particulars possess the greatest interest for the public. The scheme will, of course, have to be considered by Parliament before being sanctioned, and already there are signs of opposition in several quarters. St. Luke's and some of the other parishes contend that they are entitled to a much larger share of the College endowment fund than the Commissioners offer them.

SCHOOL-BOARD INSTRUCTION.

THE KINDER GARTEN SYSTEM.

THE communication of technical and industrial education can scarcely be considered a duty devolving specially upon the London School Board. If such an object was entertained at all by the promoters of the Elementary Education Act of 1870, it was probably regarded as subordinate and remote, rather than paramount and immediate. While this is so, there is good reason to believe that the Board has lively sympathy with the promotion of technical and industrial education. And as regards the latter, indeed, the Board has powers, under the 28th section of the Act of 1870, "to establish, build, and maintain, Industrial Schools within the meaning of the Industrial Schools Act of 1866, and shall for that purpose have the same powers as they have for the purpose of providing sufficient school accommodation for their district."

Whatever degree of general approval may have been given to Mr. Gladstone's recent manifesto to the country through his constituents, we venture to think that many persons will impute wisdom and moderation to the right hon. gentleman in connection with his reference to the Education Act. "It appears to me," he says, "that no main provision of the measure can advantageously be reconsidered without the aid of an experience such as we have not yet acquired." This is surely more seemly and becoming than the course taken by some of the new members of the London School Board, who would set at naught the experience of the first Board, who would unsettle much that was settled by their predecessors after the fullest deliberation, and undo what has been done with the most painstaking care.

The commodious school buildings in various parts of London, most of them towering above the surrounding structures, that have been already erected by the Board, or that are in course of erection, are evidence, so far as they go, of the activity at least of the first Board. Evidence of the excellent quality of the educational work—the new era in the history of popular education—that they initiated is given to any one who will avail himself of the privilege of visiting any of the new Board schools that have been opened and are in full working order.

It was, we believe, the laudable ambition of the first London School Board, and it is to be hoped the ambition of their successors, not only to provide sufficient school accommodation and to increase the quantity of teaching power, but more especially to raise and improve its quality,—to interpret generously the term "elementary education," and, with enlightened liberality, to embrace within its scope additional and useful subjects. Short though the existence of School Boards has as yet been, and necessarily limited their action and operations, they have already done something to revolutionise the popular instruction of the country for the better, and are creating valuable experience. In a work on primary instruction written about three years since by a well-known author, he gravely states in relation to the work before the then recently

appointed London School Board:—"The teachers do not exist, and the school-books have yet to be written." We are still a long way short of perfection both as regards teachers and books, but it would be idle to deny that there is a growing improvement in each. As regards future supply of teachers it may be mentioned that, exclusive of masters and mistresses, and assistant masters and mistresses, of whom there are nearly 500 now, or about to become connected with the London School Board, about 1,500 pupil teachers are under the Board receiving special training as teachers. With respect to school-books and teaching appliances, the improvements since the time of the last generation have been immense, but at no period have these improvements been greater or more important than during the last few years.

The school management committee of the London School Board are unlikely to introduce novelties in the course of instruction for novelty's sake alone. They expand the course of instruction by the introduction of branches that are of universally admitted value and importance; as, for instance, singing, in which systematic instruction is given to pupils and pupil-teachers. Although they may not with propriety, or hope of success, attempt to give technical instruction proper, they are doing their part, and laying a foundation for it, by introducing free-hand drawing as a branch of instruction and training in the Board schools.

In the same useful direction is their introduction of the "Kinder Garten" system. The Board very properly attaches great importance to thorough and systematic teaching on this system, and have appointed Miss Bishop, who is thoroughly acquainted with, and well qualified to teach it, a special instructor for their schools. For the present, there is only one Board-school, (Wilmore-street, Bethnal-green), in which it is attempted to teach the children the Kinder Garten system thoroughly; but in so far as the powers of the special instructor are communicable, judicious means are employed for enabling her to impart them to others. Five classes each week are taken in different parts of London, for the benefit of female pupil teachers and mistresses both of infants' and girls' schools. At each of these five centres a course of instruction, complete in itself, is to be given. The pupil-teachers attending these lessons are themselves taught as a class as the children should be taught in the schools. By this means the series of twelve lessons may be communicated to a thousand pupil-teachers in the course of twelve months; that number being, however, considerably in excess of the female pupil-teachers in London Board-schools.

Those who do not know much of the Fröbel system are apt to regard it with derision; those who understand it best are least likely to undervalue it. His "gifts" of "stick laying," "paper folding," "paper-plaiting or weaving," "peg-work," &c., may seem puerile, but in the hands of a teacher who understands the system and subject thoroughly, the trifling materials employed are capable of giving, in addition to interesting amusement, most useful elementary education and training to the eye and the hand. The box of balls,—blue, yellow, red, green, orange, and purple, the primary and secondary colours,—suffice for an elementary lesson on colour. The form of the ball, with all its sides, parts, or faces alike, a form that the child will distinguish from all others, serves for a first lesson in geometry, supplemented by the exhibition of cubes and cylinders. With their sticks they are taught, amongst other things, to present perpendicular and horizontal lines, and to form acute, obtuse, and right angles, and from their sticks to point out all such lines and angles in the room. Similar uses are subserved in their amusement of paper-folding. In like manner their drawings upon squared slates are a preparatory step to writing. Even elementary modelling is not neglected in the system, which is well fitted to accomplish the important object of educating that organ,—the hand, the instrument by which the mind is enabled to give expression, materiality, and form to its conceptions, so far as they are applied to the practical purposes of life.

We described the system years ago, and urged its value in the teaching of young children. It is in no overweening spirit of boasting, but with an honest and, we venture to believe, justifiable feeling of satisfaction, that we point to the early volumes of our journal as containing the seeds and early beginnings of much good work now in full swing.

CARVING IN IVORY.*

IVORY is a material upon which the skill and genius of the best artists of all ages have been lavished, and for this reason that it furnishes an admirable medium for expressing the designs and the inspirations of the sculptor. The works of art created out of it illustrate every style and every period of the past, and throw light upon times which otherwise would be absolutely obscure; and in no other material can the student find parallel specimens, as illustrations of sculpture from the days of Imperial Rome to the revival of art, as developed under the great masters of the fifteenth century. One cause of the preservation of the comparatively few ivories remaining among us is that they have not offered to the destroyer the same temptations that were presented in the case of the precious metals.

Ivory has ever stood high in public estimation, and in ages past was treated like gold and jewels as associated with royalty. Although unequal in whiteness to marble, it is superior to marble in beauty of polish. Besides the elephant, other animals furnish a material which must come under the category of ivory, such as the walrus, narwhal, and hippopotamus. To these we must add the fossil ivory, so often used in early carvings, a description of ivory which has not undergone the change generally understood by the word fossil, as it is as much adapted for ordinary use as the ivory procured from living species. Professor Owen tells us that in prehistoric ages a true elephant roamed in countless herds over the temperate and northern parts of Europe, Asia, and America. This was the mammoth. The tusks of these animals are found in great numbers in the frozen soil of Siberia, along the banks of the larger rivers. The story of the entire mammoth, discovered about half a century ago embedded in ice, is known to every one; and so recently as in July, 1873, there arrived in London from Revel a cargo of Siberian mammoth tusks, many weighing 200 lb., their length being 10 ft. 6 in., and the diameter 6 in. to 8 in. African ivory is recognised by its warm transparent tint when newly cut, by scarcely any appearance of grain, and after exposure to air by becoming lighter in colour. As regards the supply of this description, Dr. Livingstone, writing to the editor of the *New York Herald* in 1871, from Central Africa, states that no traders having ever before entered Muanema, the value of ivory was quite unknown.

Asiatic ivory has its characteristics, one of which is that by exposure to the air it tends to turn yellow. Walrus ivory was used for a long time in Southern Europe in the earlier periods of history. In quality and beauty of appearance this description scarcely yields to that of the elephant. In times of scarcity, besides the tusks of the various animals already mentioned, the bone of ordinary animals was resorted to. This was most especially the case in North Italy. Camel bone is a description occasionally mentioned. To decide the original source of the material of old carved ivories would be now impossible, time having, in the generality of cases, completely changed their colour.

It is difficult to understand how the large elabs and other pieces used by the ancient ivory carvers were obtained; and it is a curious fact that the largest tusks now procured would not yield the blocks from which ivories were carved either in the Roman or middle ages. Either they possessed in those days a method of softening and fattening solid pieces, or the tusks of the present ivory are from smaller and degenerate animals. In the British Museum there is an old plaque 16½ in. in length, 5½ in. in width, and ½ in. in depth, presenting an area of ivory which no tusk of any modern animal could possibly produce in a natural manner. A fifteenth-century receipt in the just named museum states that by applying muriatic acid ivory becomes soft and ductile, and that if afterwards dipped in white vinegar it hardens again.

In tracing the early history of the art of carving ivories, we have before us examples which testify to an antiquity long before the Christian era. Specimens, for instance, of Egyptian work are now extant of dates earlier than Ahab or Solomon. In the British Museum can be seen two daggers, ornamented with ivory, of, it is said, the time of Moses, or 1,800

years before Christ. In the same museum are visible fifty Assyrian ivories, found at Nineveh, which Dr. Birch ascribes to the seventh century B.C., whilst Layard considers them at least 200 years older than that period. When sent to England by Mr. Layard, they were in a state of decay, but the decomposition was arrested at the suggestion of Professor Owen, by boiling them in a solution of gelatine.

Greek sculptors did not think it beneath them to work in this substance. One of them, a traveller, Pausanias, has left an account of ivory statues which he saw in his journeyings, and has particularised one of Venus at Megara by Praxiteles. Specimens of this period are, of course, extremely rare. The British Museum, however, possesses several samples undoubtedly of Greek artists, and no less than 70 pieces of Egyptian, Greek, and Early Roman (i.e. B.C.) are to be seen in Mayer's Museum, Liverpool. They are for the most part small and fragmentary, but some are of great beauty, although having suffered more or less from decay.

The Roman ivories after Christ are also extremely scarce, and these form, what Mr. Maskell calls, "the glory of the Mayer collection" in Liverpool. They are the celebrated Fijerivory ivories of the third century, and as tablets have been described as of matchless excellence. The large importation of elephants under the Roman Empire for the purposes of the amphitheatre was one cause of the more extended use of ivory at that epoch.

After the Roman we enter the Byzantine period, which may be said to begin about A.D. 350, or a few years after the death of Constantine the Great, who was born in 274, and died in 337. Some centuries afterwards began the great persecution by the iconoclasts, say in 700, when multitudes of intelligent artists were driven over the whole face of Europe. The Roman pontiffs gladly received these fugitives, sheltered them, and gave them a monastery for their use. From the celebrated seminary *Scuola Greca* artists proceeded all over Europe, France, and Germany, and even England being visited by these refugees. In the tenth century the progress of Byzantine art was rapid, and in the eleventh century the highest perfection of this school was reached. Towards the end of the fifteenth century a change took place in the subjects selected and in the objects to which carving was applied. Devotional tablets became more or less frequent, and mythological subjects received more favour. In the sixteenth century, legends and romances which had been depicted on ivories were forsaken, and the prevailing taste, instead of assisting the cause of religion and morals, as in previous centuries, degenerated still further.

Within recent times the art has partially revived in Germany and France, the principal places of workmanship in the latter-named country being Paris and Dieppe.

Upon the question of nationality, Mr. Digby Wyatt says it is usually so marked by style that the judicious connoisseur will distinguish it almost by sympathy. To define, he says, precisely, why one specimen is believed to be French, another German, and a third English, would be no easy task, and yet the greatest authorities arrive almost invariably at a unanimity of judgment. France was by far the largest manufacturer. Mr. Wyatt says a peculiar *nez rebroussé*, a dimpled, pointing, and yet smiling mouth, a general gentleness of treatment, stamp French work with an almost unmistakable character.

To the French style may be assigned a position midway between French and Italian. There can be no question but that carvings in ivory were much sought after in England, and that there must have been numerous English artists. One feature in English carvings is that the mark of the cutting-tool is not rounded off or smoothed down by other implements. Hence, often every stroke of the chisel is exhibited. Maskell says that the old English Gothic ivories possess a purity and variety of treatment which are analogous to the beauty of the contemporary architecture in this country.

In Germany, the art has ever been extensively cultivated. This school is remarkable for its elaboration and finish, but rarely has risen to the type of great physical or intellectual beauty.

One great feature of the Italian style is the spiritual, partaking of the Greek immovability.

Respecting the dates of the different epochs, it will be of assistance to those interested to remember that the Byzantine ranges from 400 to 1100 A.D.; Gothic, 1200 to 1400; Cinquecento, 1450 to 1550; Renaissance, 1550 to 1600,

Mr. Clark then proceeded to speak of the artists who had worked in ivory.

To those desirous of further investigating the subject, he said he would refer them to the ivory-carvings to be found in the British Museum; South Kensington Museum; Mayer Museum, Liverpool; Ashmolean, Oxford; and Bodleian Library, Oxford.

PARIS NOTES.

The Hôtels of the Orleans Family.—The division of property belonging to the house of Orleans has been a fortunate event to French architects. The princes have hitherto resided on the common property of the family, which could not be altered, or even improved, without the formal authorisation of the *conseil de famille*. At present, however, the different shares have been allotted, and the five millions indemnity accorded to the princes by the National Assembly will be spent in extending and improving the different hôtels and châteaux of the Comte de Paris, the Comte d'Eu, the Prince de Joinville, the Duc d'Aumale, &c. The castle and domain of Eu has fallen to the share of the Comte de Paris. The château d'Eu, a construction of the seventeenth century, has been disfigured by incongruous additions made to it during the First Empire and the reign of Louis Philippe. M. Viollet-le-Duc has been charged with the restoration of the building, and after one or two visits to Eu in company with the Comte de Paris, it was decided that the clumsy peristyle that disgraces the façade should be removed. The garden-terraces are also to be demolished, and vast kitchens constructed underground. There are few alterations to be made in the interior, and the Comte de Paris will be able to take possession of his residence in the month of June. A large hôtel will be constructed in Paris near the Trocadéro for the reception of several princes of the Orleans family. The foundations are already laid in an enclosure which was formerly occupied by a colony of *chiffonniers*; and the news that the Prince de Joinville and the Duc de Nemours are about to inhabit the neighbourhood has caused five new hôtels to be placed in the hands of contractors. M. Viollet-le-Duc considers the Trocadéro the finest site in Paris.

A New Commemorative Monument.—France is being gradually studded with architectural memorials of the last war. Had the campaign ended at Berlin, and resulted in the surrender of the Rhine borders, there could scarcely be a greater number of triumphal arches, statues, tombs, and chapels, than have been erected to commemorate defeat. The last monument projected is to be raised at Mars-la-Tour, in memory of the soldiers fallen at Gravelotte, St. Rivat, and Mars-la-Tour, from the 16th to the 18th of August, 1870. The committee formed to execute the project has accepted the work of M. Bogins. The monument measures nine metres from the base. It is composed of a severe and simple pedestal, surmounted by a colossal group in bronze representing the figure of a soldier struck in the heat of combat, and falling into the outstretched arms of France, who holds a sword aloft. This last figure points to the frontier not many rods distant from the spot where the monument will be erected. Several monuments of this kind are to be placed in different public places of Paris. M. Bogins had offered his project to the municipality, but at a price which the city authorities judged excessive. The monument will be inaugurated on the 16th of August, the anniversary of the battle of Mars-la-Tour.

IMPROVEMENT IN ORGANS.

The specification of a patent taken out by Mr. Thorneley, of Birmingham, for some improvements in the arrangement and manufacture of organs, includes one novelty which is of some importance. Of late years our leading organ-players have been seeking for new combinations and effects by manipulating two key-boards at once, with the thumb and fingers of the same hand; and to do this it is, of course, essential that the keys of each "manual" should be brought as near each other as possible. This has hitherto been arrived at by bringing out the ends of each row of keys so as to overhang the row below; but this, of course, does not affect the vertical distance between the keys. Under the new patent, the several ranks of keys are brought so near each other, vertically, that there is scarcely half an inch between the black key

* From a paper on Ancient and Mediæval Ivories, by Mr. Henry Clark, of Bromborough, read at a meeting of the Chester Archaeological, Architectural, and Historic Society, and reported more fully in the *Chester Chronicle*.

of one row and the white key of the row above; the usual intervening beading is dispensed with, and the necessary space for coupling actions and other mechanical contrivances between the key-ranks is obtained by the simple but ingenious method of radiating (vertically) the several key actions, from the front to the interior. The only drawback to the arrangement is, that the space saved from back to front of the key-boards by the overlapping system is lost, and the back row of keys consequently thrown further from the player; but this would not be seriously felt in organs with less than four manuals; and in other respects the advantage to the player in combining the key-boards, and in passing from one to another, will be very great indeed.

A contrivance for lessening the pressure of the wind against the "pallets" in opening them is very ingenious, and would contribute to render the action easier to the player, but at more cost than it would be worth probably; and in large organs it would not supersede the desirability of Mr. Willis's beautiful invention of the pneumatic lever. There are other points in the patent worth notice, but the disposition of the key-board constitutes its chief value.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

This Association, which now numbers 137 members, comprising most of the large cities and towns in England and Wales, continues to progress rapidly; the objects of the Association, as taken from Rule 2, being as follow:—

(a.) The promotion and interchange among its members of that species of knowledge and practice which falls within the department of an engineer and surveyor engaged in the discharge of the duties imposed by the Public Health, Local Government, and other Sanitary Acts.

(b.) The promotion of the professional interests of the members.

(c.) The general promotion of the objects of Sanitary Science.

The members of this Association being placed so widely apart, it must be obvious that, to continue its successful career, much must depend upon the formation of district committees, having for each district an energetic hon. sec. Three district centres have already been formed, viz.:—Midland, Lancashire and Cheshire, and Yorkshire; and one in course of formation for the Home Counties. Many important meetings have already been held respectively in Warwick, Leamington, Birmingham, Warrington, Manchester, Liverpool, and Leeds, at which important questions have been discussed on sanitary matters, affecting the comfort and health of the population of this country generally.

Mr. E. Pritchard, C.E., of Warwick, the hon. sec. for the Midland district (the first committee formed), has called by circular, the fourth meeting of the committee, to be held at the town-hall, Leicester, on the 14th of March, when it is proposed to visit the Leicester Sewerage and Waterworks; after which papers are to be read by Mr. Lewis Angell, C.E., the president of the Association; and by Mr. E. L. Stephens, C.E., the borough surveyor of Leicester.

The annual meeting of the Association will be held in Birmingham in May next.

TRIMDON PARISH CHURCH.

The re-opening, after its enlargement and restoration, of the old parish church of Trimdon, in the county of Durham, took place on the 29th ult. The church dates from the year 1164, and consisted of a nave and chancel with western bell-cot and south porch, and had accommodation for about ninety persons. The porch has been taken down and rebuilt. A lean-to aisle has been added on the north side, and united to the nave by an arcade of thin pointed arches. In place of the flat ceiling and close roof of the old church, new roofs have been constructed with arched principals resting on stone corbels, and purlins and rafters and cross-braces. The old wooden windows of Batty Langley Gothic have been removed, and pointed windows of two-lights, with stone jambs and arches, have been inserted. The east window is of three lights, with moulded tracery. The priest's door has been refitted with strong jambs and arch. A vestry has been added on the north side. The whole of the rough cast has been picked off, and the walls neatly pointed and dressed. An

open drain or area has been laid all round the building, to preserve the dryness of the interior. The floor has been laid with red and blue tiles, with one step at the chancel and another at the altar-rail. A simple stone slab pulpit occupies the south-east angle of the nave, and a lectern and prayer-desk are placed in the usual position.

Sittings are provided for 150 persons in open benches, with book-boards and kneeling-stools. All the woodwork is plain and varnished.

The contract was taken by Mr. Robt. Borrowdale, of Darlington. Messrs. Hay, of Liverpool, were the architects.

ARCHITECTURAL DODGERS IN CHICAGO.

We find the following in the *Chicago Times* of February 15th, and let it speak for itself:—

"Mr. J. C. Rankin, the superintendent of construction of the monstrously known as the United States Custom House at Chicago, is a very modest man, and will be shocked upon hearing of a matter that may place him in a false light by those who do not appreciate him. Mr. G. O. Garnesey, partner of Mr. Rankin in the architectural draughting business, is now travelling in Europe, and will share Mr. Rankin's grief upon learning that some cheeky and mendacious individual has deliberately and most recklessly misrepresented the firm and one of the firm's pictures."

The cause of the unutterable anguish that is about to come to the lot of Messrs. Rankin & Garnesey may be explained in a few words by a disinterested party like the *Sunday Times*. It may cost Messrs. Rankin & Garnesey a great many words to explain it to the perfect satisfaction of a credulous public. *The Builder* is a journal published in the city of London, England, and devoted to the interests of the architect, engineer, operative, and artist; it is said to be the most influential journal of its kind in Europe, and has a circulation in all parts of the world. In its issue of December 27th, 1873, the *Builder* published a full-page illustration entitled, "Proposed City Hall and Public Buildings, Chicago, designed by Messrs. J. C. Rankin & G. O. Garnesey, architects." The picture bears a close resemblance to a plan offered to the city and county authorities some months ago, and which was repudiated by them almost at first sight. On the following page is a detailed description of the design, which is introduced in the following language:

"Designs having been invited for the city hall and county buildings for Chicago, forty-nine sets of drawings were submitted, and from these eighteen were selected as the best. Of the latter, the design by Messrs. J. C. Rankin & G. O. Garnesey, architects, received the majority of votes."

Who can picture the indignation of Messrs. Rankin & Garnesey (the latter is now in Europe) upon reading this mendacious misrepresentation. Rankin will swear round Scotch oaths at the assurance of the man who informed the *Builder* that his plan received a majority of votes when the first selection of eighteen was made, because Rankin knows that he got his plan among the eighteen by the merest scratch, and it was never included in any subsequent selection. And how presumptuous in the unknown man to mislead the *Builder* at a time when Mr. Garnesey was in Europe, and would be certain to drop round to the publishing office the next morning, and expose the falsehood!

Inasmuch as there never was, at any time, the faintest suspicion that the design published in the *Builder* would be selected by the city and county authorities; and inasmuch as Messrs. Rankin & Garnesey had no little show in that memorable scramble, that they scarcely knew that they were ever in it; what income could well be shown by the party who sought to mortify them by representing, months after the fact, that their picture-makers, one of whom was in Europe at the time? Was it Metcalf, or Gay, or Tilley? Did these three prize-winners conspire merely for the purpose of making Messrs. Rankin & Garnesey a laughing-stock? Here is one spreading across the ocean into two hemispheres. Rankin, in America, and Garnesey in England; so far apart, and yet suffering a common anguish. Who is the heartless man that has caused all this mischief, deceived the *Builder*, and made game of Messrs. Rankin & Garnesey?

SOUTH LONDON MUSEUM.

The new building for the South London Museum is shortly to be proceeded with, but in consequence of the project not having been taken up so warmly as was at first expected, it is not to be erected on the site originally proposed, nor on so large a scale as was in the first instance contemplated. It appears that Mr. Clements, with whom the fund originated, and who is possessed of a valuable collection of treasures, which he is ready to deposit whenever a suitable building is provided, has purchased a site in the New Kent-road, and intends himself to commence the erection of the building in the course of a few weeks. The situation is not so central as the one originally selected in Newington Butts, but it is still very accessible. The land which has been secured by Mr. Clements is not so large as the original plan would have required, and the building about to be erected will be about 130 ft. long. We are told that the plans for the building are now in course of preparation, and that, as at present arranged, it is intended to lay the foundation-stone in May next.

MELYN SCHOOLS.

A HANDSOME block of school buildings has just been completed near Neath, Glamorganshire, for the use of the work-people at the Melyn Tin-plate Works, at the sole expense of Messrs. Leach, Flower, & Co., the spirited proprietors of these works.

The works were constructed in 1863 for the manufacture of tin andterne plates, of which total quantity of 100,000 boxes (say 6,000 tons) per annum are produced, employing from 500 to 600 work-people, and supporting a population of several thousands.

In connexion with the manufacture of tin-plates, Messrs. Leach, Flower, & Co. carry on the business of jpanning or decorating by a process patented and introduced from France, of which they have the control for the United Kingdom.

These decorated tin-plates, which are produced in every variety of design and colour, are exported very largely to foreign countries, and are also used extensively for tea, match, and biscuit boxes, and other articles of domestic use.

The library and reading-room attached to the schools are for the free use of the people employed at the works, and under suitable regulations will be available for their club meetings, lectures, and other entertainments.

Our illustration shows the school buildings surrounding a quadrangle 46 ft. by 41 ft. The boys' schoolroom measures 65 ft. by 18 ft., with class-room, 17 ft. 6 in. by 15 ft. The girls' room, 33 ft. by 18 ft., with corresponding class-room; the infants' room, 50 ft. by 18 ft. These buildings surround three sides of the quadrangle, the fourth side is occupied by the reading-room and library, 46 ft. by 20 ft.

All the rooms are lined internally with a dado, 5 ft. high, of white enamelled bricks, with oncostic tile borders.

The walls are of solid local sandstone, and all the dressed work is of Combe Down oolite.

The windows are glazed with cathedral glass, in artistic patterns, by Messrs. Baillie. The bell-turret contains a bell by Warner.

Mr. Roderick, of Margam, has executed the works at an outlay of about 2,500l., exclusive of boundaries and site, which are also given by Messrs. Leach, Flower, & Co.

The architect was Mr. Norton, of London, who has recently built the Church of St. David, Neath.

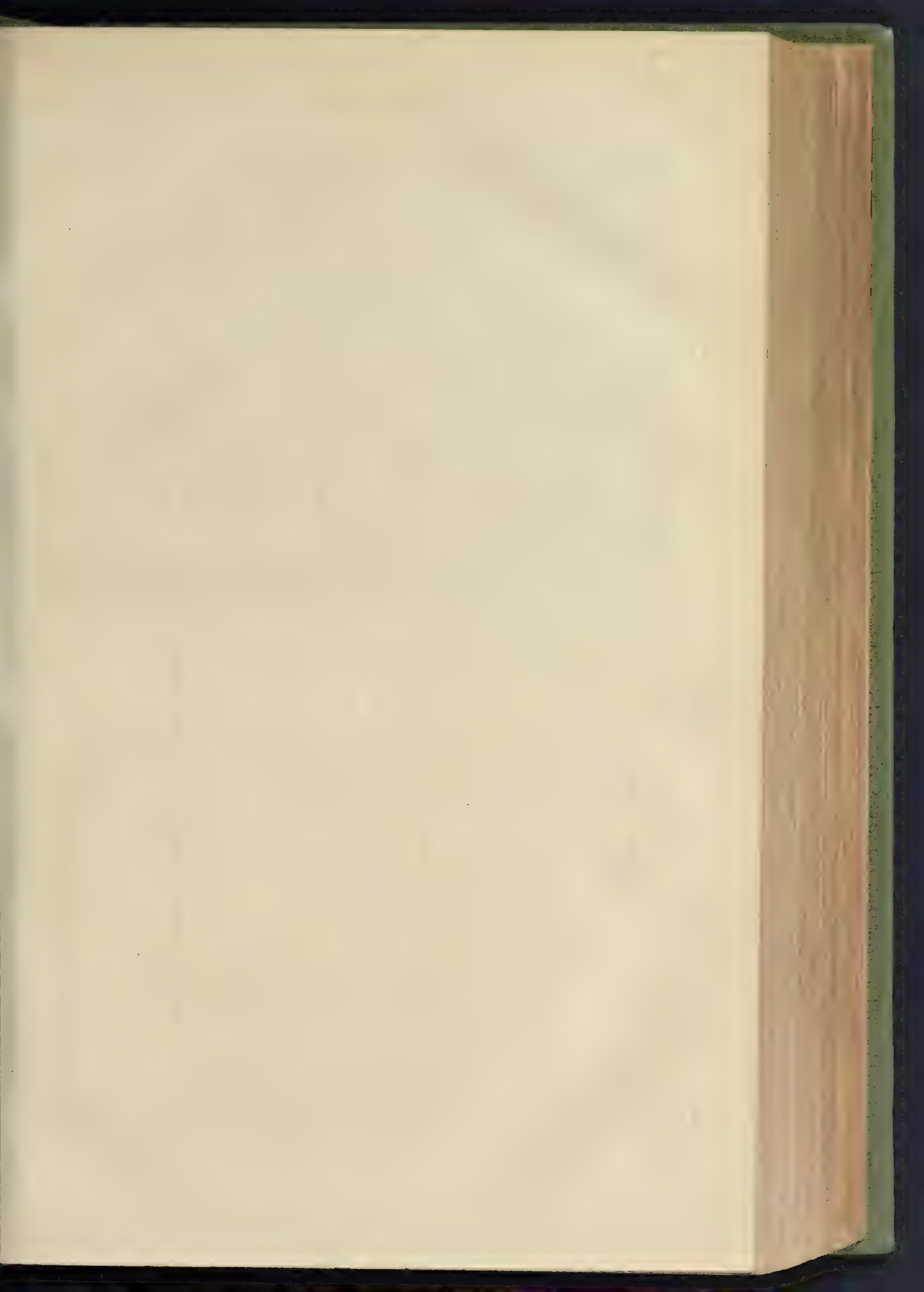
PORTAL OF THE DIGBY MORTUARY CHAPEL, SHERBORNE.

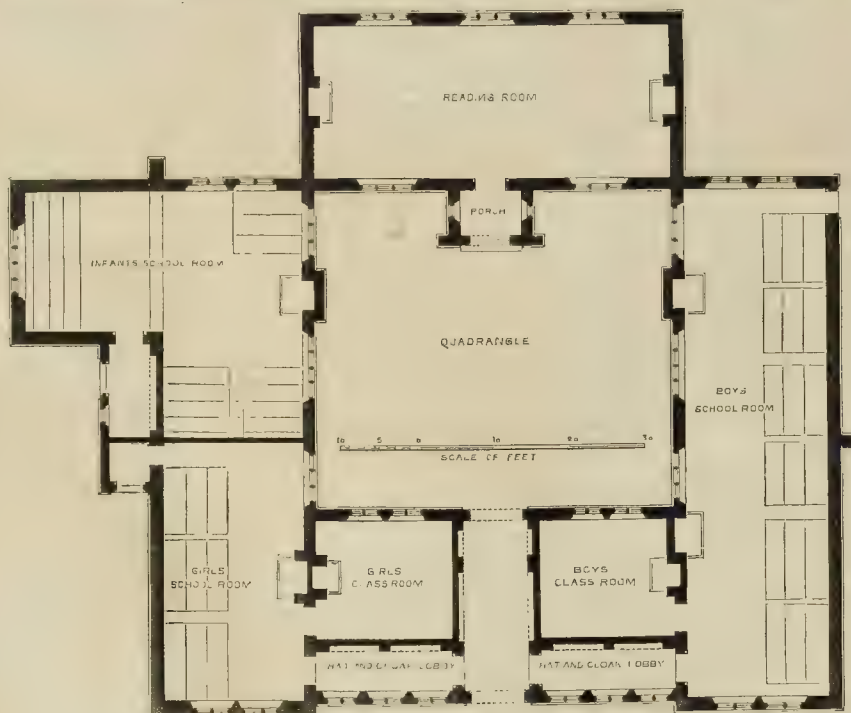
Our engraving represents the Portal of the Mortuary Chapel of Mr. G. D. W. Digby, of Sherborne Castle, erected in the cemetery at Sherborne, Dorset. This portal is the design of the late Mr. W. Slater, executed by Messrs. Henry Poole & Sons, masons, of Westminster, in 1862, in which year the main part was erected in the Great International Exhibition, taking its place in class X, section C, and obtained medals for the architect and the artificers.

The ascent is a flight of seven steps in Kinton blue stone. The plain pedestal is of Chilmark, and the richly-moulded and carved jambs above of Steeley stone—the latter being a material of great durability and delicacy, and capable of developing the undercut carving in the moulding. Two of the arch ribs are variegated with vousoirs of red Mansfield and Cornish Polyphant stones. The pillars are of polished Sienna, Devon spar, Connemara green, and Pyrenean jasper marbles. The gate is of bronze.

The sculptured tympanum was modelled, and afterwards executed in Huddlestons stone, by Mr. J. Redfern, of London.

Grecco-Buddhist Sculpture.—At the Society for the Encouragement of the Fine Arts, last week, Dr. Leitner delivered a lecture on his "Discoveries of Grecco-Buddhist Sculptures at Takhi-i-bahai in Yaufrui, on the Punjab Frontier." Mr. James Fergusson, F.R.S., occupied the chair. The lecture was listened to throughout with great interest by a numerous and distinguished audience, many of whom, for the first time, found themselves in a position to compare, from specimens exhibited by the lecturer, the Greek with the Buddhist art, forming the, until now, missing link in art-history. The usual votes of thanks to the lecturer and chairman terminated the proceedings.





MELYN SCHOOLS, NEAR NEATH, GLAMORGANSHIRE. — MR. JOHN NORTON, ARCHITECT.



PORTAL OF THE DIGBY MORTUARY CHAPEL, SHERBORNE CEMETERY.—DESIGNED BY THE LATE MR. W. SLATER.

ON BELLS, AND MODERN
IMPROVEMENTS FOR CHIMING AND
CARILLONS.*

THE machinery used in Ghent is on the same principle as all the other towns, and the same as has been used in England till within the last few years. A large barrel of either iron or brass, with pins in it of large size to catch upon the ends of the levers, to which are attached the hammers which strike the bells, to raise them, and let them fall again immediately on the bell, is driven by a smaller drum or wheel, round which is wound the flax or iron wire rope, to which is attached the weight, which is the motive power. At Ghent, the music drum is made of brass with square holes punched into it, and into which holes iron lifting-pins are placed. The surface of the barrel being divided by the square holes into intervals for crotchets, quavers, and semi-quavers, it is a matter of no very great difficulty to arrange the tunes, and when it is desired to remove them for a change of tune it is easy to knock them out from the inside, and to put them in such other holes as the nature of the notes to be produced may require. The ropes here are of flax; the driving weight is 800 lb., and is wound up twice a day. There are as many as four hammers to some of the bells, and none have less than three. The brass drum is about 6 ft. in diameter, and when in motion reminds one very much of a water-wheel, so ponderous does all the machinery look. It was constructed by Charles Nolet, a native of the town, and I have no doubt his fellow townsmen are very proud of his memory, for he must have been long since dead. The next place, *en route*, is Bruges, where the machinery is on a much larger scale than even at Ghent, the barrel being 8 ft. in diameter, forty-eight bells, and as many as six hammers to some of the bells,—190 in all. The machinery was constructed by Antomus de Hondt, of Bruges, as far back as 1748, and of late years iron wire has been substituted for flax. The weight has to be wound up every two hours, a man living in the tower for that purpose. The clock here is worthy of passing notice, being of a very large size to carry the hands for the dials, which are 19 ft. in diameter. It has a gridiron pendulum, which is supposed to compensate for changes of temperature, but which certainly does not do to any satisfactory extent. It strikes the hours at the half and half-hour,—on a different bell at the half-hour to distinguish them, and a tube is played at each quarter. As at Ghent, there are small clappers fixed inside the bells, by which they are played upon by hand. The performance is done in this way. The man who is about to distinguish himself regularly prepares as for a pugilistic encounter. He takes off his coat, waistcoat, and hat; puts his long hair learnedly off his forehead and behind his ears,—at least, the man I saw did,—looks intently for a few moments into the corner of the room; puts on a regular pair of boxing-gloves in the greatest possible hurry, evidently for fear that the brilliant melody should escape him; sets himself down in front of long rows of pegs and pedals, and bangs away at them as hard as ever he can go, first up, then down, now in the middle, now both ends at once, and I believe the whole lot would have gone down at once if he could have managed it,—legs and arms all going in a perfect frenzy; but there being many more pegs than arms and legs, he could not manage more than a certain number at a time. How thankful the Antwerpens ought to be. Now for the result produced—a great deal of clatter and fatigue, but very little music. Noise and jingle, most lovely to those who like it; but I am one of those unappreciative sort of people who do not think that music consists in a thundering noise and clatter. Dr. Gatty, in his "History of the Bell," says, upon this subject:—"The Carillonneur uses both hands and feet in executing the sprightly air which charm the inhabitants of the cities of the Low Countries. The pedals communicate with the larger bells for the base; and the keys upon which the treble notes depend are struck by the hand sideways, the little finger of the player being defended by a thick leathern stall. It requires considerable strength, as well as celerity and skill in the player, for unless a violent blow be given to the key, only a weak sound would be produced"; and Dr. Burney (in "Present State of Music in Germany, 1772") says:—"The want of something to stop the

vibration of each bell at the pleasure of the player, like the valves of an organ, is an intolerable defect to a cultivated ear, for by the notes of one passage perpetually running into another, everything is so inarticulate and confused, as to occasion a very disagreeable jargon." He also says:—"The carillons are said to be originally of Alost, in this country (that is, Germany), and are still here and in Holland in their greatest perfection."

The next town I visited where there are chimes was Antwerp, where there are forty-eight bells. The bells are swung as well as chimed on by the machinery, which was made by Von Hoof, in 1786. The weight is wound up twice a day. These people seem very fond of winding up weights. Nothing less than twice a day suits them,—and in one instance named, every two hours. The next, and last, in my route, was Namur, where there are fifty-four bells. The machinery was made by Nolet, of Ghent. Of the date I have no note; but, I should say, decidedly more recent than the machine by the same maker at his native town, the whole arrangement of the bells and hammers and machinery being much more perfect and mechanical. The music was taken in excellent time. There was a distinct melody running all through, with a most judiciously-arranged accompaniment in the base.

There has been a large bell-foundry, where, I believe, nearly, if not all, the Belgian bells have been cast. Van Acholt is the proprietor. At the time I visited him he had nothing particular in hand; but, a few years ago he sent a large peal of forty-two bells to this country, for Boston, in Lincolnshire, which are considered to be very good. The process of manufacture of English bells, which I am now about to describe, will apply equally to the German bells; and I need only mention here, that many people consider them superior in tone to ours. I believe that a great deal of this apparent superiority is due to the number they use. Take them singly, and, undoubtedly, they are thin in quality of tone.

I have now reached the second part of my paper.

Church-bells: their Manufacture and Uses.—There is a most excellent work about bells, edited by the Rev. H. T. Ellacombe, and called the "Bells of the Church," a supplement to the "Church Bells of Devon," and I was so much struck with the easily-understood description he gives there of bell-founding, that I think I cannot do better than give it in his own words, illustrating it by similar diagrams as are to be found in his book, more especially as he there describes a bell-foundry from which my firm are constantly receiving bells of which we have a very high opinion. He says:—"It will be interesting to the general reader if I describe the modern process of bell-casting. This I am the better enabled to do by taking the establishment in Whitechapel, the oldest in London or in England." Before describing the process of casting a bell, it may be well to state that bell-metal consists of an amalgam of copper and tin, in proportion of about three parts of copper to one of tin. There are, of course, various trade secrets as to the exact proportions of the different metals necessary to constitute a first-rate alloy. Mr. Denison in his book says, that "after many experiments he has come to the conclusion that the proper composition for bells is thirteen of copper to four of tin."

There is no great mystery after all in the bell-founder's art, but extreme care is necessary, in order to produce a good toned bell, that all the preliminary operations should be conducted with the greatest exactness. Passing through various yards at the Whitechapel foundry—in which are stored quantities of old timber, old bell-metal, and a multitude of odds and ends, in the shape of cannon and great masses of old copper destined one day for the furnace—we arrive at the moulding-room. In describing the casting of a bell it will be necessary to observe that it is nothing more than a layer of metal which has been run into the space between the mould and its outer covering and allowed to cool. The various parts of a bell may be described as the body, or barrel; the clapper, or striker, hanging on the inside; and the ear, or cannon, on its top or crown, by which it is hung in its chosen position in the tower.

The following description applies to all bells, large and small, the various modifications in the shape, &c., not interfering with the principle on which it is manufactured. The first principle to be observed, is the construction of the shape or form of the future bell, so as to ensure that due

harmony in all the parts which shall give to it the proper degree of tone and vibration. Various theories have obtained in different countries, and among the different founders of our own country, as to the best proportions for bells; but the following scale has been proposed and generally followed at this foundry as coming nearest to perfection. Taking the thickness of the sound-bow or brim—that is, the part where the clapper strikes,—a bell should measure in diameter at the mouth, fifteen brims; in height to the shoulder, twelve brims; and in width at the shoulder, seven and a half brims, or half the width of the mouth. These proportions, however, are very variable, and depend greatly on the taste, experience, and skill of the founder, an approximation merely being arrived at in these figures. Mr. Denison says, "The most essential point of all to be attended to in ordering bells is to require absolutely, and in spite of all protestation of the founders, that none of them when finished are to be thinner in the sound-bow, or thickest part, than one-thirteenth of the diameter." I know that some good old bells are a little thinner, but I never saw a new one that was less, and had at the same time anything of the soft and sweet tone which church-bells ought to have. I can only account for the old ones bearing to be thinner, though by no means so thin as many modern ones, by the well-known greater softness and toughness of the copper of old times, when they smelted less metal out of the ore. The small bells of a peal are always rightly made thicker in proportion than the large ones, and will run up one-eleventh of the diameter, the large ones being one-thirteenth. I would here observe that Mr. Denison goes most minutely into the why and the wherefore of the proportions of metal and the shape of bells; and I have selected Mr. Ellacombe's description of bell-founding, because I have thought it would be more generally understood. To the searcher after information both books are invaluable, one treating exhaustively on the constructive part, and only slightly on what I may call the archæological part of the question; and the other exhaustively on the archæological, and only slightly on the constructive. I believe that Mr. Denison is at issue with some of the bell-founders about the proportions and shapes; but that his theory is a right one seems entirely borne out by the fact that many most excellent peals of bells have been constructed under his instructions, and that he is consulted in almost every matter of importance. The size and proportions, then, of the future bells being ascertained, the making of the mould is proceeded with. The outer form of the core, by which the inner shape of the bell is determined, is made by means of a crook, which is made to revolve on the clay, &c., of which the mould is composed. This crook is a kind of double compass, the outer leg of which is in two parts, formed of wood and metal. The inner part (of metal) is cut or curved to the shape of the outside of the core, or inside of the intended bell; and the outer part (of wood) to the form the inside of the bell is to be made. This crook and compass is made to move on a pivot affixed to a beam above, and its lower end driven into the ground. In case of very large bells the mould is perfected in the pit in which they are to be cast. The crook is driven by the hand of the moulder, and the moulds being composed of plastic clay, &c., the form of the inner side of the bell is defined by a few revolutions of this simple machine. Thus is formed the core, or inner mould. The cope, or outer mould, is formed in much the same way, except that its inner surface is smoothed to form the outer side of the bell. The core is first roughly built up of brick-work, with a hollow in the centre. It is then plastered over with soft clay, &c., and moulded as described, by the action of the crook, and is afterwards dried by means of a fire in the hollow mentioned. When baked sufficiently hard, it is covered all over with a size of tan and grease. Over this size a coating of hay-bands and loam is laid, the exact thickness the bell is intended to be made: on this thickness the outer leg of the crook—the inner leg which formed the core having been removed,—is made to rotate, and so forms the shape of the inside of the cope or outer mould. This thickening being thoroughly dried, upon it is formed the cope, or outer mould, upon the outer surface of which are formed ledges, by means of which, when dry, it is raised, and the thickening destroyed. Both are then retouched, any device or inscription being impressed upon

* From a paper by Mr. George Lund read at the Society of Arts on Wednesday last.

the inside of the cope; it is re-lowered, and the hollow space between the cope and core is, of course, the exact shape the bell is to be. The head and staple to hold the clapper being now fitted above all, the mould may be said to be complete. A sufficient number of moulds being now formed for the number of bells to be cast, the pit is filled in with earth, firmly rammed down, to prevent the copes rising when the metal is run in. The furnaces are now lighted, the metals in their proper proportion are melted—sometimes as much as twenty tons at a time,—and from time to time tested, till found to be of the right temperature, when the furnace-doors are opened, and the molten metal directed through properly constructed channels to each mould in succession, till the whole number of bells is cast. Sufficient time is allowed for cooling. The earth is dug away from around the moulds, which are then destroyed, the bells being taken to the tuning-room, where they are tried for note; and when tuning is necessary, which is almost always the case, the bell is securely fixed into a wooden frame by means of wedges, underneath a steam cutter, which is then made to descend; the gearing of the engine is then turned on, and the cutter revolving cuts as much as may be required, either from the inside of the bell in the region of the sound-bow to deepen the note, or from the edge of the lip to sharpen it. There are, of course, other well-known bell-founders besides Messrs. Mears & Stainbank,—namely, Messrs. Warner & Co., of London, and Messrs. Taylor & Co., of Loughborough. The latter firm have, within the last few years, cast some of the largest peals of bells in England, and, consequently, in the world, and which are pronounced by Mr. Denison, and the Rev. R. Cattley, who likewise has given great attention to this subject, to be amongst the finest ever cast. They are at Worcester, Rochdale Town-hall, and Bradford; unfortunately, at the last-named place, they are in much too confined a space, and are not heard to their best advantage.

The earliest notice of a bell and a peal of bells is contained in the following passage:—Egbert, Abbot of Croylund (who died 984), in the time of Edgar, caused a peal of bells to be made for his abbey, to each of which he gave names, which it is needless to give here, and the celebrated "Benedictional of St. Ethelwold," in the library of the Duke of Devonshire, furnishes us with an earlier instance of a bell with four bells, viz., about the year 980. From that time to the present, bells of all sizes, shapes, and weights have been cast, and I think that a few moments may not be unpleasantly spent in enumerating some of the most famous. The largest bell in England is, as you are doubtless aware, "Big Ben," the clock-bell at Westminster. It may not be equally well known that it derives its name from the fact that Sir Benjamin Hall, being head of the Metropolitan Board of Works when the bell was first cast, and his name inscribed on it, it was named after him, "Ben," and from its size was naturally called big; hence the name, "Big Ben." It bears this inscription:—"This bell, weighing 13 tons, 10 cwt., 8 qrs., 15 lb., was cast by George Mears, of Whitechapel, for the clock of the Houses of Parliament, under the direction of Edward Beckett-Denison, esq., Q.C., in the 21st year of the reign of Queen Victoria, and in the year of our Lord, 1858." It was contracted for that the bell should bear the blow of an 8 cwt. hammer, but after the clock had struck on it for a few months cracks showed themselves, and upon examination it was found that the metal was porous and the casting defective. The striking was then removed to the fourth quarter-bell, upon which the hours were struck for two or three years; but, after many complaints of the confusion, the striking on the big bell was resumed (November, 1863) with a lighter hammer, the bell being turned a quarter round by the button or mushroom head by which it is hung. The four quarter-bells were cast by Messrs. Warner without any known defect, and are remarkably good. I may here give you some information which may be new to you, and at the same time bear testimony to the remarkable time-keeping of the clock. We receive from the Royal Observatory at Greenwich by electric current a time signal every hour,—and I show upon the table the instrument we use for registering it,—having found it extremely inconvenient to be on the look-out exactly at the hour, falling which the signal was lost. It is the invention of a brother of mine, improved by myself only to this extent, that instead of using an ink-chronograph watch we

use a stop-chronograph; and for the information of those who do not know the difference between the two, I would say that in one the second-hand is double, and that when the signal comes it draws the upper-hand through the reservoir of ink in the end of the lower-hand, and so marks the error of the watch on its dial or face, and that the hand is constantly moving. In our chronograph the hand can be started from zero and allowed to travel as long as desired, can be stopped, and again be brought to zero for another start, each being done by pressure. Having placed the hand at rest we put the watch into the instrument and leave it. At the next hour the signal is sent from the Royal Observatory, and the hand of the watch is started absolutely to Greenwich mean time. We can then at our leisure compare our regulators. The wire through which our signals come is used by the Westminster clock once each day, to transmit a register of its time to the Astronomer Royal at Greenwich, and to Mr. Dent, in the Strand. When we want to compare "Big Ben," we only replace our watch, and let the clock signal (being the second pressure) stop the hand. Whenever it stops to the right or left of zero, so is it fast or slow time. If it stops at zero, it is, of course, correct time. It is very rarely, indeed, that we find it many seconds out. The next largest bell in England is "Peter of York," diameter, 8 ft. 4 in.; height, 7 ft. 7 in.; weight, 12 tons 10 cwt. The note is F sharp. The next great bell is the "Mighty Tom" of Oxford, 7 ft. 12 in. in diameter, and weighing 7 tons 12 cwt. The note is generally considered to be A, but being faulty in some parts the tones vary, and some say it gives out five notes. Rather a cheap way that of getting the effect of a peal of five bells. Three unsuccessful attempts were made to cast it in 1681; twice it wanted metal enough to make out the canons, and the third time it burst the mould and ran into the ground. It was at last, can I say successfully cast, with its five notes, by a London bell-founder, named Christopher Hodson. In 1682 it was moved from the church to the Gate House, and on the 29th of May, 1684, it first rang out between eight and nine at night, from which time to this a servant tolls it every night at nine, as a signal to all scholars to repair to their respective colleges and halls.

There is a great bell at Lincoln Cathedral weighing 5 tons 8 cwt.; note A. This, and the two quarter-bells, were cast from the old 1610 bell, and six other bells from the roof tower, called the Lady bells, by Mears, of London, in 1834. St. Paul's has a large hour and two smaller quarter bells, none of them anything to boast of, in the south tower. There is, however, in the north tower, a bell which bears the inscription:—"Made by Philip Wightman, 1700." The diameter is only 49 in., and the thickness 34 in., yet the tone is most deep and sonorous, and I think, for its size, one of the most pleasing to the ear I ever heard. Having had occasion to try it several times, the impression remaining of it is a most pleasing one, which I cannot say of the three other bells; the quarter-bells are specially poor and lacking in quality of tone. There are also large bells at Leeds Town-hall, St. Dunstan's, Canterbury, and at Glasgow. One of the latest additions to the large bells in England is at Worcester Cathedral for the new clock to strike on, and for occasional tolling. It is hung on the balance-beam principle. The gudgeons or pivots on which the bell moves are wedge-shaped, and roll on hand brasses very slightly hollowed; the friction is thereby so little that the bell can be tolled by one man with one hand, although it weighs 4½ tons, a lever being attached to the stock instead of a wheel, which is necessary under some circumstances. It was so tolled for service for the first time by Mr. Denison and the Rev. H. T. Eliacombe, on Sunday, the 17th January, 1869, in the company of the Rev. R. Cattley and others, and it is owing to the last-named gentleman's indefatigable efforts that the peal has since been made up to thirteen bells, and machinery provided to play tunes upon them.

I may here be permitted to publicly thank him for his extreme courtesy to me on the occasion of a visit which I lately made to Worcester, amongst other towns, to hear chimes about which much has been lately said in the public press. In this case, at least, the eulogy appears to me not to have been misdirected. Anything more perfect in the way of general arrangement of bell-framing to support and carry the bells, of fittings in the bell-ringers' floor, and evidence of heart and soul

enthusiasm of the master-mind in the work from floor to roof of the tower, is not to be found. This is no fulsome flattery, but a statement of plain truth, as any person going there can see for himself. The bells, made by Messrs. Taylor, of Loughborough, are undoubtedly very fine, and the clock, made by Messrs. Joyce, of Whitechurch, is a specimen of English work of the highest order; and here my criticism ends. Others are as well able to judge of the effects produced as I, and I prefer to say nothing about them.

THE EAST LONDON RAILWAY WORKS UNDER THE LONDON DOCKS.

A few days ago we paid a visit to the important engineering works now in progress at Wapping for carrying the East London Railway, in the course of its extension to Liverpool-street, under the London Docks. The works, which are of unusual magnitude, considering that they involve in the result no more than the construction of half a mile in length of railway, commence at the present Wapping station of the company, and after passing under the London Docks in a northerly direction, terminate at an underground level in Shadwell, almost immediately under the station of the London and Blackwall Company. This point is the termination of the contract now in course of execution, but the line is to be carried forward from Shadwell in a north-westerly direction, passing under Whitechapel and Bishopsgate-street, and thence forming a junction with the recently-opened extension line of the Great Eastern Company, and having its final City terminus at the north side of that company's new station in Liverpool-street, now in course of erection. The contract for this last-named portion of the line is to be commenced immediately, and, as compared with the heavy undertaking now in progress at the London Docks, the works are light; it is expected that they will be completed and ready for opening simultaneously with the finishing of the Wapping and Dock contract.

These last-named works, which we have now more particularly to describe, have been designed by Sir John Hawkshaw, the company's engineer, and are being executed by Messrs. T. A. & C. Walker, of Victoria-chambers, Westminster, and when it is stated that before completion they will involve an outlay of 500,000*l.*, their great extent and magnitude will be at once perceived. They have been in progress for a little more than two years, being divided into three sections, all of which have been simultaneously going forward, and certain portions are now nearly completed. One of these is the section commencing at the junction with the present Wapping Station, and extending to the entrance to the docks, which is now almost in readiness for being connected with the latter when the works there are finished. The Wapping Station, as is generally known, leads to that portion of the line under the Thames which was formerly known as the Thames Tunnel, but which now forms a part of the East London Railway, in the direction of New-cross. The length of the extension line between the Wapping Station and the entrance under the docks is about 380 yards, and in order to arrive at the present railway low-level at the Wapping Terminus, it has been necessary to excavate to a depth of upwards of 60 ft. below the ground or street level. During the progress of these works pumping operations were rendered necessary, in consequence of the immense quantity of water which impeded the work, and pumping-engines were constantly at work day and night from the commencement to the completion of the works, and thus the difficulties, formidable as they were found to be, were eventually overcome. The excavations have now been completed, and the intended railway level reached, and a portion of the area, to the extent of about 50 yards in length northwards, will be made use of for extending and enlarging the present Wapping Station, which will be covered over with a glass roof. The remaining portion of the newly-formed line, to its entrance under the docks, is to be arched over.

That portion of the works which is intended to carry the line under the London docks must next be noticed. It is undoubtedly the heaviest portion of the entire undertaking, presenting engineering features of a character no less formidable than difficult. When the works were first projected Sir John Hawkshaw's intention was to carry the railway under the bed of the

docks by tunnelling, but subsequently deeming the process hazardous in consequence of the possible breaking in of the water during the progress of the works, it was determined not to proceed upon this principle, but to construct the works in two sections, by a system of coffer-dams. The line passes under the east side of the docks, and by the plan pursued in the construction of the works, the shipping in the docks is interfered with to the smallest possible extent. The first process was to construct a coffer-dam at the south-east angle of the dock, in order to admit of the water being run off, preparatory to the excavations being made through the bed of the dock. This coffer-dam extends about half way across the dock, and during the progress of its construction many obstacles have presented themselves, and the exercise of great engineering skill has been necessary. The difficulties which have been met with have had the effect of extending its completion over a much longer period than was expected, and it is only within the last few weeks that the brick-work in connexion with the construction of the tunnel has been commenced. The process by which the coffer-dam was constructed serves to give some idea of the magnitude of the work. In the first instance a double row of enormous piles were driven down into the bed below the dock, in order to enclose the area of the coffer-dam. The space between the outer and inner rows of these piles is 4 ft. in width, the whole of which was filled up with puddling from the bed of the dock to the upper surface of the enclosure, considerably above the average water level in the dock. The face of these piles within the coffer-dam was strongly boarded from the bottom of the dock to the top of the coffer-dam, before the puddling commenced, and this may be described as one of the most interesting features in the works. The piles having been driven down and firmly fixed, divers descended with the requisite materials, and constructed the wooden walls of the coffer-dam. This having been completed around the face of the coffer-dam, this part of the dock was then run dry, after which, the excavations from the bed of the dock to the level of the intended railway were commenced, and having been completed, the building of the tunnel is now in progress under the bed of the dock, by the railway being arched over, the crown of the tunnel being 5 ft. below the bed of the dock. When the brick-work is completed, its upper face will be covered with concrete and asphalt, and afterwards puddled up to the level of the bed of the dock. The water will then be again admitted within the coffer-dam into the dock, after which the same process will be repeated at the north-east side of the dock, thus completing the tunnel and the railway under the dock on the north side, in the direction of Shadwell. The works here are being vigorously carried forward, and in order to show the activity which prevails at this particular part of the undertaking, it may be stated that there are now no less than a thousand men employed, and sixteen engines at work within the docks.

Emerging from the docks, the line is carried forward northwards, in the direction of Shadwell, by a tunnel 70 yards in length, which has just been completed. This tunnel leads into an intended low-level station at Shadwell, bonned on the south side by Cable-street, and on the north side by the Shadwell Station of the London and Blackwall Railway. The area of the station itself, which will be considerably below the street-level, in an excavation which has already been completed, will be covered over with a glass roof; whilst the station buildings will be erected on walls and iron girders, thrown across the line on a level with the street above. This station was originally intended to be 350 ft. in length; but it has now been decided to make it a more important one than was at first contemplated, in consequence of the great traffic expected. The representations which have been made by the Brighton Company, with whose line the East London is to be directly connected at New-cross, as well as that of the South-Eastern Company, have induced the directors to decide that the station at Shadwell shall be 400 ft. in length, instead of 350 ft., as originally fixed, in anticipation of the expected general traffic at the East End to and from that station, and of the excursion-trains during the summer and holiday season.

The entire cost of the new works for extending the line from Wapping to Liverpool-street on the North, and for connecting the line with the London and Brighton and South-Eastern lines at New-cross, is estimated at 1,650,000l.

THE LAMBETH VESTRY AND THE CONTRACT SYSTEM.

At the meeting of the Lambeth Vestry last week, a discussion took place on a recommendation of the Works Committee, that the vestry should for twelve months execute their own paving in all the thoroughfares in the parish. The chairman of the committee remarked that if the vestry affirmed the resolution, he felt confident they would become their own paviors in perpetuity. Mr. Mills, in seconding the resolution, advised that they should purchase the stone in bulk, and then select what stone was suitable for every particular road in the parish. Several members supported the proposal, one member observing that he thought it was the best way to keep down the rates. Mr. Turner, on the other hand, said the contract system was one of the best, and one of their by-laws stated that all work above 50l. should be contracted for. If the vestry did the work they would but create extra expenses. Mr. Storr, in supporting the proposal, contended that the parish would get the benefit of purchasing large quantities of stone; whilst Mr. Sharpley did not see how the rates could be saved by the parish doing their own work; and Mr. Barker observed that if the motion was carried, they would find such a combination at the end of the twelve months, as to prevent them purchasing stone in large quantities. Mr. Macintosh, the surveyor to the vestry, being asked to give his opinion, said the contractors no doubt had their advocates in the vestry, and he did not stand there as their defender. The question before them was that of abandoning the present contract system, and doing the work themselves. He admitted that he had a predilection to lean to the present system, because men who laid themselves out for special business had special means for carrying such business out. They knew the ins and outs of such matters, and had resources at their command; whereas any public body must depend upon their agents, and they might be badly selected. But if they could not get their business done well under the contract system, he would say then let them become their own contractors. The proposal that they should do the paving themselves, was ultimately carried, leaving out "for twelve months." The new arrangement is to take effect from the 25th instant.

THE METROPOLITAN BOARD OF WORKS AND DISTRICT SURVEYORS.

At the meeting of the Board last week, Mr. F. Fowler called the attention of the Board to the fact that certain officers of the Board had written letters to the public journals respecting the Pantechnicon fire. Certain of these letters he had noticed in the public prints signed by some of the officials in their official capacity, expressing opinions with respect to the late fire at the Pantechnicon, and upon subjects which were under investigation and discussion in the Buildings Act Committee. He thought this was exceedingly undesirable, and hoped that some stop would be put upon it. He concluded by moving that the matter be referred to the Building Act Committee, which was seconded.

Mr. Saunders thought that the officers ought to be quite at liberty to enlighten public opinion upon any point with which they were conversant, but still he considered it most undesirable for them to communicate with the public prints in their official capacity. The opinion of those officers might be mistaken by the public for the opinion of the Board itself.

Sir William Codrington thought that it was very wrong for officials to communicate to the public opinions on the subjects that were under discussion in the Building Act Committee. Mr. Lloyd said that as the subject was under discussion in the committee referred to, it would be injudicious and wrong for a member of the Board to express himself publicly, but how much worse was it when a mere official of the Board did so?

After some further discussion, the matter was referred to the Buildings Act Committee.

Architects' Benevolent Society.—The annual meeting of this Society will be held at No. 9, Conduit-street, on Wednesday, the 11th instant. This association ought to be more widely supported even than it is.

JACKFIELD ENCAUSTIC TILE WORKS.

The clays of Shropshire were turned to account by the Romans, and the relics dug up at Uriconium, near the foot of the Wrekin, of tessellated tiles made from red clay, were in all probability made from clays similar to those now worked at Jackfield. From a period so early as 1453 it would seem that the valley of the Severn was famous for ornamental tiles, for many specimens of that date have been found in cathedrals and churches.

Jacquemart, in his "History of Ceramic Art," says that Jackfield is the most ancient site of pottery in Shropshire, and that there exists a specimen of its brown pottery dated 1634. It is also said that names of persons from Jackfield are entered in the parish registers of Stoke-upon-Trent (who are supposed to have been potters) as early as 1560, and the site of that old pottery was on the ground which is now occupied by the Jackfield Encaustic Tile Works. The clays of Jackfield are specially adapted for geometrical and encaustic tiles, and the red clay under the present works is particularly fine. Encaustic tiles have been made in Jackfield for a number of years, but since the old works came into the possession of the present firm of Craven, Dunnill, & Co., great changes have taken place. The firm took a lease of about four acres of ground, and adjoining the old works built a large manufactory, which has now been in operation for nearly two years. They have since taken down all the buildings of the old works, and erected on their site, and joining up to their new works, large new warehouses, show-room, offices, and entrance-lodge.

The buildings consist of four blocks, one detached and the others connected, each block accommodating a separate branch of the manufactory. In the detached block the raw materials are reduced to a state ready for the hands of the workmen. This building comprises the boiler-house, engine-house, pan-rooms, bluing-rooms, slip-kilns, and dust-mills, together with the stores for the various coloured clays as they leave the slip-kilns ready for grinding. The second block accommodates the workpeople in the raw material, and the stores for the various clays and dust are prepared for their use, and contains the damping-places, where the clays are kept in a certain degree of moisture; pressers' shops, for the various colours of geometrical tiles; and the encaustic tile-makers' shops, with their stoves. The next block provides for the drying and firing of the goods, and decorating-shops, and comprises the "drying-house," where tiles made from dust are partially dried; the "seggar" house, where goods are prepared for and received out of the kilns; and the kilns where the goods are fired or baked, and also the glazing and enamelling kilns. On the first floor are work-shops employed for painting, enamelling, or decorative purposes. The fourth block provides for the sorting and stocking of goods, and for packing them for despatch, also the offices and show-room. It contains the sorting-house, best and second warehouses, show-room, offices for principals and clerks, packing-house, straw-store, lodge, staircase, main entrance, lodge-keeper's dwelling, &c. This part of the building is fitted with water-closets and lavatories, and there are separate earth-closets provided for male and female work-people. Near to the detached block first described a small gas-factory has been erected, which supplies the whole of the buildings. The encaustic-makers' stoves, the drying-house, warehouses, and offices are reheated by steam-pipes from the engine-boiler.

All the work-rooms are large and lofty. The encaustic tile-makers' room is 87 ft. long by 25 ft. wide, and the upper room of the warehouse block is 83 ft. long by 36 ft. wide, the roof being supported by polished principals.

In the exterior design extravagance of detail has been avoided, as not appropriate to the purposes of the building, but by a judicious use of local materials of good quality, and by a natural treatment of the many requirements of the premises, varying from perfect plainness in the mill and workshops to a freer handling in the warehouses, show-room, and principal entrance, a certain amount of architectural character has been attained.

The general contractor was Mr. Wm. Exley, of Bromley, Mr. Bailey, of Ironbridge, sub-contracting under him for the joiner's work; Mr. Boulton, of Burslem, supplied the engineer's work; Mr. Pries has acted as clerk of works; and Mr. Lynam, of Stoke-upon-Trent, was the architect.

DEATH FROM DEFECTIVE
CONSTRUCTION.

On Tuesday last, Dr. Lankester held an inquiry at the Bank of England Tavern, Pall-mall, on the body of Edward Brewer, aged nineteen, killed by the falling of an ornamental balcony of the mansion, No. 3, Cleveland-square, Hyde Park. It is the second instance in which death has ensued from a balcony falling, under nearly identical circumstances, in the same square, within a few months.

Dr. Henry Reed said he resided at No. 3, Cleveland-square. Deceased was his servant, and on the morning of the 26th of January he went upstairs to clean the drawing-room windows. In a few minutes a terrific smash was heard, and Caroline Miles, the cook, went into the kitchen area, and found deceased lying there in a pool of blood. On witness going to the spot, he found that the balcony had fallen bodily with the deceased through the skylight covering the area. The damage done was so extensive that it appeared like a bombardment of the lower part of the premises. He believed that the balcony which had fallen was not properly constructed. There was little if any brickwork, no iron fastenings into the main building, and it was chiefly composed of cement and tiles. He believed that the balconies of the adjoining houses were all in the same defective state. He was only a yearly tenant, and therefore not responsible for repairs. He had been to Mr. Hudson, whose servant lost his life a short time since under similar circumstances, and Mr. Hudson informed him he had had his balconies put in repair.

Mr. David Ruddle, architect, and superintendent of works at Building No. 10, said he had examined the premises in which the fatal fall took place, and found that the window was 6 ft. wide. The flooring of the balcony was sound, but the capping was made with tiles and not fixed in the wall, but was away from it, and the joints, laced with the weather, and liable to give way from the wind. He believed that the architect had to have been a first-class craftsman, who would not have allowed the work to be done in that manner. He stated that the work had been most improperly executed by a plasterer instead of a bricklayer or mason. There was no doubt, as is common in these cases, that the work was undertaken by a speculator, who let his contract to another, and in turn it was sub-let to a third party, each getting a profit out of the job. He said that the deceased was a young man, in stepping on to the balcony so constructed, had walked on to a trap, which fell with his weight.

The Coroner remarked that a large number of private dwellings in London are made of those engaged in the building trade, and that a large number of the houses in the metropolis are in a state of defective repair, and in some cases, he believed, that such was the main cause of recent large conflagrations. He thought it should go forth as a warning to the public where these ornamental balconies existed, and the route to be taken by the Duke and Duchess of Devonshire, that they should be seen to with a fearful loss of life would result. Indeed, the owners or occupants of the premises where they are erected, or fifteen years ought to be compelled to have them tested, and seen to at once, to avert such calamities as the present.

The Coroner remarked that there were district surveyors appointed under the Building Act, but he did not know that they were responsible for the safety of ornamental balconies. Certainly some one ought to be held responsible. The jury concurred in these remarks, and returned a verdict that the deceased was killed by the fall of a balcony at No. 3, Cleveland-square, improperly constructed, and added, "That, in the opinion of the said jury, the balconies in Cleveland-square were defective and dangerous, and that it is the duty of the Vestry to have them properly surveyed and put in order, so that a recurrence of such accidents as that of the present case be prevented."

MR. SCOTT RUSSELL'S DOME AND THE
DISCUSSION TIEROEN.

SIR,—I read Mr. Scott Russell's paper on the Vienna Dome with a considerable degree of interest, personal as well as general, and the interest I felt was considerably increased when I came to read the discussion that took place upon his paper at the Institute of Architects. I think, however, the readers of the *Builder* have heard the views put forward by Mr. Scott Russell outlined before, and also the views put forward by two or three of the architects who joined in the discussion. I would ask the members of the Institute to refer back to the number of the *Builder* for March 23, 1872, to an article entitled "A Workman's Observations on Domes," and compare what I have been venturing at the Institute, by Mr. Russell and others, about the possibilities of dome construction; and I think they must allow that somebody is indebted to some-

body else. The article in the *Builder* speaks about domes in particular and general, domes developed from within and without a cone; domes in masonry without any hidden expedient for preserving their equilibrium; domes in iron, cast and wrought; domes composite and in concrete; and domes ordinary of timber. Even the subject of giving domes in their construction a certain entasis like the curve shown on the column of the Grecian order, was mapped out, and its utility, according to circumstances, advocated. There were also many other points alluded to in the article in the *Builder*, which a reference to it will show. Now, sir, it is said that congeniality of thought will produce similarity of expression; but whether such a marked congeniality of thought and expression be admissible when occurring in the persons of other men two years after the original thought and expression were made public, I will leave it for you to say.

C. H. C.

CAN ART BE TAUGHT?

Art cannot be taught; no amount of teaching will produce an artist. The use of the pencil and technical details may be acquired, but to produce original thought, and to implant new ideas, is beyond the power of the teacher, if the receptive faculty is wanting. But although the inventive faculty cannot be implanted in the mind; yet, if the embryo is there it can be developed and cultivated by education, when it would otherwise grow wild and produce no good fruit. The "old masters" had pupils, and they themselves had also been pupils; and each individual personal teaching is the best of all when conscientiously carried out. But now that matters are conducted at railway speed, who can spare the time?—who will take the trouble to pause at each roadside station, and expatiate upon the beauty of the scenery, or the geology of the district? The man of business cannot afford to loiter by the way; there can be no dallying by clear streams; no sauntering through pleasant valleys when business is a hindrance. This must be delegated to guides, having intimate knowledge of the localities, whose special duty it will be to accompany the youthful traveller in his journey, keeping him away from that which is unobnoxious, leading him to that which is good and lovely.

"Circumstances alter cases," and the circumstances of the present time are very different from those of old. The railway has superseded posting, although that was by far the pleasant mode of travelling.

SIGNET.

I THINK art can be taught. I believe it is only necessary to submit ourselves humbly and confidently to the dominant spirit of the nineteenth century to find ourselves endowed with a power of art as far transcending Mediaeval and ancient as do our civilisation and our sciences. The arts of the Middle Ages are no longer possible, nor desirable;—would, indeed, be intolerable and unintelligible to us in any of their many forms of expression. The arts we require,—the only arts worth having, and the only arts which can live amongst us,—must be evolved from out the physical conditions of our being; spiritualised if you will, but not severed from the common wants and aspirations of modern civilisation. Let us begin anew by refusing to receive the cant of dilatoriness as the authoritative utterances of practical wisdom. Let us try to speak of art in such terms that all men may follow our meaning, and judge of our arguments; nor any longer persuade ourselves that we have acquired the knowledge and power of art when we have only learned to repeat, parrot-like, the senseless jargon of the schools.

The untutored artists of the East, familiar only with the harmonious combinations of nature, were colourists to whom Chetrevil could have taught nothing,—painters whose instincts were more unerring than his laws of "complementaries." With us, however, these primitive faculties, once common to all men, have been subdued by ages of conventional culture, and the later exigencies of commercial and urban life; and if we ever again acquire that acute sense of beauty, which will alone direct us to excellence in art, it will be by exacting from science, in the interest of all classes of society, those forms, and colours and sounds, light and air, which nature long ago surrendered to the claims of civilisation.

It is not sufficient that we aggregate within our museums the art treasures of ancient, Mediaeval,

and modern times; nor that, few men discourse eloquently upon their never-more-to-be-attained excellences. These things may divert the minds of the leisured and learned few, but the nation at large will still hear only the discords, and see only the deformities amid which it lives and toils. For the practice of art special manual study is necessary, but correct taste can be acquired only by a process of unconscious inebriation through the senses from all the surroundings of life. Here, then, is clearly indicated the direction which our teaching and labours should take, and until we set ourselves earnestly to this work of social reform, I, for one, shall believe that our worship of art is a specious pretext, and our vocal prayers arrant cant.

Something in this direction we have unconsciously, and with other views, already done, in cleansing our streets and purifying our water-courses. Something also, with tremulous hesitancy, and sore misgivings as to the results, was achieved when we planted a few flowers within carefully-guarded ground of our public parks. Something more will be accomplished when, by the addition of reasonable accommodation in seats and houses of refreshment, we make them possible centres of popular recreation. And let us hope that we may ere long make yet another still greater advance in the same direction, when recognising the importance of Sunday as a day of rest and culture to the labouring classes, we admit them on that day to our national museums of science and art. Above all, let each of us also prosecute the work of reform within our own household, for who schools himself to look with indifference upon the ugliness of those objects with which his life is most closely associated, is not likely to acquire higher sensibility to things with which he is more remotely concerned.

C. H. W.

THE PERMANENCE OF OUR MONUMENTS.

SIR,—The public will, no doubt, be surprised, if not dismayed, at your discovery of the unfortunate state of one of Landseer's latest and noblest works, and which, being of bronze, might reasonably have been expected to be the most enduring. As the national buildings suffer in the same manner and from the same cause—the chemical ingredients in the London air—I should like to ask attention, as briefly as possible, to what I consider would be a remedy. If we look about us, what is the material—the only material, that resists decay? A glance at the York and Nelson Columns, London and Waterloo Bridges, furnishes the answer. These structures, which vary in age from forty to nearly 100 years, are of granite. I would ask, then, why not at once begin to use this material for our more important buildings? I find, after a careful inquiry and estimate, that extra cost cannot be maintained as the obstacle. It is only necessary to select an appropriate style, free from crockets, finials, and sunk carvings, all of which in London are only traps for soot, and begin to decay as soon as the workman has departed.

When we see the Houses of Parliament, Lambeth Palace, and Westminster Abbey, on the same day, in the restorer's hands,—when we think that there is scarcely an external stone remaining of the original Abbey,—that Henry VII.'s Chapel and the Temple Church have had to be entirely recased,—it will, I think, be admitted that it is time to accept the remedy I venture to propose, unless some other better one can be brought forward. Granite has been frequently used in the City and Westminster for partial details: if good for these, why not use it entirely, and so secure the perfect durability of our national buildings? It will then only be the fault of our architects if the coming New Zealand has not something to look upon that will reward his enlightened curiosity. I have no pecuniary interest whatever in this suggestion.

H. T.

"Shell v. Webster."—We are asked to say with reference to the last paragraph of our report of this matter, that although the statement of the benefits obtainable from the Society, is for the most part correct, Mr. Shell had not been a member long enough to claim them, and has not received any such assistance from the Society. Our reporter appears to have been wrongly informed. It is important this correction should be made as the impression given might damage Mr. Shell's application in another quarter.

THE WORD "WYK."

Two compounds occur to me as illustrative of Professor Van den Brink's position, viz., "Pallenswick" and "Baillwick." The former is a place identical with Stanbrook-green, Hammersmith, which stands on the line of Roman road called the Portway, which ran from London to Silchester; the latter means the jurisdiction of a bailiff. Such forms as Wickham, Northwick, and Southwick are too numerous for notice.

Mr. Halliwell illustrates two forms of the same word, see "Archaic Dictionary," vol. ii., viz., 1, *wick*, "a bay, small port, or village, on the side of a river"; 2, *wike*, "a house or dwelling." Both are from Anglo-Saxon: see Bosworth's "Dictionary."—*Wick*, *wice*, a dwelling-place, habitation, mansion, village, street; also "a bay, creek," &c.

It is the same word as the Dutch *wijk*, "a retreat, refuge, quarter, parish"; and is found in all Low-German dialects, as Sino-Gothic, *wik*; Danish, *wig*, *wig*; Swedish, *wik*. Even in High-German we find *wick*, *bild*, "a precinct," but from a different source.

We have in England a tything named Aldwick, Pagham parish, Sussex, of sufficient importance in former days to have given its name to the whole hundred. It was clearly the first permanent settlement of the German tribes on this coast, before they obtained possession of Chichester.

Extending this analogy to "Vin de Ald Wyk," I would remark that the oval in which is situated St. Clement's Church, always most forcibly suggests to my mind the shape of a Danish horse-shoe fort, such, for instance, as has given its name to Shoeburyness. We know that St. Clement Danes was a settlement of the Wickins, or Vikings, that is to say, pirates from the Baltic, in the time of Ethelwulf. The parochial buildings partly cover the course of a small stream, running thence to the Thames, down Milford-lane,—a creek, in point of fact, a vick or wyk, such as the true creekers loved.

It is not known where this stream rose. It may have been fed by the well dedicated to St. Clement, that has given name to Holywell-street, and also by springs in Clare Market.

Judging from the analogy offered by Chichester, it may be concluded that this settlement of Danes at St. Clement's was an ancient stronghold before they obtained possession of London, under King Canute. A. HALL.

CONCRETE IN LARGE BLOCKS.

SIR,—I read in the *Builder* to-day that a Mr. B. Blood Stoney, M.A., has been reading a paper on a new (?) application of concrete to sub-aqueous foundations, before the members of the Institution of Civil Engineers, viz., in very large blocks. As one who has advocated this method for the past ten years, let me repeat the trite axiom, "There is nothing new under the sun," and that the moles, or harbour-piers, in the tideless Mediterranean, constructed by a former generation on a similar principle, suggested to me the application of concrete for the above purpose. In its application to the piers of a Channel Bridge, in a competition design for Harbour Works at Jersey (*vide* "Rapports des Ingenieurs") I have publicly endeavoured to show the advantages of the plan, and placed my ideas before some of the leading members of the profession, the late Emperor Napoleon III., &c., and a notice also appeared in the "Mechanics Magazine," of July, 1867. It is to be regretted that gentlemen, in their ardour to distinguish themselves, have not the candour to mention the source of their inspirations; and the designer of the new Tay Bridge also has adopted some of my published ideas and claimed them for his own. I understand a 1,000 ton block has been made in the new harbour works at Wick, N.B., but I have not heard the constructor claims for any new idea. Curiously enough, I laid my ideas on the subject before the Ministry of Public Works at Paris in 1866, and in the Paris Exhibition of 1867 I found a model of the arrangement for using 120-ton blocks, by the French Government Engineer in the New Mole at Brest. EDMUND R. JONES, Architect and Civil Engineer.

Lectures on Architecture at the Royal Academy.—We will publish Professor Edward Barry's first lecture in our next.

COTTAGE HOSPITALS.

Wallington.—The Cottage Hospital at Wallington, has been declared open by the Bishop of Oxford. There was a special service in the parish church, and a large number of the gentry and others in the neighbourhood attended. The hospital will make up six beds, and is in charge of a trained nurse. It is intended for the benefit of the sick poor in Wallington and the surrounding villages. The Countess of Macclesfield, the Rev. J. Slade (Vicar of Lewknor), and other benevolent subscribers, have furnished the requisites for its foundation.

Walsall.—The annual meeting of the subscribers to the hospital at Walsall, has taken place. The report showed that at the formation of the hospital ten years ago, it was contemplated to provide only four beds, but the institution had been extended till it comprised twenty-six beds, and the contributions had enabled the committee to spend 2,000l. in the purchase of the property upon which the hospital stands, and 1,177l. in the erection of additional buildings, leaving the premises free of debt. The hospital Saturday movement had produced 366l. 6s. 10d., making the total income on account of the building fund, 638l. 13s. 5jd., exclusive of 200l. which had been transferred from the general fund. 158l. 1s. 3d. had been spent on new buildings, leaving a balance of 680l. 12s. 2jd. in favour of this fund. The income on account of the general fund had been 1,282l. 5s. 11jd., including a balance of 131l. 8s. 9jd. from the previous year, and the expenditure having been 961l. 12s., a balance of 320l. 13s. 11jd. remained, 200l. of which had been carried to the building fund. Including 60l. subscribed by the miners of the district, the workmen's contributions had been 342l. 10s. 5d., as against 219l. 10s. 11d. in the previous year. The out-patients had numbered 2,503, and the in-patients 239; of the latter 171 were cured, twenty-eight relieved, sixteen died, and nineteen remained in the hospital at the close of the year. The chairman briefly congratulated the meeting on the position of the institution, and on the prospect of the committee being able to obtain sufficient money to defray the cost of the proposed new wing.

TICKHILL.*

The derivation of this name from *th' wick hill*, "a fortified height," is improbable. It doubtless has its name (in Speed's Map, circa 1610 *Tickhill*) from a stream which falls into the Sheaf. It may compare with Tiohton, formerly Tiohton, in the Liberties of Beverley, in the same county, and with the local names Tiehurst, Sussex, Titchbourne or Titchbourne and Tichfield, Hants; Tichmarsh, county Northampton; Titchwell, county Norfolk; and especially with Tickford, or Tykeford, in Bucks. The Greek word *potamos*, a river, first corrupts to *ptam*, or *tam*, whence the river names Tame, or Thame, Tem, Teme, Tamer, and the Tamesis, or Thames. By change of *m* into *v*, so common in the Celtic languages, and by other mutations and corruptions, the word is liable to become Tave, Taf, Tavy, Teif, Tivy, Taw, Thaw, Tau, Thaya, Tay, Dee (compare Dundee); Gaelic, *Dùn-Tatha*, = hill on the Tay; *Taoua* (Greek), *Tavus* (Lat.), Thess, Tas, Tis, Tech, Teos (Latinised, *Athesis*; Italianised, *Adige*; Germanised, *Etsch*); also Tice, Tich, Titch. From the local name Tickhill we probably have the surnames Tickle, whilst from Tees-dale we get Tisdall. B. S. CHARNOCK.

THE DWELLINGS OF THE WORKING CLASSES.

At a meeting of the Metropolitan Board of Works, held last week, a memorial was presented from a meeting of working men, held in Denmark-street, Soho, which stated that thousands of them had been put to extra expense, inconvenience, and annoyance, on account of their dwelling-houses and tenements having been removed to make way for Metropolitan improvements. They rejoiced that the Board was engaged in making London healthier, both morally and physically; but, at the same time, great injustice had been done. They hoped that the Board would take into earnest consideration the erection of cottage or tenement residences adapted to the wants of those classes, who, through being compelled to reside near the places of their work, were obliged to live in

cellars and garrets, much to their detriment morally and physically. The memorialists also desired to bring under the notice of the Board a plan for the issue of notes or tokens on the security of the Board, such notes to be paid instead of borrowed money to the contractors and workmen for the erection of dwellings, the notes to have all the value and uses of money; after the houses were inhabited a certain number of the notes, equivalent to the amount obtained for rent, to be called in and destroyed annually until the whole had ceased to circulate. The houses could then either become the property of the tenants, or be a source of revenue to the Board, and the memorialists declared that several building firms were prepared to accept such notes in lieu of gold.

Mr. Morgan, in support of the memorial, said the construction of railways in the metropolis had destroyed thousands of houses inhabited by the working classes. The Blackfriars Station of the London, Chatham, and Dover railway cleared away 800 houses. The Metropolitan Board of Works had greatly improved the metropolis, and the Board would, by the erection of dwellings for the accommodation of the working classes, still further improve the metropolis, physically, morally, and socially, by promoting the health and happiness of the people. Over-crowding led to a variety of evils, and the chief remedy was the erection of improved dwellings. The dwellings could be built on the plan proposed without cost to the Board, as he could point to the satisfactory working of the scheme in the case of the erection of a market house and shops on the island of Guernsey at a cost of 4,000l., and which resulted, at the expiration of ten years, in an annual income of 400l., instead of having the rents consumed in interest.

The memorial was referred to the Works and General Purposes Committee.

THE DECAY OF LANDSEER'S LIONS.

It is much to be lamented that our "Landseer Lions" at Trafalgar-square are apparently falling into decay; that many unsightly and damaging defects are daily becoming more visible cannot be denied by any one,—nay, not even by the creatures themselves, who, having kept the secret so long, with a sardonic smile now make known to John Bull how such matters are brought about, not by the so-called inferior metal being acted upon by our "ravaging London atmosphere," but by the inferior workmanship allowed in production. Examine us, they say, and see in how many pieces we are each built up. When modelled by our departed author, we were such that any skilled British founder would have proudly produced us in one cast; but alas! such was not to be our fate: we were given into the custody of Marchetti, who had an extraordinary price for casting us, and who, regardless of our protestations, at once commenced his work by anatomisation: sawing us up into a number of pieces to simplify the moulding; even our poor paws and tails did not escape his surgical operations. These parts were then cast separately, and afterwards fitted and riveted together on the same principle that boilers are made, yet, in a manner not anything so strong or close in the joints (this our bodies do willingly testify); and where it is a law with skilled workmen that the face or exposed side should be cast downwards to obtain solidity and sharpness of surface, no such compliment was paid us: hence our present honeycombed appearance, with gaping joints and holes, from which has dropped the wretched stopping, and it is possible that—

"Greater ill may yet befall us,
When Freedom's friends again bestride us,
The pins be driven through the creakers,
Our paws condensed and in their pockets;
And whilst we are our fate bewailing,
Some rough will have our tails retelling."

To prevent this shocking re-enacting of Leicester-square, something should be done, and especially to the Lion opposite the Sun Fire Office, whose left paw is a failure casting. The joints should all be burned together by molten metal until the parts are homogeneously connected. This would, if properly accomplished, considerably improve the condition of the work, although it can never make them what they would have been if properly founded.

METALLIST.

NEWBURY CATTLE MARKET, BERKS.

THE demand for covered accommodation is already so great at this newly-erected market, that it has been decided to erect additional covered boxes and pens. This, however, is only the carrying out of a part of the original plans and designs of the Newbury Local Board, as submitted by their architect, Mr. James H. Money, who is pushing on the additional works for completion in two or three weeks.

* See pp. 126, 160, ante.

WIDTH OF ROADS UNDER METROPOLITAN MANAGEMENT ACT.

At Westminster, Colonel Clifford, of William-street, Albert-gate, attended before Mr. Woolrych on a summons, at the instance of the Metropolitan Board of Works, charging him with an infringement of the 98th section of the Metropolis Local Management Act, 1862, which provides that no existing road, passage, or way, being of a less width than 40 ft., shall be formed or laid out for building as a street for the purposes of carriage traffic, unless it should first be widened to the full extent of 40 ft., the measurement to be taken half on either side from the centre of the roadway to the external wall or front of the houses or buildings erected or intended to be erected on each side.

The evidence was to the effect that in August, 1872, Colonel Clifford purchased of Mr. Mitchell Henry, M.P., for 15,000*l.*, a piece of freehold land on the Kent House Estate, in Knightsbridge. Upon it he built four houses, the frontage of which is in a new road recently formed upon the estate. The width of the roadway opposite his land is about 50 ft., while the rest of the road is of the regulation width of 40 ft. At the rear of the Colonel's land, and between it and South Lodge, the residence of Baron Henry de Worms, is a terrace from the Knightsbridge-road. The Baron's house is reached from this street, which is a *cul-de-sac*, and, to all intents and purposes, a private carriage-way. The roadway averages about 12 ft. in width, but at the further end is a sweep of 23 ft. wide to enable carriages to turn. The land of Colonel Clifford has a frontage on South-place of 88 ft. out of 261 ft., its entire length, and the remainder is the frontage of a plot of land belonging to Mr. Frederick Sang, and intended for building purposes. Colonel Clifford, wishing to utilise the whole of the land that he had purchased, commenced erecting some stabling at the rear of the houses which will project to a certain extent into South-place, and narrow the sweep in the carriage-way. To this the Board of Works, at the instance of Baron de Worms, objected, and contended that as Colonel Clifford was substantially creating a new street, it must be of the width of 40 ft., as provided by the Act. The Colonel having purchased all the rights of the owner, and believing that he was acting perfectly legally in the matter, continued to erect the stabling, and the Board now summoned him for an infringement of the Act.

Mr. Woolrych, in the end, dismissed the summons, on the ground that the Board had failed to prove that anybody intended to form a street in South-place, or that Colonel Clifford joined or concurred in that intention. Mr. Philbrick intimated that the Metropolitan Board would appeal against the decision. (Since abandoned.)

Mr. Murphy, Q.C., asked for costs. Mr. Woolrych, observing that both parties came before him with clean hands, arranged with the counsel that the costs should follow the result of the action in the superior court; but that if no appeal was lodged within a reasonable time, the Board should pay the costs of Colonel Clifford in the proceedings.

SCHOOLS OF ART.

Bradford Mechanics' Institute School of Art.—A *soirée* in connexion with this school has been held in the lecture-hall of the Institute. Mr. C. Semon, the president, occupied the chair. There was only a moderate attendance. The President, in opening the proceedings said that the exhibition had been eminently successful, and had realised nearly 3,000*l.*; so that the Institution was now almost out of debt. A few hundred pounds more would entirely free the building from any incumbrance, so that the Council would be able to apply all their money to the purposes for which the Institution was formed. They were assembled to-night for the purpose of distributing the prizes in the Art department. They had been prevented doing this at the annual *soirée* of the Institution. While they were perfectly satisfied with the attendance and progress of those who had already joined the Institution, they thought that the accommodation which was provided by the Institution was not, in general, so much used as the Council would like to see, and he thought that many more in the town might with advantage attend these classes. It was gratifying to find that the reports which they had received spoke favourably of the work of the students. Mr. Tom Taylor, who distributed the prizes, ably addressed the meeting. He commenced by referring to the great disadvantages under which the study of art was carried on in large manufacturing districts like those of Yorkshire and Lancashire. Nevertheless, in spite of all these disadvantages there was a craving for love of art among our toilers. The want of a knowledge of art had lately been very strongly felt in consequence of the competition of foreign countries in our manufacturing processes becoming more and more threatening, this competition being to a great extent the result of a better knowledge of art being acquired by the artisans of continental countries, than was obtained by the workers of our own country. It had been attempted to meet this want by the establishment of schools of art, such as the one connected with their Mechanics'

Institution in their large towns, and the result had been a very great advance in the beauty of the design in connection with some of our manufactured goods. Thus our art-teaching, though far from perfect, as art-teaching in this country had been acquired, was far better and more perfect than it was thirty years ago. Mistakes had no doubt been made, but he hoped that in our very mistakes we should find instruction. Our schools of art were now numbered by hundreds. It had, however, just dawned upon the country that art was a portion of education. The time was not distant when the idea of twenty schools of art, or the collection of such a number of casts and models as were to be seen in that building, would be looked upon as a chimera. Mr. Taylor then gave at considerable length some valuable advice to art students, pointing out the faults into which they were likely to fall.

The Cambridge School of Art.—The annual meeting in connexion with this school was held in the large room of the Young Men's Christian Association. The chair was occupied by Mr. F. A. Paley. There was a good attendance. The secretary, Mr. Fawcett, read the report. The number of students, it stated, had slightly increased, and the success of the school in the Government competitions had been about equal to former years. The committee pointed with pleasure to the signal success of the Exhibition of Art and Industry just closed, and trusted that the impulse thus given to the study of art would result in an increased willingness to use the opportunities afforded by the School of Art. The Rev. Professor Selwyn then addressed the meeting. A great advance, he said, had been made in twelve months, for the students had ceased to exhibit want of care, and were noted for their carefulness and accuracy. A good master always inculcated the necessity of working well with their pencil at common objects. They must not dash in the colour until they had got a steady hand and good eye for accurate outline. They might delineate all kinds of things—a hamper, a table, a chair, a common wine-bottle, or a decanter, so as to acquire facility in truth of form—roundness—light and shade. Out of such ordinary materials as these, a portion of "still life" might be obtained; but how much more necessary was it to cultivate the qualities he had mentioned, in order to represent things in nature, with the representation of which they were probably less familiar, but which proved so attractive in the shape of landscape and scenery. It was not "magnificent scenery," or a "splendid view," that alone displayed the powers of the artist. There were charming bits of nature in the Fens, and the country had a beauty all its own. This had been abundantly shown by "Old Crome," in his painting of Norfolk scenery, whether of a river-steamer, ready for a "water frolic," with a gorgeous sunlit sky reflected in the river, or a picture with no more prominent objects than a willow or cattle grazing in the Fens. Professor Selwyn related some interesting anecdotes of this artist, one of whose works, which he possessed, and had previously belonged to Mr. R. R. Rowe and the late Bishop of Ely, had been the subject of considerable controversy, raising the point, *inter alia*, as to the date when river-steamers first came into vogue, a question settled by a Norwich newspaper, giving an account of the launch of one of these steamers five years before "Old Crome" died. We had not much to boast of in our scenery; but little was wanted if there was diligence on the part of the student. Gainsborough came from the little Suffolk town of Sudbury, and had made the world feel the quiet power of pictures of rural scenes and life,—cottages, children, as they were seen at play, and village people at their usual rustic occupations. He studied nature in the south part of that county—not a very attractive locality—and his work was much improved when he went to the Lakes. Professor Selwyn proceeded to say that he did not intend to give them a professional lecture, unless they wished it; but he preferred to give them some few hints and gossip that would amuse as well as instruct. He then went on to speak in chatty style of art and artists—painters and painters—of Raffaele, Leonardo da Vinci, and Michelangelo, their trials and their successes—of Sir Joshua Reynolds and his writings—of the Duke of Wellington and his portrait-painters,—of the principles and practices deducible from their lives. Finally, speaking of the sculptor, Thorwaldsen, and his saying, "I am afraid I shall never make another good statue, because I was satisfied with the last," Professor Selwyn said

from that might be gathered the great principle which should animate them in art, and in every walk of life—never to be satisfied with the work accomplished, but to go and do something better and higher.—Mrs. Fawcett, at the request of the chairman, handed the prizes to the successful competitors.

METROPOLITAN BUILDING ACT.

CLAIM FOR EXEMPTION.

On the 25th ult. Mr. Garham, builder, was summoned by the District Surveyor of Shoreditch before Mr. Hannay, the sitting magistrate at the Worship-street Police-court, for erecting a building, enclosed with timber and boarding, and roofed with felt, in Maria-street, Kingsland-road. The District Surveyor proved that the building was erected without any notice being given to him, and it was about 14 ft. long, 10 ft. wide, and 9 ft. high, and was used as a stable. If stood on ground belonging to the North London Railway Company, who had let it, together with one of the arches of the railway viaduct, to a cab proprietor. The building in question was outside the arch of the railway viaduct, against which it abutted on one side. The District Surveyor contended that the building was not exempt as it was not used for the purposes of the Railway Company, and called the attention of the magistrate to the 12th clause of section 6; he also referred to the case of the South-Eastern Railway Company v. Badger, in the Court of Queen's Bench, and mentioned that several cases had been decided by other magistrates in the manner for which he contended. In reply, the defendant stated that he had always understood that any buildings standing on the ground belonging to the Railway Company were exempted from the operation of the Act, and that the former District Surveyor of the parish had so informed him. After considering the cases referred to, the magistrate decided that the building was not exempt, and made an order for the amendment of the work in 14 days, with 4*s.* costs.

FEES UNDER METROPOLITAN BUILDING ACT.

MR. EDWARD SIMMONS, of the Trafalgar-road, Greenwich, was summoned before Mr. Patteson, at the instance of the Metropolitan Board of Works, to show cause why an order should not be made upon him to pay a sum of 4*l.* 9*s.* 4*d.*, being the amount of fees in respect of a certain dangerous building under the Metropolitan Buildings Act.

Mr. Bevan attended in support of the summons, and Mr. Saw for the defence.

It appeared that in 1871 a building, occupied by a person named Davis, was reported as being in a dangerous condition, and the same was surveyed, and boarding and shoring constructed for the public safety, the premises being sublet at the time to Davis. At the time of the expense claimed being incurred, the Metropolitan Board summoned Davis to this Court and obtained an order for payment of the amount. This order, however, was not enforced against Davis, as it might have been by a distress warrant against his goods, or a commitment to prison, the Board executing him on account of his poverty. The present summons had now been taken out under a section of the Metropolitan Building Act, declaring the owner of such property to be the person in receipt of any part of the rent and profits of such property.

Mr. Saw said that the present defendant was merely the agent of the person, a lady, who was the real owner of the property at the present time, and the latter had no control over the property at the time the expenses claimed were incurred. He submitted, however, that an order having been obtained against the occupier, who was liable to be sued as the owner, and not enforced, it was not competent for them to take ulterior proceedings against a second person in the same manner.

Mr. Patteson held that the Board having abandoned enforcing the order previously made was an end to the claim, and dismissed the summons.

Mr. Saw asked that costs might be allowed, but this was refused on the ground that the property had been benefited by what had been done.

NEW BRIDGE, NEAR BIRMINGHAM.

WE understand the directors of the London and North-Western Railway have accepted the tender of Mr. S. Woodall, of the Windmill End Boiler Works, near Dudley, for the erection of the new foot-bridge, at their station, New-street, Birmingham. The new bridge will be constructed with large wrought-iron lattice-girders, supported on bar-iron columns, with moulded caps and bases of a Classical design. The whole of the work will be carried out under the supervision of Mr. Henry Woodhouse, of Stafford, the company's chief engineer, Mr. T. C. Sharp being the assistant engineer.

LAST AUTUMN'S PICTURE EXHIBITION
AT LIVERPOOL.

The corporation of Liverpool have issued in a printed form the report of the Fine Arts Committee upon the third Autumn Exhibition of Pictures, 1873.

The exhibition was opened to the public from Monday, September 1st, to Saturday, November 29th, during the day, at a charge of 1s, and in the evening from Monday, October 13th, to Saturday, November 29th, at 3d.

The number of admissions by payment at the door amounted to 13,318 in the morning and 18,361 in the evening, making a total of 31,679, besides 523 season tickets, and about 10,000 pupils of educational establishments admitted gratuitously.

The number of works exhibited consisted of 454 oil-colours, 568 water-colours, 35 pieces of sculpture and other works of art; forming a total of 1,057.

Of these, 972 were for sale, and 271 were actually sold for sums amounting to 7,402l. 17s. 6d., 787l. 10s. being expended by the corporation in pictures for the permanent Gallery of Art now in the course of formation. The total receipts amounted to 1,566l. 1s. 3d., leaving a profit of 466l. 1s.

The large increase of season tickets, viz. 523, as against 332 in 1872, says the report, demonstrates the existence of a rapidly-increasing section of the public who return again and again to study the pictures carefully, and who will in time form a body of independent and cultivated art opinion, the effects of which must be most advantageous to the town.

Hitherto the committee had been somewhat disappointed at the comparative apathy of the artisan class, but this last year the attendance in the evenings had been very hopeful.

The increase in the value of sales was also a subject of congratulation, especially as regards the local artists. Out of 7,402l. 17s. 6d., the local sales amounted to no less than 1,704l. 1s. 6d.

The general standard and character of the works exhibited again evinced a decided improvement, and more especially as respects local artists. Both in character and number their works showed a decided and very encouraging advance upon previous exhibitions.

HYDRAULICS.

SIR.—Referring to the excellent leading article of last week on "Our Knowledge of Hydraulics," permit me to state that our English modern hydraulic formulae are not so inapplicable to the calculation of the volume of the flow in large rivers as Mr. J. Révy would appear to have considered them.

Applying the formulae given in one of our best text-books,—Professor Rankine's "Civil Engineering,"—in which the depth of the current, of course, forms one of the most important functions in the calculation of the velocity; to obtain the surface velocity of the La Plata River, and, using the data given by M. Révy,—viz., the greatest surface inclination as .444 in. per mile, and the depth of the current as 24 ft., the result arrived at is 93 ft. per minute, or but slightly less than that observed by M. Révy; and, allowing for possible unobserved inequalities in the bed of the river, and the difficulty of obtaining the inclination of the surface with mathematical accuracy, the small difference between the amount calculated and observed is most probably due more to the want of exact mathematical accuracy in the data furnished than to error in the formulae.

J. K. MANN.

BELLS AND BELL-HANGING.

Fressingfield.—The peal of eight bells in this parish have recently undergone a complete restoration. They have been taken up and entirely re-hung upon improved principles, fitted with new wheels, new stocks, and pulleys, also new brasses fitted into cast-iron chairs, and all new ironwork; the sixth bell has been tuned, and the tenor quartered, so that the clapper strikes the bell in a different part. The bell-frame, which was very much out of repair, has also been restored with new oak timber and ironwork.

Barnard Castle.—The machinery of the bells at St. Mary's Church, Staindrop, has for some time past been in an impaired condition, together with the bells themselves; the continued beating of the tongues from side to side having

seriously cupped them. When Mr. Mallaby, turret bellhanger and founder, of Masham, Yorkshire, inspected them, his opinion was that they required immediate attention,—and he advised the discontinuance of peal-ringing for chiming, and even that only at intervals. In the interim negotiations were entered into by the vicar and churchwardens with Mr. Mallaby, resulting in the bells being thoroughly put into order, and new appliances provided. The bells are much improved in tone, the tenor especially (14 cwt.). The clock has also been made to re-strike on this bell. These musical bells are in the key of "G," and (for their size) are considered unsurpassed in the North; but there are indications of one of them being likely to crack at no distant date. The fifth bell bears date 1685, and was cast by Sellers, of York; the other five are more recent (1767), and were cast by Chapman, late Myers, of London.

CONSTRUCTION OF TANKS.

HAVING to construct a brick tank, 100 ft. diameter, and 20 ft. deep, I am desirous of putting in as little material as possible (consistent with perfect safety), to withstand pressure of water that will be brought to bear upon the walls when the tank is entirely filled with water. Can any of your correspondents favour me with a simple and definite formula for obtaining the thickness of wall at base, also thickness at top for the above size, or rule applicable to any size of tank?

H. M.

CAUTION TO ARCHITECTS.

SIR,—I shall feel obliged if you will allow me, through the medium of your columns, to caution your professional readers against a female begging impostor, who has lately called upon several London architects, and after telling a plausible, but ingeniously diversified story of her distress, has solicited assistance, and perhaps received it in more than one instance.

In carrying on this fraud she has not hesitated to use the names of several members of this Institute by way of introduction; but, I need scarcely add, without the slightest authority.

It would be useless to guess her own name, as she has evidently more than one "alias."—I am, Sir, &c.,

CHARLES L. EASTLAKE, Secretary, R.I.B.A.

DAMAGES TO OPIUM-SMOKING SHOPS.

In the Sheriff's Court, Red Lion-square, Feb. 24, before Mr. Under-Sheriff Burchell and a special jury, the case of Summerfield v. The East London Railway Company has been decided. This was a claim for compensation.

The claimant, a tailor at Pentonville, had an interest of 18½ years in a lease of several small houses, let out at 4s. per week, containing two rooms, one upstairs and one down. Two of the houses were let to persons whose places were visited by opium-smokers, and in the house opposite was the room engraved in "Edwin Drood." The places had been visited, as described by the claimant, by many gentlemen to see the opium-smoking, and his mother, who was called, said the Prince of Wales and others had been to the spot to witness the opium-smoking. Sir John Karslake and Mr. Garth said they had been to the locality in reference to the present inquiry. The mother of the claimant asked Sir John if he had seen the woman opposite who kept the smoking department, and he said he had not, on which she replied that he had lost a treat. It appeared that Chinamen and other foreigners resorted to the two houses in New-court to smoke opium. The houses were old in New-court, formerly called Blue-fields, and afterwards Victoria-street.

The claim on the part of Mr. Summerfield was to about 300l. by damage done to the small houses by the tunnelling of the company, and he had lost a number of lodgers, who paid him 2s. per week for each room. Two Englishwomen, one of whom had married a Chinaman and another a "gentleman from Madras," were the only persons keeping houses in the court in which foreigners went to smoke opium.

The case on the part of the claimant was, that since the operation of the railway works the houses had been much damaged, and the tenants were afraid to stop in them. Even the opium-smokers had declined to come on account of the condition of the place.

On the part of the company, the case was that very little injury had been done to the houses in question, and it was alleged that, by age and the want of repairs, they were in a dilapidated condition before the railway works were commenced.

Witnesses were called on both sides, and the inquiry occupied the day.

Mr. Under-Sheriff Burchell, in placing the case before the jury, who had in the morning said a personal visit to the spot, told them that, on one side 638l. was alleged as the amount of damage, and on the part of the company from 30l. to 40l. Another question for compensation was the loss of rent.

The jury assessed the compensation at 220l.

ACCIDENTS.

Fatal Fall from a Chimney.—During a late gale the top of a lightning-conductor, attached to a chimney 40 yards high, at the works of Messrs. Schofield & Kirk, machinists, Huddersfield, was blown off, and Mr. Ives was commissioned to remove the old lightning-conductor and put another one up. The usual method of fixing a portable ladder up the outside of the chimney was resorted to, and the climber, Mellor, ascended it for the purpose of completing the fixture. When he had got above 80 ft. from the ground, he swung round to get to

the back of the ladder. Scarcely had he done so when the holdfast supporting the ladder gave way, and he fell to the ground, and was killed on the spot.

A Surveyor killed on a Railway.—On the Lancashire and Yorkshire Railway at Gilnow, Mr. William Tuke, surveyor, Pendleton, together with two assistants, were surveying preparatory to widening the line and constructing sidings. Mr. Tuke was walking across the line looking for a mark which he had made, when a passenger train from Bolton came up unobserved, and he was struck over the left eye by the buffer of the engine, hurled beyond the metals, and killed upon the spot. The deceased, who was between 50 and 60 years of age, leaves a family.

THE GLASGOW IMPROVEMENT ACT.

The Lord Provost of Glasgow attended a meeting of the special dwellings committee of the Charity Organization Society, on May 7, 1873, and made a very interesting statement with reference to the working of the Glasgow City Improvement Act. The Act was passed in 1866, and gave the city council, who were appointed trustees for carrying it out, power to raise a million and a quarter; of this upwards of a million has been raised and expended, and though the trustees at first expected to lose 200,000l., it seems probable that there will be no loss at all. Notes on the subject have since been taken by the Rev. R. J. Simpson, for the council of the society during a late visit to Glasgow, and the following is from these notes:—One of the lieutenants of Captain McCall, the chief constable of the city, stated that the effect of the clearances that had been made by the Act upon the detection, and therefore on the prevention, of crime, was of a most extraordinary character. He drew attention to one spot of some thirty square yards in the Old Vennel (now entirely cleared), on which many murders had undoubtedly been committed, the authors of which had not been brought to justice. The police dared not attempt to enter such dangerous dens as these unless in considerable force, and then at great risk. The worst of them have now been broken up and cleared away; the criminal or vicious have either fled the city, or taken up a temporary residence in some of the low tenements that still remain, or in the thieves' lodging-houses; but in either case they live far more under the surveillance of the police, and within the reach of justice.

It has been a commonly received idea that the extensive demolitions undertaken in the course of the improvements had inconvenienced the poorer classes by forcing them to remove, without providing them with dwellings elsewhere. But it can be shown that since the Trust began business in 1866, down to July, 1873, the houses sanctioned by the Dean of Guild Court within the municipal boundaries alone were 21,517, capable of accommodating something like 100,000 persons. The conclusion to draw is, therefore, that houses have been built much faster than they have been pulled down, so that no hardship can have arisen.

The committee have only found it necessary to exercise their powers of reconstruction so far as to build one model lodging-house for single men, and one for single women. These were erected on the site of a mass of buildings called the Rookery. From this fever was never absent; but not a single case of epidemic disease has occurred in the lodging-houses since their erection, four years ago. In a commercial point of view, these lodging-houses, containing 228 beds (to be increased to 300) and 98 beds respectively, have been great successes. Each inmate has a separate bed, partition, and furniture, the use of good common dining-room and good kitchen. Money was borrowed for them at 4 per cent., and they pay 5½ per cent.

I cannot, says Mr. Simpson, conclude these remarks without expressing my unqualified conviction that no more sure and certain means could be adopted for the social, moral,—ay, and religious,—elevation of a great city than those which the operation of the Improvement Act has brought to bear on the city of Glasgow.

Margate Drainage Competition. — A descriptive report or summary of the competitive schemes for draining the borough of Margate has been prepared by Mr. P. B. Cogblan, C.E., the borough surveyor, and printed by order of the local council.

CHURCH-BUILDING NEWS.

Newcastle-upon-Tyne.—At a meeting of the ratopayers of the parish of Westgate, held in the vestry of St. John's Church, Newcastle, the desirability of extending the Elswick Cemetery has been considered, and it has been agreed that it requires to be enlarged, and that the joint Burial Board of St. John's and Elswick be authorised to purchase the additional ground required. The vestry has sanctioned the purchase of a field of about six acres, lying on the west side and adjoining the present cemetery (subject to the approval of the Secretary of State), at 500l. per acre, borrowing such sums of money as may be necessary for the purpose, and for the enclosing, laying out, and draining the same, not exceeding the sum of 3,600l.; the cost to be levied on the three parishes.

Bishop Wilton.—St. Edith's Church, Bishop Wilton, was restored some fourteen years ago in a plain manner, but it has recently undergone a process of decoration. The entire cost, which is considerable, has been defrayed by Sir Tatton Sykes, bart., who has also promised to fill in the whole of the windows with stained glass; at the present time the west window, of three lights, and the chancel windows in the east wall, being the only ones of stained glass. Sir Tatton Sykes has also presented to the church a brass corona of thirty lights, and it has been suspended from the roof in the centre of the nave. Another corona of similar character, but somewhat smaller, will shortly be provided for the north transept by the hon. baronet. The work being completed, the edifice has been cleared of the scaffolding, and re-opened for divine service.

Longburton.—The parish church of St. James the Great, Longburton, three miles from Sherborne, Dorset, has been reopened by the Bishop of Salisbury, after a reparation, partial rebuilding, and the addition of a new north aisle. The work has been carried out by Mr. W. Farrall, of Sherborne, builder, at a cost of about 1,250l. Mr. Wingfield Digby, of Sherborne Castle, who owns a large portion of the parish, and is lay rector of the church, bore the whole expense of restoring the chancel, and also contributed a donation of 100l. to the general fund. The patroness of the living, Miss Cosmo, of Glenwood, Longburton, gives a new east window of stained glass and 100l. to the fund; Sir Richard Glyn, bart., of Leweston, 50l.; and the Church Building Society, 75l. The vicar of the parish, the Rev. C. H. Mayo, M.A., contributes 100l. The parishioners and others also subscribed. It was a fifteenth-century church, in the Perpendicular style; but traces of Norman work were found imbedded in the walls, and these fragments have been reset. The square tower has been underpinned and faced with new stone. The new open benches are of stained and varnished deal, and there is a new Ham stone pulpit, with small Devon marble slabs.

Exhurst.—At Exhurst Park, the seat of Mr. W. H. C. Plowden, the small church, which is situated on the north side of and contiguous to the lawn, has been undergoing a renovation, and has been re-opened for public worship by the Bishop of the Diocese. The pulpit was given by the Rector; the font, by Mrs. Pole; the harmonium, by Miss Plowden; the reading-desk, by the Rev. J. Fuller (Ramsdale); the lectern, by the Rev. E. A. Gray, late curate of Ramsdale and Exhurst. The windows in the chancel are in memory of members of the Plowden family, who are buried in or near the church. These windows and the reredos, are by Messrs. Lavers, Barrard, & Westlake; the transept window is by Horwood, of Frome; the carver of the wood-work was Mr. Turvill, of Reading; all building in stone, and carving of same were done by Wheeler Bros., of Reading; the remainder of the building and the oak work were by Mr. Garrett, of King's Clere; the heating-apparatus was by Mr. Haydon, of Trowbridge; Mr. Smith, of Reading, was the architect.

Gatesacre.—The new church of St. Stephen's, Gatesacre, has been consecrated by the Bishop of the diocese. The church, which is in the Early English style,—the architecture consisting of a nave, two chancels, and a spire,—is situate in the centre of the village, and will accommodate 500 people. It has been built entirely by the voluntary subscriptions of gentlemen of the neighbourhood, while several donations have been made for the following purposes:—By Mr. Alfred Fletcher, of Allerton, for lining the chancels with stone; Mr. Ed. Gibbon (the largest contributor to the church), donations for

the spire and communion-plate; and Mr. R. Brocklebank, the rails and gates. The church was built from the designs, and under the superintendence, of Mr. C. Sherlock. The site was given by the executors of the late Thomas Dutton. The sole contractors were Messrs. Dutton & Gore, and the heating apparatus was fixed by the proprietors of the Eagle foundry. The total cost of the edifice is about 4,500l.

Books Received.

The History of the Pianoforte. By E. BRINSMAD. Cassell & Co.

This is a small book, which might with advantage have been smaller, as no little proportion of it is taken up by mere padding about the history of music, anecdotes taken from well-known musical biographies, &c. If the portion describing the development and principles of pianoforte mechanism had been published in a simpler form, as a pamphlet, it would have been more to the purpose of the reader; as a short concise description of the construction of the instrument, and the peculiar accidents to which it is liable from age or ignorant treatment, would have been practically useful to many people. It is to be presumed that the author represents the firm of Brinsmad & Sons, pianoforte manufacturers, and perhaps we, without being censorious, infer that a main object of its publication is to draw attention to the superior excellence of the Brinsmad piano over any other. This is not done in quite so barefaced a way as in some other essays of the same kind (as in a work on organs which we noticed a little while since); but it cannot be expected that such books will be regarded in the same light, or be placed on the same footing, as if they were written by those who have no trade interest in the subject treated of. Still, when all is said, this is a pleasant little book, and may be usefully read by those who know nothing about the subject.

An Introduction to the Elements of Euclid: being a familiar Explanation of the First Twelve Propositions of the First Book. By the Rev. STEPHEN HAWTREY, A.M., late Assistant Master at Eton. London: Longmans, Green, & Co. 1874.

THREE hundred years before Christ, when Euclid wrote his great work, the Alexandrians, though great philosophers, had neither School Books nor Infant Schools, so far as we know; and a work such as Euclid's was written for maturer and more masculine intellects than those of the general run of boys and young women. Since abstruse learning such as Euclid's, however, is desired to be instilled into the tender brains of growing children of the nineteenth century, nothing can be more reasonable than to help such minds to a better knowledge of the elements of geometry than Euclid alone can give, as by teachings better adapted to the capacities of the young of an earlier age than his introduction to geometry was intended to enlighten. It is for this purpose that Dr. Hawtreys has been led by long experience of the youthful mind at Eton, to prepare the Introduction to Euclid's Introduction now under notice. It is written in a familiar style, just such as the conversational mode he has found to be best adapted to the purpose in view. It is a new kind of school-book, consisting, in fact, of *private* conversation, lucid and helpful, in a kind and pleasant way, interspersing what is written with illustrative stories, just such as he used to talk with his pupils. The teacher's wish is so to write as to draw on learners to try to master the subject for themselves; in a word, to teach learners how to learn Euclid; and we think it likely to be of benefit to schools, and to education generally.

Flowers and Festivals; or, Directions for the Floral Decoration of Churches. By W. A. BARRETT, of St. Paul's Cathedral. London: Rivington.

It will be enough to say that a second edition has been published of Mr. Barrett's manual. It is a pretty little book of its kind, but this sort of thing is being overdone, and leads innocent devotees by logical sequence to error.

VARIORUM.

MR. STANFORD has published, as usual, a map showing all the projected works in the metropolis for which Bills have been deposited. He has also issued a good Special Map of the rail-

way stations and tramways and the postal districts in London and its environs.—The railways in London and around London are now so numerous that to make the best use of them a map is essential. Several have of course been published. We may specially mention for its clearness, "London Railway Travelling made Easy," by Robt. J. Cook.—The March number of the *Contemporary Review* includes Professor Huxley's Address, as Lord Rector of the University of Aberdeen.—We get a word or two as to a *Function of Lichens*, from the current number of the *Popular Educator*. "Lichens exist exclusively on atmospheric supplies, requiring only air, sunlight, and some degree of moisture for their support. The simplicity of their structure enables them to exist at altitudes where the air is too thin for the support of plants of the higher orders of vegetation, so that they are found in abundance even at the very verge of the limits of perpetual snow. Lichens, with mosses, serve as pioneers of vegetation, having the power of acting on the stones and rocks below them, so as to produce small hollows in which moisture collects; then comes the frost, that seizes on the moisture which has forced its way into the little crevices already formed, and splits the rock, so as to cause it to moulder away; and this process, which is continually going forward, by degrees prepares a soil fit for the nourishment of larger plants."—And from another part of the same publication our readers may get an insight into the chemistry of Soap:—"If oily matters be mixed with water they will rise to the surface; but if the water contain an alkali, the oily matter will go into solution, forming an *emulsion*. When this solution is boiled for some hours, it becomes clear, being a solution of soap. By adding common salt, a curdling is produced. The curdle rises to the surface, which, when collected and pressed, forms soap; the glycerine remaining in the clear liquid soda, which is the alkali used in hard soaps and potash in soft soaps. *Curd soap* is made from tallow; common *yellow soap* from tallow and palm-oil; a quantity of rosin being added, which combines with the alkali, since it possesses acid properties. *Mottled soap* is set to cool in cast-iron moulds, and the mottling is due to the separation of an iron soap,—that is a body in which iron oxide is the base combined with the fatty acid. Soaps formed with the alkalies are soluble in water; not so those formed with the alkaline earths. It is owing to this fact that soap curdles in hard water. Such waters generally contain calcium and magnesium salts, and when soap is dissolved in them, a double decomposition occurs. The alkali of the soap joins with the acid combined with the calcium; while the calcium unites with the acid of the soap, thus forming a soap which is insoluble, and which, therefore, appears as curd."—"Animals and their Young," by Harland Coultas, is another of the pretty and instructive books for children, published by Messrs. Partridge & Co. It is illustrated by Mr. Harrison Weir, and Nicholson, a pupil of William Bewick.—Messrs. Chatto & Windus announce "The Cyclopaedia of Costume; or, a Dictionary of Dress, Regal, Ecclesiastical, Civil, and Military, from the earliest Period in England to the Reign of George the Third," by Mr. J. R. Planché, *Somerset Herald*. The work will include notes of contemporaneous fashions on the Continent; and be preceded by a general history of the costumes of the principal countries of Europe. It could not be in better hands.—"Sketches of Spain and the Spaniards during the Carlist Civil War" (Collingridge), is the title under which Mr. Charles L. Gruneisen has published a lecture he delivered recently in the Shire Hall, Hertford. It gives an interesting account of a stirring period, and at the present moment, when Spanish history is repeating itself, it is peculiarly *apropos*. Mr. Gruneisen's opinions may be gathered from the concluding sentences of his lecture:—

"The Republicans will never subdue the Basques, for if Don Carlos was to fall through bribery, like his grandfather, the civil war would recommence with another claimant. Don Alphonso has a chance, through the army south of the Ebro, but not the next remote one in the north. It is terrible to think of the troubles of poetic Spain, the garden of Europe, the land of romance, with a type of music peculiarly its own, of indescribable charm; with mines rich in gold, silver, quicksilver, iron, and copper; with vines producing the richest wines; with natural orchards growing the most luscious fruits; with national dances, exhibiting and exciting, with galleries of pictures containing some of the gems of the world; with attractions for the architect and the archaeologist, and with every eye that sees the grand and picturesque; with a noble race of mountaineers, with chivalrous and courteous cavaliers, with a race of pure and fascinating

men. But what Spain has not got is the statesman,—the statesman to turn to account the innumerable natural gifts with which the country abounds. Until that man springs up, it must be the reign of Martial Law or of Absolutism."

Mr. Grunisen is the Nestor of war correspondents.

Miscellaneous.

Sewage Farms.—Mr. W. Kempson, of South Fields, Leicester, writes on this subject:—This question would have been long ago decided, if, in the majority of instances in which sewage irrigation has been adopted, it had been carried out by practical agriculturists, instead of by Town Councils, and sanguine theorists. Where sewage is dealt with in any quantity, two things are, I think, required,—viz., under-drainage, and beds for downward filtration. Whether purification of the effluent sewage by lime to some extent is desirable before using it, is a question. In the two instances I will now give you, in which, irrigation is carried out by practical men with success, classification of the sewage is not resorted to. The first instance to which I refer is Heathcote Sewage Farm, near Leamington, the property of Lord Warwick. I believe it is about four years since this land was drained to some extent level; covered culverts were constructed for the mains, &c. The quantity of land under treatment has increased yearly, and is now something over 400 acres. Good substantial buildings have been erected for cattle, which are chiefly fed on ryegrass, with most satisfactory results. The land is freely supplied with sewage for two years, during which ryegrass or vegetables are grown; the third year the sewage is shut off entirely, and a crop of corn (good in quantity and quality) is taken. I have visited the farm yearly for the last three years, and find that the land is improving, and the produce increasing. The effluent water is passed away in a satisfactory state, and no complaints as to nuisance arise. Notwithstanding the wetness of the last two seasons, I am told that the last stocktaking showed that the whole outlay had been repaid and a small profit realised. My second instance is a sewage farm belonging to the corporation of Wrexham, North Wales.

The Effect of Cheap Labour and Cheap Coal in Wales.—The *Ironworkers' Journal* of March 1, which is published as the authority of the Amalgamated Ironworkers of Great Britain, has the following:—"It is to be regretted that there does not appear to be any improvement in the state of trade. Hundreds of men are walking about in every district, and fail to find employment. It is a trying time for many a poor family; what the end may be is unknown, and it is well that it is so. We need not say that the chief cause of this unfortunate state of things is due to the shameful price of coal. Mine-owners may thrive and fatten on the good things that famine prices have brought about; but the iron manufacturers who have to purchase their coal and pig-iron at a time when the number of purchasers is seriously reduced, are so considerable that serious consequences to labour and to the masters so circumstanced have been brought about. In the North of England an order for rails is difficult to get hold of. This is chiefly caused by the reduced demand; and what orders there have been of late, and are coming in to the market now, are taken by Welsh houses who can take an order and make it pay, in consequence of cheap labour and coal. It is a shame that the employers of Wales should be permitted to pay from 8s. 6d. to 9s. per ton for puddling grey pig-iron. This is so important that the attention of the workmen must be called to consider this act of injustice at the first opportunity. The workmen's wages must be advanced in Wales before the inequality of rates is removed.

Chappuis's Reflectors.—Suggestive evidence is given as to the value of reflectors where light is scarce, in the description of the ship *Devastation* by the *Times*. The writer says:—"The Chappuis corrugated reflectors fitted on board, in the after-sterge, act as efficiently as ever in throwing rays of natural light, finding its way below from any opening, however small, to adjacent parts of the deck at any desired angle. With the after-sterge open at the extreme after-end of the sterage, where two of these reflectors are fixed, a flood of natural light is thrown over the whole of the sterage in such a volume as to pale the overhead lamps lighting the ward-room passages 50 ft. and 60 ft. distant."

The Post-Tertiary Geology of Lancashire.—A lecture by Mr. T. Mollard Reade, on this subject has been delivered before the Literary and Philosophical Society of Southport. Mr. Reade is practically acquainted with the geology of Southport and neighbourhood, which acquaintance he acquired while planning Birkdale Park, and constructing the Birkdale Sewage Works, and other undertakings in this district. The lecture was illustrated by a large map, on the scale of 6 in. to the mile, on which all the various deposits were represented, and also by numerous sections, the result of Mr. Reade's personal observations. The post-tertiary deposits of the neighbourhood are divided into two strongly-marked groups, the upper being the post-glacial, and the lower the glacial marine drift, or boulder-clay—the whole resting upon the triassic rocks, from which they are separated by an immense period of time, in which the liassic, the oolitic, cretaceous, and the whole of the tertiary, were laid down, but which have no representatives in Lancashire. The post-glacial deposits occupy an area in Lancashire, forming a plain below the 25 ft. contour of about 75 square miles in extent. In concluding his lecture, Mr. Reade said,—"Above all, it is necessary to approach the study of Nature in a spirit of true humility, and then, whether we look at her from the artistic, the poetic, or the scientific standpoint, we are lifted above the cankerous cares of business, to a wider knowledge, a loftier ideal, and a truer conception of the wondrous works of creation with which we are surrounded."

Society of Engineers.—At a meeting of the Society of Engineers, held on Monday last, Mr. William MacGeorge, President, in the chair, a paper was read on "Recent Improvements in Tin-dressing Machinery," by Mr. S. Herbert Cox. The author commenced by noticing the various impurities which occurred with tin ore, and showing the difficulty of separating the wolfram from it in the ordinary methods of treating the ore. Sholl's atmospheric stamps were mentioned, and their advantage over the old system pointed out. Briefly these were stated to be:—1st. A greater length of stroke by which the weight of the heads is reduced from 5 cwt. to about 3½ cwt.; 2nd. A greater speed, the relative velocities being respectively 150 and 60 blows per minute; 3rd. The additional momentum produced by the compressed air, and the power thus afforded of regulating the length of the stroke. The propeller knife bundle recently introduced at Restronguet Stream Tin Works, as well as Collon's patent jigger, were described, as was Stephens's pulveriser, in which, by means of strips of wood placed in slots in the covering-plate, the rotating action of the water is turned into a jiggling one, thus carrying the pulverised ore through the covering-plate, whence it is conveyed away by launders.

The Newspaper Press Fund.—This association has taken a wise step, with a view to extend the circle of those who are interested in its progress and welfare. At the general meeting held on the 28th ult., it was resolved that "Every donor of ten guineas or upwards in one sum, not being eligible as an ordinary member of the society, shall be considered an honorary member, and be entitled to attend and vote at all general meetings, excepting only such as have been specially convened for the alteration or amendment of the rules." The grants made during the past year amounted to 490l. 3s., and the number of cases was thirty-six. The investments have been augmented by the purchase of a further sum of 1,000l. Eastern Bengal Railway Stock Guaranteed Five per Cent., by which the stock and securities of the society are increased to 3,900l. The ordinary income for the year is estimated at 637l. 1s. 6d., and there was an available cash balance on the 31st of December last of 899l. 4s. 7d. The chairman (Mr. Grunisen) announced that his Grace, the Duke of Somerset, K.G., had consented to preside at the annual dinner on the 30th of May.

Covent Garden.—The Duke of Bedford has determined to cover in Covent-garden market to a certain extent. Several are of opinion that the proposed erection is not high enough, and that the 4 ft. left open on either side is very objectionable. The openings at the side and the low roof are stated to be for the convenience of those persons who occupy the upper rooms over the shops in the centre row. The *Garden* says, so far as we could judge from the model exhibited, the improvement contemplated will be slight indeed to what is required.

The Peabody Buildings.—The report of the Peabody trustees shows that they had expended up to the close of last year in land and buildings 300,000l. Upwards of 66,000l. of this sum are at present unproductive, as two sites are not yet built upon, and the dwellings upon two other sites are not finished. The number of families now in residence at the trustees' buildings is 882, occupying 1,875 rooms. The average rent per room is 1s. 10d. per week, and the average weekly earnings of the head of each family is about 1l. 3s. 1d. Although the cost of labour and building materials is constantly increasing, the trustees have not up to the present time advanced their rents, except in a few exceptional instances. The expenditure during the year, for land and buildings, exceeds 39,000l., and the income of the two trusts amounts to 12,973l. 5s. 8d. The net income derived from the buildings is about 2½ per cent. per annum upon the outlay.

The New Public Baths and Washhouses at Alnwick.—The New Public Baths and Washhouses, together with a Soup Kitchen and Working Men's Club House, which the Duke of Northumberland is erecting in Clayport-street, Alnwick, are now far advanced towards completion, and will be ready for use, it is reported, in a few months' time. The buildings have a frontage of about 80 ft. The baths are lighted from the roof, and are fitted up with every necessary appliance. The third part of the new building embraces an entrance-hall, dining-room, smoking-room, bar, kitchen, larder, pantry, &c., on the ground floor, and the main staircase leads to the reading-room, bagatelle-room, parlour, and committee-room, and further backwards a large soup kitchen. The upper story is appropriated to bedrooms for the staff of servants.

Sewage Utilisation in Liverpool.—On Saturday last the half-yearly meeting of the Liverpool Sewage Utilisation Company was held, when the report of the directors, submitted to the meeting, stated that the company had at last succeeded in getting into a good position since the liquidation, and now, for the first time, the scheme was to receive a trial, though on too small a scale. When the affairs of the company were taken in hand by the present directors, it was found that everything had got into a very neglected condition, owing to the suspension of the company, and in consequence of the lateness of the season, the farm at Ince Blundell could not be brought under proper cultivation. Future success, however, was anticipated. The report was adopted unanimously. It was stated that many of the neighbouring farmers had expressed their readiness to buy the sewage-manure.

The Midland Railway Company, for whose works a vast amount of house property in Somers Town has already been destroyed, are now seeking by a new Bill to obtain compulsory powers to take property on the eastern side of St. Pancras workhouse, and also certain lands, houses, and buildings which are bounded by Skinner-street and Brewer-street on the east, by Blisroe-street and Phoenix-street on the north, by Ouseley-street on the west, and Euston-road on the south. The district specified contains 2,000 houses, in a dense population of the poorest class. Several hundred tradesmen and owners of property in Somers Town have waited on the General Purposes Committee of the St. Pancras Vestry, to ask for assistance against the proposal, and the committee have promised to urge the Vestry to give every possible opposition to the Bill becoming law.

Gigantic Scheme for the Extension of Boston, U.S.—A large meeting of merchants and business men has been held at Boston, Mass., to hear the Hon. Edward Atkinson explain his scheme for extending the shipping accommodation of the port. He proposed to provide for an inevitable increase of business by filling in the vast area owned by the Commonwealth now covered by water round South Boston, and claimed that the filling would remunerate the State for what it had expended on the Hoosac Tunnel. A very large area of land would be made available for city improvements and for docking accommodation. Mr. Atkinson's scheme also embraced an extension of railroads, to develop the trade of the port and add to its commercial importance.

The Barracks at Oxford are about to be commenced, and the contract has been given to Messrs. W. Downs & Co., Union-street, South-wark.

The London Locksmiths.—An adjourned meeting of the London locksmiths has been held, for the purpose of taking further steps to organise an association. There was a large attendance, and thirteen new members joined, making fifty-eight, who had given in their support to the movement up to the present time. Mr. Lewis was appointed president, Mr. Field vice-president, and Mr. G. Harper, secretary. The committee were next elected, so as to represent each firm in the association. The two trustees who were appointed were Mr. E. Cheshire and M. Courtney. Mr. Harper was elected as treasurer. The first subscription was made, and the payments were numerous.

The River Wall at Chatham.—The repair of the extensive breach in the river wall of the Gun-wharf at Chatham will shortly be commenced. Part of the wall was forced into the Medway last autumn during a thunderstorm by the bursting of a sewer running from the Marine Barracks. A new drain has since been constructed, and tenders will now be asked for to repair the wall. This work is expected to cost some thousands of pounds.

The Proposed Conservative Hall for Westminster.—A company has been formed, with a capital of 2,000*l.* in 1*l.* shares, which are being taken up promptly. The directors have several plots of land in view in the central part of the parish, but the site of the hall has not yet been determined on. When not required for political purposes, the hall will be let for penny readings and entertainments of a miscellaneous character.

Exhibition in Paris.—The International Exhibition of Arts and Manufactures, which is to be held in Paris in 1875, will be organised by private persons, as the present state of the finances does not permit the Government to grant any subsidy for that purpose. The Government, however, is earnestly desirous that the undertaking should be attended with every success, and has placed the Palais de l'Industrie at the disposal of the Exhibition Committee.

Isfield.—At the last meeting of the Archaeological Society, it was intimated that the Rev. S. F. Russell, the rector, intended to take steps to restore the parish church, which was becoming somewhat dilapidated, and active measures are in progress for obtaining the necessary funds. Plans have been prepared by Mr. J. Pearson, and he estimates the cost of the restoration, and of the addition of a north aisle at 1,350*l.* Subscriptions have already been promised to the extent of about 780*l.*, and the rector has issued an appeal for support.

The Romans in London.—The interesting Roman antiquities discovered in excavating the foundation of the premises belonging to the National Safe Deposit Company, near the Mansion House, have been lent to the South Kensington Museum until the completion of the building, and they may be seen there in the north court.

Brighton Aquarium.—The fifth ordinary general meeting of the Brighton Aquarium Company has been held in London, and notwithstanding the heavy expenses necessary in the infancy of the establishment, a dividend at the rate of 10 per cent. for the half-year has been declared. The balance-sheet showed a gross revenue of 21,911*l.* odd.

Waterworks, Nunhead.—Messrs. Joseph Quick & Son, M.Inst.C.E., wish it stated that these works were designed by them alone, and not in conjunction with Mr. Just, as elsewhere asserted.

Church at Addiscombe.—Competition designs are now on view.

TENDERS

For villa residence, Brondesbury Park, Kilburn, for Mr. C. Couthard. Mr. H. H. Bridgman, architect. —

Elkington (accepted).

Accepted for recovering the roof of Newtown House, near Newbury, Berks, for Mr. W. P. B. Chatteris. Mr. James H. Money, architect. —

Bricklayer, Carpenter, and Slater.

Adey £770 0 0

Plumber and Glazier.

Boyer & Co. 360 6 6

For the erection of new schools in the parish of Spenshamland, Berks. Mr. James H. Money, architect. —

Hitchman £389 2 6

Messrs. Harrison (accepted) 559 18 6

For covered loose boxes and additional pens at the New Cattle Market, Newbury, Berks, for the Local Board of Health, Newbury. Mr. James H. Money, architect. Quantities supplied: —

James 2,271 19 6
Messrs. Harrison 248 10 6
Whiter (accepted) 235 10 0

For proposed vicarage house, St. John, Whetstone, for the Rev. Alfred Cay. Mr. John Norton, architect. Quantities supplied by Mr. S. J. Thacker: —

Blandford & Sons £1,970 0 0
Tull 1,851 0 0
East 1,830 0 0
Nislett 1,850 0 0
R. Bus & Co. 1,820 0 0
Staines & Sons 1,750 0 0
Webber 1,769 0 0
Wicks 1,741 0 0
Walton 1,740 0 0
Gilmire 1,703 0 0
Simpson & Baker 1,681 0 0
Boyle 1,641 0 0
Jopling & Co. 1,529 0 0

For the erection of new general infectious hospitals, Bleas Union Workhouse, Kent. Mr. Benjamin Adkins, architect. —

Bushell & Son £4,414 0 0
Welby 4,163 0 0
Jopling & Co. 4,114 0 0
Wilson 4,093 0 0
Adams 4,061 0 0
Adcock 4,045 0 0
Featherstone & Lucas 4,047 0 0
Shrubsole 3,997 0 0
Wright Brothers & Goodchild 3,975 0 0
Gaskin & Godden 3,868 0 0
Solitt 3,791 0 0
Calland 3,725 0 0
Naylor 3,693 0 0
Cornelius (accepted) 3,594 0 0
Dover, Son, & Co. 3,555 0 0

For municipal buildings, Leicester. Mr. Francis J. Hames, architect. Quantities supplied by Messrs. Franklin & Andrews: —

Extra for Ketton Stone.
Dove, Brothers £35,535
Hill, Higgs, & Hill 33,394
Downs & Co. 33,890
Lindley 32,480
Rider & Son 32,500
Horsman 32,549
Osborne 31,900
Brass 31,295

For the erection of casual wards, and alteration and enlargement of infirmary, at St. Mary's Workhouse, Rotherhithe, for the Guardians of St. Olave's Union. Mr. H. Saxon Snell, architect. —

Casual Wards, including Fittings, Furniture, description.	Infirmary, including Fittings, description.
Stephenson £1,537	£18,113
Wicks, Bangs, & Co. 3,270	17,900
Nightingale 3,420	16,740
Chappell 3,239	16,757
Downs 3,280	16,790
Kent 3,149	16,770
Callum 3,148	16,675
Simpson & Baker ... 3,125	16,621
Croft 2,937	15,574
Walf 2,913	15,533
Wagner 3,049	15,440
Manley & Rogers ... 2,890	15,390
Craker (accepted) 2,742	14,959

For the erection of six semi-detached villa residences at Clacton-on-Sea, Essex, for Mr. A. Penfold and Mr. W. Agate, of Woolwich. Mr. G. Gard Fye, architect. —

Clarke & Son £3,245 0 0
Snelling (accepted) 3,660 0 0

For building new tramp-cells, receiving-wards, and porter's lodge, at Eltham, Kent. Alex. R. Stenning, architect. —

Glaston £2,240 0 0
Tull 2,024 9 7
Lowe 1,933 0 0
Nightingale 1,890 0 0
Blake & Ramplin (too late) 1,781 0 0
Mason & Co. 1,745 0 0
Waters 1,805 0 0
Charwood, Brothers 1,690 0 0
Kest & Co. (too late) 1,685 0 0
Wallis 1,675 0 0
Woodward 1,698 0 0
Simons 1,633 0 0
Barnes 1,600 0 0
Wright, Brothers & Co. 1,475 0 0
Ballford 1,564 0 0
Lacy 1,530 0 0
Lawrence 1,628 0 0
Worsell 1,500 0 0
Paskett & Co. 1,469 0 0
Boyce 1,481 0 0
Warr 1,467 0 0
Jopling & Co. 1,450 0 0
Dires & Co. 1,470 0 0
Galve 1,433 0 0
Cook 1,450 0 0
Morris 1,412 0 0
Longman 1,395 0 0
Kesterton 1,350 7 3
Steer 1,205 0 0

Hot-water Apparatus, &c.

Bonner £420 2 0
Dye & Son 142 3 9

For alterations to Prince of Wales public-house, Drury-lane. Mr. H. J. Newton, architect for Messrs. Watney & Co.; Mr. J. Viney, architect for tenant. Quantities by Mr. Budd: —

Persons £1,350 0 0
Hyde 1,334 0 0
Godden 1,319 0 0
Hockley 1,128 0 0
Taylor 1,093 0 0
Shurmer (accepted) 1,044 0 0

In our last list of tenders was one for new warehouses for Messrs. Hudson & Sons, Wells-street, Oxford-street, in which the name of the firm selected to do the work was misspelt, from bad or careless writing, "Josasin & Co." instead of "Jopling & Co."

TO CORRESPONDENTS.

A. L.—A. Ringer. J. R. W. E. D.—J. H. M.—E. F.—B. A.—Cheese.—H. F. J. E. D. L. B. C. H. S. G. G. F.—J. K.—F. J. N.—W. D. & Co.—G. O.—F. K.—W. H. F. (thanks. L. printed was probably in type first).—G. A. J. (shall have attention).—H. H. B. (accounts should be sent).—J. F. S. (next week).

We are compelled to decline pointing out books and giving addresses.

All statements of facts lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

N. P. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

PERFECT DAYLIGHT.

WHY BURN GAS?

CHAPPUIS' REFLECTORS

IMPROVE NATURAL DAYLIGHT

AND SUPERSEDE GAS.

P. E. CHAPPUIS,

PATENTEE AND MANUFACTURER.

No. 69, FLEET STREET, LONDON.

The Builder.

VOL. XXXII.—No. 1623.

The "Lungs" of London.



PURE air for the people of large towns is a requirement of vital importance. The grand chain of parks passing through, or dotted at intervals over, London, from Regent's Park in the north, Victoria Park in the east, Kensington Gardens, Hyde Park, Green Park, St. James's Park in the west, to Battersea Park and Southwark Park in the south, besides the "lesser stars" at Kennington, Camberwell, and other parts of the metropolis, enclosing an aggregate area of nearly 2,000 acres, has done much to maintain the healthfulness of this great metropolis. The extensive commons which may be found in the more open suburbs, as at Clapham, Tooting, Mitcham, Streatham, and Merton in the south, at Hackney and Hampstead in the north, at Wimbledon, Putney, and Barnes in the west, and whose integrity is so jealously guarded by the people, add another large surface to the breathing-places of the inhabitants of London, and yet the continual cry for pure air shows that even this accommodation is not enough for everybody to have a share in it. There are hundreds and thousands of children born and bred in the more densely-crowded parts of London, who never yet saw even the outer railings of the parks, or have so much as dreamt of the unenclosed areas of the commons around London. The Directory, it is true, will disclose the existence of many localities, rejoicing in names which would imply the existence of a small patch of grass and a few shrubs, of a little breathing-place where the poor children might see something besides pavements and bricks and mortar. Hatton Garden, Baldwin's Gardens, Hughes's Fields, Kingland Green, White's Ground, Whitestone Park,—such names on paper are suggestive of open spaces which the foot of the builders has not yet desecrated, and where cabs and omnibuses are unknown; yet, as a matter of fact, they are "gardens" in name only, and their appearance is a terrible satire on the faithfulness of a name. While the parks and commons are as a sealed book to many hundreds of poor children, ay! and grown-up men and women too,—either because they are too far off, or because the wretched inmates of the alleys and lanes of the Seven Dials or Ratcliffe Highway have no time to see their children safely taken into them,—there are many spots in London which are literally closed to all comers, but which might well be thrown open to the public, under proper regulations. The large "squares" of the "west central" district of London are closed from morn to night, from year to year, and hardly a foot but those of the unrequited gardeners ever breaks their solitude. The houses which surround them used once to be peopled by the rank and fashion of the country, but now they are all, or nearly all, turned into offices, occupied during a portion of the day,

but tenantless at night. The reasons, therefore, which once prevailed for keeping the enclosures shut, or reserved solely for the use of the inhabitants of the squares, no longer exist. No one's privacy would be disturbed by allowing the public to have access to the grass and shelter of the trees, to which they are at present universally denied admittance.

It is true that the reclamation of land on the banks of the Thames, and the devotion of portions of the surface to gardens for the use of all comers, has resulted in a slight increase in the spaces available for the use of those who cannot otherwise catch a glimpse of, or take rest in, a garden of flowers. But still there is a cry for more pure air, and if the demand were supplied, the decrease in disease and mortality would be appreciable.

We believe that the Duke of Westminster lately threw open one or more of the enclosed "squares" in Belgravia to the public, giving free admission to all who chose to enter, under suitable regulations and restrictions. We would wish that the good example thus set could be followed by some of those who have control of the many squares in other parts of London. Lincoln's-inn-fields, Russell-square, Bedford-square, Bloomsbury-square, Enston-square, Soho-square, Red Lion-square, Golden-square; all these and more besides, enclosing from three to twelve acres of land each, are at present rigorously closed: even those for whose private recreation they are reserved do not avail themselves of them, for the simple reason that they can go to the seaside, to the country, abroad—wherever they like—when they desire change of air. But there are thousands, as we have said, to whom a run in these open spaces would be "a change of air," the like of which they have never been able to enjoy; to whom the opportunity of amusing themselves in the quiet, under the shade of the trees, on the green grass, would be an incalculable blessing. Why, then, should not this apparently easy experiment be here and there tried? We have recently recorded the purchase of Leicester-square by a wealthy citizen, who is, at his own cost, converting it from a "howling wilderness" into a place "of beauty" and a "joy for ever," in which we trust rich and poor alike will be able to enjoy themselves.

Immediately before the purchase of Leicester-square by Mr. Albert Grant, a society was being organised by Mr. Francis Fuller, with the immediate object of purchasing the square and converting it into an open garden, with an underground aquarium similar to that at Brighton on a portion of the ground; and with the ultimate purpose of similarly utilising other squares and open places in London, either as free gardens, or by devoting a portion of the space to similar useful and popular objects. The first intention was frustrated by the sudden announcement of Mr. Grant's gift; but it is proposed not to relinquish the idea of obtaining the right to throw open other squares as gardens for the benefit of the public. With this view the society, which has been working privately, intend to continue its efforts, and a pamphlet on the subject has been issued, copies of which may be obtained by application to Mr. C. E. Fryer, the secretary, 4, Old Palace-yard, W.

We sincerely hope that the organisation thus started, although anticipated in its immediate and first endeavours, will succeed in carrying out its views in regard to some other of the open spaces in and around London. By doing so it will confer an inestimable boon on thousands of the hard-working, hard-living, and hardly-cared-for population of London. The invigoration of the children of the poorest parents will go far towards improving the sanitary condition of the metropolis. Many stunted growths may become strong and vigorous by the timely opportunity of retiring from the filthy lanes and streets, which

form their only playground at present, into the clear, pure, and healthy atmosphere of well-cared-for people's gardens.

Our own welfare depends very much on the welfare of others. Each is bound up with the whole; and in helping others it may be that we are helping ourselves.

THE HOLBORN VIADUCT NEW RAILWAY STATION.

THE new Holborn Viaduct Station of the London, Chatham, and Dover Railway Company was opened for traffic on Monday last, the opening having been deferred several times in consequence of the unavoidable delay which took place from time to time in the completion of the works, owing to several trade causes. Although the London, Chatham, and Dover Railway may be regarded as one of the most important of our metropolitan lines, it has not yet had a central terminus worthy of its position, or equal to the wide extent and ramifications of its traffic. But this has now been remedied, and what the Charing-cross Station of the South-Eastern Railway is to the West End, the Holborn Viaduct Station of the London, Chatham, and Dover Company will be to the City and the Eastern district.

In a former number of the *Builder* last year (October 11th) we published an extended description of the works on the extension line between Ludgate-hill and Holborn, together with a notice of the Viaduct Station and the hotel now in course of erection, and to these we may now add some further particulars as to the constructive features of a portion of the works, as well as the internal arrangements and decorations of the station apartments and the magnificent restaurant and refreshment saloon at the east end of the building, which have not hitherto been published. As is generally known, the area of the high-level station at the north-west side is carried over the old low-level line to Moorgate and Farringdon streets by iron girders thrown against the last-named line, and the works at this point are of a very formidable character in their engineering features. The western portion of the hotel, as well as that of the company's offices, will stand upon these iron girders, and it is only by descending to the low-level that it is possible adequately to estimate the magnitude of the work. The line to Moorgate-street and Farringdon-street exactly bisects diagonally the foundations of the hotel, the middle of which will therefore rest on immense colossal girders, borne by enormous stone piers. One of these piers, all of which are of Bramley stone, is calculated to bear a weight of 1,000 tons. The stonework rests on a foundation of blue Staffordshire brick, above which is a still thicker stratum of stock brick, covered again by concrete, all laid to a depth of more than 14 ft. below the level of the permanent way of the low-level line.

The station is approached from Holborn under a carriage-drive and colonnade, 18 ft. in width, having two entrances from the viaduct. The roof or ceiling of the colonnade is arched with white enamelled tiles. The interior of the booking-offices has been fitted up and decorated in an artistic manner. The ceiling is in covered panels, elaborately moulded, and in the centre there is an ornamental dome or lantern light, in addition to the windows at the north and south sides, thus spreading an unusually strong light over every portion of the apartment. Suspended from the top of the lantern light is a massive chandelier, containing one hundred burners. The furniture and fittings are all in solid oak, as well as the floor, the booking-offices themselves extending round the apartment in octagonal form. Spacious doors in carved oak, with projecting segment heads, lead from the booking-offices on the east side to the first-class ladies' and gentlemen's waiting-rooms, and to the telegraph-office respectively. The entrance to the waiting-rooms is at the south-east side, leading into the gentlemen's waiting-room, which is fitted up with oak furniture, upholstered in morocco. In the centre of the room there is a large oblong table, with three other oval tables in different portions of the apartment, whilst carried entirely round the room are massive seats nearly 2 ft. in depth, upholstered in morocco. In addition to these there are several chairs, uniform in design and finish, with the seats already named. A door on the north side leads from the gentlemen's into the ladies'

waiting-room, which is fitted up in the same luxurious style as that already named, with the addition of an ante-room as a lavatory. The second-class waiting-rooms are approached from the west side of the booking-offices, whilst the entrances to the cloak-room and to the luggage-office and Continental registration-office, are respectively from the east and west sides of the northern platform.

The decorations of the refreshment saloon and restaurant at the east end of the station, and which extends the full depth of the station buildings from the Northern Viaduct entrance to the boundary of the north platform, are handsome. The ceiling is divided into twenty-one recessed panels, separated by borders painted and gilt. The walls on each side of the room are divided into seven compartments, carried up from about 3 ft. 6 in. from the floor to the frieze and cornice around the ceiling. The whole of these decorations are in art-tiles and majolica, with mirrors in each panel. The panels or compartments are divided by pilasters in majolica, faced with vases, and having ornamental capitals of the same material. The upper portions of the compartments above the mirrors are surmounted by ornamented arches in art-tiles of varied colours, made by hand, and painted under glaze or enamel, which renders the face and ornamentation of the objects represented entirely indestructible. Within the hoods or borders of the arches, which are of a warm and delicate colour, are figures representing different countries, including England, Australia, India, Italy, France, America, Spain, Russia, Germany, Belgium, Portugal, Canada, Greece, and Brazil. At each angle above the arches there are sphinxes, also in art-tile work, the figures represented being in green and gray on a blue ground. This particular tile-work is also carried down on each side of the mirrors. The framework immediately around the mirrors is in majolica, outside which is a gilt bevelled strip. In the centre, on the west side of the saloon, is an ornamental chimney-piece in majolica, with double-fluted pilasters on each side, the central portion above containing panels, in which are recumbent figures in tile work. The whole of this portion of the work has been executed by Messrs. Simpson & Sons, under the superintendence of Mr. Lewis Isaacs, architect. The decorations of the lower portions of the walls of the saloon, as well as the furniture and fittings, are in walnut-wood and ebony. A moulded dado of these materials is carried round the apartment, whilst a large circular projecting counter, together with the tables and seats, are also uniform, the seats being covered in morocco. This portion of the work has been executed by Mr. John Drew, of Hatton-garden, and the whole has been carried out for Messrs. Spiers & Pond, who will shortly open the premises.

MARGATE DRAINAGE COMPETITION.

WE condense the heads of the borough surveyor's report on the plans submitted, referred to in our last. The author signing himself,—

Economy proposes to unite the drainage of the two valleys by a tunnel sewer. The outfall will terminate with iron pipes on the beach at Botany Bay. The tunnel outfall sewer will be 5 ft. 6 in. in height, for convenience of working, and 3 ft. wide. During a short portion of spring tides, the tunnel sewer will act as a reservoir. The surface drainage is proposed to be separated as much as possible from the sewage, and provided for by separate outlets. The total cost of the scheme, complete for the drainage of the whole borough, and including allowance for compensation, is estimated at 20,000l. This is the only scheme that dispenses with pumping, and avoids an annual outlay.

C. E. proposes to separate the rainfall from the sewage, and take the former direct into the harbour. The sewage he proposes to take by one main line of sewer to the pumping-station in the Dane, where it would be pumped through an 18-in. iron main to the summit at Northdown; and thence would flow through a 12-in. stone-ware pipe, by gravitation, to Botany Bay, the same spot selected by the author of *Economy*. The estimated cost of the works is 31,800l.; and for land, compensation, engineering, and legal expenses, 2,200l.; making a total of 34,000l. In addition, the annual working expenses for pumping, &c., are calculated at 600l. per annum.

Intermittent Filtration proposes to take the whole of the sewage of the town to a pumping-station on the west side of the London, Chatham,

and Dover railway, in the triangle of low ground between that railway and the South-Eastern railway, and then pumped through a 15-in. iron main to a height of 90 ft. above Ordnance datum, and conveyed by earthenware pipes to an area of twenty acres of land, situated in the Dane valley to the south-east of the town, and disposed of by the principle of intermittent downward filtration. Total cost, exclusive of the cost of land, 39,345l.; annual outlay, 620l.

Experientia proposes to take the sewage to a pumping-station in the same position as that selected by the author of *Intermittent Filtration*. An alternative pumping-station is shown in the Dane, within the borough boundary, and not far from the site selected by *C. E.* The author recommends the sewage to be disposed of by irrigation; and, should the proposal for a pumping-station in the Brooks be adopted, he shows a farm at Nash Court of 290 acres area, and an alternate site of 350 acres between Dent-de-lion and Woodchurch farm. Should the Dane be preferred for a pumping-station, he recommends about 275 acres of the West Northdown farm as a suitable site for an irrigation farm. The estimated cost of the sewers by adopting the Brooks pumping-station is 27,729l., as compared with 24,350l. if the Dane pumping-station is preferred; in addition, 11,450l. must be added for pumping-stations and engines, applicable to either site. The total cost of the Nash Court or Dent-de-lion scheme (without purchasing land) would be about 50,000l., and the Northdown scheme about 45,000l. (500 acres of land in each case). The annual expense of pumping is estimated at 1,526l.

Experientia proposes to divide the town into three districts for drainage purposes, viz.,—the two hills as the two high levels, and the King-street district as the low level. The sewage will be pumped to a height of 96 ft. above Ordnance datum, which can be conveyed to 400 acres of irrigation land in the neighbourhood of Quex Park, belonging to Capt. Cotton. The author suggests an alternate scheme for an irrigation farm at Nash Court. The estimated cost of this scheme is 25,000l., and an additional 1,000l. for a storm-water sewer, and an overflow-pipe from the Brooks to the Bay. The annual working expenses to lift the sewage to Capt. Cotton's land is stated to be 426l., and to Nash Court farm 500l. per annum.

Westminster proposes to construct the main sewer to a pumping-station in the Brooks close to Tivoli, whence the sewage would be pumped to an irrigation farm between the St. John's Cemetery and Nash Court. The system of separating the rain-water from the sewage is adopted, and of using the supernatant water only for irrigation purposes. One hundred and forty acres of land will be required for irrigation. Total cost, 22,420l.; annual outlay, 1,110l.

Carefully Considered proposes to convey the sewage by gravitation to a pumping-station immediately at the back of Marine-terrace, and pumped from there to an irrigation farm of forty-five acres in the neighbourhood of Hengrove. The rainwater is conveyed to the harbour by separate sewers. Total estimated cost, 16,300l.; annual expense for pumping, &c., 507l.

Ex Luto Lucellum proposes to sewer the whole of the town by means of earthenware glazed pipes, with the exception of a short length of oval brick sewer, and convey the sewage to the pumping-well immediately at the back of the Kent Hotel, where the system of precipitation, known as the "A B C" process will be adopted, and the supernatant water discharged direct from the works into the sea. The estimated cost of the whole of the sewerage within the borough, including outfall to sea, is 16,000l.; engines, tanks, and other buildings, 8,070l. Estimated cost of working the process one week in the production of sixty-five tons of manure, 129l. 17s. 6d. It is calculated that an average of fifty-five tons and a half per week throughout the year could be produced at a cost of 2l. 1s. 6d. per ton, and the sale for the native guano is estimated to realise 3s. 10s. per ton; leaving a profit of 1l. 8s. 6d. on every ton of guano produced.

Some discussion has taken place as to the propriety of exhibiting the designs to the public.

News-vendors' Benevolent and Provident Institution.—Mr. A. J. B. Beresford Hope, M.P., will preside at the festival in behalf of the funds of this valuable Institution on the 29th of April next, at the Criterion, Piccadilly. We hope to find the dinner well attended.

CAN ART BE TAUGHT?

SIR,—Writers upon art, like theologians, are too apt to consider all expressions of opinion, but their own, *cant*. It is but another phase of "Orthodoxy is my doxy, heterodoxy is other people's doxy."

Your correspondent of last week tells us to submit, obediently, to the spirit of the age. The spirit of the age is certainly a very grand expression, but we always took the spirit of the age to be that spirit which animates and dominates the age. If that be so, whatever that spirit wills will be manifest. If fine art, fine art will flourish.

If, however, "W." means us to understand that if we would follow the same rigorously scientific method in artistic as in physical inquiries, fine art would soon be established on a sound basis, and freed from the theoretical "dust" by which it is now choked, I, for one, would perfectly agree with him. But, strange to say, the spirit of the age will not allow that the principles of art admit of determinate scientific expression, even though Sir Joshua Reynolds, in his masterly discourses, and from whom one would have scarcely been prepared to expect it, stoutly maintains that they *do* admit of such expression.

It is because the scientific method is not brought to bear upon art questions, that people cannot see that every country cannot have an original, which shall at the same time be a *right*, fine art of its own. There is but one true and catholic art: all departures from this are variations from the central type, exhibiting individual characteristics, and their concomitant imperfections. W. C. T.

SIR,—I entirely agree with your correspondent, Mr. Cave Thomas, in his views relative to the question, "Can Art be taught?"

The personal of his communication forcibly reminded me of a remark I remember being made by the late C. R. Leslie, R.A., viz., "That those who require teaching are not worth it; and those who are worth it do not require it."

Although apparently paradoxical, it occurred to me at the time as being very much in the spirit of Sir Joshua Reynolds's observation, that if art is to be taught at all, the best teacher a man can have is himself, for he will then at least have the advantage of having a master for whom he is sure to entertain respect.

Etty, Landseer, and Leslie more than half a century ago studied at the Royal Academy together under the supervision of Fuseli, who was shrewd enough to discover that teaching in their case would have been an impertinence; for Leslie says,—"Under Fuseli's wise neglect we reached the goal of our ambition without being warped by the trammels of conventional rules."

To my thinking, the only advantages of schools of art consists in offering opportunities for free and unrestrained study, which is sure to create healthy emulation inspired by honest rivalry. After all, industry will soon reveal the material of which the student is made; for, as Etty remarked (in a letter I received from him in 1849—the year in which he died),—"Industry will do much, continued long and regularly; for genius and talents are like the rough ore,—they must receive the polish of labour and art ere they can become truly ornamental and useful."

J. EATON WALKER, M.R.S.A.,
Painter to his late Majesty Napoleon III.

IN answer to the question, "Can art be taught?" I most decidedly affirm that it can. Are not works of art, from the noblest productions of men of genius, to those of more humble art-workers, the results of much patience and industrious application? Are they not in many cases the results of life-long toil? Surely the calling forth of such endurance from their authors suggests the idea that there was something to be learnt. And what was to be learnt, but art, either by self-teaching or otherwise? By continued application, those artists must have acquired never, fuller, and truer ideas of pure art than they originally possessed. In this sense even the great masters must have taught themselves.

But, your correspondent would say, all this art was previously within them; born in them, I suppose, since they could "never have been taught art." I have an idea that a genius is a man who possesses every intellectual faculty in a measure far greater than the average amount of that faculty vouchsafed to his fellows. But the meaning of art being in a man, I cannot

comprehend. My belief is that the power of appreciating the beautiful in nature is as much, and, in the same way, a distinct faculty of the human mind as the faculty of thought or imagination. And just as the faculty of thought or imagination may exist in different human constitutions to any degree, from genius to the least appreciable, so also may the faculty of artistic perception. And it is by the intelligent exercise of this faculty on all that they see around them that mankind teach themselves art. It is from the world without them, men of genius grasp their first ideas; it is to the world without them they appeal for aid to develop those ideas are embodying them in works of art. It is evident that no man could form any conception of art if material objects were never presented to his view. Thus, although art may be a means through which we teach ourselves, it is in itself no teacher, but on the other hand something acquired.

The arguments of your correspondent against the continuance of our art schools, contained in his last paragraph, may be summarised as follows:—The human intellect, physique, and senses, not having developed sufficiently near to the standard of perfection to enable mankind to form any correct notions of art, it is advisable that artistic studies should be discontinued until such time as mankind shall have so far developed. Why, sir, by so doing we should discountenance one of our greatest incentives towards perfection. Can it be true that our constitutional development could be accelerated by disregarding all that is to be learnt from art? The clearer our conceptions of all that is beautiful, the more apt are we to discover our own imperfections, and the more we love art the more we shall seek to improve ourselves.

Art and the human constitution must develop together, acting and reacting on each other. Refined humanity refines art, and *vice versa*. Thus the good to be derived, both in a social and artistic sense, by encouraging a love of art throughout the masses of our population is evident. And such I believe to be the primary object of our art schools. Their "perfect mechanism" is well adapted to enable all those upon whom it operates to develop their art faculties as much as possible. Thus, while our "art schools" supply a national want, they afford every facility to all geniuses who may seek their aid. And long may they be continued in the good cause which gave them birth, even until the art they teach shall exercise its humanising influence in the humblest homes of England. To which all true lovers of art must say, Amen!

And if this letter should catch the eye of your correspondent, I trust it may lead him to modify his opinions on this matter. For if the cause of art were subject to the conditions set forth in his article, I fear the most sanguine temperaments of the nineteenth century could only speculate upon the dawn of "fine art" with the approach of the millennium.

SCIENCE AND ART STUDENT.

NEW BUILDINGS AT CLEMENT'S INN.

A new block of buildings is in course of erection by the managers and trustees of Clement's Inn, intended to be occupied as chambers in connexion with the Inn. The site of the buildings is a portion of that which, until recently, formed a part of the old burial-ground and the almshouses. The structure, which is immediately to the west of the site of the new law courts, extends from the old hall of the Inn to the Strand, its main frontage looking eastward in the direction of Temple-bar and Fleet-street, and a commanding view of the building being obtained from that part of the south side of the Strand, between Temple-bar and St. Clement's Church. The length of the frontage extending south, from the hall to the Strand, is 130 ft. The building contains a basement, in which will be the porter's apartments, with ground-floor, and three stories above. The style of architecture is the Gothic, and the materials Luton brick, with Ham-hill stone dressings, and red and black bricks for ornamental circular hoods over the window heads. The central portion of the elevation, which projects beyond the face of the building on either side, is surmounted by a cornice, above which rises a turret, the entire height of this part of the structure being 80 ft., and in the interior of which a stone staircase is carried up to the top of the building. The height of the building on

each side of the central projection is 54 ft. The windows are not uniformly in keeping with the general architectural character of the building. The main entrance is at the ground-floor part of the central portion of the elevation, and consists of a recessed Gothic archway in Ham-hill stone, having on each side double columns with carved capitals, and there are also spandrels above, on each side of the archway. Mr. Raphael Brandon is the architect, and Messrs. Dove Brothers are the contractors. The area in front of the new building, to the extent of about 30 ft. in width, will lead to the Inn, and the new chambers, now in course of erection, the land westward, and including the former entrance to the Inn, having been purchased for the new law courts, for the building of which preparations are now being made by the contractors, Messrs. Bull, by the erection of offices and buildings for the machinery which will be required in carrying out the contract. It may be added that in addition to the new buildings above described, the old hall of the Inn has been externally refaced, and the ceiling and walls of the dining-hall renovated and decorated.

PROPOSED NEW HIDE AND LEATHER MARKET FOR THE CITY.

A PROPOSAL has been broached for the removal of the Hide and Leather Market from Leadenhall, and the erection of a new market on some other side. The subject was discussed at the meeting of the Corporation last week, when preliminary steps were taken for carrying out the object. Mr. McGeorge moved a resolution to the effect that, considering the inconvenience and nuisance arising from the present position of the Hide and Leather Market in Leadenhall, the great value of the site, and the importance of utilising it, it be referred to the City Lands Committee to consider whether there is any vacant or other land near the New Meat and Poultry Market available as a site for the erection of a new Hide and Leather Market in that locality, and what steps it would be desirable to take to carry out the object in view. He would not specify any site upon which to re-construct the Hide Market. The motion was carried, the words "near the New Meat and Poultry Market" being altered to "any land in or out of the City."

THE COMMISSIONERS OF SEWERS AND THE CITY NEW RAILWAY PROJECTS.

THE Commissioners of Sewers have determined to oppose some of the new Railway Bills affecting the City, and amongst the projects which they intend to resist is the Bill of the North London Company, which seeks for powers to absorb and stop up that portion of Sun-street over which the London and North-Western and the North London lines are at present carried. The North London Company are desirous of obtaining Parliamentary sanction for enclosing and converting the area under the railway into warehouse and merchandise space, but the inhabitants of the district have warmly protested against the proposal, on the ground that it would interfere with the construction of a footway between Liverpool-street and Sun-street, now in course of erection, and which the Great Eastern Company, when they obtained their Metropolitan Extension Act, undertook to carry out. It is said that, notwithstanding this intended opposition of the City authorities, the company are determined to press their Bill before Parliament, and will endeavour to show that the communication between the two streets may be maintained by a deviation of the route.

The Bill for a new railway between the South Eastern Railway at Cannon-street and the Fenchurch-street station of the Great Eastern line is also to be opposed. It may be stated that the promoters of this scheme propose to effect a junction between the two stations in question by a line of railway carried on arches intersecting the several thoroughfares between Cannon-street and Fenchurch-street.

As regards the Metropolitan Inner Circle completion and Eastern Extension scheme the Commissioners are desirous of giving it their cordial support, inasmuch as it embodies improvements of great metropolitan value; but they, nevertheless, decided formally to petition against it, in order only, however, to obtain a *locus standi* for the purpose of protecting the interests of the Commission in regard to the pavements and sewers. But the discussion on

the subject at the meeting of the Commissioners last week showed that certain members of that body are of opinion that the Bill ought to be opposed on its merits, and one gentleman (Mr. Murrell) urged against the Bill that the Commissioners were asked to hand over some of their streets to a public company for the benefit of officials; and he asked what was to become of the traffic during the construction of the line? Its suspension and diversion would materially affect the trade of the City. He further argued that the company having excavated Fenchurch and Cannon streets, the houses of which thoroughfares they would put into a dangerous state, would probably get into financial difficulties, and the corporation would in that case be asked to find the money to complete the scheme, the cost of which could not be estimated. He moved an amendment to the effect that the Bill in its present shape be opposed.

Sir John Bennett said they would do damage to a great and important scheme by acceding to the amendment.

Mr. Knight, in opposing the amendment, denied that the Commissioners were going to hand over the streets to the railway company for an indefinite time. The operations of the company would not even come to the surface except in those places where bricks and mortar would have to be taken down to the works. According to the Bill the streets would not be wholly closed; and with regard to the cessation of the works, in consequence of a want of funds, a committee of the House of Commons would see to that point. The amendment was ultimately negatived.

YEOVIL CORPORATION WATERWORKS.

MR. HAWKLEY attended the council meeting on Monday last to describe the present condition of these works. He reported that the pond at the upper source was in excellent order. Only a few pipes had burst since the works were handed over to the corporation. The pitching round the hydrants had not been satisfactorily done, two-thirds of it requiring repair or actual relaying. On account of defects in joints, the council had been put to an expense of 15*l.* for repairs. He had had the reservoir emptied, and examined it in every part. He found it in excellent condition. The floor and walls were good; there was no sign of any settlement, and the mortar had set very hard indeed. The plants had proved a failure. The whole of the system was working satisfactorily, and the revenue (over 900*l.*) already obtained from the works (was larger than might have been expected in so short a time. Great credit was due to the manager in this matter. The entire cost (exclusive of land, law, compensation, &c.) was 13,123*l.*,—a sum very slightly in excess of the Parliamentary estimate. It would be satisfactory to the council to learn that the authorities at Liverpool and Leeds were both seeking powers to enforce the same regulations as those in force here.

The town clerk asked Mr. Hawkley if it would be disagreeable to him to receive the balance of the account due to his firm? and, on his assuring Mr. Batten that it would not, Mr. Alderman Whitby proposed and it was resolved that a cheque be drawn for the balance, and that a vote of thanks be presented to Messrs. Hawkley for their efficient service.

NEW VAGRANT WARDS FOR LOUGHBOROUGH.

THE new vagrant wards at the union workhouse are now completed, and have been inspected by Mr. Corbet, the Poor-Law inspector, who has expressed his satisfaction with their construction and arrangement. They are situated adjoining the entrance from Regent-street, and consist of six male and two female sleeping-cells and six labour-cells, with a separate drying and disinfecting room, it being the intention for the present to utilise to some degree the old vagrant wards.

Separate entrances are provided for males and females, with waiting lobbies and bath-room, the arrangements for classification being complete. The cells are fitted with bed-boards, and are thoroughly ventilated: bells from each communicate with the attendant's room. The labour cells are provided with an arrangement which will ensure the granite stones being broken the proper gauge, the vagrant being compelled to

break and deliver through the external wall of granite previously to his discharge.

The whole building is warmed by Messenger's hot-water apparatus, which also supplies the bath.

Many of the vagrants who have witnessed their construction are disgusted, and have expressed their determination to cease paying Loughborough their periodical visits.

The works have been carried out by Mr. Wm. Rowland, builder, at the contract sum of 556l.

Mr. George Hodson, of Loughborough, was the architect.

SEWAGE FARMING.

ONE of the objections at the present day to sewage-farms, it is well known, is, that they are injurious to health, and that the rate of mortality is increased in that particular district. This objection is a serious drawback, and greatly assists landowners in keeping up the price of their land. Happily, however, experience teaches us that this objection has no real foundation to rest upon, and we have occasionally adduced proofs to the contrary, and especially in the case of Croydon. In confirmation of that opinion, as regards the present state of the mortality in the parish of Croydon, a correspondent of the *Sussex Express*, Mr. W. H. Wright, thus writes:—

"I have in my hand an extract from the Mortality Tables for the parish of Croydon, for 1873, and where a sewage farm has existed for many years. The comparative mortality shows the parish of Croydon to be healthier than any town district. For the last year, however, Croydon has earned the great distinction of being on the average as healthy as the country districts included. Croydon was one of the first towns in the kingdom to adopt the principle of sewage irrigation, and as the result of this, and the proper ventilation of the sewers, the rate of epidemic diseases are found to be much less severe than formerly, and the death-rate has materially diminished. If we take the profit and loss account of any other system of disposing of our sewage, we find the latter in excess, while, on the other hand, if we purchase poor land, within a reasonable distance of our town, at a fair and equitable valuation, it may be so much as that we are at no loss, and must ultimately be gainers by the transaction."

DR. NEILL ARNOTT.

THIS well-known gentleman died a few days ago at his residence in Cumberland-terrace, Regent's-park, in the eighty-sixth year of his age. Of his early life little is known, except that he was a native of a district near Montrose, and that he was born in 1788. He was brought up while a boy at Aberdeen, where he had Byron as his schoolmate and playmate. He afterwards entered himself at the University of Aberdeen, where he took the usual medical degrees; devoted himself to natural philosophy; came up to London, and became pupil to Sir Everard Home, then one of the leading physicians of the time; and then went to India with an appointment in the East India Company's navy as a surgeon. Many of the most striking facts and incidents in geology, astronomy, natural history, navigation, &c., which were presented to him during his Eastern voyages were profitably used by him in after time as illustrations to the work which aided in making science popular, and Dr. Arnett famous. It is sixty-three years since he retired from the Indian service and settled down as a physician in London. In 1823-24, he was invited by Dr. Armstrong and others of his professional brethren to deliver in London a course of lectures on natural philosophy regarded in its applicability to medicine. In the following year he was requested to repeat these lectures, but, not finding sufficient time to do so, he published in 1827 the substance of his course under the title of "Elements of Physics," a work which has passed through very many editions here, and has been translated into numerous European languages. In 1838, seeing that a large part of the battle against disease and the maintenance of the public health depended on the right management of the great physical influences, among which the chief were the regulation of the temperature and the purification of the air, he attempted to awaken public attention to the subject and to the prevalent misconception regarding it. This he did by his publication of an "Essay on Warming and Ventilation," in which he described certain means of avoiding some common and not at all necessary evils.

For the inventions and novel applications of Dr. Arnett to which we have referred, and which he gave to the public without any patent appropriations, and especially for his smokeless fire-stove, the Council of the Royal Society, some

years later, in 1854, awarded to him the Rumford medal; and a gold medal at the Paris Exhibition in 1855, with a cross of the Legion of Honour, which were conferred upon him, showed in what light the jurors of that Exhibition regarded these and other novel appliances for the prevention of disease and for the preservation of public health which in England were already associated with his name as a sanitary pioneer.

Dr. Arnett was placed by Lord Melbourne's Government among the members of the Senate of the University of London at its first creation. He was elected in 1838 a fellow of the Royal Society, having already received a Court appointment—that of one of the Physicians Extraordinary to the new Queen. Since that time Dr. Arnett has been called upon to act as one of the medical advisers to the Board of Health, and has written reports, and been otherwise employed in sanitary matters.

COLOURED DECORATION.

ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting of the members was held on Friday evening, the 6th inst., Mr. E. J. Tarver (president), in the chair, when the following gentlemen were elected members:—Messrs. A. Young, H. Goodhue, W. J. B. Lewis, and W. A. Rolfe.

Mr. Paice (secretary) then read the following letter, which he had received from Mr. T. A. Wright, secretary to the Executive for the International Exhibition of 1874:—

"The committee for an literature has recommended that a class of architectural designs shall be selected for each year's Exhibition, and that school, commercial, church, municipal, and domestic buildings shall be taken in consecutive order as distinct features in the class of architectural designs. It having been decided to commence this year with the representation of scholastic buildings, including colleges, schools, museums, libraries, and gymnasia, I am to request that you will move the Council of the Architectural Association to afford the committee the benefit of their valuable assistance by promoting the exhibition of designs of the nature specified. I am to observe that the committee recommend that a small explanatory plan should be inserted in the corner of each drawing. In the event of any members of your Society wishing to become contributors to this section of the Exhibition, I am to request that they will have the kindness to fill up one of the forms of application, and to return it to this office immediately; also to cause their works to be delivered at the Exhibition Building, east goods entrance, by the 16th of March next."

The President observed that he thought the members of the Association would have no difficulty in sending a goodly number of school plans and drawings, as he believed that most of the successful competitors in the recent school board competitions were members of the Association.

A vote of thanks was then passed to Mr. Withers for his kindness in allowing the members to visit his new church in Graham-street, Cole-hill-street, Pimlico, last Saturday week.

Mr. J. Douglas Mathews announced with regret the death of Mr. Edmund Marshall, the Association's collector; and paid a high tribute to the faithful manner in which he had always performed his duties, moving a vote of condolence to the widow, which was, of course, carried.

The President stated that Mr. R. C. Page, a member of the Association, had this year carried off the Pugin Travelling Studentship at the Institute examination.

Mr. J. D. Craze then read a paper on "Coloured Decoration," to which we will return.

Mr. R. Phené Spiers said that there was no doubt that the wonderfully harmonious results obtained in the greater part of Italian decorations were due to the fact that they were actually studied on the walls. The great difficulty they (the meeting) had to contend with was, that they were bound to design decorations in offices upon paper before being executed. They had no opportunities of practising and observing the actual effect of their work in execution. He thought that one or two of the rooms at the South Kensington Museum were very satisfactory examples of coloured decoration, particularly the room in which the porcelain was kept. The successful results, in these instances, were due to the fact that the students of the School of Art in connexion with the museum repeatedly made experiments; and whenever the effect of their work was unsatisfactory, it was effaced, and a new pattern commenced. In the absence of the advantages possessed by the Italians, the only alternative left was to make careful notes of the best examples.

A similar letter was addressed to the Royal Institute of British Architects, and after the above was in type we received a copy of it from Mr. Eastlake, with a request that it might be inserted as the readiest means of furthering the object to which it refers.

Mr. L. F. Day said that, with regard to colours used in decorations, he had never seen any decoration in green or red which was at all respectable in appearance; but perhaps the satisfaction given by this combination of colours was due to the very large use of gold; for gold was at all times a very great harmoniser; and the use of gold was sure to harmonise, even though the designer had done his best to mar his design by putting in a quantity of magenta and emerald green.

The President remarked that the name of Craze, as regarded coloured decoration, had acquired a world-wide reputation; and, after hearing his remarks that evening, one could easily understand how that reputation had been earned. Speaking personally, he had found that although the study of decoration was a very charming one, its practice was not always desirable. It seemed to be a question in his mind how far the study of Italian examples was applicable to England. Of course, the clearness of the climate in Italy rendered the whole tone of decoration different altogether from that of this country, where a more forcible treatment was required.

THE PROPOSED SITE FOR THE LIVERPOOL LAW COURTS.

IT is to be hoped that the suspended negotiations between the Government and the local Finance Committee as to the central site in Victoria-street, will now be renewed and brought to a successful issue. The town council have virtually sent the question back to their finance committee, by confirming their general proceedings, with this exception. All the difference between Mr. Ayrton and the committee, it is said, is a matter of 2,000l. or so, while there is a general desire to have the new courts in the proposed central position. Some of the town councillors seem to hold the committee as not blameless in withholding their consent to the terms of the Government. The committee had offered 2,100 yards of ground to the Government for 34,675l. Mr. Alderman Hall declared that all the difference would have not been more than 275l. to the corporation; and Mr. Fieton pointed out that the erection of a large and handsome public building on the spot proposed would greatly enhance the value of other corporate land in that locality. Another and less central and convenient site was in view on the part of the late Government.

THE STATE OF ST. JAMES'S PARK.

SIR,—I feel sure you will take the same public interest in the locality I am about to call your attention to, as you have taken in other parts of London. I wish to call your attention to the disgraceful, slovenly, and indecent state of the enclosure of St. James's Park. The larger portion of the walks are worn down to the rough foundations; projecting boulders have the predominance, especially on the north side, next to the Mall, from just above the lodge opposite the Horse Guards round to the Palace; the grass borders that were formerly by the outside rails in Birdcage Walk, are all trodden down to the bare ground; the protecting rails are almost all gone; some of the protecting rails are also gone; a great many of the paddock-rails are gone, and paths are made on the grass; the border and paddock-rails that are standing have lost a great many of their coupling-nuts and screws; each one is allowed to go its own way, which adds to the general slovenliness. The outside rails at the east end, facing the Horse Guards, are not much better; they seem to want a rise. The flower-borders are never used for that purpose, as a flower is scarcely ever to be seen there. The paddocks that ought to be protected, especially in wet weather, from being trampled down, the roughs from all the surrounding districts are allowed to do as they like in, and play all sorts of games, including gambling, Sunday and week-day. The police do not seem to interfere, or trouble themselves about anything less than a fight or a robbery; the protection of the Park and its decorum seem to be beneath their notice. The seats are of the meanest description, especially on the north side of the water, from the bridge to the Palace, and in summer there is not a quarter enough of them to accommodate the hard-working females that frequent the Park on a Sunday with their infants and families; the few that are there are allowed to be

LECTURES ON ARCHITECTURE.

BY EDWARD M. BARRY, R.A.

PROFESSOR OF ARCHITECTURE, AT THE ROYAL ACADEMY, LONDON.*

My first official lecture from this place cannot be more fittingly commenced than by a sincere expression of admiration and gratitude for the excellent discourses to which you have been accustomed, for some years, from my immediate predecessor, Sir Gilbert Scott. Those who have had the privilege of attending them, or who have read them afterwards, will need no words of mine to induce them to do justice to their instructive and interesting character. An eager and enthusiastic admirer of Gothic art, he has not hesitated to press upon students of architecture the advantage, nay, the absolute necessity, of wide and catholic study, and, to quote his own words, from one of his most recent lectures, he has not been "stinted or cold-hearted in his eulogy of the architecture of ancient Greece and Rome."

In succeeding to his office, without, I feel, filling his place, I cannot do better than remind you of his teaching, while expressing a hope, in which I know you will all share, that with renewed health and strength he may long continue to illustrate the principles which he inculcated by his practice in the profession which he adorns and so worthily leads.

Sir Gilbert Scott was preceded by Mr. Smirke, to whom, for his long and devoted service, this Academy owes a debt of gratitude in various ways. I would willingly say more of both these eminent men, but as they are happily still with us, I must content myself with a general allusion to the ability and learning which they have placed at your disposal, thereby establishing claims upon your gratitude, and making my task, as their successor, only too difficult.

From this brief reference to our two living professors, and also my recollections of their predecessor, the late Professor Cockerell, you may well imagine the feelings which press upon me this evening, and which nothing but a sense of duty could overcome. I have to take up the thread of their discourse to speak to you of the noble art of architecture, to consider its qualities, to trace its history, and to contribute, as far as may be, to its glory. Well might any one, even under less disadvantageous circumstances, shrink from so heavy responsibility, and fear to twine his inferior threads with the golden strands left to him from the past. Deeply conscious of my own deficiencies, I must, I am aware, but too often need forbearance and indulgence in attempting to fulfil the task which lies before me. I cannot but feel that there are many who are far more competent to assume the position of an architectural teacher, and that the engrossing occupations of active professional life from early years are not the best preparation for a work, needing the learning and studious research which are best acquired in the quiet meditation of the closet.

Nothing, therefore, would have led me to address you from this place but a sense of the duty and obedience which each member of the Royal Academy is bound to manifest, when he is called on by the authorities to place his services at their disposal, for the furtherance of art.

It is in this spirit, gentlemen, that I shall address you, and I know I shall not ask in vain for your co-operation and attention. There may be present those who have the right to teach me rather than to learn from my teaching. To them I must appeal for their forbearance, and must ask them to consider that these lectures are mainly addressed to students, not of architecture only, and that it may therefore be necessary to dwell upon aspects or details of art, which to the more experienced are but the repetitions of a twice-told tale. It is not the first object of a professor in this place to impart the technical knowledge which can be best learned elsewhere; and I shall rejoice if, in dwelling on general principles, I am able in any way to excite an interest in architecture among the students of painting and sculpture, and so aid in paving the way for that union of the arts, the absence of which, in these days, we so often have occasion to deplore. If it were not for the thought that words uttered here may, perchance, fire the imagination of the younger generation, and inspire them with the resolution to emulate the deeds of the architectural giants of our glorious artistic history, I should feel no justification in

occupying this chair, and to students alone do I presume to offer counsel and advice.

No one who is at all deeply imbued with a feeling of devotion to his art, and who has had to carry out his views, as best he could, in the rough friction of every-day life, with its many hindrances and discouragements, will undervalue the difficulties which beset those who would speak authoritatively about architecture.

An artist in such a case would know but too well how far his own works have fallen short of his cherished ideal to be inclined to adopt that spirit of fierce denunciation which so often passes now-a-days for a knowledge of art. He would, naturally, be the severest critic of his own achievements, and would know that to his criticisms a *tu quoque* retort might often be expected. Nevertheless, whatever the difficulties which beset him, the lecturer must remember that in art, as in religion, the message is everything, the messenger nothing; and that in matters appertaining to architecture more especially difficulties only exist in order to be conquered.

I can never forget my first experience of the Royal Academy lectures on architecture by Professor Cockerell. With him devotion to his art was a passion, chastened and regulated by the refinement of a scholar, and the thoroughness of a most conscientious artist. Urging, both by precept and example, the importance and exquisite beauty of Greek architecture, he was ever ready to hold out a helping hand to the wayfarer in other paths of art, for to him every artist was a brother.

Since those bygone days there have been many changes in public taste and practice; and it can do no harm to recall to memory a time when much was enforced which is now neglected, and to caution the art student, as Professor Cockerell was fond of doing, against mere "fashion" in architecture.

It might be instructive, and certainly would be interesting, to inquire into the various "fashions" which have prevailed since the days when this warning was first addressed by the Professor to the students of the Royal Academy in Trafalgar-square. Greek art and traditions were then more fully recognised by architects, in practice, than is now the case, and the Gothic revival was in its infancy. Professor Cockerell was led by his natural taste, and also by circumstances, to enter into the spirit of the architects of ancient Greece, with all the devotion of an enthusiastic nature, much as was the case with our late distinguished member, Mr. Gibson, with regard to sculpture.

The latter, as we have lately been reminded by Mr. Atkinson, would never tire of maintaining that the Greeks were always right; and his first object, when engaged in composition, was to discover how the Greeks would have dealt with a similar problem.

His architect brother-artist had arrived by study and research at a very similar conclusion. Although not slavishly adhering to precedents, his works are so pervaded with the delicacy and finish of Grecian influences, that we can fancy him ever referring to these classic principles, as the main test of excellence, and repeating, with Gibson, "The Greeks were always right."

He neglected no opportunity of urging, by precept and example, the study of Greek art; and I venture to think, that such advice, although it may not for the moment be fashionable, was never more needed than at the present time.

Professor Cockerell had, moreover, an especial claim to attention, as having contributed, in no small degree, to bring a knowledge of his favourite architecture before his profession and the public. By his discoveries at *Ægina* and *Bassæ* he added fresh materials for that appreciation of Grecian art which led thoughtful artists to consider what must have been the exquisite keenness of perception, mingled with a wondrous refinement in regard to the subtler effects of beauty, which animated those architects of old, who had so perfectly learned to work hand in hand with the sculptor, each being necessary to the other, and each contributing, to an extent never yet surpassed, to the perfection of the work before them. The enthusiasm which the *Elgin* and other marbles excited amongst lovers of art, led naturally to a strong admiration of everything which belonged to Greek architecture, and to a general attempt to introduce its forms and decorations into the buildings of the day. In this work, Professor Cockerell had no small share; and though some of his teaching may seem to have been since engulphed in those

run over by roughs, and are never fit for decent persons to sit upon. The "convenience" at Story's Gate is in a very indecent position: a female can never enter the enclosure, gate without an unpleasant meeting. Some rough gravel and sand have lately been laid on the walks at the end of the water near the palace. I think it has not been even rough-scrubbed. Within a dozen yards I picked up nine stones (as many as I cared about carrying), which weighed from 3 oz. to 7 oz. each. Other parts of the park were patched with a very dark granite in about half-inch squares; some longer, some smaller. These are disgraceful materials to cover the walks of a royal and public park. Hyde Park has its walks covered with a beautiful soft little shell, and the tops of its rails tiled. I should like to ask, sir, why St. James's Park is not attended to like other parks?

It may not be out of place to mention I have just served three years as a member of the Westminster District Board of Works, served on the Works and Sanitary Committee. My attendance last year was seventy-one times—the highest number. My motion was carried for the improved lighting of the Broad Sanctuary. I am now on the vestry; you will, therefore, not be surprised at my feeling the interest I do in what ought to be our beautiful little park. I feel you are the proper person to take it in hand.

E. GRHAM.

ACTION AGAINST THE PEABODY TRUSTEES.

THE Master of the Rolls has given judgment in the suit of "Ball v. The Earl of Derby," which occupied the attention of the court for the greater part of two days. The bill was filed by the lessee of a public-house called the Ball in the Pound, situated in Broadwalk, Blackfriars, against the Earl of Derby and the other trustees of the Peabody Donation Fund, for an injunction to restrain them from erecting a block of buildings so as to darken and obstruct the public-house windows, and thereby injuriously affect his trade. A number of witnesses were called, and among them were several professional valuers, who gave various estimates as to the damage which the plaintiff is likely to sustain by reason of the Peabody-buildings. Some of those called for the plaintiff put it as high as £200; while others called for the defence denied that there would be any "obscuration" at all, and contended that the plaintiff would, in fact, be a gainer by the erections complained of. His Honour said it was a question of comfort, and that the proved injury sustained by the plaintiff was barely sufficient to warrant an injunction. This was a proper case for the Court to exercise its power of substituting damages for an injunction. The amount of damages, then, being the only question for his decision, he was inclined to take a liberal view, and on the whole he thought £200. was a reasonable compensation. That, of course, would carry costs.

PARISH MORTUARIES.

DR. LANKESTER, the coroner for Middlesex, made some pointed remarks on parish mortuaries, at an inquest held in Clerkenwell, on Monday last. The foreman and the jury having complained that the one which Clerkenwell until recently possessed, and which had proved of inestimable value to the inhabitants, had been pulled down by the agent of the Marquis of Northampton, the coroner observed that no one knew the value of a public mortuary better than himself, and he urged the erection of one in every parish throughout his district. In the first place, a post-mortem examination could not properly be made in a private room. No thorough microscopical examination could be made of the organs, besides which gases would escape from the body, and cause all sorts of illnesses to the inmates. It was imperative in the interests of the public that a mortuary should be erected in every parish, built in such a style that no offence could be given to, or entertained by, the relatives of the deceased removed to it, such mortuary to be supplied with slabs, a quantity of water, coffins with glass lids, in which to put the bodies of those who had died from an infectious disease, weights and scales, and such like. We have often urged the same thing.

The Artists' General Benevolent Institution.—Sir Henry James is to take the chair at the annual dinner of this society, on the 9th of May.

* Lecture I., delivered March 5th.

whirlpools of fashion which he deplored, it is not easy to prove that our art has passed into a more healthy condition by the adoption of different principles, or by the imitation of different models. I must therefore impress upon architectural students the necessity of studying, with more care than is now too often given to them, the principles of Grecian architecture. This is, of course, a very different thing from advising a pedantic reproduction of forms, or an actual copying of examples, which no one would deprecate more strongly than myself. Too much of this has been done already, and no one can desire the repetition of a movement which enumbered our houses and public buildings with useless features, inconsistent with the wants of the nineteenth century and the exigencies of the English climate. But, while avoiding this snare, can it be useless to draw attention to the refinements which were habitual with the Greeks, although they can scarcely be discovered by our apparently rougher perceptions, without previous study and the practice of critical observation?

The entasis of columns may be referred to as one of the most prominent illustrations of my meaning. No one would now dream of designing a classical column without entasis, but this was not always the case: many modern columns have been made with straight sides, and the discovery of the refinement of the entasis was only made by careful study of the best examples.

Mr. Penrose has shown us how many similar delicacies of proportion exist in Grecian work, to reward the student who has eyes to see and taste to appreciate the hidden beauties which lie beneath the surface.

Surely there are lessons here for the artist of all ages; and who can say that in these pushing, eager, restless days there is no room for the still small voice which teaches that breadth, simplicity, and refinement of proportion and ornament are the very essence of art, and that they may be seen displayed in the architecture of Greece as they have never been before or since.

While calling to mind my pleasant personal recollections of the days when Professor Cockerell enforced these principles from this chair, with as much learning and earnestness, and a charm of manner peculiarly his own, these reflections have pressed upon me the conviction that whatever may be the dominant fashion of the day, an investigation of the principles of beauty in art can never be without advantage, and that in such an inquiry the triumphs of Greek architecture must ever hold a prominent place.

I can also the more gratefully dwell upon Professor Cockerell's teaching from a remembrance of the catholicity of his doctrine. Striving by study and careful examination to detect those principles of beauty which must ever be the same, however differently they may be illustrated or emphasised in various styles, Professor Cockerell gave no encouragement to an intolerant depreciation of forms of art which were not those to which he gave his special allegiance. No one could express more heartily and unreservedly his admiration of Mediæval architecture; and some of you may remember the learning and artistic sympathy which he brought to bear on the sculpture of Wells cathedral and other Gothic masterpieces.

As regards this liberality and breadth of view, it cannot be out of place to point out that if, with our historical knowledge, we are ever to have great artistic achievements in the future, the artist must rise superior to those prejudices which would seek to close whole volumes of past history, and would confine him to a narrow line of study, and still narrower sympathies.

It is now seventeen years since Mr. Cockerell retired from the professorship of architecture at the Royal Academy, a few years only before his death, in 1859, which left a gap in our profession that has never been exactly filled. It may well be said of him, that his works live after him, and that he has left enduring claims on our respect and admiration in this place.

In entering upon the object of these lectures, it must, I fear, be admitted that the prospect before the architectural student has never been more beset with perplexity than at the present moment, when so many difficult problems are daily pressed upon us for solution.

What form is our art to assume? On what styles of past days is it to be based? or, is it to be altogether new? In what way are modern scientific discoveries to be dealt with? Is an architect to be a sculptor and a painter also

before he can be termed a true artist? These are only a few of the controversies which will readily occur to your minds as now calling for consideration, while, over and above them all, voices are loudly heard proclaiming that our whole system of architectural practice must be revolutionised, and that success will best be achieved by deposing the architect from his post of supremacy in favour of a commune of workmen.

Many signs of the times point to a disorganisation of public taste, leading to an indifference to what is good or bad in architecture; and it daily becomes more necessary to find some resting place on the true principles of art.

If we look around on the state of architecture generally among civilised nations, we must be struck by the fact, that all over the world a period has occurred when its productions have ceased to display the higher artistic qualities formerly inherent in them, as if they had been suddenly paralysed by some fatal disease. In our own country we can trace the wonderful progress of Mediæval art, from the days of Harold to the time of the Edwards, and thence by a process of decline to its fall, in the Tudor reigns. We have since seen revivals, both of Classic and Mediæval types, and of these I must hereafter speak a little in detail. It is certainly difficult to assign the reason why, up to a particular time, it appears to have been natural for men to love and achieve beauty in their works; while, in these later days, ugliness would seem to be the common heritage.

We know that, formerly, every detail of architecture was replete with interest, as if by instinct, so that the very hinges of doors were works of decorative art. This, moreover, was not done, as it might be done now, in exceptional cases, but it was the rule. The men who carried out these works were evidently penetrated with the spirit of their art; and it was as natural to them to work gracefully as it is to the modern workman to create useful ugliness. This difference of spirit dates chiefly from the discovery of printing, and the Reformation, which encouraged freedom of thought, and opened to the intellect of mankind paths till then closed or little frequented.

We cannot suppose that the sum total of human intelligence decreases as years roll on and the world grows older; but may it not be that we shall find the explanation of the apparent decline of the artistic faculties in the diversion of force, occasioned by the devotion of the intellect to other lines of thought and achievement? In past times the want of facile means of communication kept the bodies of men rooted to the spot where they were born, and the absence of intellectual freedom closed to their minds those spheres of usefulness which are now open to all.

Abbeys and cloisters contained recluses, who, in separating themselves from the world, were glad to devote themselves to those artistic pursuits, such as architecture, painting, sculpture, music, illumination, embroidery, and the like, which would add to the splendour of the church and its services, and would be free from any suspicion of heretical free-thinking.

The pursuit of learning has had an opposite effect. It has prevented the intelligence of the world from being concentrated on any one subject, or group of subjects, and it has caused the great mass of the people to care more for philosophy and science than for art.

We are surrounded in this place by the buildings of learned societies, and there are many others scattered about London and the country, while the progress of science adds daily to their numbers. I was astonished to hear lately that for telegraphic engineering, a profession almost yesterday, there is now an institution numbering upwards of five hundred members.

Before this scientific activity became possible, we may assume that a large portion of the intellectual and constructive powers of mankind which are now given to it was likely to be devoted to some of the various branches of art, which was, in fact, the common language of the educated classes.

We may as well expect to turn back rivers to their sources as to reverse the great tide of modern thought; and all experience of its tendency shows that it flows in the direction of the division of labour. The stream of knowledge is now so great that no man can venture to think he has mastered it all; and even the greatest minds must be content to follow thoroughly some rivulet of truth, while accepting, on other points, the dicta of fellow-inquirers.

This being so, we cannot expect architecture to be any exception to the general law. It cannot command public interest, if it ceases to be the expression of the wants and tastes of men.

Considering, moreover, the tendencies I have alluded to, can it be seriously imagined that the architecture of the future is to be committed to individual workmen, giving no guarantee of harmony, and owing no allegiance to the superior authority of the architect? The whole teaching of experience appears to be opposed to such a proposition, and to prove that the architect of the future should be not only a skilled artist, but also a man of scientific knowledge, and in harmony with the spirit of his time.

While it is true that we should gain by having our buildings expressions of the variety of interest, caused by the devotion of many minds to the details of the work, it is still essential that there should be a guiding spirit, and this must be that of the architect. The true reform of ordinary architectural practice would be to lessen the oppressive burden of petty business cares, which, under our present system, press daily upon him, and tend to deaden his devotion to pure art.

Every age of the world we live in has its own special characteristics, just as is the case with the human unit, and we misunderstand the teaching of history if we suppose that the outward signs of progress must always be alike, and must be the same in kind and degree as those to which men have been accustomed in the past. The architects of old worked, as we have no doubt, in perfect harmony with the spirit of their times, and we must expect to find that their mission and ours differ widely, according to the variation of circumstances and the characteristics of different ages.

In many respects it may perhaps be asked, whether architects, in these utilitarian days, do not work under less favourable conditions than their brethren of old. It is difficult, for example, to approach the composition of a great work of art, with a mind depressed by insistence on the "lore of nicely-calculated less or more." In past days, of course, financial considerations must always have ruled; but it is not easy to believe that the great public monuments of antiquity were constructed on this disheartening principle.

We can scarcely expect again to have great architectural triumphs, if the question about any important public work is, not—how shall we get a worthy building? but,—how little can it be made to cost? We cannot fancy the architects of Westminster Abbey, compelled to cheapen their design by reducing their mouldings, omitting the diapers and carvings, or leaving out the groined roofs, in order to save expense. It would, of course, be easy to blame architects for failure under such circumstances; but would it be fair to do so?

I only put this question hypothetically; for, though we may conceive that such things might happen in Laputa, we must not suppose that they could occur in a country like ours, so rich and so prosperous, that it is the treasure-house of the world,—a country which provides, moreover, museums, picture-galleries, and a Government department of science and art for the cultivation of the public taste.

Great nations, however, sometimes do little things, and their very greatness makes them impervious to criticism. It has been said that no one but a banker could walk down Lombard street in a bad hat; and, in a similar way, it is perhaps only rich communities that can afford to show with impunity a public indifference to art. At any rate, in our own case, artists may be allowed to hope that the spirit of utilitarianism, pure and simple, will never be allowed to be the sole guide of public policy in respect of architecture. It will not be creditable to us if history should record that, with pecuniary resources beyond those of any other time or country, we leave as our contribution to architectural art, public works, showing, in their mutilated features, only too evident proofs of a parsimonious origin.

From these possible difficulties of the architect, we will now turn to other considerations. We are often told that a new style is the want of the time, though why this should be required more than a new language, it is difficult to say. We have, however, to decide if novelty is to be our aim in architecture, or if it is to be archaeology. Again, is engineering architecture? and if not, where is the missing link? You will perceive how many sided is the study of our art, and how much it differs in that respect

from painting and sculpture. One difference will at once suggest itself, inasmuch as architecture is a science as well as a fine art.

A painter designs his picture, happily for himself, with no thought of constructional or economical difficulties. The shadows which fall so easily from his brush must be constructed by the architect. The latter must see in his mind the effects which he intends to produce, and must build them up, not on canvas or paper, but gradually and painfully by the hands of others. If the result fall short of his expectation, he has no power of alteration, no facilities for heightening lights, or deepening shadows. He must be an artist in his design, a man of science in its execution. His science, moreover, must be useful, and not merely speculative. Architecture must not only please the senses. She has to justify her very existence by usefulness. Externally, she may indulge in grace of form, limited only by the exigencies of climate, construction, and by durability. Internally, she must accept the necessity of being bound to combine convenience and fitness with beauty. The arts of design and of building must not clash; but their combination should give a sense of propriety and repose. They should, in fact, illustrate the lesson which Mr. Weekes taught us so well a few nights ago with respect to sculpture, that "beauty is utility."

Architecture must then contrive and construct its artistic effects, remembering always that they must grow naturally out of the circumstances of each case, and that the greatest art conceals its modes of operation. Nothing can be worse than the obtrusion of details, obviously not required, except for display, sacrificing the higher qualities of art to a pretentious fussiness.

Without ornament, indeed, architecture as a fine art does not exist. Nevertheless, though ornament may be essential, it must be an integral part of true architecture, not a mere *appliqué*, like the beauty patches of the Court ladies of Lely or Kneller.

It follows, therefore, that architecture must be studied by those who would practise it, both as a decorative art and as a useful science.

If to some architecture may seem to be degraded from the position of a fine art by its utilitarian associations, it must not be forgotten that to this circumstance it owes much of its attractiveness to all sorts of people. It may, therefore, be well briefly to consider this phase of the subject, and to pause for a moment in order to examine the grounds of interest which architecture possesses for various minds.

We shall find that it has many charms for many votaries, and that it may be studied for various reasons, and from different points of view. Thus, for some its interest is mainly archaeological or historic; for others, scientific; and for others, purely artistic. Of these, the archaeological is, perhaps, the aspect which is most common; for who is there so indifferent as not to care for the greatness of the past, and the proud deeds of ancestors? The sentiment of innate patriotism alone forbids that national monuments of architecture inherited from antiquity, and handed down from age to age, should be allowed to perish; and it is, therefore, natural that we should find that a certain archaeological knowledge is prized as a necessary part of the requirements of educated men. Indeed, some sort of archaeological taste may be said to be universal, for even in the most savage tribes, traditions and ancestral "customs," often, as we know, of the most horrible nature, are practised and venerated simply for their antiquity.

This kind of archæology is, of course, far removed from art; it interests itself in objects of antiquity because of their age, and not because of their beauty or artistic value; it seeks only to satisfy those cravings for a knowledge of the past, which are as much a part of our nature as the yearning to discover the secrets of the future, which has always pervaded every people, nation, and language.

In architecture, archæologists find a fruitful field of inquiry, apart altogether from any search after beauty. Heraldry, for example, one of the most important of archaeological studies, is so allied with architecture that it is difficult to study it without, at the same time, learning to appreciate architectural forms, and the various gradual modifications of them, which have been brought about at different dates. Thus, to mention only a trifling instance, the shape of the shields on tombs, will serve to mark the date of the monument; and no archæologist would con-

found the early twelfth-century shields of the Knights Templars in the Temple Church with

those which abound in Henry VII.'s Chapel at Westminster. In the one case there is a long and simple acutely-pointed triangle; in the other, more complex curves, and a width nearly equal to the height. This, of course, is more an archæological than an architectural detail, but it may be referred to as showing the importance to the archæologist, of observing architectural forms; and such observation would naturally lead up to the more extended inquiry of the architect into those gradual changes of the shapes of columns, arches, window tracery, and the like, which mark so clearly the step-by-step advance and decline of Mediæval architecture in this country.

In nothing has our time been more remarkable than in the impetus given to archæological inquiries, and there are now few parts of the country which do not display results of the activity of those who have interested themselves in the architectural remains of past days.

This archæological taste has found its chief vent in the very remarkable revival of Mediæval church architecture which the present century has witnessed, and to which I shall have to return in my next lecture. A movement partly theological, partly archæological, has covered the country with restorations, and new works carried out in the spirit of restorations. The expenditure on our cathedrals and old parish churches has been enormous, and besides this, new Gothic churches, schools, and buildings, chiefly ecclesiastical, have arisen, as if by magic, around us.

This circumstance is the more remarkable, when we contrast with it the comparative apathy on such subjects, of France, and the continent of Europe. It is also noticeable, as having occurred at a time when free thought is pushed to its utmost limits, and when, in most things, men are little apt to regard the past with unquestioning reverence.

If we ask, however, how far the revival movement has forwarded the interests of art, the answer is not quite clear, and probably the time is hardly come, when a complete answer can be given. A great measure of success has doubtless been obtained from an archæological point of view; but it may be hoped, rather than asserted, that a greater insight has been gained into the true principles of architecture, which may lead it to progressive glories hereafter, such as those that have been chronicled in the past. To critical observers, who regard this state of things with impatience, and are ever calling for novelty and revolution, it may however be suggested that a knowledge of the past is the best education for progress in the future, and that after the period of artistic darkness which marked the commencement of the present century, it was inevitable that any earnest revival should assume an archæological complexion. It may be that this powerful force has now spent much of its power; and it is certainly difficult to see how revivalism, pure and simple, can go much further than it has already done; but the question still remains whether our art in the future is to be based on Mediæval principles, to which alone some would bid us look for the secret of success.

If this is to be the case, it follows that no other style should be cultivated. Is this a conclusion that can be accepted, with the evidence around us, of what the revival has done for us? Is it consistent with the development of the sister arts, in all their fulness in connexion with architecture? May it not rather be due to an exaggeration of that archæological study of which we have been treating, pushed beyond the point at which it ceases to act as a trustworthy guide? It is the more necessary to guard against the fascinations of a purely archæological view of architecture, from the circumstance that our Mediæval revival has been from the outset very much mixed up with questions of religion and ritual. Those matters can of course be only barely alluded to here; but it is necessary for the student to keep them in mind, if he would understand clearly the history of the powerful movement to which reference has been made.

Architecture has in all ages been intimately connected with the religions of mankind, and the great monuments which remain to us are for the most part the result of the devotional feelings of those who erected them. Thus we have the tombs and temples of Egypt and India, the temples of the Greeks, and the cathedrals of the Middle Ages. It was natural, therefore, that any great religious revival should show itself in our architecture. In addition to this ecclesiastical

influence, there has also arisen a keen desire to inquire, more minutely than has hitherto been usual, into daily details of past history, and historians have sought to give us careful pictures of the manners and life of olden times. No one pursuing such researches could neglect architecture, which yields the most valuable results, when studied, in connexion with the history of people and countries.

It will thus be seen that to archæologists architecture offers a very storehouse of treasures, and that in that great study of mankind which we call history, the architect, the antiquary, and the historian work hand in hand.

We have now to consider yet another mode of viewing architecture, distinct from archæology, and having little or no reference to its artistic character.

Architecture being, as has been said, a science as well as a fine art, we cannot afford to neglect the attractions she presents to scientific men. Science being essentially progressive, we might fairly expect Architecture, in so far as she leans on Science, to be progressive also; and the complete separation of what we call engineering from all sympathy with architecture is a fact which is rather suggestive than satisfactory.

In seeking to forecast the future prospects of architecture, it is impossible, therefore, to overlook its scientific and mechanical, as distinguished from its archæological and artistic, qualities. No one can doubt that in our time these characteristics of our art will be full of interest to many who, in other respects, care little about it. They will dwell upon the fact that architecture is a useful art, and has no *raison d'être* except her powers to serve the necessities of mankind. To these the science of building offers special attractions. How was it that nations on whom we are apt to look down have carried out works the difficulties of which excite even now our wonder and admiration, in spite of our greater mechanical knowledge?—works, dating, moreover, from what may be termed the infancy of the world? Is our greater mechanical progress only to drive out beauty and enthroned utilitarianism?

The great monuments of Egypt, for example, are sufficient to raise numerous questions of the greatest interest from this point of view—Egypt, whose pyramids, temples, and colossi seem to regard the works of the engineer of to-day, which are now being urged on around them, with the contempt of a mighty unchangeable monarch for an upstart of yesterday. Here indigenous architecture seems to have died out, and Western civilisation is represented by the shriek of the locomotive in the silent wastes of the African desert.

Few things, again, can be more interesting and suggestive than to study the influences of climate, race, and habits, on architectural forms, and to notice how construction has given birth to beauty,—as, for example, by the introduction of the arch, the use of columns, bold projections to shelter from the rays of the sun, and so forth. These may all be termed the utilitarianism of our art, and are as interesting to the engineer as to the architect; but you will see how closely they are connected with artistic beauty, and how necessary it is for the architect to accept frankly and thoroughly the conclusion that his art must be accordant with the laws of convenience and common sense.

How far this conclusion may be carried is the problem before him. Make convenience the absolute ruler, and the result is the ugliness and bareness of modern engineering. Depose it altogether, and our art will become the languishing stock of a world, fully alive to all the advantages, though perhaps not a little deaf to the dangers, of a highly-wrought and mechanical civilisation.

Engineering may almost be said to have discovered the use of iron, as employed for construction in these later times, and in the choice of materials, the architect must, in any case, be influenced by scientific considerations. Materials, moreover, govern design. Assuming that the principles of the design of the Parthenon are based upon traditions of wooden construction, we can see that the modifications of size and form of the various parts, which have been adopted in marble; were the necessary consequence of employing a different material. This principle of using fitting materials, and designing accordingly, was never better carried out than by the Mediæval architects of our own country.

Thus, in districts where stone was good and abundant, we find groined roofs and

elaborate masonry. In places where timber was the best material available, we see the curious timber constructions, and the beautiful open roofs which distinguish the architecture of Cheshire, Lancashire, Worcestershire, and some other English counties. The brick architecture of North Germany and Belgium will also readily occur to you as an illustration of this principle, and you will see how our art, in its best days, has always recognised utility. We may be sure it must always preserve this character if it is to retain the respect of mankind.

In the aqueducts of ancient Rome we have a proof that it is not necessary that an engineering work of the most utilitarian character should be tasteless and ugly, and there can be no reason why the architect should not sympathise with the engineer, quite as thoroughly as he has been accustomed to do with the archaeologist and historian.

It is, however, the merit of architecture, that while admitting to the fullest extent, the varied interests to which I have referred, it possesses yet another, the greatest and most comprehensive of all, in its artistic character. The mother of art, it welcomes under its roof all that can claim fellowship in that glorious brotherhood. Indeed, architecture cannot be said to discharge its true mission as a fine art in its fullest sense, except in alliance with its two sisters of Sculpture and Painting.

This consideration can hardly be too emphatically insisted on as regards its bearing on the style of the future, of which we hear so much nowadays. With regard to this combination, it must always be remembered that architecture, like music, is a conventional art, while painting and sculpture are imitative arts. Nature must ever be, in a greater or less degree, the teacher and judge of the latter; while architecture can be referred to no rules but its own, and to that subtle sense of beauty and fitness which is implanted in the human breast. It is this instinct, refined and cultivated by art, which forbids that we should be satisfied with the bare provision for our wants supplied by engineering, and makes us desire some grace to be added to the simple necessities of structure. To add this grace without affectation or untruthfulness is the duty of architecture as a fine art, and her work must not only display beautiful detail, but also fine proportions. It is but too common to overlook the absolute necessity of good proportion, and to rely on ornament alone. This dangerous tendency has been, perhaps, somewhat fostered by the greater attention lately given, and rightly given, by students to free-hand drawing. It is a tendency to be carefully watched, as it easily leads to abuses. Nothing can be subtracted with impunity from a perfect work of architecture; but it can better suffer a loss of its ornamental details than an injury to its proportions.

The Greeks were probably the greatest masters of proportion the world has yet seen; but tendency of our own later time has too often been to ignore this important quality, to the loss of refinement and of true architectural grace. Perfection of proportion does not mean, however, neglect of scale, as is sometimes erroneously supposed. We have all heard it said that St. Peter's at Rome looks smaller than it really is, in consequence of the harmony of its proportions; but this is, in my opinion, altogether an erroneous and misleading statement. If St. Peter's does not impress us with its real size, we must seek the reason elsewhere than in its good proportions, for it can be no merit in a great architectural work to efface itself. An architect is not to be thought successful, if the gross result of his employment of great opportunities is only to produce, at a vast cost, the impression that would be created by lesser efforts. The real truth about St. Peter's is, not that the proportions reduce the apparent scale, but that the harmonious effect of the proportions is marred by incongruous detail and fawners of parts, all on a gigantic scale. The enormous order and huge figures, and not its beautiful proportions, have to answer for any disappointment with St. Peter's. If the parts of its architecture had been smaller and more numerous, with its general proportions remaining as at present, St. Peter's would have appeared, as it is, one of the largest buildings in the world; and the interior, more particularly, would have gained the effects of scale without losing those of proportion which it now possesses.

The student will learn from this example that he must not be satisfied with the sensation of pleasure, or dissatisfaction, which he expe-

riences when face to face with great monuments of architecture; he must inquire the reasons of their success or failure, and seek to define the secret of the harmony or incongruity of their details and proportions.

To those who study architecture in this spirit, beauties will be revealed which are hidden from the mere utilitarian observer, and they will at the same time gain an insight into the difficulties as well as the resources of their art.

Owing to the universal interest which architecture possesses, we find that it can attract the unlearned, probably to a greater extent than the sister arts are able to do.

The grand effects produced by scale alone may often suffice to explain the impression produced, on the minds of the multitude, by an art which does not work in aristocratic selection, for the benefit of the few, but appeals openly to the many. Of course it will only be the few who are qualified, by study and knowledge, to speak authoritatively on its inner subtleties, and its broader characteristics must always be those that will interest the uneducated observer.

To be able to see properly will ever require education, and the power to criticise is not an instinct, although the power of grumbling may be so. There can be little doubt that an art so essentially conventional as architecture can only be fully appreciated by those who have acquired an insight into its principles. Whether in respect of painting, sculpture, or architecture, whatever there may be of instinctive appreciation in individuals, the power of sympathetic criticism can only be gained by knowledge. In fact, in these cases there is room for what may be called the science of art,—science being, after all, only the concentration of the existing accurate knowledge of any given subject. Indeed, even in observing nature itself, men find the advantage of acquiring instruction, although it might have been supposed that enjoyment of her charms would be a thing of course. There cannot, however, be a doubt that this feeling has varied greatly with different races, and even with different generations, of the same race. Those who know Mr. Ruskin's descriptions,—say, for example, his analysis of clouds, trees, and mountains,—will see how much increase of pleasure in the beauties of Nature herself may be gained by a scientific study of her phenomena, which forms, in effect, the art of "how to observe." Knowledge, then, is required in the critic as well as in the artist, and where it abounds a genuine criticism is of the highest value.

It points out to the younger aspirants the way of progress, and exhibits the moderation and diffidence which accompanies true knowledge. It is, of course, free from that arrogance and bitterness which has led the present Prime Minister to refer to critics as "those who have failed in literature and art."

I have now touched lightly upon the interest excited by architecture in its three-fold aspect,—archæological, scientific, and artistic. The latter quality is that with which we have chiefly to deal in this place, but the others must not be neglected. There can surely be no reason why architectural progress should be regarded as at an end, when we consider the permanent interests which she has in her keeping. Whatever changes the future may bring forth, the art of building must ever be a necessity, and there will always exist tastes, and artistic aspirations, which will refuse to be satisfied with bare engineering. Architecture, then, must ever have charms for all; reserving the greatest enjoyments for those who, having learned to observe properly, can enter into the inner sanctuary. It is not necessary that she should demand a unanimity of taste, which, if possible at this stage of the world's history, would be undesirable; and she is, therefore, able to rely on that universal love of beauty, to which, after all, must be the final appeal of art.

We have seen that there should exist among civilised men an interest in architecture, which, while exerting varying degrees of attraction on different orders of minds, would yet lay claim to a catholicity denied to other developments of the artistic faculty. To the archaeologist she offers the key, by which he can open the stores of knowledge of the past; with the engineer, she will co-operate in working out the destinies of the present; while to the artist, whether painter, sculptor, or architect, she gives a welcome, and displays treasures of exquisite beauty and infinite variety. Moreover, striving onwards for the future, while reverencing the past, she does not hoard her charms in any churlish spirit,

but throws open her treasures to all the world. She connects herself naturally with the history of mankind, with the public and private life of nations, with their knowledge and progress. She has ever been the handmaid of religion,—the nursing mother of art.

Such has been architecture in the past. What is it to be in the future? Are its triumphs over? Are we to be content with the copying of barren revivals? Surely this cannot be. All sense of artistic beauty has not vanished before the steam-engine. On such of our gentlemen, as have just entered, or are about to enter, the noble profession of architecture, these questions will press, and from you will require a solution. If they are to be answered satisfactorily, there must be no half-hearted devotion to your art. Moreover, in these days, far more even than in those of Vitruvius, an architect should not be the mere master-mason, to whom some writers would seek to reduce him. No one can afford to lightly estimate the value of general culture, and certainly not the architect as a member of a responsible, difficult, and learned profession.

Remember the catholicity of art, which forbids bigoted intolerance and opinionated dogmatism. Study carefully for yourselves the remains of ancient masterpieces in our museums and in the grand old buildings both abroad and at your doors, and avail yourselves fully of the facilities which are offered in this place and elsewhere for freehand and figure drawing.

As regards science, do not let it be said that architects are behind the age, but qualify yourselves to take your part in it with knowledge, enthusiasm, and integrity.

Great characters lead to grand ideas; noble thoughts produce noble deeds; and if you will bear this in mind, my first professorial lecture will not have been given in vain.

HEALTH IN SCHOOLS.

At a recent meeting of the Social Science Association, Dr. Richard Liebreich read a paper on "School Hygiene," from which we take a few passages:—

It is no intention of mine to speak about this vast subject in general, but only to draw your attention to a special point,—namely, to the influence of the posture of the children during school-time.

If grown-up persons daily remain for hours in a stooping position, the unfavourable effect often shows itself in a disturbance of the respiratory or digestive organs. With children the hurtful influence is not limited to the functions, but extends to the shape and position of these organs. I will show you the way in which this occurs on two quite different parts of the body—the eye and the spine. The alterations which these two organs can undergo under the influence of bad posture are chiefly short-sightedness and scoliosis, or lateral curvature of the spine, and in mentioning these two affections together I by no means choose two examples unconnected with each other. Both anomalies are developed during school-time, and are incomparably more frequent in the educated than in the uneducated classes. Both are under the influence of hereditary predisposition, but developed in a stronger or lesser degree, according to the habitual posture of the children; and, lastly, they act directly on one another, inasmuch as the lateral curvature of the spine favours short-sightedness and short-sightedness increases the curvature of the spine. I have therefore found myself obliged to examine the spine in a question where my intention was originally directed only to the eye.

Short-sightedness is produced by the lengthening of the antero-posterior axis of the eye. This lengthening originates under the influence of an increased tension of the apparatus by which we adapt our eyes to the different distances. The tension of this apparatus is stronger in proportion as the distance is shorter to which the eye is adapted. During childhood this apparatus possesses a great power of accommodation. If this power is made use of for adapting the eye continuously to a much shorter distance than would be required, that is to say, if, in reading or writing, the eyes, instead of at 12 in. to 15 in., are kept at 4 in. to 6 in. distance from the book, the sclerotic, that is the membrane which keeps the globe of the eye in its shape, giving way by degrees to the pressure, gradually extends in its posterior portion. Thus the shape of the eye becomes oval, and the retina is some-

what removed from the optic media, from the cornea, and the lens. The retina then only receives the images of near objects; distant objects appear undefined, and can only be seen by the aid of concave glasses, whose negative focus corresponds with the degree of short-sightedness.

Short-sightedness is developed almost exclusively during school-life; rarely afterwards, and very rarely before that time. Is this coincidence of time accidental?—i.e. does the short-sightedness arise at the period about which children go to school? or has school-life caused the short-sightedness? Statistical inquiries prove the latter to be the case, and have shown at the same time, that the percentage of short-sighted children is greater in schools where unfavourable optical conditions prevail.

The influence of school-life on the lateral curvature of the spine is as evident as its influence on short-sightedness. I am, of course, not referring to any of the curvatures which are the consequence of diseases of the bones and constitutional affections. I only mean to speak of those slight curvatures which, during school-life develop themselves in quite healthy children, and which are so frequent that they have a strong title to the notice of all those who are interested in Social Science.

Parents generally become aware of the fact by the difference in the shoulders of a child. Careful examination shows, however, that some of the ribs of the right side are more projecting than those of the other side, in the part close to the spine. The spine shows a slight deviation where those ribs are attached to it. But though its curvature is the very reason of the deformity of figure just mentioned, yet it is in itself but little conspicuous. The reason is that we can only see the hindmost ends of the spinal processes, and that these ends may still be lying nearly straight, one upon another, while the bodies of the vertebrae themselves are deviating very considerably from the normal position.

All authors agree in thinking bad posture the chief reason of this affection. They principally lay stress upon individual habits, such as resting on one foot while standing, using chiefly the right arm, and so forth. These latter circumstances, it seems to me, are of very subordinate importance; the abnormal posture of the children during school-time, and especially while writing, being the real cause of the evil. For children who have their lessons at home, the posture during writing may vary individually; but for schools it is the same almost throughout. Modifications are only produced by either the left, or the right, or both elbows being ordered to rest on the table. In most cases the resting of both elbows is quite out of the question, the 0-in. allowance not being sufficient for it. In a few schools the children are compelled to sit with the right elbow placed on the table; but as a rule they are told to bear on the left elbow. At first sight such a position might appear infinitely more hurtful than that required in the class-rooms. That is not the case, however; for so long as a position may be altered at any moment, it is comparatively innocuous, because one group of muscles being tired, another will be called into action by involuntarily assuming another position.

In class-rooms, on the contrary, the pupils are systematically forced, every day, for several hours, into the same unhealthy posture, overruling always the same muscles, twisting and bending the spine always at the same place, and thereby gradually altering the shape and position of the bones. Some private teachers and parents, instinctively understanding this, have made it a rule for the children to change their posture constantly; and, compared to the system before mentioned, this is not a bad plan. Yet I do not mean to recommend it myself; for although bad posture constantly modified is far preferable to one less unfavourable which remains unmodified, yet the best posture is of course that which is at once healthy and fits to be retained throughout, and such a one it is possible to obtain.

The following, it seems to me, are the conditions required for a normal position:—

1. The upper part of the body is to be kept straight, the vertebral column neither twisted to the right nor to the left; the shoulder-blades both of the same height are, together with the upper arm, freely suspended on the ribs, and in no way supporting the body; both elbows on a level with each other, and almost perpendicular under the shoulder-joint, without any support; only the hands and part of the forearm resting

on the table; the weight of the head freely balanced on the vertebral column, and not on any account bent forward, but only turned so much round its horizontal axis, that the face is inclined sufficiently to prevent the angle at which the eye is fixed on the book from being too pointed.

Nothing can be simpler and more natural than this position, which, however, it is impossible to obtain with the tables and benches hitherto in use.

The study of the conditions under which a normal position becomes physiologically possible has enabled me to design a system of desks, as follows:—

The top of the desk has an inclination of 20 deg. for writing; for reading a greater inclination is required, viz., about 40 deg. This latter is obtained by turning up a flap of 5 in. in width, fixed to the front edge of the desk.

The height of the desk is the same for grown-up people as for the smallest children, the body of children of different sizes being adapted to the height of the desk by modifying that of the seat and of the foot-board fixed to the desk.

All seats have backs, which, for the chairs of private studies, are carefully adapted to the form of the body; for school-benches, the backs only consist of a board of 3 in. in width, which, placed at the right height (2 in. higher with girls than with boys), sufficiently supports the lower joints of the spine, to enable the pupils to keep permanently straight while reading and writing. The distance between the back of the seat and the table is made to suit the three different sizes, and is always just sufficient for the flap to come quite near the child while writing. By lifting up the flap, an interval is produced between bench and table, giving the necessary space for rising and passing in and out.

Mr. Hepworth Dixon, in the course of the discussion which followed, said he agreed with almost every word that Dr. Liebreich had advanced. There was almost a cyplopedia in the few remarks he had brought forward. We had a distinct public duty to perform, and in face of this the expression of opinion from such a society as this, to which the public might look for guidance, was of great use. It had been objected that such appliances as were recommended were too expensive. He did not attach the smallest weight to that objection, even if it were true. When he had advocated the introduction of drill at the London School Board, he had been told that there were no drill-grounds. He had replied to this, that they should be got, and further insisted that England had enough money to do anything that was necessary for the physical and mental education of her children, and that if this were not so, then she had already turned the point from which her decline could be traced. The measure had been carried in opposition to all the pretended economists, and the system of drill-grounds had been adopted in almost every town in the kingdom. Not only had the children reaped benefit by this measure, but by taking more space than was necessary for the mere requirements of the school itself, wells of ventilation and fresh air had been found for neighbourhoods that had greatly stood in need of them. This, in every way, had been, he thought, a very wise expenditure of money.

With regard to the improved apparatus the paper proposed, the same arguments would apply. In the old barbarous times, when there was in a school one long desk and forms, all the boys were required to sit, and at these most uncomfortable appliances, certain fixed hours of the day. In any country where education was treated as a matter of science, such a thing would not be submitted to. Now, in Switzerland, desks like one of those exhibited had been adopted. This is the poorest country in the world, and England the richest. They gave more money for the school than for the army, and they were well repaid for the outlay. Education gave them the army, for they spent their money to make the man. And one of the ways by which they made them into good useful men, was by putting them under the best physiological conditions, never overstraining muscles or right, but looking forward to the time when the children should be men, in no way wasting any force, but trying to make them valuable to themselves, and excellent citizens and soldiers. This was the highest economy. The advantages of the separate desk were great to both teacher and pupil. The power of going round and about him on all sides was a great one. The child was not merely one of a long row, but became

an individual child. All the good that came out of this arrangement for the health of the individual was told by Dr. Liebreich, and he (Mr. Dixon) had no doubt it was right. He wished the idea could be carried out in household furniture. The nations of antiquity knew more of the means of securing real comfort in the matter of chairmaking, for instance, than we do. We were extremely deficient in such things.

The chairman (Dr. B. W. Richardson) said the results were important, not only as regarded the family circle, but also in connexion with the physical interests of the nation. In regard to the part of the question which referred to short-sightedness, we knew the writer's knowledge was indisputable, and we had learnt that the objectionable position of sitting led to it. He (the chairman) affirmed this view of the case. But the mischief did not rest at the spinal column; it went far deeper. He saw daily the results, extending to the lung itself. So soon as the condition shown was set up, there was a modification of the processes of breathing—a want of elasticity, and the results, congestion of the lung, the reducing of the quality of the blood, liability to take cold on the slightest occasion, and the development of phthisis. We get, with the impaired breath, impaired digestion, dyspepsia, and that feebleness which arises from it, and which marks so many school-rooms. While the body is growing, it requires excess of force for this purpose, and all the nourishment and fresh air it can get; but by these maladies it is deprived of them, and it grows up a weak, imperfect body. It is the case more with girls than boys, for their ruler exercises to a great degree counteract the bad effects of unhealthy conditions. The effects of the way of sitting in schools cannot be shaken off, for people grow up and become fixed in them. He (the chairman) had seen diseases hastened and increased by the pressure of sitting in the position which we had made natural. The plan of laying children upon four points of their body is out of all character with physiological requirements. Hard beds, which necessitated this, were therefore objectionable. In bed the body should recline equally. To return to the old-fashioned feather-beds, where all the body is equally supported, would be one of the greatest improvements that could be introduced into schools. If we could bring the reforms now indicated, we should transform the school-room, and should lead to a great physical improvement in the next generation.

THE MANCHESTER AQUARIUM.

In reply to a request for information, the curator, Mr. Hooper, informed us that the aquarium had been erected from his designs, and under his personal superintendence, assisted by Mr. M. Senor, architect, of Manchester. As we have no belief in the ability of laymen to design a building of this kind, we omitted the words "from his designs," and affixed no architect's name to the view.

We have just now received the following note from the curator, and leave our readers to reconcile the two statements:—

"Memo.

Manchester.

It has just been pointed out to me that, unfortunately, the name of the architect, Mr. Joseph Sherwin, of this city, has been omitted in the article on the 'Manchester Aquarium.' Will you kindly notice this?—B. HOOPER."

DERIVATION OF TICKHILL.

A REFERENCE to the Ordnance map, No. 82, N.E., will I think prove that Tickhill can have no possible connexion with the course of the River Sheaf; the "Survey" has been freely abused, but I have never yet been misled by the maps.

One may fairly mistrust any such sweeping generalisation as that put before your readers; as to *potamos*, it is a general name for any or for all rivers, not the specific name for any one river.

The Greeks, rightly or wrongly, derived their word from *πόρος*, Latin *potus*, hence our word *potation*; it therefore could not be the original name for a river, as such, seeing that the river would have an existence and a name before men tested the water by its "potable" qualities.

Reference has been made to the now too famous Tickborne. This name was Latinised as "De Itchin Borne"; in English it would be "At the Itchin Borne." This proves that the initial "T" is the prefixed article, which could not be derived from *Po-Tamos*.

A. H.



FOREST HILL SCHOOLS, GREENWICH DIVISION.

LONDON SCHOOL-BOARD SCHOOLS AT FOREST HILL.

The London School Board will shortly open their newly-erected schools at Forest-hill, and the educational requirements of this portion of the Greenwich division will then so far be complete. The planning of these schools is based upon requirements of the Board as laid down in their latest instructions to architects, and may be said to embody the expression of the Board's views as to the planning of schools up to the date of Mr. Robson being appointed their sole architect. If this is not the last, it is one of the last of the schools erected under the system of competition inaugurated by the Board during the first year of their existence. The idea seems to have been that it was desirable to obtain the collective views of a large number of architects as to the planning of this class of buildings, and to this end they made their original instructions as broad as was compatible with the regulations of the Committee of Council on Education. Whether the Board really gained any new ideas by the experiment has not been stated; but it is certain that the mode of planning now adopted by them, as shown by the plans of the Brockley-road schools, is very different from that recommended in the first instance. They may be said to embody the views expressed by Mr. Robson in his paper on the planning of schools, read before the Architectural Association, excepting

only that the seats are somewhat differently arranged.

The main building, for boys and girls, consists of a three-story building, and provides on the second floor a schoolroom for ninety girls, with three class-rooms attached. There are cloak-rooms and lavatories on the landing. On the first floor there is similar accommodation for boys. The outer walls of the ground story form an open arcade, and the inclosed space is used as a covered playground for the two sexes. There are covered ways leading from this story to the waterclosets and urinals, the apparatus of which are provided by Messrs. Macfarlane.

It will be observed that the schoolrooms contain no sliding partitions, and that the class-rooms are in all cases distinct apartments. It is not found that any sliding partitions yet introduced are capable of effectually stopping sound, and, therefore, although their use is in other respects desirable, they are only now adopted under exceptional circumstances. The panels of the doors leading from the school to the class-rooms are of glass, so that the head-master and mistress have constant supervision over their respective under-teachers as well as of the large schoolrooms.

The planning of the desks is one of the latest improvements adopted by the Board. They in all cases consist of five rows, and each of these rows is divided into series of two desks with a gangway between them, the object being that

the teachers may have the opportunity of reaching the side of each child without disturbing the others. This is an evident improvement over the old system of having the gangways between a series of five or six desks, so that it would be impossible for the master to overlook the work of the larger number of the children without disturbing most of those sitting upon the same form.

The staircase is constructed on the principle by which the height usually lost between one landing and another is made use of for a second staircase, one being for the girls and the other for the boys. This description of staircase can only be used where, as in this case, the distance from floor to floor is 15 ft. or more, and then, there was only one flight the distance from step to step and landing to landing, would of course be 15 ft., but by making it a double staircase this distance is reduced to 7 ft. 6 in. for each one. The principle can hardly be indicated on a plan, and can only be realised in a model. It is much favoured by the School Board, but the architect of these schools does not consider that under all circumstances it is an economical mode of construction, and certainly in the result it produces a somewhat dreary appearance.

The infant school is a detached one-story building. The principal room has two recessed galleries, and a large area is thus left in the body of the room for marching, but in addition to this there is externally to the school another



LONDON SCHOOL-BOARD SCHOOLS, FOREST HILL.—MR. H. SAXON SNELL, ARCHITECT.

covered space for this species of perambulatory tuition. Two class-rooms, planned similarly to those in the graded schools, adjoin the large room, and a like provision is made for the separation of the babies from the main body of the infants. All these rooms, however, enter out of the one large school-room, and the glazing of the doors provides for their being constantly overlooked.

The caretaker's residence and manager's room are situated between the graded and infants' school, and are three stories in height.

The whole of the buildings are heated by hot-water pipes and apparatus supplied by Messrs. Potter & Sons, of South Molton-street. The gasfittings, seats, and desks are supplied by the Board. The playgrounds are laid by Messrs. Wright & Sheardown with the material known as "tar pavement."

The total cost of the buildings, when wholly completed, will not, it is anticipated, exceed the amount of the original estimate—7,000*l*.

It should be stated that the part of the building on either side of the graded schools containing four of the class-rooms, as also the projecting class-room of the infants' school, is not yet built, but is reserved for future extension.

The total accommodation provided by the plans is for 239 boys, 239 girls, and 320 infants, and the cost therefore will be at the rate of about 5*l*. 16*s*. per child. The floor-space in the graded schools rather exceeds 9 ft. per child. In the infant school the floor-space is about 8 ft. per child.

The builders are Messrs. Howard, Brothers; and the architect is Mr. H. Saxon Snell.

THE ARCHITECTURE OF THE PRESENT AND THE FUTURE AS SOME VIEW IT.

In a paper read on the 20th February last, before the Church Institute at Leeds, on "The Architecture of the Past, the Present, and the Future," Mr. Seddon, having given a summary of the various styles, remarked—I have now sketched for you the history of the architecture of the past, from the time of its first consolidation as an art by the Greeks, out of the heterogeneous elements that had previously existed in Eastern countries in a state of chaos; the gradual corruption of that art, and separation of construction and decoration by the Romans; the resuscitation and reuniting of both by the early Christians, and their growth, first, into the round-arched style of the Romanesque, and then into the pointed-arched style of the Gothic, in which science and taste culminated. I have also traced the decline and fall of architecture as a living art, and the inauguration of a system of copyism in its place. I have shown that the copyists reverted to the worst phase of the classic art, and exaggerated the errors that had caused that to be swept away; that they made an arbitrary and abstruse system of their revival, and failed to enlist public sympathy with it, and that when it declined for want of the enthusiasm and talent of those who invented it, a worse chaos than the first supervened. I have noted the spasmodic efforts made lately to reduce this to order by those, on the one hand, who would seek reform again where the *Italo-Vitruvians* attempted it, and by those, on the other hand, who would try to take up the thread at the culminating point of the Gothic style. Upon the issue of this contest so much depends, if there be any use now in architecture at all, that I shall now endeavour to give you some clearer idea of the present condition of things, hoping so far to interest you in the subject that you may not be wholly indifferent spectators to the contest that is going on around you, and with which you cannot help being more or less affected.

Perhaps I cannot more forcibly bring home to you the actual state of architecture, than by asking you to cast your eyes around you in this very town of Leeds, of which you are, no doubt, justly proud, as the flourishing centre of an enterprising commercial district. The love of beauty implanted in our nature, has not yet been wholly eradicated by three centuries of neglect of it in all matters connected with our daily life. The common adage, "God made the country, but man made the town," expresses a general feeling that beauty is only to be found in the scenery we have not yet spoiled, and that we congregate in towns to collect means to enable us ultimately to escape from them. No doubt the desire of all of you is, and it is one of the

healthiest you have, to rush as soon as you get a holiday, to your grand moors and lovely dales, to your pleasant woods and streams, to gladden your eyes. Still railway statistics show that no spots attract so readily as those which, in addition to nature's charms, possess some of the really artistic works of man. But what is it you go there to see? Ruins? Even so! Is it then that you gloat over the destruction of the fair abbeys, that once thickly studded your county? that you glory in seeing them falling to pieces in the grasp of giant ivy-stems, which, like boa-constrictors, writhe round and rend them asunder? Is it that you may feed bigotry by triumph, and self-complacency by comparisons not felt to be odious? No! I will answer for it that your sympathy is rather with the old monks, who, if not all saints upon earth, at least by their choice of secluded spots, and their labours of love therein, have touched a responsive chord in your hearts. You can recall, at this lapse of time, that in those rude and troublous times there may have been need for sanctuaries in the wilderness, and you are willing to draw a veil over falling purposes and human imperfections. The roofless fanes and sacked hearths strike a note of sadness in your minds; and if your feelings be roused, it is with indignation at the ruthless spoilers who stripped off and melted the lead for their own greed, who stabled cattle within walls dedicated to prayer, and tore out their carved stones to build barns for themselves.

But if whole buildings be what you prefer, why do you not stay at home and look at your own? You go upon these pilgrimages because you do really love beautiful architecture, when you can get it; because you heartily admire pointed arches, and the rich tracery of Gothic buildings; but you love them none the more because they are tenanted by owls and bats, and are reft of all their storied panes.

You shut your eyes at home because you cannot care for miles of rectangular façades, with oblong holes in them, and are not to be cozened into the belief that because their proportions may be correct, you must learn to admire them, if they have "dressings" enough to set them off. Is it necessary, however, that street architecture should be so doleful and monotonous?

An English town in the Middle Ages was a thing fair to see. Church towers and spires marked it from afar; a stately castle, may be, crowned its highest knoll,—not a pompous block, with porticoed centre and balanced wings, but a picturesque structure that seemed to grow from the rocks upon which it was poised—a good protection for friends, but firm repeller of foes. Along the slopes beneath spread the streets of the burghers' houses, which, though modest, had bold gables and quaint dormers, and were well fashioned behind as well as before; and the cottages which lined the lanes of approach, though humbler, were equally good in their way.

But you may think I am drawing from my imagination in this sketch. The fragments of old English domestic architecture of this class are now so few and far between, that though I know nothing elsewhere so tender and artistic as what is left of them, I will ask you to cross the Channel in search of examples there, which have not yet been swept away by the besom of modern progress. The splendid domestic architecture of Rouen has indeed mostly succumbed within my memory to the Parisian type of smug and featureless respectability; but Nuremberg and many other towns yet remain nearly intact, and can show still that street architecture need neither be an eyesore nor insipid.

I must, however, hasten back to Leeds, and will enter it from the side of Kirkstall, leaving behind the majestic abbey ruins, which some regard that they would spend a princely fortune in restoring and utilising them, and others regard so much more that they would not suffer the profane hand of the restorer to touch them. May they long stand as they yet do, to teach us how men could once build to the glory of God; and how others, who sought art inspiration in Pagan remains, could desecrate the works of their forefathers. What is to be said of the hovels that meet us as we approach this great and wealthy town? One might be induced to make the antithesis as to the respective makers of country and town stronger than in the old adage I have quoted; and truly the devil might well have had a hand in these, seeing that even decency is an impossibility in them; and if my present theme and want of time forbid their in-

spection, I may be pardoned for saying merely that their exterior is as ugly as sin.

I may, however, be met with a not unfair remonstrance that I have not chosen well the route of my entry to your town. Upon another occasion I came into it from Woodhouse Moor, and called on my way at a villa of no mean pretensions. I found its inmates lugubrious, and ill-health was alleged as the cause, and it was attributed by them to the flimsy construction and the unsanitary condition of the architectural tenement they occupied. I then recommended instant removal to a better, and was met by the assurance that it was impossible to find any other house in the neighbourhood in any way better, and that a leap from the frying-pan would probably be into the fire.

As a stranger I cannot vouch for the truth of this complaint, though I can for the statement. But for your consolation, if it be such, I can say, that were it otherwise, Leeds would be a town highly favoured among many.

Lest it be thought that I exaggerate, I aver that a vast majority of the houses we live in in England are ill-arranged, ill-built, ill-drained, and ill-ventilated; and as to their appearance, our villas are villanous boxes, upon the show-fronts of which some architecture-like dressings are run in cement; but the sides and backs, which are quite as visible, are left in their primitive nakedness. I may be told that what I have as yet described is not your architecture. Then pray! why is it not?

Why, in the wealthiest country, and perhaps the wealthiest age in the history of the world, should the houses of the middle classes be put to shame by the cottages of the despised Middle Ages?

The reason is that we have lost count of the value of art, and have sold ourselves, body and soul, to that curse of the age, the speculating builder, who builds houses to sell, and not to be lived in.

However, I will now proceed—all the more willingly because I know that of buildings that may fairly claim to be architectural, Leeds has a goodly store; and I so hunger for such, that I am not in a mood to be hypercritical. I must pass, as you know, a forest of tall chimneys, which, thanks to legislation, have their ugly mouths mostly shut.

But why are they and their mouths ugly? Some towns in Italy are crowded with long slender shafts, which were towers built by the inhabitants in lawless times, to enable them to watch their neighbours, and they are not ugly. Depend upon it, in the Middle Ages factory chimneys would have been, as they may be, made picturesque, and that without extra cost. It is the will that is wanted, and then the way would be quickly found.

At last I arrive in your principal streets, and survey your buildings devoted to commerce, and am struck by the Great Northern Hotel, which is one of the first to greet me. This is a fine and sensible building, well massed, and allowing one to walk round it, without finding out a part that has been forgotten. I should, however, like to relieve the two struggling figures which, with insufficient foothold, are overpowered by the weight of its angles.

In the principal streets, which I soon reach from this point, I see where your architecture really is, and that for it wise recourse has been had to professional architects, and mostly to those very able ones whom you have resident among you, and who have already done much to elevate the character of these streets. Still, as elsewhere, their works are so diverse in character, that it seems well to remind them that union is strength, and I should be glad indeed if aught I say could tend to the concentration of their efforts in a right groove.

The majority of your commercial buildings are, according to the fashion of the day, designed after Italian palaces, to which the fine stone of the district and commendable reticence as to the use of applied orders give a good business-like air. The monotony of regular compositions does not, however, produce a lively effect, and the individual features are open to the objections raised to the originals of which they are copies, and even with which considerable licence has often been taken. The perspective effect, too, of a series of formal blocks treated independently and jammed close together as necessary in streets, with horizontal cornices and strings at different heights cut short abruptly, can never be charming. So that when I sum up the result of this Italian portion of your street architecture as certainly not worse, and upon the

whole a great deal better than most, I trust not to be thought to have come to a too harsh judgment with respect to it.

But what is this vernacular Italian architecture at its best?—deadly respectable and commonplace, yet vastly costly. Go again to Nuremberg or Cologne if you would see what warehouses might be, by simply emphasising their real structure, and introducing here and there a quaint bit of ornament to shine like a jewel because of the plain common-sense setting around it.

You have, however, some excellent specimens of Modern Gothic in your streets, as, for instance, this "Church Institute" building, and I am glad to see that even a majority of those buildings that are now rising in them are of this style, and, on the whole, very well treated. I notice comparatively few of those startling and vulgar parodies of the style which have led one of our first Gothic architects lately foolishly to abandon it, and to rush to the abortions of Queen Anne's time by way of a protest; and I congratulate you upon not yet having any of that rubbish itself.

You have in the Beckett's Bank a sumptuous example of the Mediæval style happily adapted to modern requirements. Your great infirmity by the same eminent architect, is a work which perhaps more limited means prevented from being quite so successful. But this is doctrine I hesitate to endorse, because I am anxious to show that Gothic architecture does not depend upon costly work; and modern town buildings in all styles are usually much overdone with detail, and I never feel to want more, but less enrichment and better than one gets.

Finally, as to your noble Town-hall, with its stately columnar façades, and recessed portico, and pyramidal composition, well raised upon imposing flights of steps. It is a costly sacrifice to architectural effect. It should be put to the same use as the classic temples it affects to imitate. Built primarily with reference to external regularity of design, the internal accommodation has been necessarily cramped to get it into its rectangular shell. Preserve it as a votive offering to admire, and build another structure to use, into the interior of which light can be freely admitted, and wherein sound be not obstructed by architectural features constructed for display.

In concluding this summary of present architecture from the sources with which you are familiar, I ask if, all credit being given for much isolated merit, they collectively form a true reflex of the character of this age as the past living architecture of its time? Feeling,—may, even hoping,—that the answer must be in the negative, I ask, can we look more hopefully in this respect to the architecture of the future?

I have left myself little space for speaking of the architecture of the future. Fortunately it needs little at my hands. The first thing needed is real, not affected love for it on the part of the people. If there be demand there will soon be supply. May it be a result of the education movement of the day that all men should crave for beauty in their homes. By degrees the love of art would become an instinct, as it once was. As to the character of that art, we must recognise that it will necessarily remain eclectic, but public taste would require that it be pure. From the stand-point we have arrived at, can and soon should avail ourselves of the accumulated experience of the past, and have no need to seek out a new style for ourselves.

In choosing an architectural language for our use, it would be folly not to take the most comprehensive, and we are certainly bound to take the most true. But having chosen a style as a *point-de-départ*, let us turn our attention to the wants we have to fulfil, and not hamper ourselves with preconceived notions of regularity. The interior must dictate the exterior, and giving lovely forms to the features they need, let them be their own decoration. Abandon all false masks, and use no features that are not wanted, and those in strict accordance with their meaning. We may then safely leave our works to speak for themselves, and those that come after us may perhaps find a character in them we do not ourselves discern, which they, if they like, may designate as style.

The most pressing task before us is to provide better dwellings for the masses, and though this must be primarily in a sanitary point of view, it might be so in an architectural sense also, as has been proved by several recent enlightened experiments.

The reform we look for must thus come from below,—at least, there it is most needed.

Addressing the members of a Church Institute, I may in conclusion remark that almost all the monuments of the past of which I have spoken have been dedicated to religion, and it has been of those erected by the Church that I have named as embodying the highest material and spiritual aim, the noblest compositions of science and art. Our churches remain often the sole landmarks of taste that have survived the last few centuries, which have been the only dark ages, artistically speaking, in the world's history. By far the best and most numerous of the works of the present which deserve the name of architecture are ecclesiastical, and therefore it is to the continuance of enlightened patronage and encouragement from the Church that I, as a member of the architectural profession, look forward in hope with respect to the architecture of the future.

HEMISPHERICAL BELLS.*

We now come to the more immediate subject of this paper, hemispherical bells, and modern improvements in the machinery for carillons and chimes, and I would wish it to be distinctly understood that I do not for one moment desire to be understood to say that this shape of bell will supersede to any great extent the church-bell shape, or that the power of the tone of one is to be compared to the power of tone of the other. In the hemispherical shape a 4½ cwt. bell will produce the same note as 25 cwt. in the church-bell shape, and it is quite obvious that 4½ cwt. cannot produce the same volume of sound as 25 cwt. Moreover, these bells cannot be swung. But what I do say is, and my firm have proved it in practice, that hemispherical bells can be used most advantageously in places and spaces of peals of eight and more, with all the machinery necessary to produce the required effects of change-ringing, quarter-striking, and tune-playing, where the other shape could not have been used,—first, for want of space; and, secondly, in many instances a most serious consideration, on account of the cost.

That they and our machinery will prove useful in providing for a want which has been greatly felt of late years, viz., the supply of bells and filling the place of ringers in neighbourhoods where they are not to be found, I have no doubt whatever; and I am also of opinion that a very large field for their use exists in towers and turrets attached to country mansions. Their sweetness of tone is eminently suited for this purpose, as all the charming effects of bell music may be obtained from them without the tinkling sheep-bell sound of light peals, or the impossible expense and overpowering sound at short distances of peals of the ordinary shape sufficiently heavy and deep in tone to give good effects.

It is not proposed to enter in this paper into the question whether or not hemispherical bells are constructed upon scientific principles. I cannot really tell you upon what principle they are constructed. I have never put the question to the founders of them, for (to me) satisfactory reason that I do not believe they would tell me if I did. At present I have quite enough to do to make use of them when made. Given the necessity of having to produce them, I would face the difficulty in the same way as I have faced other difficulties, and with what success I leave others who know me to decide. All I propose to do is to give some information respecting accomplished facts with regard to them and the chiming machinery which we have made, and are making, under the patent of Mr. Imhof, taken out on the 25th of September, 1866,—information which we have ventured to think may prove to be interesting to our fellow-members in this society. From time to time we have applied them in isolated cases to clocks with invariable success, but it was not till 1870 that we had an opportunity of ordering a peal of sixteen for a tower at Colonel Tomlin's, Orwell Park, a few miles from Ipswich. Messrs. Mears & Stainbank, who have given great attention to the founding of hemispherical bells, cast them for us with the most perfect success. The smallest in the peal is 1 ft. 4 in. in diameter, and weighs 3 qrs. 13 lb., from which they run down to the lowest in the peal, 3 ft. ½ in. in diameter, which weighs 6 cwt. 19 lb. The hour-bell is 3 ft. 6½ in. in diameter, and weighs 9 cwt. 2 qrs. 5 lb. The peal is in the key of *F*, with two half

notes, the key which we consider best adapted for bell music, and was the first of that number and size ever cast. The whole weight is about two tons and a half, and the bells are arranged in two tiers of wooden bell-frame, the cranks leading to the machinery being placed in the centre of the two, and leading right and left. The whole is contained in a space 7 ft. 9 in. by about 11 ft. high, tier above tier, each bell in its own compartment, so as not to interfere with or stiffen the sound of its next-door neighbour. When the bells arrived at the foot of the tower, it was unanimously considered by the builders' *employés* engaged on the estate that the tower would not hold them, but, to the intense astonishment of every one, the bell-frame and the bells were all fixed in their places in less than a week, with 2 ft. out of the 9 ft. unoccupied. Our first object in undertaking work of this kind is to see the place the bells are to go in, and then to obtain from the architect of the building tracings of the bell-chamber. We then design and carefully draw to scale the bell-frame and bells, knowing approximately their dimensions, so that they are as good as placed, for all practical purposes of construction, in the tower before they are actually cast, and we are then able to state with the greatest accuracy what sized bells can be used. The facility with which these bells can be fixed in their places is one of their numerous recommendations. A hole is drilled through the crown ½ of an inch diameter, and through this and the cross-beam of the bell-frame which is to carry it is passed a bolt, secured by a nut and washers, and in this way each is fastened to its own beam, and upon which are fixed the hammers and counter springs to prevent chattering in the blows, so that, falling as it does from the centre of the bell, the full force of the blow of the hammer falls upon the bell. The machine which we manufactured and applied to these bells, chimes the Cambridge quarters the same as the Westminster clock, and plays one of seven tunes twice over or not, at will, each third hour, with one weight and one train of wheels, but does not strike the hours. A clock being already there, it was thought desirable to alter that for the purpose.

It may be here observed that we are making, by gracious command of her Majesty the Queen, a machine for St. Mark's, Victoria-park, which does all three with one weight and one train of wheels. The patent, under which these machines are manufactured, is the sole invention of Mr. Imhof, and consists in the discharge of the hammer upon the bell by means of a pin in a wooden barrel, and the provision of a cam action to again raise it to the catch from which it was discharged; thus doing away with the difficulty which is experienced in preventing the wear of the pin in the barrel, and the end of the lever in the old principle, where the hammer is raised by the pin in the barrel noting upon the end of the lever to which the hammer is attached, and so lifting it and allowing it to again fall upon the bell and strike the blow; thus from the very first, two defects from wear arise—the pin and lever both wear, and the time of the music and draught of the hammer are consequently affected. Mr. Imhof's plan is now universally acknowledged to be the only one suitable for the purpose of chiming machines. No doubt many improvements have been made since he designed the first machine, and I am sure that he most readily admits it; but at the same time the fact should not be lost sight of that to him alone is due the credit of inventing the separating of the discharge of the hammer from the lifting-pin, and it is this which constitutes the mainspring of all the improvements which have been from time to time introduced.

THE PRIMITIVE THEATRE.

CERTAIN Shaksperian discoveries which Mr. Halliwell has been incubating for about five years, bring out very clearly, if not finally, the nature of our great dramatist's business relations with the stage.

He was actor and playwright, producing dramas as stock-property for his company, with a joint share, as part proprietor, in the regular takings of the house. He was neither freeholder nor leaseholder, but, as a member of the "company," he was partner with those who held or represented such rights.

All sittings were subject to division; actors, like Shakspeare, sharing in the profit of a certain portion of the building called "the house," and in that reserved portion only. Be-

* From a paper by Mr. Geo. Lund (of which a portion was printed in our last, p. 201, ante), read at the Society of Arts.

sides this share, actors had a small allowance dependent on their status, and there was a fixed payment for the poet.

When these facts were first mooted, I saw at once the analogy existing between this term, "the house," and the modern use of the same expression when, in theatrical parlance, we talk of "a full house," or of that burst of applause called "bringing down the house."

To understand it fully, we may place before ourselves the ideal of a primitive theatre. One sees, "in the mind's eye, Horatio," a certain corps of strolling players enter an old-fashioned hostelry, such as the "Tabard" was in Southwark, the "Four Swans" or the "Green Dragon" at Bishopsgate.

The players would "act" in the open yard, and to them enter at the inn-gate all persons so disposed to witness the performance; this general public, the "pit-holders," being then termed *groundlings*; a body bound to applaud "to the very echo," ready to catch at any allusion, not squeamish as to a broad joke, but to be conciliated rather than set at defiance.

Round the open yard runs a tier or tiers of balconies, opening into the guest-chambers, to which they give access by stairs, and festooned with drapery, now represented by the "galleries," but at that time furnishing the *élits* of a player's audience.

The leader, scanning this assemblage, forms his own conclusion as to his prospects: will it be a "beggary array of empty boxes," or a "crowded house"? The play proceeds; groundlings maintain their character, and, as the action develops in interest, the occupants of the "boxes" warm up; the favourite actor at length appears, and, delivering his most telling scene, "brings down the house" by exciting the tenants of these pseudo-boxes to universal applause.

Now for the result. The players could not exact rent from the temporary occupants of a guest-chamber, so I conclude that, when this applause became apparent, and the interest of the audience was most unequivocally shown, a collection would be made.

This bringing down "the house" would then have a substantial result in a liberal pecuniary reward. A. HALL.

SALE OF CORPORATION BUILDING SITES IN LEEDS.

THERE has been a sale of building sites, &c., acquired by the corporation of Leeds in connexion with street improvements. The sites offered for sale were twenty-eight in number. Lot 18, having a frontage to the river of 37½ ft., was disposed of to Mr. A. H. Thompson, architect, for 7711. 15s., being at the rate of 51. 5s. per square yard. Lots 19 and 20, the one having an area of 66 square yards, and the other 60 square yards, sold together for 1,0081., being at the rate of 81. per square yard. The next two lots, having together an area of 106 square yards, sold at 71. 7s. 6d. per square yard; total, 7911. 15s. Lot 23, with an area of 116 square yards, sold for 9411., being at the rate of 71. 5s. per square yard. Lots 24 and 25, having together an area of 277 square yards, were sold together, at the rate of 51. 5s. per square yard. In connexion with Call-lane and Market-street improvement, the only lot disposed of was lot 27, being a shop site, with a frontage to Call-lane, and having an area of 87 square yards. It was sold to Mr. Edward Wray, builder, for 1,0111., being at the rate of 121. per square yard.

LECTURES ON INDUSTRIAL CHEMISTRY AT THE SOCIETY OF ARTS.

MR. FREDERICK FIELD, F.R.S., read last week at the Society of Arts, Adelphi, before a very large audience, a paper "On the Paraffine Industry of the Country." Professor Odling, president of the Chemical Society, presided, and it being the opening meeting of the chemical section, he delivered a brief preliminary address on the importance of industrial chemistry, showing how various products of manufactures were produced by purely scientific processes which chemists adopted in the laboratory. He strongly recommended the study of chemistry both in a scientific and practical point of view. Mr. Field's paper which followed gave an interesting sketch of the discovery of paraffine, its constituents, and the processes of manufacture, and the different efforts which had been made to turn it to practical account in the shape of oils and

candles. An attempt to make paraffine from Irish peat failed commercially; but in 1856 Mr. William Brown, of Glasgow, was more successful, having succeeded in that year in introducing into the market candles at 2s. 4d. per lb. made from paraffine, extracted from shale, which is now generally employed in this extensive branch of industry. Paraffine is also obtained from "curly" cannel, smooth "cannel," and "bottom" cannel, in varying proportions. As an instance of the extent of this industry, he stated that in Scotland in 1872, from 800,000 tons of shale, 100,446 tons of crude oil, and 5,800 tons of paraffine were produced, and at an expenditure of 500,000 tons of fuel. Several interesting experiments illustrating the different modes of manufacture accompanied the lecture, and these were exhibited to the audience by Messrs. Field, including paraffine, crude and manufactured, a variety of candles, and a fine bust of Shakespeare which nearly resembled pure white marble. There was also a fine collection of lamps by Messrs. Dietz & Co. burning paraffine and petroleum oils, which gave a light as brilliant as gas, but softer, and, it was said, at much less cost.

AMALGAMATED SOCIETY OF YORK ENGINEERS.

THE members of the York Branch of the Amalgamated Society of Engineers have held their anniversary supper at the Punch Bowl Inn, Stonegate. About 100 members from the railway and different shops of the city were present, and the chair was occupied by Mr. Jacob Burchell, the president of the society; Mr. Joseph Nowcombe, of the Railway Plant Works, officiating as vice-chairman.

Mr. Wm. Berry (secretary of the branch), in responding to the toast of "Continued Success to the Amalgamated Society of Engineers," gave a lengthy review of the establishment and progress of the society. It was in the year 1847 that about twelve or fifteen members of a trade society obtained employment on the North-Eastern Railway, and opened a branch of what was then known as "The Mechanics' Society," whose meetings were held at the Crown and Harp, Mount Ephraim, in this city. From that the York branch took its rise. The Amalgamated Society progressed year after year until at the present time it had a roll of 42,420 members. It now consisted of 362 branches, dispersed as follows:—England, 269; Scotland, 39; Ireland, 11; United States, 30; Australia, 7; Canada, 5; Turkey, 2; and East Indies, Queensland, Malte, and France, 1 each. Mr. Berry then proceeded to remark on the working of the society—how its trade and benevolent branches were successfully carried out,—and stated that the present balance in hand amounted to a little over 200,0001. While they had this surplus the wants of members had not been neglected, for the society had paid no less a sum than 986,4361. In the York branch they had risen from 15 members to 160, and they now enjoyed a balance in hand of 7591. 9s. 1d.

SCHOOL BOARD SCHOOLS.

Walsworth.—The opening of the new Board school in Walsworth-common has been inaugurated by a public meeting: Mr. G. H. Currie, vice-chairman of the London School Board, presided. There was a very large attendance. The Chairman, in the course of his opening remarks, said the opening of the school ought to be a source of great congratulation to all who lived in that neighbourhood. It was a school perfectly provided with every appliance that would enable boys and girls to act their parts with credit in the world. There would be the advantage of good teachers, and the great advantage of having the school managed by persons who lived in the neighbourhood, and thoroughly acquainted with the wants of the district. The chairman handed the key of the building to Mr. Day, as the representative of Mr. J. E. Tresidder, who was absent.

North Kensington.—The opening of the large new schools by the London School Board in North Kensington gave an opportunity of testing the public opinion of the working population with regard to the educational work now being carried on. The schools are in the midst of a large new town between Westbourne Park and Notting-hill, and the opening ceremony attracted a very large company. Dr. Gladstone, one of the Board members for the division of Chelsea, presided at a meeting which was held after a

general view of the schools, and he briefly opened the proceedings. Mr. E. H. Currie, the vice-chairman of the London School Board, in handing over the schools to the committee of local managers (composed of ladies as well as gentlemen), stated that they were for 1,100 children—300 boys, 300 girls, and the rest of the space for infants. The site, he said, was well chosen and the schools well built, and the arrangements were such as to insure that while the child was being educated it was at work in a well-ventilated room. It was satisfactory that this was a cheap school, for it had cost only 61. 14s. 4d. a head, and with its playground it stood on nearly an acre of ground. So much space could not always be obtained, nor at the money this had cost. With regard to the work the Board was doing, by the end of this year it would have 88 schools, built for 81,000 children, in full work. The effect of its work would be that every child in London would have the opportunity of receiving a good education; and more than that, by the action of the Endowed Schools Commissioners every child who had the ability would have the opportunity of being pressed forward to a higher position. At the present time the Board had 40,000 children actually in its schools, and the education being given was far above mere reading, writing, and arithmetic.

Walsham.—New schools in connexion with the North Walsham School Board have been opened. The schools form a quadrangular group, and are built with red brick relieved by Bath stone dressings. The architect is Mr. Bottle, of Yarmouth; the builder, Mr. Robinson Cornish, of North Walsham. The cost will be about 3,3501.

THE PUGIN TRAVELLING STUDENTSHIP.

IT has been announced that of ten candidates who had submitted drawings and testimonials in competition for the Pugin Travelling Studentship of 1874, the Council have elected Mr. Richard C. Page, of 15, Clarendon-street, Warwick-square, subject to the conditions prescribed in the Pugin deed of trust. They considered the drawings submitted by Mr. Edwin J. Munt, of 10, John-street, Adelphi, W.C., so excellent of their kind, that they have awarded that gentleman a medal of merit. The Council also distinguish by honourable mention the drawings of two other candidates for the studentship, viz.:—Mr. W. Wood Bethell, of 19, Craven-street, Strand; and Mr. William Wilson, jun., of 14, Hanover-terrace, Regent's Park.

CAFÉS FOR THE PEOPLE.

THE Earl of Shaftesbury has presided at a meeting held in the London Tavern, with a view of forming a "People's Café Company." The object of the promoters of the scheme is to establish places of resort and recreation for working men, conducted on temperance principles, but sufficiently attractive to compete with the beer-shop and the gin-palace. The promoters, in a preliminary notice which they have issued, point to the success that has attended Gatti's establishment in King William-street, Strand (which in past years we have more than once drawn attention to as an example, in a higher class than workmen, of what might be done); Dr. Barnardo's Coffee Palace, near Burdett-road Station; and Mr. Corbett's dining-rooms, in Glasgow; as a proof that the people will not be wanting to make use of such places when the places are ready for them. Dr. Barnardo and Mr. Corbett were present, and stated the result of their experience on the subject.

Canon Ellison advocated the establishment in London and other large towns of street booths, after the fashion in Paris, for the sale of summer beverages.

Sir Charles Trevelyan also spoke, and promised to do all he could in support of the proposed plan.

The Earl of Shaftesbury said that the scheme, if carried on at all, must be conducted upon strictly commercial principles, which, of course, might at the same time embrace the philanthropic principles mentioned in the prospectus. The working man should be fairly started, and then left to fight his own battles. What the company had to do was to place itself to these men in the same position as the big brewer stood to the public-house keeper—lend them money to start

these houses, and then leave the management to them, merely stipulating that it should be conducted on strictly temperance principles. His lordship proposed that a preliminary committee should be formed to draw up the prospectus, issue circulars, and consider generally the various matters of detail that were necessary to the regular formation of the company and a formal appointment of a board of directors.

A list of names, among which were those of the chairman himself and Canon Ellison, and also of Mr. Kenward and Mr. Winton, as representatives of the working men, was accordingly submitted to the meeting and approved.

SURVEYORSHIPS.

At a recent meeting of the Ipswich Paving and Lighting Committee, the chairman read a letter from Mr. Buckham, the surveyor, asking for an increase of salary, and enclosing a tabulated statement, showing the salaries of the surveyors of thirty-one other towns of about the same population as Ipswich, and showing that his salary was considerably lower than that of the surveyors of any of these towns. He called particular attention to the following, as being the towns nearest to Ipswich in regard to population:—York, salary 400*l.* and 220*l.* allowed for assistance; Bury, Leicestershire, 300*l.* and 120*l.* for assistance, and the surveyor is allowed to take private practice; North Shields, 300*l.* and 165*l.* for assistance; Yarmouth, 300*l.* and 2 per cent. on special work; Wigan, 300*l.* and extra for special work; Cheltenham, 300*l.* and 350*l.* for assistance; Ipswich, 200*l.*, no extras, and not allowed private practice. The area of the Ipswich district was much larger than in any of these towns, and the mileage of streets and roads double. He asked the board to raise his salary from 200*l.* to 300*l.* He had been surveyor for three years, and thought his qualifications were such as entitled him to make the request. If the board increased his salary to any less sum than 300*l.* he suggested that they should not object to his making plans and doing private business after office hours. The consideration of the application was adjourned.

FIREPROOF CONSTRUCTION.

Sir,—As this topic is uppermost just now in the minds of many, perhaps a few words from one who has given the matter considerable attention will not be out of place.

I consider that common lime (carbonate) should not be used for the purpose of building, but that sulphate of lime should be the base of the construction portion of the work, for the following reasons.

It has been proved by experience that sulphate of lime will last, as in the Pyramids of Egypt. It is also well known that sulphate of lime, when attacked by water when red hot, will not crumble as will other limes, but retains its form. Hence, I maintain, its superiority in fireproof construction in every respect over carbonate. Buildings constructed with it would be comparatively safe after a fire. All concreting for fireproof work should be done with cement of which this is the base.

I could say much more, but consider that it is sufficient just now to make the suggestion, so that the subject may be fully ventilated, and I should have much pleasure in furthering to the best of my means any experiment for the purpose of solving the problem.

J. CUMBERLAND PARK.

WARMING HOMES AND HEARTS.

Sir,—It is a curious fact that while we are here more and more heating houses and hall with the dry arid air from hot cast-iron pipes and American stoves, our Transatlantic cousins themselves have denounced their cast-iron stove and furnace-pipes as the Juggernaut of America, which, in city homes, in rural dwellings, in public offices, in churches, in railway stations, cars, steamboats, and the like places, make winter life there a burden. "Carl Benson" tells them that the proper mode of heating rooms is by wood or bituminous coal fires, there being no way of getting warm and keeping warm so pleasant or so healthy as that by radiated heat. What is there to hinder the pent of this country from being now introduced by the heat-compressing companies formed last year, for throwing a healthy glow of antiseptic

warmth into every Scottish home? The sight of the blazing peat is cheering, and has a real hygienic value that ought very much to counterbalance our stupid stylish antipathy to peat-rook. But then the economical question comes up—open fires of coal are most wasteful of heat, and the most costly as to material, of all modes of warming houses; yet, however we may condemn the expense, who would not like to indulge in that luxury all the winter through? An American writer asks, what do we read in the Bible about seeing the glow of the fire in cold weather? "Aha!" says the man in the Bible, "I am warm; I have seen the fire." To see the fire now is as comforting as it was two or three thousand years ago, and proves to us that the proper mode of heating rooms is by wood, coal, or peat fires open to view. Gladdening the heart with the sight of the blazing fuel, and at the same time to utilise the heat of the flame and the smoke, is a problem that will yet be solved by an adaptation of the great German porcelain stove to our domestic hearths and homes. The Chinese, the greatest economists in the world, with their heated walls and porcelain floors, would also teach us at little cost how to be cozy both "but and ben."

JAMES KERR.

ARCHITECTS' RESPONSIBILITIES.

TIMES V. KERR.

Sir,—The monstrous decision of the jury in the above case ought to rouse every member of our profession; and my proposition is, that each of us subscribe a guinea; that the president of the Institute be asked to act as treasurer; and that the question be argued before the judges, and, if necessary, carried to the House of Lords, that we may know our positions and responsibilities; but to allow it to pass and drift into a precedent will be to neglect a duty we owe to ourselves. I cannot imagine the fiat of the jury passing unchallenged, especially as the finding is in direct contravention of the judge's direction; so much so, indeed, as to shake my faith in that palladium of justice,—twelve men in a box.

Why should we be responsible for time when we are so frequently harassed by delays and obstructions of many kinds, to say nothing of actions for light and air, strikes, and the like?

I would recommend the practice of noting everything, in a diary, by deputy, who may be very useful as a witness; and, when clients are troublesome, enter the time of day at which interviews take place, works are visited, or directions given. I have found such a course very useful.

J. E. KNIGHTLEY.

CHARGE AGAINST A BUILDERS' IRONMONGER.

DURING the last six weeks the attention of the building world in the south-western district of the metropolis has been directed to a case before Mr. Arnold, at the Westminster Police-court, and who has at great cost, both to the prosecutor and the defendant, remanded the hearing no less than six times.

The prosecutor is Mr. Warren Smith, gas-engineer, of College-street, Chelsea; and the defendant is Mr. Richard Head, builders' ironmonger, of King's-road, Chelsea, who is now on bail to take his trial at the Middlesex Session, for feloniously receiving a 2-in. main-cock, forty-one brass cocks, fifty knee-valves, four cups and balls, one bracket, and ten brass unions, the property of the said Warren Smith.

From the voluminous evidence adduced, it appears that on the 19th of December last, a gasfitter named Christopher Corp, was arrested on a charge of stealing brass-fittings from Mr. Warren Smith's workshop in Chelsea. This man had been a constant customer to Mr. Smith for fittings, but each time his calling stock disappeared in mysterious manner, and this led to holes being bored in a door, and a watch being set. Corp was caught stealing a quantity of valuable gas-fittings, for which he received a sentence of seven years' penal servitude. Up to this time Mr. Head's name had not transpired; but on the 30th of January, the convict Corp revealed to the chaplain of the prison that he had been robbing Mr. Smith ever since May last, and that he had sold the greater portion of the stolen gas-fittings at the shop of Mr. Head for sums below their real value. A search warrant being granted, the articles above enumerated were found in Head's shop, the greater portion being publicly exposed in the window for sale.

Mr. Smith deposed to finding the property, and said he could swear to the main-cock, the cup and ball-joints, and the ten unions as being his property. The other articles he merely believed to be his. There was a large quantity of property in Head's shop, which he believed to be his, but he only instructed the police to take possession of that which he could swear to. He could hardly form an approximate value of the property stolen, but he should say about 150*l.*

In cross-examination, Mr. Smith admitted there were no marks on any of the stolen goods by which he could identify them. The main-cock he had had by him six years, and he recognised it in the same way he would his own hat.

The cup and ball-joint he identified by the shape. Head assisted the police when they searched his place, and he had frequently bought goods of witness, but they were principally iron fittings. He believed he had never purchased any brass fittings, but was not positive.

Gas-fitters and other men in Mr. Smith's employ were called to identify the property found, and admitted there were no marks on any of the stolen goods.

Christopher Corp, who was brought up in custody under a *kabaza corpus*, in his convict dress, swore that he had been principally robbing Mr. Smith from May until the 15th of December last. He used to sell some of the stolen property to Mr. Head, who gave him 2*l.* a dozen for 1-in. gas cocks, and 3*l.* a dozen for 1½-in.; 4*l.* a dozen for 2-in. gas cocks, and 5*l.* a dozen for 2½-in. He did not mention Mr. Smith's name when he sold the goods, nor did he state they were stolen. Mr. Head agreed to give him 1*l.* 6*s.* for the last lot of goods. He was taken into custody on Friday, the 19th of December, and on the Monday following he wrote to Mr. Head, and on Tuesday Mr. Head came and saw him in the House of Detention, and told him he had not slept all night since he had received his letter. Witness asked him if the police had been to his shop about the things, and he replied no. Head asked witness if it would not be better to send the things away, and he told him he was at liberty to please himself. Mr. Head asked who was going to defend him, and if he could give him a sovereign then to take the things, and he told him he was at his lodgings.

Mr. Hibton denounced the convict's statement as unworthy of belief, and called a number of builders' tradesmen, who gave Head an excellent character, and who stated that it was the custom of builders' tradesmen to buy job lots of goods; men went round and hawked them. Mr. Owen, of San-street, Bishopsgate-avenue, said he had sold some gas-fittings to Head, and that some of those which were found in Head's shop, and claimed by Mr. Smith. He believed Head's stock to be worth 2,000*l.* Head had purchased goods of him to the extent of 200*l.* per annum. The witness then examined Head, and he had been a traveller for Messrs. Fell & Co., of Wolverhampton. He left them because he had a dispute about the accounts. He then said he had been in partnership with Mr. Martin. His partner had given him in charge for forgery. He was discharged.

Mr. Arnold said, if it were not for the convict Corp's evidence, there would be no case at all to justify the commitment of Head for trial. It was almost impossible to identify the goods, and even Mr. Smith himself would not swear to them. The witness then asked Head if he had been a prisoner's favour. But he did not see why Corp's evidence should be ignored, or why he should ask up such a story against Mr. Head, more especially as he had received every thing from him. There was no evidence of Head buying some articles from Corp, but had not produced any entry in his books to show what they were, as an ordinary business man would have done. He should, therefore, send the case before a jury, and would accept the bail.

PROPORTION AND SYMMETRY.

TROSS interested in the article in the *Builder* of March 7th, "Proportion and Symmetry," will find the subject discussed in a paper read at the Royal Institute of British Architects, by Mr. W. C. Cresswell, and also in this artist's work, "The Science of Moderation" (Messrs. Smith, Elder, & Co.). "Art, Practical and Industrial," is still published, edited by Mr. Forbes Robertson (London: George Bell & Sons). There are also Egyptian proportion, of seated and erect figures, in the British Museum.

PERVIOUS WALLS.

Sir,—I shall be greatly obliged if any of your readers can help me by any suggestions, under the following circumstances. When a school-house was built here, twelve or fifteen years ago, the construction of the walls was found within a quarter of a mile of the spot, and was made use of in the building. It has proved so porous a nature (being a coarse, gritty sandstone) that, with every south-east wind, the school is completely drenched, driving rain, the wet pours in through that part of the wall which is exposed to that quarter, spoiling everything inside, and making the rooms very damp and unhealthy. Various remedies have been tried,—a silicate composition, and even anti-corrosive paint, but hitherto entirely without effect. We think of weather-tiling; but, can any of your correspondents, writing from actual experience, suggest anything else? The stonework, I should add, is hammer-dressed, the quoins only being squared.

WEST SUSSEX.

THE ROCHDALE TUB SYSTEM.

"An Explanation of the System adopted by the Rochdale Corporation for the Removal of House Refuse and Nightsoil, and its Manufacture into Manure," prepared as a report by Mr. T. Hewson, borough surveyor, and Mr. J. Harescough, manager, has been issued in a printed form (Wrightley, printer and publisher, Rochdale).

In a "Summary of the Value of the Rochdale System" the reporters say:—

"The objects so far attained at Rochdale, by the new system, are:—A more despatch, an improved health of the people, by the town being no longer soaked with night-soil (in private), and by the relief from the noxious exhalations arising from the decomposition of animal excrement arising from the faeces of fowls and choleraic patients; a cleanly mode of removal; a reduction in the cost of erecting privies; and the saving of at least two-thirds of the cost of collection.

The tub system, whether combined with a simple method of odorising, or with a manufacture of manure,—is no doubt a great stride towards securing the better health of populous places; but without a system of manufacture (as at Rochdale), the difficulty which presents itself to the tub system is, that the *aspid* nuisance remains unabated, and therefore not half the causes of ill-health are removed. It is a system that, by its very nature, is highly injurious to health, and that the ordinary conditions of an asphalt, or of a 'town's tip' actively

creates those diseases which so often assume the form of epidemics. Where, however, the method is adopted of converting into a marketable product the whole of the ashes and night-soil of a town, and disposing economically of the *chute* of the refuse, and so avoiding any necessity for a depot, or 'tip,' for 'rabbits' or 'dry ashes,' as they are called, not only are all nuisances prevented, but a profit obtained which, taken into account with the cost of collection, reduces the cost of the new system to far less than the old one. This last achievement, whilst not of such importance as the great sanitary improvement, has prevented that opposition from ratepayers which is always given where an expenditure on works is proposed for a new system, which cannot show that a commensurate return will be made, not only on the capital invested, but in a reduction of the rates."

A description of the system is given, with illustrations. It "includes the mode of manufacturing" the manure, as well as the mode of collection, &c., of which we have spoken on previous occasions.

The accuracy of the "Explanation," we must add, has been disputed. Our own impression of the system is anything but favourable.

A THOUGHT FROM THE PAPERS.

SIR,—I have been told by a friend of mine that the cleverest people for to-morrow must be those who know most to-day. "It's all very well for you, Wheeler," said I, "you have a library and have learnt a lot." "I haven't a book left," said he; "they were all burnt with the Patent Office; but the daily papers are library enough for me." Wheeler is a philosopher: he lives on porridge and wears no socks; as for his boots, so far as may be judged by the heels, they are not of much account. "I have read nothing for years but the papers, and that's why I have lost my books; at least, I thought they were safe; at most, I regret them because they were old friends, and I have paid dear rent for them too. For the sticks I care nothing; I thought they were safe though." Wheeler has been wandering about Europe for a time with the hope that he might re-establish a home by-and-by: but he won't now. For half-a-crown a week I get a splendid library—more by a deal than I can read through. What a lot of knowledge you may gain for half-a-crown a week! There is scarcely any want, real or imagined, any pain, vexation, or discomfort, that is not met with a promised satisfaction, alleviation, or positive cure, in the broad sheets of advertisements that the newspapers day after day make known to us; complaint and remedy side by side. Not to the lined-off special notifications of particular demand and supply, "Feeding-bottles for babies," "Institutes for nursing," "Education" and instructional amusements, good and bad, "Clothing" for ladies and gentlemen, and what to do with it when they have done with it, "Cautions," "Notices," "Soaps for coarse complexions," and any day you may wish or hope your hair to be—all the long run of what in a life-time dressing and acting may help to the rest of it; and for the last of them I shall cite "Mammotion of advertisement to be restricted."

From its first capital letter to the date when so and so of somewhere published it, a newspaper is advertisement from beginning to end. And not in "the agony column of the Times" are its most startling and mysterious announcements to be found, for last Tuesday a short paragraph stopped my breath, and yet I am not a very nervous man. Read this, sir:—

"Petroleum.—The increase in the importation of petroleum is remarkable, as appears by the return issued on Saturday. In the last month the declared value was 143,911l. against 38,515l. in the same period last year. In the last two months, the value was 264,855l.; in the same period last year, 59,353l."

A poor wretched creature with toothache or earache would be asked fifty questions if his or her clothes were ragged before obtaining a penny worth of laudanum to soothe the anguish. A well-dressed scoundrel with three thanks, could buy with as many pennies as smiles, enough of that which was to clean his gloves, or burn the Bank down. A fellow must smile to get along. Be grave and serious—unless a Chancery attorney, or engaged in a divorce case—and you are lost.

My library brings me many pleasures. I delight in reading of such charming record it gives of the Royal family's new happiness; our loyalty; our real love for the Queen, our princes and our princesses, and therefore our happiness too. I see so much to thank God for; but whilst thanking, I would beseech God to save us more knowledge of petroleum. It is a horrible thought that no right, no honest impulse, adds to

its importation. It absorbs me now; for the thought of "how in a quarter-turn of the clock's hands the busy hands' work of grey-headed men may be brought to nought by a little more heat than may keep it dry; that the hoarded treasures of home that have descended from father to son, shall be but cinders in a few hours; that accident, spite, or desperation, should have such a weapon," makes me regret, almost, that Jack Wheeler should have told me of a cheap library.

ADAM WAKE.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE seventh annual meeting of this Institution was held at the Office, 27, Farringdon-street, on Tuesday, the 3rd inst., Mr. Charles Fish, president, in the chair.

The balance-sheet showed an income from all sources, during the past year, of 284l. 9s. 4d., being 30l. 19s. 8d. less than the previous year, owing to a falling off in the donations principally to the Orphan Fund. 115l. had been paid in pensions to widows, and 61l. 8s. 2d. in expenses of management. 116l. 2s. had been added to the investments, and it was stated that 91l. 17s. 6d. had been invested since the end of the year; the total invested funds being 1,138l. 12s., representing 1,235l. New Three per Cents.

The president, in moving the adoption of the report and balance-sheet, said they showed that the Institution had made considerable progress during the seven years it had been established; but the builders' clerks of the metropolis were a large and important body of men, and he should have expected that much more would have been done in the time. The only point in the report which seemed to him to call for special remark was the amount of working expenses, which was large in proportion to the relief granted, but small in itself, and he did not think it could be further reduced without decreasing the efficiency of the Institution.

Mr. Thomas Robinson (Messrs. Cubitt & Co.), vice-president, made some observations on the desirability of collecting all subscriptions and paying all expenses which occurred during the year in which they accrued.

The meeting was then made special, and the election of Mrs. Spencer to a full widow's pension decided by a show of hands, there being no competitor.

Mr. H. T. D. Hayes brought forward the motion which had been advertised, that the Orphan Fund should at once be put into operation, urging the meeting not to bind themselves to the amount of 1,000l., which had been fixed by the preliminary committee before experience had shown the best mode of working, or the amount necessary to make a beginning.

Mr. E. Brooks warmly seconded the proposition.

A letter was read from Mr. Arthur Gates, one of the trustees, expressing his cordial approval of the motion, and inclosing a donation of 5l. 6s. towards the Orphan Fund.

Mr. G. Prestige (treasurer) wished the meeting to clearly understand that this was not a motion brought forward by the committee collectively, or that met with their entire approval. The fund would probably accumulate to the limited amount in three or four years, and he deprecated any interference with the established rules of the Institution.

Mr. T. Peto Ward (founder of the Institution) was fully as anxious as any of the committee to extend the benefits of the Institution as far as was practicable, but he felt that he must oppose such a motion being brought forward at this time. The rule, that when the fund had accumulated to 1,000l., a meeting should be called to consider the subject, had not been made without due consideration, and he thought it should be adhered to.

Mr. T. Robinson supported the motion, saying it seemed a pity to adhere too rigidly to the sum of 1,000l., as there was no especial charm in that amount if the fund could be usefully employed sooner.

Eventually the motion was carried by 12 to 3, and the committee instructed to prepare a scheme for consideration at a future meeting.

A proposal to reduce the amount of subscription payable by junior clerks, to enable them to obtain a vote, was negatived by the casting vote of the chairman, and the meeting terminated with the usual votes of thanks.

TRADES MOVEMENT.

Birmingham.—A general meeting of the master-builders was held at Birmingham on Thursday, 5th inst., to consider the demands of the labourers, stonemasons, and plasterers, who have given notice to strike in April unless their demands are conceded. The labourers, who now receive 4d. per hour, claim 5d. The employers offered 5d., subject to arbitration. The labourers having refused arbitration, it was resolved unanimously by the employers to make no further offer. It was the opinion of several masters that a strike would follow. The stonemasons had asked for another farthing per hour, which would make their wages 8d. per hour. The employers offered to give the extra farthing, but a disagreement had arisen about a rule binding

on the stonemasons in regard to the right and power of the masters to conduct their own business without being interfered with by their men. The plasterers claimed another farthing per hour, but agreed to arbitration. The masters supported their committee by adopting their report.

Edinburgh.—An aggregate meeting of joiners has been held in St. Mary's Hall, Mr. Thom in the chair. From the statements given in by the various shops and squads, it appeared that the whole of the masters had acceded to the demands of the men. It was, however, alleged that a number of workmen had been dismissed in consequence of the active part taken by them in the movement for obtaining the advance. After an animated discussion, it was unanimously agreed to support any who had suffered in this manner until they should obtain employment at the advanced rate.

Limerick.—All the house-carpeners in Limerick have struck work, owing to a refusal on the part of the employers to raise their wages from 30s. to 33s. per week. Some time since the men gave notice that on and after the 1st instant 33s. per week would be demanded. In consequence of the strike several employers who had large contracts in hand have been obliged to stop work.

ACCIDENTS.

Birmingham.—A house in Lower Temple-street, known as "Welch's Pie Shop," in addition to being exceedingly old, was lately rendered still more insecure by the taking down of some adjoining building, and also in consequence of it being undermined in the construction of new cellaring, and great fears were entertained of its falling at no distant date. Some workmen employed near the shop observed the house suddenly commence to sway to and fro, and immediately acquainted the inmates of the house, who at once went out into the street, and in a few minutes the whole structure fell. Half an hour later the dining-room would have been full of people.

Brighton.—A large portion of the heavy cornice on the front of the Old Ship Hotel fell last Monday, with a heavy crash on to the pavement, near the principal entrance to the hotel. Fortunately the damage done was confined to the breaking of three iron railings and a few squares of glass.

Workington.—During a storm several concrete houses, which are being built near the Derwent Tin-plate Works, at Workington, were blown down by the wind.

Sheffield.—A serious explosion has occurred at the works of Messrs. Foster & Lockwood, known as the Britannia Foundry, Carlton-road, Attercliffe. The works have only just been erected. A portion of them consisted of a shop of 100 ft. long, by 50 ft. wide, and in it were three 10-ton cranes and an air furnace. About 3 tons of molten metal were drawn from the furnace into a pan, and one of the cranes was brought into use to send the pan over what is known as a roll-pit, where the moulds are to be placed. As the crane was swinging round the chain broke, and the pan and metal toppled over into the pit. Unfortunately, not only was the pit extremely damp, but at the bottom of it there was some water. The instant the molten metal touched the water it exploded with three loud reports, and the metal was carried in one great mass right up through the roof, which was blown completely away, and the tiles and slates were scattered in all directions. There were fifteen men in the shop, all of whom are more or less seriously injured from the falling roof. One of them had a piece of slate driven into his skull. The concussion caused by the explosion smashed almost every window on the opposite side of the road, and it is said the clerks in the offices attached to the works were thrown from their seats. Windows were broken within a radius of a quarter of a mile on either side of the works.

Nothing Like Iron.—The Darlington Iron Company have just declared a dividend of 2l. 10s. per share for the past half year. The nominal value of the shares is 20l., but only 8l. are paid up; hence the per-centage paid is somewhat startlingly large. In spite of dull times, high prices of fuel, and strikes, it is clear iron-makers make enormous profits, and the increasing rage for iron constructional works is opening up a wide field for ironmasters to grow rich.

SCHOOL BUILDING NEWS.

Burton-on-Trent.—A new grammar-school and residence for the head-master are about to be erected. After a limited competition, the designs of Mr. G. Seemell, of Great George-street, Westminster, have been selected, and having been approved by the Endowed Schools Commissioners, the works will be proceeded with immediately the working drawings are prepared. The school, which is to provide accommodation for 120 scholars, consists of a general room, 65 ft. by 25 ft., and three class-rooms, each 20 ft. by 20 ft., and opening direct from the school-room, two of which are placed at the end of the school-room, forming a T on plan, and separated from each other by a sliding partition. At the other end is placed, the drawing-class-room, and also the teacher's room, lavatory, hat and cloak room, and entrance-porch. Open fireplaces are provided, and ventilating-flues in the roof. Externally the buildings will be of a plain Gothic character, built of the local red brick, with Ancaster stone dressings, with a few moulded bricks introduced as labels, strings, &c. The roof of the main building will be surmounted with an open fische utilised as a ventilator. The master's residence will be of the same character as the school, and quite detached from it.

Laisterdyke.—The new Sunday and Day Schools in connexion with St. Mary's Church, Laisterdyke, have been opened, according to a Bradford paper. The foundation-stone of the schools was laid by Mr. F. S. Powell, at the close of 1872, and the total cost has been about 1,400l. The site adjoins the parsonage. The new building consists of one large room for boys and girls, and two class-rooms, and will accommodate 220 children. Messrs. T. H. & F. Healey, of Bradford, are the architects; and the masonry and woodwork have been carried out by Mr. B. Roberts and Mr. G. C. Gamble.

Tarrant Quailly.—The new school in this parish has been at length formally opened. The school, which is of an ornamental character, has been built of brick and flint, with stone turret and porches, by Mr. A. H. Green, of Blandford, and stands in one quarter of an acre of ground, surrounded by a brick wall. It contains accommodation for ninety children. It stands above the adjoining cottages, immediately fronting the church, on the opposite side of the Tarrant valley.

Miscellaneous.

The Reredos in Worcester Cathedral.—The new reredos, gift of the very Rev. Dean Peel, has lately received some additions in the shape of grille work, intended to add to its lightness, and is now receiving the finishing touches of the decorative artist. The cost of the original structure, we understand, is about 2,000l., but the subsequent additions and decorations will add considerably to that amount. The base extending from the floor upwards for some 4 ft. or 5 ft. is of alabaster, in diaper work, interspersed with round knobs of Derbyshire spar, beautifully varied in colour. This base supports a series of five central niches canopied, finialled, and crested, and three smaller niches on each side of the central niches. The diapers in the base are now being coloured and gilt. The clustered shafts dividing the niches are of different kinds of marble and of granite. The five principal niches in the centre are more profusely carved and ornamented than those at the sides. Five full-length figures, of nearly life-size, are placed in these niches. The principal and central figure is that of our Lord in the act of benediction, the four Evangelists—Matthew, Mark, Luke, and John—being ranged two on either side. The five principal figures appear too large for their situation. The finial of the canopy over the central figure is enriched by four large coloured stones.

The New Esplanade at Ventnor, Isle of Wight.—In the local Board, it has been resolved,—"That the Permanent Improvement Commissioners be instructed to examine the plans of the esplanade already prepared, and advise the Board as to the propriety of buying any of them." Some members thought the plans referred to were not of much practical use, having been made some years ago. Mr. Saunders replied to objections, and an assurance being given that the Board would be committed to no expense, the committee were empowered to bring up any other plans they might think advisable.

Oxford Architectural and Historical Society.—The second walk this Term took place on Saturday before last, when the members and their friends assembled at the Ashmolean Museum, where, in the absence of Mr. J. H. Parker, the keeper, they were received by Mr. J. P. Earwaker, the deputy-keeper. After a few introductory words from Professor Westwood, Mr. Earwaker gave a brief description of the museum and its contents. Mr. W. S. W. Vaux, of Balliol College, then gave an account of the Arundel marbles which are now placed in the basement of the building. The next walk will be to Marston and Headington, where the churches at those places will be visited. The second evening meeting was held in the Taylor Building, the Rev. J. S. Trancher in the chair. Two new members were proposed, and twenty-four proposed at the previous meeting were unanimously elected. Mr. A. J. Evans, of Brasenose College, then read a paper on "The Bronze Age in Europe," and illustrated it with a collection of specimens from Austria, Germany, France, Italy, Denmark, Cyprus, Styria, and other places. Mr. James Parker, Mr. Earwaker, and Mr. Daniel took part in a discussion which followed. Mr. Parker had intended making some remarks "On Flint Weapons," but in consequence of the lateness of the hour they were postponed.

The Coal Question and the Statistical Society.—The debate on Sir Rowland Hill's paper, proposing a tax on coal, at the Statistical Society, appears to have been much more interesting and instructive, says the *Economist*, than the paper itself. Thus Sir James Anderson remarked that "if the price of coal were fixed at 30s., 35s., or 40s., there would be no difficulty in supplying the railways, gasworks, and iron-works of England with all the coal they require from the United States and Nova Scotia. So long as England possessed the brain to use the coal advantageously in her manufactures, she would be able to obtain it at a price which would enable her to compete with other nations. He did not believe that our operatives would leave the country, no matter what became of our home supply of coal." As the opinion of a practical man of the highest authority, this assertion that the commercial supremacy of England is not dependent on cheap coal is of some value. We also find another expression of opinion by a very able man, which seems to show the extreme danger of expressing opinions on business subjects with which the speaker has no practical acquaintance.

Manchester Academy Exhibition.—The collection is an interesting one, if not of very elevated character. Local art comes out fairly. The local *Evening News* regrets the absence of works by lady artists:—"All around," says the writer, "we saw pictures of masculine strength and vigour, and others of feminine lightness and grace; but, for all that, there was nothing which bore witness to the artistic talents of the gender sex in the whole exhibition. This we cannot help thinking, however it may have been caused, was a great pity. Manchester has a number of lady artists, and some among them are reported to be possessed of no mean ability. We dare hardly say they are 'gems of purest ray serene,' but they certainly waste much of their sweetness on a desert air, because they have not the opportunity of bringing their works under the notice of the appreciative public which attends the Academy twice a year. One of the 'rights' of woman which we have always been ready to recognise is her right to enter, upon an equality with man, into all the professions for which she is fitted."

Manufacture of Patent Fuel.—On the invitation of the Duke of Sutherland, Lord John Hay, and others, a number of gentlemen have assembled at Seafield, near Bathgate, for the purpose of witnessing the opening of works there for the manufacture of patent fuel. The fuel consists of certain proportions of coal-dross mixed with a percentage of shale-tar, and the advantages claimed for it are, that while each of the substances is individually of small account, the two combined yield a product of great commercial value. The patent fuel was tested in various ways, and it was acknowledged on all hands that it excelled for steam-producing purposes the best coal. The patent also applies to the preparation of iron-dust ore for the smelting furnace. It is intended to collect the dust ore, and by means of a flux composed of shale-tar and lime, form it into blocks, which may be thrown into a blast furnace.

Condition of Balconies and other Standing Places.—At last week's meeting of the Metropolitan Board of Works it was resolved that a circular letter be addressed to the district surveyors, in the route of the royal procession of her Majesty and the Duke and Duchess of Edinburgh from Paddington to Buckingham Palace, calling their attention to the necessity of carefully inspecting all balconies, parapets, and temporary erections in their districts, on the 12th inst., with a view to proper measures being taken for the safety of the public. Mr. Fowler regretted that no fee could be allowed to the district surveyors for this service. Major-General Sir W. Codrington, however, said he was very glad to hear that no fee was to be charged, as he thought it would be very hard if a fee were charged upon every house in the line of the procession. The first case in point was that of the proprietor of a balcony at Charing Cross, who was ordered by Mr. Vaughan to secure his balcony in a few hours, else it would be done at his expense.

Roman Antiquities. The *Italia* of Rome publishes the following:—"A number of archaeological discoveries have been lately made here in the different quarters where building is going on. Among them may be mentioned a complete statue of Juno; one of Æsculapius with the feet broken off; three figures without heads or extremities; six of Venus of different forms, and some of which are also without heads. There is also a colossal statue of a woman, in fragments, of which forty pieces have been collected. At the point of intersection of the streets Cavour and Principe Umberto four other figures without heads have been found, making in all sixteen in a few days. Near the gate of San Lorenzo have also been brought to light the remains of a forum, surrounded with colonnades. In the Piazza Victor Emmanuel the workmen have come upon the vestiges of a vast semicycle of more than 260 ft. in diameter.

Dwellings for the Labouring Classes.—At the last meeting of the Metropolitan Board of Works, the Works Committee brought up a report, recommending that with reference to the memorial presented to the Board by a deputation appointed at a public meeting, on the subject of the erection of dwellings for the labouring classes a communication be addressed to the memorialists in reply, to the effect that the Board had always evinced a desire to make provision for the accommodation of the labouring classes whose dwellings have been required for street improvements, and that certain plots of ground in the intended new street from Oxford-street to Shoreditch would be reserved for such purpose; but that the Board had no power to carry out such a plan as that suggested by the memorialists.

Improvement of St. Pancras Vestry-hall.—The vestry of St. Pancras a short time ago instructed their General Purposes Committee to obtain plans for the improvement of the appearance, and for the enlargement of the Vestry-hall, at the junction of St. Pancras and King's roads, which was to be effected by utilising the ground in front and at the side of the hall, in order to provide additional office room to accommodate the offices of the Works and Sanitary Departments, and the cost not to exceed 3,000l. The committee thereupon offered a premium of 20l. to the architect who sent in the best plan, and the plans received were exhibited in the vestry-hall for the inspection of the vestrymen.

London International Exhibition, 1874. The Committee for Sanitary Apparatus and Contrivances held their seventh meeting on Tuesday at the Royal Albert Hall. Mr. George Godwin in the chair. There were also present—Mr. Gatliff, Dr. Hardwick, and Dr. George Ross. The goods received were inspected, and the committee adjourned until the 24th inst.—The eighth meeting of the Committee for Building Contrivances and Materials was held on Wednesday, Mr. H. Grissell in the chair. There were also present—Messrs. Bird, Elger, Kirkaldy, and Wyatt. After inspecting the goods received, the committee adjourned until the 25th inst. Captain Clayton, R.E., attended both committees.

Royal Academy.—Professor Edward Barry has been appointed treasurer in the place of Mr. Sidney Smirke, resigned. This is one of the appointments in the Academy which rests with H.M. the Queen.

Cartier.....	1886	0	0
Vernall	826	0	0
Poole	662	0	0

For decorative and other works at the premises known as Eddis's Museum, for Mr. S. Gilbert, Mr. H. H. Collins, architect:—
Vernal £705 0 0
Poole 676 0 0

For pulling down and rebuilding the Leigh Hoy, Church-street, Mill-end New-town, for Mr. Claus, Mr. W. Deben, architect:—

Markall	£3,023 0 0
Hunt	1,864 0 0
Ferry & Co.	1,830 0 0
Harding	1,811 0 0
Judd & Hawkins	1,800 0 0
Peters	1,798 0 0
Rampr	1,784 0 0
Wood	1,763 0 0
Stamp & Bowtie	1,728 0 0

For a house at Sheen, for Mr. Hamilton, Messrs. Manning & Becheroff, architects. Quantities by Mr. D. J. Brown:—

Kimberley	£3,218 0 0	Add for Facing.
Browne & Robinson	2,928 0 0	88 0 0
Clark & Bracy	2,878 0 0	88 0 0
Smith	2,850 0 0	88 0 0
Temple & Foster	2,748 0 0	60 0 0
Maun	2,730 0 0	40 0 0
Nye	2,720 0 0	40 0 0
Adamson & Son	2,687 0 0	40 0 0
Longmore & Burge	2,680 0 0	80 0 0
Manley & Rogers	2,650 0 0	65 0 0
Ariss & Co.	2,592 0 0	80 0 0

For alterations to the Blackstock Tavern, Finsbury Park, for Mr. W. Wells, Mr. J. Viney, architect:—

Stead	£238 0 0
Brooks	238 0 0
Channing	224 0 0
Parsons (accepted)	216 0 0

For alterations to the Constitution Tavern, Drury-lane, for Mr. George Young, Mr. J. Viney, architect:—
Godden (accepted) £689 0 0

For repairs to four houses, Hanley-road West, Hornsey-road, for Mr. Charles Palmer, Mr. J. Viney, architect:—
Edworthy (accepted) £293 0 0

For restoring No. 32, Fulham-road (damaged by fire), for Mr. Foy, Mr. W. H. Lamborn, architect:—

Dredge	£230 0 0
G. Godbolt	245 0 0
Bunting	205 0 0
Norris	198 0 0
N. Godbolt	198 0 0
Hall	195 0 0
Sanders	180 0 0
Batley (accepted)	184 0 0

For coal-vaults at St. Luke's Workhouse, City-road, for the guardians of the Holborn Union, Mr. H. Saxon Snell, architect:—

Stamp & Bowtie	£387 0 0
Wagner	360 0 0
Boyle	347 0 0
Staines & Son	336 0 0
Deacon	324 0 0
Wall, Bros. (accepted)	298 0 0

For new chancel, vestry, and fittings at St. Margaret's Church, Brighton, Mr. John O. Scott, architect:—

Lockyer	£4,900 0 0
Booth	4,830 0 0
Chappell	4,828 0 0
Lynn & Son	3,744 0 0
Patching & Webber	4,685 0 0
Dove, Bros.	4,661 0 0
Cheesman & Co.	4,648 0 0
Eldridge	4,604 0 0
Smith	4,598 0 0
Nash & Co.	4,579 0 0
Carruther	4,446 7 6

For alterations to the John Bull, Bath-street, Poplar, for Mr. Angles, Mr. E. Brown, architect:—

Davis	£261 0 0
Lunn (accepted)	245 0 0
Marr	227 0 0
Lanscroft	225 0 0

For warehouse at 125, Queen Victoria-street, for Mr. G. H. Smith, Mr. J. Wimbles, architect:—

Bland & Son	£2,801 11 2
Shepherd	2,650 0 0
Falkner	2,566 0 0
Servier & White	2,522 0 0
Hoare & Son	2,494 0 0
Kilby	2,460 0 0
W. & F. Crocker (accepted)	2,398 0 0

For alterations and repairs to 110, Pittfield-street, Hoxton, for Mr. T. Arno, Mr. E. Brown, architect:—
Beale £292 0 0
Higgs (accepted) 277 17 0
Marr 248 10 0

For proposed lodge, chapter, banquet, reading, billiard, and assembly rooms, offices, and cellars, at the Surrey Masonic Hall, Canberwell New-road, Messrs. Paim & Clark, architects:—

Oliver (accepted) £4,882 0 0

For alterations to the Stanley Arms, Kirkdale, Liverpool, Messrs. Murray & Thomas, architects:—
Contract No. 1.
Thompson & Cook (accepted) £427 16 0

TO CORRESPONDENTS.

Rev. F.R.—J. C. Messrs. A.—F. R.—W. W.—J. V.—F. C.—G. P.—W. W.—G. H.—J. T.—G. H. O.—G. & R.—J. E. W.—J. & H.—W. G. S.—L. T.—County Surveyor.—D. & Son.—A. W. G.—W. C. R.—S. & Son.—W. & F. C.—F. G. H.—F. T. B.—C. L. E.—H. I.—H.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

Not.—The responsibility of signed articles, and papers read at public meetings, rests, if it can, with the authors.

CHARGES FOR ADVERTISEMENTS.

	Situations Wanted.	Situations Vacant.
Six lines (about fifty words) or under	2s. 6d.	0s. 6d.
Each additional line (about ten words)	6d.	6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to residents in any part of the United Kingdom at the rate of 1s. per annum, payable in advance.
Half-yearly statements for amounts under 5s. Any larger sum should be remitted by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to DOUGLASS FOUNDATION.

Advertisements cannot be received for the current week's issue later than **THREE o'clock p.m. on THURSDAY.**

NOTICE.—All communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent Garden. All other Communications should be addressed to the "Editor," and not to the "Publisher."

Bath Stone of best quality.

RANDELL, SAUNDERS, & CO. (Limited),
Quarries and Stone Merchants.

List of Prices at the Quarries and Depôts; also cost of transit to any part of the Kingdom, on application to

Bath Stone Office, Corsham, Wilts. [ADVT.]

STONE BROTHERS,

Bath Stone Merchants,
supply direct from their own Quarries:—
Box Ground, CORSHAM DOWN,
FARLEIGH DOWN, COMBE DOWN,
AND STONE GROUND.

Prices on application at Bath-stone Office, Bath. London Depot, G. W. R. Mileage Station, Paddington. Stone Dressings prepared ready for fixing. [ADVT.]

Whitland Abbey Green Slates.—These Quarries are now fully opened out, and are producing Slates in all sizes, and in any quantity: sound, and of choice green tint. Orders can be executed without a day's delay. For samples and further particulars, apply to the MANAGER, at the Quarries, Narberth-road, R.S.O. [ADVT.]

Asphalte.

Seyssel, Patent Metallic Lava and White Asphaltes.

M. STODART & CO.
Office:

No. 117, Cannon-street, E.C.—[ADVT.]

Bills of Quantities, Specifications, &c.
Lithographed by ROBT. J. COOK & HAMMOND,
29, Charing-cross, S.W., with accuracy and punctuality. Plans and Drawings Copied, Traced, or Lithographed.—[ADVT.]

J. L. BACON & CO.

MANUFACTURERS OF
IMPROVED HOT-WATER APPARATUS,

FOR WARMING AND VENTILATING
Private Houses, Churches, Schools, Hospitals,
Manufactories, Greenhouses, &c.

OFFICES AND SHOW-ROOMS:—
476, NEW OXFORD STREET, London, W.C.
From FARRINGTON ROAD.

Publishers of a Pamphlet on "Hot-Water Heating."

MICHELMORE & REAP,

Manufacturers of
CHARLES COLLINGS PATENT

COLLINGS' PATENT HINGES,
LEVER, SCREW, & BARREL BOLTS,
and IMPROVED GATE FITTINGS of every Description.

36A, BOROUGH ROAD,
LONDON, S.E.

PERFECTION IN BOOKKEEPING.—

Builders and Others desiring a really good system, can have SET OF MODELS FOR BUILDERS BOOKS, by DOUBLE ENTRY, to which will be added, forms of account, &c. The Builder, No. 1, P. 1, and which has been adopted by many large firms. Also a Modified Arrangement by Single Entry, suitable for small builders.—Address, Mr. H. J. JONES, 2, Vine-street, St. Paul's.

CAPITAL AND LABOUR.—Promoted by

the National Association of Associated Employers of Labour.
Motto: "The Freedom of Labour—the Sanctity of Contract and of Law."

CONTENTS OF No. 3.—The Criminal Law Amendment Act. A Free Breakfast Table. Working Men in New York. Curm at the Spirit of the Press—Travellers in a Million. Agitation on the National Institute of British Architects. Wages and Strikes—Legal Cases—General Notes—Foreign Items, &c.

Single numbers, 1d. Annual volume, 1s. 6d. Post-free, 1s. 10d.

Published every Wednesday, at 128, Fleet-street, London, E.C.

THE FIFTH EDITION, in One Volume, 8vo. price 2s. 6d.

GILWILL'S ARCHITECTURE, illustrated
with more than 1,500 Wood Engravings. Revised, with Alterations and new designs. Additional, by WYATT PATERSON, Fellow of the Royal Institute of British Architects. Additionally illustrated with more than 400 Wood Engravings by O. JEWITT; and more than 100 other Woodcuts.

London: LONGMANS, GREEN, & CO. Paternoster-row.

SIR W. FAIRBAIRN'S WORKS ON ENGINEERING, &c.

USEFUL INFORMATION FOR ENGINEERS

By SIR WILLIAM FAIRBAIRN, Bart. C.E. F.R.S. &c.

Works by the same Author, fully illustrated:—

TREATISE ON MILLS AND MILLWORK,

containing the Rules required for the Construction and

Making of all kinds of Water-wheels, &c. By JOHN BOURNE, C.E.

By the same Author, Improved Edition:—

IRON SHIP BUILDING, its History and Progress to the Present Day (revised), 8vo. price 15s.

APPLICATION OF CAST AND WROUGHT IRON TO BUILDING, &c. (revised), 8vo. price 15s.

London: LONGMANS, GREEN, & CO. Paternoster-row.

MR. JOHN BOURNE'S WORKS ON THE STEAM ENGINE.

In 12 1/2 pages, with 60 Woodcuts, price 1s. 6d.

HANDBOOK OF THE STEAM ENGINE,

containing the Rules required for the Construction and

Making of all kinds of Steam Engines, &c. By JOHN BOURNE, C.E.

By the same Author, Improved Edition:—

CATECHISM OF THE STEAM ENGINE, with

Practical Instructions for the Manufacture and Management of

Engines of every class. With 260 Woodcuts. Price 8s. 6d.

RECENT IMPROVEMENTS IN THE STEAM

ENGINE, including many New Examples, with 124 Woodcuts. Price 8s. 6d.

A TREATISE ON THE STEAM ENGINE, in

its various Applications; with Forts, Plans, and Woodcuts.

4th ed. London: LONGMANS, GREEN, & CO. Paternoster-row.

MR. EDWARD'S PUBLICATIONS ON THE DOMESTIC

USE OF FUEL.

In royal 8vo. size, 5s. 5d. illustrated.

OUR DOMESTIC FIRE-PLACES. Price

SMOKE CHIMNEYS. Price 3s. 6d.

THE USE OF FUEL IN COOKING.

Price 5s.

SOME OBSERVATIONS ON FIRE-

PLACES, STOVES, and VENTILATION. Price 6d.

London: LONGMANS, GREEN, & CO. Paternoster-row.

New Publishing, price 4s. Fifty-seventh Edition.

LIXTON'S BUILDERS' PRICE BOOK

for 1874, containing above 72,000 Prices, carefully corrected

and revised, according to the 1874 prices of materials, labour, freight, with many new, useful, and important Memoranda; and Prices and Descriptions of New Materials and

Instruments suited to the Builder, Contractor, and Engineer, and all Trades connected therewith, originally compiled by WILLIAM LIXTON, Architect & Surveyor.

The works of the Metropolitan Building Acts, the unexpired sections of the New Act, and the Act of 1873, with Notes of Cases, and the Act of the Superior Courts, by W. KELLY, Esq., of the Inner Temple, Solicitor.

KELLY & CO. No. 51, Great Queen-street, Lincoln's Inn; STEPHEN, MARSHALL, & CO.; and all Booksellers.

T. TRELOAR & SONS,

SUPERIOR

COCOA-NUT

FIBRE

MATTING

AND

MATS.

Manufacturers and Warehousemen

69, LUDGATE HILL, E.C.

GOOD

FLOOR

CLOTH.

KAMPTULICON

CORK

CARPET.

The Builder.

VOL. XXXII.—No. 1624.

The Imperial Procession—glanced at artistically.



Here at divers times, as opportunity offered, commented on those occasional interludes in the monotony of ordinary existence which are afforded by such public displays as that of the Imperial entry into London of the Duke of Edinburgh and his Russian Con-

sort. It is not often that such events so happily occur to break the somewhat dull uniformity of modern existence, and to do, as we think, no small amount of good; and to accomplish, if things were but altered a little, a great deal more good. Thousands upon thousands saw this show or procession, and those who did not see it—and they were not a few even of those who went out for the express purpose—have by this time got it all by heart, in pictorial and written descriptions, so that there is no special need of here telling what it was. But there is one aspect of it which, though not immediately apparent, is not a little important and significant of things as they are, and which calls for comment and careful attention. We mean the artistic view of the great show and the long procession, and what is quite as telling, the special surroundings of it, and the special preparations which were made for the enhancing of its importance and splendour. Some things in it were sad indeed to see, and but served to show how much there is yet to be learned, and thought over, and designed, before a public, and national, and Imperial Show or "Procession," can be made what it ought to be. We ask a little attention to it, and to a thought or two of what might be with but a little more of artistic cogitation the next time!

In glancing at such a subject as this, it is almost necessary nowadays to argue, more or less, for its importance; for there are not a few people who positively object to displays of this sort, and consider them as more or less trifling,—simple waste of time and means. In the old days this feeling was precisely reversed. Shows and processions and public displays were then events as necessary in human existence as they are now rare and out of the common routine of things. True, everybody does not think this should be the case; for the present Prime Minister, who ought to be an authority, but a short time back said, and we cite his own words,—“That the spirit of civilisation in the nation cannot be sustained if its symbolic representation in the usages of the State be neglected.” In other words, it is necessary to make visible and striking what is in reality but a simple and necessary act. The

State can go very quietly, if it wills, from place to place, from the City to Westminster, and without any sort of display or show; but it may also perform the same act with very great and very magnificent display. In old days people seemed to live almost for things such as these; and not only so, but were at the pains to record them afterwards in all-enduring marble and impenetrable bronze. To forget them was impossible, and one of the great questions of the future will be, doubtless, how far and in what way to carry this idea into actual practice. No frowning-down of these things can, it is certain, do away with them, as the last week's display proves. People will have a something or other to look at and to be pleased with, and they ought to have it.

This then being so, the next thing to determine is, how best to do the work, and how best it can be made interesting and instructive, and refining to the general public mind; important questions, not to be settled in a moment, and opening out into quite new fields of artistic thought and action, could we but come at them. A public "show," or procession, or royal and imperial progress, divides itself naturally and necessarily into three distinct and quite separate items; viz., the procession itself; the streets, or ways, through which it goes; and its record or memorial afterwards. A few words then on each of these, as things now are, and were last week, artistically looked at, may be useful. We are almost inclined to abandon the procession itself in a sort of despair, for "processions" are, year by year, almost resolving themselves into simple displays of long lines of horse and foot soldiers. There were in the imperial procession but six carriages in all; and, what is more, and it is significant of the practical utilitarianism of the time, even the carriages, by degrees, are getting to be more and more sombre and subdued in colour, and plainer and simpler in make and build; so that in them there is but little to distinguish them from the ordinary carriages seen on all court occasions. The old-fashioned and quaint "State coach" is in its way a work of art, and a something which can be painted and drawn from, and sculptured; but an improved and fashionable carriage cannot. In the good old days of Queen Elizabeth, processions were possible and artistic, everything harmonised, and all in them made up, however quaintly, a compact show. The forms of the carriages, their colour, and decoration, the harness of the horses, and the costumes of those who filled these carriages, all went together, and made up one quaint and characteristic picture. The military item in such a show formed but a part of it, and a harmonious part; but in these modern displays the main body of the show is one item, the military another: there is little or nothing between them. In a right Royal progress, surely, it is worth while, if the thing be done at all, to do it well, and to put as much as is possible of artistic skill and feeling into it, to make of it an extempore picture, living and moving as long as it lasts; returning, may be, to common things next day. If it be a good thing to look for an hour or two at Royal Academy picture-shows of the old-fashioned, the quaint, and the forgotten, on dead canvas surfaces; then it may be good to look, too, now and then, at the living picture in the streets. Would it not be an "improvement" to organise a special apparatus for Imperial and processional purposes, always ready, and really suitable for the work, and all designed harmoniously in form and colour?

We could well go on and say a good deal more, and by going into detail a little, perhaps afford a hint or two. We pass on to the other item in the show, viz., the streets themselves, and to the efforts made to convert them into processional thoroughfares, or ways through which the long

procession might somewhat worthily and suitably and harmoniously pass.

In the first place, we must need leave the houses and lamp-posts to themselves as they now are; for to "improve" the streets would be almost to rebuild the houses in them. Street house-building is still a problem—perhaps a distant one—to be worthily solved. Regent-street and the Quadrant form perhaps the brightest highway in London; but the architecture of it can hardly be said to be more than plaster covering to plain brickwork. The modern plan, too, of piling the whole front of the house on a sheet of plate-glass, with here and there a thin brass rod to carry it (in appearance), is only to be defended on the score of pure utilitarianism: to make the very utmost of the show shop-front. This disappears, however, in a great measure on procession days, from the fact of the wooden temporary fixtures and supports to balconies and stands. And the question then comes, can the plain and ungainly house-front be made really artistic by any amount of temporary decoration fixed to it for a few hours? Can a real work of fine art come of such temporary expedients, however worthily done? All sorts of efforts were made along the line of route to do something, and at almost every degree of cost; but it was barely possible to find a single one of them which could be called really "artistic." We would name specially but one—it may be in the recollection of a reader here and there—the China-shop in Waterloo-place; as plain a house as can be,—so the architecture did not help it, but the "decoration" most certainly did. Simple heraldic banners hung from the sills of the windows, and festoons of cloth—Imperial colours—from the cornice of the house. We specially name this from the fact of there being so very little of it; but that little doing a good deal of work: there was quite enough. Nothing could exceed the awkwardness of the putting out, in all sorts of accidental places, all kinds and colours of little flags of no special significance,—toy-shop work, if hardly so good. The greater part of it contemptible. Would not a few large and well-drawn upon flags, regularly disposed, be more to the purpose, and most surely far more artistic; and as a whole, when seen together, down the street, far more effective and pictorial? These might, too, with ever so little thought, be made to tell a good story; but a somebody must do it. Nothing can be more effective and telling in such shows than good flags, and it is a pity that the very most should not be done with them, and that they should be not only artistic but significant. The same, too, may be said of the festoons of flowers, very well made some of them; but should they not also have a meaning, and with a sort of architectural sense of order and method in their distribution? Not hung up from almost anywhere that a nail or hook presents itself, from which they can by possibility be suspended. Nothing can be more effective, when well and judiciously placed, and all antiquity shows that the "festoon of flowers" is a worldwide idea, and has been brought into service everywhere, and by every race, and made to decorate, in some way or other, all architectures. It is a beautiful art-thought, but good sense, and the artistic sense, must guide to the use of it, and find a good place to put it; and what is perhaps a more difficult feat still, say when to forbear, and where not to hang a festoon of flowers.

Another somewhat remarkable feature in this display was the exhibition here and there, as at the top and bottom of Regent-street, of—what shall we call them?—triumphal stands; with evergreens, and huge plaster statues and busts; the evergreens in some places positively hiding from view the said busts. These things seemed to take people not used to it a little by surprise.

In the general display of flowers, evergreens, flags, coloured cloth, and all else, the plaster figures helped to fill up space; but what they all specially meant, or were intended to signify, passes our imagination. We looked again and again at them, and at some old, very old, friends of ours, no less than at a pair of the supporting caryatid figures from the lateral portico of the famous temple of Erechthis at Athens, truly startling to contemplate. They did not support the cornice of the "stand," as they should have done, or indeed anything; but simply stood there in Regent-street,—may be, by way of theory, to illustrate the word "welcome" so conspicuous everywhere. From old Greece to Venice, for borrow from everywhere,—nothing can be better in idea for bright festive purposes than the "flag-staffs" as seen before the front of St. Mark's. Notable works of art they are, and made out of right good materials, and in proportion to the dimensions of the building they stand before. How different those wretched things down Regent-street, and along the route of the procession; how different the material used, the decorative art on them, and not least, the pedestals on which they stood. But who will compare the wealth of Venice, even at its best, with the wealth of modern London, or even of Regent-street? How very much is there to learn yet in the way of things artistic,—artistic in their very nature. But the question comes, cannot a lesson be drawn from these industrious and patriotic doings? And it strikes us that one good might at least suggest itself from them; and it is, that in all the individual cases which go to make up the whole of these great and expensive shows, special professional aid should be at least encouraged. Such displays, involving both constructional and decorative, and *et cetera* decorative art, might well employ, though so temporary, the highest kind of professional ability. All know how much Luigi Jones did in this occasional and festive way, and Vanbrugh, and not a few others, even in these days. The subject calls for it, after the late experience, and it must have needs forced itself on the minds of many who went and carefully noted what they saw. We are here speaking more especially of the street decorative work, and the attempts at colour every here and there visible. We may allude to one special piece of coloured decoration in Regent-street, with a somewhat striking effect, had but a little more judgment been used; and that was at a carpet warehouse. Fine specimens of Oriental fabrics hung from the house, as if to dry, or, as the day went, to get wet. Had they been hung up and exhibited with any, the smallest amount of judgment and taste, quite a colour lesson would have been taught, showing how the brightest colours may be made to harmonise, and may be brought into service to decorate a building. It was a fine opportunity, had a little art knowledge been brought to bear on it. Our suggestion would therefore be, to employ all along the highway a professional artist, here and there *next time*.

THE SUBSCRIPTION TO THE INSTITUTE OF ARCHITECTS.

SOME very strong letters have reached us finding fault with recent expenditure at the Institute of Architects, and condemning the proposal which has been placed by the Council before the members to raise very considerably the contributions, entrance-fees, and subscriptions paid by members. It was discussed rather pointedly at the recent meeting of members only, and was adjourned for further consideration at the next annual general meeting. Judgmental friends of the Institute will, we think, advise the adoption of some other means of meeting any little financial difficulty that may exist. It would be very inexpedient, as it seems to us, to raise the amount of payments as proposed, and would lead, we are assured, to the accession of a number of members, not because they could not conveniently pay a higher subscription or composition, but because they believe they get so little in return for the present payments.

The Monday evening meetings at the Institute have a very different character now from what they had in old times; when everybody was glad to see everybody, and the greatest geniality prevailed. The members who had worked early in its interest were recognised and treated with consideration, and men of mark and weight,

known and trusted by the public, sat round the president.

An account of some of the meetings of late days, cold, hard, and spiky, would not be attractive.

Raising the subscriptions is not the way to bring about the desired improvement. The Council must try again.

MEDALS AND PRIZES OF THE INSTITUTE OF ARCHITECTS.

It has been resolved that the Institute Silver Medal, with 5l. 5s., be awarded to the author of the drawings illustrating St. Mary's Church, Warminster, and distinguished by the motto "*Pastina letitia*." (G. Duns Oliver, of 150, Stanhope-street, Regent's Park.)

That in the same competition a Medal of Merit be awarded to the author of the drawings illustrating St. Mary's Abbey, Buildwas, Salop, and distinguished by the device of a Bird within a Circle. (Walter Talbot Brown, of 20, Wood-street, Northampton.)

And that the drawings submitted in the same competition under the motto "*Immer vorwärts*," and illustrating Bayham Abbey, Kent, be honourably mentioned. (W. T. Whyte, of 45, Doughty-street.)

That the Essay Prize be awarded to the author of the essay on "The Architecture of London in the Sixteenth Century," distinguished by the device of a Cross and Circle. (A. T. Taylor, 16, Oakley-road, Canchurch-road, Islington.)

That a Medal of Merit be awarded to the author of the essay on "Vaulting," submitted under the motto, "*Labor ipse volutus*." (T. H. Eagles, Associate, of Cooper's Hill, Staines.)

That the Student's Prize in Books be awarded to the author of the design for an Oak Ceiling, distinguished by the motto, "*Labor omnia vincit*." (H. R. Perry, 9, Seymour-street, Green Park, Bath.)

The Soane Medallion was not awarded this year, no design of sufficient merit having been submitted.

THE "SHAFTESBURY PARK ESTATE," BATTERSEA.

The annual general meeting of the Artizans', Labourers', and General Dwellings Company has been held. The report stated that the balance-sheet, duly vouched by the auditors, and the certificate of value of the property erected by the company, were perhaps the best indications that could be given of the hold which the company had obtained on the public mind, the solid nature of its investments, and of the measure of success that had already been realised. The company had tested both modes of building—that of letting out the work to contractors and that of using associated labour only, and the latter had been found to be better than the former as regarded the quality of the work, the saving of materials, and the question of cost. The company had now its workshops and steam saw-mills, and obtained all the advantages of trade by purchasing the necessary materials in the best and cheapest markets. Some hundreds of houses had been erected on the Shaftesbury Park estate, and about 800 more were in process of erection. All the houses that had been finished had been either sold or let. Building on the estates at Birmingham was being proceeded with in a satisfactory manner, and these estates, when fully utilised, would prove a good source of income to the company. The share capital had greatly increased, there being now in hand 112,196l., and the deposits 23,603l., together 135,799l., and the amount of business transacted during the past year had been greatly in excess of anything heretofore accomplished by the company, whilst the results had been more encouraging. The directors recommended the declaration of a dividend at the rate of 6 per cent. per annum, leaving a balance of 2,734l. to be carried forward. The report was adopted and the dividend declared.

We have seen the houses at Lavender-hill, Battersea,—long straight ranges of two-story buildings, varied by hoods over the doors, and occasional turrets, the effect of which, so far as their pointed roofs are concerned, is much interfered with by the wall raised to cut them off from the adjoining house, in accordance with the requirements of the Building Act. Externally, the houses seem well built, and have a very respectable appearance. There is a temporary lecture-room at the commencement of the estate.

The situation of the buildings seems unfortunate, the only approach at present being by two dangerously steep descents, with, so far as we know, no other carriage way out. This, however, will doubtless come hereafter. Gas is needed in the streets, and the paths are too narrow to admit of trees.

We should be glad to receive particulars of the exact terms on which the houses are rented and bought.

THE BOARD OF WORKS.

BALCONIES AND STANDS.

At the last meeting of the Metropolitan Board of Works, Mr. Valliamy (superintending architect) stated that, under his directions, the district surveyors of the Board had inspected all the balconies and other structures on the line of route of the Royal procession, and in the structures so inspected not a single accident had occurred. It would appear, however, that near the Nelson Column a temporary structure had been hastily put up by some costermongers. The Board had no opportunity of seeing it, and it fell. Several persons were conveyed to the hospital suffering from fractured limbs.

Mr. Roche thought the police were to blame in this matter. They should have prohibited at once the erection of stands of a temporary character.

The subject was referred to the Building Acts Committee.

It was mentioned at a previous meeting that the surveyors on whom the task of inspection fell would receive no payment for their work. Is it fair that an enormous responsibility of this kind should be thrown upon them without any compensating advantage? It seems to us manifestly unjust.

The Chairman of the Board has been requested to give notice upon an early day of his intention to introduce a Bill into the House of Commons for consolidating, with amendments, the Building Acts relating to the metropolis; for regulating the formation of streets and of sewers and drains in the metropolis; and for other purposes relating thereto.

It appears scarcely likely that the House will be able to give attention to the subject in the present Session.

A JOKE OR TWO FROM A BUILDER'S NOTE BOOK.

Every bricklayer has a Bob, which he hangs first and kills afterwards.

Staircase-hands make deep well-holes, but there is never water in them, although everything that rises and winds about them or above them is on a spring.

It is strange that dishonest plumbers should be always taking the lead in buildings; and, though often sent upon the roofs to work, are generally found "laying" in the gutter.

Joiners and cabinet-makers are adepts at shooting; but, though they fail to kill hares, they succeed admirably in running plenty of rabbits down.

A hand-saw is a bad graving-tool, but a first-rate instrument at "cuts."

Engineers are said to be civil, but they are well known to be deep-designing and undermining fellows; and, though not generally swearers, they never hesitate at a blast or two.

Surveyors are men of quantities. They measure every builder's work by their own standard; and, though they are always "taking out," they are never willing to be "taken in."

Steeple-Jacks ought to make good floaters for Bubble Companies, as they can fly their kites well; but, though they climb to a towering height, they soon dip to their proper level.

Carpenters and joiners are always tonguing their work; and, though it soreaches under the operation, it has never the courage to speak out in return.

Smoky chimneys, like swindlers, refuse to honour their draughts, no matter in what way the wind is raised.

Plasterers have some peculiar tastes; they are fond of good hawks, swimming beds of mortar, and floating walls; and, though they cannot fly themselves, yet even while at their work they can run well.

Sash-hanging, it must be allowed, is a most barbarous exhibition. Only think of a honest carpenter dragging a poor mouse through the groove of a pulley-box with a string tied to its tail!

A rampant handrail is eased by twisting its neck, and then boring it to see if it rides well under the operation.

Jerry-builders' dwellings tumble down like houses of cards, because they are mostly built by the aid of a pack of knaves.

Stirring sticks are always found in "strikes" jumping about like "clips" in paradise.

While these are often very black smiths, and both are said to be evil doers, for they are not only constantly on strike themselves, but they invariably employ strikers to help them in their forgoing operations.

Some people carry their lanterns about to see their work, but architects make their roofs carry lanterns, and are often shabby enough to use borrowed lights.

THE CHAPEL AT CHICHESTER.

The mortuary chapel at Chichester, the scene of the late remarkable demonstration, has been erected from the designs of Mr. Henry Clutton, architect. The style adopted is that of thirteenth century. Circular and segmental arches are introduced. The chapel opens into the church by a double arch supported upon coupled columns of marble with carved capitals, and is lined throughout with ashlar work. The vaulting is also constructed of stone. At the east end is the altar, the remains of which is formed by a large niche, with a sculptured canopy above it.

The chapel is lighted by three windows on the north side, and a pretty rose-window at the west end, and has, in addition to its access from the church, a small doorway in the west end. The floor is covered with green, chocolate, and red tiles, highly glazed, manufactured by Craven, Dunnell, & Co., Jackfield, Salop. In the centre of this chapel is the sarcophagus, of Aberdeen granite, the gift of her Majesty the Queen, formed out of a single block of fine colour; a second block forms the lid. The exterior of the chapel is constructed in ashlar, and the roof covered with black tiles. The exterior is somewhat ungaily.

PROPOSED NEW HALL FOR HACKNEY.

There is a project for the establishment of a public hall in Hackney, in order to provide the residents with a suitable place for meetings and entertainments.

It is proposed to raise a capital of 10,000l. in 5,000 shares of 2l. each. No adequate accommodation of the nature it is intended to provide exists in the district at the present time. The scheme is to erect a hall capable of holding upwards of 1,600 persons, and adapted for public meetings, scientific, literary, and musical entertainments, with other adjoining rooms of smaller capacity for the purpose of accommodation clubs, committees, and private parties, so that every kind of meeting may be provided for. It is stated that a convenient site has been obtained opposite St. Thomas's-square, having a frontage of 160 ft. to Mare-street and 140 ft. to London-lane, possessing great advantages in the matter of providing facilities for ingress and egress, and being easily accessible from the City and the surrounding neighbourhood.

Already 2,500l. of the required capital have been guaranteed.

Mr. St. John Ingram, architect, at a recent meeting, submitted preliminary sketches of the intended building, and gave explanations respecting the terms upon which the site was to be acquired, and it was resolved to call, by advertisement and circular, a public meeting, and also that Mr. John Holmes, one of the representatives of the borough, be requested to take the chair.

CAN ART BE TAUGHT?

SIR,—A "Science and Art Student" has somewhat misapprehended the precise purport of my last letter on the above subject. If the condition of painting and sculpture are unsatisfactory it is customary to throw the blame upon the art schools. Now, the art schools are more numerous and better appointed in England than they ever were in the palmiest days of Italian painting, and yet they fail to produce greater, or even equal, results. Again, the great Italian masters made Italy one academy, a museum of art from north to south; but, for all this, where is modern Italian painting? It is, therefore, evident that the finest examples and the best appointed

schools are in themselves inadequate to create a national school of art unless the human elements, the humanity of the scholars, be of the right kind; and even then, perhaps, not without a liberal encouragement to incite to industry and emulation.

Why is it that one industrious student becomes a true artist, and another equally industrious student, and with equal opportunities of study, never does? Clearly it must be some inherent difference, an incompleteness in one nature compared with the other. The results of the art schools will, therefore, be greater or less as the humanity of the student is either fit or unfit to make the proper use of them. I do not say that we are to shut up the schools, but that we shall have to wait for grander results till the fitter natures are more numerous. The artist, in fact, cannot be educated by the "labor" alone, if the "ingenium" be wanting. I therefore conclude that our first endeavour should be to develop human nature to its true standard.

W. CAVE THOMAS.

"CAN art be taught?"—who doubts it? What in the world is there to be taught if art be not the very alpha and omega of all teaching, from the time a baby learns to lift a spoon to its mouth? A strong-lunged, well-taught, and thoroughly-drilled something will sing you the most difficult of operatic airs, expressive of the most exquisite apprehension of what is vocally intense in feeling, and most finished in its method of utterance too. You and I will shriek "Brava! brava! exquisite! splendid! Who was her teacher?" "Signor Glottisium Stamina. No pupil did more honour to a great master!"—a courtesy and two bows. Lottie Shaw, who never gained a note of instruction beyond what old Stoppo, who plays the village church organ, is her creditor for, quite trembles when she takes seat on the music-stool that Leonora Handelglick vacates. With pure voice (it may want cultivation), and with soul's strength, she warbles some homely air, "Home, sweet home," or "Annie Laurie." The eyes have it first and then the nose, for tears drop or trickle whilst we wonder if "Art can be taught?" What is the "central type" of it? JEM.

TRADES MOVEMENT.

Taunton.—A strike is pending in the building trade at Taunton. Three months ago the men sent in a demand for an increase of wages and a reduction of hours, but they have not yet received an answer.

Sheffield.—An advance of 2s. per week in wages, and a reduction of hours to fifty-five weekly, have been conceded to the operative plumbers.

Alto.—The dispute between the masons and their masters has been compromised. The men have commenced work, after having been out about a month. The employers have agreed to pay wages weekly, allowing Saturday as "The day." The wages are now 7½d. per hour.

Hawick.—The master joiners have agreed to advance the journeyman operatives' wages to 6½d. per hour, being a rise of one halfpenny per hour.

Dumfries.—The ship-carpenters have struck for an advance of a halfpenny per hour.

Kelso.—The operative painters have been agitating for a reduction of their working hours to nine per day, and an increase of wages to 6d. per hour. Notice of their demands was given to the masters on Saturday week, and also that if they were not conceded at the termination of a week, they would cease working. A deputation waited upon the masters, when the latter refused to grant the demands, and consequently the operatives are going about idle.

Penticul.—A meeting of joiners, masons, blacksmiths, slaters, and other tradesmen, has been held to consider the nine-hours movement, and to hear the reports of delegates appointed at a previous meeting to wait on the employers. There was a full attendance of the different trades; Mr. Outherson in the chair. The reports given in showed that all the employers had agreed, with the exception of Mr. Tait, builder, and it was explained that those in the employment of Mr. Tait were not unanimous in their desire for the new hours, or doubtless they would have got them. The nine-hours system came into effect on Monday.

Edinburgh.—An adjourned meeting of painters has been held, Mr. A. Bevan in the chair. It was stated that an evasive reply had been

received from the employers to the communication forwarded in accordance with the resolution passed at last meeting. Mr. James Aitken then moved that all legal and fair means be used to secure the advance of one penny per hour. A resolution was passed on the motion of Mr. Buchan, seconded by Mr. R. Turvis, adjourning the meeting till the 24th inst. After a good deal of discussion, it was also agreed to write to the masters again, requesting a reply to the application for an advance of wages.

Strikes in New South Wales.—The correspondent of the Times at Sydney, writing on January 17th, says:—

"The workmen here follow the European model. Combinations and strikes are quite the fashion. The calmer mind follow the Paris example, and 'hold' for their rights at the point of a strike, although a bias is cast for the act since the Transit Commissioners were as desirous of doing justice to the cabmen as to the public. The strike of the ironworkers in the leading engineers' shops is a matter of more consequence. Ten or twelve large establishments are closed, with abundance of work on hand. The circumstances are these:—On the 11th of October last the workmen, through their delegates, gave notice to the masters that, on and after the 1st of November, they should consider eight hours to constitute a day's work. It was also demanded that the hours should be from 6 a.m. to 4 p.m. on Mondays and Fridays, and from 6 a.m. to 130 p.m. on Saturdays during the summer months, with 45 minutes for breakfast and 1 hour for dinner; and in winter, that the hours should be from 7 a.m. till 5 p.m. on Mondays till Fridays, and from 7 a.m. to 115 p.m. on Saturdays, with 45 minutes for breakfast and 15 minutes for dinner. In addition to this reduction of time, an increase of wages was demanded equivalent to from 14 to 16 per cent. upon current wages. Opposition appeared futile at the time, for a great deal of work was on hand, and the terms were agreed to unwillingly, one strong objection being made to the unequal apportionment of the eight hours by the meal breaks. This apprehension was justified by subsequent experience. The new division of time proved economically injurious. In dividing the day into three unequal portions, it was found that the two hours allotted to the afternoon were wholly inefficient for the process of casting then conducted. The masters consequently gave notice that, on and after the 2nd of January, the hours of labour would be from 7-45 a.m. to 12-15 p.m., and from 1-15 p.m. to 5-15 p.m. The only change proposed is to divide the day into two, instead of three, portions; but the men refuse to agree to it."

INCOMBUSTIBLE WOOD FOR SHIP AND HOUSE BUILDING.

SEVERAL attempts have been made at different times to render timber unflammable. A new method has recently been tested at Plymouth. Some interesting experiments were made at the Dockyard, Devonport, before Admiral Sir W. King, K.C.B., and other officials, by order of the Lords Commissioners of the Admiralty, on Thursday, February 26th, and again on Thursday, March 12th. In one, a large heap of the prepared timber, about 2 ft. high, and 7 ft. or 8 ft. in circumference, placed on large iron sheets, was saturated with paraffine and set on fire: as soon as the paraffine was consumed the fire went out; the timber was then examined, and found to be scarcely injured; whereas a similar heap of ordinary wood, treated in the same manner, was completely reduced to ashes.

We understand that the inventor is a clergyman,—the Rev. Dr. Jones, principal of Harewood College, Tavistock,—and that the process is expensive.

OVERCROWDING.

SIR,—In referring to my correction of your reviewer's statement of the law on overcrowding, you ask whether I have enforced the clause in the Sanitary Act of 1866, which makes "any house so overcrowded as to be dangerous or prejudicial to the health of the inmates" a nuisance? In one sense I have enforced it frequently, by notifying the landlord of the existence of the nuisance, and where I have done so, I have never failed to get the nuisance abated. I have, therefore, had no opportunity as yet of enforcing the law on this subject before the magistrates. If you will look at page 50 of the "Digest" which you quote, you will find the definition to which I have referred. I may add that I am very unwilling to exercise the power which the law gives on the subject of overcrowding, except in very gross cases, so long as it is due, as it so largely is in rural districts, to a crying insufficiency of house accommodation, which is the parent of that as well as of numerous other evils.

A MEDICAL OFFICER OF HEALTH.

Royal Architectural Museum.—The Council of the Society of Arts have voted a donation of 20l. to this museum, to assist in establishing the classes for artisans for technological instruction, lately set on foot in this institution.

LECTURES ON ARCHITECTURE.

BY EDWARD M. BARRY, R.A.

PROFESSOR OF ARCHITECTURE, AT THE ROYAL ACADEMY
LONDON.

I SPOKE to you last week of the various modes by which the study of architecture may be approached, whether from its archæological, its scientific, or its artistic side. In strictness it might seem that the last of these aspects is that on which alone it is legitimate to dwell in an academy of arts. Architecture, however, is so purely artificial, that it is impossible to understand it properly, without entering into those historical influences and those materialistic limitations, which affect so greatly its form, and character.

I asked you in my last lecture to devote a short time to the consideration of the various claims of architecture on the admiration and interest of men. I propose to-night to dwell on certain tendencies of our own time, and to refer to some modern revivals which may throw light upon the question of the ultimate form which our art is likely to assume.

There can be no difference among architects in replying, that any style of the future must be based, more or less, on those of the past, or on one of them. Here, I am afraid, agreement will cease, and we shall find ourselves face to face with the question of Gothic, or Classic.

Sir Gilbert Scott has lately alluded, in this place, to the division of architects into two camps, a remark he probably wished to be received with some qualification, as there can never be wanting bonds of friendship and alliance, between all true followers of art.

No one who cares for architecture at all, can speak disrespectfully of the great Mediæval revival which this century has witnessed; and its very completeness seems to suggest that the time may have come to inquire what is likely to be its result. In making this inquiry it is not easy to avoid being misunderstood, so hot and eager have been the contentions of opposing schools. It is unnecessary, however, to contend for a rigid uniformity of taste, and in speaking to students no one would wish to repress the enthusiasm which sits so gracefully on youthful neophytes. A want of interest is the parent of decorous dullness, and there is no silence like the silence of the grave.

Where there is earnestness there will be controversy. It has ever been so, and in matters which touch mankind's innermost feeling more than art can ever do, it may be doubted if the will to press dogmas even to their logical result of persecution, has ever been limited, save by the absence of power to carry it into effect. We must, therefore, make every allowance for anything which may appear to sober observers to have been extravagant, in that zeal which has revived an almost extinct enthusiasm, and has invested our architecture with so much that is poetical and interesting. At the same time, we may ask, if the day has not come to lay aside that intolerance of opposing views, which has too often found a place in architectural discussions. It may surely be possible to prefer, for modern use, classic art to its Mediæval sister, or even to dwell on the convenience of Renaissance, without giving occasion for the use of terms more fittingly reserved for moral delinquencies, than for artistic preferences. It is in this respect that a lecturer, not unacquainted with the difficulties and responsibilities of practical work, may possibly have some advantages over professors guided by theory alone, as he will have learned too much from the great teacher Experience to cherish the belief that his own views are infallible, and that he is therefore entitled to pour out his contempt on those who differ from them.

Professor Cockerell showed his moderation and breadth of view by the manner in which he dealt with the Gothic revival of his day; and Professor Scott only followed his example when he so lately insisted on the value of the study of the architecture of Greece and Rome.

It has been my lot, from early associations, to be mixed up with the discussions on both sides, and to have some experience of both camps. A learner under Professor Cockerell, and one to whom I owe a deeper, because a filial reverence, I can also remember the delight with which I devoured Pugin's "True Principles of Christian Architecture," and the other works by which he strove, often with exaggeration, often with humour savouring of burlesque, but always

earnestly, and with the vigour of genius, to recall his countrymen to what he deemed their true artistic allegiance.

No one, therefore, is less likely than myself to wish to do scant justice to the remarkable movement which, during the last thirty or forty years, has made so great a mark on our architectural history. Moreover, nothing can be further from my purpose in asking you to consider well the lessons taught by the study of the past than to discourage originality; for you may depend upon it that in an art like ours originality can never spring from ignorance, and yet possess any artistic character. Ignorance may produce buildings which may startle the world, but it will not add to the masterpieces of art.

The young architect must therefore study his art historically, and thoroughly, before he can hope to practise it successfully. With knowledge, will come its necessary consequence—responsibility,—and it is right and proper that he should form a definite opinion on the claims of different schools. I am, however, much mistaken if his studies, provided they are undertaken in a proper spirit, will not teach him moderation of judgment in estimating the merits or demerits of those forms of art which have been the admiration of centuries, though they may not happen to fall in with his own special tastes, or with the fashions of the day.

In thus speaking, I do not wish to confound a momentary fashion with the spirit of the age in which we live. All healthy and good heart must be penetrated by the latter, while resisting the ephemeral influences of the former. What would be our interest in the Venetian school of painting if Titian and Tintoretto had ignored this principle? It is the same in architecture. The best examples will be found to have been the legitimate fruit of the aspirations of their time, whether that time was ruled by devotional, political, or material influences.

In our own days architecture has, I fear, fallen somewhat short of its mission in this respect; and the revivals, whether Gothic or Classic, which have marked its modern history, will sadly perplex any future archæological inquirer into the ways and customs of the nineteenth century.

Our present desultoriness of practice, and consequent waste of strength, in forwarding the progress of art, is no doubt the penalty we pay for our more extended knowledge of the doings of all ages and countries; and it is difficult to suppose that any universal agreement will ever again be attainable on points which must remain questions of individual taste. But some general principles, such, for example, as truth of construction, are common to all forms of good architecture, and in the study of such principles will probably be found the best chance of progress. Beware of being led astray by idle fancies of a new style. Styles grow, but they are not made. Form your practice, if you will, on the type which appears to you, after careful thought, to be the right one to follow. Apply to it those principles which have ever distinguished good architecture in all styles. You will find these to be Beauty, Truth, Proportion, Fitness, and the like. Working on this foundation, patiently, carefully, and with a determination to do your best, you will fulfil your mission as an artist, and promote the development of your art, far more than in seeking for novelties, which first vitiate, and then fall upon the taste.

Do not, however, think that your first duty is to decide on the style of the future; be diligent to neglect nothing that can add to your knowledge of the past; be careful that you do your best in the present, and the future will take care of itself.

I have said that you cannot safely neglect the spirit of the age in which you live. Of course, I am not speaking to those who are satisfied that their own times are so bad, that they should shun their influences, as they would the contagion of the plague. These are the monks of the artistic world, and have, no doubt, a right to their own opinions, although we are not bound to follow them.

Architecture, however, is the offspring of our daily requirements, and it is not the business of the architect to separate himself from his own time.

We are all in some sense the worshippers of older days. The glories of the past were the song of poets long before Horace, and will doubtless continue to be so, as long as time shall last. Can any of us, and least of all those who are advancing on the road of life, resist the spell? What years were ever like those of our

youth? What days so sunny? What joys so unalloyed? Oh! the good old times! will they never return? Alas! no, the flowers fade, the world grows old, and nothing can stand still. We find ourselves, as it were, students of the fallen greatness around us. It is for us to learn by its teaching, not to copy its defects, and we shall misread the lesson if we try to force things backward, and waste our time in vain endeavours and regrets.

In learning from experience, then, the architect must not forget that we live in the nineteenth century, and are of it. Is this a misfortune? Do you think that all goodness died out in some vaguely defined past? Do you suppose there is less of real religion, honour, patriotism, and public virtue now than then?

We are sometimes asked, in desponding accents, "Are we better than our fathers?" in a tone which implies that a negative is the only possible answer. Every epoch in the world's history, like every stage in our own life from the cradle to the grave, has its own trials and temptations, and the nineteenth century has, of course, enough to answer for; but to estimate progress on a journey we must not look only at a single milestone, and can we conclude that nearly nineteen centuries of Christianity have left no mark on the world?

All ages have done honour to the glorious three hundred at Thermopylæ; but do you think the six hundred of the Balaclava charge will be forgotten? Shall we reserve our sympathies for the march of the ten thousand, and deprecate the exploits of our own people in the Indian mutiny? Or,—not to speak of the gallant handful of heroes in Africa, in whom our interest centres at the present time,—can we forget the grand spectacle of the patient endurance of our countrymen and countrywomen during the Lancashire cotton famine, when millions found themselves destitute by no fault of their own, and yet resisted all temptations to seek to alter the national policy, because they believed it was right?

I have been led into this train of thought to-night, because it seems to me that the great question which architects have now to ask themselves is this,—Are we of the nineteenth century to compress our ideas and architectural forms, within the limits that prevailed in the thirteenth or any other century? Are we not rather to seek to march with our own time, as the old architects did with theirs? These are problems which each student must think out for himself; and on the answers which he may be able to give to them, will depend, not only his own success, but the very future existence of architecture, as distinguished from archæology.

After these introductory remarks, our attention may now be given, for a short time, to the course of architectural practice in this country, since the building of St. Paul's. In a former lecture, given some years ago during the temporary absence of your late Professor of Architecture, I took occasion to trace rapidly the stages which had been passed previously to that important architectural event.

The revival of classical literature in the fifteenth century led, as most writers agree, to the change that then took place in architectural art. The great impetus communicated by the fall of Constantinople in 1453, and the previous preparatory efforts of men like Petrarch and Boccaccio insured a welcome for the new revival in the classic land of Italy. Thence it soon spread over Continental Europe, although it did not fully reach England till about a century later. We know that Queen Elizabeth prided herself on her classical knowledge; and the list of Lady Jane Grey's acquaintances reads like a synopsis of a modern university examination. The courtiers of James I., moreover, were never so courtly as when they lauded the classical achievements of "the Royal Pedant." The literary tastes of the Court and of the upper classes led naturally to the adoption of classical forms of architecture, for in those days there were no influential classes outside the great Court circles, who claimed to be patrons of art, and could have turned aside the tide of fashion.

The influence of Inigo Jones as the Court architect of the day, was consequently for a time supreme, and during the reigns of the Stuarts, previous to the Commonwealth, many remarkable buildings were erected by him. We all know the fragment of his design for Whitehall Palace, which we call the Banqueting House; and most of you are probably familiar with

his plans for the whole structure, which, if erected, would have been among the largest and most magnificent buildings of the world.

During the civil wars, and the unsettled days of the Commonwealth, art was not likely to flourish. We cannot fancy Cromwell addicted to many of the graces of life, and his demerits towards art would probably partake less of the sympathy and courtesy of *Mæcenæ* than of the rougher vigour of the camp. The Restoration, however, brought back a court still imbued with classical tastes, and a king fresh from the influence of the Grand Monarque.

When we bear in mind the tame monotony, and the elaborate littleness of Versailles, which was erected at the same time as our own St. Paul's, I think we shall find fresh reason to recognise the judgment, taste, and skill of Sir Christopher Wren. We read in the "*Parentalia*," that the first stone of St. Paul's was laid in 1675, and about thirty-five years later, the top stone of the lantern was placed by the architect himself. Versailles was erected from 1664 to 1685; and considering the intimate relations which existed after the restoration, between the French and the English courts, we can easily understand the influence which French fashions in architecture might have assumed, if Wren had been less a master in his art, than was happily the case.

I do not know that we have much to say in favour of our restored English court, in those days; but at least there was some independence left in English society. In France, we see the picture of Louis-le-Grand, with an array of chamberlains, mistresses, Jesuits, and lacqueys, with a coat embroidered with diamonds, a wig powdered with gold-dust, and red leech shoes, which lifted him four inches from the ground, "that he scarcely seemed to touch." What could such a man do wrong? Himself the State, what homage could be too abject for the tastes and will of so grand, noble, and gracious a monarch? How could his judgment of architecture be other than infallible to the thousands of courtiers, who thronged the *Château de Bouff*; seeking to imitate their grand exemplar, though at an awful distance, as we may fancy a star emulating the splendour of the sun?

How deserted and gloomy are these vast chambers now! Kings, princes, generals, and courtiers have passed away like a shadow; and the huge pile subsequently dedicated by the "bourgeois king" to all the glories of France, has, in our own day, echoed with the groans of sick and suffering soldiers, and its courtyards have resounded with German bugles, and the coarse words of command of alien conquerors.

You will find it very interesting to examine the work of Mansard and the other courtly architects of Versailles, and compare it with that of Wren. Time, however, would fail me now to do justice to this subject, and I must leave it to you to follow up at your leisure.

We will pass on to a consideration of the state of architecture in England after the days of Sir Christopher Wren. This brings us to the time of Queen Anne; and I suppose few of us, at any age until lately, would have been disposed to credit that epoch with any well-defined style. Queen Anne's reign recalls to our minds, principally, days of English daring and triumphs on the Continent, childish affectations and intrigues about the Court, and political uncertainties as to the future reigning family of the monarchy.

To Englishmen, the name of Blenheim must always be glorious, and in an architectural view of the day, the palace of a nation's gratitude which bears that name, cannot escape our notice. Sir John Vanbrugh was Sir Christopher Wren's successor in Court favour, but not in architectural genius. With considerable opportunities he failed to found as enduring a reputation. Fond of magnificence, he achieved a certain comely grandeur, without harmony of proportion or beauty of ornament. His works are interesting, however, as proving that men were beginning to tire of the fetters imposed by a strict adherence to the Classical orders. At Blenheim, the principal order is not used throughout, and the skyline of the building is effective and broken, in opposition to the sameness of many of the revived Classical compositions. In fact, Queen Anne's time, as far as developed a style at all, would seem to have been so by breaking away from established traditions, and by encouraging architects to design less pretentious modes than had been lately fashionable.

Here it is to be feared praise must end, for the details were of a mongrel kind, with bits of

quasi-Classical orders, mixed with mullioned windows, and Gothic of a debased character. It was, if anything, a protest against the fetters of a rigid revivalism, and it is possible, from this circumstance, that it may again find favour for a time, although the danger now to be avoided seems to have arisen from the opposite point of the architectural compass.

If this is to be the case, it is probable that its details will be revived, and its forms made consistent with a severer taste, when there will be little to distinguish it from Italian Cinque-cento, or Renaissance.

From Queen Anne's time to the days of the Gothic revival, our architecture has for the most part followed Classic types. Sometimes the architects ventured to dispense with the orders, as did Kent at the Horse Guards, but more often they relied upon them as the great feature of their designs, St. Martin's Church, by Gibbs, being an illustration of the latter kind of treatment.

Sir William Chambers brings us down almost to the present century, as he died in 1796. His greatest work was Somerset House, and though it may not be difficult to find many faults with its design, there is much in it which is worthy of praise. The poorest part is unfortunately that which is most seen, being the river front, which is tame and uninteresting, besides being placed on a terrace too high for a subordinate accessory to the design, which a terrace should always be.

I will not fatigue you by detailed references to the brothers Adam, (who, I believe, were among the ancestors of our late minister of Works,) or Taylor, Soane, and Wilkins, only pointing out to you, in passing, that all these architects worked in the fashionable classic of the day, and did not apparently dream of any change in the public taste. Of buildings nearer to our own day, St. George's Hall, at Liverpool, calls for a word of notice. This was, as you are aware, finished by Professor Cockerell, after the death of its young architect, Elmes, a man of the highest promise and genius. It is certainly one of the most beautiful modern buildings in Europe, and fitly represents the mode of treatment which was popular at the time of its erection.

Before, however, St. George's Hall was finished, a conviction was gaining ground that Greek architecture of so severe a type was inapplicable to our requirements, without considerable modifications. Professor Cockerell, in his practice, fully recognised this necessity, and you will find much to study in the buildings which he erected. I may select as an example, particularly deserving of your notice, the Sun Fire Office, opposite the north side of the Royal Exchange. This is a building evidently well fitted for its purpose, as the central office of a rich and prosperous commercial corporation, and it could hardly be mistaken for anything else. The whole composition is dignified with a sufficient amount of ornamentation. Every moulding and window-dressing bears evidence of careful thought, and displays unmistakably the refinement which belongs to the work of a true artist.

In passing through the City of London, you will see hundreds of buildings erected since the Sun Fire Office was built; but I doubt much if you will find anything better worthy of your attention, or more suggestive of what might be done by architects working on Greek traditions, but not slavishly copying inappropriate forms, only because they are old.

While Professor Cockerell was engaged in working out the principles which he taught from this chair, others, in friendly rivalry, were labouring in a similar spirit, with a view to adapt their architecture to modern requirements. The clubs in Pall Mall are examples of this movement, in which, as you are aware, Sir Charles Barry had no unimportant place. He had early directed his attention to Italian architecture, deeming Greek details too unbending to yield readily to the modifications, which he thought necessary, to make it suitable to the wants of nineteenth-century men and women.

He thought he saw the basis of a style such as he looked for, in the works of the Italian architects of the sixteenth century, such as Sansovino, Vignola, and Palladio; and he worked on this principle, seeking to carry out, what he was fond of terming the Anglo-Italian style.

You will not expect me to criticise his works, but I do not think you will accuse me of filial partiality, if I say that the garden-front of the Travellers' Club is to my mind one of the most

graceful compositions of modern architecture in this country. It is simple, expressive of its purpose, and every part is carefully proportioned to every other. Some years ago the stone balustrading was removed from the first-floor balconies, and a meagre iron railing erected in its place. The effect was to destroy the rhythm of the whole composition. The windows were apparently increased in length by nearly a diameter, as the iron railings allowed the spectator to see their lower parts, which were hidden by the stone balustrading as originally designed, and their proportion was utterly destroyed. Happily the Club, on being appealed to, undid the mischief, and restored the balconies to their original appearance; but I have mentioned the circumstance, in order to lead you to reflect on the great value of proportion, and to point out how little differences of detail, which to many may seem unimportant, may make or mar an architectural design.

Sir Charles Barry entered fully into the feelings which dictated the Gothic revival, and as you are aware, carried out his greatest work in that style; but there is no doubt that what he called the Anglo-Italian style, as shown in the Travellers' Club, and Bridgewater House, was the style not only of his youthful predilection, but of his mature conviction.

I have not attempted anything like an exhaustive review of modern architectural practice, but have merely asked you to notice cursorily the various waves of change which have passed over it. Continuing this review, we shall find that we have arrived at a time when architectural taste was to undergo a great revolution, and the Classic was to be succeeded by a Medieval revival. This revival was at the first, as I pointed out in my former lecture, very much limited to Church architecture, and governed by ecclesiastical influences.

We have seen how the taste for the architecture of Greece and Rome arose with the renewed interest taken in the literature and history of these countries. It does not appear that any such general cause led to the first inclination to Medievalism.

Walpole, at Strawberry Hill, was one of the first to introduce it between 1760 and 1770, and he soon found followers. Then came the series of dreadful erections which we may stigmatise as Batty Langley, or Strawberry-hill Gothic, which by-and-by roused the ire of Pugin, and were so humorously attacked by him in his "*Contrasts*." It was a time of shams,—of palaces, churches, castles, and pagodas in lath and plaster. "*The first Gentleman in Europe*" was contented with a seaside residence made up of pagodas and turrets, crowned with ice-totams and other details appropriate rather to a tea-garden than a royal palace, and Nash reigned supreme over London improvements.

As I have mentioned Nash, it is only fair to say that as regards these improvements we owe him some thanks. He laid out Regent's-street, from its commencement at Cockspur-street, to its termination in Regent's Park. The architecture along this fine thoroughfare shows all the faults of the time, but the arrangement is managed with great skill, and any architect who may now be entrusted with similar work will find much to study with advantage in the plan of the successive squares, circuses, and curves, which mark the disposition of the space. Taken altogether, I know of no such magnificent thoroughfares in any European city, if I except (and that only to a limited extent) the Boulevards of Paris. Nash's designs of the buildings are, as I have said, mean, and unworthy of their position; but this defect admits of improvement. The property on each side of the way belongs, I believe, to the Crown: we know what the present Duke of Westminster has done with Belgravia, and there is, therefore, a hope that some day a Minister of Works will be found who will perfect Nash's work, and make his own name illustrious, by compelling the erection of worthier architecture, and the substitution of stone and granite for the compe and lath- and -plaster shams of the Regency. When this has been done, and when the Thames Embankment has been properly completed and planted, London, already the most varied and picturesque of capitals, will have little to fear in the way of comparison.

You must excuse this digression. I have made it, not only in justice to Nash, but because architects should have much to do in these days with Metropolitan improvements, and it is to be hoped they may be marked by the same breadth and boldness of plan shown by him. How much room there is for this, you may see for yourselves

if you pass from Regent-street and Portland-place to Victoria-street, Westminster, or the new street in Southwark to London Bridge.

I am not going to dwell on the other works of Nash, nor on those of Wyatt; they worked with imperfect knowledge, but they roused the spirit of inquiry in others, and paved the way for better things. The literature of Gothic art became studied, and Britton, Rickman, and the older Pugin, with their followers, published many valuable works. A great religious revival was taking place at the same time, and the well-known Oxford movement led the clergy to throw their weight into the scale for the Gothic revival. Whereas it was at this time almost impossible to obtain skilled workmen for the subsidiary details of Gothic art, schools of carving, iron-work, stained glass, encaustic tiles, and the other kindred works of decoration sprang rapidly into being, this being due chiefly to the impetus given by the younger Pugin.

Sir Gilbert Scott has told you that, as the result of this movement, the Gothic revival holds absolute possession of the ecclesiastical architecture of the day, but that it has not yet obtained that mastery over secular buildings which was long enjoyed by its rival. Indeed, if we may judge by some recent preferences for what has been called the Queen Anne style, it may be doubted if it has not lost ground, rather than gained it, as regards this portion of the architects' work. We are therefore now again brought round to the problem with which we started, namely, what form is our art to assume in the future? We have seen that there have been two revivals, in some cases proceeding side by side with each other, and before we can answer the question we must ask, I think, what are the tendencies of our time, and what has been going on around us, while architects have been fighting the "battle of the styles?"

If architecture has not been idle, it is right to remember that the world at large has not been standing still, and we may therefore consider for a moment what have been the other characteristics of the last forty years. It cannot be doubted that they have been years of progress in the mechanical and engineering arts. I have before alluded to the rise and progress of what we call engineering; but the subject is so important as regards its bearing on architecture, that I must dwell upon it again for a few moments. Since Stephenson's development of the railway locomotive engine, in 1829, the increase of railways alone has been prodigious; indeed, some persons consider that they now constitute too large a monopoly to be left in the hands of private persons. We have nothing to do with such questions here; but, in order to show you the enormous progress that has been made in this department of engineering alone, I may mention that it has been estimated that if the railways were acquired by the State, their purchase-money would be little less than a thousand millions. These are large figures, and apply to railways only. While they have been in progress, millions upon millions have been spent upon steamers, docks, waterworks, and other enterprises of public utility. The Alps have been pierced, gigantic works of various kinds are in progress, or are being projected, and it would seem that the only limit of power which is now acknowledged by engineers is that of finance. Mankind has seen its various families brought more closely together, distances have almost been abolished, and instant communication secured with all portions of the world. The electric telegraph, from being regarded as a scientific toy, has become a mighty agency, whose full development cannot yet be accurately forecast. Would that it could be added that the human race had experienced the full advantages of scientific knowledge, in the increase of happiness, caused by peace and prosperity! but it must be confessed that these signs of peaceful progress have been at least equally by advances in the science of slaughter; and that, in spite of Christianity, and civilisation, men fight with men, as desperately as ever, and the horrors of war have perhaps never been so dreadfully exhibited in two worlds, as during the time under our review.

Many of the great achievements of science are of course removed altogether from the domain of fine art, though it has been a mistake to act too hastily on this supposition, in the case of some of them. The works of the engineer which have too often disgraced our towns, have generally a scale, and grandeur of conception, which in the hands of the true artist, might have made

them things of beauty, as well as of use, and would have enabled us to regard them, if not with joy, at least with equanimity and content. Although, however, we have not at present reached this stage of feeling, no one can regard the mechanical triumphs of our day with indifference, and as Englishmen we cannot but be proud of the position taken by our own country in the van of the moment.

Whatever may be the final destiny of engineering, there can be no doubt that the duty of the architect must be to study the requirements of his time, and to reconcile utility with artistic beauty, in addition to making himself acquainted with the theory and practice of ancient art. It is the more necessary to urge this in consequence of the immense seductions of the antiquarian and archaeological aspects of architectural study. Few things in modern history have been more remarkable than the revival of interest in these matters, and I should be sorry to be supposed to say one word for its discouragement. Only the student must not make it his all in all. Nothing can be better for him than to wander, sketch-book in hand, among our noble cathedrals, and historic remains, or to be found in quiet English villages, studying reverently the teaching of the sermons in stone of thousands of our churches; but if he go no further than this, he must expect to find that architecture will come to be regarded by sensible men as an archaeological curiosity, alien from the wants of the age, and unworthy of the attention of those who hold that the noblest object of man's study is Man. Something of this result is perhaps already to be seen, in the tone and temper of some public utterances on the subject of architecture, and it is well that the difficulties of the case should not be ignored by those who devote themselves to its study and practice. A heritage of carelessness and neglect has made the present generation, a generation of church restorers; and architects have therefore been especially called on to turn their attention in this direction. A strict conservatism has been naturally forced upon them by the course of events, and it may probably be maintained, without fear of contradiction, that at no time, and in no country, have so many difficult tasks of architectural restoration been successfully performed. There have of course been exceptions to this rule, and we have often to deplore a rage for so-called restoration, which has deprived some venerable fabric of every particle of historical value. But in all great movements there will be extravagances, and when the tale of our time can be written, it may probably be described, with considerable approach to accuracy, as an epoch of conservative art, and progressive science.

But is there any reason why architecture should rest content with mere conservatism, and abandon progress to the engineer and man of science? The Parthenon, the Hall of Karnak, and the Medival Cathedral exhibit progress, not only in the artistic, but in the constructional or scientific sense, when contrasted with the Pyramids; and architects have now all the resources of the world at their command.

In speaking of engineering, reference has been made to the almost startling suddenness of its development, as we now see it. While an architect must too often feel that the structures of his time do not surpass, or even equal, the productions of his forefathers, an engineer is troubled by no such misgivings. It is doubtless too much to expect that architecture should rival the strides of engineering; but in its quality of a useful art, it is closely allied with science, and may expect to have some share in its progress. In the meantime it is impossible not to regard with feelings somewhat akin to jealousy, the well-grounded confidence of the modern engineer, that he can surpass the achievements of his fathers, and write his name on the history of his time.

While we pay an ungrudging tribute to the success which has attended engineering, we must nevertheless remember that it is not architecture. The one is a science, the other is art and science in combination. We may, however, reasonably inquire what are the principles which engineering has marked out for itself, and by which it consents to be judged. One of them is a careful adaptation of its works to the convenience of those who are to use them. This is a principle which should also be accepted by the architect. Again, engineering prescribes the use of fitting materials, and good statical forms, here also there is a common ground.

What, then, is the difference between architect-

ture and engineering? It is, I think, principally a difference of addition.

The architect, no less than the engineer, must accept the dictates of common sense, but he must add to the work of the latter artistic beauty. The dull and heavy supports which a pure utilitarianism would give us, should become in the hands of the architect, replete with effects of light and shade, as they are adorned with mouldings and sculpture, or thrown into the form of columns and arches. The bare roof of necessary covering grows into domes, groining, or beauteous forms of woodwork, when it passes from engineering into architecture.

Our towns, instead of being planned with rectangular blocks, as in the chessboard-like arrangements of American cities, depressing in their dull monotony, may owe to the architect countless graces both of general and particular design. Churches, town-halls, and private dwellings may all charm the instinct for beauty, by reason of the architect's addition to that bare provision of necessity, which falls within the province of the engineer. With the latter, the materials employed must be used economically and scientifically, with strict reference to the utilitarian object in view. The architect must go beyond a bare sufficiency, and add the graces of ornamental construction, never forgetting that he is not to invent the ornament, for the sake of constructing it.

We have seen how great has been the progress of mechanical science. A similar activity has been shown in other branches of science, and every day we hear of some new and wonderful discovery,—now among the stars above us, now about the earth under our feet, the air we breathe, or the water we drink.

It seems to me unquestionable that architecture, to be a living art, must be in harmony with this state of things. It was reasonable, and perhaps necessary, that men should first turn their attention to restorations. This necessity has now passed away, and with it the day for copying the architecture of the past.

I cannot venture to predict the issue of the warfare of the styles, but with all the signs of the times before us, it is difficult to believe that future thought and science will be content to wear a Mediæval garb. The tendency of civilised nations appears to be in the opposite direction, and to demand that our architecture, on whatever foundations it may rest, should be consistent with the tendencies of modern ideas, founded on truthful principles, and not by its very completeness of imitation an elaborately constructed falsehood. At the same time it must be confessed that there is no such general agreement among architects on this point, as would justify me in directing you authoritatively, as to the selection you should make for your special studies.

The peculiarity of our position in these modern times prevents us from deriving much instruction on such a point from the experience of former ages. Up to the time of the revivals, each age possessed but one style of architecture, and followed it with singleness of aim. We have no reason to suppose that the old architects knew anything of the history of art, for they had no opportunities of learning it, unless, indeed, through the common craft of the mysterious body of Freemasons.

To-day we have to deal with a very different state of things. No one need be in ignorance of the history of architecture; and the art of engraving, to say nothing of the process of photography,—brings home a knowledge of the forms and details of the architectural works of all ages and countries to all who wish to possess it.

Even in Vren's day, a visit to Rome was a formidable affair, and he never saw St. Peter's. To-day, you know how every one hurries on the wings of steam, to see everything that is worth seeing, in all parts of the world. The "grand tour," from being the crowning item of the patrician's education, has become the privilege of all who can command some weeks of leisure, with a few pounds to spare. Men hurry from point to point, and think they are studying art.

Modern restlessness may be either the cause, or the effect, of modern eclecticism, but in any case it would seem to be fatal to the acceptance of any universal rules of guidance in artistic matters. While, therefore, we cannot absolutely predict the future of architecture, we must devote our best efforts to work out the problem of reconciling beauty with utility, whatever may be the style of our individual predilection. If we think first of the purposes of our buildings,

and afterwards of the details to be used, we may probably find ourselves on the way to true originality, while we shall avoid the reproaches, so often levelled at architects, of not sympathizing with their own time, in which they have been born.

Science must not be repelled, rather its alliance must be courted. If new constructions are required by convenience, they must not be grudgingly accepted. The use of iron is to the engineer as the air he breathes; it should not be neglected by the architect. Even now, many grand works of architecture owe to it their very existence; and in quite recent times, we have seen it applied as ties or struts to some of our most famous English cathedrals.

A scientific application of iron enables the architect of to-day to indulge in features more apparently daring, though not really so, than were possible in the days of our grandfathers. Are these opportunities to be rejected? It is rather the duty of the architect, as an artist, to study carefully the laws which limit the useful employment of iron in works of architecture, with a view to conform his designs to those laws, and so arrive at artistic successes, similar to those gained by our Mediæval predecessors, in their use of wood, stone, and the other materials with which they were familiar.

In the form of beams, iron offers obvious advantages to the architect, by extending his powers. He can, by its aid, venture on spans of floors, and roofs, hitherto only possible at vast expense, even if not altogether impracticable. It is only a few weeks since the President of the Institution of Civil Engineers informed the members that a bridge was about to be erected in Scotland, with openings 1,600 ft. wide, and piers 100 ft. in height above high-water mark. He also described a light-house which had been built in the midst of the sea, entirely of concrete. A short time previously one of the first engineers of the day had pledged his reputation to the feasibility of connecting England and the Continent by a tunnel under the Straits of Dover. I cannot but think that architects would do well to consider carefully these signs of the times, and to accept readily the conclusions to be drawn from them.

In questions of construction they may learn much from the engineer, and may often work hand in hand with him to the public advantage. Bridges and aqueducts were once considered to be within the province of the architect; but we may be sure that when such gigantic dimensions, as I have mentioned, can be promised by others, there will be little disposition on the part of the public to revert to the more timid constructions of past ages, even if to an artist's eyes they may appear more beautiful. This being so, is it not our duty to make the best of the circumstances in which we are placed? No one is bound to attempt impossibilities, and the revival of Greek temples and Mediæval cathedrals must, I think, be reckoned among them. The form may be copied, but the spirit is not there. You may obtain clever reproductions, delighting the scholar, and the antiquary, but you will feel your hold on public taste slipping away from you, until a dreary and hideous utilitarianism shall reign supreme.

I cannot do more now than commend these points to your consideration, in the hope that you will think them out for yourselves, and come to a sound decision upon them. If I have not ventured to pronounce dogmatically on the prospects of architecture, I have, nevertheless, attempted to indicate the principles which seem to me likely to govern in the future the practice of our art. The particular application of them must be left to the taste and genius of architects.

To some, it will appear that the true path is from a Mediæval starting-point, and that we should ignore all that has been done before or since the thirteenth or fourteenth century, and start afresh. Others will hold a reference to classic traditions the more reasonable course. By another school it will be thought impossible to close one's eyes to the experience of past ages, which is laid before us, as in an open book, and to ignore what has been done by either of the rival systems of architecture. These will inquire whether there may not be some common principles of beauty inherent in both systems, on which future excellence may be based, without a rigid adherence to conventional rules of style. They will further insist that architecture must be governed by common sense, and be consistent with modern ideas. Their preferences may lead them, in the first

instance, to that Anglo-Italian type of which I have before spoken, with such modifications and extensions as circumstances may require.

This style possesses the convenience of round arches, and square lintels, and will admit of various degrees of treatment. Heroic, or domestic, according to the necessities of the case, it can display stateliness when required for public purposes, and plasticity when the demands upon it are more humble. It will readily combine with the sister arts, and is prepared to accept new materials or new processes. It seems, therefore, to offer a meeting-ground on which something like a fusion may be effected. The adoption of what is called the Queen Anne style, little as some of us may approve of it abstractedly, would appear to be an effort to follow out this principle. As far as we can define this manner of work, it may be termed an attempt to unite the picturesque of the Gothic with details, not very pure, belonging to Classic architecture,—a Renaissance, in fact, but less strict and refined than the style to which the term is usually applied.

To those who are attracted by it, I would recommend the study of the châteaux on the Loire and in the centre of France. They will find in them all that the Queen Anne style gives them, and I think much more. To great boldness and variety of outline, these Renaissance buildings add an elegance of ornament which is based in some examples on Mediæval, and in others on Classic precedents, according to the dates of their erection. They are exceedingly rich in picturesque details, such as high roofs, turrets, chimney shafts, and dormer windows, and they adopt windows of various sizes and shapes, mullioned or otherwise, according to circumstances. The convenience of round arches and horizontal floor divisions is freely accepted, and the great roofs, which are invariably, offer facilities for the provision of a number of secondary bedrooms, to do which, without either meanness, on the one hand, or extravagance on the other, is not one of the least difficulties of an English architect engaged on domestic work.

Those of you who have not yet visited the valley of the Loire, will find it a most delightful architectural excursion, starting from Orleans, by Blois, Tours, and Angers, to Nantes, with excursions, from time to time, on the right, and left banks of the river. At Blois, and Amboise the details have a Mediæval character, while at Chenonceaux and Chambord, they are for the most part based on Classic forms, and in some cases, such as the applied Corinthian pilasters, they are copied from Classic precedents. These fine old structures appear to me to be full of suggestions to ourselves; but in any case I know of nothing more interesting than the evidence they afford, of the taste and tendencies of their builders, in a transitional age, anxious to adopt the new forms of the day, while still clinging to the traditions of the past.

The time warns me to conclude. In these two preliminary lectures, I have but touched lightly on the considerations which must affect the future of architecture, but I would wish to convince its students of the greatness of their mission.

In following architecture, they are the slaves of no mean mistress; and if they wish for success, they will need all their best energies to obtain it. Their devotion will be excited and controlled by the responsibilities cast upon them by the peculiar characteristics of practical architecture. Simplicity and truthfulness will be their aim in their studios, as in their homes, together with thriving industry. Without the latter they will scarcely thrive, for to the architectural artist, in an especial degree, there is no royal road to excellence.

This lecture has been meant as an incentive only to private study, and I shall be glad if any who hear me have had awakened in them a conviction that, great as have been her past triumphs, architecture may have yet before her a glorious future.

Painting and sculpture can hardly look for progress, because, being pure fine arts, there is no room for their advancement, by reason of any increase in the powers of man. Phidias or Titian may possibly be rivalled, but they cannot be surpassed. What Man can do now, as a painter or sculptor, he could always do, and no advance of knowledge can increase his artistic capacity. With architecture, as a mixed art and science, it is different; and as she is bound to recognise utility, she is of necessity connected with scientific progress, and may, therefore, be destined to surpass in the future the achievements of the past.

To ensure progress, it is indispensable to be first certain that we are on the right path. "Be sure you're right, and then go ahead," is advice which none need be ashamed to follow.

To advance art is a noble mission, and never more so than now, in an age of fastidious civilization, of wealth, luxury, and softness. It is surely something to have aims and aspirations independent of that money for which men lie, and steal, and murder, and to aspire to a fame not to be measured by its glittering standards.

A conscientious artist will meet with much to discourage and disappoint him, but his pleasures will be pure. He will live in a world of his own, and happy will he be, if, when the night cometh, he can repose, as does our great English architect at St. Paul's, under the well-earned epitaph—

"Si monumentum requiris circumspice."

ARCHITECTURAL STUDENTS.*

As the greater number of our members are pupils or students of architecture, it strikes me that a few words of advice as to the course of study to be pursued, to fit them for the practice of our profession, may not be out of place. I do not propose to give many or any hints on professional practice or office routine, but to confine myself to the preliminary preparation for embarking in practice.

In almost all other professions the student undergoes a systematic preparation for the calling which he has chosen, by going through a regular course of studies, attending lectures, and passing certain examinations to prove his proficiency before being admitted to practice. Now, the contrary obtains with architecture; no tests being required as to ability, any man may put a brass-plate on his door inscribed with the magic word, and forthwith he becomes an architect, the consequence being that several builders, auctioneers, land agents, and others include the practice of the profession of which we are members in their lists of accomplishments; the result being, that gentlemen and journalists look down upon us, and the Government of the country stoops from its lofty position to heap humiliation and insult on our devoted heads, one of the English journals—"a journal written by gentlemen for gentlemen"—going so far as to make in all seriousness the bloodthirsty suggestion, that to hang a few architects would be a salutary example and a fitting protest on the part of the public against the sanitary and other defects of the suburban villa of the present day, for the construction of 90 per cent. of which, it must be borne in mind, architects are in nowise responsible.

How is this state of things to be remedied? How are the public to distinguish between the genuine architect and the impostor? I say that the remedy lies in our own hands. Let us raise the status of our profession; let us educate the future architect, and rigidly set our face against and exclude from all intercourse with us those who, by irregular or unprofessional conduct, tend to lower us in public opinion. But the surest way is to guide the young aspirant in his studies, and endeavour to instruct him in all things he should know, in order that—as is too often the case—he may not be but beginning his studies when they should have been well nigh ended, and when he should be in a position to drop into the ranks of those who are working at architecture as a means of livelihood. Let none of us be so blinded by selfishness as to refuse to impart information to any requiring it; but let us give it cheerfully, bearing in mind how we should ourselves have felt such a refusal, and that by instructing young men we are but bettering our own prospects and those of the profession at large, for the more learned and clever our body is, the more it will be respected and looked up to by the public.

The late Mr. Dickens, in one of his novels—with which, I suppose, you are all familiar—has painted to the life (and as only an observer of human nature like himself could have done) the disadvantages and absurdity of the pupil system. Let none of us say that Pecksniff is an overdrawn or extravagant picture, for we know in our hearts it is not so, for Pecksniff still lives and flourishes amongst us.

Although the faults of the present system of pupilage are, I dare say, patent to all here, yet I may be permitted to briefly enumerate them

* By Mr. J. L. Robinson, from a paper read at a meeting of the Architectural Association of Ireland, February 26th.

before proposing a remedy for them. We will take as an example a case with which we are all familiar: Tom, the clever boy, when at school shows a decided taste for drawing, and his sketches having been duly touched up or completely re-drawn by his master, are at vacation time brought home and exhibited by his fond parents to friends and relations with the same amount of pride as if they were rare impressions of Albert Dürer or The Carracci. It is agreed by all that he is a very clever boy indeed, and has a decided taste for drawing. He goes on with his usual school course—plenty of classics and little or no science,—and accumulates more and more pencil sketches. At sixteen he completes his studies, and is, after some preliminary bargaining between his father and Mr. Blank, F.R.I., &c., as to the amount of fee and length of servitude, duly installed in the office of the aforesaid Mr. B., the eminent architect,—it being ten chances to one that up to that day Tom has not had the slightest notion of what an architect is, and is struck with astonishment at the large drawing-boards, squares, and other paraphernalia that meet his eyes. Mr. B. pats him on the head in a fatherly and affectionate manner, and says he is a very clever boy indeed; that his sketches are most beautiful, and evince a great deal of talent; that he will make him an architect in no time, together with other compliments highly flattering to our friend Tom's juvenile mind. He is ushered into the office, and finds he has for his companions two assistants and four or five pupils—the latter in various stages of being ground into architects in this first-class manufactory of the genuine article, where architects are turned out in the shortest time, and on the most moderate terms. Some are in a rough state, and others are almost quite polished and finished off—which means that they have spent nearly four years tracing plans for Mr. B., and occasionally varying that interesting occupation by holding the tape for one of the assistants when out measuring land or buildings. Tom has a board, squares, instruments, and paper placed before him, and is initiated by one of his companions in all the mysteries connected with compasses, Indian ink, rubber, drawing-pens, &c. After perhaps a month's preliminary training he gets his first tracing to make, and it is very probable that his attempt is a very poor one indeed; yet he improves after a time, and gets all that description of work; the other young gentlemen having his instruction in their hands, give him any job that may be distasteful to them, and set themselves out to teach him as little as possible outside the office work.

So the four years pass over, Tom occasionally getting details to ink-in and drawings to clean up or copy, and varies the routine of office work by taking three, or perhaps four, months' shooting each year, with cricket matches and other amusements on an average of say twice a week during the remaining eight months. The four years have expired, and he is handed over by his indentures by Mr. B., who, if he has a large practice, may send him as clerk of works for a few months to some of his buildings, just to give him a start; or Tom, thinking his studies are over, if he has sufficient connexion or influence, takes an office, and comes forth into the world as a full-fledged architect.

Now, let us ask ourselves what has he acquired during his four years' servitude? It is probable that during the whole of that time he has not received one word of instruction from the man who has been paid to teach him his business, nor seen a specification, such documents being prepared by an assistant, or—a still worse practice—by a building surveyor outside the office altogether. He does not know how to make a perspective drawing, and it is likely cannot design the simplest thing without a wholesale raid on architectural works and the building journals; and it is almost certain that he has never seen an architect's certificate during the whole time; and as for construction, you might as well expect to find a knowledge of astronomy in a South Sea islander.

Although the inherent defects of the apprenticeship system are many and great, yet if our friend had been a studious boy, and paid attention to his studies, and taken some interest in learning his business, he would not be a by-word and a reproach to the profession, and a laughing-stock for builders and practical men, who cannot understand his plans, and fear to construct his roofs as shown on his drawings for a wholesome dread that they would certainly fit some of their workmen for a coroner's inquest. He would lose no opportunity of learning some-

thing, and would not copy a constructive drawing without asking himself the why and the wherefore of its different parts; he would learn Tredgold's and other works on carpentry, and carefully study Nicholson and our old friend Sir W. Chambers; he would get a specification occasionally, and copy it out, and in fact endeavour by all means in his power to obtain as much information as possible bearing on the profession which he has chosen. If he does this and fails, he will at least not have himself to blame for his non-success.

Let me impress on any of you who are pupils that now is the time to gain information, for any knowledge that will be acquired after you have commenced to practise will have been dearly bought, perhaps at the price of humiliation and disgrace, through some failure in your work that might have been avoided if during the golden hours of youth you had not wasted your time, and allowed the precious moments to pass by in idleness and indifference. It is not sufficient that you should pass through your four years' apprenticeship by just going through the routine of office work from 10 a.m. till 4 p.m. No time should be lost in idleness; you should bring home your master's books to read, and draw at home after hours. You should learn the principles of carpentry, and the uses of the different building materials, how to write a specification, to take out quantities, to measure up extras, check builders' accounts, and make valuations,—all which important matters are to be learned by keeping your eyes open, and observing the manner in which your master conducts his business, and by reading books bearing on those subjects. You should also learn to draw well and neatly both in pencil and ink, and, if you have the taste, in colours, and to make sketches from existing examples. You should learn projection, shadows, and, most of all, perspective; for none can be architects that have not an intimate knowledge of the principles and practice of perspective, or the appearance their designs will assume in execution.

THE BELLS AND CARILLON MACHINE, WORCESTER CATHEDRAL.

So much interest has been recently expressed concerning the bells and bell-chiming arrangements in Worcester Cathedral, that we are led to give a view and plan of the bells and bell-chamber, together with a view of the carillon machine recently completed there. The proposal to raise funds by subscription, to provide the cathedral with a clock and peal of bells, was originated by the Rev. Richard Cattley, minor canon of Worcester, and by his perseverance and devotedness to the object it has been successfully carried out. In his appeal Mr. Cattley said, "I have felt anxious for some time past that the noble tower of our cathedral, which rears itself with so much grandeur, not only over the city but also over the rich valley of the Severn that environs it, should, with the sanction of the Dean and Chapter, be furnished with a clock, in which all the resources of modern art (including, if practicable, daily telegraphic communication with Greenwich Observatory), together with the most finished workmanship, should be combined. And not only so; but, in order to complete a scheme worthy of Worcester, which from its rising importance now takes no mean place amongst the cities of England, I propose that we provide a peal of twelve bells, in the key of D flat, on the heavier of which the noted Westminster quarter-chimes would be sounded; and a bell of great power and magnitude, much after the model of the Leeds Town-hall bell, the tone of which would be B flat, weighing nearly 5 tons, on which to strike the hours. The carrying out of this latter part of my plan is the hinge on which the whole practical utility of the scheme would turn, because by such a grand measure only would the time be distinctly indicated in every part; thus all other clocks could be regulated with perfect truthfulness; and I also make bold to say, without fear of contradiction, that the changes at the quarters, corresponding with the celebrated chimes to which I have just alluded, and answering to the deep-toned hour-bell, will present a combination which has not as yet been equalled, and will, moreover, only be surpassed when the unfortunate 'Big Ben' passes successfully through the founder's hands."

The sum named at first as the probable cost was about 4,000l. The greater part of the

money was speedily raised, and the work was put in hand.

The casting of the bells was successfully completed by Messrs. John Taylor & Co., of Loughborough, and the tone is pronounced exceedingly fine.

The ringing peal consists of twelve, the weight of the tenor being 50 cwt.; note D flat. They are dedicated to the Twelve Apostles, and the name of the Apostolic Patron is cast in beautiful 15th-century letters on the waist of each bell. The Cambridge Quarter Clock Chimes necessitate an extra bell sounding D natural. This is dedicated to St. Paul.

The weight of each bell, with the title and note, is as follows:—

No.		ent.	qrs.	lb.
1.	S. Matthias	A flat	6	3 19
2.	S. Judas Jacobi	G flat	7	0 22
3.	S. Simon Zelotes	F	7	2 10
4.	S. Jacobus Alphaei	E flat	8	3 0
5.	S. Maththus	D flat	10	1 21
6.	S. Bartholomæus	C	11	0 24
7.	S. Thomas	B flat	12	0 0
8.	S. Philippus	A flat	15	2 11
9.	S. Andreas	G flat	21	2 11
10.	S. Joannes	F	26	1 8
11.	S. Jacobus	E flat	34	2 12
12.	S. Petrus	D flat	50	0 0
Extra Quarter Bell S.				
Paulus	D	9	2	4
Total				221 3 12

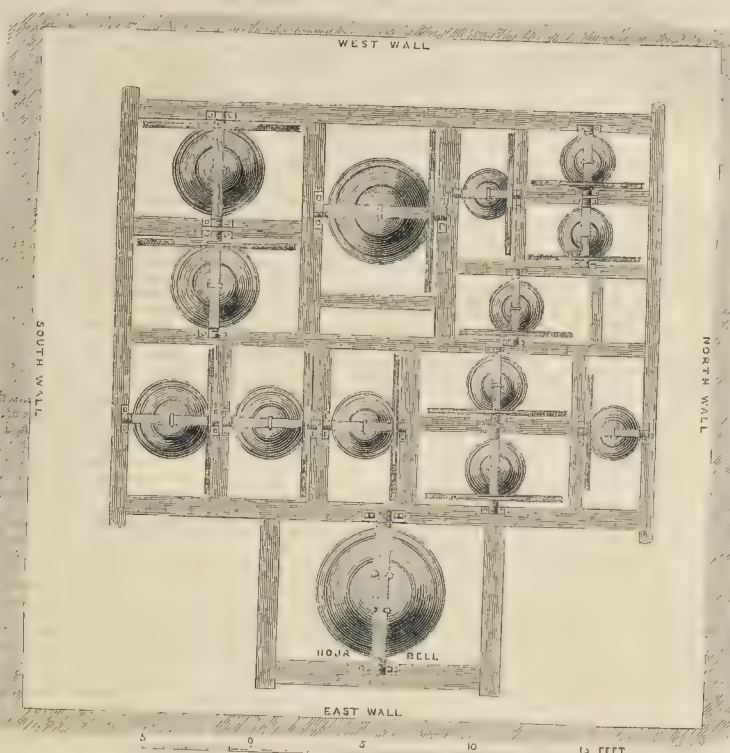
There is also the great bell, on which the hours will be sounded by a new and powerful clock, constructed by Messrs. Joyce, of Whitechurch, Salop (from the designs of Mr. E. B. Denison, Q.C.), weighing 4 tons, 10 cwt.; making a total weight of metal of 15 tons, 11 cwt., 3 qrs., 22 lb. This bell is a fine casting, and the note B flat is a remarkably true and full one. The ornamentation is of the same character as the peal bells. There are also four coats of arms on the waist—(1) England; (2) See of Worcester; (3) Dean and Chapter of Worcester; (4) City of Worcester. Round the crown is a text of Scripture, Eph. v. 14—"Surge qui dormis et exurge a mortuis, et illuminabit te Christus." (See Durandus de Campanis.) Also, on the lower part of the bell, in addition to the founder's name, is the following:—"In usum Ecclesie Cathedralis Christi et beate Marie Virginis in Civitate et Comitatu Vigorniensis. Anno Domini MDCCCLXVIII."

The following is the estimated expenditure:—

Bells, oak frame, and all necessary fittings complete	£2,677
Clock, about	500
Timber trussing, floors, &c., about	1,200
Architect's commission, about	70
Gas-fittings	12
Chiming apparatus (Ellacombe's)	20
Wire for lower windows, about	35
Incidental expenses, including taking down old bells, printing, advertising, &c., about	200
£4,714	

The large bell was tolled for service for the first time by Mr. Denison and the Rev. H. T. Ellacombe, on Sunday, the 17th of January, 1869, in the company of Mr. Cattley and others.

A desire having been expressed for the restoration of the ancient musical chimes, which had fallen into decay many years ago, Messrs. Gillett & Bland, of Whitehorse-road, Croydon, who have brought the machinery for such chimes to great perfection, were called in, and have constructed a machine on a new and patented principle, a great improvement upon the original patent which was first applied to a set of Belgian bells in Boston Church. Since then the firm have effected many improvements, all of which have been introduced in the piece of mechanism under notice. It may be well to state that the chimes are the quarter-chimes of the clock. Mr. Ellacombe's chiming-hammers strike the bells inside with round hammers pulled by ropes, so that the success of the tunes or chimes depends entirely upon the skill of the performer; but the carillon machine is an automatic musician, the tunes being played entirely by machinery, and let off by the clock at the proper times. The carillon machine is constructed to play twenty-eight tunes on fifteen bells, but at present it will play seven tunes only on the ringing peal of twelve bells, occasionally introducing the great bell of 4½ tons, which has a grand effect. The tunes are original, composed for the purpose. This we are disposed to regard as a mistake.



Plan of the Bells and Bell Chamber, Worcester Cathedral.

known tunes would have given more general satisfaction. When two extra bells are provided (which are essential in order to render the music of the Worcester carillons the finest in England), the other three barrels will be pricked with seven tunes on each. There are thirty-four keys to the machine, only twenty-four of which are now used. The machine wound up every morning, and plays eight times in the course of twenty-four hours, a period of three hours elapsing between each performance. The same tune is repeated three times on each occasion, and it continues in action for minutes and a half. At the expiration of twenty-four hours the tune changes involuntarily, in like manner the seven tunes of the barrel are consecutively played. Its connexion with a clock is by means of a lever, which, by a mechanical arrangement, is gently drawn when the time approaches, dislodging a pin, and thus the machine is set in motion. The motive power is obtained by weights, and the speed, as in clocks, is regulated by revolving vanes, capable of easy and instantaneous adjustment. The barrel, which is exactly on the same principle as that of a musical box, and is constructed to play tunes, is studded with brass pins, and in its rotation releases the detents and lets the hammer descend upon the bell; a cam-wheel of peculiar construction, continuously revolving, immediately forces the hammer back into a striking position, and the detents back into their proper place. On the bells are required for ringing, by a simple arrangement a bar is turned down on the keys, which prevents the machine being set in motion, but the ringing may continue for any length of time without fear of interruption. The whole machine is enclosed in a massive cast-iron frame, bolted together with iron nuts and pins, and 7 ft. long, 4 ft. wide, and 4 ft. high, weighing over 1½ ton. The motive power is given by weights, weighing 14 cwt., which are ended by a steel line (280 ft. in length)

from the iron barrel which drives the main wheel, and thus sets the whole machine in motion. The four musical barrels have seven tunes on each, and are 5 ft. long, 12 in. in diameter, and are made of mahogany, each being pricked with 1,100 brass pins, one-eighth of an inch square. There are twenty-six hammers for striking the bells, some of which weigh 2 cwt., 1½ cwt., and 70 lb. each, altogether weighing 1,302 lb. The weight of the whole machine, including hammers, cranks, lines, &c., is nearly 4 tons of metal.

The great advantages claimed for the new system of carillon machinery are, that instead of the hammers being lifted up by the pins on the musical barrel (in the way common to all chiming machines on the old system), the two off to strike the bells are released by the small pins on the musical barrel, they are again instantly raised into the striking position, their actions being perfectly simultaneous.

To show the facility with which the carillon machine acts upon the bells, it is stated that, notwithstanding the great weight of the hammers, an ivory key-board could be attached, the same as in a pianoforte, so that the tunes could be played upon the bells by the fingers as easily as playing a church organ, and any number of tunes could be played by having a series of musical barrels with seven tunes on each.

Disputes have arisen as to the authorship of certain improvements made in the carillon machine, and which may result in litigation. We will not attempt to apportion the merit due to this or that person, but it seems clear to us, after some examination, that to Messrs. Gillett & Bland belongs the credit of having brought the machine to the condition in which we find it in Worcester Cathedral.

For the addition of the chimes to that cathedral the citizens of Worcester are indebted to the

munificence of Mr. J. Wheeley Lea. The Rev. R. Cattley is to be heartily congratulated on the success which has attended his efforts to furnish the cathedral with a magnificent peal of bells, and to develop their excellence to the fullest possible extent.

FIRESIDE LORE.

THE paper on "Some of the Sanitary Aspects of House Construction," recently quoted in the *Builder*, furnishes a text for a gossip concerning fireside matters in the olden days. Going back to the grim gray dawn of history, we come to a time when fire was unknown. The oldest tradition relative to its discovery is that a Phœnician hunter observed a conflagration that had been excited in a forest by the attrition of some trees during a storm. To come down to later times: when Magellan visited the Marian Islands in 1521, the natives considered themselves to be the sole inhabitants of the world. They possessed none of what are termed the necessities of life, and were in total ignorance of fire. Several of their huts being consumed during a thunderstorm, they considered the flames to be a kind of animal that attached itself to the wood and fed upon it. Martini, in his History of China, states that one of its earliest kings, following the inspiration of Heaven, first taught his countrymen the art of producing flame by rubbing pieces of wood together; then, says another Chinese historian, from being slaves of earth like the barbarians, the children of the Celestial Empire became the eyes of the world, for they alone could produce fire and convey it to places where it was wanted. But for this contrivance, a great portion of the globe must have remained a desert. Neither will our admiration of the discovery be diminished on finding that for many thousand years no improvement was made on the simple method by which the inventors first warmed themselves

and their neighbours. A fire of dried wood or grass, built up in the open air or in the centre of the cave or tent, was the one provision against chilly weather used among the wandering tribes; and the same rude method was followed when man had gathered into societies and peopled cities. As the years rolled on, the focus, the hearth, of a home was established. The hearth occupied the same place in the British as in the Anglo-Saxon houses. Giraldus Cambrensis, that most patriotic of Welshmen, tells us that families inhabit a large hut, or house, which, having a fire in the midst, serves to warm them by day, and to sleep round at night. In the strongholds of the time of the Red King, a central hearth is seldom found. In the great guard-room of Conisborough Castle, which was erected in or near the Anglo-Saxon period, is a large fire-hearth. The mantel of this fireplace is supported by a wide arch, not trusted to as sufficient, but having two transom stones running under it, and at a little distance the aperture resembles a modern ornamented chimney-piece; and a ground-plan of the room, made on the line of the soffit of the mantel, shows a recess for the hearth on the common construction; yet, in reality, the back of the fireplace, where it joins the hearth, is on a line with the walls of the room, and the recess at the mantel is formed by the back of the fireplace sloping outwards, as it rises into the thickness of the wall until it reaches a loophole on the outside that forms the place of exit for the smoke.

The first legal notice we have of coal is in a grant made in the reign of William the Lion to the monks of Holyrood. In 1239 Henry III. granted a charter to the inhabitants of Newcastle to dig for coal, which is the first legal mention of that fuel in England. But London objected to Newcastle coals, and in 1306 Parliament petitioned the king to prohibit burning the noxious fuel in the city. A law was passed making it a capital offence to burn sea-coal within the city. The records in the Tower contain a document importing that in the reign of Edward I. a man was tried, convicted, and executed for the crime of burning sea-coal in London.

Long before and after this period wood and peat were the fuel of the country. The prejudice against coal was exhibited even in the coal-fields. In 1349, at the religious house at Whalley, peat with a very little wood was the only fuel used, although coal abounded in the neighbourhood. In this same house wood was generally used for light, as there was but a scanty provision of oil for lamps, and of tallow almost none; indeed, tallow candles did not take the place of splinters and flambeaux till the close of the thirteenth century. In those days there was no fireside comfort, even in the houses of the nobles. The spacious, lofty hall, left open to the roof, had its windows placed high from the floor, and filled with oiled linen or painted glass. The doors opened by latches, and where the walls were not coarsely painted in the fashion of the time they were left rough and covered with arras, suspended by hooks at a distance of three to four inches from the wall. The floor of stone or earth had a portion at one end raised above the general level and laid with planks. On this dais stood a cumbersome table and benches, and a high-backed seat for the master, under a canopy. On the hearth in the centre of the hall were placed the andirons for supporting the ends of the brands that were arranged by means of a heavy double-pronged fork, the predecessor of the modern poker. The cottages of this time were little better than pig-sties. Beds they had none; the inmates curled themselves up to sleep as best they could round the fire of turf that burned on the floor of clay. The fifteenth century saw many fireside improvements. In the inventory of Sir John Fulkraft's effects we read, in regard to the furniture of one room:—"Item, 1 andiron; item, 1 fire-pipe; item, 1 pair of tongs;" and in the same document, "Item, 1 pair of bellows in the lady's chamber." In this same century Ennius Sylvius relates that he saw the poor people in Scotland, who begged at the church-doors, receive for alms pieces of stone, with which they went away contented. "This species of stone, with whatever inflammable substance it may be impregnated, they burn in place of wood, of which their country is destitute." Though coals and wood were not high priced in England, firing was in general scarce, and in country places the hearths were few, and therefore of such importance that the right to use them was sometimes bequeathed. In 1516 Richard Byrchette, of Pesemershe, testifies:—

"I will that my wife shall have the chamber she lies in, and liberty at the fire in the house; all these things shall she have as long as she is a widow." London was now progressing in fire-side improvement, fires were beginning to be made in several rooms. In 1524, John Port, "late the king's servant," had three rooms which, besides the kitchen, had hearths. In the hall were a pair of andirons and a pair of tongs, with a fire-rake and a little fire-shovel; in the parlour was a pair of andirons; and in Port's sleeping-chamber, a pair of small andirons. At the close of the reign of Henry VIII. domestic convenience and comfort had progressed still further. The windows were glazed and hung with curtains. The hearth recess was generally wide, high, and deep, and had a large flue. The hearth, usually raised a few inches above the floor, had sometimes a dais made before it. In front of the hearth, or on the dais was spread a piece of green cloth or tapestry (the initial of carpets), as a substitute for the rushes that covered the lower part of the floor. On this were placed a very high-backed chair or two, and footstools, that sometimes had excellent inventions for neutralising draughts of air in these chilly apartments. It is related of Henry VIII. that he gave the revenues of a convent which he had confiscated to a person who placed a chair for him commodiously before the fire and out of all draughts. We are indebted to Sir Hugh Platt, an ingenious lawyer, for being among the first who attempted to improve smoky chambers by operating on the five-places, which showed that he understood the seat of the evil. "If the smoky chimneys that want help be large, and carry some good length and breadth with them, then erect or build a false back or sides, so that there may be a distance of three or four inches between the old back and the new, and raise this work about a foot above the mantel-tree." One of Sir Hugh's favourite projects was what he called "the sweetening of sea-coal," so as to make it a substitute for wood in domestic economy. In the present days of high-priced coal, Sir Hugh's plan has been announced as something new, and not dating back for nearly three hundred years. In one of his books entitled "A New Cheape and Delicate Fire of Cole-balls," he says, "In the winter season, after a few frosts, as much loam is to be gathered as is necessary; half a peck of it is to be dissolved in a tub of water, and mixed into a very fine pap. A bushel of the best sea-coal is to be strewn upon a paved floor and bruised with a hammer or by treading under foot. The coals are then to be spread, some handfuls thick, upon the floor, and some of the thin loam pap sprinkled evenly over them." When the loam and coal are thoroughly mingled, the mixture is to be rolled into balls. This recipe was no invention of Platt's, for he says, "when these balls are thoroughly dried they are ready for use, after the manner of Lukeland in Germanie, which form of firing hath been with them many years past."

RECENT CEMETERY MONUMENTS.

OUR engraving illustrates three typical modern cemetery monuments recently erected from the designs of Messrs. Horton and Bridgford, of Manchester. The first structure, on the left-hand side of engraving, is known as the Pilkington Monument, and has been set up to the memory of the late Mr. George Pilkington by his trustees and relatives in the churchyard of All Saints', Oxford-road, Manchester. It is about 4 ft. square and 17 ft. high, with four sides similar in design. The monument may be described as an arched canopy, having, in place of a statue, four memorial tablets, one in the panel of each arch. There are five stages: the lowest includes slab and base; the next, the pilasters of the canopy, shafts, and the tablets; the third, the arches of the canopy and those surmounting the tablets; the fourth, the sloping roof; and the highest is a cross. The style of architecture is Early English. The angle pilasters have carved capitals and moulded bases. From these capitals springs, on each side, a pointed arch with boldly-cut arch mouldings, and label moulding terminated with foliated bosses; and immediately under this arch is a trefoiled arch, with carved spandrels and arch mouldings, enriched with polished green and red serpentine marble panels, and carried on green and red serpentine marble columns, with

foliated caps, and bases as before described, the foliation being carried across the central recessed panel which the trefoiled arch surmounts. The trefoiled arch is filled in with an angel in a devotional attitude, carved in high relief in a moulded vesica-formed panel, on a diapered background. One of the four central recessed panels has a white marble slab let in, with a notification of Mr. Pilkington's death, in Gothic letters, and on the reverse side is a similar slab, briefly recording his successful career and munificence; the other two panels being filled in with shields on diapered backgrounds, bearing respectively the coat of arms and the initials of the deceased gentleman. The spandrels on each side of the pointed arches are relieved with carved paterae; and the outer angles, above the pilasters, enriched with the tooth ornament peculiar to the style. A little above the pointed arch runs the moulded eave-course, enriched with a carved leaf ornament, and from which slopes a crocketed and scalloped canopy, terminating in four battresses, weathered on all sides, and so leading the eye gradually to a simple, effective cross, the arms of which are foliated at the termini, and interlaced with a circle with trefoiled spandrels and serrated edges, a carved leaf ornament marking the centre. The whole stands on a slab 8 ft. square, and is surrounded by a dwarf wrought-iron railing, picked out in colours. The stone used is Yorkshire. The monument was executed by Mr. Bonhill, of Upper Brook street. The cost has been about 160l.

The central subject is the Fernley Monument erected by Mr. John Fernley, in the Southport Cemetery, to the memory of his infant son, who stands 17 ft. high, and is executed in Portland stone. The style of architecture adopted may be called Early Decorated, freely treated. It consists of a square base, boldly weathered and gabled, with foliage in gables, and has the following text inscribed:—"The grass withereth the flower fadeth: because the Spirit of the Lord bloweth upon it." The base carries a square block of polished Peterhead granite, on which is cut the inscription, finishing with the quotation, "Of such is the kingdom of Heaven." At each angle, and detached, stands a pilaster with engaged and banded marble column, in recess on each of the inner angles, all having foliated capitals, carrying the arch moulding enriched with fern-leaf, the inner order of which has cusplings, with foliated terminations, and carved spandrels from the inside of the moulded ribs, with carved corbels at their intersections, forming a grained roof over the granite block. Above the arch mouldings, on each side, is formed a crocketed canopy, the hood moulding being enriched with foliage. In the centre of each canopy is carved an angel's head, the spandrels around the same being filled in with foliage, and terminated at the top with figures emblematical of Faith, Hope, Charity, and Religion. The whole is surmounted with a crocketed spire, finished with a carved cross, and on the four angles at its base are angels seated.

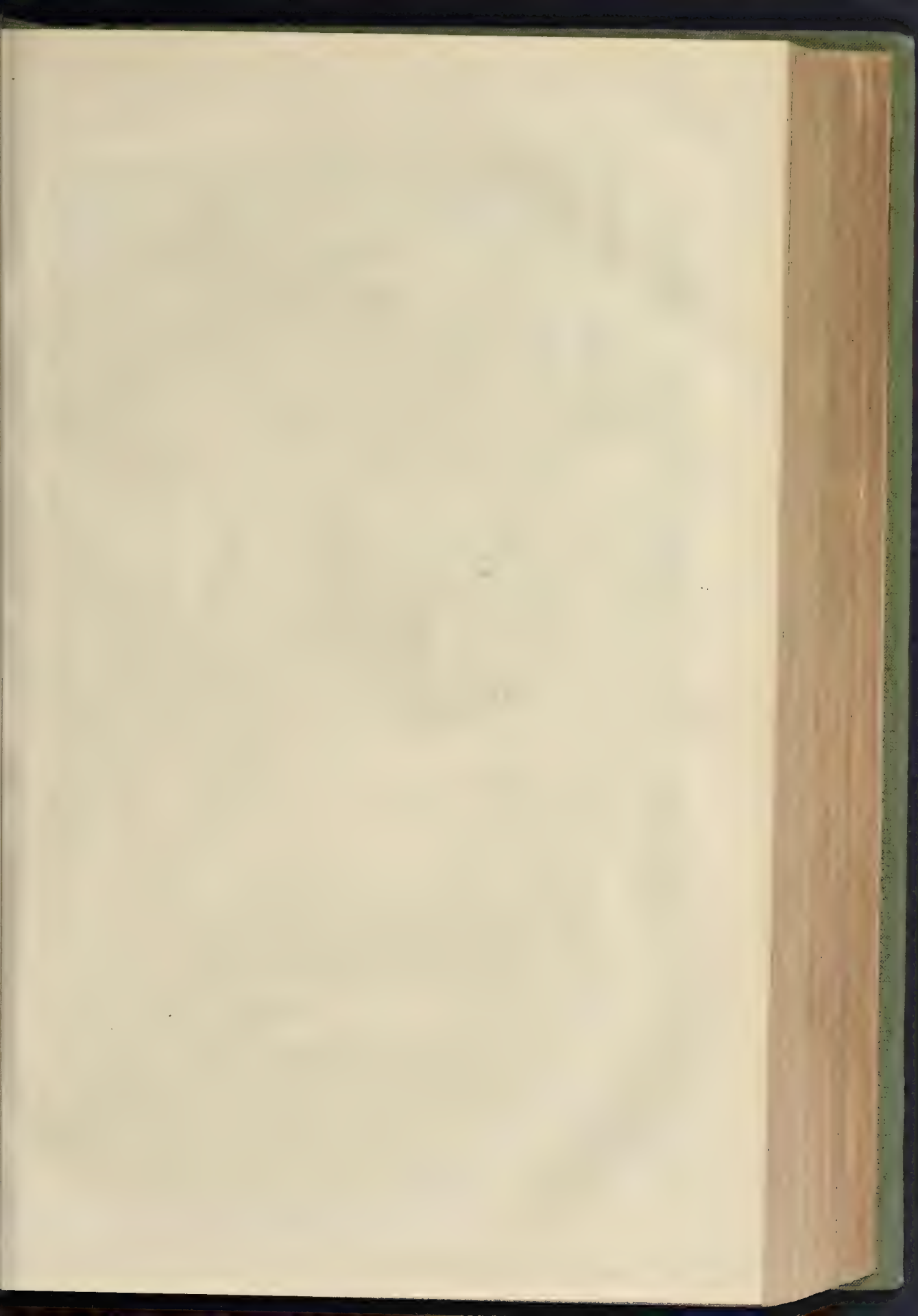
In the carving, the following emblematical flowers have been introduced, viz., the lily, lily of the valley, snowdrop, forget-me-not, primrose, violet, and daisy; whilst the fern has been made to predominate, as referring to the family name, taking the form of crockets, and being the principal feature in the capitals, where the lily seems to be rearing its head under its protecting influence.

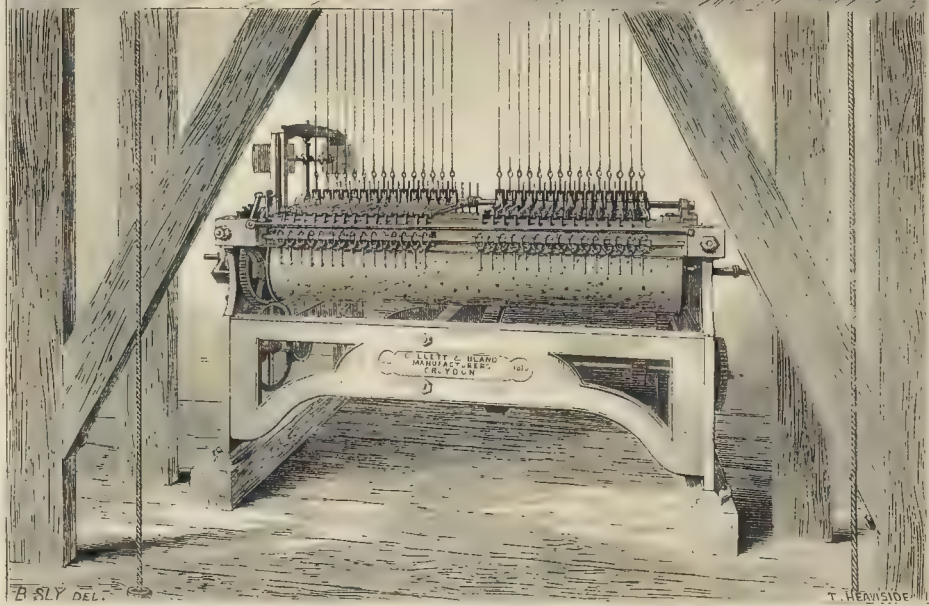
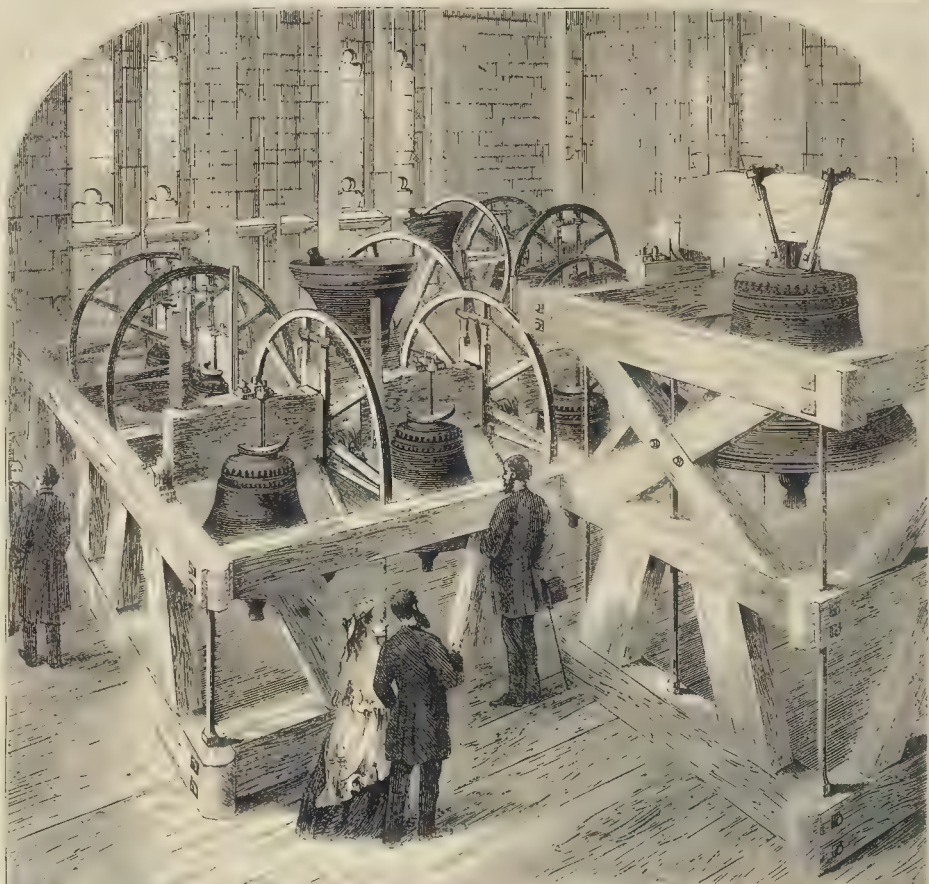
The monument is mounted on three steps, enclosed with wrought-iron railings, picked out in gold and colour.

The right-hand structure is the Stark Monument, in Bowdon churchyard, Cheshire, and is erected in Yorkshire stone, the columns being of red and green serpentine marble alternating.

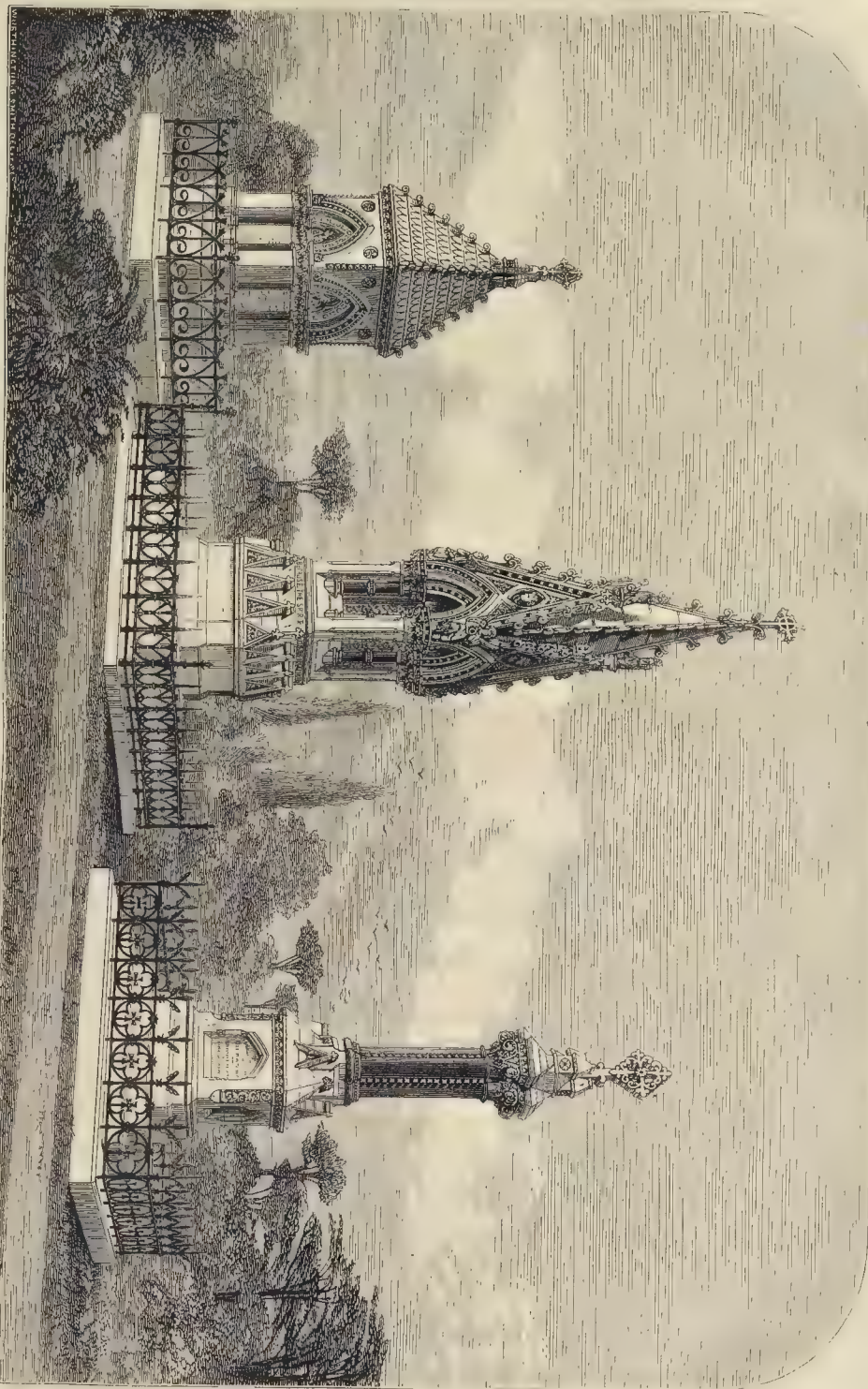
PROPOSED PUBLIC BATHS FOR ATTORNEY CLIFFE, SHEFFIELD.

At a meeting of the ratepayers of Attorcliff Ward, in the Vestry-hall, Hill Top, to consider the site for the intended public baths, it was proposed that they should be erected on a piece of ground near the Attorcliff bridge, but Mr. Councillor Skelton advocated the erection of proposed baths in a more central position, suggested as a site, that now occupied by the Vestry-hall in which the meeting was being held. A resolution to the effect that it was desired that the baths should be as centrally situated as possible, and that the site named by Mr. Skelton was a very eligible one, was carried.





THE BELLS AND THE CARILLON MACHINE, WORCESTER CATHEDRAL.



RECENT CEMETERY MONUMENTS.—MESSRS. HORTON & BRIDFORD, ARCHITECTS.

HOW TO STUDY COLOURED DECORATION FROM EXISTING EXAMPLES.*

In what I have to say to you I must, of necessity, often take you over well-trodden ground. I must often repeat to you, doubtless, suggestions which you have already heard from others or read in books. Nevertheless, I am not without hope that, whilst I shall make no attempt at saying what is very new or very striking, I may succeed, here and there, in impressing upon some of your minds certain rules and suggestions as to the use of colour for decorative purposes, which, as they are the result of nearly twenty years of practical experience, and of habitual observation, may at least receive your careful attention.

They will stand, I hope, the better chance of being received by you with thoughtfulness, because I shall in no case trouble you with any theories of my own, but shall only endeavour to point out to you what you may learn from the practice of men whose renown is world-wide, and whose works, so long as they exist, are certain to be studied, rightly or wrongly studied,—by generations of colourists.

I must be understood as addressing myself almost exclusively to such of you as are still students, among whom, probably, not a few will make a special study of colour in connexion with architectural purposes. A special study it must be, and zealously and ardently pursued by those who hope to attain to any considerable success. And, as I shall endeavour to point out a means and method of study, I shall also presently point out what pitfalls beset the student, and into what errors he may most easily slip.

The means of study open to the student are, broadly, two,—*Nature*, and the existing works of great artists, or at least of men of acknowledged skill. The former is of course the source of all,—the widest and deepest, inexhaustible,—but precisely for that reason it presents difficulties which can only be encountered, or at least can be most advantageously grappled with, subsequently to a very careful study of the works of the best men who have gone before us. If out of that deep well of Nature others have drawn many a vessel of refreshing beauty, surely we shall do well first to make all the use we can of the contents of those vessels which stand around the brink; and, later on, our strength will be the greater to draw for ourselves.

For this reason I propose in the present paper to deal almost entirely with the lessons to be derived from existing works of coloured decoration, and somewhat reluctantly leave aside the sister subject of "How the Decorative Colourist may Study from Nature." Perhaps at some later time I may be allowed the pleasure of saying something to you on that subject; if, indeed, no one more capable to deal with it should meantime volunteer to bring it before you. Till then I must beg you by no means to misunderstand me. Though you cannot at first go direct to nature to study decoration, you can, and must, always be studying nature along with whatever else you study. It is in the application of such studies that your previous lessons will be your best aid.

Even though they be obvious enough in themselves, it may be as well to repeat a few of the leading maxims which should guide the colourist in his work applied to buildings:—1. The colour must be so used as best to express the best forms and proportions of the structure of which it was applied. 2. It must also be so used as to assist the eye in recognising the structural features and motive of the building, where such exist; or, in the absence of such features architecturally, to compensate for their absence by some satisfactory substitute of division and arrangement. 3. Where a building or room is obviously defective in proportion (at any rate for its intended purpose), colour may be so used as to assist the sense of proportion, and, to some extent, to correct the existing defect. 4. Whichever of these purposes the colourist has chiefly in view, he must, above all, take care that his colours are harmonised with each other, and that his ornament, in whatever style, assists his purpose.

Having, then, in his mind some distinct maxims, which his own reason will assure him are simple and sound, the student will go on his travels with some clear idea of what it is he wants to learn. It is very necessary that he

should, to some extent, school his mind to look first for that which is most important when he goes to learn from the old masters of art. He must, without chaining down his mind to them, keep these first objects of "coloured decoration" steadily in view, lest he be carried away by the charm of the detail, or by his admiration for some special or striking features of which he may easily mistake the original aim.

When he is once capable of fairly asserting for himself the various examples of beautiful decoration with which he meets, so as to recognise what kind of lesson to learn from each, he need place small limit upon his enjoyment and appreciation of all. Only let him early learn to use his tests fairly and with discrimination. The want of the knowledge of how to apply critical tests fairly is a very common want, and a very common cause of disappointment as to much valuable art. It is especially so with the youngest and least travelled followers of art. Often with those whose sense of the beautiful is keen, but who lack either the experience or the patience to look beyond their first quest. I venture to caution you on this head because, having started with simple maxims, you may either be led to condemn or despise all works of reputation which do not illustrate those maxims, or to think the maxims themselves in error when you find beautiful works which appear to fall short of being their examples. I would remind you, then, that the works of some artists are admirable for *comprehensive* management of colour, whilst others owe their repute rather to the exquisite fancy of their ornament, or the beauty of their colouring *in detail*, than to the success of the general effect, or to the advantage which the building itself derives from them. There will, therefore, occur to you many admirable examples which will not teach you that which, as colourists, you most want to learn. Do not on that account despise them; because you will often find in them much to delight and benefit you when you look at them as ornamentists, or even as artists.

Having, however, warned you against a fanatic abuse of maxims, I must revert to them to insist upon their value in weighing the lessons to be derived from each example. If you keep them well in view you will not refuse to admire every work which does not fulfil your chief requirement, because it is only exquisite in fancy, in detail, and in execution; but you will not commit the error of mistaking the source of your admiration; and if you study it, you will assign to it its proper place in your mind and memory.

Admitting, then, that your first object will be to learn how to make your colouring and surface ornament advantageous to your structure, we will leave out of account for the present special charms dependent upon detail or delicacy of execution, and will seek, rather, a few examples in which we may be able to recognise certain aims, and certain results attained by the colouring. We are in the position of being obliged to deduce the original intention from the result; but, if we are careful in so doing, the lesson may be almost as valuable as if we really knew the artist's mind; and the mere fact that we are able to deduce an intention from the result in any particular example, will show that the example is worth careful study.

Without, then, breaking off to catalogue a set of rules by which certain results may be attained, I will point out each rule where it is exemplified, thus saving time and your patience.

Now, I may as well at once tell you that my examples will, for the most part, be drawn from works in Italy; and this for a very simple reason,—that Italy possesses far more numerous and beautiful examples of coloured decoration than any other country in Europe; and not only this, but these examples come to us, in many cases, signed by the great names which have influenced all modern art, and before which we all willingly bow. Let me hasten, however, to reiterate those whose enthusiastic predilections make the name of "Italy" as a reproach in their lips.

I shall endeavour to remember that, as Mr. White has told you, "Queen Anne" is not dead after all; and I shall hope at once to conciliate some of my friends, at any rate, by selecting as my first example a Gothic church of (shall I say the best period?) the thirteenth century.

The upper church of St. Francis-Assisi was begun in 1228, two years after the death of the saint, and was completed in about twenty-five years by a German architect. Its coloured

decoration was carried out from thirty to forty-five years later. The church is rather over 220 ft. long, divided into five vaulted bays, and a short choir; the width is 36 ft. (making each bay nearly square); and the height 60 ft. Clustered columns, attached, support the vaulting. The absence of mouldings on the groining-ribs, and the large plain surfaces of wall, sufficiently show that this interior was always intended to depend on surface decoration for its finished effect.

The enthusiasm, which had been awakened among men of all conditions by the preaching and example of the saint, was to be kept alive by depicting on these walls, in full view of the pilgrims to his shrine, incidents from his life side by side with others from the Old and New Testament.

At a height of about two-thirds the length of the columns a string-course divides the height of the walls. This is the only moulded division. The Biblical subjects are above this line in two tiers; the Franciscan subjects below it. All separating margins or divisions of the subjects (with the one exception already named) are in coloured decoration.

You will see, then, that the whole of the walls are covered with colour, either pictorial or merely decorative; but, besides this, the roof also is made a field for colour, and even the windows are entirely filled with stained glass.

Now, you will almost have gathered from this rough description of the general conditions that, where such enormous surfaces of pictorial art were to be displayed, the decorator would be placed between two difficulties. If the pictures be not distinctly divided or framed, and the structural features be not clearly defined, a sense of confusion will be produced. If, on the other hand, too emphatic a colouring be used for the expression of the structure, there is a risk that the subjects may assume a more subordinate place than is demanded for them.

How, then, did the artist steer between these difficulties? I will endeavour to point out. Taking the walls first, he divided the various tiers of subjects by broad bands or friezes, finishing below with a diapered dado. These bands, though having a ground which contrasts with the predominant tone of the pictures, present a by no means hard contrast, because other colours, also present in the pictures, are introduced largely in the ornament. Clearness is thus obtained by the *width of the margins*, not by the abruptness of their contrast; whilst value is given to the colouring of the pictures by keeping the general tone of the borders, especially that of the ground-colour, lower than the leading tones in the pictures; but, in guarding against confusion or undue monotony in the pictures the artist adopted another and still more important expedient. Among some memoranda which I made in the church some fifteen years ago I find the following:—"The frescoes of the upper church have each a predominant colour,—the upper series chiefly blue. The lower range have blue, yellow, and red,—the first in the largest proportion." Each is framed by a maroon line; and descending to the dado, we find various diapers of yellow, maroon, green, &c., but a total absence of blue. Thus, not only are the pictures of each bay framed by the wide margins I have mentioned, but the individual pictures vary in predominant colours, though the colours themselves are always in the same scale. Besides this, the predominance of blue above diminishes to nothing below.

The pictures, therefore, are well separated, but maintain a certain unity of effect throughout the bay. We now come to the separation of the bays one from another. There is a wide arched soffit next the wall, framing the whole group of the upper series. This soffit is again in the somewhat quiet "tertiary" tones of the margins, which, as we shall see, are repeated in the vaulting. In this soffit the brighter tones are introduced at intervals by means of pictorial medallions,—a connecting link with the pictures, again avoiding abruptness.

There remain now the vaulting, with its ribs and ceiling, and the clustered columns from which the ribs spring. We take the vaulting, and find an uncommon treatment. The ribs themselves would have appeared hard and "lively" if left to themselves to mark the structure, so they are supported on each side by wide borders of similar colouring to the margins below,—another substitution of *width* for force of colour, observe!

Then we find the ribs themselves diapered in the primary colours and white, so closely sub-

* By Mr. John D. Cresce. Read at the Architectural Association, as mentioned in our last.

divided as to be somewhat subdued by each other. Thus, again, recalling the pure tones of the pictures, only with more intensity. But when we come to the ceiling panels, we find that the bays are *alternate* in colour and treatment. The panels of one bay are blue, powdered with gold stars. In the next they are yellow, but largely occupied by big medallions, with figures, or by single throned figures in colour.

"Why this alternation?" you ask. I take it to be this. You have a long building rather low for its other dimensions, thus bringing the ceiling conspicuously into the perspective view. Had the ceiling being all blue, with gold stars, one can feel that the effect would have been to give that colour undue preponderance, to the detriment of the wall pictures. Not only this, but the eye, catching the perspective of the pendentives, would have been arrested by the mass of blue in which it would find a lack of interest, vertically. The impression to be would have been such as to reduce the height of the already low building; whereas, by interrupting the longitudinal perspective of colour, the eye is led to pursue its researches vertically; and in this is still further encouraged by the medallions, or subjects, which are introduced with just sufficient frequency to give them fresh interest and point.

The clustered columns remain. These form the division of the bays, coming between the lower strata of pictures. From them again blue is excluded. I am sure that some of you will be horrified at hearing that these shafts are painted in imitation of marble, and of inlaid marble-mosaic alternately; and this by the artists who painted all the other work which I have been describing. Gentlemen, I wish I could console you by telling you that these artists, whatever their merits, belonged to a decadent and debased period of art; but it grieves me to be obliged to say that they lived and painted in that golden age of art, the thirteenth century, and their names were "Cimabue" and "Giotto." If we review the whole, we find a building glowing with pure colour, alive with pictorial story, and illuminated by gem-like glass. The pictures tell their story with unbroken surface, but without confusion or monotony. The tones of colour are of the purest, yet there are no harsh contrasts; for even in the vaulting, where the alternation of blue and yellow occurs in large masses, it will be found that the ribs which divide them, in themselves contain both colours. The conditions are unusual, but the treatment is also original and well studied, and one from which we may take many valuable lessons.

Now there are some of the features which I have alluded to in the foregoing example, which you will find as well, or even better, illustrated in examples elsewhere. Such, for instance, as the soffits of arches, or the margins surrounding pictures, in which the colouring is made at once to define and set off the picture, and which yet have some colouring in common with it, introduced by medallions or otherwise. Good examples occur (still of the Gothic character) at Prato, at Florence, at Sienna, and at Bologna (St. Petronio), besides in many other places, as well as in the later styles of art.

Again take the treatment of the vaulting ribs. We have seen that at Assisi it was deemed desirable to strengthen these by adding to them *wide* margins, rather than by forcing the contrast upon their comparatively narrow surface, which, where the building is very high, or very long, would leave them looking thin and wiry. Yet we find the same artist, Giotto, so well aware that the change of these conditions allows and invites a change of treatment that in his decoration of the vault of the private chapel of the Popes at Avignon (which is, if I remember rightly, a single square chamber), he throws every possible vigour into the dividing ribs, marks its lower edge in black and white, confines his tertiary maroon and green to the side hollows; and, satisfied with a couple of inches of added margin, boldly frames his blue ceiling with a bright red band. Why? Because he wants to lead your eye upwards, and to take care that you shall not only see his frescoes on the wall below; but that, having seen those, your attention shall glide up that narrow, but attractive path, to find the four figures which he has painted in the four divisions of the blue, star-spangled ceiling. Why, you ask, may the strong, direct contrast be permitted here rather than in the longer church? I reply, because in the longer church the perspective will bring your rib across, or very near to, a succeeding picture, to the

latter's detriment, and that here the space does not allow of this perspective. Not only this, but in this chapel you are so directly under the vault that your eye needs a stronger inducement to look over head, and this inducement is more readily obtained by using *bright red* in a narrow margin, than by using *dull red* in a wide one, and that without necessarily affecting the balance of colour. I take a third case, in which the wide margin of quiet colouring is used on each side of the rib, but the rib itself is much more clearly defined, having, in fact, its side facets panelled out in bright red, and bright blue, alternately, in short lengths, with a band of green dividing the lengths, the lower face being treated as marble-mosaic. This example is in the choir roof of Sta. Croce, at Florence. In what respect do its conditions differ from both the preceding examples? In the first place, these ribs divide the vaulting of the choir at the end of the church only, and are, therefore, not shortened one against the other. Secondly, they are seen from the extreme end of the church; therefore, most often at a considerable distance. Thirdly, they are seen *against the light*, for the fine east windows of the choir are directly facing the spectator, and immediately below the vaulting in question.

I have dwelt with something like undue length upon one decorative feature, because this, as well as any other, serves to show the spirit in which art must be studied from examples. If you simply go from one example to another, taking notes or sketching, as each pleases you, but not well considering the reasons for which it is good in its own place, and conditions, the chances are that you will derive but little advantage from what you admire; and will remember your examples only to misapply them.

Let us now consider a different set of decorative examples. I mean the colour treatment of surfaces which do not possess much architectural form or feature, or in which the divisional arrangement of the surface has depended upon the ornamental rather than the builder. These instances abound in Italy, and it is among them that we find the greatest decorative triumphs, the most wonderful subtleties of harmony, and the most playful and delicate fancy.

I will first call your attention to one of the best known decorations of this kind—the vaulted roof of the Stanza of the School of Athens. The great frescoes which occupy the walls are, as you know, Raphael's masterpieces. He had the Pope's order to paint out this ceiling (by Sodoma), and substitute one of his own; but he replied that he would rather abandon the whole commission than destroy so fine a work. You will see that the subdivision of the vault is entirely arbitrary, and yet admirably calculated to explain and give strength to the form. The broad gold margins, which divide the whole and frame the pictures, are well toned by the arabesque in red, and indigo blue, upon them; while they gain in vigour from the lesser borders of deep blue which surround the secondary panels. Yet you will notice that these blue borders are *not* allowed to come next the gold, nor even next the stucco moulding, for they would then *kill* the gold—gold being very sensitive in borrowing from adjacent tones of colour—but a narrow strip of quiet red and gold is inserted between them, and this, almost unnoticed itself, adds value to both.

Let us pass next to a smaller, but very beautiful, example of decoration of the same form of ceiling by Pierino del Vaga, at Genoa. It is an open Loggia; and therefore, please remark, the surroundings are exposed to very strong effects of sunlight and shade. On this account it has been necessary to express the leading divisional lines with emphasis. How simple is this division, too, then, least this deep-blue margin should cut too harshly against the panels, it is toned by a refined and delicate interlaced ornament of gold.

Notice how size is obtained by throwing the most sparkling colour and finished detail into the framing-bands which enclose the whole. With what art the maroon panels, so boldly used at the four sides, find a recall in both inner and outer margins. Again, how the spreading gold panel of the springing is toned, firstly by gilding the ground (like mosaic) for depth, and then cooled by the stone-colour ornament; and by the greater width of moulding; and lastly, and most subtly, by the addition of a fine green line between the latter and itself. This in its way is a gem of decoration.

There is an adjoining chamber (the Sala dei Giganti) decorated by the same artist, in which

again he shows his knowledge of colour treatment as applied to the expression of form. Without the pictures to give the colouring of the walls and ceiling, you will hardly appreciate the value of the colours in the side-vaulting of the cove which divides the two. Still you will see how gracefully the constructional lines are marked out by the red margin. The almost indigo-blue carrying up the deep colouring of the wall-pictures without disturbing them; and connecting links between that and the picture of the ceiling are obtained by those blue-margined panels which break the yellow and white frame. In that frame, or frieze, you will also not fail to note that the red is present again—this time only in narrow lines—but even these were indispensable. And upon these colours, where the size admits, a delicate gold pattern is traced, in no way disturbing the continuity of the colour, but serving a most important end in softening both, one to the other, by the introduction of something common to both.

This introduction of some third common colour, or set of colours, upon both of two grounds which are strongly contrasted, is a very valuable expedient; and the stronger the contrast, the more necessary is it to adopt this or some similar course. I may refer to a ceiling of deeply-moulded panelling in the Farnesina Palace at Rome. The dividing framing has its lower flat surface deep blue, upon which is a gilt fret. The moulded sides are gilt throughout; whilst the greater part of the panelling is painted in alternate grounds of bright red and rich green. *Bare* they would be intolerable, having all the crudity of two complementary colours; but each has its surface extensively covered with closely-painted arabesque ornament; and this marvellously tones both, as much as, and more agreeably than if the various colours of the arabesque had been stirred up with the red, or the green, on the palette. You will also bear in mind that the gilded mouldings catch many a side reflection from the panels which they surround; thus establishing a sort of relationship with them.

The next decoration which I will bring to your attention, is a work of Ghirlandajo's—a small private chapel in the Palazzo Vecchio at Florence. It is a capital example of skillful division by means of colour; and of a resulting rich but sober effect. The prevailing tones may be spoken of as drab, gold, and blue, and the form of the chapel as an oblong 22 ft. by 14 ft. 8 in., with a little choir of 10 ft. square added. The ceilings of both portions are plain, segmental, wagon-headed, quite unbroken by mouldings, but springing from a projecting cornice and frieze.

The walls are of the drab tone, broken by some gilding; but, except in the choirs, the upper part of the wall was evidently hung with some kind of tapestry or needlework, the hooks still remaining. The ceilings, however, present the great attraction. Each is skillfully set out into panels of various shapes. The whole of these have gilt borders. Then certain of them, forming the more set design, are pictorially treated with figures in colour, whilst the remaining panels are made subordinate by having drab-coloured scroll arabesques painted on them, as if in relief. The dividing margins are blue, with points of gold marking the intersections, and being framed with a gilt "fillet" on either side. Black is introduced with great skill in only two or three places, and performs a valuable part in clearing the drab, and lighting up the blue. The whole presents a delightfully mellow and harmonious example, and it deserves careful study. I will ask you to notice how usefully the blue band of the frieze girds the whole together, and improves the spring of the arch. Another expedient may be observed in this work, as in many others; but here with peculiarly good result. I mean the cross-hatching of the gold grounds, which not only softens the gold, removing the hard glare, but gives surface, enabling the eye to better recognise its true plane, a not unimportant matter for attention in many situations. The idea is evidently taken from mosaic work, and shows that these masters took careful note of how effects were produced. And, indeed, we shall ourselves do well to study carefully such old mosaic decorations as fall in our way; even if we have no thought of making use of the material. Many of the old Mosaic ornamental treatments were carried on for generations, and tradition by degrees established certain rules of gilding against gold grounds, a detail of much importance, and much neglected. The outline has enormous power in determining the warm or

cold tones of the whole; and a gold ground may be made to appear luminous or sombre, warm or cold, entirely by the outline used next to it.

I might pursue the subject of coloured decoration through endless detail, and a multiplicity of examples, but I believe that I need not ask you to extend your attention to me longer. My object in the present paper is not to attempt to point out to you every example worth your attention; nor even to catalogue the various forms of excellence which may be found in existing examples.

It is rather to caution you against limiting your powers of observation and enjoyment by a false use of rules or theories, good in themselves (as guides), but easily capable of prejudiced or unthinking application. It is to advise you to carry such rules carefully and clearly in your mind, but to use them with *thought*, not with *prejudice*, which is such an easy substitute.

Keep fresh your power of admiration, and subject each object of it to many tests if you will, but apply them fairly. Try to suck some thing of value from whatever you can admire at all. Do not determine to see no good in each thing which you cannot admit to be perfect. After all, how few can hope to attain more than a very small amount of excellence in art; but how many may and do contribute their mites of gratifying beauty. To know how to select these is better than to pass them by.

Well, then, I suggest to you that you shall, with every example of decoration which you believe to be worth study, carefully resolve in your mind whether its chief merits lie in harmonious colouring, or in constructive expression, or in skillful division and arrangement. Whether it expresses well existing structure, or provides a satisfactory substitute.

Whether, again, if the colouring be weak, or disconnected, or barely harmonious, there be any special charm in the forms or execution of its detail; or delicate fancy in places of more solid qualities. Satisfy yourselves how far any special features or colouring may be intended to meet some special circumstances of light or other accidental conditions. In doing this, you will render any sketch or notes you may make of double value to you; for many a man's sketches have proved a bane to his work through carelessness in a comparison of outward conditions. Above all, try to keep your mind clear of prejudices and foregone conclusions; for we are, each of us, far too apt to shut up our minds to all but one form of beauty—the particular form of beauty allowed by our own "set,"—who seem to be perpetually writing over their ideal, "None else is genuine."

Let us, then, sum up what my advice to you amounts to. I advise, in the first place, that you should carefully weigh your admiration by means of your judgment, to this extent,—that you shall in every case in some degree account to yourself for your admiration; and so also with your criticism, that you shall modestly restrain it, not allowing your discovery of one weakness, even in some important particular, to blind you to many remaining beauties. It is the failing of the *half-taught* to make their criticisms too sweeping; and too many of us are far too ready to turn our backs altogether on many a beautiful thing which fails to satisfy some particular theory to which we have, in our own narrow circle, given a possibly inordinate value.

Believe me, your faculties, both of admiration and of criticism will be most useful to you when in harness. Only remember, that it is by *studying*, and not by *contracting*, your power of admiration that you can add to the happy side of your life.

A NEW THEATRE IN SOUTH LONDON.

ANOTHER new theatre, of large dimensions, is about to be erected on the Surrey side of the Thames. In connexion with the building there will also be an extensive restaurant, containing dining and refreshment rooms, together with a large smoking-room, in the upper portion of the building over the dining-room, in addition to oak-rooms, lavatories, and ladies' and gentlemen's retiring-rooms; whilst on the top floor, adjoining the gallery, there will be a commodious toilet. The building is being erected by a capitalist, with a view to the formation of a company, and the name of this new dramatic temple is the *Opera Theatre*. The site is in Newington Causeway, about midway between the Borough and the Elephant and Castle, on the premises

formerly occupied as steam wheel works, the freehold land having been purchased for the sum of 8,000*l*.

The designs for the building have been prepared by Messrs. Elliott & Warren, architects, of Parliament-street, and workmen are now employed in the necessary excavations, and getting in the foundations, preparatory to the ceremony of laying the memorial stone, which it is expected will take place in about a month from the present time, and the building is to be completed and ready for opening in the autumn. The style of architecture adopted is modern Venetian Gothic. The extreme height of the elevation from the street level to the roof will be 80 ft. The elevation will be faced with white Suffolk brick, Portland stone being freely used for dressings and ornamentation. Between the windows, which will have arched stone headings, there will be pilasters, also in stone. In the centre there will be a large mullion window, opening out to an ornamental balcony in terra cotta. Right and left of the central window there will be niches for full-length figures in stone, the one representing Tragedy and the other Comedy.

Within, the horse-shoe plan will be adopted in the construction of the auditorium, and the size of the building will be seen when it is stated that it will admit of accommodating an audience of between five and six thousand, independently of the large space occupied by the restaurant; whilst under the pit there will be a spacious canteen, the access to which from the pit, will be altogether distinct from that of the restaurant. The auditorium portion of the interior will include about one hundred stalls in front of the pit, whilst on each side there will be four tiers of boxes, the central portion containing the upper and lower circles, and balconies. The height of the interior from the pit to the ceiling will be 60 ft., the span of the ceiling being 68 ft. It will be domical, and will be painted and decorated. In the centre there will be a large skylight. The proscenium will be 40 ft. in height, with an opening 32 ft. in width, and the depth of the stage will be 70 ft. There will be two sets of flies, and the depth from the stage to the basement, or stage cellar beneath, will be 16 ft., thus admitting of a whole flat being lowered out of sight. At the back of the stage, and directly connected with it, there will be a distinct and separate building, in the basement of which will be the property and carpet rooms, green-room, actors' lavatories, and scene dock. The treasury and the manager's offices will be on the ground-floor, the wardrobe and dressing rooms on the floor above, whilst above these again will be the painting-room and the carpenter's shop. This block is already in course of erection, and considerably advanced towards completion, the object being to admit of preparations being immediately commenced with the scenic and other arrangements in anticipation of the opening of the theatre in the autumn.

The restaurant will be situated between the pit and box entrances in Newington Causeway. For the purpose of ventilation there will be thirty-two air-shafts carried through the walls, and in addition to these there will also be a large shaft above the skylight in the ceiling for the purpose of still more effectually giving an outlet for the heat. We understand that the company intend to apply to the Metropolitan Board of Works for permission to erect a portico in front of the building extending across the footpath.

The estimated cost of the building alone is set down at 40,000*l*., which, together with 8,000*l*., the price of the land, will bring up the aggregate cost of the establishment to nearly 50,000*l*.. The contractor for the work is Mr. Wheeler, of Grove Park, Chiswick; his son, Mr. Wheeler, jun., acting as clerk of works; whilst the general manager and superintendent is Mr. Page.

The Peabody Trust.—The report of the Peabody trustees shows that they had expended up to the close of last year in land and buildings 300,000*l*. Upwards of 66,000*l*. of this sum are at present unproductive, as two sites are not yet built upon, and the dwellings upon two other sites are not finished. The number of families now in residence at the trustees' buildings is 882, occupying 1875 rooms. The average rent per room is 1*s*. 10*d*. per week, and the average weekly earnings of the head of each family is about 1*l*. 3*s*. 1*d*. The net income derived from the buildings is about 2½ per cent. per annum on the outlay.

LARGE AND SMALL HOSPITALS.

At a recent meeting of the Social Science Association, Dr. Charles Shrimpton read a paper on the subject of Hospitals generally, in the course of which he said,—So much has been written on hospitals and ventilation, by the highest and most competent authorities of our day, that the subject may appear exhausted. The principles of hygiene and hospital improvement are established and accepted by every one, yet we all know how difficult it is to apply these principles in any way that may take us out of our routine and disturb the habitual order of things. The most effective means of escaping from this routine is, I submit, in making known, as far as possible, the existing evils, and in inquiring in what direction any hospital improvement may be working itself out. This is the task I have before me, and, though I may touch on some salient points, I cannot hope to do more than, perhaps, give a little impulse to a general movement.

Allow me to take as examples the hospitals of London. They are large, spacious buildings, containing from 150 to 780 beds each. Everything is most amply provided by the most generous contributions, and the patients are attended by the most scientific and skilful medical men. The largest and oldest of these hospitals, when they were first built, were in the open country, surrounded by fields. These fields are become populous districts. The hospitals built in on every side, become larger and larger as the population increases. The hygienic conditions of these establishments have thus become greatly deteriorated. They have lost, in a considerable degree, the advantages they have originally enjoyed, and the aggregation of so many sick in hospitals in large towns is a continually increasing cause of insalubrity for the general population. The atmosphere floating over large populations must inevitably be corrupted, so that the hospitals placed in their midst cannot obtain pure fresh air from without, whilst the patients themselves are infecting the atmosphere within in proportion to their number.

The large hospitals in towns are thus become unfit for the reception of the sick; they absolutely defeat the object of such institutions by delaying the cure of the sick, and by exposing them to the danger of contracting other diseases, erysipelas, pyæmia, and hospital gangrene, diseases generated by the hospitals themselves. Are we, then, to do without hospitals? We must assuredly must have hospitals, and we must find security in them for the treatment of the sick: there must be no such thing as hospital diseases.

The large hospitals in towns will, we believe, be gradually, and of necessity, replaced by an exactly opposite state of things—small, or cottage hospitals, in the country, in communication with a number of depôts, conveniently placed in towns, to receive the patients and transmit them to the country. A system of this kind would place the patients in the most favourable condition for their recovery, and respond to the requirements of the increasing population continually spreading over large areas.

In hospital arrangements and management we must be guided by the sole object we have in view—the recovery of the sick. All good hygienic measures, hospital conveniences, and comforts should be combined by the hearty co-operation of the whole hospital staff for the benefit of the sick. Every consideration should yield to this guiding principle; the hospital itself should be sacrificed if, from circumstances over which we have no control, the site should become unhealthy. The sole economy by which we can be guided is the economy of life and suffering.

The first condition of hospital hygiene is its site in a healthy, airy situation in the country, so that thorough ventilation may be established; and, for reasons just given, hospitals should be small, containing not more than thirty or forty beds at the utmost. The number of these small hospitals might be increased to represent the number of beds required, each small hospital being separated from the others by gardens and trees, thus forming a village of small or cottage hospitals two stories high, and communicating by telegraph, pneumatic tubes, and tramways on inclined planes, with the principal offices established in the centre of the group. The church being also placed in the centre of the cottage hospitals, all the dependencies—washhouse, laundry, bakehouse, &c.—might be conveniently established a little beyond the group.

This village of hospitals would be in connexion with the depôts in town, within reach of the sick, who could thus obtain immediate assistance, and be sent into the country by services conveniently arranged for that purpose.

Everything new seems at first sight difficult. As soon as we see it in operation all the difficulties vanish, and so it will be when we see this change working itself out. But there is nothing new in the plan I have ventured to sketch. Mr. Whitfield, of St. Thomas's, most powerfully advocated a plan of this kind in 1862, in proposing the transfer of St. Thomas's Hospital to a suburban site, Lewisham. Unhappily, his arguments did not prevail, and there is no doubt that many persons who are really interested in the hospital regret the enormous outlay, which might have been spared with immense advantage to the patients and to the hospital.

That the London hospitals will, however, be transferred to the country there can be no doubt; if our object be the recovery of the sick. We learn from the Registrar-general's report that the mortality in hospitals is in proportion to the population of the towns in which the hospitals are placed; and, again, Sir James Simpson's statistics show that the mortality, after amputations, is much greater in large hospitals in towns than in small hospitals in the country and in country practice.

Out of 2,089 major amputations in large hospitals	825 died.
Out of 2,089 major amputations in the country	226 „
Leaving a balance of	599

that would not, in all probability, have died if all the patients had been operated on in the country. Can anything be more conclusive than this?

The accuracy of Sir James Simpson's statistics has never been contested in regard to the large hospitals, and, though the statistics from private and hospital practice in the country may have been impugned on account of the variety of circumstances under which the cases had to be collected, it is admitted by every one that Sir James was most scrupulous in his inquiries into all these cases. Even admitting that some slight error might have crept into the statistics of country hospitals and private practice in the country, the advantages of country hospitals will remain confirmed by the Registrar-general's report, and by the hygienic advantages acknowledged and appreciated by all medical men.

Without doubt Sir James Simpson chose the major amputations as the best test of the sanitary conditions of hospitals; but there is another test far more conclusive than amputations, and that is child-birth.

By far the greater number, if not all, the large hospitals have been obliged to close their obstetric wards on account of the mortality of women in child-birth, whilst we find that, in the little wooden hut open to all winds, on the edge of the cliff at Shorncliffe, up to December 29th, 1869, there had been 702 deliveries without one single death from puerperal disease.

At Colchester Lying-in Hospital, an ordinary officer's wooden hut, up to October, 1870, there had been 202 registered deliveries and no deaths. Is not this sufficiently conclusive in favour of the small, and condemnatory of the large, hospitals?

With this evidence before us can we be justified in accepting the confidence of the sick who demand admittance to our large hospitals, implicitly believing that in these large establishments they are in greater safety than anywhere else? This is a very unhappy delusion. Assuredly, then, it is a cruel deception if the principles of hygiene are not most rigorously observed in institutions of this kind. Let us take the case of a poor man confiding himself to the care of the most skillful surgeon and scientific physician, and who, instead of being restored to his family, as he confidently hoped, in a few days, should be carried off by a disease engendered by the hospital to which he had so trustfully come for cure. Diseases of this nature are inseparable from the agglomeration of large numbers of sick under one roof. It is certainly difficult, and it is deemed almost impossible, to prevent the agglomeration of sick in hospitals in large towns. The principal obstacle to be overcome appears to lie in the nature of the institutions themselves, each hospital having its own invested rights and privileges, by which it is kept in a groove of routine passively opposed

to any great change. But the oldest and largest hospitals in London,—St. Bartholomew's and St. Thomas's,—what changes have they not seen since their monastic origin? They are protected and ruled by charters, it is true; but were not these charters, whatever be their date, granted them on their entering into a new existence, to protect them from the then obsolete laws? May we not ask if these charters, in their turn, are not become obsolete, and if these hospitals are not again called into a new state of being corresponding to the progress of our time?

Westminster, St. George's, and all the hospitals of more modern date, were founded by bequests and donations, and supported by princely contributions, which are being constantly renewed by contributors of the present day, who necessarily will require these establishments to keep pace with the progress of their time.

There is only one hospital, I believe (Guy's), which owes its foundation principally to one or two benefactors, giving it a sufficient endowment, and appointing its form of government. It seems impossible that Mr. Guy, whose sole object was that of philanthropy, and Mr. Hunt, who, moved by the same feeling, left nearly 200,000*l.* for the enlargement of the hospital, could have intended anything but that the greatest benefit to the sick should be obtained with all the advantages of the progress of science, and the development of sanitary hygiene could procure.

The governors and boards of management of the different hospitals, impelled by the grave responsibilities of their office, and the honour of the establishments they have so generously taken under their protection, will not long resist the movement which is making such rapid strides in the improvement of sanitary measures on every side.

Ventilation dominates all other hygienic measures. Unhappily, ventilation is too little known and appreciated. It is frequently not even understood what is meant by ventilation; for instance, we often hear persons speak of a room as being well ventilated, because it has so many doors and windows. This is an illusion; for, if the doors and windows are kept closed, where is the ventilation? The atmosphere of a room may be changed, it is true, by opening the doors and windows; but this is not ventilation. Ventilation consists in the constant renewal of the atmosphere of a room, or ward, when the doors and windows remain closed. But people complain of cold, an idea inseparably connected with the thought of ventilation. This is a fatal error for it is by breathing pure fresh air alone that healthy warmth, animal heat, can be generated. The constant renewal of the atmosphere of a room should be obtained without loss of temperature. But how is this to be accomplished? Most assuredly not by any complicated machinery, steam-engines, &c., to furnish given quantities of air at given temperatures; air cannot be metered out to patients, they cannot have the atmosphere of their wards renewed too much, and the renewing air should never be heated. Heated air loses its vivifying property. Machinery of every description is quite objectionable. It will, some time or other, get out of gear, and the patients may at any moment be without any renewal of the atmosphere of their wards. How, then, are we to secure the constant renewal of the atmosphere of the wards? By the most simple means possible. By making large openings, say 1 ft. 6 in. in length, by 6 in. in height, through the walls of the building. These openings should be closed on the outside and on the inside of the walls by metallic gauze, or plates of perforated zinc, allowing the air to be sifted from without into the space between the two pieces of gauze. From thence the air will be drawn into the room or ward as may be required, self-regulating, according to the change which may have taken place in the atmosphere of the ward. There is no loss of temperature from these openings through the wall. The air in the space between the two gauzes, being a non-conductor of caloric, protects the internal temperature from the variations of the external atmosphere. The only change of temperature is from the fresh air admitted, which is always an advantage to the sick, when the openings are properly placed. The proper place for these openings is between the ceiling and the window, over each window; the windows, opposite each other, always with eastern and western aspects, occupying the space from a few inches below the ventilator to about 3 ft. above the floor.

Wards should not be large, never containing more than eight or ten beds, allowing to each bed an area of 12 ft. by 8 ft., and 1,400 cubic feet. The cubic space proposed may appear small. I would observe, that the value of cubic space depends entirely on ventilation. Too large a cubic space cannot be well ventilated, nor can the temperature be properly regulated; but a small cubic space can be compensated for by increased ventilation.

But, we may be asked, what becomes of the foul air? Air, subject to the law of all fluids, finds its level according to its weight, if it has communication with the general atmosphere. When the wind blows, and there is greater pressure on one side of the ventilating openings than on the other the sulphuretted hydrogen and lighter gases, always rising to the ceiling, escape through the ventilators on the opposite side, as we see smoke escape from the upper part of one window when the opposite windows are opened in a smoky room. The carbonic acid gas which, on account of its weight, occupies the lowest stratum floating over the floor and around the beds, when the atmosphere of the ward is not agitated, is more easily carried off by the draught up the chimney of an open fireplace. There should be a number of small openings in the lowest part of the panels of the doors, so that there may be a continual draught sweeping the floors and carrying off the noxious gas. We cannot be too careful in removing the atmosphere of the wards of a hospital, where there must be many patients who would inevitably poison the atmosphere of their neighbours, if these simple measures of ventilation were not attended to.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS AT LEICESTER.

On Saturday last, a well-attended meeting of the members of the Association of Municipal and Sanitary Engineers and Surveyors, was held in the Mayor's parlour, Town-hall, Leicester, under the presidency of Mr. Lewis Angell, Mem. Inst. C.E. (President of the Association), when there were also present Messrs. J. Lemon (Southampton), Assoc. Inst. C.E. (Vice-President of the Association); C. Jones (Ealing), C.E. (Honorary Secretary); E. Pritchard (Warwick), Assoc. Inst. C.E. (Honorary Secretary for the Midland Counties); R. Vawser (Warrington), Assoc. Inst. C.E. (District Secretary for Lancashire and Cheshire); and E. L. Stephens (Leicester), C.E., all of whom are members of the Council of the Association. The following members were also present:—J. Proctor (Bolton), E. J. Purnell (Coventry), R. Davidson (Leamington), E. R. S. Escott (Halifax), J. H. Hall (Canterbury), H. Walker (Barnford), J. Lohley (Hanley), A. Comber (Kidderminster), R. Hodge (Plymouth), E. Butteridge (Balsall-leath, Birmingham), E. Clavey (Burton-on-Trent), G. Hodson, Assoc. Inst. C.E. (Loughborough), W. Batten (Aston Manor, Birmingham), E. Monson, Assoc. Inst. C.E. (Acton), E. Sharman (Wellingborough), T. T. Allen (Stratford-on-Avon), E. Davey (Maidenhead), J. Davis (Oldbury), and J. Baker (Assistant Surveyor, Warwick). The visitors included Messrs. J. Stoper (Architect and Surveyor, Winchester), W. Humber, Assoc. Inst. C.E. (London), W. Boon (Coventry), T. Colman (Borough Accountant, Leicester), &c.

The minutes of the last district meeting of the Association, held at Leamington, were read by the Honorary Secretary, Mr. E. Pritchard, and confirmed. Mr. Pritchard then read a number of apologies from gentlemen who were unable to be present.

The Water Works.

The members afterwards proceeded in vehicles to the Bradgate Water Works. By the kind permission of the Earl of Stamford and Warrington, they were allowed to drive through Bradgate Park; thus giving a full opportunity of seeing the reservoir and catchment area. The reservoir, which is a very long one indeed, contains about 500,000,000 gallons. It is constructed by a contour line being drawn over the water level and a very deep embankment. At the foot of the ravine are placed engine-house, four filter-beds, pure-water tank, by-wash, engine-house, and buildings. The engine-house contains two splendid steam-engines of the Wolf description. The works generally are elaborate, and have been successfully carried out by Mr. T. Hawkeley, at a cost of somewhere about

140,000. By the kind permission of Mr. E. S. Ellis, the chairman of the Leicester Water Works Company, the members were allowed to visit the works, and the manager and resident engineer, Mr. Tebbitt, courteously explained each object of interest. In the Board-room a *déjeuner à la fourchette* was provided by Mr. Ellis for the party, and Mr. Pritchard, as hon. sec. to the district, was requested to convey the thanks of the Association to that gentleman for his kindness. The Association also expressed their indebtedness to Mr. Tebbitt. Not only were the water-works open to inspection, but copies of the plans were placed for inspection by Mr. T. Hawkesley. Mr. Hawkesley had wished that the Association had deferred visiting Bradgate till the summer-time; then they would have seen, not only the works, but the grounds, which are tastefully laid out, to greater advantage. The party then proceeded to

The Sewage Works.

Mr. Stephens, the borough surveyor of Leicester, took great pains to carefully explain all matters connected with the works, which, as our readers no doubt are well aware, were about the first of the kind constructed. They are by Mr. Wicketed, and have been frequently pointed to as being one of the best illustrations of purification of sewage by lime. The town-hall was again reached about five o'clock, when the president, Mr. Lewis Angell, said he had prepared a paper having especial reference to the legislative aspect of the sewage question, and the failure of chemical systems, but he preferred deferring the reading of his paper till the annual meeting, at Birmingham, in May, in order that the meeting might hear the paper to be read by Mr. Stephens, explaining more fully the interesting works they had just left. To this suggestion the meeting agreed, and the President added that he would issue a small draft of his paper to the Association prior to the Birmingham meeting, in order that they might be the better able to discuss it.

Mr. Stephens then read his paper. He stated that the sewage-works were situated about a mile from the town, and the site contained an area of about four acres; that at these works the whole of the sewage of the borough, amounting, with a quantity of subsoil-water, to an average of five million gallons per day, were raised by two single-acting Cornish pumping-engines, each of twenty-horse power, to a height of 20 ft. These Cornish engines were so constructed that at each stroke of the pumps they mixed with the sewage-water certain portions of cream of lime, the effect of which was a rapid and perfect precipitation of all matters in suspension. The lime was slaked in pits with sluices; and this being thoroughly effected, it passed into circular tanks, and in these agitators were formed, which, constantly rotating, prevented deposits. It then passed through suction-pipes to the pumps, which are attached to the beams of the engines, and is raised and mixed with the sewage in its course to the settling-tanks. The sewage subsequently passes into pits in which other agitators are kept in constant motion by an engine, for the purpose of more intimately mixing the lime with the sewage. From thence it passes through checkered walls into the settling-tanks. After a description of these tanks, it was shown that by the process thus explained something like 4,000 tons of solid matter were obtained per annum.

In reply to questions, Mr. Stephens said it took nearly two years to dry a tankful of manure, and that, in connexion with the Leicester sewage-works, they had about two acres of tanks. The working expenses were about 1,800l. or 2,000l. per annum, and there was a dead loss in connexion with the works of between 1,400l. and 1,500l. annually.

The meeting then terminated.

The Dinner.

which took place subsequently, at the Bell Inn, was a very satisfactory one. Mr. Angell presided, and Mr. Lemon occupied the vice-chair. The Mayor of Leicester (Mr. W. Kempe), and Councillors Green and Millican were also present. The cloth being removed, the toast of "The Queen" was loyally drunk, and the chairman said, there is one toast that upon this occasion I feel bound to propose, and that is the "Municipal Corporations" of this country. Local government is not only the glory of our land, but it is the bulwark of our liberties. We, the municipal engineers of England, are most desirous of assisting municipal institutions so

far as we can in our offices respecting sanitary matters. I am sure they most thoroughly approve of our efforts, and particularly when, as upon this occasion, we are honoured with the presence of the Mayor of Leicester. Therefore, I propose the "Municipal Corporations" of this country, coupling with the toast the name of the Mayor of Leicester.

The Mayor made a suitable response. He spoke of the importance of engineering to this country, and the important position which surveyors and sanitary engineers held. He added that he would much rather hear what those present had to say than talk himself.

The Chairman, in giving the toast of the evening, said, the next toast which I have to propose, is success to the Association of Municipal and Sanitary Engineers and Surveyors. Considering our number in this country, and the importance of our appointments, it is a matter of surprise to me that we have not been united before. But now that we are associated together, I think we have every reason to be satisfied with the amount of success which has attended our proceedings. I think our success is greatly due to the energy of our local secretaries, and as we are meeting in the Midland district, I cannot fail to remark that this district has been most energetically promoted by our indefatigable secretary, Mr. Pritchard, of Warwick. He has promoted it on every possible occasion. He has adopted the same idea that I have always tried to urge, and that is, that the success of our Association depends entirely upon the activity of our district committees, our subdivisions, so to speak, of the Association. They alone will keep alive our Association throughout the country. I am sure the Midland district gives us a pattern of energy which may be copied by all other parts of the country. In speaking of district associations, I will also refer to our friend, Mr. Vawser, who is honorary secretary for the Lancashire and Cheshire districts, and has very much promoted the success of this Association; but as we are met in the Midland district, I desire to give you the name of our local secretary, Mr. Pritchard.

Mr. Pritchard and Mr. Vawser suitably responded, the latter gentleman proposing the health of the president, which was suitably acknowledged.

The remaining toasts were—"The Vice-president and Officers," responded to by Mr. Jones (Baling); "The Visitors," acknowledged by Councillor Green (Leicester); "The Health of Mr. E. L. Stephens" (borough surveyor), which he suitably acknowledged; and "The Press," responded to by Mr. H. J. Hodson (Coventry).

ARCHITECTS' BENEVOLENT SOCIETY.

The annual general meeting took place at the Rooms of the Royal Institute of British Architects on Wednesday, the 11th instant, the President, Mr. Sydney Smirke, R.A., occupying the chair.

The business of the meeting was of a routine character, amongst which was the election of a new treasurer in the room of Sir William Tite, C.B., deceased. On the motion of Mr. Papworth, which was seconded by Mr. J. A. Hanson, Mr. George J. J. Mair, F.S.A., was elected. Mr. Mair is one of the seven gentlemen who met on the 31st October, 1845, and then laid the foundation of this society; two others now only remain, Mr. J. H. Hakewill and the Hon. Secretary, Mr. John Turner. The President spoke very gracefully of the untiring zeal in the cause of the society always manifested by the newly-elected Treasurer, who suitably returned thanks, and gave a donation to the funds as an earnest of the continuance of his good wishes of 20l., in addition to the sum he has already given.

The report this year took the shape of an appeal to the profession at large to come forward and help the good work the council had in hand by increasing their means. In conclusion it said:—

"The council have to report generally, that the financial state of the Society is very satisfactory. Through the great liberality of the Duke of Westminster, Mr. Ayrton, M.P., and various members, who have added donations to a considerable amount, our balance is hand last January exceeded that of previous years, although a larger sum has been devoted to charitable purposes than we have hitherto ventured to appropriate. We regret that five deaths of members have occurred during the past year, but eight new members have joined us. It is an agreeable fact to record that several of our members have, during the year, doubled their subscription; and, as a significant mark of the estimation in which the Society is held, we would add that a bequest of 250l. has been recently made by our late distinguished member, Mr. Teulon."

From the auditors' balance-sheet it appeared

the receipts of the past year were 477l. 17s. 1d.; the expenses attendant upon advertising and management, 88l. 2s. 4d.; the stock invested was 114l. 0s. 6d.; the gifts to applicants amounted to 285l.; and the balance carried forward was 178l. 5s. 2d.

Since the meeting of the council on the 26th of February, the hon. secretary announced, he had received the following donations—Charles Forster Hayward, 10l.; also further donations to amount already given—Arthur Cates, 10l. 10s.; David Brandon, Esq., John J. Phelan, Esq., and J. A. Hanson, 2l.; also that Mrs. E. C. Hakewill desired to increase the amount of her annual subscription from 10l. 1s. to 20l. 2s.; as also did E. M. Barry, R.A. He also announced that the proprietors of the *Builder* had intimated their intention of annually subscribing to the funds, and that H. A. Freeman and Charles Fisher were new subscribers each of 10l. 1s.

The meeting closed with votes of thanks to the donors to the Society, and to the president, hon. secretary, &c. Members present were—Messrs. Benjamin Ferrey, Horace Jones, J. H. Hakewill, J. A. Hanson, George J. J. Mair, Edwin Nash, Wyatt Papworth, Sydney Smirke, J. Goldiecutt Turner, and John Turner, the hon. secretary.

LIGHTHOUSE, CEYLON.

THE INSTITUTION OF CIVIL ENGINEERS.

On Tuesday, March 3, the first paper read was "On the Great Basses Lighthouse, Ceylon," by Mr. William Douglass, C.E.

As early as November, 1826, the late Sir J. J. Gordon Bremer, R.N., and the late Capt. W. F. Dawson, R.E., made an examination of the south and east coasts of Ceylon, one of the results of which was the recommendation for the erection of a beacon on the Great Basses. It was not until 1855, however, that the authorities gave instructions for the preparation of a design for the work. This design, submitted by the late Mr. Alexander Gordon, C.E., was for a cylindrical cast-iron tower, secured within an enlarged basement of masonry, which basement was to be inclosed within an outer casing of cast iron, and both tower and casing were to be sunk into the rock. Mr. Gordon's estimate for the work amounted to 83,946l., and that sum having been sanctioned by the Board of Trade, Mr. W. W. Pongdestre was appointed the resident engineer, and left England for Ceylon in March, 1856. After three years' operations and the expenditure of about 40,000l., only a few landings had been effected on the rock, and the authorities therefore suspended further proceedings.

In June, 1867, the whole question, as to the practicability, probable cost, and reasonable chance of success of the erection of a lighthouse on the Great Basses, was referred to the Elder Brethren of Trinity House, who recommended for approval a design prepared by their engineer, Mr. J. N. Douglass, C.E. That design was for a granite structure, in which the base of the "Gordon" lighthouse was proposed to be utilised. The plan further included a lantern and dioptric revolving apparatus of the first order; also a light vessel, to be moored off the rock, for exhibiting a red revolving light every night during the progress of the work, and to serve as a barrack for the executive engineer and staff. The total estimated cost of the work was 64,661l. The design having been approved by the Board of Trade, and the Trinity House having agreed to undertake its execution, the necessary funds were voted by Parliament, and the work was immediately proceeded with. The author, who was then building the Wolf Rock Lighthouse, was appointed the executive engineer. The lighthouse consisted of a cylindrical base, 30 ft. in height and 32 ft. in diameter, on which was placed a tower, 67 ft. 5 in. in height, 23 ft. in diameter at the base, and 17 ft. in diameter at the springing of the curve of the cove. The thickness of the wall was, at the base of the tower, 5 ft., and at the top 2 ft. The accommodation within consisted of six circular rooms, each 13 ft. in diameter. There was also a room 12 ft. diameter in the basement, for coals and water, and a rain-water tank below 7 ft. 6 in. in diameter. From the floor of the tank to the rock, a depth of 11 ft. 6 in., the building was solid. The tower contained 12,288 cubic feet of granite, and the cylindrical base 25,077 cubic feet, making a total of 37,365 cubic feet, weighing about 2,763 tons. The stones forming the wall of the tower were dovetailed, both horizontally and vertically. Medina cement was used for the first and second courses, and Portland cement for the courses above these. The cylindrical 14 ft. lantern of the Trinity House was adopted. The dioptric apparatus had eight panels of refractors, with upper and lower

prisms, for emitting flashes of red light at intervals of 45 seconds. A 5-cwt. bell, for a signal during foggy weather, was fixed on the lantern gallery.

The light was exhibited on the 10th of March, 1873, and had since been continued with regularity every night, from sunset to sunrise. The illuminant adopted was Ceylon coco-nut oil, at a price of about 2s. 3d. per gallon. The work was executed without loss of life or of limb to any person employed. The total cost of the undertaking was 64,300l., being 361l. below the original estimate.

THE BONE CAVES OF THE WYE, AND ANCIENT TROPICAL AND ARCTIC LIFE.

At the Worcestershire Natural History Society's Rooms, Worcester, Mr. G. W. Hastings, president of the Society, recently gave an account of the bone caves discovered on the banks of the river Wye, near Symond's Yat, in Herefordshire. He, in company with Dr. Carpenter and the Rev. W. Symonds, F.G.S., had visited the locality and made some curious discoveries. Only three caves out of twenty had at present been investigated. In clearing out the rubbish on the upper surface of one, they found two human skeletons and coins and ornaments of the Roman-British period. They then came to a floor of solid stalagmite, so thick and hard that it had to be blown up with gunpowder. Below the stalagmite was another layer, and in it the bones of the common black bear, and nothing else. At the bottom of this layer was a second bed of stalagmite, 2 ft. thick, which they also blew up with powder, and beneath this they found an immense mass of fossilized bones of extinct animals, the remains of a mammoth in a marvellous state of preservation, and the bones of the woolly rhinoceros, the cave lion, cave bear, and hyena. A flint weapon, as Dr. Carpenter held it to be, was found among the extinct animals. Mr. Hastings then diverged to the subject of the antiquity of man, which he was of opinion dated further back than was generally admitted; and, in incidentally referring to the evidences found in this country and in more northern latitudes of it having at some time grown tropical plants, he started a theory that the axis of the earth had been slowly altered, and hence the change of temperature, &c.

An approximation is thus being made to the simpler and more natural view taken in the *Builder*, according to which causes still in operation suffice to account for all the phenomena, including both the tropical and the arctic, without any supposed former change of axis in the earth at all. The secular diminution of the angle between the ecliptic and the equator is a cause still in operation, and which has been going on in past ages, and for a period not yet utterly unknown, but admittedly without sufficient astronomical data for the small limits to it yet allowed by astronomers, who must now allow geological records to aid and instruct them as to its real extent. According to this view the present arctic winters and summers are merely the close of a vast period, during which tropical summers must have alternated with arctic winters in this and other countries, the sun going further north in the summers, and returning further south in the winters, so that both arctic and tropical phenomena must have prevailed by turns, just as milder summers and winters now do. Thus, and only thus, can apparently anomalous and contradictory facts in respect to the former existence of arctic and of tropical life in the caves and the strata of this and other countries be explained and reconciled.

A DISASTER AT THE EAST LONDON RAILWAY WORKS.

A CASUALTY has happened at the works of the East London Railway under the London Docks now in progress, which has caused some inconvenience and danger at the workhouse of St. George's-in-the-East. The railway works closely skirt the workhouse which the railway company are underpinning, and it appears that in consequence of the giving way of a portion of the piling in the docks the works have been flooded with water, and that although the shafts sunk for the purpose of underpinning the workhouse are at some distance from the flooded part of the railway works, the water has penetrated through, and is now within a few feet of the old footings of the workhouse. The consequence is that it

has now become necessary to complete the work under the workhouse in Portland cement, which will have to be laid by a diver, as it is impossible to pump the water out until the main works of the railway are clear. This course the railway company are now pursuing in underpinning the workhouse walls.

PROPOSED IMPROVED THOROUGHFARES BETWEEN CLAPHAM COMMON AND THE WEST END.

A PROJECT has just been mooted for improving the communication between Clapham Common and the surrounding neighbourhood of South London, and Kensington and the West End. It is urged that although the distance between the neighbourhood of South Kensington and that of Clapham Common is comparatively short, yet that the means of access between the two districts is difficult and circuitous in consequence of an absence of direct connecting thoroughfares, and that the new Albert Bridge, which crosses the Thames at the bottom of Oakley-street, Chelsea, and terminates at the western corner of Battersea Park, is of small utility for general traffic purposes, in consequence of there not being good thoroughfares leading to it either on the one side of the river or the other. It is admitted that there is a good road from Clapham-common to Wandsworth-road, which will be still further improved when a new street now in course of construction from Wandsworth-road to Queen's-road is made; and in order to complete the communication on the south side it is suggested that this new street should be continued from Queen's-road across the waste ground lying by Battersea Park, to the south-western gate of the park, where it would meet the present road to Albert Bridge, and so complete the communication across the Thames to Chelsea. With the view of continuing the proposed improved thoroughfare after passing along Oakley-street to the King's-road, the suggestion is that the houses on the west side of Arthur-street, which are generally small dwellings, and many of them in a dilapidated and ruinous state, should be taken down for the purpose of straightening the line and widening the street, so as to make its western side run in one line with the western side of Charles-street, Fulham-road. It is further proposed that about fifteen houses should also be taken down on the eastern side of Charles-street, in order that the east side of this street could be brought into line with the east side of Arthur-street, the result being that a wide and convenient new thoroughfare would be opened between the King's-road and the Fulham-road. This thoroughfare could then be continued along the west side of Ouslow-square, opening out into the Crownwell-road. The result would be a wide and direct thoroughfare from Clapham-common and South London to South Kensington, the Albert Hall, the parks, and the West End generally. It is urged in favour of these proposed improvements that at the present time the property which would have to be purchased for carrying them out is comparatively of small value, whilst the advantages would be great, in addition to the property along the route increasing in value in consequence of the improvements being carried out.

MEMORIALS.

Seavoth Memorial Hall, Barnard Castle.—At a meeting of the committee held at the offices of Messrs. Watson, Barnard Castle, the plans of the architects (Messrs. Ross & Lamb, of Darlington) were submitted and approved. The estimated cost of the memorial hall is 1,000l., the greater part of which is already in the hands of the treasurer.

Sedgwick Memorial, Cambridge.—At a meeting of the Sedgwick Memorial Committee, held at Cambridge, Professor Humphry in the chair, it was stated by the treasurer that the subscriptions exceeded 10,000l., and that more than 7,000l. had been paid to the account of the fund at the several banks. The question of the site of the new Geological Museum, which is to constitute the memorial, was discussed, and the feeling of the committee was in favour of the space in front of the new museum in Pembroke-street.

Memorial of Dean Garnier, Winchester.—The shape this will take has now, we believe, been finally decided on by the committee. Their proposition is to erect a fine open carved oak screen in place of the one of stone which now

encloses the choir from the nave of the Cathedral. By a photograph taken by Mr. Savage of the drawing made by Sir Gilbert Scott, it appears that the new screen will to a great extent make use of the carved arched canopies now behind the stonework, and the whole erection will be in unison with the carved work of the stalls. The cost of the memorial will be about 1,500l., and the committee have now about 800l. subscriptions promised. The idea once entertained of relieving the great west widow is now abandoned, for this which we have just given. At the meeting of the committee, Sir Gilbert Scott, in submitting his design, said in placing it on paper he was surprised at the great beauty and unique effect produced by simply converting the existing Gothic stall work into an open screen, and providing a nearly similar front to face the nave. Archdeacon Jacob at once stated he would increase his original subscription of 10l. to 25l. if the new design were adopted and carried out, and other subscribers would no doubt act in the same spirit. The architect's drawings will be placed in the Guildhall for inspection.

COTTAGE HOSPITALS.

Shaftesbury.—A new cottage hospital, erected by subscription in memory of the late Marquis of Westminster, has been opened at Shaftesbury by the Bishop of Salisbury, in the presence of a numerous company. It is a picturesque building, erected at a point which commands an extensive view of the Vale of Blackmoor. The site was given by the Dowager Marchioness of Westminster, and the cost of the building has been about 2,000l.

Newmarket.—Meetings for the purpose of taking into consideration the necessity of establishing a cottage hospital for Newmarket and district have been held. Mr. Fenn alluded to the hospital at Royston, for which Lord Dacre gave the site, and a lady 200l., the necessary funds being quickly raised by twelve or fourteen subscribers, and there all the medical men were in favour of it. A committee was formed to carry out the object of the meeting.

HIGH AND LOW ROOMS UNDER FIRE.

SIR,—Permit me to point out a distinction which generally escapes the notice of those who consider in the efficacy of so-called fireproof modes of construction.

Suppose a warehouse, constructed with floors so close together that the spaces between are like the accommodation for passengers in a slave-ship, or for the crew of a coasting barge,—3 ft., 4 ft., or 5 ft. high; and again, suppose another warehouse, to have a height between the floors of 20 ft.; and suppose that both warehouses are filled with goods and furniture, in that one with the lofty spaces the articles being stacked and piled up, to save space. Now, consider the different circumstances attending an outburst of fire in the two cases. A chimney, 20 ft. high, has, let us suppose, a draught up it of four times the vehemence of that in a flue only 5 ft. high. In the warehouse with lofty stories, on every square yard of floor there are four times the quantity of fuel than there is in a yard of the low space. Suppose, then, that the quantity of combustible matter is multiplied by the vehemence of draught, it would seem that the ceiling of the lofty space is attacked by a force of fire sixteen times as great as that which attacks the ceiling of the low space. If so, it would seem that the allegation of fireproof construction, made with reference to the low-speed warehouse might be a safe and reliable one, whereas a precisely similar mode of construction adopted for the lofty warehouse would be a delusion and a snare to those who placed faith in it as a security from fire. Only admit that a warehouse story is indefinitely lofty and indefinitely utilised, by stacking up inflammable goods within it, and it would seem that not even the thickest armour plating for a turret ship would constitute a fireproof ceiling.

G. M.

The late Mr. John Roe, Engineer.—We hear with regret of the decease of Mr. John Roe, formerly Surveyor to the Holborn Sewers, and also Chief Engineer to the Metropolitan Commissioners of Sewers. Mr. Roe died at his residence on the 15th, aged seventy-nine years, and will be interred at Finchley Cemetery at 2.30 p.m. on this Friday, March 20th.

OUR KNOWLEDGE OF HYDRAULICS.

Sir,—It is always desirable that any novel statements on matters of science should be thoroughly thrashed out by intelligent discussion.

I think, therefore, that we are indebted to your correspondent, Mr. J. K. Mann, for the defence which he volunteers of our actual knowledge of hydraulics.

But he seems to me to miss the point raised by the observations of M. Révy. Mr. Mann speaks of surface current. As to this nothing has been alleged in the "Hydraulics of Great Rivers" which is inconsistent with the ordinary views. M. Révy has expressed the opinion that, considering the minute differences of level that give rise to varying velocity, it is more reliable to calculate gradient from measured velocity, than to estimate velocity by levelled fall. But this in no way interferes with the operation of that well-known law which is at the bottom of all the formulae.

I cannot be sure to which of M. Révy's observations Mr. Mann refers as to the La Plata velocity. If it is to those figures which are given in a table on page 45, they will repay careful study; and it will be of interest to work out the volumes of mean flow which they give as compared with those arrived at by the usual formulae. When it is observed that, according to actual measurement, we find a surface-current of 108 ft. per minute, giving a mean current of 71.50, as a surface-current of 116.75 ft. per minute, giving a mean current of 83.53, it seems pretty clear that we must, for the future, be guided rather by actual survey than by the use of formulae which are confessedly empirical.

F. R. C.

BRIDGES AND CULVERTS.

Sir,—Turnpike trusts are frequently expiring in different parts of the country, and the expiring Turnpike Act states, "Where a turnpike-road shall have become an ordinary highway, all bridges which were previously repaired by the trustees of such turnpike-road shall become county bridges, and shall be kept in repair accordingly."

As there are a great many small arches, culverts, and drains, which cross the roads, it has become a question whether the whole of them are included in the term "bridge," and if not, where would the culvert end and the bridge begin?

As this is a subject of considerable public importance, perhaps you will be good enough to find room for these few lines in the *Builder*, in the hope that some of your correspondents may be good enough to give opinions or experience on the subject.

COUNTY SURVEYOR.

BOARD OF WORKS AND THE CONTRACT SYSTEM.

Sir,—Seeing in the *Builder* of last week that one parish south of London has decided to endeavour to alter the present system upon which the parish works have been done, allow me to say this must afford great satisfaction to a large portion of the heavily-taxed ratepayers of the metropolis; for, since the great contract scandal of the Wandsworth District Board of Works was discussed, in which the surveyor was charged with taking a uniform commission of 5 per cent. on all works executed by the contractor (*vide Wandsworth District Times*, Oct. 18, 1873), people are beginning to inquire if it is done elsewhere. When we consider the many thousands of pounds' work yearly carried out, such a commission would represent a very large amount thrown upon the ratepayers.

JUSTICE.

ACTION BY A BUILDER FOR LIBEL.

Mr. Jons Pethic, a builder, contracted for the new Guildhall at Plymouth, and signed a contract for £2,424. During the progress of the works a letter appeared in the *Western Daily Mercury*, published at Plymouth, complaining of the way in which it was being done. This was the libel complained of. The plaintiff, Mr. Pethic, alleged that it was probably written by a rival builder. Defendant said the letter had got admission to the columns of the paper surreptitiously, without the knowledge of either the editor or the sub-editor, and the copy had been made away with. He apologised, however, in the same paper for its publication. On the other hand, the plaintiff declined to accept of the apology as being insufficient. He said he was a loser to the extent of more than £1,000, from a forced rise in wages and otherwise, in consequence. The jury appeared to think that defendant had done sufficient to redress the error into which he had fallen (so long ago as about four years since), and returned a verdict for defendant.

ACCIDENT ON THE ROAD.

At the Worcester Lent Assizes, in the *Nisi Prius* Court, before Mr. Baron Cleasby, an action was brought by Mrs. Sarah Lettis against the Oldbury Local Board of Health.

The plaintiff sought to recover damages for loss sustained by her by the death of her husband, who was killed, it was alleged, owing to the negligence of the defendants in not keeping a road under their supervision in proper repair. The damages were £1,000.

The case, as set forth, was this:—The deceased, Mr. W. Lettis, was going along the Birchfield-road, when the wheels of his cart came in contact with a heap of cinders (Rowley rag, for a wall), which had been placed on the side of the road, and extended, it was said, about 3 ft. into the road. The result was, that Mr. Lettis was thrown from his cart, and died very soon afterwards. The question for the jury was to consider who was to blame, and the amount of damages Mrs. Lettis was entitled to. After evidence for the plaintiff and defendants was heard, the jury returned a verdict for the defendants.

THE BUILDERS' CLERKS' INSTITUTION.

Sir,—With reference to your report of the annual meeting of the Builders' Clerks' Institution, permit me the opportunity to establish, if only as a reference, my protest against Rule 14 being violated, whereby the orphan fund, now reaching between 500l. and 600l., is at once to be used in lieu of waiting till it reached 1,000l. Had the scheme originated with a subscriber to that fund, or even less, from a member who had not sided to compile the rules or subscribed his name thereto, I should not have been surprised at the desire to alter them. The meeting was small, and did not by any means show the feeling the subscribers, considering that most of those voting did not subscribe to the fund they proposed to use.

I confess my inability now to work for the Institute so hard as in the time when I first sought and received your countenance and support. Time I cannot spare, and have therefore not one alternative,—to crave a space in the columns of that journal which so much aided me in 1866, and which has brought hundreds and clerks and sympathising public together, and with it a collection close upon 300l., great portion of which was to that fund now alluded to in the present scheme. Its disbursement is to be considered. To those who, as above, so liberally responded to my views I express them now,—“that the time is not more pressing now than then, and that there is no real sound reason for departing from our original intention, and that I beg the subscribers who favoured me in years gone by, will not now hesitate to endorse my protest.”

THOS. FETO WARD.

DISPUTED CONTRACT.

The Vicar of Dartmouth and his builder have been at loggerheads about a contract for work done in St. Saviour's Church, Dartmouth. The claim was for 73l. 8s. 8d., for work and labour done in respect of certain alterations in the interior of the church. It was a case with rather peculiar features, and somewhat complicated. The plaintiff, William Crocker, was a builder in Torquay, and the defendant, the Rev. J. Priestly Foster.

The plaintiff contracted with the defendant for the work done by “a fictitious tender,” in such a way as to conceal the true nature of it from other persons, with whom the vicar was at variance, but into the peculiarities of the case we cannot enter. The special purpose of the defendant was stated for the plaintiff to be to bring the choir from the gallery to the chancel, and put temporary seats for the choir in the aldermen's pews. Plaintiff admitted that he was in hot water, or “rows,” with the corporation and other parishioners, but he had the permission of the Bishop to do the work. The upshot of the whole affair was, the jury has returned a verdict for the defendant, and the plaintiff declared that the defendant had got 131s. 4s. worth of work for 73l. The “fictitious tender” to which the plaintiff had agreed, as a private acquaintance of the defendant, was for 28l. 10s.

ARCHITECTS' ACTIONS.

PUGIN V. MOLLOY.

Sir,—The report of this case in your publication of the 25th ult. is incorrect in material parts, affecting the interests of my client, the defendant, the Rev. William Molloy. For instance, the name of the Bishop of Birmingham, to whom the matter was stated to have been referred, was not even mentioned at the trial, and Mr. Hopwood, for the defendant, did not state that he depended for his defence upon a point of law; nor did the Judge rule that the plaintiff had a just and valid claim for the difference between the actual specification, or quantities, and the amount of work which had been executed; nor did he give a verdict for the plaintiff, which carried the costs of the cause; nor was any offer of compromise made. In fact, you have been completely misinformed. The cause, and all matters in difference, were simply referred to arbitration, the parties are, therefore, in reference to this action, in exactly the same position they occupied before it was called on for hearing.

ARTHUR C. RAY,
Defendant's Attorney.
* The notice (p. 181, ante) came to us in the shape of a printed slip from one of the parties concerned, as we made known by a foot-note at the time.

BOARD SCHOOLS.

High Wycombe.—New Board Schools are in progress to accommodate 1,000 children, the buildings including covered playgrounds, committee-rooms, teachers' residence, &c. The materials are of black and red brick, with stone dressings, and are slated. The new scientific ground is used. The total cost (exclusive of ground) is expected to be about 7,000l. Mr. W. R. Loosley, of High Wycombe, is the contractor, and Mr. Arthur Vernon the architect.

TO RENDER WOOD INCOMBUSTIBLE.

Sir,—Will any of your numerous readers inform me of the best process for rendering wood useful for building purposes uninflammable; or, at all events, calculated to delay combustion?
D. B.

* We cannot undertake to print the replies we may receive to this inquiry, but, at any rate, they shall be forwarded to the querist.

COMPETITION.

Whipstead, near Bury St. Edmund's.—The plans sent in to the School Board, by Mr. Frank Whitmore, architect, Chelmsford, have been selected, and the works are to be commenced immediately.

THE ROCHDALE TUB SYSTEM.

Sir,—In concluding your notice of the “explanation” of the Rochdale system, by Mr. T. Hewson, borough surveyor, and Mr. J. Hareseough, manager, you say “our own opinion of the system is anything but favourable.”

I think, sir, if you were compelled to use a closet on the “Rochdale system,” as so many are in this town, your “anything but favourable opinion” would in no degree be modified.

How any sanitary authority out of Rochdale has been induced to adopt the system is to me incomprehensible. But that any medical man connected with the Health Office of the Privy Council should have sanctioned the use of a plan of collection so repulsive, is literally astounding. As to Rochdale, I fearlessly assert that had it been recommended by any other person than Mr. Alderman Taylor, the present chairman of the Health Committee, it would have been rejected with disgust.

This so-called “Rochdale system” was first introduced here in the early part of the year 1869, as Hareseough's box-and-ash system, oblong boxes being used as the receptacles, with a small quantity of dry ashes and deodorising powder placed at the bottom, to modify the sloppiness, and prevent smell. The system had been previously tried at Leeds by Mr. Hareseough, in connexion with a Dr. Bishop, and proved a disastrous failure.

The preliminary trial in Rochdale commenced in February, 1869, and was carried on until September, under the nominal supervision of a sub-committee, of which Mr. Alderman Taylor was chairman. On the report of this committee, drawn up by the chairman, recommending Hareseough's system, it was finally adopted at the September council meeting. I have drawn these data from a file of the *Rochdale Observer* for 1869.

Oddly enough, the system thus introduced to the ratepayers of Rochdale as Hareseough's, and recommended for adoption by Mr. Alderman Taylor, was subsequently patented by that gentleman. The patent is No. 1969, dated 1871.

A RESIDENT.

CHURCH-BUILDING NEWS.

Bath.—The new church of St. Paul, for the residents of a new ecclesiastical district formed out of the parishes of Trinity and St. James, has been consecrated by the Bishop of the Diocese. It occupies the site of the old Elephant and Castle Inn, which faced the Upper Bristol-road, and stood at the angle now occupied by the nave of the new church. The new edifice is in the Early English style, is built of local stone, and consists of a nave, 97 ft. long, terminated by a circular apse. The width is 38 ft., and the height to the ridge of the roof is 50 ft. Ultimately it will have a western aisle, which will be separated from the nave by arches already erected, and supported by circular Penan columns. At the present time a space of some 4 ft. wide beyond the arches is covered in and bounded by a temporary wall, pierced with lancet windows. On this wall have been placed the mural tablets removed from St. Mary's Chapel. The other interior walls are faced with clean-worked ashlar, having red mortar pointings, and relieved with bands of red stone from the Bishop Lydeard quarries. The roof is wagon-headed, supported by hofter-trusses, carved and moulded, and supported on ornamental stone corbels. It is diagonally boarded, and covered with Bangor slating. The passages, choir, and sanctuary are laid with encaustic tiles, supplied by Mr. Godwin, of Hereford, and the windows are filled with grisaille glass, from Messrs. Heaton, Butler, & Bayne, of London. Externally, the building

presents five buttressed bays on the Chapel-row side, with a two-light window in each; and a gable at the south or Upper Bristol-road end, 63 ft. 6 in. high to the top of the cross. In this southern end is a central doorway, approached by a double flight of steps, and surmounted by five lancet windows, over which is a rose-window. The lancet windows are relieved with red stone columns, as are also the five lancet windows in the chancel. The whole of the exterior is of hand-dressed freestone. Besides the principal or western door, there is an entrance at the north-east angle of Chapel-row. There is also a small door in Stable-lane, giving direct access to the temporary vestry and organ-chamber. The church is seated with 700 rush-bottomed chairs, arranged for kneeling, with ledges for books, and kneeling-mats are also provided. The gas-lighting is effected by bracket lights on the eastern side, and rows of jets round the capitals of the columns on the western side. These fittings and other smiths' work have been supplied by Messrs. Saunders & Elliot. The choir and sanctuary are lighted by a large brass corona, manufactured by Messrs. Witham. The works have been carried out from the designs of Messrs. Wilson, Wilcock, & Wilson, of Bath, by Mr. Joseph Bladwell. The carving is by Mr. Watie, and the heating and ventilating apparatus by Mr. S. Diplock, of Bath and Crowbridge.

Leicester.—St. Nicholas Church has been reopened, after having undergone considerable repair and alteration. The church had for some time past been in a very dilapidated condition, and extensive repairs have been made in supporting the weak points of the building, in renewing the decayed portions, and in putting the church generally in such a condition as will secure it from further decay. The old pews have been replaced by free and open seats. The entire floor has been relaid, and tiles placed in the chancel. A new Mansfield baptismal font, with alabaster pillars, has been placed in the church, while a stained glass window, a representation of the Crucifixion, has been placed in the east end, over the altar. The window is the gift of the vicar. Messrs. Ordish & Traylan were the architects, and Mr. Osborne the builder. Much yet remains to be done, and as the total cost is expected to be about 12,000l., it is hoped that the friends of the church will contribute liberally towards the object in view.

Davertry.—The Rev. Chancellor Wales presided in the Consistory Court at All Saints' Church, Northampton, to hear an application from certain parishioners of Davertry with respect to the reseating of the parish church. In the early part of August last, the Rev. John Martyn Collins, rector, Captain E. Stopford, B.N., churchwarden, and others, petitioned this court for a faculty to be allowed to make certain alterations in the church. Messrs. Burton and Willoughby, and other parishioners, then opposed the application, and the court adjourned in order that the parties cited might file their claims. At the second meeting Messrs. Burton and Willoughby withdrew their opposition, in consequence of the Rev. J. M. Collins having acceded to a request to make the height of the new seats 3 ft., and at a later period the other parishioners also withdrew. The Chancellor therefore decreed that the faculty should issue according to the petition. It was now thought that the whole affair had come to a satisfactory termination, and the work of alteration was proceeded with. Immediately, however, that the reseating was commenced, it was discovered that, instead of 3 ft., according to the agreement entered into with Mr. Burton, the height of the seats was 2 ft. 10 in. only. Notice of this was given to the parishioners in order that they might carry out the agreement; but the reseating went on, and the result was that these proceedings were instituted by the parishioners. In the course of the proceedings, however, an agreement, said to be satisfactory, was again entered into, the seats to be 3 ft. in height, as before arranged.

Thirsk.—It is proposed to restore the church. Some time ago Mr. Street was engaged by the committee to prepare plans. He estimates the restoration to cost 4,600l.

New Offices for Westminster.—At the last meeting of the Westminster Board of Works, the Hon. Ashley Ponsonby gave notice that he would move at the next meeting that the Board do take into consideration the necessity of providing new parochial offices for the use of the Board and the vestry, the present offices being most unsuitable.

Books Received.

The Design and Construction of Harbours: a Treatise on the Art, &c. By THOMAS STEVENSON, F.R.S.E., C.E., &c. Second Edition. Edinburgh: Adam and Charles Black. 1874.

It was to be expected that this standard work, first published in 1851, would reach a second edition. Mr. Stevenson has long been known and esteemed as a most reliable authority in maritime engineering. The work under notice was originally embodied in the *Encyclopædia Britannica*, as an article on "Harbours"; and it has since been revised, both in the first and second editions of the treatise under notice, and now many additional subjects have been introduced, while most of the chapters have been considerably extended. As a specimen of the new matter, and of the work generally, we may quote a passage on concrete:—

"*Monolithic Structures of Cement, Concrete, or Rubble.*—In *Nature* for September, 1871, I suggested that light-bases on rocks in the sea might in certain situations be constructed wholly of concrete and rubble. The advantages of this mode of construction, when used in sea-water, are the following:—1st, the disposing with all stones or rubble, or materials, 2nd, The suitability for such works of any stone of hard quality, thus rendering it unnecessary to bring large materials from a distance, or to open quarries or ashlar, 3rd, No need of timber, as in the case of moving or raising heavy materials, 4th, Saving in the levelling of the rocks for a foundation for the tower. 5th, The ease of landing on exposed rocks, small boats being stone, as compared with the landing of heavy and finely-dressed materials."

A beacon 13 ft. high and 10 ft. diameter was constructed under Messrs. Stevenson's direction in a very exposed situation near Isle Burard, Anglesey, which has stood perfectly for the last two years.

The walls of harbours may also be constructed of concrete, as I have proposed by temporary piling and case plating. The test mode of piling out the water, as adopted by Mr. Blumer at the Duke of Richmond's harbour of Port Colston, is to make a sea wall in each plank, and to place a thin plate of iron between the planks. An example of this continuous or monolithic building is shown in Plate 18.

"*Asphaltic Masonry and Concrete.*—I have tried, at the island of L. Abbeville, some experimental masonry, which is cemented together with British asphalt. At the same time the experiment was successfully tried of letting down over the surface of low water stones and hot asphalt, placed in January, which were pressed down upon the irregular rocky bottom, so as to equalise it, and render its surface ready for building on. This is situated in water or cement in rubble and ashlar work seems easy, but of resisting the chemical action of salt water, for at least both it has stood for several years. Mr. Manley mentions that asphalt was proposed for lighthouse work in France, but that the risk of its decay prevented its adoption. He does not mention, however, whether any experiments were made in order to test its quality."

"*Cable for Concrete.*—While the present state of this book is passing through its last proof, my attention has been called by Mr. H. G. Paterson, of Glasgow, to a new material for building and concrete, which plainly presents features of marked interest, the invention of Dr. George Hand Smith, of New York, a prominent American metallurgist. It is the result of a combination mainly of hydration of varying amounts with clay, chalk, or gypsum, whereby concrete and all kinds of material for building purposes can be produced. The constituents are stated to be cheaper than those at present in use, as well as of a more durable character, being unaffected by frost or exposure, while they resist the action of the most powerful acids, including sulphuric and hydrochloric. It is further stated that the concrete can be made of any required density. . . . One of the great advantages of this concrete is that it can be made in any shape, and immediately after being manufactured. There is also claimed the further advantage that the blocks are capable of being fixed to each other under water by an indestructible cement of great binding power, which is also prepared in the process of manufacturing the concrete."

Miscellanea.

Oxford Architectural and Historical Society. The last excursion of this Society for this term took place on Saturday before last, when a large party of the members and friends visited the churches of Marston and Headington. At Marston they were welcomed by the Rev. Canon Gordon, who, after a short account of the recent alterations in the churchyard, led the party into the church. Mr. James Parker pointed out the principal features of the architecture. At Headington, the members assembled in the church, where Mr. Parker very briefly pointed out some of the details of the architecture. Attention was called to the curious wall-paintings discovered on the plays of the Early English windows in the south aisle, at the restoration in 1863. These were destroyed at the time, but a drawing of them was published by the Society in their Proceedings, vol. i., p. 302, a copy of which was exhibited and described by the secretary. After inspecting the exterior of the church, and the cross, which stands on the south side of the churchyard, the party returned to Oxford.

The New River Approaches at Liverpool. The new approaches to the Mersey, commenced a little over two years ago, are in a forward state, and will be opened for traffic, according to the promise of the Mersey Docks and Harbour Board, within the third year after the commencement of the works. In the construction of the approaches the George's and Seacombe Basins have been absorbed. Their cubic area has been filled with upwards of 200,000 tons of rubbish. Down the centre of the space a "way" has been constructed of granite from the quarries at Freetown, Kirkcubrightshire, belonging to the Dock Trust. The masonry is of a massive character, and each of the walls is surmounted by a balustrade, in the construction of which Ransome's patent stone, a composition largely in use in America, has been employed. The balustrades are terminated by pillars entwined by a rope carving. On the coping of the balustrades will be placed twenty-four globe lamps. Between the walls an iron bridge, resting on pontoons, will be placed. Its entire length from the termination of the "way" to the Landing-stage will be 590 ft., and its extreme breadth 36 ft. Messrs. Vernon & Capper, of Liverpool, undertook the making of the pontoons for the bridge; and Messrs. Thomas Brassey & Co., of the Canada Works, Birkenhead, those for the junction of the stages: the masonry is being executed by the men in the service of the Dock Board. The scheme, which before completion will have cost upwards of 150,000l., was designed by Mr. G. F. Lyster, the engineer to the Trust, and the operations are being carried out under the direction of Mr. Fielden Sutcliffe.

New Clock and Chimes for Leek Church. The parish church of St. Edward, Leek, now possesses a new chime-clock recently completed. It has been manufactured and erected in the tower by Messrs. Gillett & Bland, of Croydon. It contains all their recent inventions and improvements. The hours are struck upon the tower bell of 20 cwt., the hammer-head being 50 lb., bringing out the full tone (which, on a still night, may be heard a distance of four miles), and also chimes the St. Mary's (of Cambridge) chimes on four bells every quarter of an hour. The time is shown upon one dial 6 ft. 6 in. in diameter, the figures and minutes being of copper, painted, and gilt, glazed with patent opal glass, and illuminated at night by gas. A self-acting gas apparatus is fitted in connection with the clock for the purpose of turning the gas on and off automatically. The motive power is given to the clock by means of weights weighing three-quarters of a ton. The whole of the works are enclosed in a glass case to protect them from dirt. The cartilage, or chiming machine, in connection with the clock, is being also made by Messrs. Gillett & Bland. Only four of these machines have as yet been put up; viz., at Rochdale Town-hall, Bradford Town-hall, Worcester Cathedral, and St. Stephen's Church, Humpstead, Lond. N. The Leek cartilage-machine is being constructed to play 11 tunes on eight bells. The woodwork was done by Mr. Mackrell; the painting, by Mr. W. Daveport; and the stonework, by Mr. Barlow.

A New Amusement.—Mr. Ruskin is angry at the barbarous state of the country about Hincksey, and has hit upon a plan for beautifying the place. He has long expressed his regret at the amount of time lavished on cricketing, boating, and other fashionable outdoor amusements. These are, he considers, purely selfish modes of gaining exercise. He proposes, therefore, that a band of undergraduates, provided with spades, shovels, pickaxes, and the like, should at once give up their selfish modes of recreation, and proceed to Hincksey, clear the country into the hands of the "thoroughbred towns in England." Fifty or sixty undergraduates have already enrolled themselves in this band, and the professor will, it is said, as soon as his health allows him, join them in their sacred work. Mr. Ruskin will lead them in triumph to the scene of their labours. These will begin at once, in the event of Professor Ruskin being in Oxford; if not, they will be postponed to next term.—*Globe*.

Natural Philosophy in Edinburgh University.—Mrs. Neil Arnott, the widow of Dr. Arnott, has lately written to Dr. Lyon Playfair, offering 1,000l. for the promotion of natural philosophy in the Edinburgh University.

Manchester and Salford Ladies' Sanitary Association.—The annual meeting of the subscribers to this association was held at St. Ann's School, Queen-street, to receive the report and statement of accounts. Mr. T. Dale was in the chair. The report stated that the income of the society had been fairly sustained, the slight falling off being caused by the loss, through illness or removal, of several energetic lady collectors. Commencing the year with nine mission women, the number soon increased to eleven, and they had been at work in districts. In nearly all the districts the mission women were permanently placed, two-thirds of their salary being guaranteed. The mothers' meetings had been attended with the best results. The committee regretted to report that there had been more than the usual amount of illness amongst the mission women, and one case of typhoid fever had been peculiarly trying. The committee expressed their sense of the loss the society had sustained in the death of Dr. Turner, who was one of the founders of the society. The treasurer's statement showed that the subscriptions had amounted to £391., and there was a balance in the bank of 53s.

Condition of Sidmouth.—The local Medical Officer of Health, in his first annual report, just published, says:—"The water in the pumps in the town which water I have analysed (presented the analysis to the Board), has been, almost without exception, contaminated with animal matter. I have, therefore, recommended the Local Board to close these pumps, and lay on water. I have called the attention of the Board ever since my appointment, and now I beg to call the serious attention of the Board again to this matter, as I believe it vitally affects the health of the town, and that it is perfectly providential that, with such an insufficient water-supply, there has been no epidemic disease. During the last three months I have, in accordance with the Public Health Act of 1872, visited all parts of the district. I find there is complete ignorance of the most ordinary sanitary precautions,—dung-heaps in close proximity to residences, and this not only in country portions of the district but in the town itself,—pig-sties in the centre of the town; total absence, in some instances, of privy accommodation, in others the accommodation utterly insufficient." The Board should at once take measures for remedying these evils.

Tinfoil in Wall Hangings.—The Tinfoil Decorative Painting Company (Limited) is being formed, with a capital of 150,000l., in 15,000 shares of 10l. each (the list to be closed by the 24th inst.), for the purchase of the stock, plant, machinery, and goodwill of the business lately carried on by Messrs. Daniel & Co., Rue de Rocroy, Paris, in the manufacture of tinfoil decorative painting, together with the patents for the United Kingdom, the United States of America, France, Belgium, and Austria, with power to take new patents for other countries. Decorative wood and marble work is painted on tinfoil, which, when fixed on walls with varnish, is of especial use as a resistant of damp, and a preservative of the work printed on the surface of the tinfoil itself, enabling it, as appears, to last much longer and in better order than when printed on paper. The merits of this invention, however, are very fully set forth in our advertising columns of the 14th of March, and we need not therefore say more here on the subject.

Sale of Shares in the Brighton Aquarium Company.—Two hundred and fifty 10l. shares in the Brighton Aquarium Company divided into fifty lots of five shares each, were sold at the Auction Mart recently in less than an hour. The shares were some of those originally issued by the Company, and, being fully paid up, will participate in the issue of new shares now being made. The resources of the institution, Mr. Attree said, had not yet been fully developed, although a handsome dividend had recently been declared. The lots were knocked down at from 10l. 10s. to 11l. 10s. per share. The total amount realised by the sale was 2,705l.

The Ryde Sewerage Outfalls.—A report has been made to the Town Council of Ryde, upon the outfall sewers, with suggested alterations of the same by the borough surveyor, Mr. G. H. Staddon, C.E. He reports that the outfalls are not in a good state, and that it will be desirable to alter the point of discharge for the whole of the sewage of the borough to as far east of the pier as practicable. He estimates the cost of the proposed works at 4,300l.

Val de Travers Asphalt Paving Company.—The annual general meeting of this company has been held at the City Terminus Hotel, Mr. Horatio C. Scott in the chair. The directors' report stated that the year's working had resulted in a profit of 1,646l. 0s. 10d., notwithstanding that, during the first three months of the year little work was done, and a loss of 1,962l. 13s. 9d. incurred in connexion with works previously contracted for. The directors thought it better to carry the balance forward, instead of declaring a dividend. During the year the material of the company had been exclusively selected by the authorities for all streets of heavy traffic. The directors congratulated the shareholders upon the lapse of time having justified their anticipations of the durability of the asphalt, and that considerable orders had recently been received, and they had reason to expect a continuously-increasing and large trade as the season advanced. The report was adopted.

The Social Science Congress at Norwich. A piece of plate has been presented to the Rev. Canon Hinds Howell, on behalf of the subscribers to the fund for entertaining the National Association for the Promotion of Social Science, in Norwich, last year, in recognition of the services rendered by him as chief local secretary. The testimonial consists of an epergne, standing upon a massive circular platen. Three camels, wrought in frosted silver, are represented as lying on the platen, and supporting a fluted column, from near the summit of which spring three branches, which can be used as will to hold lights, or to bear dishes of fruit. A large glass dish crowns the epergne, which is of solid silver, about 2 ft. 6 in. in height, and weighs 160 oz. The description of this memorial, three camels supporting a fluted column, shows that it is about as absurd as such silversmith testimonials usually are.

The Greek Church of St. Nicholas, Cardiff.—The Empress of Russia sent a donation in money, and subsequently a piece of altar plate, to the authorities of the church at Cardiff for Greek and Slavonian sailors, with the written request "Pray for the rest and peace of the soul of the Emperor Nicholas." On the anniversary of the decease of the late Emperor, a commemorative service, similar to that celebrated last year in Wolverhampton, was performed in the church, notice of which was given to a member of the Imperial Russian court, and a recognition of the same was received by telegraph from St. Petersburg—"Join prayers to-morrow. Sacred vessels sent by Greek Consulate." Father Matherly has received a list of the "Sacred vessels," which includes a complete massive set of altar furniture, and a set of priestly vestments, worth at least 200l.

The Inhabited House Duty.—According to the Blue-book lately issued there has been a decrease in the house duty of about 20,000l., when in the natural course of things the Commissioners consider there should have been a considerable increase to the extent of the actual decrease. The doubts as to the scope of the exemption of trade premises mentioned in the last report as prevailing with the Commissioners for the City of London might be assigned as a sufficient cause; but, after making the allowance, the Commissioners state that they should have still to account for the sudden arrest of progress in the duty which occurred in 1872-73. Shops and warehouses, beerhouses and farmhouses, are only charged at the rate of 6d. in the pound. There is likely to be a revision of the duty. Out of a duty of 1,382,800l., the dwelling-houses paid 1,046,001l.

An American Tower of Babel.—Some active American brain has devised a second edition of the tower of Babel. The projector intends the structure to celebrate the Exhibition of 1876 at Philadelphia. The tower is to be 1,000 ft. high. The base is to be 150 ft. in diameter, and the top 30 ft. It is to be constructed of iron plates, connected by girders. Access to the top will be attainable by a hydraulic lift, or by a winding staircase.

The Timber Trade.—It is stated on good authority that there is a great pressure for accommodation for the timber trade in the port of Liverpool. As many as thirty vessels have been ordered to Grimsby, Barrow, and other ports, it is said, where the accommodation is of a very extended character, and given at a cheaper rate. The deal trade is one that is seriously inconvenienced.

New Excavator.—Mr. R. Stone, of Liverpool, has patented an improved pick excavator and discharging elevator for excavating for foundations, surfacing roads, excavating clay, sand, soil, and other like substances. A pick excavator and discharging elevator, according to this invention, consists of a circular disc, or discs, which are carried on a shaft mounted in suitable bearings, carried on a truck or wheeled frame. Carried on the same truck or wheeled framework, and immediately behind the revolving discs, is an elevator, which lifts the loosened material, and discharges the same into a cart, or truck, immediately behind the pick excavator. The picks on the discs are so arranged that they will work at banks or on road surfaces, as may be required. The apparatus is driven by a suitable system of cog-wheels or straps and pulleys.

Rio de Janeiro City Improvements Company.—The annual report of the Rio de Janeiro City Improvements Company, Limited, states that the accounts for the year 1873 show that a net sum of 15,417l. 16s. 3d. has been expended during the year in drainage and additional houses. The unappropriated balance of revenue amounts to 45,606l. 16s. 9d. Of this sum the directors recommend the distribution of 31,875l. by way of dividend for the half-year, at the rate of 7½ per cent. per annum (free of income-tax), leaving the sum of 13,731l. 16s. 9d. to be carried over. This dividend, together with that paid in October last, raises the payment for the whole year to 7½ per cent. upon the share capital.

Health of Liverpool.—A report on the health of Liverpool during the year 1873, by W. S. Trench, M.D., medical officer of health for the borough, has been issued in a printed form. From this it appears that the death-rate of the borough during the past year was equal to 25·8 per 1,000. There were 18,716 births and 13,042 deaths. The death-rate per 1,000 in Rodney-street and Abercromby was 20·2; West Derby, 21·5; the Toxteths, 22·3; Everton and Kirkdale, 23·8; Castle-street and St. Peter's, 29·4; St. Anne's and Lime-street, 30·0; Pitt-street and St. George's, 30·1; St. Paul's and Exchange, 31·6; Scotland, 31·8; and Vauxhall, 34·2.

The Patent Laws.—A meeting was held, on Monday evening last, in the rooms of the Social Science Association, in Adam-street, Adelphi, under the presidency of Mr. Thomas Webster, Q.C., when a paper was read on the above subject by Mr. John Coryton. A discussion followed, in which Mr. Frederick Hill, Mr. Charles Clarke, Q.C., Mr. J. Anderson Rose, Dr. Edgar, Dr. Ryalls, Mr. De Tracey Gould, and the chairman took part.

TENDERS

For new schools and offices, in the Greenwich District, at Upper Earl-street, Walmer-road, Plumstead, for the School Board for London. Mr. Robson, architect. Quantities supplied:—

Sheffield	27,997	0	0
Thompson	7,980	0	0
Callum	7,540	0	0
Jerrard	7,482	0	0
Cooper	7,480	0	0
Hill, Higgs, & Hill	7,334	0	0
Johnson	7,240	0	0
Newman & Mann	7,146	0	0
Kirk & Co.	6,983	0	0

For vicarage in Ashby-street, Clerkenwell. Mr. J. C. Hulkin, architect. Quantities not supplied.

Roberts, L. H. & R.	22,734	0	0
Moreland & Nixon	2,695	0	0
Staines & Son	2,346	0	0
Elkington	2,000	0	0

For alterations to Mongeham House, Deal, for Mr. M. B. Thompson. Messrs. Whitley & Fry, architects. Quantities not given:—

Ansell & Cook	£1,311	10	6
Denne & Wise	1,176	0	0
Collins & Davis (accepted)	998	0	0

For finishing two warehouses in Wilderness-row, Goswell-street, Clerkenwell, for the Metropolitan Board of Works. Mr. George Vulliamy, architect:—

Nixon & Son	£2,100	0	0
Shurmer	1,989	0	0
Callum	1,987	0	0
Greenwood & Son	1,975	0	0
Crack	1,889	0	0
Wood	1,873	0	0
Forrest	1,823	0	0

For painting and other work at the Poplar and Stepney Sick Asylum, Bromley, Middlesex. Messrs. A. & G. Harston, architects. Quantities supplied:—

Ridall	£1,341	0	0
Nowlan	1,210	0	0
Derby	1,012	0	0
Palmer	999	0	0
Hopewell	890	0	0
Sheffield	888	0	0
Lenison & Knight (accepted)	812	0	0

For Bookbinders' Provident Asylum, Ball's Pond-road, Tainton, N. new west wing. Messrs. McNab, Saul, & Pritchett, architects. Quantities supplied by Messrs. Batterbury & Huxley:—

Cohen	£1,600 0 0
Sheffield	1,435 0 0
Simpson & Baker	1,423 0 0
Moreland & Nixon	1,405 0 0
Nightingale	1,393 0 0
Tibbitt, Jan.	1,388 0 0
Wick	1,367 0 0
Aldous	1,285 0 0
Crabb	1,248 0 0
Elkington	1,243 0 0
Sabey & Sons	1,243 0 0
Boyce (accepted)	1,227 0 0

For new Sick Asylum, Cleveland-street, Fitzroy-square, for the Central London Sick Asylum District. Messrs. John Giles & Gough, architects. Quantities by Mr. C. H. Goode:—

Oliver	£18,930 0 0
Staines & Son	18,680 0 0
Boyce	18,590 0 0
Kirk & Co.	16,350 0 0
Howard	15,745 0 0
Ansecomb	15,713 0 0
Niblett	15,367 0 0
Thorn	15,367 0 0
Grimwood	15,249 0 0
Hill, Higgs, & Hill	15,249 0 0
Elkington	15,135 0 0
Crockett	15,000 0 0
Rankin	14,950 0 0
Simpson	14,930 0 0
Bayes & Ramsay	14,850 0 0
Wagner	14,700 0 0
Nightingale	14,643 0 0

Accepted for new bonded and free warehouses, for the Kendal Bonded and Free Warehouse Company, Limited, Kendal. Mr. Stephen Shaw, architect. Quantities supplied:—

Walling, Masonry, Arching, Escalating, Drains, and Slating.	
Troughton	£3,016 0 0
Carter	1,732 0 0
Lees & Graham	1,043 0 0
Airey & Tanner	273 10 0
Steel	85 0 0
Hine	119 0 0
Downes	642 2 0
	£8,830 12 0

For roads and sewers, Wandsworth-road. Mr. W. A. Murphy, architect:—

Thompson	£2,250 0 0
Batch	1,999 0 0
Jackson	1,850 0 0
Kelble	1,816 0 0
Harris	1,685 0 0
Wainwright	1,850 0 0
Cole	1,621 0 0
Pearson	1,523 0 0
Biley	1,488 0 0
Carier	1,450 0 0
Hawks	1,350 0 0
Hopkins	1,332 0 0
Hancock (accepted)	1,273 0 0
Gardner	1,232 0 0
Hare	1,198 0 0

Accepted for new auction mart, auction rooms, and offices for the Cokermouth Auctioneering and Estate Agency Company, Limited, Cokermouth. Mr. Stephen Shaw, architect. Quantities supplied:—

Masonry, Paving, Escalating, and Drains.	
Bolton	£1,850 0 0
Carpenter and Joiner's Work.	
Robinson	1,665 0 0
Plumbing, Smith, Iron-founder, and Painter's and Glazier's Work.	
Robinson	628 0 0
Slating.	
Nanson	415 0 0
Plastering.	
Steel	151 19 6
	£1,836 19 6

For Mr. S. A. Cail's offices, Quayside, Newcastle-on-Tyne. Mr. Gibson Kyle, architect. Quantities supplied:—

Reed, J. & N. E.	£2,062 0 0
Millar	6,008 0 0
Lewry, J. & W.	5,998 12 0
Elliott	5,538 0 0
Mitchison (accepted)	5,465 0 0
Hudspeth	1,782 0 0

* Mason and Bricklayer only.

For work-rooms, stables, &c., in the Clapham-road, for Messrs. Wand & Co.:—

Young	£2343 0 0
Snell	330 0 0
Liddicot	330 0 0
Frebble & Morley (accepted)	320 0 0

For rebuilding No. 23, Holles-street, Cavendish-square. Messrs. J. Young & Son, architects. Quantities supplied by Mr. Buzzard:—

Kelly, Bros.	£3,123 0 0
Brass	2,120 0 0
Ashby & Horner	3,027 0 0
Corder	3,000 0 0
Manly & Rogers	2,977 0 0
Lawrance	2,835 0 0
Nightingale	2,693 0 0

For alterations and additions to house and premises belonging to Mr. John Copping, Marsham-street, Westminster. Mr. Henry Stephen Ridley, architect:—

Abbiss	£1,143 0 0
Mills	1,130 0 0
King & Son	1,110 0 0
Foster	1,075 0 0
Richards	974 0 0
Jopling & Co. (accepted)	910 0 0

For the Kettering Sewerage Works. Mr. R. W. Johnson, surveyor:—

Chappell	£15,420 0 0
Acock	10,000 0 0
Neave & Son	9,214 10 0
Henns, J. & G.	8,173 4 0
Walker	8,139 19 8
Brannon	8,138 15 8
Moore	7,547 16 0
Barlow	5,825 0 0

For New Connexion chapel, West Hartlepool. Mr. Gibson Kyle, architect:—

Alderson	£2,480 0 0
Panton	2,136 19 9
Pylus	2,103 8 0
Bridges & Robson (accepted)	1,650 0 0
Coxon	1,943 18 9

Hot-air Apparatus.

Lewis & Co. 35 0 0

For new business premises, High Wycombe, for M. J. G. Pearce, Mr. Arthur Vernon, architect:—

Hunt	£1,000 0 0
Loxley	1,003 10 0
Spicer	1,800 0 0
Ward (accepted)	1,700 0 0

For alterations and additions to house and premises, Boston-road, Brentford. Mr. John W. Smithies, architect:—

Gibson	£1,068 0 0
Nye	820 0 0
Bostel	778 0 0

TO CORRESPONDENTS.

W. E. C. (we do not give prices, which, simply stated)—T. T. (we have already alluded to the representation). We will illustrate the proposed design.—J. G. G. (shall have attention). E. H. L. B. (ditto)—J. W. (we mentioned the establishment of such a library not long ago)—A. E. F.—A. V.—C. E. F.—M. P.—V. T.—B. W. J.—H. H.—J. W.—W. G.—H. W. W.—W. W. L.—B. F.—W. G.—H. R.—McN.—S. & T.—W. S.—J. L.—F. W. S.—J. A. W.—B. & Son.—T. B.—W. A.—S. S.—J. D. (yes, to a certain extent).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, bids of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

Note.—The responsibility of signed articles, and papers read at Public Meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

	Situations	Situations
	Wanted	Facing
S lines (about fifty words) or under	2s. 6d.	4s. 6d.
Each additional line (about ten words)	6s. 6d.	6s. 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to residents in any part of the United Kingdom at the rate of 12s. per annum, *Advance in Advance.*

Half-yearly advance accepted for amounts not less. Any larger sum should be remitted by Money Order, payable to the Proprietor, King-street, Covent Garden, W.C. to DODD & FOTHERINGHAM.

NOTICE.—All communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent Garden. All other Communications should be addressed to the "Editor," and not to the "Publisher."

Bath Stone of best quality.

RANDELL, SAUNDERS, & CO. (Limited),

Quarriesmen and Stone Merchants.

List of Prices at the Quarries and Depôts; also cost of transit to any part of the Kingdom, on application to

Bath Stone Office, Corsham, Wilts. [Advrt.]

STONE BROTHERS,

Bath Stone Merchants,

supply direct from their own Quarries:—

Box Ground, Corsham Down,

FARLEIGH Down, Corsham Down,

AND STONE GROUND.

Prices on application at Bath-stone Office, Bath,

London Depot, G.W.R. Mileage Station, Paddington.

Stone Dressings prepared ready for fixing. [Advrt.]

Whitland Abbey Green Slates. These

Quarries are now fully opened out, and are

producing Slates in all sizes, and in any quantity: sound, and of choice green tint. Orders

can be executed without a day's delay.—For

samples and further particulars, apply to the

MANAGER, at the Quarries, Narberth-road,

R.S.O. [Advrt.]

Asphalte.

Seyssel, Patent Metallic Lava and

White Asphaltes.

M. S T O D A R T & C O.

Office:

No. 117, Cannon-street, E.C.—[Advrt.]

The Savile Street Foundry and Engineering Company (Limited), Savile-street

East, Sheffield, Engineers and General Founders,

supply all kinds of Gas and Water Pipes, Valves,

and every description of Builders' and Contractors'

Castings, Girders, Columns, &c.; Cranes, Crabs,

Derrick Hoists, Lifts, and Machinery. [Advrt.]

Bills of Quantities, Specifications, &c.,

Lithographed by ROBT. J. COOK & HAMMOND,

29, Charing-cross, S.W., with accuracy and

punctuality. Plans and Drawings Copied,

Traced, or Lithographed.—[Advrt.]

MICHELMORE & REAP,

Manufacturers of

CHARLES COLLINGS PATENT

COLLINGS PATENT HINGES,

LEVER, SCREW, & BARREL BOLTS,

and IMPROVED GATE FITTINGS of every Description.

361, BOROUGH ROAD,

LONDON, S.E.

PERFECT DAYLIGHT.

WHY BURN GAS?

CHAPPUIS' REFLECTORS

IMPROVE NATURAL DAYLIGHT
AND SUPERSEDE GAS.

P. E. CHAPPUIS,

PATENTEE AND MANUFACTURER.

No. 69, FLEET STREET, LONDON.

The Builder.

VOL. XXXII.—No. 1625.

Some Branches of Ancient Art Work.

T has not unfrequently fallen to our lot to invite the attention of our readers to various branches of antique art. We have spoken of the general aspect of the antique, as a main department in the education of the artist; and, moreover, as coming under practical question when the progress of decay becomes such as to render utter disappearance the only alternative offered to those who refused any, even the humblest, restoration, or rather conservation.

Especially we were led to dwell upon the subtle and uncommunicable spirit that yet lives in the marbles of Greece; perishing as matter of chemical composition, but immortal, as embodi-

ments of lofty, poetic idea, so long as a fragment remains without crumbling into dust. We have spoken of "motive," and of "character," as these words have meanings of their own in the vocabulary of the real student of art; we have, more recently, touched upon the important subject of proportion, although only to indicate the wide, and not inaccessible, field of research that here lies open to the student. We have glanced at the essential elements of those three styles, or rather three requisites of perfect style, in art, which are known by the terms of Realism, Conventionalism, and Idealism. And we have seen how, again and again, in the history of art (as has been the case in many other branches of human study and contemplation), men of culture that were special, but not catholic, have fancied that they were founding schools, when they were only neglecting principles. We have glanced at the subjects of colour and of shadow, as the special elements of the genius of the painter and of the sculptor. Above all, we have been impressed with the idea that the very central essence of the excellence of ancient art, as embodied during the brief period of its apogee, is the attribute which we have denominated its grandeur. Without making any pretence to an exhaustive treatment of these important portions of a general theory of art, within the limits proper to our columns, we have yet endeavoured to supply something of a guide to a more detailed and comprehensive study, than is possible without some attempt to grasp the general outline of those main principles which are latent (if not vividly embodied) in all true art.

It may be well, in the pursuit of this train of ideas, to fix on the mind the nature of those distinct branches of art, the pursuit of which, in classical times, is proved by the existence of relics, or indicated by the references to be found in literature.

It is, of course, as to the architecture of Greece, that we are able to speak with greater

precision than in the case of most other branches of art. This may be characterised as having attained that stage of development at which a style, originally and essentially proper to a wooden structure, had attained perfection under the hand of the mason; while, at the same time, it had not given birth to any example of truly masonic construction, such as that of which the later discovery led to the grandeur of the semicircular arch, and the graceful delicacy of the Pointed Gothic. As to painting, we are almost entirely left to that kind of reflex opinion that is formed from the testimony of those writers who have described the effects produced, but not the mode of their production. A particular branch, however, of the painter's art is illustrated by the fictile vases of Greece, Magna-Grecia, and Etruria. To the earliest specimens which we possess of the archaic period of this ceramic work (which are vases from Athens, Corinth, Melos, Rhodes, Etruria, and Southern Italy), it may be rash as yet to attempt to assign a date. They are chiefly ornamented with patterns which are called geometric, but which probably originated in an attempt to represent wickerwork. Primitive representations of goats, birds, and horses, succeed; although they are at first but sparingly introduced, and are drawn in the rudest manner. The colours employed are brown on an ash-coloured ground. Purple and white are, a little later, combined with brown. Bands of ornamental patterns next make their appearance, and compartments, containing a geometrical figure, a flower, or an animal, are arranged in a manner that recalls the idea of the metopes and triglyphs of a Doric temple. Later, we find crimson and white mingled with the brown, and animal and human forms more freely introduced. Later yet, we find vases painted in black and crimson, with incised lines, on a cream-coloured ground. In some of them rude inscriptions enable us to recognise the representations of the heroes of the "Iliad." The latest vases of the Archaic period, which come down to about B.C. 440, exhibit a design painted in black on a red ground, the outlines and inner markings incised, the details picked out with crimson and white. In these vases the red ground is produced by a glaze painted over the clay. The mouth, handles, and unornamented parts of the vase are painted with a black varnish, more lustrous and durable than that of the earlier examples. The representation of the human figure, in action, becomes more and more the central object of the design.

As we advance to the finest period of art, we find the body of the vase painted with a black lustrous varnish, the figures having been first roughly marked out in the clay, and then more carefully finished, after the black background was filled in. The details of the costume, and the inner markings of the anatomy, are given by black lines; and as the drawing (as in the later case of *majolica* ware) had to be executed on the wet clay, great artistic freedom of hand found room for display. The composition gains in simplicity, the figures being represented as much as possible on the same plane, and the faces given in profile, as in the sculptured reliefs of the period. The vigorous and bold proportion of the female type, which forms a feature of the School of Phidias, is characteristic of the finest period of art.

Connected with the painted vases, are those of *terra cotta* ornamented with high relief, or even with some detached figures. The best examples we possess of these are from Magna Grecia; but from the imperishable nature of the material it is probable that much of this work may yet reward the toil of research. The life-like character of these statuettes is at times perfectly surprising.

From work in clay the natural advance of the sculptor's power led him to turn to the nobler

material of marble. With reference to this, however, it may be proper to glance at the statement of Winkelmann, that the modelling of the Greek sculptors was executed in wax, and that the use of clay was comparatively modern. We think there can be no doubt that this is a misapprehension, such as often arises when those write on art who may be deeply imbued with its spirit, but who have little practical acquaintance with its procedures. The use of clay as a plastic material goes back to the very commencement of history. The potter is one of the very oldest of workmen; and specimens of his work,—bricks, vases, lamps,—rising from the rudest simplicity to something of highly ornate character, very far antedate the most archaic relics of Grecian sculpture. But it is extremely probable that, for casting in bronze, wax was employed before clay. To melt the core, and leave the mould fit for the reception of the metal, was a far simpler process than any by which a solid core could be removed. And it is true that, in the modelling of many antiques, there is a mode of handling that tells rather of wax than of clay. That a statue which it was intended to produce in metal, should be modelled in wax, whether in the first instance, or after a sketch in clay, is therefore an extremely probable hypothesis, not only from the testimony cited by Winkelmann, but moreover from this practical point of view. But that the Greek sculptors did not primarily model in clay does not follow from the admission; nor do we take it to be credible as a fact.

A distinct branch of sculpture, of which all examples, and nearly all representations, have perished, was the chryselephantine work. All our own examples of what we may call compound sculpture hold rather to decorative, than to fine, art. We have no warrant, however, for doubting the purity of the taste of Phidias; and when we find that this great sculptor considered that his noblest work was executed in gold and ivory—the colossal statue of Pallas—we can only regret our inability to form any just conception of the effect. We should have been as unable to appreciate the grandeur of the sculpture in marble of the finest period, but for the precious fragments we possess.

Miniature sculpture forms the next branch of antique art. The beauty of some of the gems cut out by the most famous artists is surprising. Our most reliable examples are, however, the glass copies, which the engravers produced, on the completion of some excellent work, for general sale. These it has not been thought worth while to forge; so that the questions which rise at every step in this department of research into the antique are avoided with these humbler, yet authentic copies. There is a head of Hercules, a cameo in chalcedony, at the Museo Borbonico at Naples, which, though damaged, is equal to any production of ancient art. The likeness of Alexander the Great, by Pyrgoteles, is another famous instance of this microscopic sculpture. But definite proportion has not been adhered to by the artists of gems. If the best of them are photographically enlarged, this fact becomes most apparent.

Metal work was, in all probability, the field in which the highest triumphs of ancient art were attained, when we regard delicacy, as well as grandeur, of execution. There were limits to the range of the sculptor, in marble, which he could overleap when he wrought in bronze. Thus the reduction of the ankle to its proper size is a process attended with such risk, when, as in the Apollo Belvidere, or the Venus de' Medici, the main weight of the statue bears upon one foot, that proportion has, in such cases, been sacrificed to safety. The left ankle of the Apollo, on which much less weight is thrown than on the right, is an inch smaller in girth than the corresponding dimensions of the other limb. The ankles of the Venus de' Medici



are the only exceptions to the perfect symmetry of the figure of that goddess, below the chin.

The artist who works in metal commands a wider range than any other description of sculptor. This is the case for more reasons than one. Size ceases to be a limit to his imagination. For, on the one hand, he may attain a magnitude that is colossal, as in the case of the famous sun-god at Rhodes; and on the other hand, he may descend to the most subtle delicacy of the goldsmith's touch, as in the shield of Achilles, the Homeric description of which is a proof of the great antiquity of this beautiful branch of art. Again, the worker in metallic relief approaches the confines of painting; and in some cases, such as in the instance of the celebrated "Gates of Paradise," executed by Ghiberti, the modeller displays a style, at once sculptural and picturesque, that is entirely his own. The power of employing both the modelling tool, in the first instance, and the chisel, the hammer, and the graver, afterwards, is also a special gift of the metallurgic sculptor. Chamber sculpture probably thus originated. The *statuette* is essentially a work in metal; the utmost delicacy of finish being here attainable, without that danger of frittering away which arises in treating the less trustworthy marble. But beyond all this, there is an intimate reason why sculptors should have felt, rather than have argued, that bronze was the material in which their art can attain its highest triumph. Marble sculpture is not, as a rule, original. Michelangelo, indeed, attacked the solid block with a sort of inspired fury, and hewed out his vehement idealisations without preliminary model. In the courts of South Kensington is to be found a most interesting proof of this habit, in a female bust from his hand, of which one eye is open and the other shut,—a tentative alternative which any other man would have tried in clay.* But marble statues, as we know them, are copies, and to a great extent mechanical copies, of clay models. The only other mode in which we can regard sculpture in stone or in marble, is as an ennobling of work in wood. Greek archaic sculpture denotes this origin for the art of the eiconist. In the stone carving of India we can trace almost the very steps of the transmutation of the art. But with the worker in bronze a mechanical step is avoided. The melted metal takes, of its own accord, as it were, the form impressed on the plastic material. In the great contest which every true sculptor feels to be ever going on between expression and finish, the power of the first is most characteristic of clay—the beauty of the latter is the glory of marble. But it is as a modeller, rather than as a hewer, that the copyist of the human form, especially in and under life-size, most happily succeeds; and not only so, but the lines of sculptural composition, the true containing curves, suggest themselves, in a great measure, in the clay. The temptation to a boldness which is out of keeping, is at times irresistible to a worker in wood; it does not occur to the worker in clay. If we contrast two very different figures, the Apollo Belvidere, and the Paul in the new redos at Westminster Abbey, the difference between the style proper to clay and that natural to wood will be seen at a glance. Each figure stretches out an arm, which directly projects from the general containing lines of the form. But the projection which is easy in wood (and which, moreover, instead of being grand and imposing, is simply awkward) involves, in clay, the addition of some extraneous support (unless iron bars be of set purpose introduced). Hence the falling drapery of the *chiton* of Apollo presented itself as a natural portion of the figure, when modelled in clay. The degree of dignity which is thus given to the statue can be estimated, if we so far obscure it to the eye as to be able to regard it as entirely undraped.

The works in metal of antiquity were thus, especially if we regard their great number, as well as their attainable and obtained excellence, by far the most important of all. There is good reason to hope that many of these works yet remain to be discovered. Among the most exquisite productions of human art may be named a wearied Mercury, in the Museo Borbonico, in which the expression of fatigue on the face, no less than the modelling of the entire figure, is of unapproachable truth. In the British Museum perhaps the very finest bronze is a *statuette* of Neptune, dug up in Epirus, which, with the exception of the right arm, and of the emeralds or garnets which once formed the pupils of the eyes, set in a silver

cornea, is perfect. Its modelling is of the grandest style; and the earth in which it was long buried, instead of producing that thick and mouldering verdigris which characterises bronzes dug from volcanic formations, such as tufa, has produced a lovely green *patina*, resembling fine unvened malachite.

Were we to select a specimen of that which is noblest in the metallurgic art of Greece, so far as relics are in our possession, or come within our knowledge, we should cite the fine tetradrachm of Lysimachus, which is in the gem-room of the British Museum. The art of the metallist has here attained its supreme expression. It is the case, historically, that the *apogee* of the art of the gem-cutter and of the die-sinker, by no means coincides in date with the noblest triumphs of the sculptor. It is not difficult to account for this circumstance. The decay of the highest excellence of sculpture has been, not only coincident with, but to a considerable extent influenced by, the advance in manipulative power. Overdelicacy of finish detracts from grandeur. This is the case in the noblest work of the Divine Artificer,—the human form. The exquisite delicacy which is the characteristic of feminine beauty, is not so consonant with grandeur of type, as the hirsute veil which man seems to have retained from the period when he was the rival of the lion in searching for his food. The emotional delicacy of the lips and chin of the Cupid of the Vatican, or of the *Psyche* of the Museo Borbonico, has not the grandeur of the bearded mouth of the Jupiter of Oriccoli. The two elements of the beautiful differ. They differ as much as do Justice and Mercy. What has a real cause in nature is easily exaggerated in art. Thus we find, from the time of Pericles to that of Alexander, delicacy of finish, and even that apparent boldness of execution which is the result of prolonged and almost infinite labour, to be continually on the increase, at the expense of the element of grandeur.

With the worker in miniature, however, the advance in manipulative skill is actually an advance in merit. He must rather translate than create. His noblest work is portraiture; when he reproduces, for the constant delight of the taste, some famous work of the sculptor, he does not give a proportionate reduction. We can speak with certitude on this point. By means of the camera we can reduce at will with absolute proportionate exactitude. The result is not happy when carried far. And when we attempt the reverse process, and enlarge, by means of the camera, the most beautiful gems, we find disproportion that is absolutely ludicrous.

The artist in miniature, then, has to seize the salient points of his subject, and so to treat the whole as to make the sublimity of the minor traits harmonise with a nervous treatment of the essential. This is an effort of genius so different from that which produces a statue of life-size, or even a reduction to half size—which is one of the most beautiful scales on which the sculptor can work—that it might naturally be expected to be somewhat later in its development. Such, at all events, has been the case.

In the coin that we have mentioned are combined all the elements of the very highest excellence. We say little of the character of the metal, although there is something in silver, as a material, that is unrivalled by any substance, unless it be bronze that has acquired an unusually fine patina, such as that of the Paramebian *statuettes*. But, fine as the silver tetradrachm undoubtedly is, a plaster cast (such as the admirable public spirit of the authorities of the British Museum allows any one to obtain from them for a few pence) shows the beauty of the modelling far more apparently than does the coin itself, or its reproduction in electrolytes.

The coin is of the diameter of 1½ in., and of the weight of 236 grains Troy, having lost only four grains from the original weight of the tetradrachm. This alone is an indication of the excellence of its preservation. It bears, on the reverse, the legend *Lysimachos Basileos* (of King Lysimachus) in vertical lines, on either side of a seated figure of Athena, holding a winged Victory in her right hand. This figure is the prototype of the Britannia of our own copper coins. But the head on the obverse is that of Alexander the Great, the evidence of a wise reverence on the part of the Thracian King. The coin so far maintains the old "set" of the earliest "incused" money, that the reverse is hollow, and the piece, when new, would have lain perfectly flat on a table if placed reverse downwards, the field being recessed so as to give the due relief to the figure. This allows of an

extraordinary boldness on the obverse; and the most prominent part of the design, the conventionalised ram's horn, which indicates the divine parentage of the great conqueror, rises to about double the thickness of the field. This full relief admits of a bold and perfectly accentuated treatment of the profile, of a deep shadow for the eye, the lips, and the nostril, and a deeply cut rendering of the curling locks, and of the Persian diadem which confines them. At the back of the profile, the hair, and the ends of the diadem, float over the field of the coin, into which they almost sink, vanishing by a delicate shadow line. The authenticity of the portrait is avouched by the peculiar angle of the throat, which combines with the other elements of Grecian masculine beauty to give to this representation of the great conqueror a beauty that is not only living, but unique.*

ON THE PROPOSED CHANNEL TUNNEL.

At the Society of Arts, Adelphi, last week, Mr. Wm. Hawes, F.G.S., read a paper on this subject, in which he entered fully into its geological, engineering, and commercial aspects.

It appears to be generally acknowledged that the only place where a submarine tunnel can be made, with a due regard to safety and economy, is through the grey chalk which stretches across the straits between Dover and Calais; and this being admitted, it only remains to show the cost of, and the time required for, the construction of a tunnel of such dimensions and length as to be practically available for general traffic.

First, as to time. The application of the machine for tunnelling through chalk or any soft strata, invented by Mr. Brunton, a model of which is on the table, will so reduce the time required for the excavation of the tunnel between Dover and Calais, that the period for the completion of the twenty-two miles may be determined almost to a certainty. At Snodland, near Maidstone, where it has been tried, a heading of 7 ft. in diameter was driven at the rate of one yard per hour. This rate, supposing the work to be begun on both sides of the Channel, would require only two years to drive a driftway from 7 ft. to 9 ft. in diameter across the Channel, allowing for delays and casualties which always occur in works of such magnitude, we may safely say it would be easily completed in two years and a half.

With such a machine, the cost of the excavation of the driftway may be accurately estimated. The cost of the tunnelling machines, the air-pumps, and pumping engines for drainage and for raising the chalk as excavated, can be easily determined. The hand-labour to be employed is also capable of accurate estimate, and would be limited in the cost and the time required for its execution, by its practicability, and has, therefore, demanded the most serious and careful consideration by Sir John Hawkshaw and Mr. Brunton, as well as by their French colleagues.

The driftway being completed, the cost and the time required for its enlargement to the size of a railway tunnel could also be as easily estimated; and it may be assumed that should the driftway be driven successfully one or two miles under the sea, the enlargement might be begun without waiting for its completion across the Channel.

If this course be pursued, the entire work may be completed in five or six years, and at a cost of from eight to ten millions of money; but until the driftway be carried a certain distance under the sea, it is almost impossible to give more than a general idea of the time which would be occupied in completing the work, or the expenditure it would involve.

The shafts on each shore will be sunk to the depth of 450 ft. below high-water mark. From the bottom of the shaft driftways will be driven for the drainage of the works whilst in progress, and for its permanent drainage after completion.

The tunnel will commence 200 ft. above this driftway, and will be driven at an inclination of 1 ft. in 80 to the junction with the drainage driftway, and then at a gradient of 1 to 2,640 to the centre of the Straits, where the tunnel from the English shore will meet that driven

* It ought to be generally known that electrolytes and plaster casts of the coin in the British Museum are obtainable, by permission, from Mr. R. Ready, of that institution. We have reason to speak well of the fidelity and beauty of Mr. Ready's reproductions, and of the low price at which they may be obtained.

exactly in the same manner from the French shore, and being united with it, will complete the submarine railway under the Channel. The drainage will be from the centre of the tunnel to either end.

At present, I have only referred to ventilation during construction, respecting which, so long as the excavating power is obtained by the use of compressed air, there is no difficulty. The results obtained during the construction of the Mont Cenis and St. Gothard tunnels are conclusive on this point. But for the ventilation after completion I will confine myself to the statement of our distinguished engineers, and there can be no difficulty in obtaining by mechanical means a steady current of air through the tunnel at all times, quite sufficient to maintain the purity of the atmosphere. The exact method by which this will be accomplished need not be stated at present: it is sufficient to know that there is a general agreement of opinion by the English and French engineers as to the facility with which perfect ventilation can be maintained.

The net revenue Mr. Hawes estimates at 732,000*l.*, or 7½ per cent. on 10,000,000*l.*

Let us now consider, he continued, how this great work can be accomplished.

There are two distinct steps to be taken. The first, to raise sufficient capital to make the driftway, to test the practicability of the greater work; and the second, when this is proved to be practicable, both on the score of expense and the time required for its completion, to find capital for the enlargement of the driftway into a submarine railway tunnel.

To accomplish the first, or preliminary portion of the work, 160,000*l.* must be raised. Half of this should be found by France and other European States, the other half in England.

If 650,000,000*l.* have been raised for railways without any assistance from Government, because the population have required the convenience and facilities its expenditure affords, is it being too sanguine to expect that 8,000,000*l.*, or even 10,000,000*l.*, will be forthcoming to perfect the present mode of transit across the Channel?

These figures apply only to this country. It is proposed, then, to establish in France and England companies to raise 160,000*l.*, and to begin the works on both sides at once; and so soon as the driftway is bored a sufficient distance under the sea to prove the accuracy of the calculations of the English and French engineers, and the practicability of the work, it is proposed to take measures to bring this great undertaking before the various Governments and capitals interested in its success, with a view to the ultimate provision of capital for its completion.

After the reading of the paper, a discussion followed, in which Sir John Hawkshaw, F.R.S., Mr. J. F. Bateman, F.R.S., Mr. R. Rawlinson, C.B., and others took part.

THE CONSERVANCY OF THE CITY AND RIVER.

Great damage and inconvenience have been caused along the thickly-inhabited borders of the Thames by the high spring tide of the 20th inst., which appears to have been one of the highest on record. It is said that the danger was predicted on the 6th of January last by Captain Saxby, who named the tides of 20th March and 18th April as the highest that might be expected. As a rule, the poor people who were flooded by the 4 ft. to 5 ft. of water which invaded their dwellings had their furniture and bedding spoiled, and the lower stories of their houses defiled and made unwholesome by mud; even the sewers burst in beneath them; and they had to adjourn to the upper parts of their houses for the time. Much damage has also been done at the wharfs, and in warehouses and other business premises along the banks of the river. Similar floodings have occurred in many places along both the east and the west coasts of the country. Surely the police will extensively distribute precautionary warnings as to the 18th proximo. Better a false alarm than want of precautionary measures on that occasion.

The damage occasioned by the late overflowing is sufficiently serious in extent to call for more than a passing notice. It calls for comment with a view to remedy, and the prevention of its future occurrence as far as possible. The inundation of large tracts of land,

particularly of the river-side portion, is a casualty of frequent account in the annals of London. We have often heretofore reaped, and probably will again reap, the fruits of our neglect of the Thames and its tributaries, be these feeders, mountain streams, main drains, or town sewers. It has taken London upwards of one thousand years to learn the science and estimate the importance of embankment. There exists no necessity at present of going back for citations to the period of the Roman occupation to find precedents or examples for pointing a moral. Our own ancient City magnates, from at least the thirteenth century, were fully conscious of the wrong that was perpetrated upon Father Thames, and they made several ineffectual attempts to save our noble river from pollution. From the date, not merely of the council which was elected in the City in 1347, but for some years anterior, the conservancy of the river was a matter of serious concern, and troubled the minds of the civic rulers not a little. Repeated bye-laws were passed, kindly intercession was enlisted, and proclamations, monarchical and corporate, were put forth in every reign, from the third Edward to the fourth George, but still the Thames continued to be polluted and treated as if it were only a scour for the filth of London. The old bye-laws of the City authorities proved inoperative, because they were not supported by any practical system of surveillance. The will often existed to do what was right, but the way was never properly pursued, because experienced, practical skill and scientific ability had no embodiment. Let us be just, however, to our old City masters, and cite one of their efforts, by way of proclamation, made and cried in the time of John de Stodeye, mayor, 31st Edward III., A.D. 1357:—

"Also it is ordered, that no man shall take, or cause to be carried, any manner of rubbish, earth, gravel, or dung from out of his stables, or elsewhere, to throw or put the same into the river Thames and Fleet, or into the Fosses around the walls of the city; and as to the dung that is found in the streets and lanes, the same shall be carried and taken elsewhere out of the City by carts, as heretofore, or else by the rakers [the rakers or street-sweepers], to certain spots, that the same may be put into the *dongebotes* [dung-boats], without throwing anything into the Thames; for saving the body of the river, and preserving the quays, such as Dronigate, Queenche and Castle Baynard, and elsewhere, for lading and unloading; and also for avoiding the filthiness that is increasing in the water and upon the banks of the Thames, to the great abomination and damage of the people. And if any one shall be found doing to the contrary hereof, let him have the prison for his body, and other heavy punishment as well, at the discretion of the Mayor and of the Aldermen."

There were other provisions made at the same time, for the prevention of nuisances in the city, and before the doors of the citizens living in the streets or lanes. Now, if the spirit or words of the above proclamation, and several similar bye-laws, passed by the city authorities, had been kept in force, it would not have remained for us to witness in our time, nearly five centuries later, the still worse pollution and abomination of the Thames. Alas! the good intentions of the early City Fathers were but seldom carried out, or, if carried out, it was only for a short period. The evil grew with the age and commercial importance of the river, until it attained a magnitude that required more than bye-laws or proclamations to put it down. Even when, in later times, a stop was put to scavenge contractors and others throwing cart-loads of all sorts of refuse into the river, another and as great an evil almost existed in the matter of city drainage, which received hardly any check until within our own memory. The filth and drainage of the Moor, the city ditch or foss, and the tributary and long-continued humble nuisances of the Fleet and the Wall Brook through some ages played sad havoc with the Thames. Accumulating nuisances growing larger and larger, every year helped to lift up the bed of the river considerably, and impeded its navigation. Inundations were to be expected, and, though always dreaded, they were as inevitable as eclipses. As the bed of the river became elevated, so did the city, though not exactly from the same causes, though in both cases there were similar agents contributing their quota. It would be a curious problem to solve, what degree of elevation takes place each century in the plane of London. Lately, when excavations were made for a public building near to the Mansion House, in Queen Victoria-street, a black silt was reached on the old course of the Wall Brook, at a depth of at least 30 ft. Making a reasonable deduction, we may calculate at least, by the site of the Roman pavement, that this portion of the City, including Cheapside as well, has been elevated since the Roman occu-

pation, 20 ft. to 25 ft. at least. Many of the ancient brooks, and streams, and drains of the old City are, without doubt, absorbed, and their disappearance can be explained in no other way than by mere drying up. The course of some is entirely changed, and that of others is buried perchance at a depth of from 30 ft. to 40 ft. below our present pavement in different places in the City. We do not hesitate to say that there are many subterranean ancient streams and sewers belonging to old London whose course now is far below the present bed of the Thames. Occasionally, in excavating for the piers of bridges in tidal rivers, subterranean streams and sewers are tapped, which in former years gave no small trouble to bridge-builders by their welling forth. The colour and taste of the water proved to a demonstration what they were.

The safety of the City from inundations in the future is an important matter, and this safety cannot be secured until the Embankment of the Thames is a completed work on both sides of the river. Confining the subject within due limits, and looking at the matter as a nineteenth-century undertaking, we think the want of the time demand that the Embankment of the river on both sides, as far as London Bridge, should be performed. The principal objects to be obtained by embanking the river is to retain a proper volume of water in the bed of the river to regulate the conditions of its flow, and to prevent inundations. To properly secure these ends the main drainage and sewerage of the City, in view of the future as well as the present, needs to be attended to. The bed of the river must never be allowed to rise, but rather deepened more and more as far as is consistent with its embanking walls and bridges. There is, however, a danger to be avoided on the other hand in curtailing too much the width of a river, particularly a river like the Thames, which has ever been from the earliest times greatly affected by tidal causes. Mountain freshets and high tides are not rarely concurrent, and there is no way of anticipating their twin arrival. Our standard for river defences and embankments should be based not on high tides, but on extraordinary high tides. What boots it if for twenty or thirty years we are guarded against ordinary high tides, if on the following year millions worth of property is destroyed by a tide resching from a foot to eighteen inches higher? There is another matter which we cannot pass over without again adverting to. Public health and humanity demand that all underground dwellings should be abolished, and that under-stories and cellars should be used only for the storing of goods. By the river, at least, these precautions should be taken; and whatever regulations it may be necessary to enact, they should be strictly enforced. If the embankment of the Thames was complete between Chelsea and London Bridge, the dwellers on either side would have a right to be held free of all future damage by the overflow of the river, if such was occasioned by the neglect of the Conservancy Board, or other responsible authorities. The embanking of the Thames below London Bridge belongs to the great future, and it is a subject we do not desire to enter upon at present. Whenever that embanking takes place, it need not be for the purpose of a promenade, with parapet walls, but simply a broad line of quays on either side, whereby both public traffic and shipping interests would be equally accommodated.

NEW DOCK WORKS AT BIRKENHEAD.

UPWARDS of half a million of money is about to be spent on new works at Birkenhead, and a vast sum will soon be devoted to increasing the accommodation for shipping at the northern and southern extremities of Liverpool. The works on the Cheshire side of the river include a new wet dock, a graving dock, and a range of warehouses, and in an article on the subject the *Albion* gives some idea of the magnitude of the undertaking.

In 1873 the Trust asked Parliament for borrowing powers on account of works proposed to be proceeded with at the north and south ends of the dock system on the Liverpool side, and in the Act granting these powers it is stipulated that the proposed works at Birkenhead shall be completed within four years, otherwise the borrowing powers then obtained will cease. Shortly after the passing of the Act, the able engineer of the Board, Mr

George F. Lyster, received instructions on the subject, and he at once made preparations for commencing the works.

The sea-wall, a heavy structure of stone, will extend in a line with the existing river walls on the north and south sides of the basin. It will be founded on piles and concrete carefully deposited, the ground being exceedingly soft. Another wall will be erected inside the one facing the river, and the space between them will be filled up, thus forming a quay 175 ft. wide along the east side of the basin. The new dock will be 1,560 ft. in length, the average width 350 ft., and the area 12 acres. It lies between the Morpeth Dock, with an area of 11 acres, and the Alfred Dock, the area of which is 8 acres. Plans for the erection of an extensive range of sheds and warehouses on the quays surrounding the dock are now in preparation. A landing-stage, which will measure 352 ft. in length and 72 ft. in breadth, and which is in course of construction, will be moored in the river just opposite the goods station of the Great Western Railway Company, and will be connected with the quay by two commodious bridges. The works are progressing rapidly.

Accommodation for the overhauling of ships at Birkenhead is provided by two graving docks at the west end of the great float. One of these is 50 ft. and the other 55 ft. wide, the length in each case being 750 ft. Unlike the other public graving docks of the port, the wider one at Birkenhead has a gridiron on each side in addition to the ordinary central blocks on which vessels are usually laid. But these two docks, big as they are, do not meet the requirements of the shipping interests at Birkenhead. They will, however, soon be supplemented by a new graving dock which is to be constructed in their immediate vicinity. Nine hundred feet will be the length of this dock; its passage will measure 60 ft. in width, and its entire breadth between the surfaces of the quays will be 84 ft. It will be the longest graving dock on the Mersey estate, and, consequently, perhaps the longest in the world. Already the contract for the excavations has been let, and it is expected that the masonry will shortly be commenced.

Perceiving the necessity that existed for warehouse accommodation in Birkenhead, the Dock Board recently decided on building warehouses in the neighbourhood of the Morpeth Dock for the reception of general cargoes, and the work of erection is now going on. The block—which, when completed, will consist of three floors above the level of the quay, and vaults below—is 165 ft. long and 104 ft. wide, and the superficial area will be 2,640 square yards. Brick, wood, and iron are the materials being used in its construction. It will be furnished with every mechanical appliance necessary to facilitate warehouse traffic. A special overhead connexion between the sheds on the south side of the Morpeth Branch Dock and the new warehouses will be provided. Merchandise can thus be removed direct from vessels in the dock to the warehouses, and without danger of damage by weather and other circumstances.

The whole of the plans of these extensive works were prepared by Mr. George F. Lyster, and they are being carried out under his direction.

PROPOSED GIFT OF A PUBLIC HALL TO STAFFORD.

A SUM of 1,500l. having been offered towards the erection of a public hall for the town of Stafford by Mr. Pochin, the town council met to consider the matter, and a long conversation took place as to the position of the borough with regard to the adoption of the Local Government Act and other matters. Mr. Pochin, thinking that the council had a great deal upon its hands, expressed himself in favour of a hall being built by means of a limited liability company, and towards such object he was willing not only to hand over the 1,500l. already given, but to take shares which would increase that sum to 3,000l., giving the interest accruing on that amount to the embellishment of the building, or any other public object. If the matter were taken up by the council at once, this sum would be handed over to them. The question now was, were they, as a council, prepared to carry out the erection of a hall, or was it to be left to private enterprise? If a limited liability company were formed, and 2,000 shares issued, he believed he could find twenty gentlemen in the borough who would become shareholders to the amount of 100l. each.

Mr. Cox proposed that the council do not further entertain the subject of a public hall, and that the 1,500l. be given into the hands of Mr. Pochin, to whose munificence he paid a high tribute. He thought there was not the slightest doubt that in connexion with a limited liability company 2,000l. could be easily subscribed.

Mr. Evans moved that Mr. Pochin's offer to the town council be accepted, and that a committee be appointed to draw up plans for a public hall, and, if practicable, for market accommodation.

After some further discussion, Mr. Evans's amendment was carried by thirteen to four.

Mr. Gibson then formally announced, in the name of Mr. Pochin, that unless a site for a town-hall was purchased, and plans advertised for within a term of three months, Mr. Pochin would withdraw his offer of 1,500l., and hand over the 3,000l. to be utilised by private enterprise. It was then decided that a committee of the whole council should take the matter in hand.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of the members on the 23rd inst., Sir G. Gilbert Scott (President) in the chair, the following gentlemen were elected—Mr. G. T. Molesey, of Bombay (Fellow), and Mr. H. J. Lanchester and Mr. W. Reddall (Associates).

Mr. Eastlake (Secretary) announced the death of Mr. Gill, of Bath, a Fellow of the Society, to whose high position in the profession the President bore testimony.

A letter was read from Major-General Sir T. M. Biddulph, K.C.B., addressed to the President, in which Her Majesty's gracious sanction was given to the recommendation of the Council of the Institute that the Royal Gold Medal for the year 1873-4 be awarded to Mr. John Ruskin, M.A.

Mr. W. H. White (Fellow) then read his paper on "Government Architecture in Bengal," part of which we print on another page. We will note hereafter the discussion which followed the reading of the paper.

THE DUBLIN MAIN DRAINAGE.

It may be remembered that some months since, when tenders were advertised for, the estimates sent in exceeded in amount by many thousands of pounds what the committee, even the engineer of the scheme, anticipated. The result was a reference back to the engineers to report; and then followed a modification of the original scheme. Some weeks ago, new tenders for the modified plan were advertised for, and there were eight tenders received, the lowest of which now turns out to be 428,000l., and the highest 526,000l. Seven contractors tendered for the whole work, and one for Nos. 2 and 3 contracts only. The committee is again placed in a dilemma, and have postponed their acceptance of a tender until the first Wednesday in April, pending the report of the two engineers, Messrs. Bazalgette and Neville, the latter being the borough engineer of the city. Matters have turned out just as we feared, and it is not unlikely there will be another long delay in the financial difficulty.

SANITARY MATTERS.

Wedgefield.—A special meeting of the Wedgefield Local Board, over which Mr. Owen, the chairman, presided, has been held, to hear from Dr. Ballard, of the Local Government Board, the result of his inspection of the district. Its unsanitary state was shown by the fact that during the past four years there had been 102 deaths from preventable causes. This in a population of only 3,700 was really very serious. Fifty of the deaths arose from the pollution of air and water by accumulated filth—the worst places being New Invention, New Cross, High-street, Church-street, Well-lane, and Wood-end. The flagrant want of the district was some system of sewerage, and though Mr. Rawlinson made the same complaint in 1849, the Board had never given the slightest attention to the matter. Attention was drawn to the large number of houses without pure water or proper conveniences, many being altogether unfit for human habitation. Then there was that "monster nuisance," Mr. Bradburn's works. Mr. Bradburn had added to the manufacture of artificial manure that of

sulphuric acid, phosphorus, and a process of copper reduction. Night-soil, Mr. Bradburn told him, was mixed with sulphuric acid, and he could not imagine a more horrible and disgusting smell than that which would issue from such a mixture. Dr. Ballard condemned in very strong measures these abominable nuisances, and said the medical officer of health of the district should be consulted, and if he certified that the works were a nuisance, then the Board should take steps to compel Mr. Bradburn to abate the nuisance. After making a number of general suggestions, Dr. Ballard was thanked by the Board.

Wells.—At a special meeting of the Wells Town Council the report of Dr. Parnell, the medical officer of health, and of the inspector of nuisances, was considered *seriatim*. The report showed the town to be in a most unsanitary condition, and noted the existence of nuisances in variety and extent that would equal those in many large manufacturing towns where the urban authority was lax. There were piggeries in close proximity to dwellings, insufficient closet accommodation, and no closets at all, untrapped drains, foul accumulations of manure and refuse, dirty unwholesome slaughter-houses, in some of which horses were kept,—in one the window of a privy opened into it, blood and offal polluted the precincts, and no proper receptacles were provided for blood and refuse. These are only a few of the nuisances unearthed by the sanitary officers; but in all cases the Sanitary Authority has ordered notices to be issued against the offending parties.

Willenhall.—A special meeting of the Willenhall Local Board of Health has been held to meet Dr. Ballard, the Local Government Board Inspector, who has been making an inspection of the district. Dr. Ballard alluded to the contents of several of the Medical Officer's (Mr. Hartill's) reports, and read extracts from them. During the past four years, he said, there had been 357 deaths from preventable diseases. It was well known that the spread of those diseases was associated with defective drainage, accumulations of filth and pollution of the air and water, and the Board had not taken steps to effectually prevent the spread of those diseases. He next referred at some length to the nuisances arising from ditches and open channels, which were filled with filth, thus preventing the free passage of the water. One of the chief faults in the sanitary arrangements of the district was the absence of a proper system of drainage, and he recommended that systematic sewerage should be adopted. The undrained parts of the town were most unsightly, besides being injurious to health, and the Board ought to give their attention to the matter. Clothier's-street was one of the filthiest in the district. Notwithstanding that the Medical Officer of health had called the Board's attention to various matters affecting the town, his suggestions had not been acted upon, and his reports seemed not to have met with the attention they deserved. Dr. Ballard went on to point out numerous nuisances which arose from accumulation of filth at Spring Band and locality. Many of the houses occupied by the poorer classes in the town were damp, filthy, and unfit for human habitation. The ashpits were badly constructed. There was a fair water supply, but there were several polluted wells in the Board's district. The pig nuisance was abominable, and although the Board had bye-laws they had not enforced them in respect of slaughter-houses. There had been some neglect by the Board in the sanitary administration, and he recommended that they should follow the advice of their Medical Officer. He gave a series of recommendations for the proper sewerage of the district, and the prevention of the accumulation of filthy matter.

Skelmersdale.—At the first meeting of the Skelmersdale Local Board it was resolved to appoint a medical officer of health for their own district at a salary of 20l. per annum. It was next resolved to advertise for a person to fill the office of surveyor, collector, and inspector of nuisances, applicants to state the salary they would require. The Clerk was directed to communicate with Mr. Edward Stanley, with a view of making arrangements with him to take water from Bath Spring. As soon as an answer is received from Mr. Stanley, the Clerk is instructed to communicate with Mr. Goodison, C.E. Liverpool, who will inquire into the water supply and report to the Board; but if a negative answer is received, that Mr. Goodison look elsewhere for a water supply.

ON GOVERNMENT ARCHITECTURE
IN BENGAL.*

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

WHILE it is of constant remark in India that, at home, little attention is paid to its affairs, it is also maintained by many Anglo-Indians that travellers are "the curse of the country." But although the former regret with justice that little is known in England of the Empire it is their business to rule, they seldom hesitate to fall foul of any rash visitor who dares to communicate unfavourable opinions he may form on a journey through the great dependency. Perhaps this is inevitable amongst an omnipotent aristocracy which has not long been accustomed to outside criticism. Unfortunately it is easy for the community criticised to fling back at the critics an isolated error, or a distorted fact, and thus cast doubt upon the accuracy of the whole critique, because the enormous area of Hindustan, the difficulty of verifying impressions, and the fact that what applies to one Presidency is often inapplicable to another, render absolute exactness on the part of the traveller a formidable task. To have lived exclusively in Calcutta or Bombay is likely to lead to very little knowledge of India proper; and to say that many of our countrymen, born in Bengal, and who have passed a large portion of their lives in it, have never cared to visit Delhi, Agra, or even Benares, is equivalent to saying that there are Scotchmen who have never seen London, and Londoners who have never set foot in Dublin. The opinions of such people are naturally as narrow as those of the general traveller are superficial; yet even if the latter be disposed to disparage some of the imported institutions of the country, he is sure to be astonished at the gigantic nature of the labour assumed in the government of so vast a territory. An Englishman of sufficient experience to compare his own island with continental countries is necessarily a proud man; but one who has also seen parts of India as it is to-day returns with increased pride and confidence in British honesty and capacity for rule. He may perhaps weigh in a mental balance Modern Britain and Ancient Rome, and waste a thought upon the remnants of Anglo-Indian palaces. But here he will do well to stop, especially if he be enabled to appreciate the present condition of building in Bengal; and if he have seen, or heard of, the vast civil and military constructions which, since the mutiny, have sprung up in different parts of the country, some to succumb beneath their own rottenness and the spontaneous disruption of their walls, others to be condemned as uninhabitable by commissions specially charged to examine them. Public works in India are generally designed and executed by the Government. In Bengal, under the late Viceroy, the civil and military works were separated and placed under the charge of distinct bodies of officials; but the reform has not been carried so far as to confine military engineers entirely to military works, or civil engineers exclusively to civil constructions. The military and civil engineers composing the Department of Public Works furnish India with public buildings, aqueducts, canals, tanks, fountains, railways, drains, roads, bridges, many scientific statistics, and much decorative art of every description. In money matters the Department has had, until lately, only to ask and have. In the science and art of architecture, as in the disastrous question of taste, it is still above control. Its organisation is so contrived that it is capable of undertaking a colossal public building, the decoration of a lady's boudoir, and the macadamisation of a road. It accepts the construction of a bridge or a tunnel, a thousand miles of road, rail, or canal with equal confidence; and each of its officers is expected to superintend, execute, or assist at, all or any of these varied works. That many of them fail is undeniable, but that the majority, like the rest of our countrymen in India, try to do their duty as equally undeniable. Nothing would be easier and nothing more useless than to hold up the engineers of Bengal to professional ridicule; but an attack upon a Department of Public Works is the last resource of literary destitution. I shall describe simply what I saw and experienced, in the hope that others may learn the lesson that has been taught me; and others perhaps will tell whether the manufacture of Govern-

ment architecture in Bengal assimilates in any way with that of Public Works at home.

There are few, I may almost say no, "practising architects," as we understand the phrase, in India. In Madras, Mr. Chisholm, a fellow of our Institute, is an Executive Engineer, styled by courtesy, Architect to the Government of Madras; in Bombay, Colonel Fuller, R.E., is a Superintending Engineer, styled by the same courtesy, "Architectural Executive Engineer and Surveyor"; while Mr. Molecey, an Executive Engineer, who to-night has been elected a fellow, Mr. Adams, and Mr. Stevens, are Colonel Fuller's assistants. Of these, Mr. Chisholm is the only one privileged to accept private practice. In Bengal, unless an appointment has been expressly made during the last year, there is no Government architect. Both in Calcutta and Bombay there are men who, educated as architects and engineers, are now contractors; and in their premises one portion is allotted to the "architect," just as others are devoted to the smith, painter, and carpenter. The Government sometimes invite them to offer tenders for the erection of public buildings; but however much the higher authorities may favour the contract system, my short experience in Calcutta led me to perceive that the Department itself was opposed to it, and that a call for tenders was seldom intended to lead to serious results.

British rule in the peninsula is directed by the Supreme Government, called the Government of India. Inferior to this are the local governments of Bengal, Bombay, Madras, the North-west Provinces, and the Punjab, which are presided over by Lieut.-Governors; while other territorial divisions, such as the Central Provinces and Oude, are ruled by Chief Commissioners. In the Government of India is the chief branch of the Department of Public Works, at whose head, in 1872, was a colonel of the Royal Artillery. He is the secretary and intermediary between the Lieut.-Governors and the Viceroy for all the affairs of the Department. Each local government has its particular branch of the Department of Public Works; and, in Bengal, during my stay, a civil engineer officiated as secretary, in the absence of the military holder of the post, an unprecedented circumstance. There is also in Calcutta a Mathematical Instrument Department, with another colonel at its head; and though it is said that only bad workmen complain of their tools, both civil and military engineers would be justified, to my mind, in attributing the avowed imperfections of their drawings to the terrible productions of that department, the functions of which could be better performed by any one of the extensive stationery warehouses in Calcutta, and, to all appearance, at a less cost.

The Bengal Department of Public Works is presided over by a Chief Engineer. Under him are Superintending Engineers, who each control what is called a Circle. These circles are cut up into Divisions, over each of which is an Executive Engineer, and under each Executive Engineer is an Assistant Engineer, under whom are Sub-Engineers, clerks of works, foremen, &c., while a host of natives complete the itinerary of departmental service.

The business of the Chief Engineer is necessarily general, as it comprises all Bengal. That of the Superintending Engineers consists of the verification of estimates, the examination of designs, and the supervision of all buildings and other works in course of execution within the circles they control; that of the Executive Engineers is to make the designs and estimates, order the materials, execute the works, and pay for them; that of the Assistant Engineers is to prepare the drawings and make themselves generally useful both in the offices and on the works. The Sub-Engineers, clerks of works, and foremen do what is implied by the name they bear; and native workmen perform the manual labour required in building enterprises. To sum up roughly,—the Assistant Engineer designs the building; the Executive Engineer builds it: thus the artistic portion of the work is made inferior to the mechanical part of it, the architect's functions are degraded below those of the builder—the latter being practically superior of the position, since he is the official master of the position, since he is the official superior of the man who best understands the design. The Executive Engineer as master of the Architect—his assistant—controls, where as a builder he should be controlled; and he often "measures up" the work he himself builds. If a mistake happens to be made, whereby a wall is put in the wrong place, or

built too high, or too thick, he is rarely called upon to alter it, because all such alterations must be effected at the Government expense. An Executive Engineer holds in his hand, as it were, the five orders of architecture, the building materials, and the public cheque-book, together with almost despotic control over his Assistant Engineer, the foremen, and workmen. It is indirectly in his power to alter, condone error, and spend indiscriminately—he and his Assistant being the only people really conversant with the drawings of the building in course of erection, since the visits of the Superintending Engineer, immersed in other business, do not often bring much practical benefit to the work; and, as you can readily understand, it is easy for men of the greatest experience to lose themselves in the confusion of walls and arches if they have not an intimate and personal knowledge of the plans, sections, and elevations of a large building.

If, however, the Superintending Engineer made the design himself and really superintended the work, as the title he bears would seem to demand, the system would assume a more logical aspect. If he were rendered responsible, morally and pecuniarily, the system would enter, if not follow, the high road to perfection; but the virtue of "if" under such a hypothesis would involve much change, and possibly the precipitated retirement of more than one high-placed official to whom seniority has been equivalent to promotion. The "general orders" are very precise about responsibility; and each engineer is understood to be responsible for his particular share of work; but it is difficult to define the limits of his share. The characteristic quality of all departments, regiments, and corporations generally, *esprit-de-corps* renders it almost impossible; for where all are willing to take general blame, none are likely to suffer individually. Indeed, to fix responsibility upon any particular officer under the system at present in vogue in Bengal would be a crying injustice, as the following illustrations will suffice to prove:—During the thirteen months I was in the service of the Bengal Government, two large public buildings were commenced. The plans, sections, and elevations of one of them, with an approximate estimate, having been approved by the Lieut.-Governor, were sent by the Superintending Engineer of the Presidency Circle to an Executive Engineer, with orders to prepare an official estimate, and to commence the works without delay; at the same time he was cautioned as to the precarious nature of the soil, and ordered to make plans and sections of the necessary foundations, the footings of which were to be calculated as regards width and depth, according to the weight of wall they were intended to carry. The plans and sections of those foundations, with a careful estimate of their cost, were in due time sent to the Superintending Engineer, approved by the Chief, and returned to the Executive Engineer with orders to begin. Those foundations were barely completed before a change was necessitated by unexpected circumstances. The Executive Engineer, who had given a great deal of conscientious labour to the study of them, and who was responsible for them, was suddenly despatched to the charge of a Division distant 1,000 miles from Calcutta; another was appointed to the post thus vacated, and the works proceeded. Now it is clear that if those foundations fail, as nearly all foundations have hitherto failed in Calcutta, the original Executive Engineer cannot be called to account, because his mantle of responsibility was transferred to the shoulders of the colleague who superseded him; while each of the many Executive Engineers who have doubtless continued, or will continue, the works can plead, in the event of the failure of any portion of them, that it is due to the foundations which their original predecessor executed. I must add, that the acknowledged architect of both those public buildings (compounded structures of no merit whatsoever) was not allowed to visit them while they were in course of erection; but his visionary responsibility was borne by the Chief Engineer who vacated his post almost immediately after they had reached their second story. Another illustration of the difficulty of defining responsibility and of the omnipotence of the heads of departments, is to be found in the New Imperial Museum in Calcutta, a building in the Italian style, with "ornamental" French roofs, the original design for which was made by Mr. Granville, at that time Civil Architect of Bengal. Some of the floors of that build-

* By Mr. William H. White, Fellow. Read at the Ordinary General Meeting, held on Monday, the 23rd instant.

ing were designed to be arched, and the passages vaulted. Soon after the works were commenced an order was issued to substitute iron girders in their place; and walls designed to receive continuous brick arches were weighted at intervals with enormous wrought-iron girders. The obvious consequences followed, and the building is cracked and ruptured in many places; while the public, with little means of learning the truth, believe that the failure is due to the incompetency of the architect, who, if I am not mistaken, has not seen the building since it emerged from the ground.

By imagining this repeated all over Hindustan you have the most gigantic system of manufacture ever carried out by any Government in the world. As a system it would be feasible if educated men were as conversant with science and art as they are with orthography and grammar. That up to the present hour it has failed, no one, not even the Department itself, attempts to deny. Just as the great Clive, charged before a special committee with the misappropriation of plunder, replied with pardonable audacity: "Mr. Chairman, at this moment I stand astonished at my own modernity." So, with equal reason, an Indian engineer might turn round upon critics who enumerate his failures, and say:—"Gentlemen, I am astonished that there are not more of them." That it is impossible to reform the system without improving human nature in general, and British cultivation in particular, admits of little doubt. Adam Smith said of India:—"It is a very singular Government, in which every member of the Administration wishes to get out of the country, and consequently to have done with the Government as soon as he can; and to whose interest, the day after he has left it, and carried his whole fortune with him, it is perfectly indifferent though the whole country were swallowed up by an earthquake." This is as true to-day as it was in the great economist's time. The peculiar circumstances of British rule necessitate government by Departments; and a Department, as a man who knew India has said, is the paradise of mediocrity. A member of one to succeed must sink his individuality in the general organisation of the whole machine. Even if the authorities, seized with a determination to have educated architects at any price, were to induce some of the leading members of our Institute to spend a few years in Bengal, disorder would be followed by chaos. A professional man to be of use in a Department of Public Works must hold the position of a Superintending Engineer. But to attain that rank is the work of many years, which must be passed in India away often from everything which, at home, promotes the study and development of art and science. To expect that a large body of men, who are giving the best period of their lives to Oriental service, are to cede coveted places to professional engineers or architects, is beyond the bounds of possibility. The reform of public building rests with the Department itself. My own experience showed me that if a Superintending Engineer could combine the qualities of a first-rate architect and a first-rate engineer, together with the business acumen of an educated builder, and the arithmetical speciality of a first-class surveyor, if by his constitution permitted him to spend a quarter of a century in India, and to regard his career there as something higher than a monetary speculation, he might perhaps succeed in erecting a few buildings worthy of British rule; but even if he accomplished so much, he must be heroic enough to dispense with artistic appreciation; or, at least, be satisfied with the little that can be squeezed out of the traditional apathy of an Anglo-Indian population.

II. Calcutta is a medley of stucco constructions, at once palatial and petty; dull in the brilliant setting of an Eastern sky; vulgar in the midst of dependent races to whom vulgarity is unknown. The streets are generally broad and the houses lofty, without, until lately, any excrescences to break a skyline monotonous from dilapidated balustrades, cornices, and copings. Before describing any existing buildings, I propose to consider, not what "style" is best suited to the country, but rather the requirements which it is absolutely necessary to satisfy; and the obstacles to constructive security, domestic comfort, and æsthetic excellence, against which it is necessary to contend. The engineer has to provide a dwelling in Asia for a superior class of Europeans, and it must recall the architecture of home. It must be composed of few and often inferior materials,

built by native workmen, under the guidance of those whose interest in it if it be not official is speculative; and who, in either case, are generally devoid of the ambition which often actuates client, architect, and builder in this country.

Houses in Calcutta must be placed with regard to aspect, north and south; because during the hot season the only breeze, except when a periodical "north-wester" springs up, is from the south. The windows and doors of all the principal rooms must be wide and lofty, and most of the former must face the south; or some means must be contrived to obtain direct southern ventilation. Each bedroom must have a bath-room attached to it on the northern side; and as the bath-rooms are water-closets as well, private stairs must communicate with them from the garden or compound for the passage of low-caste natives specially employed to serve them—the system of drainage not being extended to private houses, and, indeed, to only one or two of the new public buildings. Large staircases, passages, and ante-chambers are necessary on account of the number of native servants employed, two punkah-wallahs being stationed outside, sometimes each room in a house, both night and morning, all through the hot and part of the rainy seasons. A verandah consisting of broad openings with slender pier or columns, is required to protect the east, west, and south sides of a building, and it should be deepest on the southern side—the south verandah being the principal living-room for the members of a family while the sun is rising and after sunset, during at least six months in the year. A carriage porch must be attached to the entrance, and during eight hours of the day the inmates must be enabled to feel the largest possible amount of the external breeze without receiving the rays of the sun, or even a particle of its glare; because in India, light is heat, and one of the secrets of the Hindustani architects, consisted of a successful method of obtaining light without heat,—a method ignored or disregarded by India engineers.

The positive nature of the climate is antagonistic to European modes of architectural arrangement, both decorative and defensive. For seven months in the year a rain-water pipe is of little if any use; for the other five it is in constant exercise. The Government have therefore forbidden its use in public buildings; and many and strange are the devices employed by the engineers to drain their roofs and terraces within the letter of the law. Cornices and ornaments intended to catch the play of sunlight are not adapted for the reception of continued rain; and stone, or cement, saturated during twenty out of the twenty-four hours, is often injured by the burning sun, which bursts out between the showers. During the rains the public and private edifices of Calcutta present a pitiable spectacle; and the damp, unwholesome odour which pervades them, the effect produced upon objects of apparel, upon paper, and all kinds of furniture, serves to show that the precarious nature of Anglo-Indian existence is due in some measure to the buildings in which Europeans are compelled to dwell. The public offices, as well as the majority of private houses, are built without a basement story, or cellars; and a flat terrace-roof covers them. To be damp from beneath, from above, and from the four walls, is the normal condition of a dwelling-house in Calcutta, during at least four months in the year; while towards the close of the rainy season innumerable insects build nests under the verandahs and on the inside of the walls of bed and sitting rooms. To close the windows or doors of any room for the space of a few hours even in the best houses, is to invite every odour with which ill-begotten moisture can pollute the nostrils.

The terrace-roof of an Indian metropolitan residence is often a morning and evening retreat for many of its inhabitants. It might be made a "hanging garden" of the most charming description. Let me remind you that north-western India is essentially the land of the kiosk and the dome. The former is an exquisitely beautiful feature of indigenous architecture. It is a canopy, square, oblong, or polygonal in shape, in stone or marble (sometimes both), supported upon piers or columns, domed and shaded with overhanging stone or marble eaves. Some architect, with more or less reason, has lately erected two imitations of an Oriental kiosk on a building situated at the Middlesex foot of Blackfriars Bridge. If you have seen them, you can imagine the graceful originals grouped upon the house-tops of an Eastern city, and will perceive at

once how agreeable such retreats would be on summer nights and mornings, especially when protected by blinds or drapery of some kind. Yet, no engineer has yet attempted to adapt them to European use in India; and during my journey across that country, the only person I saw sitting beneath one—and one of a hideous, debased description—was the Nawab of Oudh on the top of his residence in Lucknow. The construction of the dome at a period coeval with our Middle Ages, seems to have been accomplished by Hindustani architects with peculiar *naïveté*. On the broad plain, ten miles long by six wide, which holds the ruined cities of Ancient Delhi there are numerous domes, large and small, some of which have already existed for six centuries; and if left undisturbed by men they may remain for six centuries longer. How they were built has puzzled, and still puzzles the world, or, at least, that part of it which knows them. If any one as a boy has put together a grotto with oyster-shells, he may possibly divine the principle, or absence of principle, which directed their construction, and which enables them to stand without ties or buttresses,—inert, without "thrust" of any kind. Now, although in these days of free trade nothing need astonish any one, it is nevertheless surprising that, in a land where the simplest, most logical, and cheapest domes have been constructed by native workmen, it should be thought necessary to use an Italian or a French adaptation of one; and, more, that the erection of domes so imported and constructed of imported materials, should cause inquietude in the breasts of European engineers, who sometimes frankly admit doubts whether their handicraft will stand or fall.

A want painfully experienced in Calcutta is a covered footway; every street in the capital ought to be lined with arcades or colonnades; and the foot passengers and others, descending from carriages into shops or offices, protected by a covering similar to that of the Rue de Rivoli in Paris, or the old Quadrant in London. It may seem extraordinary to advocate such a thing for an Eastern metropolis, but it is still more extraordinary to find that nothing of the sort exists in the European quarter of any Indian city.

The beautiful screens of perforated stone and marble, which abound in Hindustani architecture, are nowhere introduced in Indo-European architecture; yet the manner in which they were used at Agra, Delhi, and Ahmedabad, to counteract the rays of light and to receive light reflected upon adjoining walls, must be familiar to Indian engineers. It is true that in the present state of the communications the stone and marble quarries of the country are of comparatively little use, at least to Bengal. It is cheaper to import marble from England than to obtain it in India, unless of course it is required for the neighbourhood of a quarry. At the same time a cast-iron grating of home manufacture is often preferred, because it is English, to a marble grille of native work; and a simple Birmingham, which supplies the Hindus with both mistresses and idols, often sent out to them in the same ship, has firmer hold of Anglo-Indian sentiment than a dozen native cities, rich in art and innate artistic genius.

Among the building materials at the immediate disposal of engineers in Bengal are *teak* wood, brick, tile, excellent mortar, and *chunam* (this word is often applied generally to all kinds of plaster, mortar, and cement), which is a superior kind of *stucco*, and a cement, similar to that much used by the architects of Louis XIV., made of pounded brick. Iron, slate, terra-cotta, plaster, and cements are easily imported; artificial stone is made in Bengal, and stone of the best description can be obtained within easy railway distance. But of these, wood is a prey to the white ants; brick and slate are conductors of heat, and iron is considerably influenced by it; plaster, though a good non-conductor of heat is destroyed by damp; while ordinary cement cannot withstand rapid alternations of sun and rain. Though brick may be guaranteed from water by a coating of good cement the sun inevitably cracks the coating; and a crevice once made the rain penetrates between the cement and the wall, causing more injury to it than if it had never been cemented all. Consequently "honest" brickwork with a little stone bond and a few stone string-courses, is the safest kind of wall for a Calcutta house; but on condition that the wall be built *double*—that is, with a hollow space between an external wall (say two bricks thick), and an internal one (say half a brick thick), the latter to be plastered or cemented, and both

divisions to be connected at intervals with stone or slate slabs.

In a country where an absence of chimneys, kitchens inside the houses, gas-fittings, &c., preclude danger from fire, naked iron can be used with impunity, and with no other protection than paint can afford—at least in the interior of a building. To employ it, however, in the construction of verandahs and roofs exposed to the sun, and to electric action, cannot be too categorically condemned.*

BURIAL-GROUNDS IN SOUTH LONDON.

THE rapid and continual increase in the population of the southern suburbs of London is making itself apparent in the gradual filling-up of the cemeteries and burial-grounds. So large has been the increase in the number of interments at the Lambeth parish cemetery at Tooting, that the number has nearly doubled in the last eight years. This cemetery was opened in June, 1854, and between that date and the end of March, 1873, the total interments had exceeded 49,500. The private cemeteries at Lower Norwood and Nunhead, and the Camberwell Vestry Cemetery at Forest-hill, are also being rapidly filled up; and in view of the increasing value of land, the Lambeth Burial Board has for some time had under consideration the advisability of adding to the Tooting Cemetery. The original area of this ground was thirty acres, which were purchased at a cost of 9,000*l.*; the additional expenses incidental to the laying out of the ground, the erection of chapels and lodges, walls and fences, and the draining of the land amounted to 12,431*l.*, making a total cost in round numbers of 21,500*l.* To provide this sum the amount of 22,000*l.* was raised by way of mortgage on the poor-rates, the whole of which debt will be paid off by the vestry of Lambeth at the end of July next.

In 1869, it was proposed to meet the expected increase in the number of burials, and the consequent want of land, by the addition of four acres of land adjoining the cemetery, which was then available, but the price demanded was considered too high, viz., 3,600*l.*, or 900*l.* per acre. Recently, however, the opportunity has occurred of purchasing about 1½ acres of land, conveniently situated close to the existing cemetery, for 500*l.* per acre, or 5,728*l.* in all. To lay out this land, and properly fence and drain it, a further sum of about 3,272*l.* will, it is estimated, be required; making the total amount to be raised about 9,000*l.*

This sum will be raised in the same manner as the original outlay was met,—by mortgage of the poor-rates.

Of the original portion of the ground set apart as "consecrated," there only remains sufficient to accommodate the estimated interments for two years longer, while, at the present rate of mortality, the unconsecrated portion will only last another ten years.

The time is fast approaching for earnest reconsideration of our mode of sepulture.

THE ST. GOTHARD TUNNEL.

FROM a report of a lecture delivered at Venice by Professor Fubini we learn that the great work of tunnelling the St. Gothard has made a fair start at both ends. The use of dynamite in place of gunpowder is described as one of the greatest improvements yet introduced in this description of work, since it allows a large saving both of time and money as compared to the older explosive. But there are various modifications in the air-supply machinery lately introduced which add to the comfort and safety with which the work is carried on. The boring machine employed is the Belgian one of Messrs. Dubois & François, which is capable of giving from three to four hundred blows a minute, but a still more powerful engine will shortly be substituted for it. A chain of lamps down the centre of the tunnel brought, by means of a telescope, at some distance from the mouth, into a vertical line with set of posts carried straight over the mountain, assures the perfect correctness of the direction of the work, which, contrary to the advice of some engineers, will be straight throughout, and not 2,800 yards longer than that of Mont Cenis. The Professor is confident that the line will be completed in 1880, as promised by the engineer in charge, M. Favre, of Geneva, who is assisted in the purely scientific details by Professor Calladon.

VIBRATIONS OF RAILWAY BRIDGES.

ONE of the principal drawbacks attending the extension of the railway system in popular districts is the nuisance caused by the noise occasioned when a train passes over a bridge. In the ramifications of the railways throughout the large area embraced by the metropolis and its suburbs, it is indispensable that many roads and streets have to be crossed and viaducts carried in close proximity to numbers of tenanted buildings. When the Metropolitan Extension was being carried from Westminster, underground, to the Mansion House, the students and lawyers at the Temple stipulated for certain extra precautions to prevent the possibility of vibration in the superincumbent buildings; india-rubber and felt were placed in layers between the rails and the sleepers, and every care was taken to obviate the infliction of any nuisance on the learned and learning fraternity who had their chambers in the neighbourhood. But the greatest vibration caused by a train passing beneath the foundation of one's house is as nothing compared with that occasioned by the passage of the steam-horse and his heavy load over a viaduct carried on a level with one's chimneys; and this again is eclipsed by the additional horror of its sudden bound upon a somewhat lengthy bridge, whose arch echoes again and again the rumbling, roaring, thunder. A house situated near a bridge, such as those which occur every hundred yards, for miles before the train has accomplished its sinuous course through the outlying districts of London, is really uninhabitable save by those who have iron nerves, or whose ears are, happily, deaf to such sounds.

It has been said that the horses of the present age are degenerating; but a horse that can be so trained as to pass quietly under a railway bridge, while his iron competitor is tearing along overhead, is surely no degenerate creature. His nerves must be of iron, his temper must be excellent, his mettle must be staunch, his courage unflinching; while a lady who can pass coolly through such an ordeal would have been almost acclaimed a heroine in the Middle Ages.

But not merely on this ground are railway bridges a growing nuisance. In wet weather as in dry they are perpetually perspiring great drops of water, which generally fall, with unerring aim and some violence, on the hat or bonnet of the passer-by. People are taken to admire the curious formations of stalactites and stalagmites in the caverns of the Peak, or 'at the Giant's Causeway; but they need not go so far to see the phenomenon. Any one who has passed under a railway arch is conscious of the incessant falling of drops of water, which percolate through the bridge, and drip from a series of long finger-like formations, which have resulted from the particles of lime brought through with the water. Sometimes an extra heavy train sends a shower of these miniature stalactites into one's eyes, and not only are passers-by annoyed, but paths and roads are actually worn into holes by the fall of water. Where parish vestries are earnest in looking after the interests of those who pay road rates, and paving rates, they have called upon the railway companies to adopt some means of remedying this evil. The result has been the infliction of a still greater nuisance on residents in the neighbourhood. Sheets of galvanized zinc, or corrugated iron, have been attached as a sort of outer skin to the lower side of the bridges; and these, however efficacious their performance of the duty of intercepting the water, are an addition of tenfold the previous noise occasioned by the bridge. Surely the last state of that bridge is worse than the first. To the former rumbling, thundering kind of sound, is added a din caused by the rattling of the zinc plates, which more resembles the united efforts of the "Thunder-makers" at the Polytechnic, all the tom-tom beaters of the Chinese empire, and the iron riveters employed in her Majesty's dockyards, than any single attempt at the production of inharmonious sounds in Christendom. The deaf and the iron-nerved, even, are reduced to distraction, and whole rows of houses are scarcely habitable.

Really the nuisance thus caused is a serious depreciation of adjoining property. No one will live in a house at all close to a railway bridge, and it is a question for vestries and local Boards to see if the offence cannot be reduced.

One thing is evident. It is the duty of the engineers of railway companies in the first place to build a bridge water-tight. This could easily

be done by the placing of the iron or zinc plates immediately below the ballast, and providing proper drains. In the second place, it is incumbent upon them to reduce to a minimum the sound produced by the passing of trains. A railway close at hand is a great convenience; but it is an infinitely greater drawback to have one's rest and peace disturbed by the unmusical sounds occasioned by railway bridges as at present constructed.

CHURCH RESTORATION.

THE ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting of the members was held on Friday evening, the 20th inst., Mr. E. J. Tarver (President) in the chair, when the following gentlemen were elected members;—Mr. Frederick Powell and Mr. George Bellingham.

The immediate occasion of the meeting was for the purpose of discussing the question of "Church Restoration."

Mr. G. E. Street, R.A., in opening the proceedings, said that the large assembly he was then addressing fully showed that considerable interest was taken in the subject of the restoration of churches by architects. The more the question was discussed, the more likely were the churches requiring restoration to be tenderly dealt with in the future. The first question which had to be answered was, whether church restoration was either possible or allowable. The scheme of Sir Gilbert Scott for the restoration of Kirkstall Abbey was considered by Mr. Sharpe as weak and wrong. Sir Gilbert Scott was right in thinking that the Abbey could be made to appear as it did originally. There was no reason why Mr. Sharpe should not have the same views of all restorations of buildings. Looking to the fact that a vast number of churches were in use, he (the speaker) could not sympathise with that view. He could not but hold that if they had to be repaired they had also to be restored. Accepting, then, restoration as a matter of necessity, the question arose as to what character it should assume; should it be destructive or conservative? Destructive might appear a strong term to use, but that was the character of the work done in the middle ages. Every man in those days thought his work quite good enough to replace the work that was done before it; and if any alteration suggested itself to him, he invariably made it in his own way. The conservative restoration was, however, the only one that he (the speaker) would advocate. This mode of restoration dealt with buildings, and historical as well as architectural monuments. When that mode of restoration was determined upon, it was necessary to consider how to become fitted for such a work. In the first place, it was of the greatest importance that a spirit of enthusiasm and reverence should be cultivated. It was almost impossible to carry that feeling too far; for the more it was cultivated the more tenderly would any work be dealt with in the progress of being restored. Too often it was seen that there was not that real reverence for old work that would make one shrink from destroying it or from damaging it in any way whatever. This spirit of love for old buildings could be applied to the remains of a Greek or Roman building, which it was desirous to see destroyed. But how much more should Englishmen have that feeling for the old buildings spread all over the country, all of them being connected with religion and the religious history of the country. It was almost impossible not to feel an interest in them. All good architects must be archaeologists. To say that an architect was not an archaeologist was a foolish thing. The good architect, as a man who had to build, must be an archaeologist, artist, and constructor; otherwise his work would be valueless. All men of any skill, to be good architects, and especially those who would be good church-restorers, must be good archaeologists. In almost every part of England, in the Middle Ages, there were local schools of architecture, and the character of their work differed immensely in one district from that in another; and it was necessary that an architect, to be a church-restorer, should know something about those local schools. He must pay attention also to the local variations of materials. A distinct difference of style of architecture would be found in the works of the Middle Ages, caused by that variation of material. He must deal not only with stone and flint, but

* To be continued.

with timber and combinations of timber and plaster, and flint with stone, and flint without stone. In many ways the effect upon architecture by the variety of material was great. Supposing, then, that they had a church to restore in a conservative form, the first course would be to make an examination of the building in a very careful manner. The ground-plan should be commenced with, as giving the key to the whole subsequent history of the building, noting particularly all the variations of date in the different parts of the work. When the analysis of the building had been made, and it could be seen where one man's work began and left off, some of the costs of plaster on the walls should be pulled off. It was of the greatest importance that this should be done very carefully, because in the course of removal of the coat of plaster that covered the walls would be discovered the changes that gave almost the whole of the historical value to the building, and its preservation was much to be desired. The rediscovery of the old features was one of the most interesting things to architects. In the Chapter-house of Westminster Abbey, Sir Gilbert Scott had, by a very careful examination, made the old remains assume their former appearance; and in a great work in which he (the speaker) was engaged at Dublin, he had found a perfect mine of old stone buried in the wall. Such discoveries were encouraging to the patient student. The strong desire to see every damaged stone taken out and repaired had often to be objected to; and in France this failing was once very prevalent. In many cases stone was over-repaired. In repairing old stone-work it was very important that it should be done with the same kind of material as the old stone; but there was a difficulty sometimes in obtaining the same material. There were many who maintained that it was wrong to show the old stone wall, because such was not the original intention of the builder; but the restorers of a building could not look at it in the same light as those who built the structure. As to the external stone-work of churches, he considered it a great mistake to clean it, for it was one of the many charms of the old building. If the stone-work was much decayed, then it was necessary, in order to preserve the record, that the stone should be taken out and restored; but that might be done without interfering with the interest attaching to the old building. In dealing with the restoration of old features, it was absolutely necessary that none of them should be removed. Some of the old features might appear to be in such bad taste that their removal might seem to be an improvement; but the more attention was given to this point, the more likely would the conclusion be arrived at to leave them alone as far as possible. With regard to the question of the enlargement of churches, as it regarded the question of restoration, the best counsel he could give was to make all necessary alterations with as much respect as possible for the old buildings. Each case should be dealt with on its own merits. Where a vestry was required, it would be well, if possible, to make it by means of a screen. If restoration could be done without touching the outside wall, so much the better. In the use of masonry in repairs there arose a great difficulty; for there was a striking difference between early and late masonry. All work that was done should tally with the old; and in stone-work the putting in of little pieces of stone should be avoided, to prevent any appearance of patch-work. The repair of wood-work in old buildings was a work about which persons appeared less careful than they did about stone-work. The restoration of roofs should be done with the same kind of material and the same scantlings. He would rather tie an old work together with iron than take it down and put a new work in its place. It was constantly possible to have a great deal of old woodwork by supporting it, and it might be made fairly ornamental. The retention, too, of the old church ritual arrangements of the interior should be observed,—such as the pews and galleries. In this work it was only too frequent now to proceed upon a cut-and-dried system, without reference to the particular feature of a particular church. The porch with an archway was a feature of a picturesque character in many of the old churches; but in many restored churches it was found that a door had been ingeniously fitted into the arch, and the effect of a porch as such was destroyed. Another point was the position of the font, which had been altered from the west to the east side of one of the columns. Then, too, with regard to the level of the floor of the church, it was desirable to keep to the old

level. Little peculiarities were the essence of the picturesque in a building. The arrangements of churches for seating were very difficult; for there were often in the transepts older remains in such places, so that if the transepts were filled with seats the remains were likely to be obscured. Seats ought not to be placed against old monuments. With regard to galleries, no one now desired that they should be built. The old features which were found by the restorer should be carefully retained. He would never restore old carving,—it was a great mistake, and would thereby lose its interest. That did not apply to mere masonry; it was true only so far as concerned carving, painting on the walls, and such works as required the hand of the artist; and he would not advise their restoration for fear of damaging the old remains. The remains of old reredoses which were found were generally so much knocked about as to be difficult to restore but in a conjectural way. To do much painting on the walls was a mistake, for directly one began to paint it must be restored on every where, and then there was the risk of making everything look new. A good deal of decoration in a building might be obtained, if it was required, by paintings on panels, altar furniture, and screens. The inconvenience of old churches was a source of constant complaint. With regard to the question of costs, that was always a difficulty which architects had to deal with. In dealing, therefore, with church restorations ample estimates should always be made; and if but a small amount of funds was forthcoming, they should do a little work well instead of attempting much badly. In drawing up specifications for the restoration of old work, it was important that there should be a special provision that all curiosities should not be the property of the contractor; but that they should be preserved to be placed back again into the building. In conclusion, he would say that the essence of the necessity of church restoration was that it led to the study of English architecture in every part of the country. It was a great inducement to do so; and there were now more inducements for it than formerly. The Pugin Travelling Studentship led of necessity to the study of old work; for it could not be gained unless the students competing had given some time to that study. It was of the utmost value to them as architects in their career that they should have that living architecture which was always before their eyes to study. Those who spent a few weeks or months in patient toil in such a study would be the men who would be the best fitted for the work which all were called upon sooner or later to carry out. The study of original work would make them become very much more accomplished in their art than they otherwise would be.

Mr. Perceps considered that most of the points laid down by Mr. Street were incontrovertible. Between the views of Mr. Sharpe and Mr. Street there was not, he thought, much divergence. With respect to the subject of leaving the walls unplastered, if it was intended that they should be left uncoated with plaster where the covering would obscure ancient work, he quite agreed with that view; but if it was meant that the whole of the wall of a church should be left without plaster, he thought it would take away a great deal of the character of the old work.

Professor Kerr said, the views they had heard were from a representative man, who had, all his life, taken up the position he then maintained, which was, that in restoring ecclesiastical remains of the middle ages, the example of the French should not be followed. They had heard something of the difference between archaeology and architecture; and the opener regarded the work of restoration, not as a work of architectural design, but as a work of archaeological maintenance; and he would say, do not renovate it, but support that which was old and maintain it in its veritable antiquity. That view seemed to him (the speaker) the essence of common sense in the work. He had a high opinion of the French as artists, but upon this point there was a difference of opinion between the two countries. Every old church that existed throughout England was venerated by the people of the parish; he could not tell whether a similar feeling existed in France, but if it did it was not expressed in the same way. If a French artist was set to restore a church, he did all he could to turn it out a new church; and of this English architects complained. It might be better, he thought, to allow the nineteenth-century restorer to do his work in his own way in order to show to

future ages the abominable character of his judgment.

Mr. Phéné Spiers considered that the architectural students had had a great service rendered them that evening; for there had been pointed out to them the elements of study which must give to them a far greater interest than they would otherwise have felt in the study of old buildings. Those who took the great interest in their summer studies and travel would be best capable of dealing with church restoration. As regarded the difference between English and French restoration, he fully concurred in the views expressed. The question whether the student should keep to English work alone, he considered a difficult one; it was a difficulty for a young artist not to be occasionally induced to follow some foreign work. However, they desired to have any originality in design, it was necessary that they should make themselves acquainted with all that had been done before.

Mr. Clarkson said that the question arose in his mind as to at what point of time they were to consider that any work became incongruous, and upon what degree of art value were they to know whether anything was necessarily to be destroyed or to be preserved. He thought that a general rule could not be laid down in either case. He thought that the purpose of restoration was to preserve buildings for themselves and for posterity.

Mr. Robertson said that with reference to the question of the connexion of archaeology and architecture, there was something to be said on both sides. It might be said by one who knew something of the subject, that archaeology was distinct from architecture, and that its aim was entirely different. Old buildings might be considered in various points of view,—archæologically, architecturally, and that of utility. Viewed from each of these points, an old building would be treated very differently. He thought that a good deal of the discontent which had arisen with reference to the very numerous restorations, was caused because they had not been conducted with a more archaeological view. There were other questions, as to whether the architect of the nineteenth century should be allowed to restore, or whether he should not limit his dealings with such buildings simply to their repair and maintenance; and also the question as to what was the nineteenth-century style.

Mr. Pownall wanted to know, in the case of a church that had been repaired, whether any other additions which were to be made should be done in accordance with the earlier or the later portion of the work.

Mr. Street, in replying, said that as regarded the style in which additions should be made, it seemed to him, in spite of all that had been said, that each man should have his own style. The whole end and object of his remarks were to the effect that the old work should be left to tell its own story. It was not desirable to repair old stonework where it was slightly damaged; but where an old feature was found to have been put in for an intentional purpose it was not fair to old architects to allow it to be entirely demolished. There was a great difference regarding the restorations effected by the English architects as compared with French; but he flattered himself that old English buildings had very many devoted admirers amongst the French.

THE ART QUESTION, FROM ANOTHER POINT OF VIEW.

THAT a building should be designed after such a manner as, both in external appearance and internal arrangement, it should show the purpose for which it is erected is a proposition which few will dispute. Generally speaking there is little to find fault with in this respect in the aspect of recently-erected places of worship, for no class of buildings so distinctly tell their purpose to the passer-by as our churches. And it is very right and proper that such should be the case, but that it should be done at the expense of convenience and the personal comfort of the worshippers, it is not so easy to maintain.

The element of ecclesiastical demonstration is usually so strongly maintained in plan and artistic elegance is considered of less account than a rude severity of manner more in accordance with the spirit of a period when refinement was rare than with that when culture is widely spread. In this respect architecture is follow-

ing in the wake of the sister art of painting. The Pre-Raphaelite movement introduced a new phase into that art, a certain mannerism which had a charm for many, although it did not fulfil the utmost requirements of the art. It was rather a protest against the slovenly disregard to nature and truthfulness which prevailed, and its votaries in due course burst the chrysalis, freed themselves from the narrow limits of their voluntary prison, and took to the freedom of the wing. Such may also be the case with architecture.

Since the beginning of this century various principles of architectural art have been advanced, one supplanting another in due course. First, it was maintained that in the works of classical antiquity, certain rules were observed, and the examples of the application of these rules were to be regarded as infallible guides. Then followed "the battle of the styles," in which a rising party maintained the superiority of Mediæval examples, both as to art and suitability to climate. Next followed a crusade against academic formulae and copyism, and an attempt to strike out a new style; but the examples of "Victorian" architecture were not such as to call forth admiration. Concurrent with this movement was another, which sought to develop the styles already in existence, taking as a starting-point the architecture of the thirteenth century, and gradually to lead up to the formation of a new style. And, latterly, a small section has evolved to the style of the time of Queen Anne, as affording a more advanced stage from which to start in quest of the holy grail.

A building may be perfectly correct in its details, composition, and arrangement, and yet be cold and spiritless, and another, although exhibiting no special originality, may possess a certain charm and grace, which reveals that the soul and eye of an artist were engaged in designing it. Add to this latter quality a tincture of originality, and we have the highest point yet attained in the architecture of modern times, and in no class of buildings has this point been so often reached as in our churches.

If we trace the gradual development of any style of architecture, we shall find how little there is which can be called original in the respective examples. Nay, even so subtle are distinctions, that it is with difficulty we can separate those of the same era in contingent countries. It is only by taking a broad view of a subject, and comprehending an extended portion of time, that we can see the marked distinctions which constitute a new style. One nation borrows a leading idea from another, the Egyptian, Phœnician, Assyrian, Etruscan, and Roman styles of art all gradually blended and influenced each other. So also was it with the Byzantine, Lombardic, Norman, and Gothic.

Since the advent of the Renaissance, there has been no continuous development, but isolated examples may be discovered of the application of classical forms in a different manner than before, and to these have been given the general name of Italian. In Northern Italy an effort was made to introduce the Gothic style, but being of foreign importation it did not accord with the traditions and feelings of the people; it was not generally accepted, and where it was it did not show the true character of the style, but retained only the outward appearance of the classical feeling and manner.

Great as was ancient Rome, she was confined to take her art from Greece; she had no of her own, nor were her people possessed of truly artistic tendency. We modern Britons the subjects of a realm greater than that of Rome; we had at one period of our history a fine style of architecture, which produced art and noble results. We have the noblest sessions, the largest commerce, and the greatest wealth of the nations of the earth. This tended to give us a more exalted notion of our capacity, and induced us to look less to ancient sources than heretofore. It has strengthened the national feeling and the regard for our own history and traditions, and classical tendencies have become proportionally weaker.

A tendency has been shown in a marked degree in our literature and in our school of painting, and it has also appeared in a minor degree the adoption of a Mediæval style of architecture. But this architecture, as practised amongst us, has not been accepted as a true and permanent response to the sentiments of the age, and we are still in a state of transition and uncertainty as to the future.

The revived taste for Mediæval art led to the

adoption in the church of certain forms and observances which had for ages been in desuetude; and to have all things in keeping, the most rigid adherence to ancient forms and styles has been insisted upon. Is this state of matters to continue, or is it only as the last flicker of the candle flashing spasmodically before it expires?

Ours is an iron age. We use that material to an enormously greater extent than did our ancestors. Our mechanical achievements have been great, but our artistic triumphs, where are they? The question how to use iron as a constructive material in an artistic manner has not yet been solved. A building should not only be strong, but appear to be so, in order to fulfil the requirements of art; the ignoring of this axiom has in every instance produced painful results. This is particularly the case where a trabeate style is used, for in such the supports should not only be stronger, but more frequent than is necessary, in order to produce a good result. The most artistic way of spanning a large opening is undoubtedly by using arched construction properly abutted; and in that case the construction should be visible, and not concealed.

The absence of dignity in iron supports was so apparent in the great cone of the Vienna Exhibition that it had to be supplemented by a mock arcade. Such a mode of procedure may be allowable in a temporary structure, but would be most unsatisfactory in one of permanent monumental character. We have had examples of the perishable nature of the material when tried by fire, and, considering its liability to expansion and contraction, the suddenness with which an unseen flaw brings about a collapse, and the action of time upon its granular formation, its durability is doubtful.

If, therefore, iron is neither a safe nor a dignified material to use, we must fall back upon stone, brick, and wood, in order to produce a truly architectural effect, employing iron tentatively for constructive and decorative purposes.

STUDY OF SCULPTURE AT THE ROYAL ACADEMY.

PROFESSOR H. WEEKES, R.A., lectured on Sculpture on the 18th inst., at the Royal Academy, Burlington House.

In the course of his remarks he said that sculptors did not reflect in art what was in themselves, whatever the extent of their genius. There had been many men unlearned who had succeeded in becoming good sculptors; but had they been better educated, so much the better sculptors would they have made. These men had defects which were the result of their ignorance, and their excellences were their own; for it was the men and not the art that succeeded. Men with extensive ideas, by being enabled to choose a wider range of subjects, had a better chance of success. A good education of a general nature tended to refinement of style in work, and to the removal of vulgarities. He would urge students to read earnestly not only those works which were closely connected with their profession, but also those which were likely to lead to the enlargement of their minds, so that they could think soundly for themselves. This advice was given by one who had experienced the result of neglect in that direction. The works of Plato, Xenophon, and Pliny he would especially recommend for the earnest perusal of the students. The student, in his selection of subjects, should choose those which by association belonged to his own country; for, through the neglect of that association, sculpture seemed sometimes as though it would fall out of place, and become no longer needed. The sculptor, to become popular and instructive, should bow to the requirements of the many, and direct his work towards their good sympathies. With regard to the tendency to adopt the nude in the productions of sculpture, he had no doubt that the learner found it necessary to enter well into that study, as it conveyed the clearest indication of all the movements of the human frame, as well as the most direct expression of its beauties, and without a thorough knowledge of it a good work could be produced by no sculptor. However, it did not follow that the nude was the sublime, or *vice versa*; they must be separated, and each exist without mutual aid or assistance. That students should entirely do away with the nude in their designs, he would not advise; for, if they did, they would be deprived of one of the most powerful aids of expression of art; but he would advise them to be more sparing in its use in their compositions. Both the climate of

the country and the habits of the people were somewhat adverse to it; and it must be remembered that sculpture had to adapt itself to civilisation. The purposes of nature, as they existed separately and in different works, should be looked to, and students would then find a key that would open to them a store of knowledge, and which would make them ardent students and devoted admirers of her beauties. They ought not to criticise her ends; nor ought Phidias even to stand between nature and art. Some persons had an idea that art could not be taught; which in a qualified sense must be true; but if it were literally true, art would have sprung up at once to perfection instead of gradually rising, as it did. The sculpture of Greece was the growth of years, until Phidias carried it to the point beyond which it could not go. The student, he hoped, would repel that idea with regard to the teaching of art as utterly worthless, and devote himself seriously to the study of the schools of art. No one ever succeeded to any great extent untaught, or by inspiration. The want of proper accommodation in the Academy led the student to copy in relief only, which system, of course, had its disadvantages. With respect to modelling, he would warn students against exaggerating the defects of their models; they should model as much as possible with their fingers and thumb, which was done to a great extent by Flaxman. When using wooden tools for modelling, they should avoid the use of small and sharp-pointed instruments. He would beg to caution them against always beginning and never completing, but would recommend them to finish the models, whether they were studies for life or of a more imperfect character; and by all means they should be mindful of cultivating the habit of carefulness. In the late exhibitions the tendency to depend too much upon truth was very evident in the work of men in the prime of life, and probably in the prime of their art. This was not seen in the productions of older men. In endeavouring to produce real imitations of nature, the student should avail himself of those licenses, the use of which enables him to approach nearer to the truth than a mere blind copying of fact would do. Referring to the Coliseum at Rome, he said that this was Rome's great architectural work; and no one could deny but that it was greatly admired, for its immense size connected it with the sublime. There was, however, no very great ingenuity of construction about it, beyond the admirable way in which its vast interior was arranged. Reduced, as it was, both by the waste of time and robbery, it was an enormous structure, which, owing to its simplicity and uniformity, rendered it much more impressive than another more varied design would have been. The heavy masonry of the building was characteristic of the people who had erected it. With regard to Venice, the excessive colouring of the works there deprive them of the power of expression. In every street and canal this colouring prominently presented itself.

THE PLANNING OF ANCIENT CHURCHES.

THE BELFAST ARCHITECTURAL ASSOCIATION.

At a meeting of this Society held at the Museum last week, Mr. Young delivered a lecture "On the Planning of Ancient Churches," which was illustrated by a large number of ground plans. The lecture began with a brief sketch of the position in which the Christian Church found itself in the early part of the fourth century. The internal arrangements of the Roman Basilica, or Court-house, with its various adjuncts, were described, and the reasons adduced why the early Christians adopted this model for their Ecclesie, or assembly-halls. A typical Christian Basilica, containing all the parts referred to in the old writers, was then explained, a diagram of the Church of St. Clemente at Rome being shown as the one now remaining most nearly approaching it. But by far the most important of these structures must have been the great five-aisled Church of St. Peter, erected about A.D. 330, on the site of the Circus of Nero, where tradition pointed to the martyrdom of the apostle. Although every vestige of this building was removed to give place to the more famous modern St. Peter's, fortunately drawings were carefully taken. The atrium, or forecourt, was of enormous size, and had in front of it two lofty bell-towers; but these probably not original. The nave of the

church was nearly 400 ft. long and 80 ft. wide, and the extreme width, including aisles, was 212 ft.; so that the area was about the same as that of the great cathedrals of Seville or Milan. The *basilica*, or sanctuary, had the singular arrangement of transepts extending beyond the outer walls, one arm of which was connected to a circular building of considerable size, whilst a similar one stood a little way from it on the same side, and both were placed on the *spina* of the ancient circus. Although one of these was popularly thought to be the tomb of Honorius, and the other that of St. Andrew, there are strong reasons for thinking that they were erected by Constantine to preserve the remains and honour the memory of Peter, apostle and martyr, and those who suffered with him in the persecution of Nero. Descriptive particulars were given of the plans of several churches, dating from the fifth to the tenth century, in which the circular or polygonal form had been adopted, both for public worship and for ritual and ceremonial purposes. Of these the very remarkable galleried and domed church of San Vitale, at Ravenna, was explained in detail. It was remarkable as having so completely captivated the fancy of Charlemagne as he passed through Ravenna on his way home from being crowned Emperor at Rome, that he resolved to erect a church of the same style in his own capital, to serve also as his mausoleum. The result was the Dom Church of Aix-la-Chapelle, a building which, although much mutilated by later additions, is still of the highest interest in the history of art. The remains of the church of St. Lorenzo at Milan, of the fifth century, were referred to as the earliest example of a circular church enclosed in a square ground plan. The last plan described was that of the church of St. Michael, near the city of Angoulême, where a small specimen of an octagonal building is to be seen constructed entirely of stone, both walls and roof.

THE DEMOLITION OF ST. ANTHOLIN'S CHURCH.

WITH the exception of the tower, which is to remain, all traces of the old church of St. Antholin, at the corner of Sise Lane, Queen Victoria Street, will shortly have disappeared. Last week workmen were busily engaged in removing the pews, galleries, organ (valued at 100*l.*), pulpit, and other interior fittings, which had been sold by tender the week previously, and the bare walls alone now remain. The materials of these have since been disposed of, and prior to the edifice being taken down the churchwardens have given notice that after Monday next they will proceed to remove and re-inter the remains of those buried there whose relatives and friends may not have undertaken that duty. The churchwardens also intimate that the Ecclesiastical Commissioners will pay the expenses of removal to any other consecrated churchyard or burial-place, not exceeding 10*l.* in each case. The remains of those not removed by their relatives will be removed and re-interred under the tower.

There was a church here, then called St. Anthony's or St. Anthonine's, as early as the twelfth century. It was rebuilt about 1399, and again in 1513. The fire of 1666 destroyed it, and the present church was completed by Sir Christopher Wren in 1682. The interior is covered with an oval-shaped dome, which is supported on eight columns standing on high pedestals. The carpentry of the roof is interesting.

INTENDED NEW CHURCH AT ADDISCOMBE.

WE are asked to announce that in the above competition, the first premium, 50*l.*, has been awarded to Mr. Thomas Porter and Mr. Aston Webb, and the second premium, 30*l.*, to Mr. S. Brookes. All other designs have been returned except one, bearing the motto, "True Economy;" the author of which is not known.

The Exhibition of Appliances for the Economical Consumption of Fuel now open in Peel Park, Man hester, seems to be a success. It has been visited by nearly 40,000 persons up to the present time, including most of the practical and scientific men of the day, and special deputations have come from France, the Government of Saxony, and other countries.

THE LONDON FORESTERS' ASYLUM, BEXLEY HEATH, KENT.

THE "Ancient Order of Foresters," as the association calls itself, is one of the largest organisations of working men in the United Kingdom. If any one should doubt the fact, let him visit the Crystal Palace on what is termed a Foresters' Pête Day. They are traditionally alleged to have been founded by Robin Hood, of Sherwood Forest celebrity, "the First Forester," and hence the claim to their name. They more probably owe their origin to the influence of the writings of Sir Walter Scott, as likewise do, to a great extent, the revival of Gothic architecture and the erection in modern times of a monument to the memory of Richard Cœur de Lion. The Foresters are neither politicians, trade-unionists, nor sectarians; religion and politics being prohibited in their discussions. Their objects are of a purely philanthropic nature. Like Robin Hood, "who took from the rich and gave to the poor," they take from each other in their better days in order to relieve themselves when distressed. Besides a sick-fund and a benevolent fund, they have also a widow and orphan fund, for the benefit of which the *fête* at the Crystal Palace is annually held. The Order has been making rapid strides lately, morally, financially, and numerically; and many of the members of the London Foresters having determined it would be better for their headquarters not to be held at a tavern, they have recently erected what is known as the Foresters' Hall, in Wildemere-row, at a cost of 7,000*l.*, besides the value of the land. In addition to this step, many of them also determined, in 1862, to establish an asylum for the old, blind, and infirm members of the Order who had attained the age of sixty years. They therefore associated or banded themselves together under a "deed of trust," bearing date November 12th, 1864, to provide "a comfortable home; an income of 6*s.* per week; home and pension for widows of members; fire and light; medical attendance and medicine;" and, to secure those objects, members are eligible (without passing through the trying ordeal of election) at or over sixty years of age. About 1,400 members of the Order having subscribed, and the committee having collected sufficient funds, their first step was to purchase a small estate of 53 acres of freehold land at Bexley Heath, in the county of Kent, which was done for the sum of 1,275*l.* This estate is opposite the twelfth milestone from London, and is situate on the high road from London to Dover. The committee next adopted a plan for running a proposed road through the estate, reserving the northern portion of about two acres, whereon to erect the asylum; the remaining portion to be let on building leases, in order hereafter to create an endowment fund.

The illustration which we publish shows the centre portion of the asylum, which in its outline or block plan forms the shape of a recumbent letter *U*, consisting of an east and west wing on either side of the centre building. This centre building will have a master and matron's residence on the ground floor, and a committee-room 23 ft. by 16 ft., and conveniences. In the basement will be coal-vaults to supply coals to the whole of the asylum,—about 80 tons; two entrance-porches (one surmounted by a bell and the other by a clock tower) lead to two corresponding staircases, which both lead to the chapel on the first floor, 32 ft. long by 22 ft. wide, capable of accommodating 100 persons. Each wing is to consist of six pairs of houses, or twenty-four houses in all. There is also ample room on that portion of the estate set apart for the asylum for erecting twenty-four houses more at some future period; each pair of houses will have a front entrance porch, with rooms on the ground floor each 15 ft. long by 11 ft. wide, fitted with cupboards and pantries; facing the entrance-porch inside is a passage leading to the out-houses, and a staircase leading to the first floor,—here the arrangements are the same as on the ground floor. The out-houses consist of coal and water closets. Thus the plan is so arranged that each house can be made to accommodate either one or two inmates as the committee may hereafter consider advisable or as funds permit. The height of each floor is 8 ft. 6 in.

The elevation is in the Tudor style of architecture (modernised) for economical reasons, the material being selected stock bricks, with white Suffolk brick dressings and Portland stone cills and copings.

The first stone of the first four houses was

laid on the 28th of September, 1872 (being the first portion of the west wing), by Mr. Richard Isham, the chairman of the Institution, Mr. Horne, of Norwood, undertaking the contract for 613*l.* (exclusive of painting), Mr. W. L. Potter being the architect. These houses are now completed and occupied,—eight inmates and their wives, fifteen persons in all, have been elected into them on the 1st of May last.

It is expected another block of houses will be commenced shortly.

In conclusion, we would mention this is the first institution of the kind that has been erected entirely from the pockets of working men, though we understand they would not refuse, but would be glad to receive, assistance from others if such aid were offered.

THE CHURCH OF ST. THEGONNEC, FINISTERRE.

THE department of Finisterre, in Brittany, abounds in interesting and curious churches, most of which, however, are of late date, being either the latest Flamboyant or Renaissance in style, and they were with few exceptions erected during the sixteenth and seventeenth centuries. Of the Renaissance churches now existing in this department, that of St. Thegonne is the most singular and elaborate, and is perhaps the most perfect example to be seen of a thorough Breton church and churchyard with its "Calvary," triumphal arch, ossuary, and cemetery-chapel.

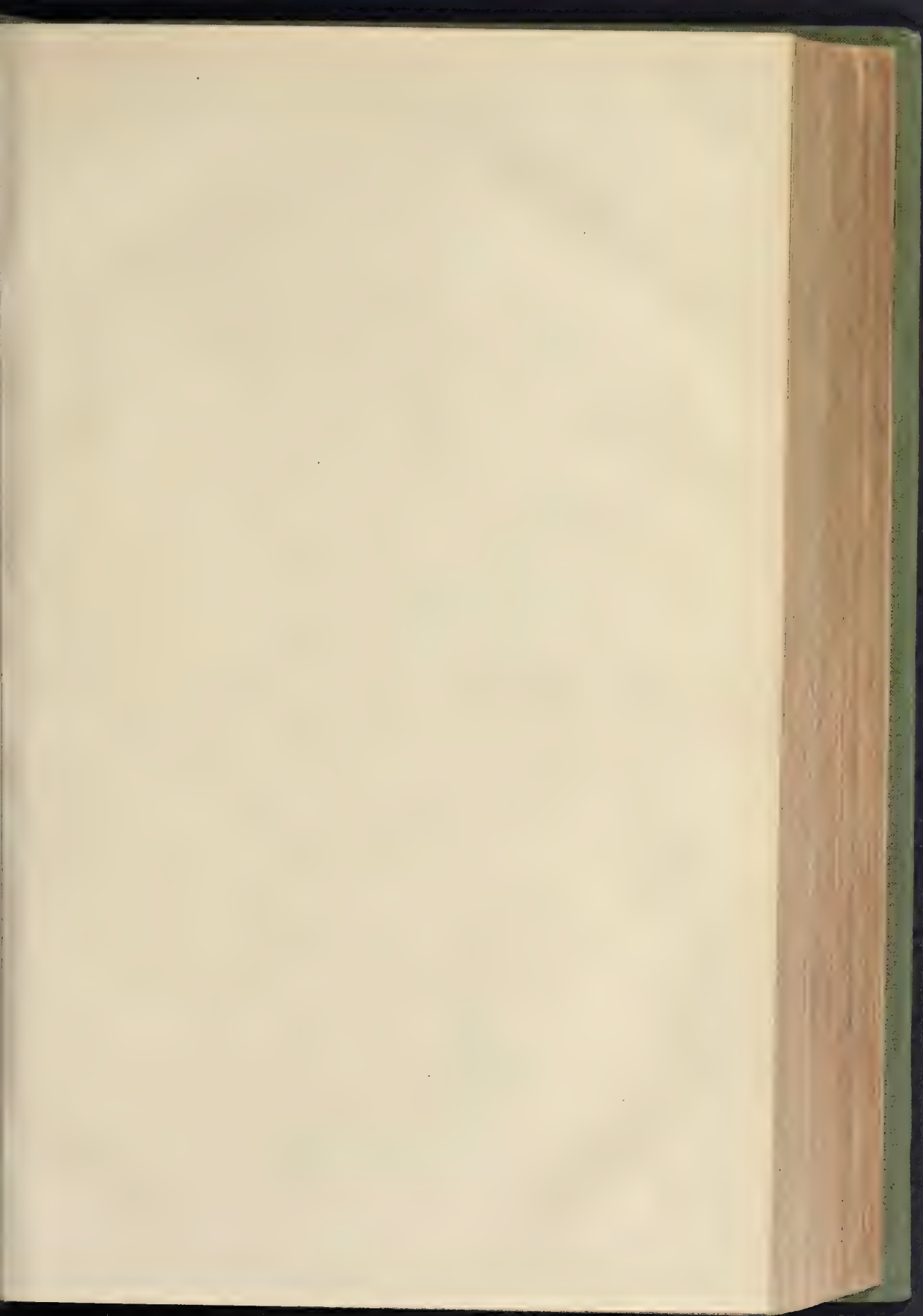
The church of St. Thegonne is a cruciform building of moderate dimensions, consisting of an apsidal choir, transepts without aisles, a nave with gabled aisles, a large square tower crowned with a dome at the south-west angle, with porch at its base, and a small tower crowned with a spire attached to the western gable. The last named feature is the only portion of the church which is of an earlier date than the sixteenth century, and probably dates as far back as the end of the fourteenth century. At first sight it looks even earlier, but the detail is exactly similar to that found in most Breton spires of the end of the fourteenth and beginning of the fifteenth centuries. The architecture of the rest of the church of St. Thegonne is of a more remarkable development of the Renaissance, very wild and fanciful, but singularly picturesque and effective. As the whole building is erected in granite, the detail is, although intricate, rather rude and large in execution.

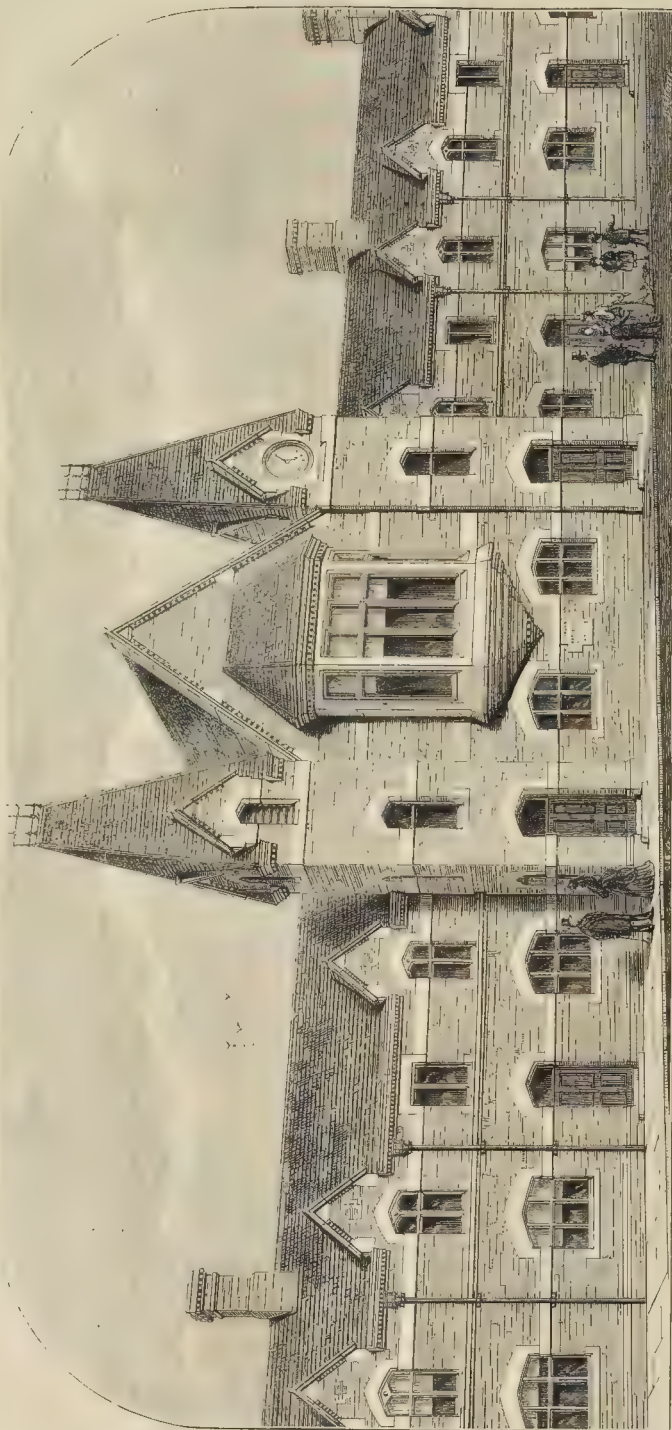
The tower and porch of the church are the most elaborate portions of the structure. The former is inscribed with the date 1605. The calvary, which consists of three columns, bearing a representation of the Crucifixion, standing on a lofty podium, is profusely adorned with sculpture, and bears the date 1610. The ossuary or mortuary chapel forms a building two stories high, terminating to the south in a lofty apse adorned with gables and pinnacles, and is seen to the extreme left in our illustration. The great churchyard-gate, flanked by stone attics on either side, is a grand feature, and is here called the "triumphal arch," and in reality it bears some resemblance to the old Classical erection of that class. The date upon this "triumphal arch" is 1587; and it is rather singular that it shows far less Gothic influence in its detail than the mortuary chapel, which is inscribed with the date 1677.

The interior of the Church of St. Thegonne is far less interesting than the exterior. It contains, however, two remarkably fine reredoses of the seventeenth century, and in the sacristy is a superb processional cross of the same date.

The interior of the mortuary chapel is plain, but has a very pretty wooden barrel-vaulted roof, and in the crypt which occupies its basement is a remarkably fine representation of the "Entombment." The figures are all life-size and carved in wood, and are painted in "proper colours." This fine work of art dates from the year 1702, and shows what excellent sculptors the Bretons were down to a very late period.

A Wall Blown Down.—A long length of newly erected wall, at the North of England Wagon Shops, Hartlepool, now in the course of construction on the outskirts of the town, has been thrown down by the force of a gale, and four workmen were buried in the ruins. Two were found to be but slightly bruised; but the other two had to be conveyed to their homes one suffering from a fractured skull, and the other from serious wounds.





1. Porch.
2. Hall.
3. Master's Residence.
4. Matron's Residence.

5. Committee-room.
6. Large room.
7. Wash-house.
8. Closet.
9. W.C.



THE LONDON FORESTERS' ASYLUM, BEXLEY HEATH, KENT.—MR. W. F. PORTER, ARCHITECT.



THE CHURCH OF ST. THEGONNEC, FINISTERRE, BRITTANY.

ON ARTIFICIAL FUEL.*

It is so evident that great advantages would be gained by coal operators, and by the public generally, from the utilisation of what is known as coal dust, slack, waste, or culm, that it is to be wondered that manufactories to transform this worthless material into a marketable fuel are not erected everywhere in the mining regions. The immense accumulations of coal-waste to be found in those regions are really a nuisance to the inhabitants and an eye-sore to the travelling public. It is generally admitted that, on an average, from 40 to 50 per cent. of the entire coal production, both in America and in Europe, is converted into dust or waste. The utilisation of this waste has been a problem which scientific and practical minds have tried to solve for a number of years. Partial results have been obtained by which a certain amount of the waste of coal mines has been utilised, and this only in Europe, where a gradual and constant increase in the cost of the natural coal has given to the manufacturers of artificial fuel a fair chance of profit, but it must be admitted that, compared with other branches of industry, the progress made in the utilisation of coal waste has been very slow. The enormous increase in the cost of coal in England, France, Germany, and Belgium during the last three years has, however, brought again before the public, and this time prominently, the question of utilising the waste created everywhere that coal is handled.

Bituminous coal dust will coke well, and it is much used for that purpose, but the demand for coke not being in any way equal to the supply of bituminous small coal from which it might be made, a great proportion of the latter is left underground. A small proportion of bituminous slack is used by blacksmiths, and even in peculiar grates, for engineering purposes, but the largest part above ground is thrown into rivers or piled up around the mines. It is estimated that the quantity of waste exceeds thirty millions of tons.

Although several establishments have been created in France, England, and Belgium for the purpose of converting coal waste into marketable fuel, that branch of industry is at present quite in its infancy. France has 28, and Belgium 9, manufactories of artificial fuel. In England the principal seat of these manufactories is in South Wales.

Coal-dust can be manufactured into solid lumps in two different ways: by simple compression without the addition of any cementing material, or by agglomeration with cements.

In England, Messrs. Bessemer, Rees, and Buckwell, and in France, MM. Baroulier, Evrard, and Loup have patented different processes for the compression of bituminous coal-dust into solid lumps without cement. The coal manufactured had a great heating power, but it could not bear handling and transportation.

Bessemer, heating previously the bituminous slack until it was brought to a plastic state, forced it, by a piston, into a long tube whose diameter was gradually reduced and from which the compressed coal was forced in a continuous cylindrical shape. By means of a revolving knife, the fuel was cut in sections of any required length, as fast as it was forced out of the tube. This process required very powerful machinery. Bessemer was compelled to reduce gradually the length of the tube and to increase its thickness, as it burst very often. The process required a large amount of natural coal to heat the dust to a pasty mass, and while being heated it eliminated from the coal the greatest part of its volatile constituents. The application of Bessemer's process has long ago been abandoned.

Buckwell and Evrard compressed the bituminous waste into moulds without heating it previously. Although a powerful pressure was applied to the fuel the product could not bear handling.

Baroulier used circular iron moulds of a certain depth, open on top and at the bottom. These moulds were filled with coal-dust, and this dust was compressed by hydraulic pressure; more coal was then added, this again compressed, and so on, until the moulds were completely filled. The process, although a real improvement on Bessemer's, had some of its defects, and the manufactured fuel could not be sold in competition with the natural coal.

These are the only serious attempts which

have been made to convert bituminous coal-dust into solid fuel without cement. Rees took out an English patent for a process similar to Baroulier's. He did not meet with more success than my countryman did.

Among the numerous cements which have been patented for the manufacture of artificial fuel are to be found the strangest substances, such as spoiled flour, blood, gum arabic, animal and vegetable oils, cow-dung, rakings of roads, sweepings of houses, chalk, common salt, sal ammoniac, sulphur, solutions of glue, alkaline silicates, alum, copperas, &c., &c. It is unnecessary to add that of these singular materials none have ever been brought into practical use.

Among the cements which have been used to a certain extent may be cited rosin, asphalt, petroleum, coal tar, and its derivative fluid, and dry pitch, lime, plaster, starch, and clay.

Professor A. S. Bickmore, in a very interesting paper on "Coal in China," read before the American Association, says that "from time immemorial, in the north of China, coal is ground to dust and mixed with clay, that it may burn more slowly."

In 1603, a pamphlet entitled "A new, cheap, and delicate fire of coal-balls" was published in London by Sir Hugh Platt. This gentleman recommended for use in common fire-places, a mixture of coal and clay, moulded by hand in the shape of balls. He also used another mixture, which consisted of coal-dust, tanner's bark, sawdust, and cow-dung.

Another pamphlet, also published in London, in 1679, and entitled "An excellent Invention to make a Fire," contains the following recipe:—

"Take three parts of the best Newcastle coal, beaten small, one part of clay; mix these well together into a mass with water, make thereof balls, which you must dry very well. This fuel is durable, sweet, not offensive by reason of the smoke or cinder as other coal fires are, beautiful in shape, and not so costly as other fire, burns as well in a room even as charcoal."

In an article on the coal-basin of Eschweiler, M. Clère, a French engineer of great reputation, states that—

"At Liège (Belgium), coal-dust is mixed with clay pressed by hand in the form of balls, dried in the sun, and stored away for domestic use. That kind of fuel is there called *houlets*."

I can add to this, that even to this day, not only at Liège, but everywhere in Belgium, coal-dust is used in the same manner.

There exists in Belgium a certain class of working women, who earn a scanty living by converting the coal-dust into solid fuel. They call at every house in front of which a load of coal-dust has been dumped, offering their services. These poor creatures can be seen daily in the streets, always two or three together, each one of them pushing a wheelbarrow loaded with clay, in which stands a shovel. They try their best, if the house is occupied by people in easy circumstances, to obtain a little more than the price which is usually paid to them. As soon as the price is agreed upon, they go to work in earnest; the coal-dust is shovelled all around so as to form a circular bed of about 1 ft. in thickness. From 25 to 30 per cent. of clay is diluted with water and sprinkled over the coal, which is well mixed with the clay by means of the shovels first. Then, putting on wooden shoes and slightly lifting their skirts, they commence to trample upon the coal, turning round the coal bed from the circumference to the centre, and back again from the centre to the circumference, following each other like ducks. When the whole surface of the coal bed has been trampled upon twice, the mixture is turned over with the shovel, and the trampling recommences. After five or six operations of the kind have been gone through, the coal and clay have been worked to a plastic mass. This is piled up in a heap, and, seating themselves on their wheelbarrows, these poor women proceed to compress the fuel in the shape of balls, by hand. These balls are then dried in the sun, after which they are ready for use.

This very primitive and original way of mixing and compressing coal-dust into lumps has never been patented.

In some parts of Germany, the trampling on the coal is done by men on horseback. In the Rhine regions, the mixing of the clay with coal is an affair of constant occurrence.

At Ham-sur-Sambre (Belgium), in 1859, under the direction of M. Darbois, machines, invented by M. David, a French engineer of merit, were erected for the purpose of manufacturing, by mechanical pressure, solid lumps

from semi-anthracite coal-dust, mixed with 15 per cent. of clay. With these machines, lumps of cylindrical shape were pressed, also cylindrical lumps with perforations half an inch in diameter, through the centre. These machines were very expensive, and their production was very limited.

In 1861, they were replaced by cheaper and more productive machines, invented by Mr. Martin from Liège (Belgium). These machines, making egg-shaped lumps, met with more favour, as the product was very similar, to the lumps pressed by hand. Martin's press is still in operation at Ham-sur-Sambre.

At Tamines-sur-Sambre (Belgium), in 1862, under the direction of Mr. Cavenalle, the company of the "Charbonnages réunis de la Basse Sambre" (united collieries of the Low Sambre), of which I was at that time general agent, erected also Martin's machines to convert the coal-dust into egg-shaped lumps, by using 18 per cent. of clay as cement. Martin's press made only one lump at a time. The feeding was very defective. This slow and very imperfect method of drying economised fuel but required a large number of boys.

Baudry invented a drying oven, with shelves all round. It required two hours to dry the fuel. Labour being relatively cheap in Belgium and coal selling high, no improvements have been made to suppress unnecessary handling. Notwithstanding the defects of Baudry's process, it is still applied in Belgium, the product containing 18 per cent. of clay and not being impervious to moisture. The large percentage of clay and the fuel not being able to stand exposure to the weather are the greatest obstacles to the development of the manufacture of artificial fuel by the use of clay as a cement. Asphalt, rosin, and petroleum, as cements, have been found wanting in cohesive property, and also too expensive. Coal tar and its derivative, fluid pitch and dry pitch, have been the most extensively used.

The idea of mixing coal-dust with coal tar originated [with Peter Duvey, an Englishman, who, in 1821, took out an English patent for it.

From 1821 to this day a considerable number of patents have been issued, both in this country and abroad, either for so-called new processes or for the machines to apply them.

Among the inventors who have really improved the means of manufacturing artificial fuel, by using either coal tar, fluid pitch or dry pitch, the names of Grant, Rathwell, Cooke, Wylam, Warlich, Dobrée, Moreau, and De Hoyning are prominent.

Fluid and dry pitch formed a good cement for bituminous and semi-bituminous coal-dust, but it did not succeed as well with anthracite and semi-anthracite waste, which is mined in South Wales and in some parts of France and Belgium. Before the cement is consumed the bituminous artificial fuel is coked, and consequently it does not crumble in the fire. It is not the same with anthracite or lean coal-dust. When cemented with coal tar or pitch, or any other resinous material, the cement consumes in the fire more rapidly than the coal, and the particles of coal, having lost their adhesive coating, crumble in the fire and fall through the grates without being consumed.

Resinous materials expand when burning, while clay, on the contrary, contracts progressively when submitted to elevated temperatures. Clay, used alone, would not have given a fuel impervious to moisture. It was supposed that, by mixing clay and pitch with the coal-dust, the fuel manufactured would not only be waterproof, but would remain in the fire, without crumbling, until consumed, the shrinkage of the clay compensating for the swelling of the pitch.

Among the experimenters in that direction we have men who have really improved the manufacture of artificial fuel. The most eminent of these inventors are Chabannes, Sunderlandt, Stafford, Oram, Geary, Goodwin, Mohum, Sterling, Albert, Newton, Holcombe, and one of the great Smith family.

All these attempts were unsuccessful. The presence of pitch in the fuel made it unfit for domestic use, and the clay impaired its combustible character for manufacturing purposes.

Patents were also granted to several inventors for a mixture of bituminous and of anthracite coal dust, and coking the mixture. The first one of these patents was granted, in 1823, to John Christie and Thomas Harper, in England.

The result was the same as with Bessemer, Baroulier, and others. The machinery was too expensive, and the product was not marketable.

* Condensed from a paper read before the Franklin Institute of Pennsylvania, in January, 1874, by R. F. Loiseux, and fully reported in the Journal of that Institute.

The most singular patent ever issued was granted in 1840, to Thomas Kerr, of England, for a new composition for artificial fuel and other purposes.

"This composition is formed, first of the 'takings of roads, or streets, or other public ways, or the sweepings of houses, offices, and other buildings; or of the ashes of coal or other fires; or of small coal, culm, breeze, or of river or sea sand, or of free-stone or other stones pounded into dust, or of any other mineral or vegetable substance in a state of dust or powder.'

Secondly, of chalk, or any other similar calcareous substance of a drying and retaining nature, ground into a fine powder.

Thirdly, of tar, or pitch, or oil, or rosin, or some other substance of the like bituminous, fatty, or inflammable nature, such as the common Archangeal tar, in the same state as imported, coal-tar as it comes from the gasworks, the pitch that is manufactured from coal after the naphtha has been extracted, whale-oil, linned-oil, and other oils.

Fourthly, simple clay or common salt. These ingredients described under these four heads are combined in a variety of proportions, and used for fuel and for an infinity of other purposes."

Some inventors, thinking that coal does not contain sulphur enough, and probably supposing that it improves the fuel, especially for metallurgical purposes, add to their mixture, as described in their specifications, large quantities of sulphur, some of them as much as 3 per cent.

A large number of patents have been granted in America for artificial fuel. Most of them are modified copies of foreign patents, and a good number denote in their description a complete ignorance of the calorific properties of fuel and of the laws of combustion. The only one which, in my opinion, possesses real merit, has been lately granted to Dr. Joshua R. Hayes, of Winchester, Pa. This patent was issued on March 4th, 1873.

Mr. Hayes uses coal-dust, clay, and asphaltum; but although the manner in which he combines these materials is new and ingenious, the product will be liable to the same objections made against the fuel manufactured in Europe from coal-dust, clay, and pitch, by Stafford, Oram, Goodwin, Geary, and others.

The manufacture of artificial fuel, although being far from having attained the importance which it must attain in the near future, has been developed more rapidly in France and in Belgium than in England. English coal is harder than French and Belgian coal; and, until within the last three years, the price of coal in England was so low that there was no inducement for capitalists to invest their money for the development of an industry which presented but poor prospects of good dividends. But increase after increase in the price of coal during the last three years has entirely changed the state of affairs. Large companies were organised last year, with immense capital, for the manufacture of "patent fuel" by different processes. The last one patented in England, and which has also been patented in this country, is the invention of Martin Rae, of Uphall, North Britain. It consists in mixing with coal-dust 15 per cent of what he calls a bituminous mastic. In this process we have again a mixture of clay, coal-dust, and some other bituminous material, fluid shale pitch.

A company was organised in May, 1873, with a capital of 1,000,000 dollars, under the name of "The Diamond Fuel Company," to apply David Barker's process.

In these two processes, as well as in the old one of cementing coal-dust with pitch, or rosin, or asphalt, a large amount of natural coal is consumed, not only to dry or carbonise the product, but also to heat the cement and the coal-dust itself. If the dust was not heated, the cement would not adhere to the particles of coal. There is also the unnecessary handling in carrying the fuel to the drying-oven, and removing it when dry.

Both Martin Rae and David Barker are inventors, not only of the process, but of the machinery for its application.

The mixing-machines in Europe are almost all constructed on the same plan: they consist of vertical or horizontal cylinders, differing only in height, or in length.

Although the compressing machines used in Europe are numerous, they are all modifications of four distinct mechanical modes of applying pressure. First, by means of rollers; second, by pistons in closed moulds; third, by pistons in open moulds; and fourth, by pistons pressing cylindrical lumps with a hole through the centre.

Most of the machines have also been tried to convert peat into a dense fuel. Some of them have answered the purpose very well—Millsch's machine, for instance. Large peat factories

are in operation at Stalbach, Halle, Haspelmoor, and Neudstadt, in Germany; and at Montaign in France.

I will now proceed to describe what appears to be their deficiencies.

It is evident that no artificial fuel containing a resinous substance will ever be used for domestic purposes, on account of the smoke and of the bad odour. Another objection is that such a fuel is liable to spontaneous combustion. No objection of the kind can be raised against artificial fuel cemented with clay and milk of lime.

By mixing the coal-dust and the cement in a vessel which contains only one single shaft with blades the materials are turned around, always in the same direction; it takes a long time before they are brought to a plastic state. Increasing the length or the number of horizontal mixers requires too much valuable space and is very expensive. A better result would certainly be obtained if the diameter of a vertical mixer was increased, and if several upright shafts commanding each other and consequently revolving in opposite directions, were used instead of a single one. The knives of these shafts crossing each other in all directions, would undoubtedly perform a quicker and better work than the blades of one single shaft. Practical experiments have demonstrated this fact.

In my process, I use the slack without heating it or drying it previously. The moisture which it contains varies with the state of the atmosphere. Therefore I am compelled to regulate the supply of lime water accordingly. The difficulty of ascertaining the state of the materials, inside the mixer, suggested the idea of placing sliding doors around it. These doors facilitate the cleaning of the mixer and the removal of stones or pieces of iron which are found quite often in the coal-dust. By means of a movable spider, which allows the removal of each shaft without interfering with the others and without removing the stationary frame in which they stand, a broken arm or a worn-out one can be replaced by new ones in half an hour.

Although the compressing part of some only of the European presses is defective, the feeding part of almost all of them is very deficient. The materials to be pressed containing at certain times more moisture than at other times, the feeding of these materials to the press ought to be reduced or increased accordingly, and, to effect that purpose, simple and efficient means are necessary.

The pressure should be applied gradually in order to expel, as much as possible, the moisture contained in the mixture, and avoid cracks, which are the unavoidable result of a sudden pressure. An excess of compression spoils the fuel, prevents its free burning, and makes the ashes adhere to the surface of the lump, instead of falling through the grate into the ash-pan. The fuel must be sufficiently compressed to bear transportation and reasonable handling, and be still porous enough to insure free combustion. The shape of the fuel is also of great importance. Square lumps have too many sharp edges, which break off easily when the coal is handled, and the flat surfaces meeting very often in the fire prevent the free access of the air. Cylindrical-shaped lumps are better, still they have sharp edges left. Round or egg-shaped lumps are evidently to be preferred. It is not without some good reasons that this shape has met with favour for nearly three centuries in Europe.

To compress the plastic composition into round or egg-shaped lumps, it requires less power than is required to compress square ones of the same weight, as there are no corners to fill and, as a result, less friction. With round or egg-shaped lumps, no matter what amount of coal is piled on the fire, there is always sufficient space between the lumps to secure a good draught, and to allow a free access for a good supply of oxygen.

For these reasons I have adopted the egg-shaped form, slightly flattened, and have modified Baudry's and Martin's presses, in order to obtain more and better products. Instead of using moulding rollers producing only one lump at a time, I increase the length of the rollers, and mould fourteen lumps at a time. The feeding is regulated by a pug-mill, with a central shaft, to which a series of knives is fastened at any required angle, and below these knives, on the same shaft, is a two-bladed propeller. The bottom of this mill is formed by two sliding-plates, which can be brought apart and together

by hand-wheels. I am thus enabled to increase or reduce the open space between them, and to force more or less plastic material between the rollers, according to the degree of moisture which it possesses. The number of revolutions of the knives can also be increased or reduced, by changing one gear wheel, which can be done in a few minutes. A machine is thus obtained, possessing all the good qualities of Baudry's press, and having none of its defects. The lumps fall on an endless wire-cloth belt, and are carried by it directly into the drying-oven. This press will produce over 10 tons per hour. The drying of the fuel, in Europe, takes place in ovens.

In this system all handling is suppressed. No cars, tracks, hooks, turning-tables, &c., are necessary. The doors of the oven are always closed, and consequently the heat in the oven can be kept up to any degree; the iron in the oven is not liable to contraction and expansion, and less coal is consumed to dry the manufactured fuel.

To render the fuel impervious to moisture, instead of mixing a resinous substance with the materials, the lumps are simply dipped into a liquid composed of rosin dissolved in crude benzine. By exposure to a current of air the benzine evaporates, and leaves each lump coated with a thin film of rosin, which closes all the interstices and renders the fuel waterproof. I have kept lumps under water for three months.

CONCRETE BUILDING.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

At the meeting of the members of this Society held at their rooms, No. 7, Westminster-chambers, Victoria-street, on the evening of Friday, the 13th inst., under the presidency of Mr. O. H. Rew, a paper on "Concrete Buildings" was read by Mr. Drake. He said that to trace the history of the use of concrete for structural purposes would take the student back to the earliest period of the world's history. Both in India and in America concrete had been used from the earliest times, and in every country in Europe old concrete buildings were numerous. With such facts, it appeared strange that only about fifty years ago the use of concrete, even for foundations, had almost ceased in this country. The modern revival of its use could be easily traced to the increased knowledge of the properties and values of all kinds of limes and cements; engineers, architects, and manufacturers recognising the necessity of applying the most accurate scientific knowledge and practice to the preparation and use of these materials. In tracing the progress of this country in the use of concrete, it was stated that Mr. W. Wanger, of Brighton, obtained, in 1832 and 1834, patents for "artificial stone," his patent specifications describing careful and scientific methods of making lime concrete blocks for buildings. In 1836 the first medal of the Royal Institute of Architects was awarded to Mr. G. Godwin for his essay on concrete, which was published in the first part of the first volume of the "Transactions" of the Institute; and to its influence he said might be traced very much of the increased use of concrete, especially for foundations. Capt. Smith's translation of M. Vicat's treatise on limes and cements was next mentioned. The rise and progress of modern concrete buildings was found to be co-ordinate with the discovery and perfection in manufacture of Portland cement. Roman and Media cements were inferior in many ways to Portland cement for concrete-work, and when measured by strength, were very much dearer. Much of the high superiority of Portland cement was due to the careful and scientific tests and experiments of the engineer of the Metropolitan Board of Works, and especially to Mr. Grant and Mr. Bazalgette. Mr. Drake said, that in 1868 he obtained a patent for concrete-building apparatus, and that it had gained much favour. The advantages secured by the use of cement concrete for house-building purposes were,—increased strength, greater durability, reduced cost, greater expedition, superior damp-resisting qualities, greater facilities for fire-proof construction, greater facilities and economy for ventilating, warming, and applying improved sanitary arrangements, being vermin-proof, and giving an alternative method of construction and the means of employing unskilled labour. Mr. Grant's tests and Mr. Kirkaldy's accurate testing machinery had proved conclusively that

almost all the ordinary buildings of stones and bricks succumbed under test before concrete. The lowest estimate of comparative strength that he had seen showed concrete to be three times stronger than brickwork, there being of course a variation of strength with the different kinds of materials used for mixing with the cement. Chemical analysis proved that the durability of modern cement concrete was assured by its ultimate crystallisation; and the experiments of Mr. Grant showed that instead of deteriorating with age it became harder and stronger. Many of Mr. Drake's clients had testified to the reduced cost of the material, some stating the cost of concrete-work to be less than half the cost of brickwork, while others said there was a saving of from 30 to 40 per cent. The cost varied, as in some districts circumstances were much less favourable to concrete than in others. There were, even when carriage of cement and the aggregates for concrete were dearer, other elements of economy worthy of notice—wood lintels and bonds were not required, one coat of plastering could be saved, and the thinness of walls of concrete gave more house-room than would stone walls. Cement concrete walls might be safely built at the rate of 2 ft. high per day. The greatest saving of time effected by concrete-building was due to the fact that a concrete house was perfectly dry as soon as built, and might be inhabited at once with safety. During the progress of setting, which occupied only a few hours, cement exuded all moisture in excess of that required for hydration and induration, and would not again absorb moisture from the atmosphere. The non-absorbent qualities of concrete were considered by many to be its most valuable quality. Several instances were given to show that good cement concrete was practically damp-proof. Concrete offered greater facilities for fireproof construction than any other material. He had seen pieces of concrete taken red-hot from a fire, and upon cooling it showed no other effect than a slight vitrification of surface. Much depended upon the aggregate of which the concrete was composed. The chief cause of failure in many so-called fireproof buildings had been the use of iron, while in concrete floors and roofs were protected from the heat, as they were completely buried in the concrete. In concrete walls, ventilating and air-flues could be formed in the walls, and no pipes were required. In monolithic concrete houses there were no mortar joints, and vermin had no chance whatever of finding an entry or an abiding-place. The work in building with concrete could be done almost entirely by unskilled labour. For that reason, and because concrete offered an alternative method of construction, in conclusion he thought it ought, in these days of strikes and attempted restrictions of trade, to find favour with employers.

The chairman considered the members were under an obligation to Mr. Drake for his excellent paper. He had not, however, according to his (the chairman's) view, made out a case of decay in brick and stone. Stone would stand as long as concrete, if it was properly chosen at the first. While concrete might be suitable for engineering work for heavy foundations, it was totally unfit for any architectural purposes. He had seen some concrete buildings which had taken a very long time to erect, while he knew of some brick buildings which had been built and inhabited in four weeks.

Mr. Butler thought there was no doubt that concrete had a great future before it. To modern engineers he considered it due that Portland cement had been raised to its present value as a building material. The improvements in mortars and cements were almost of modern origin. In ancient work the Romans used very good mortar and cement, but afterwards it fell into disuse; and in England the Middle Age architects built with very bad material.

Mr. Pain differed from Mr. Drake as to the rapidity with which buildings could be erected, and gave an instance where a concrete building had been in hand a longer time than it would have taken to erect a brick building. In an architectural point of view he considered that it was a failure entirely. He hardly thought it fair to give examples of old buildings, and state that the concrete-work had stood for so many years, when perhaps there were a great number of buildings of the same material that had gone to ruin. There were equally good examples in brick and stone to be seen. If concrete-work was scamped, it was worse than brick or stone-work scamped. Doubtless it was a great advantage to use concrete when bricks or stone could

not be obtained. In the construction of walls, warehouses, or other buildings where no architectural display was required, he thought it would be an advantage. Anything in the way of architectural decoration which he had seen in concrete buildings had been either cement moldings or cornices, and the appearance was poor and wretched.

Mr. Whitaker supported several of Mr. Pain's views.

Mr. Wilcox said, as to the mixing of concrete some persons thought it should be thrown from a certain height; but he thought that was a disputed point; for where that was done the stones fell below, and a proper mixture was not obtained. This view was also supported by

Mr. Butler, who believed that the best way to use concrete was by adopting the old-fashioned block system.

Mr. Usill agreed with the two previous speakers as to mixing concrete, and the use of the block system.

Mr. Meakin thought the chief argument in favour of concrete as a building material was its cheapness. If a finer class of cement, or a finer quality of concrete, were used as a facing on buildings constructed with concrete, he thought that some little ornamentation might be impressed upon it. The plainness and unsightliness of structure would thereby be improved.

Mr. Drake, in reply to Mr. Pain, gave an explanation of the delay in the erection of the building to which that gentleman referred; and in support of his argument that concrete buildings could be very rapidly constructed, he said that an hotel, three floors high, which he had had to erect within six weeks under a penalty of 50l., had been completed within five weeks. There was little or no difference between the brick-built and cemented house of the west of London and his concrete houses, which were also cemented. An explanation of the mode of mixing concrete was given. The various advantages of the use of the block system he considered as very delusive, and thought the time spent in setting them, waiting to see if they were secure, and the employing of skilled men, were all unnecessary. The concrete building apparatus was referred to.

CONVERSION OF HOTELS INTO WORKING MEN'S HALLS.

The inauguration of a new style of hall—or rather the conversion of a first-class hotel—into a building for workmen's temperance meetings, took place last week, and is likely to be the precursor of similar buildings.

The city of Durham has of late become very active in the temperance movement; and the members having felt the want of a large place for public meetings, it was eventually resolved to bid at auction for the Shakespeare Hotel, which was in the market; and, despite the high biddings of distillers and brewers, the temperance advocates got the house knocked down for the sum of 2,630l. The property then required considerable alterations, and subscriptions ranging from 1,000l. to a penny came in from different parts of the county, that enabled the committee to commission Mr. Henry, architect, to prepare plans for the alteration of the property into the "Shakespeare British Workmen's Hall," and the work of restoration was brought to a successful termination a few weeks ago.

The design was to make it as cozy and comfortable as an English hotel; and on the ground floor are the bar, a dining-room, and a smoke-room. The "bar" occupies the same position as when it dispensed grog, and measures 16 ft. by 13 ft., and the architect has embellished the walls with the old half-dozen spirit-casks, which have been cleaned, and painted, and purged of all spirituous chances of absorbing alcohol into the pores of testollars.

The hall will seat about 300 persons, measuring 50 ft. by 29 ft. The height of the wall-plate is 16 ft. 6 in., and the total distance to the apex of the roof is 25 ft. The roof is trussed with circular ribs, and is ceiled from the wall-plate, and has a pleasing aspect. At the west end of the room is a platform, near to which are fixed an harmonium and a pianoforte; scullery, larder, and ante-room. There is a large boiler-house, for making tea and coffee on a heavy scale, and for boiling hams; stabling for horses; and above which is a lodge-room, for the use of temperance societies, friendly societies, and other kindred bodies. Inside the yard the manager has a compact residence, that will enable him to lodge visitors. Even the old sign-board is left swinging;

but instead of "Good accommodation for man and horse. Best wines, spirits, and ales," the architect has been directed to have lettered,—

"A publichouse without the drink,
Where men may sit, read, talk, and think,
Then safely home return.
A stepping-stone this house you'll find,
Consent to leave your beer behind,
And truer pleasures learn."

The total cost of the alterations was 1,400l., which, with 2,630l., the purchase-money, and the expense of the fittings, is nearly all subscribed.

THE KENNINGTON NEW BATHS AND PUBLIC HALL.

A NEW building which will contain one of the largest swimming-baths in the metropolis, as well as upwards of fifty private warm baths, and which is also so constructed as to answer all the purposes of a large public hall, has just been erected in Harleyford-road, Kennington, immediately opposite the Oval Cricket-ground, and the opening ceremony will take place shortly after Easter, when it is intended to have a number of swimming matches.

The Harleyford-road frontage of the baths, which is also the main entrance to them, forms the central elevation of a new block of houses, right and left of it, now in course of erection, and which overlook and have a commanding view of the cricket-ground. The elevation of the baths is carried considerably higher than the buildings on either side, and is surmounted by a gable. Underneath, an archway leads to the baths, which are approached along a corridor 16 ft. in width and about 100 ft. in length. The swimming-bath is entered at the extreme end of the corridor, whilst the approach to the private baths above is by a stone staircase on the right-hand side of the corridor, 6 ft. in width. The extreme ground area of the interior of the building, from wall to wall, and including the space around the margin of the swimming-bath, is 160 ft. in length, by 60 ft. in width, thus occupying nearly 10,000 square feet, whilst the dimensions of the water area of the bath are 127 ft. in length, by 37 ft. in width, with a minimum and maximum depth of 4 ft. and 7 ft. respectively. The bath is circular at each end, and steps formed of Portland cement are carried entirely round down to the bottom of the bath. Dressing-boxes, on the immediate edge of the bath are also fitted up around the entire water area. They are 92 in number, and are 4 ft. in length and 3 ft. in width, being entered at the rear from a corridor carried round the interior. In the centre of the bath, and 40 ft. from the shallow end, there is a fountain which is intended to be kept constantly playing. Above the swimming-bath a gallery or balcony is carried entirely round the interior of the building. This gallery is supported by 24 square columns, which are also carried up to the roof. The rear portion of the gallery will be partitioned off for the private baths, which will be 60 in number, whilst the front is intended to be fitted up with seats for the audience on the occasion of meetings or entertainments. The front of the gallery is of open ornamental ironwork, which, together with the columns and the interior generally, is intended to be artistically painted and decorated. The interior has an open circular timber roof, with a lantern-light above, carried the full length of the baths, and which also serves for ventilating purposes. The roof will be stained and varnished. The extreme height from the bottom of the bath to the apex of the lantern light is 50 ft.

Amongst the objects contemplated by the proprietor, in addition to bath accommodation, is a coffee, smoking, and reading room, and for this purpose two rooms, 28 ft. by 14 ft., are situated in immediate proximity to the swimming-bath, and are entered on the left side of the main corridor leading to the latter. They are intended to be handsomely fitted up for their intended purpose, and liberally supplied with the newspapers and periodicals of the day. In view of the building being used for meetings, dinners, musical entertainments, balls, or other public purposes, arrangements have been made for running off the water in the swimming-bath during the winter months, and converting the interior into a spacious hall, by laying down a floor, which, we understand, has been constructed for the purpose. Its capacity, including the galleries, is calculated to be equal to an audience of between three and four thousand persons, on occasions when it may be used for meetings or

other similar purposes; whilst the ground area will accommodate a dining-party of upwards of a thousand. The building is centrally situated in the immediate neighbourhood of Vauxhall, the "Horns," Kennington-road, Kennington-park-road, and other populous districts.

The building has been erected from designs furnished by Mr. Higgs, the owner; the works having also been carried out by Mr. Higgs, under the superintendence of Mr. Swain, as clerk of works.

NOTTINGHAM IN OLD TIMES.

THE history of Nottingham is obscure, but by the aid of charters and State papers, supplemented by other documents accessible to the public, we learn that from an early period Nottingham was a town of some importance, and the records in the muniment-rooms of the Corporation have long engaged the attention of antiquaries. In the local *Guardian* is an interesting article on this subject, to which we are indebted for the following particulars:—Edward I., in 1283, granted a mayor. In 1574 a list of mayors first appears in the Hall book, but the first nomination was 1594, yet there is no record of nomination before 1698, and no satisfactory evidence who chose the mayor until the 18th Elizabeth, and when the mayor first became Lord of the Manor is not known; but a Mickleton juries' presentment exists as early as 1512. Amongst other presentments, they say the market wall is in decay for want of coping stones, and forbid people to wind corn in the streets, or allow swine to roam without a eweherd. They also present that every alderman shall make search in his ward weekly to weed out idle persons, and all who let houses in back lanes shall be bound in a good round sum of money to discharge the town if they leave any children behind them. The chamberlain's accounts are curious, and date from Henry VIII. A few extracts may interest. In 1548 the so-called Robin Hood's Well is entered in the Hall book, as "Robyn Hood's Well." In 1586 no person was to go to Derby for 12 days, without the consent of the Mayor, and not to receive any Derby men under pain of 10s. In 1594 it was ordered that R. Hancock was to dig in the copice for coal. In 1603 a proclamation was issued as to keeping Lent, and as to the sale of fish; white herrings full-wed three gallons 1d., white shotten four gallons 1d. Twenty years later, such was the distress around Nottingham that the justices report that dogs' flesh and horse flesh were dainty dishes; many soldiers were without shirts, shoes, socks, or breeches, and no money to pay them; many malt-houses and ale-houses were suppressed, and the corn sold to the poor. In 1628 a proclamation was issued to Anthony Aier to preserve his Majesty's "game of hares," in the county of Nottingham. In 1647 the mayor's sergeant was ordered to close shops according to custom, and restrain non-free-men from trading. In 1652 tolls collected on oatmeal and malt shall go to the mayor's sergeants equally between them. In 1654 Evelyn in his diary says, "I lay this night (14th August) at Nottingham, and I observed an ample market-place, and large streets full of crosses." He would also observe an unpaved market-place, occupied by saw-pits, with a horsepond in the centre, an open sough and a mouldering wall down the middle, with rough timber on sale roped to trees, and stocks, pillory, and a ducking-stool on Timber-hill. In 1655 two persons are ordered to make a journey to Leicester to ascertain the best way to set poor stockingmakers to work, and a house was taken in Castle-gate for that purpose for two years. In 1685 it was ordered that burgess parts should be forfeited, if the recipients could not procure certificates of having received the sacrament within twelve months. Counsel's opinion was taken upon this subject, 1776, who decided that the sacrament must be received.

The Surveyorship of Marylebone.

There will be a very strong contest for the office of chief surveyor of Marylebone, the salary for which is 600l. per annum, at the meeting of the Marylebone Vestry this Thursday. At the meeting held last week five candidates were selected by a committee to go to a ballot, viz., Mr. George Buchanan, Mr. H. J. Hallett, Mr. A. Latham, Mr. J. Niblett, and Mr. Henry T. Tomkins. Mr. Latham and Mr. Tomkins having the highest numbers, will go to the final ballot.

A WORKING MEN'S CLUB-HOUSE BUILT BY WORKING MEN.

A WORKING Men's Club has recently been built at 93, Regent-street, Westminster, called the Portcullis Club, which has been completed in every respect by a body of working men. The ground upon which it stands has been purchased by working men, who also purchased and paid for the materials of which it has been built. The same parties have also actually themselves erected the building, having been employed on the work after leaving their regular day's labour, on many occasions until midnight. Beyond this, they employed no architect, one of their own body having drawn up the whole of the plans and elevations of the building, which comprises a large hall, which they let for lectures and musical and other entertainments. There is also a large reading-room, which is fitted up for writing and business purposes, and chess, draughts, and other quiet games are also played in this room. Another part of the building contains a billiard-table, and a refreshment-bar which is conducted upon temperance principles. The lecture-room has already been let on several occasions, and the refreshment-bar has also been placed in the hands of a tenant, who pays a rent for it which covers a certain portion of the expenses of the establishment, the tenant undertaking to supply the best materials at reasonable charges.

A NEW CEMETERY FOR HAMPESTEAD.

LAST week Mr. Holland, the medical inspector appointed by the Home Office, attended at Fortune Green, Hampstead, to inspect a site for a proposed new cemetery for the parish of St. John, Hampstead, which has become necessary in consequence of the burial-ground attached to the parish church being now nearly full. The result is that a Burial Board has been constituted by the Vestry, and the Board have selected a site twenty acres in extent, situated on the west side of Fortune Green Lane, and to the south of the Anglo-French College, Finchley-road. The inspector having examined the site, adjourned to the Cook and Hoop Tavern, West-end, where an inquiry took place as to the suitability of the site. The surveyor of the vestry said that the land could be easily drained, and made available as a cemetery, according to the provisions of the Burial Acts. The cost of the land would be 5000l. per acre, but that, as it was copyhold, it would amount, with enfranchisement, to about 6000l. Three acres of the site being within 100 yards of some cottages, could not be used for interments without the sanction of the owners, and this portion the Board proposed should be planted as ornamental ground. The site was supported by Mr. Le Breton, of the Metropolitan Board, and several other gentlemen, and opposed, amongst others, by Mr. Hayman, proprietor of the Anglo-French College, on the ground that it was too near the populated portion of the parish; but it was shown, on the other hand, that it was at one of the boundaries of the parish, and in reality away in the country. The Government Inspector appeared to be of opinion that the site was unobjectionable, but eventually he adjourned the inquiry until the week after Easter, in the meantime throwing upon the owners of property who opposed the site the onus of finding a more advantageous site.

THE GREAT FORTH RAILWAY BRIDGE.

THE unprecedented magnitude of the proposed stupendous bridge across the Forth has so alarmed a number of the shareholders in the North British Railway, under whose auspices, along with the Midland Railway, it is intended to be carried out, that a committee of shareholders of the former company are taking steps to secure the election of a number of directors who will oppose the proposal for the North British Company to take an active part in the construction of the works. The committee state that the Act for the construction of the bridge incorporates a company with a share capital of 1,250,000l., with borrowing powers for 416,666l., a sum equal to the present market value of the North British ordinary stock; and that the authorised railways extend over a distance of about thirteen miles, in addition to the bridge across the Forth, which is one mile and a half in length. In aid of this project the North British directors have signed an agreement guaranteeing 7 per cent. on the outlay of 1,250,000l., and the

committee complain that, although no efforts have been made by the Forth Bridge Company to obtain the necessary capital, there is an intention to link it on to the North British Company, and that a guarantee is given to the Forth Bridge Company of 40,000l., and also a further sum of 95,000l. out of the net revenue of the North British, which aggregate sum is to be increased to 87,500l. They add that this guarantee will be ruinous to the North British Company, and they point to the improbability of the works ever being successfully carried out, owing to their gigantic character. The bridge, they say, is to be constructed on a scale hitherto unknown in engineering experience, the main span being nearly one-third of a mile in length, and the pillars much higher than the top of St. Paul's Cathedral; an undertaking, therefore, of so gigantic a nature as cannot be otherwise regarded than a most dangerous and unwise entanglement on the part of the North British Company, and involving risks which ought not to be undertaken. In the meantime the Midland Company are warmly supporting the undertaking, and have guaranteed 16,000l. a-year in traffic; and it is said that the works are immediately about to be commenced.

RESTORATION OF ST. HELEN'S CHURCH, YORK.

A MEETING of the parishioners has been held in the vestry of this church to consider the best means of repairing and restoring the west front. It appears that subsidence caused by street drainage in Davy-gate has rent one of the internal arches, and otherwise injured the buttresses and windows at the south-west angle. On further examination the lantern turret which surmounts the centre of the façade was found to be so much decayed that it would be unsafe to leave it in such a dangerous position. Messrs. Atkinson, architects, York, produced plans of the parts requiring to be repaired and restored, together with an estimate of the cost, which amounted to about 6000l. Archdeacon Hey, the vicar, was in the chair, and explained that owing to the parish being so small they were obliged to appeal to the public for aid in carrying out the work. Mr. Roper, Clifton Croft, having offered 3000l. for rebuilding the turret in its present form, a subscription list was opened and subscribed to by the parishioners present, in furtherance of the other portions of the work. It is intended to proceed with the restoration as soon as possible.

GAS.

THE Commissioners appointed by the Board of Trade to revise the price and illuminating power of the gas supplied by the Imperial Gas Company have made their award, fixing the illuminating power of the gas for the year 1874 at 14 candles, and the price at 4s. 8d. per 1,000 cubic feet. The increased price asked by the company was 1s. 1d. per 1,000 cubic feet. The Commissioners have allowed them 11d. per 1,000. The illuminating power remains as before. We should think the company must regret that they did not ask twopence more at least, when they would have no doubt got exactly what they wanted. The Chartered Company know a little better what they are about.

At the opening of the Commission on the application of the Chartered Gas Company for increase of rate, Mr. Serjeant Sargood stated that the accounts of 1873 indicated that there would be a deficiency on the current year of 289,648l., or about 1s. 5½d. per 1,000 feet. It was proposed to ask for an increase of 1s. 4½d., which would still leave a deficiency of about 4,000l.

In consequence of complaints by the inhabitants of Notting-hill about an offensive discharge of refuse from the Gas-Light and Coke Company's works into the public sewer, the Vestry of the district took out a summons against the company at the police-court. Mr. Beesley argued that the prohibition of refuse did not apply to liquids. On the merits of the case he said it was only a question of time, as the company were doing all they could to comply with the requirements of the Vestry. The hearing of the summons was adjourned.

Damage to Sharpness Docks.—The north wall of the new Sharpness Docks, 60 ft. long and 40 ft. high, has been broken down by the water recently let into the dock. The damage is estimated at from 40,000l. to 60,000l.

THE NEW COLLEGE AT NEWINGTON.

The new building at Newington, called the Pastors' College, adjoining the Rev. C. Spurgeon's Tabernacle, which has been in course of erection during the last six months, is now approaching completion. During the present week the structure has been covered in, and workmen are now busily engaged in finishing the interior.

The style of architecture adopted is a mixed Gothic, and the materials used are red Farnham brick, with black brick bands and Portland stone pilasters and dressings. The principal elevation is to the north, facing Temple-street, at the east end of which the building projects 8 ft. beyond the main body of the elevation. The length of this portion of the elevation is 35 ft., terminating with a gable, the extreme height of which is 58 ft. In continuation the elevation is carried westward 59 ft., the entire length of the frontage being 94 ft. The west frontage is hexagonal in form. The main body of the building is 36 ft. in height to the cornice, and 60 ft. to the ridge of the roof, and contains a lofty ground-floor, and an equally lofty upper floor. This was the original plan, according to which the building was intended to be erected, when the works were commenced last autumn, but subsequently an extension of the building was decided upon, and the structure is now carried up, in the centre, over the first-floor, to the extent of another story, which not only gives increased internal space and accommodation, but also imparts additional effect to the architectural appearance of the exterior. This extension of the original design has increased the cost of the building to the extent of nearly 2,000l. The principal entrance to the building is in the projecting portion of the north elevation, and is recessed, its width from pier to pier being 11 ft. In the centre of the gable in the upper floor there is a large traceried three-light window, 16 ft. in height and 8 ft. in width, the other portion of the upper part of the elevation containing four three-light traceried windows, 6 ft. in height and 8 ft. in width. The windows in the ground-floor are also uniform in their architectural character and dimensions with those above, but not traceried. The roof of the main body of the building is covered with green slate. The central portion of the building, above this, already named, terminates with an octagonal lantern-light, 21 ft. in width, the height of which from the ground-floor is 74 ft.; whilst at the east and west angles of the lantern-light there are octagonal ventilating shafts or turrets, 6 ft. in diameter and 25 ft. high, their extreme altitude from the ground-level being 80 ft. These ventilating turrets have stone copings, surmounted by open ironwork, for ventilating purposes.

The ground floor contains the college common room, 48 ft. by 28 ft., together with a large room, 71 ft. by 32 ft., which it is intended to divide into three class-rooms by movable partitions, thus admitting of the apartment being at any time converted into one large room for meetings or any other purpose. There are also three other class-rooms in the rear of this floor, in addition to two curators' rooms. An iron and stone staircase leads up to the first floor, which contains a large hall, uniform in its dimensions with that on the ground floor, namely, 71 ft. by 32 ft.; at the east end of which there is a gallery, approached from the landing on the third story in the centre of the building. This apartment is 28 ft. in height to the upper portion of the ceiling, which is of timber, stained and varnished. Adjoining this is an apartment, octagonal in form, and 30 ft. in diameter, which was originally intended for the library, but which is now to be converted into a depot for the sale of books in connexion with the tabernacle and the college. At the south-east corner of this floor is the lecture-room, an apartment 35 ft. 6 in. by 28 ft., with a raised angular platform at the west end, and immediately adjoining the lecture-room are four class-rooms, each by 15 ft. each, together with offices and other apartments. The library is in the third story, immediately over the octagonal apartment below, with which it is uniform in form and dimensions, and is lighted from the lantern-light at the top of the building. The floors are of wood and 2 ft. in thickness, including the iron rods and joists. The whole of the building will be heated and ventilated on Haden & Son's system, the machinery for which is in the basement, and flues in the walls throughout communicate with the ventilating shafts already described.

The architect is Mr. Henry Currey, and the builder Mr. Brass, and the cost of the building is stated at 11,000l.

SANITARY AND EDUCATIONAL EXHIBITION.

At the last meeting of the Executive Committee of Council of the Social Science Association, it was resolved that an Exhibition of Sanitary and Educational Appliances, such as that at Leeds in 1871, and at Norwich last year, during the period of the Congress in those places, should be organised to take place in connexion with the annual meeting of the Association, to be held in Glasgow in the autumn. In furtherance of this object, a Managing Committee was appointed to make the necessary arrangements. The object of the Exhibition is to bring under the notice of the public generally, and particularly those who are interested in social, sanitary, and educational questions, the latest scientific appliances for improving the public health and promoting education. Among these may be mentioned all matters relating to architectural and sanitary engineering, warming and ventilation, heating and cooking, water supply, sewage and drainage, food, disinfectants, hygiene in clothing, and things relating to the prevention of disease; school furniture, and other articles used in teaching; and all sorts of appliances appertaining to the advancement of sanitary science, the promotion of education, and the improvement of the health and domestic comfort of the community at large.

SUITABLE HOUSES.

In the last report on the condition of the Whitechapel district, Mr. John Liddle says, under the heading, *Metropolitan Board of Works*:-

"The best plan of improving the densely-crowded localities which presents itself to my mind is, for the Metropolitan Board of Works to obtain powers for the compulsory purchase of lands and houses which are unfit for habitation, and sell the ground, either to private individuals or public companies, for the purpose of erecting suitable houses for the use of the working classes, according to plans prepared by their surveyor, and approved of by the Board."

So long as the poor are suffered to remain huddled together in the several narrow courts and alleys in London, as is now the case, into which no other persons, except the police, relieving officers, medical officers of the union, and sanitary officers, enter, little or no improvement can be expected to take place in the moral, physical, or intellectual condition of the people. It is necessary for the well-being of a community that the rich and the poor should live in accessible proximity to each other, and should not be separated in the manner they now are in London,—the wealthy occupying the wide thoroughfares, and the poor the bye and narrow places on each side of them, so as to be out of sight, and, alas! too frequently, out of mind. So long as this state of things exists, the poor and ignorant have little prospect of becoming improved. Whereas, if the habitations and localities of the poor were thrown open to public view, by widening some of these confined places, the inhabitants thereof would profit by the example of their richer brethren. Much has recently been done in Glasgow, under the powers of the renewed Improvement Act, 1871, which enable the Lord Provost, magistrates, and council of the city, for the purposes of this Act, to take houses and lands compulsorily to make new streets, to alter old ones, to purchase lands and houses by agreement, to erect new buildings, to dispose of land by lease or fee for building purposes, &c. By these powers, the authority have extirpated seats of contagious fever, and have greatly improved the moral and physical condition of the people; and this has been done without inflicting any suffering upon the poor."

An Engineer for the West Indies.—The Borough Council of the Port of Spain, Trinidad, West Indies, in reply to their advertisement, received 125 applications for the post of engineer and surveyor to their town, and have conferred the appointment upon Mr. Llewellyn Lloyd, C.E., Oxford, at a salary of 600l. a year, and private practice allowable.

EXTERNAL AIR TO FIRE-GRATES.

An architect, "F. W. S.," writing as to some recent claims to credit for introducing the external air beneath the fire-grates, points out that it was long ago advocated in the *Builder*, and that he himself introduced air to grates many years ago. There is nothing new in the idea; the difficulty is to do it efficiently. In towns it seems undesirable without filtration, because of the dirt it otherwise introduces. The writer says,—"In a house in Brighton, where I bring in the external air, it is introduced at the back of the kitchen-range, and passes from thence up a flue to the foot of the staircase, which is thoroughly warmed, and this is effected without the additional cost of 1s. for fuel."

One of the principal reasons why the majority of English houses are so miserably chilly in winter (in which, I believe, a Russian would perish of cold) is that the staircases and passages are kept at a lower instead of a higher temperature than the rooms, so that when a door is opened the cooler air rushes from the staircase or passage into the warmer apartment, towards the fireplace, and thus creates those dangerous draughts which destroy our health and comfort.

In a visit I made to Moscow a year or two ago, whenever I felt cold in my sitting-room, I used to go and sit in the passage or staircase, for the sake of warmth. If our houses were arranged in a similar manner, we might have health and comfort comparatively without cost."

A PERSPECTOGRAPH.

Mr. A. R. EAST, of Selma, Indiana, has patented an improved perspective, the object of which is to provide a simple and efficient mechanical apparatus by which to take the points or boundary-lines of all visible stationary objects accurately, and transfer them to paper on a sketch-board. According to *Iron*, this is done by two perpendicular bars, which extend from a bed-piece. On one bar are two sleeves, the lower of which carries a horizontal arm, the further extremity of which is slotted to receive the second perpendicular bar. On the horizontal arm slides a vertical rod, through which, at its upper end, passes another horizontal arm, which is attached to the upper sliding-piece on the bar first mentioned. Pivoted to either sliding-piece at will is a converging arm, which carries one eye-plate on a vertical staff. On all these portions, except the swinging arm, are marked scales. A single example of the mode of using the instrument will suffice to show its application. To operate by the use of the perpendicular scale and the horizontal scale on the upper sliding-piece, or, in other words, to take field notes by latitude and departure, using the sliding scales, slide the horizontal scale to the top of the meridian, and move the scale of latitude (the vertical rod on the lower horizontal arm) to the extreme right. An object in the foreground to the extreme left, and nearest to the observer, is selected and regarded through the eye-plate. The scale of latitude on the base is next moved till it comes in direct line with the eye and the said point. Then the horizontal scale at the top of the meridian is loosened and moved down till it also comes in direct line from the eye to the object, and the angle of incidence, or the latitude and departure of the point of the object is found at the intersection of the two scales. A horizontal scale on the plat-board is moved until it cuts the degree of latitude of the point in the object, and a dotter is fixed to the angle of longitude or departure. By a gentle pressure on the dotter the point is carried on the paper. In this way the operation is carried on from object to object, and from point to point, until the entire field is gone over.

SNETTISHAM SCHOOL COMPETITION, NORFOLK.

Sir,—I have been informed on reliable authority that the selection in this competition has not fallen upon an architect, but upon a builder's clerk in the neighbouring town of Lynn.

Far be it from me, sir, to underrate the abilities of this gentleman (who, for aught I know, may be thoroughly competent), or to impugn the judgment of the School Board, whose business it was to adjudicate upon the relative merits of the designs of the architects whose services they solicited. Yet how frequently does it happen in these competitions, that, though the four quarters be ransacked for plans, the choice, after much ponderous debate, falls upon some unprofessional neighbour, whose eclectic attainments are probably not of the highest order.

AN ARCHITECT.

THE LUMBER TRADE.

THE mild winter has been very bad for logging in many parts of Canada. *The Morning Chronicle* of Quebec says:—

"Matters are even worse in the Michigan peninsula. In the latter district, owing chiefly to the money crisis, manufacturers were unable to make preparations for more than one-half of their usual get-out, and it is feared that that half will now be diminished by fully one-third to one-half, owing to the want of snow and frost. We understand that as a consequence the lumber market of the United States is appreciating the state of affairs, and we hear that lumber has gone up fully one dollar the mille feet, in Chicago.

We learn that many of our Canadian friends, who have been as usual going into Michigan to get out oak and elm square timber, and oak staves, have been very unfortunate, owing to the difficulties they had to contend with; most of them have reduced the number of their hands many weeks ago, as there was no advantage in chopping down what it was almost certain could not be hauled to the banks."

DRYDEN'S POETIC PROPHECY OF EDINBURGH.

SIR,—Seeing that visitors and strangers who come from afar to build and to sojourn in Edinburgh, give vent to their feelings against those who, in their haste to be rich, would obscure rather than develop the charms of a city beautiful for situations, I think the following lines by Dryden may now tend to keep our architects and builders on the alert to add to, instead of detracting from, the beauty of Edinburgh:—

"Now like a maiden queen she will behold
From her high turrets hourly arrivals come:
The East with income, and the West with gold,
Will stand like applicants to receive her doom.
The silver Forth, her own domestic flood,
Shall bear her vessels like a sweeping train,
And often wish, as of her misters proud,
With longing eyes to meet her face again.
The vent'rous merchant who design'd more far,
And touches on our hospitable shore,
Charm'd with the splendour of the northern star,
Shall here unfold him, and depart no more."

It is passing strange that it is from the palatial homes of those who have settled here that this remonstrance comes against those citizens who, for a little gain, would so far sacrifice the amenity of part of the city, sloping towards the Forth, north of the Dean Bridge. Luckily, the varied levels of the ground in and around Edinburgh hinder much damage from being done to the city general grandeur of appearance that the city possesses when viewed from a distance. Still it is a pity to see the haphazard way in which many vistas and views have been neglected, or, at least, the bravery of effect diminished, when the beauty of the whole surrounding prospect might have been increased at the same cost for buildings adapted to the respective sites.

J. K.

ANCIENT EDIFICES.

SIR,—In the year 1873 I saw in the West-street of Hexham, nearly opposite the Wesleyan chapel, two very curious old houses, which merit the notice of architects. On the Roman wall, the stations of Housesteads and Birdoswald, and west of Carlisle, old Dacre Castle satisfied my expectation. Even in busy Manchester some old buildings are extant, and many at Congleton. At Lichfield I saw the corner house in the market-place, occupied by Dr. S. Johnson's father,—a grocer's shop in 1797, when Miss Burney saw it, "stuccoed, with five sash windows in front, and pillars before it," engraved in Croker's original edition of "Boswell's Johnson," and in an anonymous account of Lichfield, A.D. 1819, printed by Lomax, of Lichfield, p. 145, as it was in 1760. Since then the ground floor has been altered. At p. 152, the house of Mrs. L. Porter, Dr. Johnson's daughter-in-law, is engraved. I saw at Edgell, two miles south of Lichfield, the large house, engraved in "Barwood's Lichfield," 1806, p. 664, and there stated to have been Dr. Johnson's academy in the village. In "Erdeswicke's Staffordshire," 1844, and in the volume printed by Lomax, this house is stated to have been demolished. It has been altered, and the observatory has been removed; but the house can be identified by the windows in the roof, the willow at the south-east corner, and the back gable. On the east side of Bear-street, Lichfield, is an ancient house, of the time of Queen Elizabeth, I think.

CHR. COOKE.

"BRIDGES AND CULVERTS."

SIR,—The question raised by "County Surveyor" some time back engaged the attention of the Bridge Committee for the county of Essex, and I was directed as County Surveyor to give my view of the matter.

It seemed to me that the term "bridge" for county purposes was applicable to constructions—culverts or otherwise—carrying the high roads over natural streams, however insignificant they might be; that the term "culvert" applied to drains, of whatever construction, to assist in clearing the roads and ditches from water due to rainfalls or storms. Upon this view of the matter the Bridge Committee has acted.

Hr. Stock.

FIRE.

SIR,—A lively interest is manifested to prevent fires. Our leading fireman has been experimenting on a burnt post. He decides that there is nothing "like wood" to resist conflagrations, and hopes that it may be treated in some way to retard ignition. Something may be done to aid, but perfection may not be reached any more than the North Pole. Pickled timber has been offered to the trade, but invitations and extras are not liked. If beams, rafters, &c., were washed with a sized solution of soda or alum, or salt of any kind except saltpetre, not excluding our old enemy, Epsom salts, its application would be easy, inexpensive, and lasting. Its merit may be tested on a small scale at the small outlay of one penny; or thin slabs of alum, &c., might be laid or glued on the beams: heat would cause it to melt and run round the beams. The same might be applied for centre ceiling ornaments, upper mouldings, and so on.

R. T.

FROM SCOTLAND.

Edinburgh.—A portion of the bronze equestrian statue, designed by Mr. John Steel, R.S.A., as the leading feature of the Edinburgh Prince Consort Memorial, has been cast at the sculptor's foundry, in Grove-street. The monument, of which the red granite pedestal now stands complete in Charlotte-square, comprises, besides the mounted figure of the Prince, four bas-reliefs, to be let into panels of the pedestal, and four subsidiary groups of statuary, which will occupy projecting stages at the corners of the basement. The minor groups, as also the bas-reliefs—with, says our authority, the *Weekly Scotsman*, one exception,—have been in the bronze for some time, so that the work now remaining to be done is mainly the casting of the central subject, to which the artist has devoted much time and labour. Mr. Steel's original intention had been to dispose of this in two, or at most three, operations; but, on mature consideration, it was thought desirable still further to sub-divide the work rather than run any unnecessary risk by taking too much at a time. Accordingly five distinct castings were resolved upon; and one of these, embracing the fore-legs and chest of the horse, was successfully carried out a few days ago.

That last undertaking was a much heavier piece of work, comprising the horse's head, neck, upper portion of fore-quarters, and barrel to a point below the saddle. The next will consist of the hind-quarters and hind-legs of the horse, and the figure of the rider will then be disposed of in two castings; after which the sections will be fused together by placing them in close juxtaposition and running molten metal along the edges. So far as could be judged from external appearances, the operation seemed perfectly successful.—The committee entrusted with the collection of subscriptions for the memorial of Sir James Y. Simpson, have decided to have a bust of the deceased baronet placed in Westminster Abbey, in addition to the statue by Mr. Wm. Brodie, R.S.A., which is to be erected in a central locality in the New Fluv. The balance of the subscriptions, amounting to nearly 2,500*l.*, will be handed over to the directors of the Edinburgh Royal Maternity Hospital, on condition that this sum shall be increased to 5,000*l.*, the whole to be devoted to the building of a new hospital with which the name of Sir James Simpson shall be in some way connected. Our authority, the *Weekly Scotsman*, says that the directors of the Maternity Hospital have at present 1,000*l.* in hand, and that an appeal will shortly be made to the public, in order to make up the necessary amount.—The

Heriot's Hospital governors have just acquired the Lanecranian schools, Davie-street, which it is their intention to demolish, says a correspondent of the *Weekly Scotsman*, in order to erect upon the site a handsome new building, to meet the requirements of this populous and somewhat destitute neighbourhood. The proposed school will be two stories in height, and will partake of the architectural characteristics of the parent hospital. At the intersection of Dean-street, with St. Bernard's-crescent, a strip of land has also been acquired, upon which it is intended to build an infant school for the Stockbridge district. This latter structure, which will only be one story in height, will closely resemble in design the school which at the present time is in course of erection at Norton-place, and will be an agreeable architectural feature in the locality. Building operations in both cases are to be commenced forthwith. The elevations for both schools are in process of preparation by Mr. Chesser, architect.

Leith.—At a special meeting of the Leith Dock Commission, the contractor formerly accepted for the new dock having declined to accede to the terms of the Commission, the contract has now been given to the contractor for the Albert Dock, viz., Mr. William Scott, who will commence the works forthwith.

SCHOOL BOARD SCHOOLS.

Leicester.—The completion of the King Richard's-road Board Schools has been celebrated by a public gathering, in which the Mayor and others took part. The schools are intended to provide accommodation for about eleven hundred children. They comprise four departments, viz., schools for boys, girls, and infants, and one for mixed scholars. Each of these departments has an equal area floor-space allotted to it, and consists of an L-shaped school, of which one arm of the L is 57 ft., the other 34 ft. long; two class-rooms, each 20 ft. by 18 ft., and separate entrance lavatory and out-offices. The width of the schoolroom in each case is 18 ft. The clear height of all rooms on the ground floor is 14 ft., and of those on the first floor 17 ft. The exact numbers which the several departments of the school will accommodate are as follows:—Boys' school, 280; girls' school, 280; infants' school, 280; total 1,120. The allowance of superficial area for each child is 8 ft. 6 in., and of cubical area about 150 ft. The infants and mixed scholars are located on the ground floor of the building; the boys and girls on the first floor; the boys and infants occupying the portion of the building nearest to, and the girls and mixed scholars the portion furthest from, the King Richard's-road. The total area of the site is 2,249 square yards. Of this area about 1,000 yards are occupied by building and fences, and the remainder is devoted to playgrounds for boys, girls, and infants. Each playground is distinct from the others, and those for the boys and infants are in front, that for the girls being in the rear of the buildings. The style adopted for the schools is Gothic, but the buildings are of the plainest possible description, and they are built entirely of red brick, the instruction of the School Board committee having been peremptory that stone work was not to be used, and that no ornamentation of the buildings would be permitted. The architects appointed by the School Board, Messrs. Shenton and Baker, have endeavoured to carry out the wishes of the committee as far as possible in these respects, and the work has been executed under their superintendence by Mr. Thomas Bland, whose contract amounted to 6,170*l.* This amount is exclusive of the cost of school fittings and stoves, and these items, together with the value of extra works sanctioned by the committee, will probably raise the total expenditure on the buildings to about 7,000*l.* The sub-contractors for the various works were: Mr. Yates, stonemason; Messrs. Carr & Paul, ironfounders and smiths; Mr. Shardlow, plumber and glazier; Mr. King, painter. The sanitary fittings are supplied by Messrs. McFarlane & Co., Glasgow.

Tamworth, Suffolk.—At a meeting held to open tenders for the proposed new buildings, the following were laid before the Board by the architect, Mr. J. B. Pearce:—Messrs. Carter & Son, Saxmundham, 886*l.*; Mr. Wright, Norwich, 798*l.*; Mr. Grimwood, Weybread, 755*l.*; Messrs. Goodman & Mallows, Framlingham, 708*l.* 10s. The last of these was accepted, subject to the approval of the Education Department.

SOCIETY OF LADY ARTISTS.

UNABLE again to obtain the Gallery in Conduit-street, the lady artists have found a home at 48, Great Marlborough-street, Regent-street, where two well-lighted apartments enable them to display 592 works, including three pieces of sculpture and three paintings on china. It is to be hoped the society will be able to remain where they now are, so that the public may know where to go. The larger gallery of the two is devoted to water-colours, the smaller to oil paintings and the list of contributors includes Mrs. E. M. Ward, Miss F. Ward, Mme. Bodichon, Miss Florence Caxton, E. V. B. Miss Alice Manly, Mrs. Bridell Fox, Mrs. Benham Hay, Mrs. Marnable, who makes a successful *début* in oils, Miss Julia Pocock, Miss Rayner, the Misses Swift, Miss Rebecca Solomon, Miss Thornycroft, Miss Warren, and other known artists. Even admitting that our female painters send their best works to the Academy and elsewhere, as they have every right to do, this Society, which serves as a training-ground for recruits, has this special value, that it affords an opportunity to ladies with artistic ability to add in an agreeable manner to their possibly small means; and on that ground, not to mention others, deserves the support of the public.

SWANSEA STREET IMPROVEMENTS.

The street tramways promise to bring about a change in the streets of Swansea, says the *Cambrian*. Mr. John Buse, of Oxford-street, has remodelled the corner of Temple-street and Goat-street. On that site stood the old police station. The corporation thought it best to remove the business of the police-court to the Guildhall, and erect a police-station in High-street; and the town is recompensed by having in its stead a block of buildings, erected at some cost, and which will be for the future known as the Temple-buildings. The block, which is now completed, consists of five first-class business premises and houses, two in Temple-street and three in Goat-street, which are erected on modern principles, attention having been paid to sanitary requirements, under the superintendence of the architect, Mr. Thomas Davies, and Mr. E. Cousins, the corporation surveyor, Mr. David Morgan being the builder. The building is four stories high, the rooms on each floor are lofty and well ventilated. The frontages in Temple-street and Goat-street are ornamental. The pillars of the ground floor are made of dressed stone, with carved Bath stone caps. The first floor frontage is built of dressed stone, with Bath stone columns and heads and cills of windows; the other floors being entirely of Bath stone with dressed stone quoins, having five gables of an ornamental design, with gilded spires. The shop-fronts are fitted up with plate glass; and the whole of the woodwork is varnished pitch pine. The pavement is carried round on an easy gradient, in lieu of the old and dangerous slopes.

THE POSITION OF THE INSTITUTE OF ARCHITECTS.

SIR,—All true friends of the Royal Institute of British Architects must have welcomed the new remarks you appear to have been constrained to make last week in reference to the late unfortunate suggestions of a Finance Committee. It is proposed to augment the entrance-fee of the members in general, and the yearly subscriptions of the Fellows in particular. I intend to pay five guineas per annum, the latter are offered to pay five guineas; and nothing is offered in return but the gentle reminder that life more expensive than it used to be, and that, the price of labour and materials having risen, architects' incomes have increased also. At the Institute of labour, which used to be gratuitously performed, is now paid for as it should be; but the total amount expended upon salaries of officers not very much less than half the yearly receipts for entrance-fees and members' subscriptions. When, however, it is remembered that the usual work of the council and other honorary committees consists principally in endorsing suggestions and sanctioning whatever has been "out and dried" beforehand by one or two who have looked into the matter, any change tending to substitute honorary for paid assistance is scarcely to be recommended. The Institute, however, is in debt to itself,—

funds intended exclusively for the library have been employed for general purposes; and this debt must be paid with interest without further delay. It is imagined by the Finance Committee that, contrary to all known statistics, income can be increased by simply increasing the subscriptions—by imposing voluntary direct taxation. It is felt by many that a reduction of expenditure is possible, and that at least a hundred guineas can be saved by discontinuing the annual *conversations*. But would not this savour somewhat of meanness? It would be infinitely better to leave the amount of fees and subscriptions as they are, and boldly inaugurate a diploma or certificate, which each Fellow of the Institute might receive upon payment of a certain sum of money. There are at present more than 275 Fellows, and supposing one hundred of the number consented to pay ten or even five guineas, a sum more than sufficient to meet emergencies would be obtained. In the course of a year, or two years, the grant of such certificates might be made dependent upon successfully passing an examination, conducted by a committee, not entirely professional, approved by the members, and subject to the approval of the State. Undoubtedly, for a short time, the world would be able to say that anybody, after having been seven years in professional practice, can obtain an architect's diploma by simply paying for it; but the same insinuation has been applied to many an admirable reform commenced under similar circumstances. It is necessary to make a beginning, and an accomplished fact usually receives in this country the respect everywhere accorded to success.

A FELLOW OF THE INSTITUTE.

ARCHITECTS' ACTIONS.

"PUGIN V. MOLLOY."

SIR,—It is not only not customary, but also most unprecedented, for an attorney to make statements regarding his client's case whilst it is still *sub judice*. It is therefore with considerable surprise that we have read Mr. Ryan's (the defendant's attorney) letters in your columns. Such a course might possibly have been pardonable had a false statement been made, or had he believed himself to be in a position to give a true for an untrue one; but it is clear on the face of Mr. Ryan's letter that he is not in this position, and that his communication is intended to raise a quibble, and disguise the actual points at issue. Although the report you first published gave the facts of the case rather than the incidents of the trial, still we would ask the defendant's attorney whether or not he is prepared to deny that our client was willing, on the ground of a long-standing friendship, to accept the sum of £800, in full of all claims, and to take upon himself the loss of £800, which had been incurred in the work?

If the defence did not depend on a point of law, on what did it depend?—for what other object was our client forced to take the case into open court?—for what object have we with the object of obtaining a verdict on a point of law? Not only do the facts speak for themselves, but the very expression was reported in Mr. Ryan's own words; and if this defence was not relied on in court one would assume it was simply because the defendant was at the last moment, ashamed to rest his case on as rotten a foundation.

It is now more than two years and a half since our client, after making the generous proposal above referred to, offered to leave the whole question to any impartial tribunal, and on the different occasions proposed that the Right Rev. Dr. Ullathorne, of Birmingham, should be sole referee. These proposals having failed, our predecessors endeavoured to get the matter referred to a barrister or to one of the Masters, but every obstacle was thrown in the way by the defendant.

With regard to the Judge's ruling as to Mr. Pugin's being entitled to receive the difference between the specified quantities and the value of the work actually done, we are quite content to await the final issue. Mr. Molloy rests his case on an alleged contract for a specified sum, and, on his own showing, has failed to keep the terms; so far, therefore, the action is, and must be, practically undefended, and, under that assumption, it is clear the terms of the reference give the costs to the plaintiff.

As to the question of compromise, if a direct offer to settle on terms would lead to one, such an offer was most certainly made to and refused by the plaintiff in the words set forth in the report. Mr. Ryan's denial of the complimentary remarks made by the judge is too ludicrous to admit of serious consideration.

Mr. J. James Brett still lives, and we assume that the jury and the public who were in court have not ceased to exist. Begging you will kindly insert the above in your next issue.

JOHN BURTON & CO.

* With this the correspondence must end.

Wakefield Model Lodging-house Company (Limited).—A general meeting of the shareholders in this company was held at the Model Lodging-house, Wakefield, on Thursday, under the presidency of Mr. Henry Lee, chairman of the company. The report showed that the undertaking, commenced some fourteen months ago, had been a great success, so much so that the directors now recommended that a dividend at the rate of 10 per cent. per annum be paid for the past six months, leaving a small balance to be carried to the reserve fund.

CHURCH-BUILDING NEWS.

Reading.—The Reading School Chapel has been opened for divine service by the Bishop of Oxford. The architect is Mr. Waterhouse. The details of the work have been carried out under the direction of Mr. J. Bottrill, the clerk of the works. The chapel has been erected in the school grounds, a little to the west of the main building, under the superintendence of Mr. Waterhouse, who is the architect of the schools, in a style in harmony with that of the principal structure. Internally, the chapel is 88 ft. long by 26 ft. wide, and 42 ft. high to the apex of the roof. Over the ante-chapel, at the west end, is a gallery intended for the families of the masters, the floor of the chapel being devoted to the boys, the masters, and visitors. The seats are arranged college-fashion, parallel with the central passage, which runs from the ante-chapel to the altar-rail. At the west end are four stalls for masters on either side of the entrance, and other stalls are arranged in the back row of the ordinary seats. The chapel, externally, is erected of red bricks, with grey bricks in bands and diapers. Internally, the grey brick predominates, relief being given by dressings of red brick. No stone has been used in the construction of the building, nor any plastering internally, except a cement dado behind the seats. The curved principals of the roof recall the usual form of hammer-beam construction, while slender and delicately-moulded tie-beams have been inserted to prevent their exerting a thrust upon the walls. That part of the roof over the two eastern bays has been boarded to follow the curve of the principals, and the construction of the rest is visible up to the apex. The roof timbers are to remain unstained and unvarnished, just as they left the carpenter's hands. The seats will be varnished. The chapel is warmed by Messrs. Haden's system of warm-air circulation, the apparatus being placed in a vault below the vestry. Above the vestry, with its front to the Chapel, an organ will be erected by Mr. Hedge-land (we believe), the case of which will be designed by the architect, in harmony with the rest of the work. The windows are filled with tinted quarry-glass. The contractors are Messrs. Wright & Goodchild, of Croydon. The original contract sum amounted to about 3,000*l.*, which has been somewhat reduced by the omission of some of the work contemplated.

Gloucester.—The tenders for building the proposed new church in Barton-street have been opened and considered. Five builders in response to private invitation, had tendered, and the tender of Mr. James Clutterbuck, of Gloucester, was accepted. His estimate is 4,400*l.*, with the alternative of its reduction to 3,672*l.* if the committee decide to dispense with the west bay to the church. The building, which is designed by Sir Gilbert Scott, architect, will consist of a nave, south aisle, and chancel, with chancel aisle attached. The proposal to have a north aisle and tower has been postponed for the present. The building will be of stone, with oaken seats, all free, to accommodate 540 persons. The site (a plot of land adjoining the Midland Railway, at the corner of Lower Barton-street), cost 1,086*l.* The subscriptions paid and promised amount to 4,593*l.*, including 2,600*l.*, a donation of the Misses Hedley. There are still 1,000*l.* required.

Hull.—The new church of St. Barnabas, in this town, has been consecrated by the Archbishop of York. The new building is situated on the south side of the Hassle-road, at the eastern corner of the Boulevard, and near the western boundary of the borough. The desirability of erecting a church in the district, which is almost entirely laid out for building purposes, and was, before long to be thickly populated, was considered a year or two ago, and the new edifice is the result. The cost of the church, with only a north aisle in addition to the nave, &c., leaving the south aisle to be completed when funds allow of it, has been found to be 3,100*l.*, and towards that amount the sum of 2,600*l.* has been promised or obtained. The edifice is built in the style of architecture which prevailed at the beginning of the thirteenth century, and consists of nave, north aisle, chancel, organ-chamber, and vestry. Accommodation is provided for 500 persons. The building is constructed of brick, faced externally and internally with red bricks; blue Staffordshire bricks are used in the interior arches, string courses, and paterne. The chancel has an apsidal termination, and is divided from the nave by an arch and sub-arch, with moulded label, supported on shafted corbels.

At the window-level an arcading runs round, supported on Bath-stone shafts, having moulded caps and bases. The ceiling is plastered in concave form, and, it is hoped, will at some future period be decorated. The roofs of nave and aisle are open-timbered, framed in trusses, with moulded and wrought timbers, resting on moulded stone corbels. The organ-chamber and porch have simply-framed rafter-roofs, and the whole of these ceilings are plastered between the rafters, the woodwork throughout being stained and varnished. The nave-arcade is carried upon octagonal shafts, with moulded caps and bases, and springers in Bath stone, these latter being incised and filled in with representations of Christian symbols and monograms. The vestry is separated from the church by a wrought chamfered and oспed screen; and this and the pulpit and choir-seats and communion-table are executed in red deal. The whole of the windows are glazed with tinted cathedral-glass in lead quarries. The gas-lighting of the nave is effected by jets round each cap, and that of the chancel by a series of lights running along the moulded string-course beneath the windows. The building at present appears rather one-sided, the north aisle alone having been erected, but it is hoped that ere long the temporary wall on the south side may be removed and another aisle built to correspond with the one now erected. The church has been erected on as economical a scale as possible, and is seated with chairs. The building has been executed from the designs and under the superintendence of Mr. Samuel Musgrave, of Hall. The contractors for the building were—Messrs. B. Musgrave & Son, bricklayers and plasterers; C. W. Foster, joiner; G. Taylor, mason; Gouldsbrough & Son, plumbers, &c.; Wilde & Sons, slaters; W. B. Leaning, iron-founder; and A. Wright, painter, all of Hall.

DISSENTING CHURCH-BUILDING NEWS.

Bromley.—The foundation-stone of a new Wesleyan chapel and school has been laid, on the Bromley Lodge Estate, fronting the high-road, near the railway station. Mr. Grubb, of Widmore-road, is the builder of the chapel. The cost of the building, land, and other expenses amounts to the total sum of £1,900.

Pursey.—The new Wesleyan chapel, erected in this town, has been opened with the usual services. The chapel, the foundation-stone of which was laid in July, had been erected by Mr. Barrett, of Swindon; the architects being Messrs. Lansdowne & Shopland. It has a good elevation in one of the principal streets. It is built in Classical style, of red brick with Bath stone dressings. The interior walls are plaster; the windows are circular, with iron sashes, and it has a wrought-iron and framed roof. The sittings are open, of picked red deal (Archangel timber), stained and varnished, and the chapel is estimated to seat 250. The rostrum is stained a richer tint than the pews. The gas standards are formed so as to be inexpensive, the plain service-pipe, coloured a deep blue, running up to above the sittings, and then brass placed on the top, terminating, after a spiral column, in three jets. The total cost of the building, including the site, is £800.

Torquay.—A new Wesleyan Chapel, called "Weesley Church," in Torwood-street, commenced last autumn, has just been completed and opened. It comprises a nave, with side aisles, separated by clearatories and arches, supported on light iron columns, with a transeptal appendage to the higher side of the main building, in which there is a side entrance, the organ-chamber being placed over this, but the chief entrance is under the tower, at the lower corner. Inside this, the front end, there is a small gallery for school-children and the choir. There is one large six-light window, filled with tinted glass, with tracery in front, three smaller two-light windows under the gallery, and one in the side entrance. The nave has seven bays, with six two-light windows on either side. The roof is framed with a collar-beam, up to which is red deal, matched boarding, stained and varnished, the open benches being of the same material. The dimensions of the chapel are 78 ft. long, by 50 ft. wide, with a chancel 11 ft. deep. At the right of the chancel is a vestry, and on the other side another room, which will be used for a school and other purposes. The tower rises to about 60 ft., terminating with a spire about 70 ft.

high. Sufficient seat accommodation is provided for about 900 people. The building is of a simple Decorated character throughout, local limestone, of different tints, with Bath stone dressings, being used, the interior mouldings being formed of Watcombe terra-cotta, plaster, and stone. The builder is Mr. E. P. Bovey, Torquay. His contract amounted to about £3,500, besides the site, purchased of Messrs. Harvey, which the site, purchased of Messrs. Harvey, cost £500, for 99 years. Various other items for furniture and extras swell the total cost to about £4,600. It is intended to build three class-rooms at the back with some accessories, and a large school-room by the side, 60 ft. by 30 ft. The plans were furnished by the Rev. John P. Johnstone, of St. John's-wood, London, and in his absence the work has been superintended by Mr. G. Soudan Bridgman, of Torquay, architect.

South Shields.—On the 4th inst., the new Unitarian Church in Derby-street, South Shields, was formally opened. The new building, which is called Unity Church, is in the Gothic style, with double-light lancet-windows in the sides, and circular tracery window in the front gable, over an entrance porch. The internal fittings are all of pitch-pine. The edifice has an open-timber roof, the principals of which spring from small stone corbels. The church is seated with open pews to accommodate 250 persons. The woodwork is deeply stained and varnished. Under the church there is a schoolroom, ministers' study, library, and kitchen fitted up with requisites for tea-meetings. The heating apparatus was furnished by Whitaker and Constantine, of Manchester. The contractor was Mr. Joseph Nicol, of South Shields. Mr. Thomas A. Page, of South Shields, was the architect.

Tunbridge Wells.—A new Congregational Church has been opened for public worship here. The building, which is in the Albion-road, is in the Gothic style of the thirteenth century, and built of Kentish rag-stone, with Bath-stone dressings. It is entered by an open porch, having a central polished granite shaft, and thence by enclosed lobbies right and left. Internally the building at present appears as a single parallelogram, with an open-timbered roof. The walls are boarded as high as the seats. There is then a band of plaster, and above this the walls were faced with Gault bricks, the window-arches and doors being marked by stone bands and red bricks. The seating is all open, and lightly stained and varnished, ample space being allowed for each person, and the seats and backs are sloped. The platform is placed in front, on an arched recess (adopted for acoustic reasons) at the end, and the minister's and deacons' vestries, &c., closely adjoin. The artificial lighting is by means of ornamental gas pendants, with small standards to the platform. The heating is by means of hot-water pipes under gratings in the floor, and ventilation is effected by means of a continuous band of pierced boarding in the roof, with flags above, regulated by cords. The windows are glazed with green tinted quarry rolled glass, which was specially manufactured for this building. Accommodation is provided at present for 400 persons, but future enlargement has been considered, and provision made when necessary. The work has been carried out by Mr. Steer, of East Grinstead, from the designs and under the personal supervision of Mr. John Sulman, of London.

Liverpool.—A new church, in Catherine-street, Liverpool, for the Welsh Presbyterian or Calvinistic Methodist denomination, has been opened for divine worship. The new church is a stone building, capable of holding about 500 people; but provision is made for the erection, at some future time, of galleries, to accommodate 800 more. The church consists simply of a nave, with two transepts, and a tower and spire, rising to a height of 127 feet. The tower is at the north-east angle, and stands upon a plinth, in the front or Catherine-street side of which is a doorway, with a recessed and moulded arch. In the four sides of the upper part of the tower are coupled windows, and above a sunk traceried parapet, at each angle of which rises an octagonal pinnacle. The lower part of the spire has double flying buttresses at the angles, surmounted by small square pinnacles. Above, the spire is perfectly plain. In addition to the doorway in the tower there is a doorway of somewhat similar design to the staircase. The windows are traceried, and glazed with cathedral tinted glass. In the interior, the transepts and organ-chamber are divided from the nave by moulded arches, partly carried upon corbel

columns, with floriated capitals. The pulpit is of Caen stone, carved, and so placed that every one can see the minister. The roof is open-timbered, and forms, as it were, externally, a nave and aisles, but internally, it is in one span, without any intermediate support. The architects of the building were Messrs. T. E. Murray & G. H. Thomas, of Liverpool; and the contractors in chief, Messrs. John Parker & Son, of Liverpool and Manchester. The cost of the church, inclusive of the price of the land, will be about £6,000. Including the sum realised by the sale of the Windsor-street Church, the congregation have, up to the present time, raised about £4,000, leaving a debt upon the building of £2,000.

Books Received.

History of the Modern Styles of Architecture. By JAS. FERGUSSON, D.C.L. London: John Murray. 1873.

SOME of our readers will be glad to hear that a second edition of Mr. Fergusson's "History of the Modern Styles" is published. It has not only been revised throughout, but fresh matter has been introduced, including the results of a recent tour made through parts of Italy and France, with the object of verifying or correcting first impressions regarding buildings commented on. It will afford us materials for an article before long; suffice it at present for us to make known the publication of the volume, and to say, not merely that it is a work absolutely indispensable to every architect and architectural student, but that it ought to form part of the reading of every person desiring to be educated.

Illustrations of Fortrose Cathedral. From drawings by Mr. A. R. SCOTT, 37, George-street, Edinburgh.

The Edinburgh Architectural Association awarded to Mr. Scott, for these drawings, a prize offered by Mr. Bryce, and have photographed them for distribution amongst the members. As the work of a student it is a creditable production. The date of the building is the beginning of the fourteenth century. According to local tradition the author says, Cromwell's troops demolished it; "but," he continues, "probably like the fate of so many noble examples of ecclesiastical architecture, it was destroyed at the time of the Reformation." The next time he indulges himself with his little dig at the Reformation—a weakness which prevails amongst many who do not look beyond their nose—he may as well use decent English.

VARIORUM.

Capital and Labour is the title of a weekly paper issued by an association of employers with the view, in defence of their interests, of counteracting what they consider erroneous doctrines maintained and acted on by the other side. It commenced, as it seemed to us, with too strong an exhibition of bias and partisanship. The tone, however, has improved, and will doubtless continue to improve. Although the organ of the employers, it should seek to inspire the employed also with confidence in its truthfulness and the soundness of its views. The mere setting forth of the arguments admissible on one side, and the thick-and-thin advocacy of a class, would simply have the effect of rendering more distinct the division which exists. We take a paragraph from the last number on the subject of foreign competition:—

"An order was sent to a well-known firm in Shropshire for eight hundred tons of galvanised wire, subject to the price being found satisfactory. The sum quoted was £22, 10s. per ton, and this was lower than the price of any other English maker. But a German house offered to supply goods of the same quality at 19s. per ton; and thus the order was lost to England. In other words, upwards of fifteen thousand pounds, which might have been expended in this country, has gone elsewhere. The same firm reports that within two or three years several large orders for iron girders have been sent to Germany, because the founders there could produce them at fifteen per cent. less than English makers." "In the face of such facts, it is in vain to seek to apply artificial rules as to wages and hours of work, and to say that the former shall not be allowed to sink below a certain level. A manufacturer, or a builder, having to execute a large and costly order, will naturally go to the market where the most advantageous terms can be secured; and if trade is driven out of the country, workmen will be among the first to suffer."

—In *Leisure Hour*, an Eastern sea-captain and traveller writes:—"The lake dwellings in Switzerland are not so much without parallel in our own times as might at first sight appear. Actual lake dwellings I have not seen, but at Singapore,

on the right hand of the road leading from the Peninsular and Oriental Wharf, at the mouth of the small river which passes through the town, the Malays have a small village in the water, raised above it by posts and connected by bridges. The houses are of the simplest construction, more resembling booths at a fair than anything else; they are of one story only. Why they chose to build in this seemingly unfavourable position I do not know, unless it is from force of habit. It may tend to cleanliness; it may also provide food in the form of fish, and I suppose no rent is expected from them. This last may be the chief inducement. At Penang there are houses built on frames raised on posts, but when I saw them they were raised above dry sand; it is probable, however, that the sand is covered at times with water, either from the sea or from mountain floods, such as tropical showers produce."—*May's British and Irish Press Guide* contains some curious statistics, showing the present position of the newspaper and periodical press of the United Kingdom. It is shown that there are now 1,690 newspapers issued in the kingdom, of which the metropolis provides 410. 889 of the newspapers are published as 1d. The periodical publications in the United Kingdom number 662, 182 of these being monthly. 199 of the periodicals are issued at 1d. The increase in trade organs is remarkable, there being now 64—"Pickwick," with fifty-seven illustrations by Phiz, and all for 3s., is an announcement that will send many new buyers to Chapman & Hall's.—*Laxton's Builder's Price-Book* for 1874 is the 57th edition, and has had time to grow into settled and accepted form. We have a strong suspicion that a builder who priced out all the items in his bills of quantities according to "Laxton," would have little chance of getting a contract as against one who priced them from his own experience; and doubtless this is well understood in the trade: when to use the price-book, and when not, is probably pretty generally known.

Miscellaneous.

The Royal Commission on the Labour Laws.—The *Gazette* notifies the issue of a Royal Commission to inquire into the working of the Master and Servant Act, 1867, and of the Criminal Law Amendment Act (34 and 35 Vict., cap. 2), and whether any, and if any, what amendment or alteration in the provisions of those Acts, or either of them, is desirable, and also to inquire whether it is expedient to limit or define the law relating to conspiracy, either generally or as affecting the relations of masters and workmen. The Commissioners are—Sir Alexander James Edmund Cockburn, Baron Winmarleigh, Mr. Edward Playdell Bouverie, the Right Hon. Russell Gurney, M.P.; Sir Montague Edward Smith, Mr. John Arthur Roebuck, M.P.; Mr. Thomas Hughes, Mr. Gabriel Goldney, M.P., and Mr. Alexander Macdonald, M.P.—At a special summoned meeting of the Trade Unions Parliamentary Committee, attended by all the members, "London and Provincial," the following resolution was unanimously passed:—"It was proposed by Mr. A. W. Bailey, President of the Maltreated Society of Tailors; and seconded by Mr. W. Rolley, President of the Sheffield Trade Unions Congress, "That this meeting of the Parliamentary Committee, elected by the Trade Unions Congress, representing more than five million workmen, specially convened to consider the action of the Government in appointing a Royal Commission upon the labour question, believes the same to be a mere ruse for delay, and we adhere to the resolution already passed deprecating the appointment of the Commission, and we hereby pledge ourselves to continue to protest against the whole scheme as being a surprise, an intrigue, a fraud; and we further recommend the whole trade unions of the country to refuse to give anything to do with the Commission, either by way of giving evidence or recognising in any way the action *pro* or *con* of the Commission."—The Engineers' Advance of Wages Conference have passed a resolution deprecating the action of the Trade Unions Parliamentary Committee in condemning the appointment of a Royal Commission upon the Labour Laws, questioning the right of that body to put forth the statement that they represent more than a million working men, and expressing an opinion that Mr. Macdonald, M.P., and Mr. Thomas Hughes are quite right in accepting places upon the Commission.

Public Schools for the Middle Classes.

A meeting has been held in the Town Hall, Tamworth, for the purpose of promoting "the building of cheap public boarding-schools for boys and girls, in union with St. Nicholas College." The Vicar of Tamworth (the Rev. Brooke Lambert) occupied the chair, and the Earl of Shrewsbury and the Rev. Canon Lowe, D.D., attended to lay before the meeting the plans of the society, with a statement of its operations. There was a very large attendance, and among those present were several clergymen and leading gentlemen of the neighbourhood, in addition to a great many ladies. Lord Shrewsbury, in the course of his address, said he was there to oppose his friend Col. Dyott, who told them that Denstone was the abode of confession, and asked if they could believe it possible for him and his father to have been in favour of arduous confession. Dr. Lowe moved the following resolution:—"That this meeting recognises the value of more systematic education for girls, and pledges itself to support schools on the system now in use at Denstone." The Earl of Shrewsbury seconded the motion. Mr. Skeg moved the following amendment:—"That this meeting, whilst recognising the value of more systematic education for girls, declines to pledge itself to support schools on the system now in use at Denstone." Mr. J. Neville seconded the amendment, and the latter was declared carried by a large majority, only about half a dozen hands being held up for the original motion.

The Excavations at Rome.—The excavations at the Coliseum are proceeding very slowly, the irruption of a copious spring of water having submerged the foundations of the arena. The excavations on the Esquiline continue to furnish interesting results. A statue of Fortune has been found in one of the rooms of an ancient Roman house recently unearthed. In removing the rubbish which covered the edifice it was found that an exact reproduction of the statue had been painted in fresco on one of the walls. Several discoveries have been made in the Villa Altieri grounds, including an admirable onyx cameo of an oval form, 58 millimetres by 42. The relief represented two half-figures veiled. On the left side of the Via Merulana, a vast hall has been brought to light, one end of which terminates in a circular apse, around which five square niches open out. The walls are covered with a *couché* of vermillion, on which are designed griffin-shaped ornaments, comic masks, meanders, &c. In the interior of the niches were painted views of gardens adorned with exotic plants and flowers, on which are perched birds very gracefully designed. The municipal commission of archaeology proposes, says our authority, the *Morning Post*, to preserve this monument of ancient domestic architecture, which might serve as an ornament to the new piazza.

Sale of the Victoria Theatre.—The lease of the Victoria Theatre, Waterloo-road, has been sold by order of the mortgagee. It appeared from the published particulars that the property is held for an unexpired term of 29½ years, at a yearly rental of 1,400*l.*, "subject to certain rights reserved by such lease, and subject also to prior determination in the events therein mentioned." It was also stated that the whole of the interior of the theatre, including the fittings, decorations, and stage machinery, which were constructed not more than two years ago, at an expenditure of 9,000*l.*, when the whole of the interior was remodelled, were included in the purchase, but that the scenery, properties, and bar utensils would have to be taken by the purchaser at a valuation. The auctioneer, before offering the property, endeavoured to show that the rental paid by the tenant of the refreshment-bars, and other payments in the form of sub-lettings, amounted to nearly 1,200*l.* The biddings commenced at 500*l.*, and the lease and property in the theatre were knocked down to Mr. Villiers, of the London-road, for 820*l.*

Margate Theatre.—The following are the tenders for pulling down and re-building the Margate Theatre, Mr. J. T. Robinson, architect:—Jones & Fulford, London, inclusive of gas-fittings, decorations, and upholstery, 5,380*l.*; Judd & Hawkins, London, building only, 3,450*l.*; Bushell & Sons, Margate, inclusive of gas-fittings and decorations, 4,410*l.*; Paramor & Son, Margate, inclusive of gas-fittings and decorations, 4,165*l.* (accepted, subject to modifications of the designs and cost).

Interesting Discovery in Whitechurch Parish Church.

The discovery of the bones of John Talbot, first Earl of Salop, in Whitechurch Parish Church, has excited general interest. It was known that a silver urn containing the embalmed heart of the great soldier was found among the ruins of the ancient church, and that it had been deposited beneath the porch or vestibule, but there appears to have been no record or even tradition in the parish of his bones having been brought over from France and buried within the sacred precincts. Recently, however, while the workmen were removing the recumbent figure of Talbot from its position in the south aisle, preparatory to the restoration of the side and canopy, it became evident that there was something of the nature of a coffin immediately beneath the effigy. On closer examination bones were apparent, the woodwork having fallen into decay. The remarkable fact that each bone was carefully wrapped in oerements, and the position in which they were found, places it beyond a doubt that they are none other than the bones of the Great Talbot, who fell at Chatillon, in France, A.D. 1453. At the back of the skull was an opening, apparently caused by a battle-axe. It is expected there will be a public interment of the remains in the porch, where the heart is believed to lie.

Decoration of the Exchange, Sandhill, Newcastle-on-Tyne.

Out of numerous designs for this work, the committee chose that of Mr. John G. Green, of Gateshead. The roof is supported by a series of arches resting on stout pillars, treated in imitation of Peterhead granite, the capitals in grey or Aberdeen granite. On the wall, between each keystone, on a light ground, is a spandrel, centred by different national arms of Europe and America, boldly painted. This is surmounted by a frieze, stronger in colour and broken at intervals by oblong squares, on which are written in white letters the names of different countries and their principal seaports. On the light roof, circles of ornament attract the eye easily from wall to wall, and passing into the east end, on the circle next the roof, is a broad band of blue, on which is the text, "The earth is the Lord's and the fulness thereof." The centre spandrel contains the arms of Newcastle, and in the other two are small figures emblematic of industry and commerce. Round the outer wall, and about 4 ft. from the base, runs an ornament, from which to the floor is a uniform colour much deeper in shade. In the new-room the pillars are here treated with coloured ornaments on a light ground, the centre of each spandrel containing a small figure (typical of the seasons) in monochrome.

Sale of Public Buildings in Italy.

At a sitting of the Chamber of Deputies, February 27, Signor Minghetti, Minister of Finance, proposed the sale of several public buildings to the municipalities of the different towns in which they are situated. According to the *Academy*, among the most important of these sales is that of the Palazzo Riccardi at Florence, the stately residence of Cosmo "Pater Patriæ," and inhabited by the Medici family until the end of the seventeenth century. This palace, celebrated for the majestic severity of its architecture, is a noble specimen of the Florentine fortress style. Within, the galleries are richly decorated, the ceilings by Luca Giordano. Here the Academy Della Crusca held its sittings, and compiled its Dictionary. The Government, in selling the palace, retain the rooms containing the Riccardi library, and stipulate that the paintings of Luca Giordano and the frescoes of Benozzo Gozzoli, which adorn the chapel, shall be carefully preserved, and free access to them given to the public.

New Lectern at Wolverhampton Parish Church.

A carved oak eagle lectern, of somewhat elaborate design and execution, has been put up in the parish church of Wolverhampton. The pedestal consists of three stages, the lowest being plainly chamfered, the second enriched with inlay and a battlemented cornice, and the third has a gabled pediment on each side, crocketed and finished with a terminal cross. The pediments are panelled, and contain shields. At each corner is the statuette of an angel in the attitude of prayer, the wings being turned upwards round the moulded base of the column which supports the eagle. The total height is 7 ft. The work has been executed by Mr. Masey, of Louth, under the superintendence of Mr. James Fowler, architect. The carving is the work of Mr. Riddock, of London. This lectern is a gift to the church

Engineers in the Present House of Commons.—It has been notified to us that the following members and associates of the Institution of Civil Engineers have obtained seats at the recent elections:—"Members: Messrs. I. Lowthian Bell, North Durham; C. E. Cawley, Salford; J. Hick, Bolton; E. J. Reed, C.B., Pembroke; H. Robertson, Shrewsbury; J. P. Romayne, Cork; J. D'A. Samuda, Tower Hamlets; and B. Samuelson, Banbury. Associates: Messrs. J. Ashbury, Brighton; H. W. F. Bolckow, Middlesbrough; T. Brassey, Hastings; A. C. Brogden, Wednesbury; D. Chadwick, Macclesfield; the Right Hon. Lord Robert Grosvenor, Flintshire; Sir W. V. Harcourt, Q.C., Oxford City; Colonel J. M. Hogg, Truro; Sir H. Johnstone, Bart., Scarborough; C. Leeman, York; S. Lloyd, Plymouth; C. M. Palmer, North Durham; Captain Bedford Pim, R.N., Gravesend; A. G. Sheriff, Worcester; C. Waring, Poole; and Sir F. M. Williams, Bart., Truro." English architecture has not, we believe, a single representative in the House.

Pullman's Hotel Cars on the Midland.—The Midland Railway Company have entered into a contract with the Pullman Palace Car Company for a term of years, and for the future the sleeping-car saloons will be at the disposal of such passengers as can afford to pay the extra fee which will secure them. The Pullman Company provides the cars, furnishes, serves, and keeps them in order, leaving the railway company to light, warm, and look after the carriages to the same extent as would be observed with their own rolling stock. The first of them have made a trial trip to Bedford,—rather a short trip for a trial of the beds. They are elegantly fitted up. The parlour car is for short lines and day travel only. It is 60 ft. long, carpeted, upholstered, and furnished. There are separate saloons of the private box order for small family parties. The drawing-room and sleeping-car is alternately a drawing-room, a dining-room, and a sleeping apartment, with removable tables, convertible seats, and so on.

New Primitive Methodist Chapel and School Buildings, Ardwick, Manchester.—Designs for the above buildings have been submitted in competition by a limited number of local architects. The committee have selected that sent in by Mr. William Dawes, of St. Ann's Churchyard, and have instructed that gentleman to proceed at once with the work. The buildings will be in the Gothic style, and will be faced with stone. The chapel will have a tower and spire, transepts, galleries, and an apse behind the pulpit for the reception of the organ, &c. The site is triangular in form, and the planning therefore required more than usual study. The schools are two stories in height, and are supplemented by six class-rooms, three on each floor. The usual offices and conveniences are arranged in the mezzanine floors and the basement. To the chapel are annexed two vestries and a library, and there will be a chapel-keeper's residence in the corner of the site nearest Herring Ardwick. The contemplated cost is 7,000l.

The Benefit of Brick.—A recent fire in Palmer's great new hotel at Chicago afforded an instructive illustration of the benefit of fireproof construction. In the absence of the occupant of a room the porter had built a fire in the grate and locked the door. The fire by some means reached the carpet and spread to the floor and walls—the cracking of which gave the first intimation of the mischief on foot, and caused its immediate extinction without further trouble. And yet it is calculated the burning must have been going on quite three hours. The whole mystery of such retardation and harmlessness is told in the fact that the room rested on brick arches and iron girders, with cement for floors and hollow brick and hard plaster for partitions. This made the whole difference between a charred room and, probably, a mighty conflagration.

Fall of a Tunnel.—About 12 yards of the railway tunnel under Fishergate, Preston, has fallen in upon the line. During the previous week this portion of the tunnel had been bared, and it is supposed that the late heavy rains had sapped the work after the removal of the surrounding earth. An engine-driver was passing through the tunnel at the time the accident happened. The falling mass separated above him in its descent, or he would have been instantly killed; as it was he was greatly injured.

The New Buildings Bill.—Sir W. Codrington has given notice, at the Board of Works, that on bringing up the report of the Works and General Purposes Committee, submitting the Metropolitan Buildings and Management Bill for approval he will move,—

"That the new clause in the Metropolis Bill (the 25th), by which an owner or occupier is authorised to build a portion of a party wall upon ground, the property or in the occupation of another person, is wrong in principle, and should not be introduced or sanctioned by the Metropolitan Board."

"That the 25th Clause, with the clauses and schedules by which it is to be carried out, be omitted from the Bill."

"That in order more effectually to prevent fire communicating from one roof to another, the dividing-wall of a dwelling-house should be of the same height above the roof as that proposed for a warehouse, viz.—not less than three feet."

"That an alteration to this effect be made in the Bill."

New Mortuary.—The vestry of St. Martin-in-the-Fields have erected in the old parish burial-ground, Drury-lane, a mortuary house, for the reception not only of the bodies of parishioners, but also of those of persons residing in the adjoining parishes of St. Giles, &c. The mortuary has been fitted up with air-tight glass coffins, and all the proper appliances for the decent conducting of post-mortem examinations. A code of rules explaining the regulations of the mortuary has been printed, and a regular house-to-house distribution of the same has been successfully effected. The building has been examined by the Coroner and medical practitioners of the district, and a unanimous expression of thanks to the vestry has been accorded.

"Cromwell on his Farm."—This is the title of a picture by Mr. Madox Brown, recently completed. Cromwell, about thirty years of age, and before his entry upon public life, is traversing his farm on horseback, Bible in hand, and falls in with some of his men clearing the hedges and burning the refuse. The incident has probably induced a train of thought which renders him oblivious to a shouting maid-servant, sent by Mrs. Cromwell to bring him back to the house, while pigs and other occupants of a farm run under his foundering horse's legs. The contrast between the abstracted man and the surrounding incidents is striking, not to say venturesome, but the power of the painter brings him through it successfully. The picture must take its place amongst the best works of the present day.

Bradford Assistant Borough Surveyor. Some time ago the Bradford Town Council decided upon appointing an engineer to superintend the street and drainage works of the Corporation, at a salary of 400l. a year. No fewer than fifty applications were sent in, and these were dealt with by a sub-committee, who submitted to the Street and Drainage Committee, at their meeting on Tuesday, the names of Mr. John Allison, town surveyor, Jarrow-on-Tyne, and Mr. George Jerram, of the Manchester city surveyor's office, as the two most eligible candidates. After some discussion, the committee resolved to recommend the appointment of Mr. Allison, and the recommendation will come before the Council at its next meeting.

A Service Reservoir at Huddersfield.—The Mayor of Huddersfield has formally opened a service reservoir at Westhill, constructed to hold a million and a quarter gallons. The height above the sea level is 495 ft., and from the Wessenden reservoir, whence the supply is derived, 1,030 ft. The area of the surface-water is 3,000 yards, and the area within the enclosure of the walls is just an acre. The work was done under the superintendence of Mr. Stanway, managing engineer for the corporation, and Mr. Crowther, resident engineer. The reservoir is intended to supply the inhabitants who live below a level of 400 ft., and will be worked in conjunction with the Spring-street tank.

Big Trees.—Mr. Walter Hill, the Government botanist in Australia, reports to the Queensland authorities that, while cutting a given line on the banks of the River Johnstone, for the purpose of examining the land, an enormous fig-tree stood in the way, far exceeding in stoutness and grandeur the renowned forest giants of California and Victoria. Three feet from the ground it measured 150 ft. in circumference; at 55 ft., where it sent forth giant branches, the stem was nearly 80 ft. in circumference.—The largest tree in Brookline N.H., has just been cut and saved. It was a pine, 139 years old. The first log, 18 ft. long, made 800 ft. of inch boards, the whole tree 3,317 ft.

The New Alexandra Palace.—We are informed that Lord Londesborough has offered to the Alexandra Palace Company the loan of his valuable collection of arms and armour, which it is the intention of the executive to exhibit to the best possible advantage. This collection was made by the late Lord Londesborough at great cost, and comprises unique specimens of ancient arms and armour, many Celtic ornaments, and other objects of great historic and general interest.

Macclesfield Surveyorship.—The surveyor Mr. H. S. Aspiwall, having resigned, in consequence, as we understand, of not being allowed to increase his income by doing business privately on his own account, and his resignation having been accepted, the town council have resolved to advertise for a new surveyor, who is to have 200l. a year, and not to be allowed to do private work.

National Museums.—Mr. Mundella has given notice in the Commons that on an early day he will call attention to the report of the Science Commissioners on National Museums, and move that, in the opinion of the House, steps should be taken to render national museums and galleries of art more available for instruction for the purposes of science and art.

The Fine Arts in Ipswich.—It is reported that at last the question of a picture-gallery for Ipswich is being seriously considered. Besides the educational effect of a public library, there is a belief that, commercially, a good collection of works, especially by local artists, would further add to the prosperity of the town; and local artists are at work.

Gift of a Public Park to Dingwall, Scotland.—Sir James Matheson, Bart., of Lewis, has just intimated to the Town Council of Dingwall, in Cromarty Firth, his intention of presenting the burgh with a field on his property to be used as a public park, on condition that the Council suitably enclose and embellish it. Sir James was at one time Provost (Mayor) of Dingwall.

Fire in a Mansion.—Mr. Ormsby Gore's mansion, near Oswestry, has in great part been destroyed by fire. Happily, the pictures, statuary, and other works of art were saved together with a valuable collection of books.

TENDERS

For Cricket Pavilion, Cambridge. Mr. W. M. Fawcett, architect:—

Tooley	£2,293 0 0
Bell	2,229 0 0
Gray	2,134 0 0
Lovday	1,987 0 0

For addition to mansion (conservatory), Blackmoor, and Kimpton, for Mr. R. B. Baxendale. Mr. George M. Laborn, architect:—

Gilmour	£1,698 5 8
Messrs. Avery (for bills)	48 12 0

For the erection of a new brew-house and other buildings, at chimney-shaft, at Tewkesbury, for Messrs. P. & R. Phipps. Mr. R. Davison, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Wheeler	£4,840 0 0
T. & O. Orchard	4,289 0 0
Clark	3,900 0 0
Ireson	3,488 0 0
Claridge	3,393 0 0
Dunkley (accepted)	3,299 15 9
J. & J. Davis	3,273 0 0

For the erection of a shop and residence, Dovercourt, Essex, for Mr. S. Watts. Mr. G. Gard Pye, architect:—

E. & C. Gilbeons	£2,001 0 0
------------------	------------

Dutcher 883 0 0 |

Sealey & Wells 889 0 0 |

For building two villa residences on the west side of the Portadown-road, Malda-rale, for Mr. T. Smith. Mr. P. Wilkinson, architect. Quantities supplied:—

Longmire & Burge	£4,770 0 0
Stimpson & Co.	4,660 0 0
Brass & Son	4,020 0 0
Hind	3,993 0 0
Temple & Foster	3,980 0 0
Cross & Son	3,869 0 0
Thompson & Smith	3,600 0 0

For schools, masters' residence, and boundary wall for the Shoreham School Board, near Brighton. Mr. A. B. Cress, architect:—

Eldridge	£3,093 0 0
Wells & Mills	3,075 0 0
Colwell	3,000 0 0
Mills	2,998 0 0
Longley	2,996 0 0
Terry	2,882 0 0
Watson	2,760 0 0


For house at Leytonstone for Mr. Ritter. Messrs. T. & W. Stone, architects:—

After	£597 0 0
Howard	619 0 0
Hinds (accepted)	498 0 0

The Builder.

VOL. XXXII.—No. 1626.

Hoxton and its History.



MONGST the numerous districts of London, the names of which commence with the aspirate so much neglected by the uneducated Cockney, such as Hampstead, Highgate, Holloway, Hornsey, Haggerstone, Highbury, Hackney, Hoxton, &c., Hoxton is not the least interesting. It has a history to tell to all who are ready to listen to its tale. Those who feel inclined to explore the Liberty of Hoxton will find that its limits are now quite unmarked, and that there is nothing to show that it was once a place apart; but in the days when London was a walled city, an inhabitant standing by old Moor-gate and

looking over the wide expanse of moor to the north might have distinguished in the distance one or two little villages dotted about the space beyond it. One of these was Hoxton. Should the visitor of to-day come out from the West of London he will proceed after passing the Charterhouse along Old-street, St. Luke's, until he arrives at Pitfield-street; if from the East a turn out of Shoreditch and a two minutes' walk will take him into the chief street of the place; and from the North he can come from Islington down the New North-road. He will find little to remind him of the once famous gardens, the handsome trees and grand old houses for which Hoxton was formerly noted. There are still a few trees left, but they do not look as if they had a healthy air to breathe, and the few old-fashioned mansions that remain are in a greatly decayed or patched-up condition.

Hoxton is of considerable antiquity, and is mentioned in "Domesday Book" as Hocheston. During the eight centuries that have passed since when it has gone through many stages, and after enjoying a separate existence for a long term of years, it has at last been swallowed up by London's ever-advancing growth. We must imagine it as having been originally a small village surrounded by fields and entirely cut off from London by the great marsh of Moorfields outside the old City walls. Let us now look at it during the last four centuries of its existence. In 15 Thomas Falconer, then Lord Mayor of London, caused a branch to be made in the walls next the moor, and built a postern, called Moor-gate, through which the citizens were enabled to reach the rural villages of Isledon (Islington), Clerkenwell, and Hogsden (Hoxton), making use of the causeways which were cut across the moor; and this state of things lasted till 1527, when Moorfields were at last inclosed. There is much to be said of the village of the sixteenth century, when it still remained in the isolated condition we have just described. Van der Wyngaerde's "View of London," in the Sutherland collection (1543), it is marked as a small speck to the north of London. The

archers of Finsbury-fields were formerly of great fame, and Henry VIII. gave honorary titles to the chiefs; thus the Captain was Duke of Shoreditch, and the Marquis of Hogsden was one of his principal officers. The following is a note of one of the archery displays on September 17, 1588:—"The train passed to Shoreditch Church, and then turned into Hogsden-fields, in a fair large green pasture, of goodly compass, where a tent was set up for the duke and the chief citizens, where they might sit to see the shooters appointed to shoot at the butt now set up for the same." During the reign of Elizabeth, and in the years 1584 and 1585, search was made in Hogsden, by order of her Majesty and the council, for the apprehension of certain priests and papists. Popish relics and papistical books were found in the houses of Sir Thomas Tresham and others, and priests and Jesuits were found in Mr. Wyford's house. In 1588 Sir Thomas and his fellow prisoners obtained their liberty from confinement in the palace of the Bishop of Ely, and his letter, thanking Burghley for their freedom, is preserved among the State Papers.

At the end of the sixteenth century Hoxton had grown considerably, and it is described by Stow in 1598 as "a large street with houses on both sides." It was, however, still surrounded by fields, and in those fields Ben Jonson killed Gabriel Spenser, a player in Henslowe's company of actors, in a duel in September, 1598. Jonson told Drummond, of Hawthornden, that, "being appealed to the fields he had killed his adversary, who had hurt him in the arm, and whose sword was 10 in. longer than his, for which he was imprisoned and almost at the gallows," and added, "in the time of his close imprisonment, under Queen Elizabeth, his judges could get nothing of him to all their demands but 'Ay' and 'No.' They placed two damned villains to catch advantage of him, with him; but he was advertised by his keeper." Ben has several references to Hoxton in his plays; and in "Every Man in his Humour" we learn that Master Stephen dwells at Hogsden, but despises "the archers of Finsbury, and the citizens that come a-ducking to Islington ponds."

We will now pass on to the seventeenth century. Hoxton had then become a place of holiday resort for Londoners, and, although of easy access, it was sufficiently in the country to be a desirable place for the citizens to breathe the fresh breezes from the north, and to see some rural sights. In Newcourt's "Map of London," engraved by Faithorne (1658), Golden-lane, with its gardens in rear of the houses, is the most northern point built upon, and Hoxton, therefore, is not included in the map. Withers, in his "Britain's Remembrancer" (1628), writes,—

"Hogsden, Islington, and Totham Court,
For cakes and cream had then no small resort."

These dainties appear to have been supplied to visitors at a place called Pimlico, noted for its ale, and frequently mentioned in the literature of the time. In the "City Match" (1639), Plotwell says,—

"We have brought you
A gentleman of valour, who has been
In Moorfields often; marry, it has been
To 'quire his sisters and demolish custards
At Pimlico."

This name still remains in Pimlico-walk, a narrow lane out of Hoxton-street.

Charles I., on his return from Scotland in 1641, crossed the fields from Newington to Hoxton. During the eighteenth century Hoxton still retained its character as a pleasant place; and in Rocque's map (1746) it is shown as a country spot, with Finsbury-fields to the east and Kingsland to the north, the houses having gardens looking into the country.

Hoxton was a favoured home of some of the most noted gardeners in the seventeenth and eighteenth centuries. One of the earliest of these was Goulie, who flourished in the reign of Charles II., and whose name has come down to us in an anagrammatic form attached to the nectarine he successfully raised, viz., the *Elouge*. George Ricketts, Pearson, and William Darby are all three mentioned in Gibson's curious account of gardens near London, in December, 1691 (*Archæologia*, vol. xii., pp. 190—192). Ricketts cultivated more than 190 kinds of tulips, and he possessed the richest and most complete collection of flower-bearing trees and shrubs in the kingdom; Pearson had the best assortment of anemones about London, and sold "them only to gentlemen"; and Darby was known as one of the first in England to cultivate exotic plants. He was succeeded by John Cowell, in whose garden flourished the *Cereus* and the *Glastonbury thorn*. A great American aloe was bought by Darby when it was twenty years old, and it remained in his garden for forty years, after which it came into Cowell's possession. When it was seventy-two years old it began to open its crown for flowering, and in June, 1729, it flowered magnificently. Large numbers of visitors were drawn to the gardens to see this curiosity. Another noted Hoxton gardener was Benedict Whitmell; but the most distinguished of the fraternity was Thomas Fairchild, who, by the judicious bequest of the small sum of 25*l.*, has succeeded in preventing his name from ever being forgotten. Fairchild united a love of science with the practice of his art, and contributed a paper on the motion of sap in plants to the *Royal Society*, which was printed in the "*Philosophical Transactions*" (vol. xxxiii., 1724). His grounds were afterwards known as Selby's Gardens, and extended from the west end of Ivy-lane to the New North-road. Here he cultivated a vineyard as late as 1722, which is said to have been one of the last in England. Fairchild by his will, dated February 21st, 1728, and proved in the Prerogative Court, October 13th, 1729, gave and bequeathed to the trustees of the charity children of Hoxton, and their successors, and the churchwardens of the parish of St. Leonard, Shoreditch, and their successors, the sum of 25*l.*, to be by them placed out at interest for the payment of 20*s.* annually, for ever, for the preaching of a sermon in the said Church of St. Leonard, Shoreditch, by the lecturer of the said parish, or such other person as the said trustees and churchwardens and their successors should think proper, in the afternoon of the Tuesday in every Whitsun week in each year, on the subjects following, viz., the wonderful works of God in the Creation, or on the certainty of the Resurrection of the Dead, proved by the certain changes of the animal and vegetable parts of the creation. This sum was considered so inadequate for the purpose, that a subscription was opened, with the intention of raising it to 100*l.* To this subscription Sir Hans Sloane, Lord Charles Cavendish, and other celebrated men gave their guineas; but only 45*l.* 3*s.* were collected by this means, and afterwards Dr. Denne, vicar of Shoreditch, a valuable man, who rebuilt the church and carefully looked after the benefactions of the parish, added 25*l.* 17*s.* out of the money he had received for preaching the lecture for fifteen years. Archdeacon Denne and Cornelius Wittenoom, the trustees, were desirous of transferring their trust to the *Royal Society*, and in June, 1746, the Society having accepted it, an elaborately-worded deed was approved by the Council, but the actual transfer did not take place until after the death of Archdeacon Denne, in 1767. Among the noted men who have delivered the lecture may be mentioned Dr. Stukeley; the Rev. William Jones, of Nayland; the Rev. Samuel Ayscough; and Dr. Wilberforce, when Bishop of Oxford. In 1750, Stukeley

made a note in his journal of a visit to hear the lecture; and as the passage gives us a picture of the state of the neighbourhood of Hoxton at that date, we will quote it here:—"I went with Mr. Folkes and other fellows to Shoreditch, to hear Dr. Denne preach Fairchild's sermon on the Beauties of the Vegetable World. We were entertained by Mr. Whetman, the vinegar merchant, at his elegant house by Moorfields, a pleasant place, encompassed with gardens, well stored with all sorts of curious flowers and shrubs, where we spent the day very agreeably, enjoying all the pleasures of the country in town, with the addition of philosophical company."

The late Charles Babbage, in his "Decline of Science in England," suggested some impracticable alterations in the carrying out of the founder's intentions, but a general desire was long felt in the Society to get rid of the Trust. One of the stipulations in Fairchild's will was that "in case default be made in preaching the said sermon at the time aforesaid, then his will was that the sum of twenty-five pounds should be forfeited to the churchwardens of the Parish of St. Giles, Cripplegate, London, to be by them and their successors placed out at interest for the preaching of the said annual sermon in the Parish Church of St. Giles, Cripplegate." Had the Society, however, allowed the trust to lapse, the only sum to be handed over to the churchwardens of St. Giles's, Cripplegate, would have been the original twenty-five pounds, and with the remaining amount they would still have been saddled. A way was at last found out of the difficulty, and after some correspondence between the Secretary of the Charity Commission and the Secretary of the Royal Society, the trust was handed over to the Charity Commissioners in 1873, and the Bishop of London for the time being was appointed Trustee. In 1851 the 100*l.* South Sea Annuities paying 3 per cent. was converted into 110*l.* New 2½ per Cent. Stock.

Although we have but little space left for the history of some of the once celebrated houses of Hoxton, we must not pass them entirely by without notice. Balmes House, originally built in 1510 was once surrounded entirely by a moat. St. John's House, also known as the White House, Hoxton, Old Town, was long supposed to have been built early in the reign of James I., by Oliver, third Lord St. John, of Bletsoe, in the county of Bedford, who died here in 1618, because the vase that once stood on the top of the building was perforated with the inscription, *St. J. 1618*. It has, however, been contended by some that the house was only thoroughly repaired in 1610, and had been erected about a century previously. The St. Johns were the great people of the neighbourhood, and many of them were buried in the church of St. Leonard, Shoreditch. Soon after 1700 the estate passed by purchase from the St. Johns to the Tillard family, and the house was kept from 1740 to 1750 as a boarding-school by Mr. Baddeley, father of George Baddeley, D.D. It was afterwards successively occupied by Messrs. Barnes, Smith, Burrows, and Tipple, the latter having used it as an asylum for paupers farmed out by various London parishes. The garden at the back of the house at one time extended to the Kingsland-road. Hoxton House was rebuilt in 1818 and is now occupied by a Lunatic Asylum. A very noticeable feature of Hoxton is the large number of almshouses that have at different times been founded in its immediate neighbourhood. The most important of these is Aske's Hospital in Pitfield-street, which was erected by the Haberdashers' Company in 1692, pursuant to the will of Robert Aske, who left 30,000*l.* to that Company for building and endowing a hospital for the relief of 20 of its poor members, and for the education of 20 boys, sons of decayed freemen of the company. The once celebrated Arthur B-dford was one of the chaplains. The architect was that universal genius Dr. Robert Hooke, who was blamed for exceeding the sum allowed and thus lessening the revenue of the hospital; but he contended that this was not his fault. He said that it was caused by additions and alterations of the first design, and also because he did not himself procure or agree with the workmen. The building was pulled down and rebuilt early in the present century. Hoxton-square was once remarkable as the residence of many eminent Nonconformist divines, and it was probably a pleasant place when country fields could be seen from the back windows. Charles-square was built in

1684 by a Mr. Charles, and was known for many years as the New Square. A distinguished resident was Cowper's friend, the Rev. John Newton, who was rector of St. Mary Woolnoth, Lombard-street, for twenty-eight years, and died in 1807.

Hoxton was once noted for Balsamic Wells, and a book was written upon them. Sir Philip Skippon, writing to Ray (December 13, 1687), refers to "the sweet-smelling earth found in Captain Massey's garden at Hogsdon," and eighteen years afterwards Sir Hans Sloane, in a letter to Ray (November 10, 1685), gives a full account of the earth, and an analysis of the water found "near the new square at Hogsdon."

Whatever charms Hoxton may once have possessed, they are all gone now, and yet not many months ago a London merchant purchased ground there, and built himself a house, which was finished, and fitted up with all the thoroughness that taste and luxury could suggest. A conservatory was placed between the kitchen and the dining-room, and a tramway laid down, in order that the dinner might be wheeled from the place where it was cooked to the place where it was eaten without any delay. The house was hardly finished when the merchant died, and his family, preferring another neighbourhood sold it. Hoxton has still some claim to notice as possessing a well-conducted theatre for the people. We once found ourselves spectators of a pantomime at the Britannia Theatre, but the audience were better worth looking at than the mimic life upon the stage.

THE FRENCH GALLERY.

It was a debt worth acknowledging when private enterprise enabled the untravelled Londoner to make acquaintance with some of the best and most celebrated pictures of the world's most recent production, and many of the choicest works of French and Belgian painters have passed a summer-time in the apartment 120, Pall Mall, to which years of custom have given the lasting designation of "the French Gallery,"—for beyond the pleasure and instruction ever derivable from contemplating such masterpieces, it seemed a promise that frequent opportunity of studying them would surely benefit those amongst us who were cultivating taste and knowledge for the practice of art; that our school would be benefited by constant association with the works of professors versed in classic knowledge of what it must appear their nature makes them more susceptible of acquiring than capable of imparting.

The question now is, whether foreign painters have not become more like our own than *once* were. There may be many reasons why there has been of late so little change in the succeeding Exhibitions of Continental contemporary art, and one may be that the increasing demand for pretty pleasant brilliant specimens of it to adorn drawing-room and dining-room walls very much regulates the supply. There is no falling off in any respect of these recommendations. The "Pretty Reflections" (2), by M. G. de Jonghe, with another well-to-do young lady, not quite so well painted, if as well dressed; "The Lap Dog" (34), by the same; "Chez le Cordonnier" (36), by M. V. Casabianchi; "In my Garden" (46) and "The Morning Bath" (62), two very choice little bits, by M. G. Boldini; "The Letter Casket" (146), that gives nominal motive for another fair one to stand in such splendidly expensive white satin, that might stand alone, by M. H. Scholten; and "The Jewel Cabinet" (155), the contents of which are being exposed in a ladylike manner by a tall slender blonde to an equally ladylike and appreciative brunette, by M. F. Verlaas, head a list of such charming things, as it is quite easy to anticipate finding amongst the usual 200 and odd items that annually re-awaken interest and admiration for Mr. Wallis's collection.

The judgment and care with which these collections are brought together, give very good evidence that they do more than fairly represent contemporary foreign art, and if there be any object of comparison with the widely-spread and rather wildly-growing show of art we sometimes make in Britain, similar pains would insure similar results, always so long as Meissonier reminds of wonderful dramatic and manipulative skill by the least assertion of it; and Jules Breton, with others, are left to tell that the genius of the French school is a tradition strong

enough to be kept alive in choice costume, attitude, and *bric-a-brac*. Conviction strengthens, year by year, that in the want of purpose, inventiveness, or any meaning beyond the mere intention of displaying the hand's skill, the apprehension of form, and sense for colour, for the sake of vaunt only, the total subservience of individual mind to common matter, the vain show of a worth less glory, a deluge is promised to the painter. If put to the vote, his own countrymen would return M. Meissonier as their greatest artist of to-day, and M. Meissonier has a great deal to answer for: inimitable as he is, no one was ever more imitated. If perfect success attending the completion of every intention of the painter, including the one of making it quite palpable to all what the intention is, may be taken for consummate performance, Meissonier is the greatest artist living. He attempts to teach no lesson: with laconic terseness,—his pencil is his voice,—he gives a text with such inflexions that dissertations follow of its own accord. "The Sign Painter" (60), who before giving the finishing touches to a figure of Bacchus beseeching a cask, and is occasionally asking the opinion of a connoisseur well calculated to give one if it be only by his sympathy with the heathen god, knows very well it will be a favourable one or he would not ask it. Some physical resemblance between his own bare chest and that which he has depicted for Bacchus would suggest more faith in nature than dependence on what is Greek; but the sagacious critic is too far gone in libation to do more than indicate he has an opinion, if he could only state it; he does not feel sure of coherence though, so he bites a straw and screws his eyes to critical focus, thrusts his hands into his breeches pockets, and with his legs well fixed to stop away, follows the bent of art critics generally, who, when they do not know what to say, give room for an impression that they could say a great deal if they only chose to speak. It would seem to be next to impossibility to beat the workmanship throughout this picture, but thus is its lesser merit by the side of the character and vitality of the two figures that warm the very clothes they wear.

The "Guard-room" (63) is not the best nor the least perfect of many similar scenes that once rear to memory whenever this master's name is mentioned; M. J. L. Gérôme's moody Eastern potentate, "Botzaris" (44), will also recall many a triumph of narrative value over equally well represented velvet, chased arms and elaborated properties, as this show; but very few would identify the clever carelessness that appears to leave whatever careless result is attained to mere accident, in such work as fills "An Idle Hour" (12), with the exquisite finish and refinement of taste by which M. Alfred Stevens used to exalt ordinary episodes of everyday life.

The always-delightful children that Mons. Edouard Frère selects as models for his method of poetising and making picturesque the even tenour of peasant-boy existence, are missed from the number of examples provided by those who would emulate him. "The Girls' School" (84), by Mr. E. Duverger, is poor compensation for what would have been so much better done by M. E. Frère, and the amount of all that may be seen here to give room for a supposition that his place might be supplied, only serves to make his absence the more remarkable.

M. P. Billet is a post-painter. There is an indescribable grace about his homely damsels "Grass-cutting," under a dappled sky, that generalises open-air effect, and leaves little difference between light and shadow, that would raise even more homeliness until it became singularly beautiful. One of the most difficult of natural effects is here wonderfully well fixed in paint, and with the more credit to the painter's observation, since it belongs to those things that must be learnt, by reason that it could never be made stay for copy.

M. A. Wahlberg is entitled even in greater degree to this rarely-earned praise: the close watchfulness and keen apprehension of light and shadow effects that pass and vary whilst they are watched, belong to the highest qualities that fit a man to excel in art. "The Port of Wexholm, near Stockholm" (149), might class with the best of its kind, as a magnificent example to prove there must be much that is innate in addition to the more that may be learnt and acquired to constitute a great painter.

Those who came most nearly after Raffaele might owe all they knew and did from teaching; whilst Rembrandt, Constable, Reynolds, Turner, and some few others, were their own and only real masters, even if they did not know it.

In art, catholicism and dissent have not so many differences as degrees, and there never can be a great artist, however intense his desire is to learn everything that can be taught, who will not take room to find out much more for himself.

A strict Protestant might lift his hat to M. A. E. Hébert's "Maddons" (8), the representation is so simple, and so devoid of anything like a sentimentality such as spoils M. J. Cernak's "Episode of the War in Montenegro" (1862), wherein some Montenegrine women, when carrying cartridges to the soldiers, meet a wounded Volovide, and are demonstrative of the most frantic grief at the practical lesson on the purpose of making and carrying, and firing ball-cartridge; however, the incident may be historical, it is only one more unnecessary illustration of woman's perfection—her perfect inconsistency. There is sound workmanship to condone any such shortcomings as this, however, in Mr. Cernak's clever picture, which is almost singular as an example of dignified application of good drawing and general artistic skill.

THE PROPOSED CITY MARKET COMPETITION.

The designs submitted for the proposed market in Farringdon-street, in reply to premiums offered by the Corporation of London, and which are now hanging on screens within a temporary enclosure at the east end of the Guildhall, give us no pleasure. When the competition was first announced, it was pointed out in our pages that it could scarcely result satisfactorily. Architects of position, it was said, knowing that the work must almost necessarily go ultimately into the hands of the City architect, so that nothing was to be looked for but the bare premiums, could scarcely be expected to compete in any numbers. And this we are forced to suppose has been verified by the result. The majority of the designs submitted are utterly valueless, many of them ridiculous. The least cultivated observer will say *prophète* to "Prudentia," and question the clear-headedness of the competitor who signs his designs "Practical," "Validus" is altogether invalid, and "Post Mortem" requires no lengthened inquest to be put out of court. Some of even the best of the works have features which must inevitably lead to their rejection: "Domine dirige Nos" has a turreted tower, that suggests Scotland in the Middle Ages, when the market had to be defended against an occasional raid; and "Anchor," praiseworthy in some respects, has made a monument instead of a market. The corporation do not want a monument—they do not want domes or towers. What is needed is a good, light, well-ventilated market; handsome, of course, or it would not be a fitting work for the Corporation of London, but still a market, and is, shall the market be in two stories or one? The difference in the levels on the east and west arrangement is proposed by several of the competitors. We are strongly disposed, however, to degree, would be a mistake. It certainly should not be done without the fullest consideration on efficiency or otherwise of the Corporation. The wholly on considerations of the market depends only by an architect who can go minutely into them on the spot with all the required special knowledge and local information. If the Corporation had offered their premiums for sketches, suggestions, and ideas, the waste of time now apparent would have been saved. One of the competitors, and by no means the least praiseworthy as a draughtsman ("Westminster"), has sent no fewer than twenty-four large frames of drawings, including minute details of ironwork and fittings, all of course utterly useless if the initial idea of the design be rejected.

The Building Act of 1844.—In the Commons on Monday, Mr. Locke asked the Home Secretary whether, in view of the unrepented success of the Building Act of 1844 (as to slaughter-houses) coming into operation in August next, the Government proposed to legislate on the subject according to the recommendations contained in the report of the Select Committee made last year. Mr. Cross said it was the wish of the Government to legislate upon the subject during the present session in the spirit generally of the commendations of the Committee.

ANCIENT ART-WORK IN METAL.

In our recent observations on the subject of ancient art, we arrived at the subject of metal-work. The field of research, as to this branch of the workman's craft, is wide, and very far from being exhausted. The discoveries in the Troad, chronicled in our pages, not only offered a proof of the costly nature of the ancient *vaisselle*, but afford specimens of execution, from the minute study of which, information, as regards the history of the goldsmith's art may be derived.

Notwithstanding the goodness of workmanship (apart from design) which characterises the work of our best English goldsmiths and silversmiths at the present day, there is good reason for coming to the conclusion that they might yet learn much from a fuller acquaintance with the labours of their predecessors. There is evidence of a "lost word" in the craft; of the possession, by the ancient craftsman, of secrets which, if not entirely lost, are yet very generally unknown. One reason of this appears to be the fact, that when the enormous treasures of the temples and palaces of the ancient world were pillaged and destroyed by various hordes of barbarian conquerors, not only were the ancient services of gold melted into money, but they have never since been replaced. The very word "gold plate" is an illustration of our meaning. The discovery of the fact that if a strip of gold was welded on to a bar of silver, or a strip of silver on to a bar of copper, the compound structure might be rolled or beaten to a great degree of tenacity, without destroying the continuity of the more precious surface, has allowed of the production of services for the table which, while made of silver, have the appearance and lustre of gold. Such is the magnificent service made for King George IV., which was recently displayed in the Royal Banquet at Windsor. Articles of gold for chamber use, as distinguished from personal ornaments, are now extremely rare. The Ampulla or Golden Dove, which is used to contain the chrism, or anointing oil, for the Coronation of an English Sovereign, is, so far as we remember, the only article, in the Coronation Service of gold plate, which is made entirely of gold. In addition to the fact that a dish or goblet of gold would cost, for material alone, sixteen times as much as an equal weight of silver, the difference in the specific gravity of the two metals is such, that the golden article would only be about half the size of the silver one. Thus the disproportion in cost is more than thirty to one. And, for convenience of use, the weight of the silver article is every way preferable to that of the more costly metal. Indeed in this respect we think it highly probable that silver will hereafter be, to a great extent, superseded, for articles of domestic use, by the lighter metal aluminium; which possesses a lustre similar to that of silver, and is far less subject to oxidation.

The ancient craft, therefore, of the goldsmith, is now represented by the two existing crafts of the silversmith and the jeweller. The former executes all those objects of ornamental vesselry which, when gold was more common, as measured by its relation to silver, than at present, were wrought in that noble metal. The latter works, for the most part, in an alloy of comparatively low value. The purity of gold is still denoted by the use of the term *carat*. This word, which like the Troy grain, and the Latin *siliqua*, is thought originally to have denoted a seed, or pod, taken for the unit of weight, appears to have been the basis of the ancient Chaldean system of weights. As a positive dimension, it is now only commonly used by the diamond merchant. Four diamond grains go to one diamond carat, which is the equivalent of 32 grains Troy. But the term is still employed to denote the purity of gold. Absolutely pure gold is said to be 24 carats fine. It is a curious fact that this weight of 24 carats, if taken as a positive quantity, of 768 grains Troy, is exactly the fifth part of the Sela, or silver unit, which was introduced into Palestine after the conquest of Babylon by the Persians. This coin was one-fifth part heavier than the shekel, the silver unit which prevailed from the earliest known times down to those of the Persian empire. And the Dario, or gold coin of the Persians, specimens of which exist in our museums, has a distinct relation of weight and of value to the Sela of 384 Troy grains of silver.

In the English coinage, 22 grains of fine gold are mixed with 2 grains of fine copper, to form the standard, which is called 22 carats fine. This is represented by the decimal 0.9166. In

the French coinage the gold is 0.90 fine. Ordinary jewellers' gold is of a lower purity. When it is of 15 carats fine, or fifteen parts of pure gold to nine parts of copper, it is now frequently stamped 15 c., to denote the fact. Gold of 18 carats fine, or 0.75, is unusually pure for jewellers' work. In Portugal, however, gold of a much greater purity is employed by the goldsmiths. In Italy, on the contrary large quantities of rings, chains, and other ornaments with which the women of the lower classes are fond of loading their fingers and necks, are made of gold as impure as 6 or 6 carats,—that is to say, that the alloy contains only five or six parts of gold to nineteen or eighteen of copper.

The use of silver as an alloy, instead of copper, gives that pale colour which characterises our old guinea-pieces, as they were struck, down to 1754. The question of colour is rather one of taste than of actual value. But if coin be reckoned according to its gold-weight alone, and at one time silver, and at another copper, be used as an alloy, it may pay to melt down the former mixture, in order to extract the silver; and much old gold has, it is said, been thus destroyed.

In gold chains, or other articles of personal wear, the owner will sometimes have the articles recoloured, as it is called. The method employed involves subjecting the object to heat adequate to burn out the particles of copper on the surface. The article loses appreciably in weight by the process. The brilliancy of appearance, which has been acquired by the "colouring," is soon lost, and the object is permanently deteriorated.

A cubic foot of gold weighs from 1,186 to 1,224 pounds avoirdupois, or from 19 to 19.6 times the weight of an equal bulk of water. This is expressed, as our readers are aware, by saying that the specific gravity of gold varies from 19 to 19.6. The specific gravity of silver is 10.5; that of copper 8.6, when cast, 8.8, in sheet, and 8.9, when hammered. Thus the purity of any object made of gold can be ascertained by weighing it, first in the air, and then in the water. In the latter case, the object displaces a bulk of water exactly equal to its own bulk. It loses, in consequence, a weight equal to that of its own bulk of water.

A means of comparison is thus established, which only fails in exactitude from the want of knowledge as to what is the nature of the baser metal used in alloy. This beautiful and simple check upon the purity of gold, when worked up by the goldsmith, was the discovery, as is well known, of the great mathematician, Archimedes, of Syracuse, who died B.C. 212. The legend, which has all the stamp of truth, is to the effect that it was the displacement of the water in a bath by his own person that originated the train of thought which led that great engineer to the establishment of the doctrine of specific gravity. He is said to have rushed home from the bath, without waiting to put on his garments, exclaiming EYPHKA—"I have found it!" His mind had been previously much exercised by the inquiry made of him, by Hiero, tyrant of Syracuse, as to the purity of the gold employed in making a crown, about which some suspicion had arisen with regard to the integrity of the goldsmith. This ancient classical tale, with which many of us are perfectly familiar, is of interest in this inquiry, as it proves that, at a period when (as we shall show) the art of the goldsmiths had attained great excellence, what until then was a mystery of the craft was penetrated by the analysis of pure science.

Gold is now employed as the standard of value in Great Britain; and is increasingly so employed throughout the world. It must be borne in mind that a standard is a unit, arbitrarily assumed, by which dimensions are compared; or in terms of which they are stated. Thus, a Troy grain is a unit of weight, and when we make that statement we have stated an ultimate fact. If anyone asks how much a Troy grain weighs, it is only by some very circuitous and difficult process that any exact answer can be given. And that answer will only be arrived at by some comparison with other dimensions. In the same way, the foot is our unit of length, and we could only recover the exact length of the foot, if it were lost, by its recorded relation to the length of the pendulum which vibrates seconds. In the same way, again, a sovereign (which retains the name of pound, given when the troy pound of silver was the unit of amount) is a stamped piece of gold, 22 carats fine, weighing 123.274 grains Troy. That is an ultimate fact, and questions of value become simple when it is thus regarded. A piece of metal of that weight and fineness is

a well-known, though arbitrarily fixed, unit of exchange.

In round numbers (which are generally the most useful) gold may be said to be worth twenty pence per grain. An ounce of standard gold is worth seven shillings and ninepence as bullion, and seventy-seven shillings and tenpence halfpenny as coin,—the odd three-halfpence being the sole charge made for assay and for mintage. At that rate, an ounce of pure gold is worth 84.82 shillings. We can thus readily ascertain the value of gold of any given degree of fineness. Eighteen-carat gold being worth 55.95 shillings per ounce; fifteen-carat gold being worth 50.89 shillings per ounce; and so on.

We have an account of a masterpiece of ancient goldsmith's work, dating about half a century before the important discovery of the laws of specific gravity. It is given in the "Archæologie" of Josephus, book xii, chap. 11. A great amount of obscurity attends the passage; and as it has been rendered by Whiston—we cannot say into the English language, but into English words—it approaches what is commonly called gibberish. Even in the original Greek it is obscure. This arises from the remarkable fact, that the Jewish writers, almost or altogether without exception, labour under a marked disability to describe any visible object in intelligible words. They appear to be so accustomed to the hair-splitting of minute metaphysical subtleties as to be unable to call a spade a spade, or to describe its plain wooden handle and flat iron blade. In this instance also, as in many others, an unnecessary complication is involved by the introduction of dimensions that are mentioned in the Law, but which are inconsistent with the details given from other sources. Thus Josephus begins by describing the splendid piece of work in question as a golden table 38 in. long, 16 in. wide, and 24 in. high. But he then repeatedly speaks of it as triangular and equilateral, which is entirely inconsistent with these dimensions.

The probability is, that this table, which King Ptolemy II. had made, and sent as an offering to the Temple at Jerusalem, was actually a tripod. On one of the copper coins of Herod the Great, a tripod is represented, which very closely resembles one that is found on the silver coins of Crotona, of early date. The Mishna states (in the treatise on Offerings, chapter xi.) that a golden table stood in the porch of the Temple, on which the shew-bread was laid, when removed from the table before the Lord, within the Holy House. It is extremely probable that this second table may have been that offered by King Ptolemy. This may, therefore, have been actually a tripod, according to the details of the description; while the table in the Holy House, which (originally, at all events) was of wood, covered with gold, was of the oblong form denoted by the dimensions just given.

This magnificent piece of goldsmith's work then, may be considered as having been 40 in. high; and,—if, indeed, it was a tripod,—of 18 in. or 20 in. on each side. It was entirely made of gold. Its flat surface was surrounded by a border, or crown, of 3 in. (accurately 2½ in.) deep, wrought in arabesque, with a reed pattern at the angles. The table itself was chased, and precious stones were inlaid, both in the flat portion and in the supports and mouldings. Beneath the arabesque crown, there must have been something resembling the mouldings of an architectural cornice; and the author appears to endeavour to describe the now well-known "egg moulding;" as interposed between the reeded members of the decoration. Beneath this, hung a sort of veil of golden foliage, either wrought in *repoussé*, or, as seems most in accordance with the account, actually beaten out in leaves, fruit, and tendrils, in a purely naturalistic style. "Under this pattern of eggs," says the old writer, "the artificers wrought a crown, composed of fruits of every sort, so close to nature that the grapes seemed to hang, the ears of corn to rise, the pomegranates to open." Precious stones, of the natural colours of each of the fruits, were set in the golden chalices, and the whole was united to the table.

Beneath this frieze of foliated work, which must have contained rubies for the pomegranates, emeralds or amethysts for the grapes, and topaz, for the wheat or barley, was another egg-moulding; and then another piece of reeded work. Thus, instead of a hollow tripod, such as is portrayed on the coins we have cited, or an ordinary table, standing on legs, we find that this masterpiece of the Alexandrian goldsmiths of the third century before Christ, was a

prism, wrought with equal care and skill on each of its three vertical sides, and with the *corona* rising above the level surface which formed the upper part of the table. The little altar which Railhac has introduced into the cartoon of Paul and Barnabas at Lystra may be taken as a type of the design. A plain band, or fringe, of the same width as the *corona*, ran, under the lower moulding. This rested on feet, each of which was wrought in the form of a lily, its petals spreading under the frieze of the table and skewing—if we correctly read the word BLASTESIS—the stamens and pistil within the *corona*. Under each of these golden lilies, as the actual support of the whole superstructure, was a carbuncle, or large ruby; of course, as we now say "an *en cabochon*." The word employed is *anthrax*, which is translated live coal; and Pliny derives the word carbuncle "a *similitudine ignis*." The most valuable of these gems are of the colour of pigeon's blood. Even when of a small size they fetched, in Imperial times, high prices. At the present time a ruby of the weight of 4 carats, that is to say, a little under 13 grains Troy, is worth 400*l.*, and those above that weight have no determined price. The magnificence of this offering may be more fully appreciated by thus glancing at the value of but one of its constituent parts.

The thickness of the work is said to have been eight digits, which is equal to 5½ in. This must measure the relief, or projection from the back of the plates to the most prominent part of the enrichment of the edifice. It is consistent with the proportion of the relief of the tetradrachm, which we recently described, in which the fullest part of the work was double the thickness of the disc itself. A spray of ivy was wrought round the lower band of metal, mingled with a branch of the vine, of which the tendrils were so delicate that they are said to have been moved by the wind, and to have "seemed to be a phantasy of nature rather than a mimicry of art."

The chased surface of the table would seem to have been inlaid with gems set transparently; a rhomboidal space in the centre being filled by rock crystal, surrounded by amber, around which rubies and emeralds gleamed like stars. The sacerdotal writer lingers with delight over this glorious gift, the beauty of which he is so little able adequately to describe. He concludes by saying:—"Such was this gift of regal munificence, from the vast cost of the material, the variety of the ornamentation, and the mimicry of nature by the toretic skill of the artificers, that, although it did not exceed the table before dedicated to the divine worship in size, yet in art, in novelty of work, and in brilliancy of effect, it was far better and more beautiful."

It is not the more admiration of an Oriental semi-barbarian for a sacred object, that we have thus attempted to bring before our readers. As a priest, Josephus had no doubt seen the table in question. And he concluded the work we have quoted in the thirteenth year of Domitian (being the fifty-sixth of his own life), when he was not unacquainted with the full splendour of Imperial Rome. The table in question may, we think, be identified among the objects borne in triumph in the procession represented on the Arch of Titus. It was, no doubt, among the precious objects pillaged by Genseric, and carried by that barbarian to Carthage, on the sack of Rome in A.D. 455.

We may further assure ourselves of the excellence attained by the art-workmen of the time of Ptolemy II. by the comparison of the hieroglyphics cut under this dynasty, with those of more ancient date. In this branch of glyptic art, Egypt early attained a perfection of execution which may even now excite our admiration. We confess to wonder and amaze as to how these innumerable inscriptions were wrought in granite and in porphyry. There is a sharp, perpendicularly cut side, and a flat smooth bottom, to every character, in thousands of these inscriptions, which it would puzzle us now to produce. That time was utterly disregarded by the sculptors is, no doubt, one of the elements of the accuracy of their work. We see that condition illustrated by the Indian, and by the Chinese, work of to-day. But neither India nor China presents us with any counterpart of the true hieroglyph. The characters are, by perfectly conventionalised. They assumed, by the time that the pyramids were built, a type in which none but a very experienced and observant student of Egyptian antiquity can trace any variation, either as to form or as to

mode of execution, for not only hundreds, but even thousands, of years. They seem to yield evidence of the application of an art, hardly to be distinguished from that of the carter of gems in intaglio, to large surfaces, to statues, sphinxes, and walls of temples and of tombs. They wrought for an earthly eternity. Specimens of the personal ornaments wrought by the ancient goldsmiths, for kings and queens of old, whose tombs have been rifled by modern rapacity, heedless of the solemn curses denounced by the ancient ritual on such sacrilegious robbery. But none of our recent "finds" of ancient plate, in the Troad or elsewhere, has yet supplied anything approaching the magnificence of this offering of the Egyptian monarch; although there are cups and craters in the *Museo Borbonico*, wrought with vine-leaves and tendrils, that are not unworthy of the admiration, expressed, by the ancient writer, for the Golden Table of King Ptolemy.

THE TEMPLE RAILINGS ON THE EMBANKMENT.

THE lofty ornamental iron railings in front of the Temple Gardens, on the Thames Embankment, which have been in course of erection during the last few months, are now completed, the west gateway entrance, near the library of the Inner Temple, having been finished during the present week. The extreme length of the railings, from the east end, near Blackfriars Bridge, to the western boundary, is 980 ft. The Portland stone plinth or wall (resting upon a concrete bed), in which the railings are set, is 3 ft. in height, and the railings themselves 8 ft., the extreme height from the foot-path level being thus 11 ft. The piers at the carriage and foot-way entrance-gates, at each end, which are in Portland stone, are elaborately carved. They are square in form, and 13 ft. in height. There are four of these piers at each entrance-gate. At the base of the angles of the piers there are carved acanthus leaves, whilst in the upper portion of the face there are ornamental incisions. About midway on the face of each pier there is a fluted band, whilst at each angle are columns, the lower portion of which, to the height of 15 in., is fluted. The piers terminate with an overhanging coping or capital, and each pier is surmounted by an ornamental cast-iron vase. The carriage entrance-gates are 10 ft. in width, and the footway gates on each side, 5 ft. wide. The gates at the east end are ornamented with the figures of Pegasus, as the emblem of the Middle Temple, whilst those at the west end display the Lamb and Flag, as the emblem of the Inner Temple. At the east end there is a boundary-wall, in Portland stone, 11 ft. high, surmounted by an ornamental balustrade. The spikes and some other portions of the railings are intended to be gilt, and otherwise ornamented. The whole of the works have been executed under the superintendence of Mr. Bazalgette, the engineer to the Metropolitan Board, by whom they were designed, having been approved of by the Benchers of the Temple before the commencement of the works. Mr. Gibbs, of Cheltenham, executed the whole of the iron-work belonging to the railings, the standards and the ornamental portion being of cast-iron, and the rails and spikes of wrought iron. The contractor for the masonry was Mr. Blake, of Devonshire-road, Hackney. The cost of the works is between 7,000*l.* and 8,000*l.*

DISCOVERY IN MOAB.

We have been for some little time aware of the departure from Jerusalem of an entirely impartial and trustworthy expedition, bent on ascertaining something positive on the disputed point of the authenticity of the Moabite *temple-colla*. We thought it advisable to wait for further intelligence before mentioning the fact, as it was the wish of the explorers themselves that their errand should, if possible, be unknown to the partisans interested on either side. A captain in our Royal Navy, two English clergymen, one German Lutheran clergyman, another German, and an Armenian, formed the party. They directed their course to a part of the country to the north of that in which the former exploration (in which Pastor Weser went with Mr. Shapira) were carried on. Doubts were thrown on the authenticity of the finds then made, on the score of the presence of a collector

with the party. Every care was, therefore, taken on this occasion that no possible element of doubt should be admissible as to the thoroughness of the investigation.

We hear by this mail of the return of the party. Full particulars will no doubt be authoritatively published, which we prefer not in any way to forestall. This much, however, we may state. They have brought back *tools* with them, but no inscriptions. This is a striking illustration of the wisdom of the old proverb, not to halloo until out of the wood. Forgeries are known to be indigenous productions of the soil of Palestine. The antiquity of that evil craft is probably greater, or, at all events, can be traced further back, in that locality, than in any other part of the world. Denarii of Trajan and of other emperors are familiar to collectors of coins, which have been restructed in Jewish dies. The work has been generally attributed to Jewish leaders, in times of war and revolt. But even if this be true, such a re-issue is very closely akin to forgery; and, it must be observed, that while these pieces, in spite of the antique type of the illegal die, are certainly not older than the emperors whose coins furnish their material, there is nothing whatever to show how lately the second impression may have been made on them. Fully aware of the activity of the Chinese kind of industry in Palestine, we have yet all along pointed out the essential difference between forgery and creation. It now seems to be established, by entirely independent testimony, that these quaint and often hideous figures are veritable relics of the ancient idolatry denounced in the Bible, and of which much detail is given in the Talmud. That no fringe of fictitious objects has been appended to this ancient web, we are not at all prepared to argue. But that the matter was not one to be treated with contempt either when it was brought to the attention of English inquirers, or after the main collection had been secured for Berlin, we have all along urged. The intelligence now received shows that, in this, we were thoroughly right. We may anticipate some rather lively letters from Jerusalem, and, perhaps from Berlin.

THE BRITISH MUSEUM AND THE LATE MR. EMANUEL DEUTSCH.

The April number of the *Contemporary Review* includes a memorial of the late Emanuel Deutsch, by the Rev. H. R. Haweis,—a sad and touching story, not uninteresting. Mr. Deutsch, an officer in the British Museum, whose great attainments were little known beyond a circle of friends, awoke one morning in 1867, and found himself famous as the author of the now well-known article in the *Quarterly* on the Talmud. This article, as we are here told, which was but a fragment of an intended colossal work, has been translated into French, German, Italian, Dutch, Russian, Danish, Swedish, and Icelandic, and made the author known throughout Europe. Three years afterwards a fatal disease manifested itself, and after another three years of fearful suffering he died amongst strangers in Alexandria.*

In the course of the memorial Mr. Haweis makes some remarkable statements as to the treatment Mr. Deutsch received from his superiors in Great Russell-street. The writer says:—

"He complained bitterly, like many others, of the ventilation and heating of the British Museum. One day every one was oppressed with the closeness and heat; the next every one was shivering with cold. He complained that he was kept needlessly standing in draughty passages; was refused the use of a screen where he sat all day in a draught; suffered from cold feet, his mat having been removed for several days. The books it was his speciality to catalogue were taken from him, and hack work, well paid for as he would say at 40s. a year (his own salary was 300l.), was given him to do; indeed, he said that an attempt had been made to take him from his place and set him to work with clerks of an inferior official grade. At this he rebelled successfully. But after all, was not Mr. Deutsch bound to do as he was bid, and was it the business of the authorities to attend to his comfort more than to that of any one else?"

* Up to the last he appears to have laboured on, and not very long before his death we received a letter from him, seeking some information as to masons' marks, a subject for investigation which he regarded as of more importance than some persons, of not greater ability, are willing to attach to it.

Mr. Haweis, however, makes a charge of more weight than any of these. He says:—

"It was discovered, for the first time, that Mr. Deutsch was too valuable a public servant to be spared to go to the opening of the Suez Canal. The authorities began to have in Mr. Deutsch's case a high sense of what was due to the public service, and their scrupulous integrity was summarily vindicated at his expense. In fact, no personal feeling was allowed to interfere with what they doubtless conceived to be their duty as administrators of a great public trust. They carried the principle so far, that when a document numerously signed by the Dean of Westminster, Lord Strangford, Rawlinson, Lane, Layard, and others (every one of whom stood at the head of his own department in special learning), petitioning Parliament to appoint Mr. Deutsch keeper of Semitic antiquities at the British Museum, was handed to the authorities of that institution, to be through them presented in due form to the trustees, the document being slightly inaccurate in its technical terms of address, was quietly shelved and never presented at all."

There are usually two versions of a story, and the Museum authorities may have a complete reply to this serious impeachment. If they have, they owe it to themselves to give it forthwith. If they do not do so, some inquiry should be addressed to the trustees through Parliament.

COST OF PAVING IN LAMBETH.

At their meeting last week, the Lambeth vestry were engaged in a prolonged discussion on the large amount of paving required in the parish. The committee of works reported that the cost of substituting tar-paving in footways now gravelled would be about 37,776l., and if asphalt was used the cost would be about 68,406l. The committee further reported that 18,000l. were required to put the paved footways in proper repair, and that a great portion of this was very much needed, but that circumstances combined to render the present time inopportune for recommending a comprehensive plan of dealing with them. Still, as some provision must be made to meet a portion of the work, the committee had provided 7,000l. for this purpose, to be expended in the localities most in need of attention; and they state that this outlay, if annually maintained, will not accomplish for many years the work the vestry has before it. The recommendation of the committee to spend 7,000l. in the required paving, together with a similar sum in future years, was adopted.

HYDE-PARK-CORNER.

In reply to Mr. Goldsmid, in the Commons, Lord H. Lennox said he had not yet had time to consider the question with reference to the new road from Hamilton-place to Grosvenor-place, a question which would more properly have been addressed to his predecessor in office, the right hon. member for Clackmannan. Mr. Adam said he had brought this subject under the consideration of the late Government, but owing to the pressure of business they could not take it up at the time. The Duke of Westminster was disposed to deal in the most liberal manner with the proposal which had been made to him with the view of facilitating the traffic at Hyde-park-corner. He had had an interview on the subject with the duke's agent, and a plan was suggested which, however, would somewhat interfere with the use of the park. There were two plans he would suggest for consideration. The first was that the roadway at Piccadilly should be turned before reaching the archway, and that the road should be made to pass between the archway and the Green-park, leaving the archway standing out in an isolated position, with a road on each side. That would effectually relieve the traffic at Hyde-park-corner. It would necessitate a new entrance to Constitution-hill, and a new gateway, and would be rather expensive. There was a much simpler plan which he would suggest, and which could be carried out in a few weeks. Between the archway and the roadway at Piccadilly there was a broad pavement, and there was also a piece of garden ground. The pavement was broader than was necessary for the foot-passenger traffic, and this might be thrown into the roadway at Piccadilly, making a pavement for foot-passengers where the present garden-ground was, and doing away with the bit of gravel foot-path at the corner of Grosvenor-

place,—a plan which would greatly relieve the traffic, although it was not one which could be recommended as a permanent improvement. Colonel Hogg (for the Metropolitan Board of Works) said he should be glad to get plans and estimates from the right hon. gentleman (Mr. Adam).

METROPOLITAN BOARD OF WORKS.

At the usual meeting of the Metropolitan Board of Works, held on the 27th ult., the Board proceeded to the election of a district surveyor for the district of Bromley, Middlesex. There were sixteen candidates, and Mr. Foulsham obtained the appointment.

BUILDING ACT.

On a report from the Works and General Purposes Committee being presented, recommending the adoption of the Metropolitan Buildings and Management Amendment Bill, laid before the Board about a month since,

General Sir W. Codrington moved as an amendment.—

"That every wall separating the property of owners or occupiers should be built as an external wall, placed wholly on the ground of each separate owner or occupier; that no part of each such separate wall should be of less thickness than 4½ in."

He considered that the present arrangement was a very slack way of dividing property, not only as regarded providing for the safety of the occupiers, but for the purpose of securing adequate protection in case of fire. This was a very important consideration, and he hoped the Metropolitan Board of Works, in dealing with it, would take care of the interests of the occupiers as well as the owners of the property, who should be equally considered.

Mr. Leslie seconded the amendment.

Mr. F. Fowler opposed the amendment, and said, if it were agreed to, the owners of property would be able to build a party-wall only 4½ in. thick, and the adjoining wall would not be bound up with it.

Mr. Carr said he knew something about party-walls, and he felt sure that it would not be safe to carry out the plan which General Codrington had proposed.

The amendment was then put, and negatived by a majority of 20 to 5.

Sir W. Codrington then moved,—

"That in order more effectually to prevent fire communicating from one roof to another, the dividing wall of a dwelling-house should be of the same height above the roof as that proposed for a warehouse, viz., not less than 3 ft., and that alterations to this effect be made in the Bill."

His object in moving this amendment was to prevent the communication of fire from one house to another, and to give additional security to life. The safety which was given to warehouses ought, in his opinion, to be extended to dwelling-houses.

The amendment was put and negatived.

Mr. Fowler then called attention to paragraph 7 of part 4 of the 7th schedule to the Bill relating to party structures, which provided that a building owner shall make reasonable compensation to an adjoining owner for any loss caused to him by the works therein specified, and moved,—

"That such compensation be confined to the reasonable cost of making good structural damage or damage to the internal finishing and decorations, and that the following words in the said 7th paragraph, viz., 'and of making reasonable compensation for any loss caused thereby to him,' be therefore omitted."

After discussion, the amendment was carried by a majority of 16 to 1.

THE CHANNEL PASSAGE.

A new suggestion for improving the Channel passage is offered by M. Roumieu. As the shallowness of the French and English shores and the constant shingle drift offer great hindrances to the formation upon the coast of harbours which will receive large steamers at any time of the tide, this engineer proposes to construct harbours two or more miles out at sea, approached by tunnels from each shore. Accommodation would thus be provided for vessels drawing such a depth of water as would ensure steadiness of motion in any except stormy weather. The harbours (he says) would present no engineering difficulties. They might be formed upon the same principle as the Plymouth breakwater, concrete blocks being placed by divers below the sea-level. Upon the superstructure a lighthouse would be raised, which would also form a ventilating shaft to the

tunnel. Access to this railway tunnel would be gained by sinking a large caisson to the necessary depth, and the excavation from it would help to form the outside slopes of the harbour. The tunnel on either side would not be of a length to require ventilation except at the two ends, particularly as M. Roumieu proposes to dispense with engines, and the air would not therefore be deteriorated by smoke or steam. An inclination of the rails seaward would carry the train to the deep-sea harbour; an endless rope, worked by a stationary engine, would draw the train back again. The passengers and their luggage would be brought to the water level by a powerful lift, and they would then embark on board large and swift steamers, which would perform the passage, of say sixteen miles, in about an hour, the transhipment being no more than is now necessary, and the liability of sickness being reduced to a minimum. Such is the compromise suggested by M. Roumieu between the proposal to tunnel all the way, and not to tunnel at all. Another proposal might be to form these terminal tunnels in such a way as afterwards, if found advisable, to allow of their being completed by a tunnel uniting the two.

THE DISCOVERIES AT EPHESUS.

At the Royal Institution on Saturday before last, Mr. Newman, of the British Museum, delivered an interesting lecture, illustrative of Mr. Wood's recent discoveries at Ephesus. The lecturer gave a vivid picture of the worship of Diana, in the chief city of Asia Minor, and also of the varied uses to which the newly-discovered temple was applied. It was at once a museum, a bank, and a mint. It contained great stores of bullion, bars of gold, bonds, and acknowledgments of debt. An inscription from the temple stated that it lent money both to the State and to individuals. Xenophon's testimony proved that it was a place where deposits were made. Mr. Wood had brought to light losses which showed that the temple leased lands, and probably the tenure upon which the landed property attached to the Turkish mosques is now held was derived from the ancient practice of the temples of Asia Minor. Mr. Newman confessed his inability to throw much light upon the origin of the worship, but while pointing out that the Ephesian Diana was a purely Asiatic deity, and not to be confounded with the Greek huntress, he made some apposite remarks on the facility with which the Greeks, on settling in Asia Minor, adopted the unknown goddess, and at once proceeded to group around her a number of new legends. St. Timothy suffered martyrdom at Ephesus in consequence, it was said, of his having ventured to come forth and preach against a sacred procession while it passed through the streets, but the lecturer believed it could be shown that this particular procession had nothing to do with the worship of the goddess Diana.

GAS.

The ruling powers first gave the London Gas Companies a monopoly, whereby they were enabled to share the metropolitan public, as a prey, amongst them, leaving all at their mercy, and obliging them to submit to a never-failing supply of bad gas and ready insolence; and now, it would appear, they are to be allowed to complete their power over the citizens by extorting from them a full fourth more than their late high prices. They obtained their monopoly on the pretext that the fewer the separate establishments connected with the gas supply were, the lower could the gas be given to the public. Were those who allowed themselves to be bamboozled by such an argument stupid enough not to see through it; or did they see well enough through it, but only winked hard, as if they did not see it? The companies could thus give a cheaper gas supply; but would they? we asked. And did they? we again ask. On the contrary, now, we see that having first obtained the monopoly, they are about to reap forced crops of profit from it,—at a time, too, when even their own excuse of dear coal is crumbling down beneath their own feet. This is shameful; or, rather, it is shameless. But the only consolation is that it must bring matters to a crisis. The forced transfer of the gas supply into the hands of the Corporate authorities, as in Manchester, is the inevitable result.

In the Commons, a day or two since, Mr. Goldney asked the President of the Board of

Trade if he would lay upon the table of the House a copy of the opinion of the law officers of the Crown to the effect that the Board of Trade Commissioners, in settling the price of gas to be paid by the public, were precluded from inquiring into the mode in which the gas companies have raised or expended their capital. In reply, Sir C. Adderley said there was no such opinion of the law officers of the Crown in existence. There was an opinion given by Sir John Karslake, Sir Richard Baggallay, and Mr. Bowen, not as law officers, but as counsel, upon the questions referred to them as to the powers of the Commission appointed by the Board of Trade upon the application of the Imperial Gas Company for a revision of their rates of charge, and that opinion would be included in the minutes of the proceedings of the Commissioners which he (Sir C. Adderley) was about to lay upon the table.

The Birmingham Town Council, it seems, are engaged in doing precisely what must shortly be done in London, either by agreement or by force. They have purchased the properties of the Birmingham Gas Company and of the Birmingham and Staffordshire Company. The latter company is to receive in perpetuity a maximum dividend of 10 per cent. on one portion of the capital, and 7½ per cent. on the remaining portion. The former undertaking is purchased outright for 450,000l.

A special meeting, too, of the Town Council of Nottingham it has been decided to purchase the Nottingham Gas Works, the allowance to shareholders being 6½ per cent. for the first six months, and 6½ afterwards.

A public meeting has been held at Newington Causeway for the purpose of protesting against the high price of gas. The following resolution was carried:—"That, in the opinion of this meeting, the Phoenix Gas Company ought to supply the consumers with gas at the same price as the South Metropolitan Company does—namely, 3s. per 1,000 cubic feet, free of meter rent." That is something different from the Imperial Company's rise from 3s. 9d. to 4s. 8d.!

ON GOVERNMENT ARCHITECTURE IN BENGAL.*

THE soil of Bengal is more treacherous than that of Holland, and the sands upon which Calcutta rests are the most treacherous portion of the Presidency. What sort of foundations, how deep and how broad, whether concrete or piles should be used, continue to remain interesting topics of speculation to the most experienced officials; and in a late yearly report to the Government of Bengal, the Secretary in the Department of Public Works is assumed to have declared that as the walls of every building yet erected in Calcutta were spontaneously disintegrated, so all future works must share the same fate—a logical non sequens which seems to have been accepted with complacency by the Lieutenant-Governor. In such a soil, the surface of which is devoid of even a hillock, and which resembles the muddy bed of a river, cellars and sunk stories are impossible. It is not deemed advisable to use wooden piles, and though iron piles have been proposed they have never been tried for the foundations of public or private buildings. What is wanted in Calcutta is a platform on which to build—something upon which to balance a building. I would suggest, and it has probably been suggested before, the formation of a colossal table with four, six, twelve, or more legs, which should be deeply immersed in the sand. These legs might be cast-iron tubes (say 5 ft. in diameter), filled with rubbish and broken bricks. Rolled iron girders, tripled, secured together with wrought-iron collars, and the spaces between them filled with brick or concrete, could be placed upon these legs to form a frame, and strengthened by transverse girders. Brick arches or flat vaults could be turned between these girders; and, with the addition of concrete, the homogeneous top of a square or an oblong table formed, which would rest upon four, six, twelve, or more points of support. The superstructure would have to be built with due reference to these points; and the constructive skeleton would necessarily consist of four, six, twelve or more brick or stone piers of equal weight; while each floor would have to be put together with lighter girders and arches in a manner similar to the original platform. To

complete the external walls the space between the piers might be filled up with iron frames for doors and windows, and concrete or cement blocks coated with glazed tiles; the walls thus formed would be supported upon the frame of the platform; while the internal partitions composed of hollow bricks would rest, wherever they happen to be necessary, upon the brick and concrete top of the table. It seems to me that such a description of building would balance itself; and I was presumptuous enough to propose such a mode of construction to a high building authority in Bengal. Though he was pleased to approve the notion of a table, such as I have just described, he said that it was difficult to get the authorities to sanction expenditure for work which they could not "see"; that the *dekhane kavaste*, or what a French contractor once contemptuously called *ce qui est bon à Paris*, was the one thing for which it was possible to obtain funds; and so it results that public money is squandered for inartistic "show," and refused for ensuring a scientific system of foundations, at least in Calcutta.

Of the public buildings lately erected in the Indian capital, the least inappropriate is the new Post-office, and the most incongruous the new High Court of Judicature. The former is a specimen of the "Modern European," the latter of the Anglicised Franco-Venetian-Gothic style. The original designs for both, which were very artistic, were made by Mr. Granville, to whom I have already alluded; but it is certain that as far as the new High Court is concerned, he would refuse to father the bantling of which Bengal has been prematurely delivered. The Post-office is composed of huge Corinthian colonnades, the columns of which are built of brick, covered with cement, and a well-shaped dome of iron and cemented brick; and the latter has the merit of representing externally its internal section. But a broad flight of steps projects in front of the columns, and a broad pavement in front of the steps, so that no European can enter the building on a summer's day, except under shelter of an umbrella; nor, arrived on the threshold, can he find relief from sun or rain, even in the recesses of the porticoes. That the High Court is a lamentable failure, as far as architecture goes, is nobody's fault; even the substance of Medieval art is obtained with difficulty from books and photographs, the spirit never; and books, few and imperfect, have necessarily been the only guide possessed by its numerous builders. The judge's entrances are devoid of carriage porches. It should be remembered that no European can walk with impunity in the streets of Calcutta while the sun is up, and the Bengal Government have lately interdicted the construction of such porches in public buildings. Upon a flat terrace-roof, which may be said to cover the whole building, have been placed at intervals colossal iron Mansard roofs, plated with corrugated iron, of a height sufficient to contain two lofty stories, but to which there is no access, not even an eoliot for ventilation. They are thus reservoirs of caloric, so to speak, possessing the additional inconvenience of being permeable to the rain, in constant action from the rays of the sun, and a source of chronic danger from electrical influences.

In designing buildings for India, some past architectural style must, of course, be accepted as a basis upon which to create and fit them for the actual necessities of an Anglo-Indian community. But to transfer the Gothic of Northern France, or England, or even of Northern Italy, to the banks of the Ganges, bears on its face the impress of absurdity. A Greek colonnade, and a Roman arcade, though they may have sufficed to protect the walls of temples and theatres from European sun, are insufficient against an Indian one; for in Calcutta the spaces between columns and piers have to be partly filled up with wooden blinds or *persiennes*, and these have often to be supplemented with other contrivances to counteract heat. It seems to me that the architect, who designs for India, ought to turn, or rather return, to the works of the thirteenth and fourteenth centuries at Delhi, and to some of the later native productions of Agra and Ahmedabad. The best specimens extant of indigenous architecture are in the north-west of India, and its best period is identical with that of the Medieval architecture of north-western Europe. It is impossible to realise the beauties of the Hindustani school from photographs even of the best description, and no pictures I have yet seen give the true colour of its red sandstone buildings. Mr. Fergusson has described them as

* By Mr. W. H. White. Read at the Institute of Architects. See p. 239, ante.

representing "one of the completed architectural styles of the world"; and here I take leave to acknowledge, with other travellers, the debt I owe to him, for means of study and information concerning Hindustani monuments. But the illustrations published in his "History of Architecture," though eminently useful and exact, are not sufficient for students, either European or Native. Both require measured plans, sections, and elevations, drawn to a large scale, of buildings such as those still remaining round the Kutab Minar, the mausoleum of Toghlak Shah, and many of the mosques and tombs in and around the Purana Kila, in the neighbourhood of Modern Delhi, magnificent remnants of the Pathan and Moghal dominations. A writer in a well-known journal published in Calcutta, has drawn a parallel between European and Indian architecture of the last century. He says:—

"Hindustani architecture, even when emasculated and depraved, was ever lovely, whilst it remained untainted by European vulgarity and British vandalism. The epoch of Louis XIV., which, as Voltaire has justly shown, spread its demoralising influence over all nations left untouched the new city of Shah-Jehanabad—the modern Delhi—whose noble mosque surpasses the Invalides of Paris, the best work of the older Mosaic, as much as that excels the buildings of the Jesuits throughout Europe. Any carefully drawn parallel between the last creations of the Hindustani school and the miscellaneous assemblage of abortions, designed without taste, executed without principle, and belonging to no school whatsoever, which emanate from the dark age of Christendom—the eighteenth century—could have but one result; and that may be obtained by ordinary sightseers. Those who run may read. They have but to compare the more modern Hindustani buildings of the North-West with Kedleston Hall, Derbyshire (of which Government House, Calcutta, is a sublime copy), Blenheim Palace, or Horace Walpole's villa at Strawberry Hill. Domed tombs, arched verandahs, houses, ay, palaces in stone and marble—the works of living men—attest that the Hindustani style, though intellectually degraded, still lives in native hearts. The spirit is willing, but the flesh is weak; and there is no point to point out to a dependent people the principles of construction, which, in the fourteenth century guided the master-workmen of a free and noble craft."

Government assistance is needed to obtain a scientific and useful knowledge of Hindustani architecture, and to encourage a just appreciation of it amongst Anglo-Indian officials. Englishmen are apt to regard everything "native" as necessarily inferior; and to forget that much of the atrocious taste conspicuous in Indian dwellings of the present day is due to the examples set by themselves and their predecessors, who, although they have given the country political institutions, have destroyed its artistic traditions, and introduced, to fill their place, imported art of a more than dubious complexion. Modern architecture in India ought to be based upon the examples left of the Hindustani style of the thirteenth and fourteenth centuries, which is only a variety of the style of Medieval Europe fitted to the necessities of Oriental life and the exigencies of an Eastern climate. Strange as it may appear to Indian engineers, every detail of architecture necessary to compose a logical, scientific, and artistic dwelling for Europeans in India is to be found in the country itself. Indian stone, brick, and tile glazed and unglazed, for the walls; Indian vaulting for the floors; Indian arched and grilles for the verandahs; Indian covered balconies for window openings; Indian domes, terraces, and kiosks to compose the roofs; with Indian parapets and projecting eaves to shelter the façades from sun and rain. All these features, essentially Indian, are known to the ordinary archaeologist. If they were used by the engineers, according to the recognised principles of Greek and Medieval art, with the common sense which usually distinguishes Englishmen in their daily pursuits, an Anglo-Indian method of rational construction could hardly fail to be engendered.

III. A condemnation of the Bengal Department of Public Works is to be found in the actual state of Government architecture in Bombay. Doubtless the existence in that Presidency of a rich Parsi community, and the fact of its chief city being the commercial capital of

Hindustan, have contributed to the progress which has marked the construction of its Public Works during the last few years. Comparatively speaking, and mindful of the opportunities enjoyed by each, it seems to me that neither Paris nor Cairo has accomplished as much as Bombay in the same space of time. Not even the first-named city possesses a nobler range of buildings than are now to be seen on the Esplanade at Bombay; and no building among them is nobler than the New University, which, with the local assistance of Mr. Molesey, has just been erected from the designs of our distinguished and ubiquitous President.

There is a peculiar notion which has taken possession of many engineers—not in India alone,—respecting the work of an architect. During my employment under the Chief Engineer of Bengal, I was sometimes ordered to "put architecture" to engineering work; and I think you will bear me out in saying,—as I told the Chief,—that if his "engineering" did not contain the essence of architecture, no power on earth could ultimately add it. I have had occasion, more than once, to hear that constructive details, such as girders, stone lintels, brick walls and arches, are engineering specialties, and that the architect's work is limited to the coat of cement with which the façades of buildings are sometimes dressed. This fallacy is probably the origin of the many extraneous horrors with which engineers are often pleased to spoil their works. It is astonishing to reflect, as it has occurred to me to reflect, upon the magnificent bridges at Delhi and Allahabad, on that over the Son near Patna, and the Nile at Cairo, at Saltash and other places in Europe, that men who can work such marvels should endorse tricks of so-called decoration which even speculative builders now refuse to employ. Some time ago, when in Oude, I examined a small girder bridge then just completed. It was beautiful in its simplicity, and the fact that it conveyed of its containing no portion which was not necessary to the well-being of the whole. Not satisfied with this, the engineer must needs have two immense pedestals at each end. They were four times the height of a man, they held nothing, and they contributed nothing to the construction of the bridge. They had been introduced as architectural features, and this is what they were.—Square in shape, of solid brickwork, with towards the summit a few bricks laid in projection, on which rested a piece of wood, which in its turn supported more projecting bricks. The rounds of excellent brickwork, seventy in number, had been converted, by means of cement, into the appearance of nine courses of inferior stone; on the lowest stone course an extra thickness of cement had been added to form a base; the last stone course but one from the top had been made into a cornice, of which the piece of wood formed the corona. Upon three faces of each pedestal a parallelogram of cement mouldings displayed the semblance of a wooden frame, the centre of which was filled with a counterfeit wooden panel metamorphosed, by means of paint, into a marble slab; and this is what is meant by the term "putting architecture to engineering."

The Anglo-Indian mode of life necessitated by the climate is not conducive to artistic excellence, nor to those "sedentary and window arts which require rather the finger than the arm." The Englishman fitted for India is necessarily "warlike," and Lord Bacon says that "all warlike people are a little idle, and love danger better than travail; neither must they be too much broken off if they shall be preserved in vigour. Therefore it is the great advantage in the ancient states of Sparta, Athens, Rome, and others, that they had the use of slaves, which commonly did rid those manufactures." There are however no slaves under British rule, and the natives of India are equal before the law with those of this country. But if they were not physically inferior to Englishmen the latter would not be there. The career best suited to the educated classes of the Hindu and Muhammadan communities is a subject often discussed, and nothing in the difference between the Viceroy and the Lieutenant-Governor of Bengal is more marked than the advice each has given to native audiences. Sir George Campbell has advocated muscular exercises, horse-riding, buggy-driving, and I think even pig-sticking, in imitation of European manners. Lord Northbrook has advised the native youth to apply themselves to the pursuit of art and commerce, and the first speech he made in public after his

arrival in Calcutta, was upon the subject of art. He then urged his hearers to study purely native examples of it in preference to those of European importation. There cannot be any reason why the Hindus of the present day should not achieve for the British the same architectural triumphs that their forefathers accomplished for the Musalman Conqueror. All the Muhammadan buildings in the north-west of India are the works of Hindus; and that something of the artistic spirit of their predecessors still remains in the race is attested by more than one modern example of native architecture. It is declared that the Bengali is bereft of the faintest trace of originality, and that as a copyist he is far inferior to the Chinaman. But it is necessary to be able to copy well before trying to invent. The Bengali has not had the artistic opportunities of the peoples placed more directly under Pathan and Moghal influence; and it says much in his favour that he is a skilful copyist. More at least can be made of him than many of our countrymen seem willing to acknowledge. While I was in Calcutta a few native students, five I think, who had passed examination at the Presidency College, were sent to the Department of Public Works, to be ultimately converted into engineers. They were all good draughtsmen, and had already acquired the rudiments of architecture, much in the same way as they are learnt in the European schools of art. They were all utterly ignorant of even the existence of any style of indigenous architecture. The best one of them was placed under my charge. He was a polished young Hindu gentleman, whose English was irreproachable, and who, always conversing with his fellow students in our language, was pleased sometimes to appear ignorant of his own. One day, to test his artistic ability, I ordered him to copy, to three or four times the size, the engraving of an elaborate Medieval fountain, designed by Mr. Burges. He not only made a good copy of it, but added the extra spirit it is necessary to give to an enlarged drawing; and I sent it to the Chief Engineer with some little exultation. The Recording Angel knows that my intentions were good; but so horrified was authority, so convinced was it that an artist, especially a brown one, in the Department of Public Works, was an anomaly that precedent could not justify nor practice initiate, that means were instantly devised for driving the evil spirit out of him; and before I left India I was informed, though I did not attempt to verify the information, that he had been sent to make bricks at one of the Government Kilns! This is not the moment to discuss what it is or is not necessary for an architect to know; but it is as well to recollect that the Hindu is made of a very different fibre from the Englishman. To know how to manufacture bricks is undoubtedly useful, but the time required to learn how to use them properly is so considerable, that it may be questioned whether such elementary practical education is not sometimes overdone. It was once thought that to excel in our profession a man ought to have "worked at the bench;" but division of labour is a distinguishing feature of modern existence. In the Hindu, to whom I have just alluded, there was the stuff to make an architect; to have set him at brickmaking was to do too much or too little. To be logical, he should have been taught to make the straw before the bricks, and to extract the coal with which to bake them. It is true European engineers are sometimes called upon in India to manufacture bricks, but this is a phase of the system which is worthy the attention of reformers; because, though a thousand men could equally well make bricks, only one of them, perhaps, could be educated into an architect. An unqualified belief in the "practical," is a creed with which too many of our countrymen are too happy to deceive themselves; and many ignore the fact that nothing practical has ever been accomplished until theorists have expended a vast deal of time over its consideration. The labours of Colbert, in the seventeenth century, and of Adam Smith, in the eighteenth, rendered possible in the nineteenth the practical introduction of free trade. German armies would never have victoriously traversed France had they not first marched in miniature upon a map. The study of the principles of architecture, little respected in Europe, is still less encouraged in Asia; and architects have some right to address engineers who, in Bengal at least, usurp their functions, and studiously ignore their existence. We are the elder community. On our side are all the books of Europe, on theirs, a library of statistics

* The Indian Observer, Feb. 1, 1873.

and official reports; on our side are the imperishable records of twenty centuries, on theirs, fifty years of disastrous experience. Our own destinies are linked with a higher branch of our common art, under a more developed social system; and the artistic future of England, retired from European dissensions, and entered upon the path of universal education, bids fair to be brilliant. It is not too much to ask the Indian Government to promote the study of native architecture amongst the inhabitants of Hindustan. Success in such a task would not only afford a sentimental gratification, but it would practically assist an alien aristocracy; and perhaps it might hereafter be said, with justice, that of the many benefits conferred upon India by British rule, not the meanest was that one which enabled the East, whence art sprang, to participate with the Western nations in the glory of its later achievements.

The moral to be elicited from the action of Government with regard to ourselves is worthy of professional consideration. Administrative, in place of individual, enterprise has been instituted; the original object of which was doubtless to make more use of the military engineers than had hitherto been possible. The argument that they are under the thumb of authority, while the professional man is a free agent, being conclusive; and in India the civil engineer in the employment of the State is amenable to the same strict discipline. Now the responsibility of both is divided amongst so many different officers and grades of officers as to be almost null. But is the responsibility of a "practising" architect defined by law? If a Department carries on a gigantic species of manufacture, is the architect in extensive practice very much better than a professional manufacturer? An Executive Engineer performs the functions of an English builder, with the exception that the capital with which he works belongs to the country and not to himself. The duties of a Superintending Engineer assimilate to those of many London architects, but instead of his interest in a building being diametrically opposed to that of the builder, it is identically the same. He is in the same condition of life, often a personal friend and powerfully influenced by *esprit de corps*. On the other hand, the architect is usually a friend of his client, and sometimes a man of superior education to the builder he employs. It is a point of honour for him to husband his client's money, yet his temptation to spend it is greater than that of the official, since he is paid by commission on the outlay, while official salaries are fixed. A London architect may have ten buildings in progress in different parts of England, each under the charge of an assistant. Why may not a Superintending Engineer have ten buildings in Bengal, each under the charge of an Executive Engineer? The fruits of the Government system may be often bad, but it remains to be seen whether it be the system itself, or the peculiar conditions under which it is worked, which is the cause of failure. The experience of the last comparatively few years suffices to prove that individual architects cannot hold their own in any part of India, and it is gradually becoming clear that even in England it is a task of difficulty to contend against official opposition and ill-will. With a very little trouble the profession, I think, might steal a march upon the administration. I have attempted to show, and circumstances support my conclusions, that a Department is virtually irresponsible. Therefore earnest endeavours ought to be used to get an architect's moral and pecuniary responsibility in all professional matters clearly and satisfactorily defined; and, if you will permit me to say so, no more important subject could be submitted to the consideration of the Congress of Architects, which is to be held this year in London, than that of the liabilities of a member of our profession before the law.

DISCUSSION ON MODERN ARCHITECTURE IN INDIA.

At the close of the paper read at the Institute of Architects, which we have printed, Mr. Roger Smith, in opening the discussion, said that the condition of Bombay regarding building materials and exigencies was, to some extent different from that of Calcutta. The almost constant presence of a sea breeze made Bombay a place where buildings of a more European character could be tolerated than in Calcutta.

The bad foundations were not met with in that city; but in other respects, what Mr. White had said concerning Calcutta was, he thought, in the main, true. In Bombay, and in the greater part of India, the works executed by Europeans were generally Government works. No Englishman went there to settle as a colonist; he only went there to make as much money as he could in as short a time as possible, for he could not long reside there without greatly injuring his health. Being a bird of passage, he rarely attempted building on his own account, and therefore the only buildings of importance were Government buildings for official purposes, — post-offices, universities, barracks, &c. The Department of Public Works undertook the design and execution of buildings, and a very anomalous and unsatisfactory state of things thereby existed. That there was great room for improvement in this respect no one could doubt; and he was glad to note that some attempt at ameliorating the condition of affairs had lately been tried at Bombay. Sir Bartle Frere, when governor of the city, was anxious that, if possible, European architects, should be induced to go there and take part in the erection of large buildings, for which a large sum was made available during his term of office. He was instrumental in procuring designs; but the greatest difficulty was in getting them carried out. One or two buildings were erected by Parsee contractors in Bombay; but the majority of the works, even those undertaken from designs of European architects, has been carried out in a very inferior manner. Mr. Smith would like to have heard in the paper, something about the standing of a civil architect, and as to how far he was a distinct official, and if any one had to design works in India, unless for railway companies or for private enterprise, they might take it for granted that the work would be placed in the hands of an executive engineer to be carried out. The wisest way was to make everything as simple as possible, and to leave no point upon which a question need be asked.

Mr. Phéné Spiers mentioned that he had been requested at one time to superintend some drawings for public buildings in India designed by a Government engineer, who had been obliged to come to England for the sake of his health. He fancied that they would be in that unsatisfactory state to which Mr. White had alluded; but he was surprised to find that this was not the case, the designs being almost as good on paper as he had seen in photographs and in Mr. Fergusson's book, the drawings being done by native architects, from the design of the engineers. It therefore appeared to him (the speaker) that there was the material in the natives, if it could only be turned to good account; and it was only required, he was of opinion, to have engineers of a certain amount of intelligence and zeal, and with a desire to improve the people, to bring them up to a high standard of excellence. As to the reproducing of what was valuable in the fourteenth or fifteenth century, he was inclined to disagree with the remarks of the reader of the paper.

Mr. Morris considered that the earnestness of purpose evinced by the Imperial Government should not be forgotten; and the wonderful zeal shown in the introduction of works of utility of every possible class and kind proved the great interest which the Government took in the endeavour to ameliorate the condition of the people of India, and could not fail to produce good results.

The President, Sir G. G. Scott, thought the meeting were immensely indebted to Mr. White, both for the instruction and for the amusement which had been afforded them. He had brought before their attention a most important and difficult subject. At first sight the question seemed a hopeless one. They were occupying as conquerors a country in which Europeans could not live for more than a few years, and in which no one cared to stay any length of time without some very great temptation, and in which no architect would venture to establish himself to spend his professional life. The question necessarily arose, who was there that could construct for them. There was only one set of men who were able, in some degree, to carry on works there, — the military engineers. It was inevitable, therefore, that the direction of works should in a great measure be placed in their hands. One would have expected that they would have devoted their attention to the scientific and practical study, both of materials which they required and the exigencies of the climate of the

country in which they worked; but he learned with astonishment that upon these very points they failed. It would not be a matter of wonder at their failing in their architectural work, but one could hardly expect them to fail in their practical work. It appeared they not only utterly failed in this respect, but they forbade others to carry out what they were unable to do. The absurdity of this was so gross that he thought it only required to be pointed out to be corrected. He quite agreed that it was useless to carry into India architecture which belonged to totally different countries. English architects should build only in the style with which they were acquainted; and it was utterly useless for him to attempt to carry out Indian architecture. All that was generally known about the subject was obtained from books and photographs; and the only way to adopt was to make the best use of the natives of India. If the engineers and the Government were to take up the matter, and to found a school for Indian architecture, so that a thorough training might be secured in a very short space of time, they would be able to rival the works of their forefathers, which were so much admired.

ARCHITECTURAL IMPROVEMENTS IN LUDGATE CIRCUS AND NEW BRIDGE-STREET.

For some time past the neighbourhood of New Bridge-street, extending from the Ludgate-circus boundary to the junction with Queen Victoria-street, opposite the Royal Hotel, has been undergoing very considerable architectural improvements by the erection of large blocks of buildings. Some of these are already almost complete; whilst within the last few weeks the elevations of others have begun prominently to show themselves. Another addition is about to be made to the number by the new buildings to be erected at the south-western angle of Fleet-street and New Bridge-street, which will complete the Ludgate-circus. The preliminary steps towards effecting this was taken last week, when the materials of the premises on the site of which the new buildings are to be erected were sold, prior to their immediate demolition. We understand that the new structure is at once to be commenced, and that it will to a great extent resemble the structure opposite, at the south-eastern angle of the Circus, which is now fast approaching completion. This last-named building is erected in the Italian style, the whole of the elevation being in Bath stone. The ground floor, extending from the New Bridge-street boundary to the extreme angle in Ludgate-hill, consists of shops, divided by granite pilasters; whilst the upper portion of the building, consisting of three stories and dormers, is designed for a hotel, the entrance to which is in the centre of the Bridge-street frontage, under a segmental pediment, surmounted by reclining figures. But in addition to the building, as shown in the New Bridge-street and Ludgate-circus elevation, the block is carried backwards to a depth, from the New Bridge-street frontage, of about 150 feet, and under the railway arches. On each side of the railway there is an arcade leading out of Ludgate-hill, with an outlet at the south side of the boundary of the narrow street leading into the railway station, and in these arcades there will be upwards of thirty shops, in addition to those having their frontage to New Bridge-street and the Circus.

Passing along from the last-named building, we notice several large structures in course of erection on the site of what was formerly the Bridewell Estate, and a portion of which, until recently, stood Radley's Hotel. The most prominent of these consists of three blocks, opposite the railway station, and which occupy the entire frontage of New Bridge-street, from St. Bride's-lane to the Bridewell Hospital buildings. These buildings are being erected on the north, south, east, and west sides respectively of New Bridewell-place, a thoroughfare which has been made through the area of the Bridewell Estate, leading westward out of New Bridge-street, to a depth of 103 feet, whence it is carried south and north, to the boundaries of Tudor-street and St. Bride's-lane respectively. The New Bridge-street elevation of the block on the north side of New Bridewell-place is 65 ft. in length, and that on the south side 28 ft., the entire length of the New Bridge-street frontage being thus 93 ft. The extreme height of the elevation will be 59 ft., and the building, in addition to a basement, will contain

ground floor, together with three stories and dormers. The basement of the building and the ground-floor portion of the elevation is in rusticated stone work, from the Chilmark quarries, whilst the materials used from the first floor to the top of the structure are white brick, with dressings of Portland cement, a considerable amount of ornamentation being introduced into the elevation. The windows in the several stories vary in form, some being square, whilst others are circular-headed. The several elevations on the north, south, and east sides of New Bridewell-place are uniform with that already described, with this exception, that that on the south side of New Bridewell-place has a projecting porch and gateway, the porch being surmounted by a carved pediment. On each side of the gateway there are entrances to this block. The buildings have already been carried up to the second floor, and will shortly be covered in. They are principally intended for chambers. Mr. Richard Roberts is the architect, and Mr. Hart the contractor.

The area on the west side of New Bridewell-place is also rapidly being covered with public buildings, and those of a mercantile character. Amongst these is the new London City Mission House, a building immediately facing the north and south side of New Bridewell-place, and commanding a good view from New Bridge-street. This building, which has already been noticed in the *Builder*, is 50 ft. in height, and built of Portland stone, contains ground floor, and two stories above, surmounted by dormers. The ground-floor entrance has a projecting porch, supported by columns on each side, with ornamental capitals, with a balcony above. The building has just been finished internally, and is now occupied for the purposes of the Mission. Messrs. Spalding & Knight are the architects, and Messrs. David King & Son, the contractors. Immediately adjoining it are extensive new premises which have just been erected for Messrs. Collins, the publishers. This building, which has a frontage of 75 ft. in length, and is 60 ft. in depth, is four stories in height, and is built of white brick, with red brick dressings. The elevation is plain, with few pretensions to architectural effect.

Immediately adjacent to the last-named structure, and having the frontages to the south-west angle of New Bridewell-place and Tudor-street, are two extensive blocks, which are in course of erection for Messrs. Spicer Brothers, wholesale stationers. The block at the corner of Tudor-street will be occupied by Messrs. Spicer themselves for the purpose of their business; whilst the other block, in New Bridewell-place, will be let as chambers. The extreme frontage in New Bridewell-place, of the two blocks is 122 ft. in length, that of Messrs. Spicer's being 64 ft. long, and the other block being 58 ft. The buildings are of substantial character, and ornamental in their architectural design. They are 60 ft. in height to the top of the parapet, the elevation consisting of a basement, ground-floor, and four stories, a bold projecting cornice, 9 ft. high, surmounting the third story. The basement, and 3 ft. above the ground-floor are in Aberdeen granite, and above this to the first floor the elevation is carried up in Portland stone. The upper portions of the building are in white Suffolk brick, with Portland stone dressings. Messrs. Spicer's block has a distinct elevation at the angle of Tudor-street and New Bridewell-place, which is one of the most striking architectural features in the buildings. This consists of a principal doorway in red polished granite, with mouldings resting on a grey granite base. The remainder of the dressings are of Portland stone. Over the principal entrance is a tympanum, supported by carved consoles, and similarly carved spandrels over the doorway. The first-floor windows are Portland stone dressings, with panelled heads, whilst the second-floor windows have double columns of red polished granite on each side, with Corinthian capitals, and are surmounted by an entablature, cornice, and pediment. Mr. W. Smith, of Gresham-buildings, and Mr. W. Seymour, of John-street, Adelphi, are the joint architects for these buildings, and the contractor is Mr. Oliver, of Camberwell.

Proceeding along New Bridge-street, in the direction of Blackfriars, what have been designated "New Bridge-street Chambers" are noticed on the east side. These premises have some time been undergoing alterations and external ornamentation, which are now approaching completion. The entire elevation of the building, from the ground floor to the upper

story and cornice, have been re-faced and decorated, and a porch entrance has been erected at the north side. From two polished granite columns on each side, resting upon Portland stone bases, and having carved capitals, spring arches in Portland stone, facing New Bridge-street, and also on the north and south sides, and these are surmounted by a cornice and pediment, also in Portland stone. Mr. Robinson is the architect.

A few yards beyond the premises just named, a large and costly building is about to be erected for the Hand-in-Hand Insurance Company. The foundations are now being got in, and the superstructure will shortly be commenced.

LONDON SLAUGHTER-HOUSES.

A PAPER on this subject was read last week, before the Society of Medical Officers of Health, at the Scottish Corporation Hall,—Dr. William Hardwicke in the chair,—by Dr. T. Orme Dudfield, of Kensington. The subject, he said, was of great sanitary importance, and must, in all probability, be settled in some way during the present year, the term being near its end that was fixed by Michael Angelo Taylor's Act, 1844, for the suppression of all trades scheduled as noxious within a limited area of roads and dwellings. A brief retrospect of the course of legislation with reference to slaughter-houses was given; and in illustration of the general ignorance of the provisions of the Act of 1844, it was stated that hundreds of such establishments have come into existence during the last thirty years, in direct contravention of the Building Act, being within the prescribed limits in which no new business of a noxious character was to be allowed; and speaking particularly of such of these as had their origin during the last eighteen years,—the lifetime, thus far, of the Local Management Act,—there could be no doubt they ought never to have been licensed at all. The Bill to repeal the abolishing clause, brought into Parliament in the last session by Dr. Brewer, was withdrawn upon a reference of the entire subject to a Select Committee of the House of Commons. The evidence given before that committee was emphatic and, apparently, decisive on both sides alike. On behalf of the butchers it was contended that the improvements effected under the licensing system had rendered slaughter-houses innocuous, while the powers of inspection and opposition to renewal of licences conferred upon local authorities were sufficient to insure all sanitary requirements being duly carried out. The results of personal observation led Dr. Dudfield to question the accuracy of this view, and the ground he took was in harmony with that portion especially of the Committee's report which stated the desirability of constant inspection, and of precise, stringent, and uniform regulations, with the ulterior object of using that inspection and those regulations for the detection of contagious diseases in animals, and preventing the sale of unsound meat. A slaughter-house should be a detached building, with a fair surrounding air-space; nor near accumulations of foul-smelling refuse, and sufficiently distant from other buildings to preclude offensiveness. It should be airy, well lighted, and open to the roof; the walls being formed of impervious materials, so as to admit of thorough cleansing with soap and water, and the flooring also should be impervious, and slope to the drain, which should be incapable of disturbance by rats or foul air, or for the purpose of passing blood and filth into the sewer; a catch-pit for pressure water supply be always available. So far are the existing slaughter-houses from fulfilling these conditions, that their use may be described as usually an accident—a shed, a wash-house, a stable, or mews, being converted wholly or partially to the purposes of slaughtering. Amongst facts ascertained by actual inspection, Dr. Dudfield stated that many of the slaughter-houses could be approached only through the dwelling-house or shop, horses were sometimes stabled in them, and in other instances there was full connexion with the stabling; frequently the layerage was contained within the slaughter-house; some of the premises had dwelling-rooms in actual occupation above them; in two-fifths of the total number visited the drainage was found to be out of order at the very time when, as a preliminary to the annual licensing, inspection must have been looked for; and, in several cases, light was obtained by opening the doors, so that the business was carried on in public.

All these conditions were quite consistent with an appearance of cleanliness such as would impress favourably an inexperienced observer, and yet it would have been unreasonable to require their amendment at the cost of a considerable outlay for the improvement of premises so soon to be closed by the operation of law. The alternative system of public abattoirs had worked so well wherever introduced, that it could hardly fail of success in the metropolis. It was not desired nor desirable to establish one vast abattoir, but a sufficient number of such places of moderate size to meet the necessities of the trade and of the community, while enabling the slaughter of diseased animals and the traffic in unsound meat to be effectually prescribed. Such a number of private slaughter-houses as 1,700 was absurdly in excess of every legitimate requirement. It was to be observed here, that only in connexion with public establishments could constant and effectual inspection be carried out, good sanitary conditions ensured, and cruelty and the sale of bad meat be prevented.

Drs. F. G. Burge (Fulham District), George Buchanan (Local Government Board), Hardwicke (Paddington), Iliff (Newington), Tidy (Islington), Stevenson (St. Pancras), Sutton (Shoreditch), Netten Radcliffe (Local Government Board), Vinen (St. Olave's), and Liddle (Whitechapel) took part in the discussion which followed, and a resolution affirming the necessity of abolishing private slaughter-houses, and erecting public abattoirs under the Corporation of London or the Metropolitan Board of Works, was adopted by all but two votes.

THE STUDY OF DECORATIVE ART.

At the usual fortnightly meeting of the Edinburgh Architectural Association, held in their rooms on the evening of Wednesday, the 25th ult.,—Mr. John Bryce, president of the Association, in the chair,—a paper, having for its subject "The Importance of Mural Decorative Art as a Study for the Architectural Student," was read by Mr. Thomas Bonnar. Proceeding to sketch the rise of Decorative art from the earliest known period, as illustrated in the ruins of the Ancient Egyptian cities, to the high perfection which it reached in the Greek examples we are acquainted with, Mr. Bonnar drew attention to the indications which were possessed by the latter, showing its Egyptian origin. Passing on to speak of Roman art, which he said exhibited evidences of the influence of the Early Classic, and which, although it did not seem to be as successful in conveying the same sense of originality expressed in the Greek, nevertheless established a standard and authority in works of ornamental colour and decoration which renders it a worthy monument of the great people from whom it emanated. The Mediaeval era was next touched upon as being noted for the deep religious feeling pervading its works, and was spoken of as the era of a style of decoration—when modified to fit our times and circumstances—which no other could surpass. But the adaptation of this style of art without reference to its suitability, and retaining all its errors and crudeness of colour and design as instanced in the works of some of our modern decorators, was severely criticised. The position occupied by decorative art on the Continent was next glanced at, and its exponents and patrons received eulogium. Its backward state in this country was then considered and ascribed to the want of hearty and discriminating patronage on the part of the wealthy classes generally. This cause also created a desire on the part of table decorators to seek a more congenial sphere of action in the social status obtained by the artist, and accounted for its losing workers who have succeeded in many cases in realising a wide fame, and in proof of this the names of several well-known artists were quoted, who had begun their career as decorators. In order to obviate this difficulty Mr. Bonnar sought to impress on the minds of architects the necessity of giving mural decoration as a study more consideration than it has hitherto received. He believed that with consistent and skilful treatment observed throughout a house, in design and colour, besides the pleasing and delightful sensations created, there would result an increased value to the building, and an impetus would be given to one of the most valuable assistants of architectural art. Mr. Bonnar brought his paper to a conclusion by quoting the observation made by Wilkinson on the same subject:—"Those who think that their

acquirements as artists would be lowered by their condescending to decorative work or to ornamental design would do well to remember that neither a Giotto nor a Raffaele thought himself degraded by a similar employment of his talents, and that by improving the general taste they would promote a greater appreciation of the beautiful." The interest of the paper was enhanced by a number of sketches and coloured drawings of already executed works, together with specimens of new methods of wall decoration, some of them specially adapted as background for pictures. A lively discussion followed.

WAREHOUSE, CHEPSTOW-STREET, MANCHESTER, FOR MR. SAM MENDEL.

Our engraving illustrates one of the large warehouses for which Manchester is celebrated. The basement floor is used chiefly for the packing and making up of goods, the packing being done by fourteen powerful hydraulic presses. Approaches are obtained from Chepstow-street and Great Bridgewater-street. Leading from this floor, and under the loading-way at the Chepstow-street end, are the engine and boiler houses, &c. Under this floor runs a portion of the River Tiv, which it was found necessary to divert from its original course.

The ground-floor is used for general warehouse purposes, and has two large covered loading-ways, one at each end of the warehouse. It is approached from both streets. The chief entrance to the warehouse is from this floor in the centre of the building, and communicates with the first floor by the grand staircase, 10 ft. wide, handsomely arched on both sides in stone.

The first floor is devoted to a large general office for clerks, private offices, waiting-room, sample and pattern rooms, occupying the Bridgewater and Chepstow Street ends, and the whole of the back; the remainder is used for warehouse purposes. A large fireproof safe is built on this floor in the general office. From the grand staircase is a corridor, 14 ft. wide, leading to offices, &c., and joining one at the back, 7 ft. wide, which runs the entire length of the building, the flooring of which, as well as the staircase, is covered with 6 lb. lead, with French polished margins of pitch pine. On either side are moulded and panelled pitch pine; screens filled in with plain and chequered plate-glass, French polished, as is the whole of the woodwork and fittings on this floor. A central staircase from the clerks' office communicates with the whole of the upper floors.

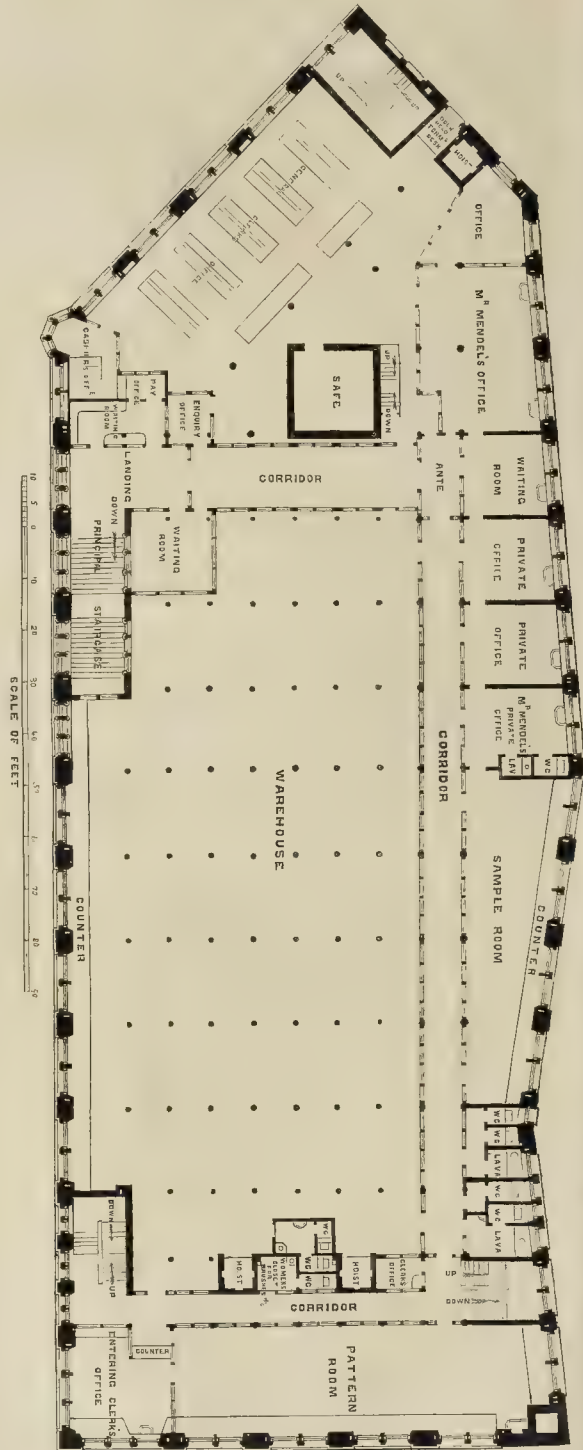
The two-pair and three-pair floors are used entirely for warehouse purposes. On the latter, however, is a commodious kitchen and dining-room, &c., for the use of the clerks generally. The floors are constructed of beams 7 ft. apart, supported by iron columns, on which are laid 11 in. by 3 in. planks, grooved and tongued with hoop-iron. There are three large hoists running from basement to top floor; three staircases of stone, independent of those already described, connect the several floors, on each of which is a commodious lavatory and W.C. accommodation, the walls of which are tiled throughout with coloured glazed tiles in patterns. The warming of each floor is accomplished by several large upright coils, supplied from boilers below. Ventilation flues are built in all piers between the windows. The windows are glazed throughout with chequered and plain plate-glass. The warehouse occupies a total area of 2,400 square yards, and has a frontage of 304 ft.

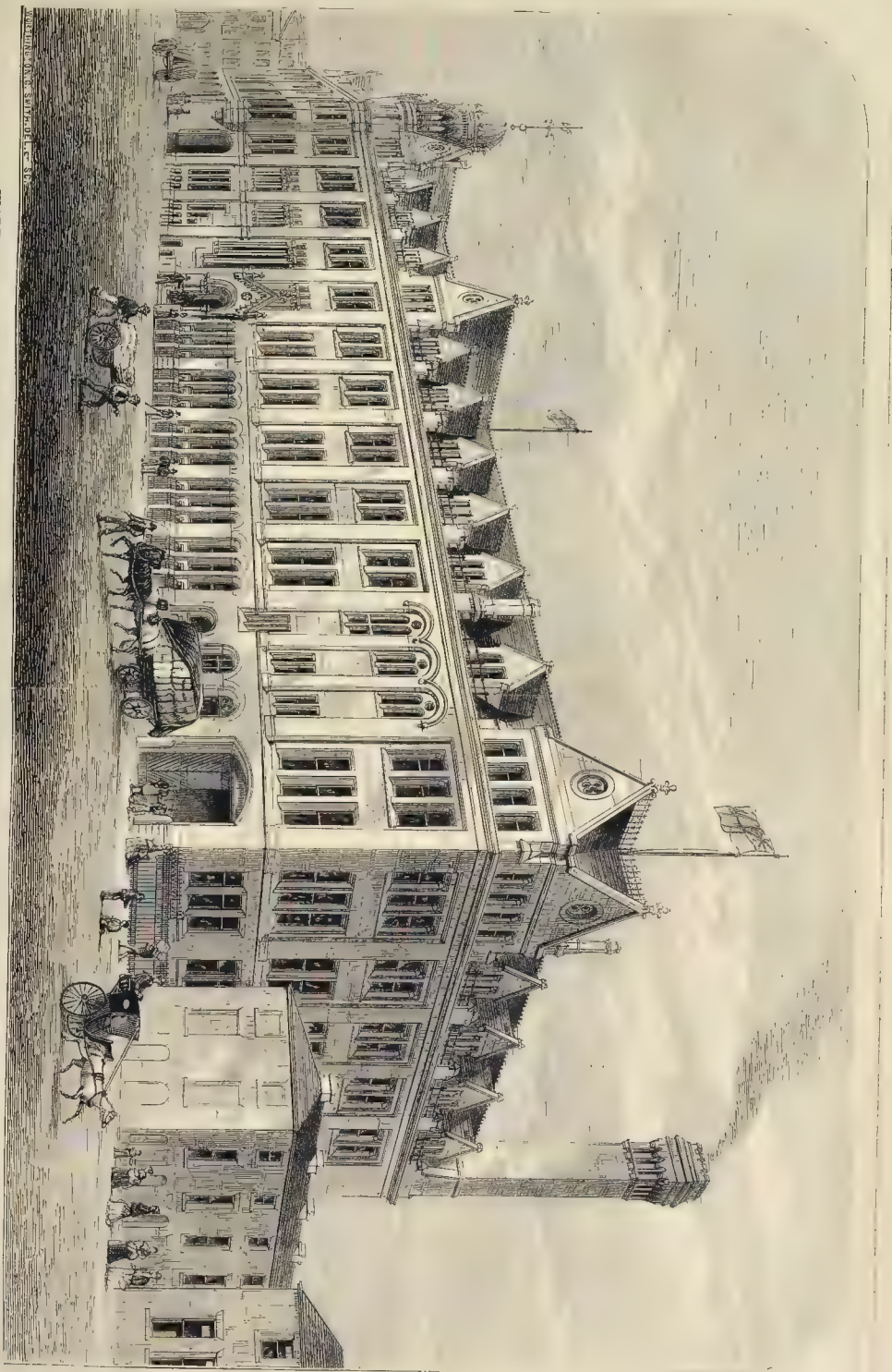
The contracts for the different trades were let separately in all cases, and have been efficiently carried out by the following:—Excavating and brickwork, Mr. William Healey; masonry, chimney-pieces, and grates, &c., Messrs. J. & H. Paterson; carpenter and joiners' work, Messrs. Robert Neill & Sons; plastering, painting, and French polishing, &c., Mr. William Hood; plumbing and glazing, Mr. Robert Heyworth; slating, Messrs. J. Kirkley & Sons; cast ironwork, Messrs. Bellhouse & Co.; ornamental wrought ironwork, Mr. Robert Jones; all of Manchester.

The engine, boilers, and presses were supplied by Messrs. Nasmyth, Wilson, & Co., of Patricroft, near Manchester.

The building was designed and partially carried out by the late firm of Speakman & Charlesworth, and has been completed by their successors, Messrs. Speakman, Son, & Hickson, of Manchester, at a total cost of 40,000*l.*, exclusive of site and machinery.

WAREHOUSE, CHEPSTOW STREET, MANCHESTER.—PLAN.





WAREHOUSE, CHEPSTOW STREET, MANCHESTER, FOR MR. SAM MENDEL.—MRS. SPEAKMAN, SON, & HICKSON, ARCHITECTS.

DISCLOSURES FROM THE NORTH OF ENGLAND.

For some time past the *Builder* has directed the attention of the Government Board to the sickening and appalling condition of the towns and villages in the county of Durham; and a report recently made by Dr. Thorne, one of the principal medical officers of the Whitehall Board, as to the sanitary condition of the Auckland Union, contains such startling revelations as may exceed belief in the minds of those who have not looked into such matters for themselves. The Government Inspector says:—

"The Local Government Board had long had under its consideration the high death-rate and prevalence of diseases in the Auckland Union, and had it not been that one of their Inspectors, who was deputed to make the present investigation, had died, it would have been made some months since." [Dr. Gwynne Harries, whose case of virulent typhoid fever, contracted on a visit to Auckland, was reported in the *Builder*, and to whose widow a deserved pension has been granted, at the instance of Mr. Gladstone.]

Before going into the death-rate and prevalence of disease in this particular district, he might say that the deaths from all causes in England and Wales, during the ten years ending 1870, had been 2,242 per 100,000; in the same proportion 81 were from fever, and 97 scarlet-fever. In the thirteen registration districts of the county of Durham, the figures were 2,249 from all causes;—101 from fever, and 155 from scarlet fever; and in the Auckland registration district the figures were 2,396 from all causes,—124 from fever, and 198 from scarlet fever.

It would thus be seen that the death-rate in the Auckland Registration district was alarmingly high. Then again with regard to the infantile mortality during the ten years ending 1870, there were in every 100,000 children under twelve months old, 18,041 deaths from all causes in England and Wales; 18,517 in the thirteen registration districts of the county of Durham; and 20,725 in the Auckland Registration district. These were figures of which there could be no dispute, as they were the figures of the Registrar-General.

With reference to the districts of the various Local Boards, he found in the Bishop Auckland local board of health district, that the death-rate during the past two years has been 29.0 in 1872 in 1,000, and 36.1 in 1873, a truly appalling death-rate; and those rates were calculated after deducting the deaths occurring in the workhouses of persons who were not previously resident in the local board districts; the rate from fever alone was five times that obtaining in London and the large cities!

One of the most painful features noticeable was the waste of infant life in the Auckland Union. In the Bishop Auckland district, out of every 100 children born alive more than 28 die the first year. The diseases principally causing this mortality were typhoid, or, more properly, enteric fever and scarlet fever. The spread of enteric fever was always associated with excremental pollution of air breathed or water drunk. Bad drainage and water supply were the cause of this poison. Loves Bitchburn, in the district, was one of the most disgraceful places he ever visited; the inhabitants were under the necessity of having to go to a water-pond a quarter of a mile distant. The water was simply filthy. In Bishop Auckland he found in every case that there was a large escape of sewer-air into houses where cases of enteric fever had occurred. The remedy, he thought, was obvious, viz., to carry the sink-pipe to the outside of the house, and to cut it off, allowing it to flow over a properly-trapped grating covering the drain inlet. No direct interior communication between interior of houses and sewers should exist; except in cases of w.c. soil-pipes, all connexions should be severed, and in cases of soil-pipe it should be thoroughly ventilated. The ventilation of sewers he considered most important. In many cases the usual position of rain pipes or spouts by the side of houses were to be deprecated, for they were merely ventilated from the sewers, carrying the sewer air up to and through the open bedroom windows.

The middens in the district were all open, and the contents got saturated with rainfalls and dews. Then, again, the middens were close, and parallel with rows of cottages, polluting the whole neighbourhood.

There were long rows of houses in several villages without any closet accommodation in

whatever, whilst at others there was only one closet to ten houses.* He also found scarlet fever patients occupying the same bed and rooms as healthy persons.

With reference to pitmen being a dirty class, so far as he could see that was not the case. It was a perfect disgrace to the rich colliery-owners that such a state of things should exist.

It was not his place as a medical man under Government, to recommend any special or particular method to be carried out. That was the province of architects, engineers, or surveyors. It was only his duty to point out the evils causing so much sickness and death, and to point out their remedy without interfering with structural works. He might just add that fevers were the most expensive of diseases, carrying off those in the prime of life as well as infants.

It was to be hoped that the dens he had seen would be swept from the face of the earth, and in their place suitable dwellings at once erected. The Local Government Board would shortly send round circulars that would enable the medical officers to reach the owners of the properties who disregarded the notices left on them six months ago to erect decent places for the inhabitants.

In connexion with the Government inquiry, the pitmen now ask, are they to wait till the Bishop of Durham falls a victim to the diseases that are slaying those who live around his palace—"The Castle," Bishop's Auckland,—at a rate greater by 5 to 1 from typhoid and scarlet fevers, than is proved to be the ratio in London and other large towns.

INTERNATIONAL EXHIBITIONS AND TECHNICAL EDUCATION.

In the course of a paper on the London International Exhibition, read last week, at the Society of Arts, by Lieut. Cole, Dr. Lyon Playfair in the chair, the reader said, the usefulness of the Annual International Exhibitions lies in their bearing on technical instruction, and opportunities afforded for the study of particular industries; and in view of increasing the sphere of their usefulness, her Majesty's Commissioners have invited the alliance of corporations, trade companies, and special societies, in order that the students in schools connected with them may be sent to study the Exhibition. Considerable support has already been met with towards the furtherance of this object, and a National Association for the Promotion of Technical Instruction has been formed. This Association consists of two classes of members. A subscription of 5l. entitles the subscriber to receive 200 tickets for artisans or 400 tickets for children, together with a transferable season ticket; a subscription of 3l. entitles the subscriber to receive 120 tickets for artisans or 240 school-tickets, together with a non-transferable season-ticket. The artisans' and children's tickets will be available on Mondays or Saturday during the months of August, September, and October; and the Board of Management have it in contemplation to institute a series of lectures on the industries shown in the Exhibition. This Society has already commenced to make use of the Exhibitions for giving aid to technical instruction. This aid, which can be afforded by no other means, consists of scholarships offered for the best examination in the industrial classes of each year. The technological examinations conducted by this Society furnish the necessary machinery, and the scholarships are awarded on the condition that the recipients go for one year to some place of scientific instruction, such as the Royal School of Mines, the Royal College of Science in Dublin, Owen's College, Manchester, or the English, Scotch, or Irish Universities, or other approved schools, or travel abroad for the purpose of improving themselves in their trade.

In 1873, two scholarships of 50l. each were awarded for the best examinations in carriage-building and steel manufacture; and this year similar scholarships will be offered for examinations in civil engineering, leather and harness, and in methods of heating.

* See view and description of Pitmen's Dwellings of this neighbourhood, in "Another Blow for Life," by Geo. Godwin, pp. 120-123 (1883), and previously published in this journal. A calculation of the number of lives sacrificed during the eleven years that have followed, through inattention to the warnings then and before that time given, would appal the most thoughtful.

At the close of the paper, Mr. Henry Cole, C.B., said the Exhibition of 1851, with which both the chairman and himself were connected, had been a fruitful parent, but none of its successors had equalled it, either in brilliancy or financial success. It was the means of introducing many novelties, and also of reviving much which was thought to be new. As, for instance, he might mention reaping-machines, for which the Americans took great credit, though, in fact, an exactly similar machine was now in the Patent Museum at South Kensington, which was invented some thirty-five years ago by the Rev. Mr. Bell, and had been at work in Scotland until a very recent period. Having briefly alluded to the succeeding Exhibitions at New York in 1853, and at Paris in 1855, which were not so successful in a pecuniary point of view; to the London Exhibition of 1862, which very nearly paid its way; to the Paris Exhibition of 1867, which cost about half a million of money, and led to an immense number of law-suits; the British Commissioners having been involved in several, though they got out of them at such a nominal expense as to show they were not much in the wrong; and to the Vienna Exhibition of last year, which he believed contained a brilliant assemblage of objects, though it entailed a loss of more than a million sterling;—Mr. Cole said he could not avoid the impression that the world was getting tired of Great Exhibitions, and he doubted if there was any chance of one being held in England for a long time to come; and at any rate, such an enterprise would require a guarantee fund of from 1½ to 2 millions. Still there was a great demand arising for technical instruction, a phase which was translated in various ways, some even thinking that the State ought to establish workshops,—*ateliers nationaux*,—which he thought a mistake; for in his opinion it was hardly the business of the State to decide on the calling or occupation of any of its citizens. All were agreed, however, that English people should be as well instructed as those on the Continent, for the lesson could not be mistaken, that the nation which had been able to gain the greatest victories in arms was the nation which was best educated,—that the German nation, which throughout its whole extent provided not only for the education of the infant and the youth, but also for the instruction and civilisation of the adult, was more advanced than any other in Europe, as well in the arts of peace as in military pursuits. Now technical instruction seemed capable of great development by means of Exhibitions. Of late years Parliament had not only determined that all children should learn to read, write, and cipher—which was but a miserable termination to education—but also that those who desired it might be assisted in acquiring the elements of science and art; some 25 subjects being open to them, including botany, chemistry, geometry, physiology, &c. Any one could start a school in a garret or a cellar; no credentials were required; but if the students passed the requisite examinations, the teacher received from the Government a certain reward for his labour. But there still remained the question of applying the science so learned. He did not think the State should interfere in this, as some suggested, but there could be no doubt that it was of the highest advantage to all the world to see what was being done in the different industries, and what improvements had been introduced; and it appeared to him, therefore, that Exhibitions afforded a mode in which technical instruction could be conveyed with the greatest advantage to all parties. At present, England was said to be at the apex of manufacturing industry, but it was evident that other nations, Germany especially, were treading closely upon her heels, and if she were not to be a loser in the race, she must use every effort to retain her place. To this end he had been very pleased to be able to render any assistance towards making Exhibitions useful as means of technical instruction, and he doubted not they would be so increasingly in the future. They had fine art exhibitions at the Royal Academy, commenced by the Society of Arts; agricultural, floricultural, and various other exhibitions; and it would never do for the greatest manufacturing people in the world to let it be said that they could not get up an industrial exhibition, in which science and art realised their highest aims. Although they were rather difficult to manage, these exhibitions had hitherto proved financially successful, and he believed they would do for the industry of this country that which could be done by no other means.

Major Beaumont, M.P., thought Mr. Cole was

quite correct in saying that one of the main objects of these Exhibitions should be the technical education of the people, for it was by this means only that England could hope to retain her commercial supremacy. This was due in the first place, no doubt, to her mineral wealth; but coal and iron were now being found abundantly in other parts of the world, thus placing other countries on a level with ourselves as regards natural advantages, and rendering it even more necessary than ever for education to be attended to. Now he thought Exhibitions were perhaps the most popular way of imparting technical education, combining, as they did, instruction and amusement. He had seen something of them, both as exhibitor and manager, having had the control of the machinery department in the Paris Exhibition of 1867, and he feared they had somewhat fallen off in the public estimation. Many large manufacturers seemed to be getting tired of them, and did not care to exhibit, and this feeling he attributed to their being in some cases made too much like huge bazaars, the instruction being too much sacrificed to amusement, and the exhibition of real improvement and important manufactures giving place to petty huckstering. This tendency culminated in the Paris Exhibition, where large manufacturers found themselves to some extent pushed on one side by exhibitors whose goods were more of a bazaar character. He believed, therefore, that it would be advantageous in every way to keep instruction in view rather than amusement, and this was the especial feature of these annual Exhibitions. It was supposed that a certain lapse of time must take place in every trade before they could have made progress sufficient to warrant them again appearing before the public as exhibitors, and if that were properly carried out, they might fairly expect exhibitors would only come forward with something which it was really worth while to show. Thus Exhibitions, instead of being mere spasmodic efforts of feeling, would become permanent means of instructing the people. In one respect the Paris Exhibition stood alone, viz., in the admirable arrangement of the different objects in zones, which again were divided laterally, according to the countries, so rendering it perfectly easy for a visitor to discover what he was in search of, and study it with its cognate objects, instead of being obliged, as was frequently the case, to go from one end of the building to the other.* The circular form, however, was not well adapted for arrangement, particularly with reference to machinery. At Vienna there was a most splendid collection of goods; but the difficulty of finding anything was almost insurmountable. The English collection was highly creditable to the nation, especially considering that Parliament had voted very little money for the purpose, instead of from 100,000*l.* to 130,000*l.*, as it did for the Paris Exhibition. He felt quite satisfied it was the duty of Parliament to give a certain amount of support to exhibitions of this kind, though he would not venture to lay down the limit to which it should go, and that they would do wisely to spend public money in giving encouragement to exhibitions when properly conducted, and particularly when principally devoted to objects of real utility.

Mr. Pearsall thought, considering the large extent of wall-space occupied, which rendered it quite impossible for one to make himself acquainted with the Exhibition in any one visit, that it would be well if greater facilities were offered by reducing the charge for admission.

The Chairman thought that Lieut. Cole had shown them very clearly that the Exhibitions to be held in this country in future must be limited to a very few subjects, probably to fewer even than were now included in the annual Exhibitions, and that the real object of such exhibitions of industries occurring once in every ten years was to compare the progress made in industries all over the world, in order that they might take stock of what was doing both in England and other countries. It was a remarkable thing, looking at the progress of industry over Europe, that the mere possession of the materials of industry was the smallest factor in production. This had resulted chiefly from the facilities of intercommunication, by which raw material could be carried from one part of the world to another at such comparatively cheap rates, that the possession of that raw material was as nothing in comparison to the skill and

intelligence applied to turning it to utility. For instance, cotton was exported from America, it came to this country, was converted into calico, and sent out again to the United States, and, after all the cost of converting and carriage, it underdressed the mills in America. That was even more extraordinary in the case of a country where there was no fuel, like Switzerland, where this bulky raw material had to be carried overland by difficult mountain roads, and where coal had to be got from Belgium, France, or Germany, yet in that country cotton was converted into a useful substance, and sent back to America, still underselling the country which produced it. This showed that the possession of raw material, however important, was insignificant when compared with the science which converted that substance into a useful product. Last year, in Switzerland, he remembered visiting a narrow valley, some few miles from the baths of Ragatz, closed in with a mountain, over which there was nothing but a mere mule-path. He found the whole place teeming with industry. Every part of the valley was taken up with works for the production of calico and dyed goods, especially Turkey reds, competing with Glasgow, Manchester, and other places, for cheapness of production, and sending the products back to America. Ireland, which possessed infinitely greater facilities for manufacturing industries, having a seaboard, which Switzerland had not, and though it had no coal, being near the coal-fields of Wales and Scotland, with abundant intercommunication for raw material, yet with all these advantages had scarcely any manufacturing industry. What was it that made Switzerland so busy in all parts of the country, and left Ireland so unprosperous? There was only one answer, the education of the people. In Switzerland every child was taught well at school; they were not satisfied with the miserable three Rs which were considered sufficient in England, but really only constituted the knife, fork, and spoon of education without any meat. As soon as the children passed out of school with an infinitely greater knowledge of the world around than the three Rs can ever give, with a knowledge of economics in the best sense of the term, they passed into a better school, where they were taught the sciences bearing upon industries, and this made Switzerland prosperous in spite of all its difficulties. This was a question to be deeply considered. In the metropolis there were 130,000 children not possessing any education at all, or scarcely any worthy of the name. What would any parent before him think of ending the education of his children at eight or nine years of age, when they were just able to read a paragraph in the newspaper or write a small sentence from dictation? Yet that was the education which the children of the working classes of this country considered it a great merit to obtain, an education which could not bear the friction of the wear and tear of life. Unless this was fully understood, and the people were educated according to the new requirements of the world, it would be useless to expect a continuance of the prosperity which the great wealth of raw materials in this country, and the energy and honesty of the people, enabled them to enjoy. Twenty years was a small time in the life of a nation; but even in that time some industries had nearly vanished from this country, and unless the schools were raised from their present position, unless the artisans were instructed so as to enable them to take that intellectual position which the progress of the world required to promote the wealth and industry of this country, the consequence would be really serious. He was, therefore, glad to hear such a discussion in that room, because it was in the Society of Arts that the Exhibition of 1851 had its first birth. It was the Society of Arts which first had the courage to promote higher education by means of examinations throughout the country, and which had recently taken up the larger subject of technical education, and had sown a small seed which might grow into a great tree. If they had faith in themselves and continued in such useful acts, the country would recollect that the Society of Arts, small as it was, had had an enormous share in improving the state of the country, and the arts and manufactures for the promotion of which it was established. The Exhibition of this year he was told would be an excellent one, being got up with energy and great judgment, and ought to succeed. He was not so sanguine as Mr. Cole in thinking that Exhibitions were a great financial success, but as yet they had not been a

failure, and the Exhibition shortly to be opened with limited industries would prove whether the public would support them and make them self-supporting.

SUGGESTIONS AS TO FIRE-PROOF CONSTRUCTION.

SIR,—Being much interested in arriving at a satisfactory solution of the important question of fire-proof construction, which has so much occupied attention of late, I trust you will allow me, through the medium of your industrial columns, to make a few suggestions in the hope of directing the attention of scientific men to certain points not, at present, perhaps, quite sufficiently considered by our constructors, but on which, to a considerable extent, the whole question appears to depend, viz.:

1. That buildings, of the warehouse-class especially, should be constructed wholly of incombustible materials; and of such, moreover, as are unaffected by intense heat.
2. That they should be built in compartments capable of instant isolation.
3. That they should be proof against fire from without.
4. That in the event of fire in any one compartment, and the inevitable consumption of its contents, an intense accumulation of heat, to endanger the building generally, should be impossible.

To secure the first in a strictly sound and scientific manner, the highest talent of civil engineer and architect is demanded. The use of wood constructionally should be discarded, and our scientific men might do good service by discovering a mode of construction with known substitutes which should dispense with its employment. The too-free use of iron in exposed situations has been found most objectionable; stone has equally failed; and good honest brickwork, especially when the mortar used is fire-resisting, would appear, after all, to be the most reliable. As however iron must enter into the construction to admit of the large rooms required in modern buildings it would be essential, and by no means difficult, so to isolate vertical columns, girders, and tension rods, as to make them unaffected by the fiercest heat generated in their immediate vicinity.

II. The fact of the fragile wooden doors of ordinary buildings being the chief outlets for the spread of fire, has scarcely been adequately noticed in the otherwise exhaustive discussion which you have originated. No sooner is the frail door burnt through, than the fire rushes up the staircase, which thus acts the part of a huge chimney in creating a draught and increasing the fire, being itself a vehicle for transmitting the fire to other parts of the building. Ever iron doors buckle and twist under intense heat and have failed lamentably. There is, however, a description of door (of which two have been fixed for some years in the Museum of Building Appliances in Maddox-street) absolutely fire-resisting. They are partly constructed of refractory fire-clay, and are made to slide into the spaces left in the thickness of the walls. They overlap the door aperture by several inches, on all sides, whereby their iron framework is removed from any possible contact with fire.

III. It is needless after the recent narrow escape of Lowndes-square, to point out the danger to which an ordinary town house is liable from the ignition of its external woodwork. Safety from external fire may be secured by the application of the same construction of fire-clay doors and shutters already described, to the external doors and windows. These fire-clay shutters have been made to slide over the wall faces both internally and externally; and, better still, into recesses in the wall itself, so that, in the first alarm of fire the premises may be rendered impervious to the enemy in a very short space of time. One further source of external danger lies in the ordinary construction of roofs with wooden framings, generally as dry as tinder and readily inflammable, even through the slated coverings in most cases. These should be universally superseded by the cheaper, more durable and fire-resisting flat roof, now proved by several examples, to be quite practicable when constructed of concrete, or concrete faced with tiles.

IV. Whilst advocating the provision of available appliances for "knocking out" incipient fire, such as hydrants, hose, &c., it necessarily should, above all, be recognised that such construction as would facilitate the

* The plan was stolen from the *Builder* without acknowledgment; as we have before proved.—Ed.

CULVERTS AND BRIDGES.

SIR,—In reply to your correspondent, "County Surveyor," who wishes to know the legal distinction between a bridge and a culvert, the following remarks may be of some service to him.

In a case, *Rex v. Oxfordshire*, tried in the Court of King's Bench in 1830, "the Court laid down a general rule as to what description of bridges the county were liable to repair, viz., such as are built across water flowing in a channel between banks more or less defined, although such channel may be occasionally dry."

In the case mentioned by your correspondent, where a turnpike-road becomes an ordinary highway, and the law imposing the repairs of all the bridges upon the county, according to the above rule, all such as would span any natural stream in a channel within banks more or less defined by the county, irrespective of shape or size; and culverts would be such as are made under embankments, or under the road in side cuttings (where there are no natural channels), for the purpose of draining the surface water from the upper to the lower level, and I should say they would be termed culverts irrespective of shape or size also.

ROAD SURVEYOR.

In reply to the query of "County Surveyor," the Bridge Committee of the County of Suffolk took counsel's opinion as to the definition of a county bridge, under 33 & 34 Vict., cap. 73, which was as follows:—

"Lord Coke defines it (2 Jus. 700, 701)—'Pons publicus est communis situs in alta regia via super cursum vel dumens aqua'; i.e., a structure carrying a highway over a channel more or less defined in which water usually flows, or the normal state of which is to have water flowing in it, even though it be sometimes dry (*R. v. Oxfordshire*, 1 B. & A. 299). Nothing short of that is capable of being a county bridge; and even if it comply with the above definition, but be of trifling dimensions, it has been held not to be one (*R. v. Whitney*, 3 A. & E. 69; *R. v. Southampton*, 21 L. T. M. C. 201). In both of which cases the decision seems to have gone on the ground that the structures were too insignificant to be dignified by the name or rights of county bridges. The culverts, barrel-drains, round arches, &c., seem not to be substantive bridges, that would not fall under the above definitions, and therefore it can hardly be maintained that they could become county bridges."

The Committee, after taking the above opinion into their consideration, reported, 1st. That under 33 & 34 Vict., cap. 73, the county will only be liable to repair such bridges as are genuine and real bridges, previously repaired, or liable to be repaired, by the trustees of turnpike roads, and such culverts, brick arches, round arches, barrel arches, &c., as are within 300 ft. of each end of such bridges, including, of course, the repair of the whole structure of the bridges, together with all fence walls, land arches, embankments, accesses and approaches within the 300 feet. 2ndly. That as in the case of any county bridge built since 1836, the maintenance of the roadway leading to and over all bridges thrown upon the county under this Act, does not fall upon the county. 3rdly. And that, according to the opinion before expressed, foot-bridges cannot be considered to be county bridges. The report was agreed to, and all bridges not being barrel arches over 7 ft. 6 in. chord were accepted as county bridges.

HENRY M. EYTON, Ipswich.

DR. JOHNSON.

A SHORT reference is made by Mr. Christopher Cooke, under the heading "Ancient Edifices," to a "Mrs. L. Porter, Dr. Johnson's daughter-in-law." Dr. Johnson never had a son, married or single; so, the person here referred to was no doubt Miss Lucy Porter, a daughter of Dr. Johnson's wife by her former husband;—the lexicographer's step-daughter. A. H.

HARROW.

A GYMNASIUM for the school has just been erected by Mr. C. F. Hayward, architect. There are workshops for the boys underneath the main floor.

Schools for the teaching of natural science, with laboratories, physical and chemical, are in course of erection there by the same architect. These buildings are being carried out for the Harrow School Tercentenary Fund Committee, established two years ago to celebrate the foundation of the school by John Lyon in 1572.

A public hall is about to be opened in Harrow. It has been erected for a local company, Mr. C.

F. Hayward architect, and is intended to supply a want long felt,—for a building suitable for musical entertainments, lectures, &c. It is to be opened by some private theatrical performances, for which it is also adapted.

The accommodation is for 500 nominally, but more can be seated comfortably; and there are committee and other rooms for public or private use.

PERVIOUS WALLS.

In reply to "West Sussex," who asked (p. 226, ante) how the rain could be prevented from penetrating his walls of local stone, "East Sussex" writes to say, "From painful experience, weather-tile by all means." We have received the prospectuses of several paints warranted to resist all moisture; but as to these we must leave our correspondent to get information from our advertising columns, and make his own inquiries.

OAK.

SIR,—Will one of your correspondents kindly inform me, through the medium of your paper, what is the best method of finishing oak gates, when they are to be exposed to the weather, so as to protect them from the black stains, which I observe upon most gates under this circumstance?

S. R.

NOTTINGHAM.

THE RIGHT HON. W. E. GLADSTONE was here last week, and in company with Mr. T. C. Hine, the Local Surveyor of the Newcastle Estate, inspected the dwelling-houses recently erected in the Park, and after walking through the Castle grounds, examined the design made by Mr. Hine for converting this unique example of the Inigo Jones school of architecture into a Museum and Gallery of Art and Science. As one of the trustees of the estate, it was the opinion of the right hon. gentleman that if the terms on which the Corporation proposed to lease the property were satisfactory, it would be as good an appropriation of the premises as possible, and one which would doubtless be highly advantageous to the town.

SCULPTURE AT THE ROYAL ACADEMY.

SIR,—The insertion in your last number of a summary of my lecture on Sculpture at the Royal Academy is a high compliment for which I feel bound to thank you. That it is in the main correct there is no doubt; but I should feel much obliged if you would kindly put right an error, most probably a printer's slip, which misrepresents me. Your report makes me say that in the late Exhibitions there is a "tendency to depend too much on truth." What I did wish to caution the students against a too great dependence on touch. The difference is obvious.

H. WEEKES.

MONUMENTAL.

A MEMORIAL of the late Captain and Adjutant Barrett, of the Dorset Rifle Battalion, is to be erected by Mr. Benjamin Grassby, of Dorchester, ecclesiastical sculptor. The memorial, which has been raised by a shilling subscription amongst the officers and men of his regiment, will be placed in Wimborne Minster. It will be carved from Caen stone and white marble, designed in the Gothic style, corresponding with the minster itself. The extreme height will be 6 ft. 6 in. A Latin cross, composed of white marble, in *alto rilievo*, springs from a rock, at the base of the former lying the figures of the sword and accoutrements of an adjutant. The stone panel containing this representation will be enriched with a canopied design, terminating with a finial, and having shafts of serpentine marble, with caps and bases carved with natural foliage. The spandrels within the canopy will also be carved, and those filling the upper part of the tablet bear Masonic emblems, while along the top is to be a moulded and carved cornice. The tablet will stand upon a corbel, the *facia* of which is to be of white marble and bear the inscription. The lower part of the corbel is to be moulded and carved in natural foliage, and the terminal will be a corbel angel. A memorial will also be placed at the grave in Wimborne cemetery. The cost of the two memorials will be about 60l.

LIFTING A BRIDGE.

THE town bridge at Winsford, which had sunk between 3 ft. and 4 ft. since it was raised about two years and a half ago, has been raised again to its original height by the river Wenner trustees. This was accomplished by means of two of Tangey's patent hydraulic jacks, which were placed upon timber beams, from which also the bridge was from time to time blocked up. The beams were supported upon timber piling, driven close to the four corners of the bridge. The weight of the bridge, together with the temporary timber approaches and extra road materials required to be placed upon it, would be about 200 tons. The masonry of the abutments, which was cracked, is now to be taken down and rebuilt, and the abutments and road approaches have to be raised to correspond with the altered level of the bridge. The operation was performed without any sensible interruption of the road traffic.

BOARD SCHOOLS.

LONDON.—At the last meeting, the following report from the Works Committee was received: The committee have invited tenders for the erection of a school to provide accommodation for 810 children on the site in Upper Earl-street, Plumstead. The following are the respective amounts:—A. Steffield, 7,997l.; J. Thompson, 7,860l.; W. Cullum, 7,540l.; S. J. Jerrard, 7,492l.; J. Cooper, 7,460l.; Hill, Higges, & Hill, 7,334l.; F. Johnson, 7,240l.; Newman & Mann, 7,146l.; Kirk & Co., 6,693l. The committee recommended the acceptance of the lowest tender, that of Messrs. Kirk & Co., of Warren-lane Wharf, Woolwich, amounting to 6,693l. This sum includes a considerable provision for tarpaving and for laying concrete 5 ft. deep under main walls of building. Cost of site, 616l. 16s. Cost of building per head, 8l. 5s. 3d.

MORE CITY CHURCHES TO BE DEMOLISHED.

IN addition to the several churches in the City which have either already been taken down or are in course of demolition, upwards of a dozen more have now to be added to the number of those which are to be removed. Amongst those which it is stated are to be demolished are St. Edmund the King, Lombard-street; St. Mary, Aldermanbury; St. Mary Magdalene, Old Fish-street; St. Anne and St. Agnes, Aldersgate-street; St. James's, Garlickhithe; St. Michael Royal, College-street; St. Michael, Queenhithe; St. Nicholas, Cole Abbey, Old Fish-street; All Hallows, Thames-street; St. Mary-at-Hill; St. Mary, Abchurch; St. Botolph, Billingsgate; St. Benet's, Paul's Wharf; and All Hallows, Bread-street. This last-named edifice is the church in which John Milton was baptised, and there is a tablet on the outer wall commemorative of the event. The inscription on the tablet, taken from the register, is as follows:—"The xxth day of December, 1608, was baptized John, the sonne of John Milton, Scrivener," and the font which was then used is still in the church.

SANITARY INSPECTION.

Sir.—What particular qualifications should an "Inspector of Nuisances" under the Public Health Act of 1872 necessarily possess? From what class or profession, is it supposed such officers will by preference be taken? What salary should be considered adequate for a district containing say a population of 30,000, and an area of 40,000 acres? Would it be considered derogatory to an architect's position to undertake it, seeing that he is supposed to have a knowledge of sanitary appliances, drainage, building, surveying, levelling, &c., and that such appointments are frequently advertised in the professional papers?

Ans.—We have already said something as to the qualifications and the duties of sanitary officers, but willingly print the above to induce the expression of opinion on the subject, and to obtain the results of experience.

WORKMEN'S CONTRACTS.

At the Clerkenwell Court, Ferdinand Battaglierini, a journeyman frame-maker, Great Bedford-hill, was summoned by Mr. Victor Penco, of Brook-street, Holborn, to show cause why he, having entered into a contract to manufacture three dozen toilet-glasses, did unlawfully neglect, and had ever since neglected, to fulfil the said contract.

The complainant stated that the defendant had been in his employ, and in January last in contract with him to manufacture three dozen toilet-glasses. The defendant was satisfied with the terms, and having drawn his account he commenced the work, and when he had done only about 16, worth he left the work unfinished, and had ever since done so, and in consequence he had been put to some loss and inconvenience. It was a common practice for workmen when they had obtained money before the work was done to commence it and then leave it in an unfinished state.

Mr. Barker in strong terms condemned the practice of masters paying their employees in advance. It was a bad practice, beset with many disadvantages, and led the workmen into bad habits. He was strongly of opinion that the practice was bad for both parties, and the sooner it was discontinued the better. He should make an order for the defendant to return and finish the work, and for that purpose he would give the defendant fourteen days' grace to do it in; but if at the expiration of that period, the complainant informed him that the order was not obeyed, the defendant might depend upon it that he would be sent to prison. There were two persons to a contract, and it was not for one moment to be tolerated that a servant, as soon as he had entered into one, and had even been paid the money before the work was done—a practice which he again said was very bad—should leave his work in an unfinished state, and, as in this case, go and work for another employer.

ROBBERY OF BUILDERS.

From Friday up to Tuesday, the trial of Richard Head, builders' ironmonger, of 9, King's-road, Chelsea, on the charge of feloniously receiving a quantity of brass and gas fittings, the property of Mr. Warren Smith, has occupied the attention of a jury, at the Middlesex Session, who have been sitting up each night, and all Sunday, whilst the prisoner has been at liberty on heavy bail.

The case has been previously noticed in the *Builder*, but the principal offender and witness, a convict named Corp, has divulged more of his career before the jury than he did at the Westminster police court, and he confessed that he robbed every builder, shopkeeper, or house, he had access to. At Messrs. Trolope's he helped himself, amongst other trifles, to a number of valuable bell-pulls.

Artisans have long held out against employers requiring certificates of their honesty, but if many more cases come before the public eye like the present, "customers" will compel tradesmen to be answerable for the integrity of the men sent to work in their houses.

Mr. Douglas, builder and upholsterer, of Belgrave, some time since took on a detective. Mr. Frenke adopted a similar plan, but rogues like this Corp would have set such precautions at defiance.

The jury having returned a verdict of guilty against Head, the Judge said he entirely approved of the verdict, and that there was no doubt the prisoner Head was a participator in the great thefts upon Mr. Smith, and that Corp had been instigated by Head to commit the felonies. The case was another example of the truth of the observation, that the receiver is worse than the thief; for if there were no receivers, there would be few thieves. The evidence, after giving it every consideration, showed that for a number of years the prisoner Head had been purchasing goods at prices infinitely below their value, and at the same time with a consciousness that they were stolen; and the Court would not be doing its duty if it did not inflict a serious punishment, for the temptations to which poor prisoners yield did not exist in Head's case, and the sentence was that the prisoner undergo penal servitude for five years.

It being intimated to the Court that in consequence of the protracted inquiry at the police-court and at the sessions, the costs to Mr. Smith would be a fair average of £1,000. (P), and that the prisoner Head's estate was worth double that amount, the Judge made a further order that execution should at once issue to levy the costs out of Head's business and effects.

THE TRADES MOVEMENT.

Hastings.—The carpenters and joiners have resolved to strike should their demands—1d. per hour increase, and two hours less on Saturday—not be conceded.

Wiesbach.—The strike of carpenters and joiners has now come to an end, and those men who have found their places open have resumed work on the old terms. Many of the men's places have been filled up, and they are now thrown out of employment.

Edinburgh.—At a meeting of the painters, the secretary read a letter received from the Em-

ployers' Association, intimating their willingness to give a halfpenny per hour advance on and after the 1st of May to efficient workmen. A communication was also submitted from Glasgow, in which it was stated that the painters there were going to demand a similar advance, and requesting that members of the trade keep away from the west during the dispute. After a good deal of discussion, it was moved that the overture of the masters be accepted, on condition that the advance be given from 1st of April, as originally requested. It was also moved that the terms of the employers be accepted in the meantime, and that a request be made for another halfpenny per hour next April; and that the demand of one penny per hour, as formerly requested, be pressed. On the vote being taken, the first amendment was carried by a large majority. It was also resolved that a small committee be appointed to frame a code of working rules, to submit to the Employers' Association at an early date.

Jedburgh.—The journeymen joiners having asked a rise of wages from 6d. to 6½d. per hour, some of the employers have acceded to the request, and the others are expected to follow.

Lanarkshire.—The slaters and plasterers of the districts of Wishaw, Carlisle, Hamilton, Uddington, Motherwell, Lesmahagow, Strathavon, and Ardrie, with the exception of a few who have received the advance demanded, have struck work for the advance of 1d. per hour. The strike is not expected to be protracted, as the men have no organisation.

Berwick.—The operative painters are out on strike, their request for an advance of 1d. per hour on their wages having been refused by the masters. They were offered ½d. per hour advance, but this they have refused.

Glasgow.—A mass meeting of Glasgow joiners has been held, and resolutions were unanimously passed adhering to the demand of a rise of 1d. per hour in the rate of wages, and weekly instead of fortnightly payments; agreeing to confer with the masters on the subject; calling upon the different shops and squads to ascertain the views of their employers on the demand; and requesting union men to do their utmost to get non-union men to join the association. There is said to have been three thousand joiners at the meeting. They threatened to come out in April unless the masters concede their demand for an advance of from 7½d. to 8d. per hour.

The Coal Districts.—A strike of about 12,000 colliers has begun in the South Staffordshire and East Worcestershire districts, and there are fears that it will last some time. The men refuse to accept the reduction of wages of which the colliery proprietors gave notice as a consequence of the fall in the price of coal. Reductions of wages in other districts are being made, in some cases to the extent of 20 per cent. The Monmouthshire and South Wales colliery-owners met at Cardiff, under the presidency of Mr. Fothergill, M.P., to consider a proposal from the men to keep up their wages by doing nothing—in other words, to limit the out-put of coal, in order to maintain the existing wage rate and price of coal. The masters do not seem to find that arrangement answer, as they have refused to entertain the proposition.

FROM SCOTLAND.

Edinburgh.—For some time past the University authorities have been quietly promoting a subscription for the extension of the College buildings; and the general public will now be asked to participate in the movement. The sum required is 100,000*l.*, and of this, including Mr. D. Baxter's bequest, upwards of 42,000*l.* have been already contributed. The sites of Fark-place and Teviot-row have been acquired with a view to the intended extension, at a cost of about 30,000*l.* On the ground thus available, which presents an area of 80,000 square feet, it is proposed, says the *Weekly Scotsman*, to erect buildings such as will enable the University to reorganise not only the departments of anatomy and chemistry, but all the separate departments of medical teaching, on a scale commensurate with the present advanced state of science and the number of students attending the classes. The advantages of this arrangement, with reference to the position of a new Infirmary, are obvious. By the transference of the medical school, with its lecture-rooms, museums, and laboratories, to the immediate vicinity of the hospital, there will be set free a large amount of space in the existing building, which, with due improvements in

ventilation and arrangement, will be turned to account for the better accommodation of the Faculties of Arts, Divinity, and Law. Other objects in contemplation are the making of adequate provision for the growing wants of the University library, the improvement of the north front of the present building, now thrown open to the public view by the formation of Chambers street, and the erection of a hall suitable for examinations and College ceremonials. A reference to the extension of feuing on the estate of Dear has once more directed attention to the proposal of forming a public park on the magnificent slope to the north of Queensferry-road. A strong feeling prevails as to the desirableness of preserving that slope as open ground. It is proposed to form a limited company, with a capital of 100,000*l.* for the acquisition of the area in question, its conversion into a public park, and the handing over of this to the corporation. The ground to be dealt with extends to about 60 acres.

Dundee.—A large portion of the north wall of the Victoria Dock has been completed, but it was discovered that the wall for about 100 yards from its eastern end had given way, and was bulging out, while there were extensive rents in various places through the solid masonry. The wall was inspected by the officials of the Harbour Trustees. There will, doubtless, be an investigation as to the cause of the accident, but in the meantime it is believed that the whole of the part of the wall which has given way will have to be taken down and rebuilt. The opening of the new harbour works, therefore, will have to be postponed. At a meeting of the Forfarshire Prison Board, a committee was appointed to bring up a report on the whole question of prison accommodation, the expediency of selling the present buildings, and the probable value to be derived therefrom, and on erecting a new prison and its probable cost; and also whether the prison should be for Dundee or for the county; and also whether it would be advisable to sell the three local prisons in Arbroath, Brechin, and Montrose.

Kilmarnock.—Arrangements for the acquisition of a new cemetery for Kilmarnock, to supersede the present burying-ground, which is very much over-crowded, are making progress. The Parochial Board have agreed to the proposal that the scheme should be carried out by a new cemetery company, they providing, at a reasonable cost, whatever ground may be required by the Board. It is understood that an eligible and picturesque site on the farm of Southdean has been fixed upon, for which application has been made to the Duke of Portland. The ground extends to about 15 acres.

Greenock.—Typhoid fever is raging in the most respectable district of the west end of Greenock, twenty-four cases, some of them resulting fatally, having occurred within a radius of 500 yards. The outbreak is causing much alarm, and the sanitary staff are prosecuting inquiries on the subject. The milk supply is suspected.

CHURCH-BUILDING NEWS.

Castle Cary.—The new church of Hornblotall has been consecrated by the Bishop of Bath and Wells. The old church, dedicated to St. Peter, was for many years in a very dilapidated state and on examination it was found impossible to restore it without entirely rebuilding, as the walls and foundations were so decayed. The rector, therefore, resolved to build an entirely new church, and the site chosen was a few yards to the north of the old building, of which the western gable, with its belfry—more like a dovecot, than anything else, has been left standing in the old Norman font, the only object of interest in the old church (the church itself was of much later date), has been transferred to the new church. The work has been carried on by the builders, Messrs. Clarke & Son, of Bruton, under the immediate superintendence of Mr. Charles Bentley, clerk of the works. The architect was Mr. T. G. Jackson, of London, Fellow of Wadham College, Oxford. The church consists of a chancel and nave, with a western bell-tower and spire of oak (capable of holding a peal of five bells), covered with oak shingles (which even at the present early date are fast getting that silver grey colour which unvarnished oak always takes when exposed to the air), and is Gothic in spirit and detail, without belonging to the style of any particular period. The materials are a yellowish brown oolite from the Hadesden quarries, with

dressings of Doulton stone, roofed with flat red tiles made in the parish. In the interior Sgraffito work covers the walls, in which the figures, &c., are formed by cutting away an upper coat of light cement and leaving exposed an under coat of a darker (here maroon) colour. The designs comprise such figures as those of the prophets Isaiah and Jeremiah over the western door; Moses striking the Rock and the Brazen Serpent over the tower arch; and the Annunciation over the chancel arch. One of the features in the church is the east window (designed by the architect, and executed by Messrs. Powell & Son, of London), a five-light window filled with triangular glass, in the middle light of which is the Saviour hanging on the cross, with an angel in each of the other lights looking upwards at the Saviour. The colouring of the glass is peculiar, and the whole forms a very light window, as is necessary on account of the wall decorations. The five small windows under the belfry are the liberal gift of Mr. & Mrs. Jelly, of The Priory, Straton. The reredos is of Derbyshire alabaster, with figures of the four Evangelists on blue enamel in the panels, a cross of porcelain (blue) with enamel lustre (the art of making which, though known in the Middle Ages, has only been lately re-discovered by Mr. De Morgan). The glass pavement is by Messrs. Powell & Son. The sittings in the nave are of oak, and in the chancel of oak and black walnut, inlaid with birds, foliage, and texts in original designs in box-wood.

Dulverton.—The parish church, which is one of the finest in West Somerset, and which was restored about twenty years ago, has been considerably improved during the past year. A reredos of alabaster, with appropriate symbols and tablets illuminated on zinc, has been erected at the cost of Mr. B. M. Collyns, who a few years since presented the organ. The sacristarium has also been enriched with encaustic tiles. The church has also been enriched with a lectern of carved oak.

Patshull, (Staffordshire).—The church of St. Mary, Patshull, has been reopened by the Bishop of Lichfield, after undergoing considerable alterations. The church, in its normal state, was a simple oblong nave with a tower at the western end, and a chancel. The Earl of Dartmouth, the patron, resolved to extend it by adding a north aisle and a vestry and organ-chapel combined, adjoining to it, and which are separated from the aisle by an oak screen. The aisle is divided from the nave by three arches with square piers of simple design, and it has a vaulted and groined ceiling. The seating is entirely new, and made by Horsman, of Wolverhampton; that in the nave being of pitch-pine varnished and the chancel stalls of oak. The old oak pulpit of Jacobean workmanship has been refixed upon a stone base, with new steps and handrail, and a new oak lectern has been provided. The encaustic tile paving was supplied by Maw & Co., and the heating apparatus, supplied by Whitworth & Higginson, of Birmingham, who also have entirely relaid the roofs with new lead. The windows have been filled in with stained glass by Camm Brothers, of Smethwick. The works generally were executed by the Earl of Dartmouth's work-people upon the estate, under the command of Mr. Charles Hawley; and the whole has been carried out under the supervision of Mr. William C. Banks, of London, architect. It is proposed to make considerable alterations to the existing tower, and to provide a new peal of bells and a new organ forthwith.

Clabury Mortimer.—Last year, an Early English pulpit in stone was placed in the parish church by Mrs. Child, and the old pews in its immediate vicinity were removed by the parishioners. This year it is intended to make an effort to continue the work of restoration, and with this view a public meeting has been held, the vicar in the chair, when the reverend gentleman stated that he had procured a report upon the condition of the church from Mr. Wood (the representative of Sir Gilbert Scott), who recommended the remainder of the pews to be removed and the nave re-seated, the gallery taken down at the west end, and the tower opened into the church, which will not only give additional space but show the length and proportion of the church, the flat ceiling (which now conceals a roof stated by Mr. Wood to be of unexceptionable beauty, of magnificent timber and in an excellent state of preservation) to be removed and the spire reshingled. These recommendations were carried unanimously, after which he stated 2,000*l.* would be required to carry them out. The vicar headed the sub-

scription list with 800*l.*, and a committee was formed to appeal to owners and occupiers of property connected with the parish, as well as to lovers of architecture, for subscriptions.

St. Faith's.—It is nearly twelve months since the complete restoration of the parish church was determined upon in consequence of a gift of 1,000*l.* being offered by Miss Twining for that object. The tower originally contained five bells; but the fourth having been sold to defray the expense of repairs done to the church about 100 years since, and the third being unsound, it was suggested by some of the parishioners that all the bells should be recast, and formed into a peal of six, and this suggestion being supported by a similar desire on the part of Miss Twining, the work was commenced as soon as possible by Messrs. Warner & Co., London; and the hanging, new frame, and other fittings, have been done by Mr. Wm. Crane, of Marsham. **Rotherham.**—The Rotherham parish church is to be closed after Easter Sunday until December. It is expected that the restoration, which was undertaken some time ago, under the supervision of Sir Gilbert Scott, will be completed shortly before Christmas. The work on the exterior of the church has been progressing for some months, but the greater and more difficult part of it still remains to be done. In the interior the renovations will be extensive. The galleries are to be demolished; the pews are to be swept away; the whitewash is to be scraped off the sculpture and the ancient stonework; windows are to be re-glazed; the time-worn timbers of the carved roof are to be replaced; and such general alterations will be made as will allow the original architectural designs to be seen. The most striking feature at present in the improvements of the church is the new window at the east end—the gift of the Earl of Eppingham—which has just been completed. The window was designed by Sir Gilbert Scott. Likenesses of the Howard family are sculptured from photographic copies inside the church, and stop the label which surrounds the head of the windows.

DISSENTING CHURCH-BUILDING NEWS.

Salisbury.—The new Presbyterian Church, in Northenden-road, Salisbury, has been opened. The style is Early Decorated. The area of the church is 60 ft. in length by 40 ft. in breadth, with a gallery over the western entrance, in addition to a choir gallery, and there will be accommodation for 600 people. There is also a schoolroom, 45 ft. by 30 ft., with session-room, vestry, and other rooms. The total cost will be about 6,000*l.* Of this about one-half had been subscribed before the building was commenced. The architects are Messrs. Wilson & Oldham, of Manchester.

Earls Barton.—The corner-stone of a new Baptist chapel, at Earls Barton, has been laid. The plans for the chapel were prepared by Mr. Edward Sharman, of Wellingborough. The style adopted is of Gothic treatment. The exterior walls are built of Duntun stone, with Bath stone finishings for windows and entrance, and the interior is partly lined with brick. The general exterior has the rugged appearance characteristic of the local stone, but the Bath stone finishings, which in the front will be somewhat carved, will relieve it from dullness. The roof is a pitched one, and inside is to be lined with varnished pine. There will be galleries on either side, and at the entrance end, the sittings of which, as well as those on the ground-floor, will be open. Altogether the chapel will seat about 250. For the preacher a rostrum, with canopy, will be provided, and underneath this, in front, is the baptistery. Hot air will be used for heating purposes. A preacher's vestry is provided at the side, and has entrances from without, and into the chapel. The building part of the work was given to Mr. Birkitt, of Wellingborough; the woodwork to Mr. Knight, of Earls Barton; and the plumbing, &c., to Mr. Simcoe, of Earls Barton, the contract being for 1,000*l.*, exclusive of the value of the materials of the old building. The chapel is so far completed that it was ready for the top corner-stone.

Henley.—The Wesleyan Chapel, the erection of which has just been completed, on the west side of Duke-street, has been opened for divine service. The chapel is in the Decorated Gothic style, and was commenced in July last. Messrs. Catermole & Eade, of Ipswich, being the architects, and Mr. C. Clements, of Henley, the builder. The building is capable of seating

about 160 persons, and the outlay, including the purchase of freehold site, amounts to 930*l.*

Preston.—A new Wesleyan Methodist chapel built of brick, with stone dressings, in Marsh-lane, Preston, has been opened. The building, which will accommodate 500 or 600 persons, including from 100 to 130 free seats, has a portico, supporting the north gallery, and four Corinthian columns. The total cost of the building and site will be about 3,500*l.*

Hartlepool.—The foundation-stone of a new chapel, for the New Connexion Methodists of West Hartlepool, has been laid by Mrs. Love, of Mount Beulah, Durham, the site of the new edifice being at Old Stranton. The estimated cost of the new building is about 2,600*l.*, inclusive of the site, and embracing both chapel and school accommodation, and covering an area of 103 ft. by 50 ft. The architect is Mr. Gibson Kyle, of Newcastle-on-Tyne, who designed the newly-erected Wesleyan edifice. The contractors are Messrs. Bridges & Robson, of Hartlepool; the brick and stone work being undertaken by Mr. W. Hall. Already 1,500*l.* of the required sum are subscribed for.

Gorton, Manchester.—A new Wesleyan chapel has been opened for divine service here. The chapel is built with local bricks, with bands and arches in coloured Staffordshire bricks, and dressings of light Darley Dale stone, in the Romanesque style of architecture. A gallery is carried round three sides of the chapel, with choir-gallery in the end, over the minister's large vestry. The pillars of the gallery are carried up to the roof, and the roof timbers are swept from the same in elliptical arches, dividing the roof into panels, the centre ones being ornamented with rosettes pierced for ventilation. All the internal woodwork is in pitch pine, varnished. The seating has leaning backs, book-boards, hat-rails, &c., and provides accommodation for 700 persons. The lighting is by coronas from the ceiling panels, and brackets under the galleries. The warming is by hot water, by Mr. R. R. Gibbs, of Liverpool. The new buildings are connected with the school, chapel, and vestries, built a few years since, and which are now adapted for Sunday-school purposes, with new offices, and yards for the children. The works have been carried out by Messrs. Henshall & Smith, builders, of Gorton, Manchester, from plans prepared by and under the superintendence of Mr. Alexander Lander, of Barnstaple, architect.

Cleckheaton.—The foundation-stone of a new Congregational chapel, to be erected in Westgate, Cleckheaton, has been laid by Sir James Watts, of Manchester. A sum of over 4,000*l.* having been raised, a limited competition for designs was invited. Out of the plans sent in, those of Mr. H. J. Paull, of Manchester and London, were selected, and the contracts were let. The site has a frontage of 29 yards to the main road, and is bounded on either side by a street 11 yards wide. The surface falls rapidly from front to back, so that underneath the school-room, which is to be in the rear of the chapel, and on the same level as the chapel-floor, there will be a suite of class-rooms. The school premises have been specially arranged to suit both week-day and Sunday school requirements; and ample accommodation will be provided for eighty infants and 350 other children. Open playgrounds are placed on either side, between the streets and the school building, and connected therewith is to be a large covered space, measuring 250 superficial yards, and 10 ft. clear height, obtained under a portion of the chapel. This will be floored with fine gravel, and the ceiling will be boarded. The schoolroom is 59 ft. by 53 ft. wide, and 22 ft. high to the centre portion of the ceiling. At the end is a platform recess, and a private staircase for the use of committees at public meetings and for orchestra performers at concerts. The room will be lighted by windows on either side. Owing to the limited dimensions of the land, and the necessity for play-grounds to be attached to the school premises, the area at disposal for a large chapel was comparatively small, and this necessitated a special treatment in the design. The general arrangement may be described as a double nave, intersected by a continuous transept, the latter extending the full width of the site. Each nave is 25 ft. wide, and the width of the transept corresponds therewith. Three cast-iron columns suffice to carry the roof-timbers of the entire building, the area clear of the walls being 435 superficial yards. The pulpit will occupy a central position adjacent to one of these columns, and the ground-floor seats are arranged in a semicircle, the outer line

of which reaches the transept. End and side galleries are conveniently planned to suit the peculiar arrangement of the building, and two stone staircases are provided in the angles of the junctions of the naves and transepts. Another stone staircase, from one of the side galleries, leads down to the basement-floor of the school premises. The chapel will accommodate nearly 1,000 persons.—666 on the ground-floor, and 372 in the galleries. The ground-floor is arranged so as to give a large proportion of short pews, and there are four alleys in the total width of the naves. In the front is a continuous vestibule or corridor extending the whole width of the naves, and containing the outer and inner entrance doors. This has a slated roof and gabled doorways. Externally the chapel bespeaks the internal construction. The front elevation shows two gables, each containing a three-light traceried window; and at their junction is a turret 8 ft. square projecting 3 ft. from the wall-face, and continued as an octagon above the roofs to a total height of 90 ft. from the ground. The upper portion of this turret will be of hewn stone throughout. The transept gables abutting upon the side streets contain a central window of two lights, with one-light window on either side of it, and all containing tracery in the upper part. A separate range of windows will light the ground-floor underneath the galleries. The style of the building is English Gothic of the geometrical period. The walls will be built of rubble stone, faced with square pargets in regular courses of from 3 in. to 5 in. thick, and hewn stone for all the dressings. The roofs are to be slated, and the timbers exposed to view internally will be stained and varnished. The joiners' work throughout will be of pitch pine varnished. For warming the whole of the building, Messrs. Haden & Sons' combined system of warm air and hot water will be adopted; and it is intended to use Boyle's air-pump ventilators for extraction of foul air. The contracts have been taken as follows:—J. Drake & Son, Cleckheaton, masons' work, &c., 3,216*l.*; J. Fawcett & Sons, Huddersfield, joiners' work, 2,885*l.*; W. Watson, Leeds, slating, 256*l.*; Duckworth & Son, Bradford, plastering, 316*l.*; J. Brook & Co., Heckmondwike, plumbing and glazing, and gas-lighting, 618*l.*; J. Peel, Cleckheaton, painting, &c., 410*l.*; Haden & Sons, heating apparatus, 148*l.* 10*s.*; total 7,579*l.* 10*s.*

STAINED GLASS.

Pishill Church, Henley.—Messrs. Cox & Sons have lately placed in Pishill Church, near Henley, a small stained-glass window, of three lights, illustrative of the three parables, the Good Shepherd, the Good Samaritan, and the Return of the Prodigal Son. They are represented in simple groups in medallions, the remaining spaces being filled with grisaille work, broken up by coloured fillets, which serve to connect the subjects with the richly-coloured border that runs round the window.

Woodhorn Church.—Two windows have been placed in this church, by Mr. Robert Watson, in memory of his late brother. They are the work of Mr. Barnett, Victoria Stained Glass Works, Newcastle. The subjects are the Good Shepherd, and Cornelius the Centurion, with an angel above holding a scroll. A brass plate below the latter window bears an inscription, in black letters, with red initials.

Bransford Church.—This small church has recently been enriched by the addition of a stained-glass window, presented by Mrs. Mamford, of "The Gables." The window is at the west end of the north aisle. The architecture is Early English, with only the plain tracery of that style, in three lights. The design is by Mr. Samuel Evans, of West Smethwick, near Birmingham, and the work has been executed by Messrs. D. & E. Haggard, Ipswich. The subject is an illustration of the texts, "In the morning sow thy seed, and in the evening withhold not thine hand," "Sown in corruption; raised in incorruption."

St. John's, Middlesbrough.—Two new stained glass windows have just been placed in this church, by Mr. J. Brewster. The subjects are Naaman dipping himself in Jordan, and the baptism of Cornelius, as being the Old Testament type and the New Testament fulfilment of Christian baptism. At the head of each light is a cross, to signify the cross which is marked upon the forehead of the baptized, in token of his admission into the Christian family. They are placed near to the font. The artists were,

Messrs. Lavers, Barrard, & Westlake, of London, who have supplied all the other windows in this church.

Gorleston Church, Great Yarmouth.—This old church, which has just been restored, has had placed in its south wall two stained-glass windows. The one immediately to the west of the priest's door is in memory of the late Mr. and Mrs. Bell, and is erected at the expense of their children. The subject represented in this window is "Dorcas and the good Samaritan." The next window, to the west of the Bell window, is in memory of the Whitteys family, and has been erected by their relatives. The episode of Martha complaining to Jesus of Mary's devotion and Mary's early visit to the Sepulchre, are the subjects represented in this window. Besides the many coloured figures, the windows contain a cusped canopy in each pane above the figures. The triangular apex of each window contains an angel embowered with decorative glass. The windows are the work of Messrs. Hughes, of London, and were erected in the church by Mr. George Road, of Gorleston.

Harleston Church.—A painted window, has just been erected in this church, as a memorial, by Mr. Hazard, of Harleston, Norfolk. The subject represents "The Parable of the Good Samaritan." In the first of the three lights he finds the wounded man; in the second he is carrying him on his own beast; in the third, which has the brightness of morning, he is seen paying the innkeeper. The arch of the windows, as well as the quatrefoils in the tracery openings, is ornamented with flowers, vine-leaves, and grapes. The work is from the studio of Messrs. O'Connor & Taylor, of London.

St. Mark's, Holbeach.—This church has been ornamented with stained glass. The windows are placed in the five openings of the apse, the centre representing "Christ bearing the Cross," the four Evangelists completing the number. They have been furnished by private subscription, under the superintendence of the vicar, the Rev. J. H. Jowitt, and are the work of Messrs. O'Connor & Taylor, of London.

Full Sutton Church, near Stamford Bridge.—A memorial window has been erected in the east end of this church. It is composed of three lights, with quatrefoil tracery. In the centre one is a representation of our Lord upon the Cross, surrounded by an aureola, the background of the panel being composed of cherubim of varied tints of ruby. At the base of this panel is a smaller quatrefoil, with the pelican and young in it. In the side lights are the figures of the Virgin Mary and St. John, under canopies of the Perpendicular style, with bases of canopy work with foliage ornament of the same character, this style of glass-painting being adopted throughout the window. The spaces are filled with angels veiling their faces. The work is from the studio of Mr. J. W. Knowles, York.

Miscellaneous.

An Artist Farmer, Modelling in Butter.—The Cincinnati Commercial says:—

"There is now in this city a unique work of art,—the 'Dreaming Iolanthe,'—a study in butter," by Mrs. Caroline S. Brooks, a daughter of the late Abel Shawk, of Cincinnati. A few months ago, while living on a farm near Helena, Arkansas, Mrs. Brooks began to sculpture faces in the butter she made with her own hands, doing it to ornament the pats she prepared for market. The only implements at her hand were a common butter-paddle, cedar sticks, broom straw, and a camel's-hair pencil. The faces that sprang into relief under the touch of these rude tools possessed a singular charm for the farmer's wife, and she laboured over them with patient delight. Her faces in butter became the marvel of her neighbourhood. Then one of them was exhibited at Memphis, and the best judges of art there were greatly surprised by its excellence and originality. Mrs. Brooks continued to remodel her ideal, and found a subject in 'The Dreaming Iolanthe.' She discovered this character in a translation of 'King Rene's Daughter,' a poetical drama by the Danish poet, Henry Heitz. The bust, which is somewhat less than life-size, is in high relief in the concavity of a large tin-pan. The butter is almost white. Its translucence gives to the complexion a richness beyond alabaster, and a softness and smoothness which are very striking. The hair ripples back in waves, and the lips are parted with a heavenly smile. The harmony of the face is exquisite. The ear is quite a marvel of delicate manipulation. In the absence of all technical knowledge of art, Mrs. Brooks has succeeded in creating a face that may make her famous artist-landlord that in a grain of the mobility of the model, a cast can be taken of it."

Civil and Mechanical Engineers' Society. On April 8th a lecture will be given by Mr. G. W. Usill, on "Setting out Bridges and Viaducts." All engineering students, we are asked to say, will be welcomed.

A Village embedded in Ice.—A despatch from Halifax, Nova Scotia, dated March 10, says,—"Immense damage has been done to Sherbrooke, Guysborough County, about ninety miles from this place, by a freshet. A couple of miles above Sherbrooke there is a natural dam of rocks across the river. The ice on this portion of the river broke up in consequence of the freshet, and flooded the whole of the valley. The flood brought down thousands of tons of ice and great numbers of logs. The solid ice below the village remained firm, and Sherbrooke stands behind a boiling sea. Every house was flooded. Many families abandoned their houses, while others took refuge in the upper stories. Two bridges in the village, and a large bridge over St. Mary's river, are gone. The day after the flood the mountains of ice, and the logs, trees, and other rubbish became frozen solid, so that the village is now embedded in a frozen sea. The ruin is indescribable; it extends a mile and a half in length by a mile in breadth. In the event of a sudden thaw the village will be quite destroyed."

The Recent Extraordinarily High Tide. The unusually high tide of Friday week caused considerable damage to property and even loss of life in different parts of the country where tidal waters flow. Great havoc has been caused on the low-lying coast of Essex. On the Blackwater and the Crouch, especially, the water rose to a height previously unknown. At Maldon, Heybridge, and Latchingdon the damage is reckoned at many thousands of pounds. Ipswich, Yarmouth, Hull, and various other large towns on the east coast were partially flooded. The unusually high tide was observed likewise in the estuaries of the great rivers of Germany—noticeably at Bremen and Hamburg. The Elbe rose very rapidly, from 17½ ft. over low-water mark to 18 ft. The subject was brought under the notice of the Metropolitan Board of Works at their last meeting with reference to the low-lying districts of London near the river, and their chief engineer was directed to consider the subject, and report to the works committee.

The Factory Labour of Women and Children.—A deputation of members of Parliament and representatives of factory workers has waited upon Mr. Cross, the Home Secretary, urging upon the Government either to support Mr. Mundella's Bill, or bring in a measure of their own, for the reduction of the hours of labour of women and children in factories to five hours a week or nine hours per day. Mr. Mundella, M.P., introduced the deputation. The hardship of women and children working longer hours than men, almost regardless of the delicate health, particularly of the former, and the desirability of many women operatives that the law should be altered, were among the principal points urged, on the grounds of humanity, in favour of a nine hours Bill. Mr. Cross, in reply, said he sincerely hoped, before long, to see the legislation relating to factories, at all events, taken out of its present complicated condition.

The Royal Commission on Labour.—The Royal Commission appointed to inquire into the operation of the Criminal Law Amendment Act, and the other Acts specially affecting trade unionists has held its first sitting at the Westminster Palace Hotel, when the whole of the members were present, including Mr. Thomas Hughes and Mr. Macdonald, M.P. The business transacted was of a formal character. It is stated that Sir A. Cockburn, the Lord Chief Justice, was appointed chairman, and Mr. Francis Bacon, secretary. It is also understood that the rules adopted by the late Trade Unions Commission will be followed, and that the proceedings will not be open to the general public.—The Parliamentary Committee have elected Mr. Bailey, president of the Amalgamated Tailors' Society, as its chairman, in the place of Mr. Macdonald, M.P., resigned.

Roof "Raising."—At St. Jude's School, Upper Chelsea, the main roof, measuring about 27 yards one way and 10 yards the other, covered with slates, lined internally with plaster, and containing several skylights, has been lifted by Mr. J. High, under the direction of the architect, Mr. E. H. Lingen Barker. After being poised for several weeks mid-air, during sunny gales, on the fine points of a few ordinary screw-jacks, whilst a lofty story was in course of erection beneath, it was finally lowered and fixed in its raised position, no disturbance of the slates or cracking of the plaster or glass having occurred.

Antiquarian Discovery.—At a recent meeting of the Croydon Local Board of Health the Chairman announced that some workmen in the employ of the Board while digging for gravel on the Irrigation-farm of Beddington, had discovered the remains of a Roman warrior, who had evidently been buried in his armour, with arms. Some time ago the remains of a Roman villa were found in the same neighbourhood, and a number of coins, Roman and British, between Croydon and Norwood. It may be mentioned that the locality in which this discovery has been made is rich in archaeological remains. Distinct traces have been found of "hut circles" in the fields south-east of Woodcote and near Wallington Manor-house, and it is supposed that the Roman town of Noviomagus occupied the southern portion of the parish.

Dublin Main Drainage.—Of the tenders received for the execution of these works (a list of which we give), the lowest is £28,000, exclusive of the machinery for pumping, &c., at the outfall, and which will not cost less than £50,000, so that in round numbers the main drainage works will not cost less than £78,000. Now the population of Dublin is 245,000, while fully one-fifth are too poor to bear any portion of sewer-rates; consequently, the remaining portion must be taxed at the rate of from 60s. to 60s. per head, including men, women, and children, to make up the required amount. Whether it will be possible for the Corporation to carry out the works at such a cost remains to be seen, but considerable opposition is expected from the ratepayers of the city.

Bristol Blind Asylum Chapel.—The chapel connected with the Bristol Blind Asylum, erected about the year 1837 from the designs of Rickman, has been altered internally under the advice of Mr. Henry Masters, architect. The seats have been made uniform. The pulpit arrangement has been altered so that the preacher faces all the congregation instead of having to preach to two groups of hearers, as heretofore. The walls, ceilings, and windows have been painted, and the carving gilded, the gas brackets removed, and centre cornices substituted. The contractors who have been engaged upon the works are,—carpenters and joiners, Messrs. Bastabrook & Sons, of Stapleton-road; painters and decorators, Messrs. Lewis & Sons, of Clifton; gas work, Mr. Henry Harris, of Lower Castle-street.

The Disposal of Sewage.—The Master of the Rolls has given judgment in two suits relating to the disposal of the sewage of the Eufield district. Mr. Harrison, the proprietor of a farm at Edmonton, undertook to dispose of, all the sewage which should be delivered by the Local Board; but he now complained that they were supplying him with a worthless mixture of sewage and water in such quantities as to drown his land, and prayed that they might be compelled to erect the necessary works to keep the subsoil water out of the sewers. The Local Board, on the other hand, sought to obtain a specific performance of the contract. His Honour said the Court could grant no relief to either party, and dismissed both bills, with costs.

Frosser's Adjustable Spreading Nozzle.—These nozzles, which are now coming into use, give means for the more extended application of water to the extinction of fires. The nozzle consists principally of a jet, suitably formed to deliver a solid stream of water, as in the case of the ordinary nozzle, so long as a solid stream is required, but when it is desirable that the water shall be spread, a slight turn of the wrist will raise a number of metal fingers to enter the stream, the effect of which is to break up the jet of water into a number of smaller streams, and to spread the water. Amongst other advantages this dispenses the smoke, and allows the operator to approach the seat of the fire. The nozzle will be useful, too, for watering streets.

Sale of Building Land in Bristol.—Messrs. Alexander & Daniel offered for sale by public competition about 2 acres 12 perches of building land, situate near Bristol, in lots, on a reehold ground-rents.—Lot 1, a plot of ground with a frontage of 33 ft. to the road from Westbury to Henbury, and with a depth of 200 ft., 18s.; lot 2, a plot adjoining, with a frontage of 33 ft. and depth of 182 ft. 31. 3s.; lot 3, a plot with a frontage of 33 ft. and depth of 70 ft., 21. 14s.; lot 4, with a frontage of 80 ft., and depth of 142 ft., 31.; and so on, the lots mostly ranging between 21. and 31.

Whitby.—The Archbishop of York has laid the foundation-stone of a new Church of England elementary week-day school in Fishburn Park, Whitby. His Grace was accompanied by a large gathering of the clergy, gentry, churchwardens, &c. Both the Privy Council and the National Society have given grants towards the building fund, but the remainder of the money has been raised by voluntary subscriptions. The schools are designed to accommodate 500 children, girls and boys, and will have all proper conveniences, such as class and recreation rooms, playgrounds, out-offices, &c. The total cost is nearly 2,000l. The architect is Mr. E. H. Smales, of Whitby; and the contractor, Mr. W. Langdale, of the same place. The building will be in the Gothic style of architecture, rather freely treated.

Ventilation of a Grand Jury Room.—At the Monmouthshire Quarter Sessions in Usk Town-hall, the foreman of the grand jury, addressing the chairman, said the grand jury objected to sit longer in the room in which they had been placed. Could anything be done in order to give ventilation to the court? It was like a hothouse. "If we open the window from the bottom, we cannot sit there. Will the Court give us permission to break a pane of glass in the upper part of the window?" The Chairman: "Yes."—The foreman of the grand jury then retired, and in a few minutes a smash of glass was heard. The foreman afterwards said he hoped the Court would not be afflicted with such a place as the Usk Town-hall very long.

The Social Science Congress in Glasgow.—A meeting for the purpose of making arrangements for the reception of the National Association for the Promotion of Social Science in October next has been held in Glasgow. Representatives from all the scientific institutions in the city and neighbourhood were present. Dr. Ryall, secretary of the association, addressed the meeting at considerable length, explaining the arrangements which it would be necessary to make. Committees were appointed to carry out the necessary arrangements. Dr. Lyon Playfair, it appears, has accepted the post of President of the Health Department of the Congress.

The New Government Offices.—Mr. Goldsmid asked in the Commons whether the space now enclosed by a hoarding in front of the new buildings will be thrown into Parliament-street. Lord E. Lennox said the matter had been carefully considered by both his predecessors. A certain portion of the ground had been reserved under his directions and those of Captain Galton, and under the special sanction of Sir Gilbert Scott; but orders had been given to the workmen, and he hoped that in the course of four or five weeks 45 ft. or 50 ft. extra would be added to the roadway.

Archæological Remains at the Sea of Marmora.—A portion of a marble column, ornamented in bas-relief with figures of men and horses, has been discovered on the shores of the Sea of Marmora, and is believed to have formed part of the Arcadius Column, which remained standing more than 200 years after the taking of Constantinople by the Turks, and was not discovered till after the seventeenth century. The entire surface from the base to the capital was ornamented with bas-reliefs of victories of Theodosius the Great, while the interior was pierced with a winding-staircase, which gave access to the summit.

A Royal Residence in Ireland.—A Dublin correspondent of the *Pall Mall Gazette* writes:—Rumours very generally prevail in Dublin that the Government contemplate certain 'concessions' to Ireland, of a social rather than a political nature. The erection of a Royal residence near Dublin, and the substitution of a Royal prince and a yearly Court on a regal scale for the Vicerey are among the projects with which the Ministry are credited. It is said in some quarters that contracts are already being sought for alterations to the Viceregal Lodge in the Phoenix Park, which will cost 30,000l.

The Society of Arts and the Brighton Aquarium.—Arrangements have been made for a large party of the members of the Society of Arts and their families to pay a visit to the Brighton Aquarium during the Easter holidays, under the guidance of Mr. Frank Buckland, her Majesty's Inspector of Salmon Fisheries, who will deliver a lecture adapted to the juvenile portion of the party. A special train is engaged for the excursion.

Leicester Square.—An application has been made before Vice-Chancellor Hall, on behalf of Scaife and Others v. Grant, for an injunction to restrain the defendant, Mr. Albert Grant, M.P., from proceeding with the Leicester-square gardens, so far as such works are or may amount to a breach of the covenant subject to which the plaintiff and others, together with the defendant, are owners or tenants in common. At the request of the Solicitor-General, who appeared for the defendant, the application was ordered to stand over to the second motion day on Easter Term.

Loan Exhibition of Art at Milan.—Some of the most prominent residents of Milan have lately proposed to exhibit, in the great hall of the public gardens, all the objects of art which private persons may be willing to lend for the purpose. To this show the houses of Trivulzio, Borromeo, Trotti, Cagnola, Poldi, Sola, and many others will contribute. Besides these private collections other cities, churches, and the Government have promised to contribute their share. It is intended to open it in May next.

Improvements in the Parks.—Considerable improvements are being carried out both in the Green and Hyde Parks. In the former the entire length of walks has been coated with a covering of white shell gravel. Numerous additional flower-beds are being constructed. In Hyde Park the Row has been relaid with bright red sand and gravel, the walks are renewed, additional shrubberies are being constructed, and flower-beds laid out. The island in the Serpentine has proved a success.

Fall from the Summit of Holt Castle Ruins.—A Chester lady, Miss Griffiths, accompanied by Mr. Fressoe Jones, of Chester, visited the ruins of Holt Castle, and whilst standing on the highest point of the battlements, the stone work or soil gave way under the lady, and she was precipitated, unobserved, into the rocky moat below. She was found lying insensible on the ground, and on recovering complained of being sadly hurt, but it is said no bones were broken.

English Engineers in Russia.—Mr. Alfred Edward Garwood, C.E., son of the late Alderman Garwood, of Arundel, has been appointed Chief Engineer and Locomotive Superintendent to the Losova and Sebastopol railway in Russia. Mr. Garwood was formerly superintendent of the Kolonna ironworks, near Moscow, and constructed the first locomotive engine that was made in Russia.

School Building in Scotland.—Sir R. Anstruther has given notice in the Commons that on going into committee of supply on the 17th April, he will call attention to the restrictions enforced by the Committee of Council of Education as to the internal arrangements of schools proposed to be built in Scotland, and to submit a resolution.

Aldershot Brick Works.—At the first general meeting of the Aldershot Brick and Tile Works Company, held on Saturday last, a dividend at the rate of 6 per cent. per annum was declared, the trade for the year ending 31st December, 1873, showing an increase of 75 per cent. over that of the year 1872.

Landseer's Lions.—Our endeavour to draw the attention of those in power to the state of these bronzes has been successful. Lord Henry Lennox, the First Commissioner of Works, has commissioned Dr. Percy, of the Ventilating Department of the House of Commons, to examine and report on their condition.

Fall of a Race-stand at Lincoln.—Great alarm and excitement were caused on the Lincoln Race-course on Tuesday last week by the falling of a temporary timber stand erected in the ring under the direction of the Race Committee. Several persons were injured.

Street Names on Lamps.—The Committee of Works of the Clerkenwell Vestry have recommended that the names of streets should be painted on fifty street-lamps as an experiment, in the neighbourhood of the Angel and St. John-street-road.

St. Paul's.—Messrs. H. & R. P. suggest that the steam jet might be usefully employed to cleanse the exterior of the Cathedral. We are not so sure about this.

TENDERS

For the erection of a residence at Codrall, near Wolverhampton. Mr. J. R. Veall, architect:—

Horsman	£250 0 0
Moreton	504 0 0
Thompson	500 0 0
Cookerill (accepted)	462 0 0

For additions to winding engine-house and setting new boilers at the Conduit Colliery, Norton. Mr. J. R. Veall, architect:—

Higham (accepted)	£618 4 6
-------------------------	----------

For alterations and additions to Nos. 220 and 222, Great Portland-street, for Mr. Adam Pensom. Mr. Thomas Durran, architect:—

Robertson	£695 7 5
Bottling	685 0 0
Berridge	669 0 0
Adams	644 2 6
Catrus	638 0 0
Higgs	616 10 0

For painting, &c., the external work at "Northumberland House," Green-lanes, Stoke Newington:—

Lewis	£178 10 11
Greening	105 0 0
Baldwin	82 10 0

For building retaining-wall, embanking, forming roadway, curbing, channelling, and forming footways in approach from Hope-road to the Esplanade, Shanklin, for the Shanklin Local Board. Mr. F. Newman, engineer:—

Coker	£1,580 0 0
Sanders	1,180 0 0
Thirst	1,048 0 0

For constructing timber platform and building offices and waiting-rooms at the Fouton, Fountain Quay, West Cowes, for the Southampton, Isle of Wight, and South of England Royal Mail Steampacket Company. Mr. Francis Newman, architect:—

Thomas	£2,307 0 0
Sibley	2,257 0 0
Ball	2,100 0 0
Barton	1,998 0 0
Meador	1,884 0 0
Langdon (accepted)	1,833 0 0

For schools, Gloucester-road, Lambeth, for the London School Board. Quantities supplied:—

Ennor	£11,567 0 0
Putman & Fotheringham	11,568 0 0
Manley & Rogers	11,237 0 0
Staines & Sons	11,186 0 0
Glover	10,975 0 0
Dove, Bros.	10,970 0 0
Perry, Bros.	10,818 0 0
Roberts	10,729 0 0
Browne & Robinson	10,658 0 0
Rewell & Sons	10,460 0 0
Scrivener & White	10,434 0 0
Jerrard	10,244 0 0
Hill, Higgs, & Hill	10,240 0 0

For Schools for the London School Board, Penrose-street, Lambeth Division. Quantities supplied:—

Gammom & Sons	£9,137 0 0
Kilby	8,580 0 0
Thompson	8,380 0 0
Tarrant	8,237 0 0
Sheffield	8,175 0 0
Jerrard	8,068 0 0
Callum	7,640 0 0
Cooper	7,544 0 0

For the construction of vaults, house-drains, carriage-way, and footways, Wornington-road, Westbourne Park, for the Land and House Foremen's Society. Mr. J. Houle, architect. Quantities supplied by Mr. Nichols:—

Riley	£2,320 0 0
Ennor	2,218 0 0
Gardner	2,178 0 0
Crookell	2,130 0 0
Baby	2,099 0 0
Blight	1,900 0 0

For new shop-front and fittings at 224, High Holborn, for Mr. T. Bowles. Mr. Owen Lewis, architect:—

Blandford & Jones (accepted)	£150 0 0
------------------------------------	----------

For repairs to the undermentioned houses. Mr. H. J. Newton, architect:—

Cottenham Arms Public-house, Holloway:—	
Channing	£99 0 0
Searle	93 0 0
Shurmur (accepted)	73 0 0

Chapel House Public-house, Islington:—

Taylor	£113 0 0
Shurmur	109 0 0
Hockey (accepted)	103 0 0

Rainbow Tavern, Islington:—

Taylor	£91 0 0
Hockey	87 0 0
Shurmur	81 0 0
Brindle (accepted)	64 10 0

For Dublin main drainage:—

Pearson & Co.	£229,000 0 0
Webster & Co.	509,000 0 0
Pickering & Co.	493,000 0 0
Doherty & Co.	480,000 0 0
Trevel & Roberts ..	466,000 0 0
Mackay & Co.	448,000 0 0
Smith, Finlayson, & Co.	428,000 0 0
J. & J. Williams, No. 2 Contract, £118,000; No. 3, £133,000 only.	

For two pairs of villa residences, Lordship-lane, East Dalwich. Mr. Thos. Clarke, architect:—

Upson & Kisdale	£1,154 0 0
Turl	1,227 0 0
Mull	1,230 0 0
Martin	1,334 0 0
Turner	1,443 0 0
Taylor & Parsons (too late)	1,515 0 0

For stabling for fifteen horses (exclusive of Mount Sorrel paving) in the Stone-yard, Battersea, for the Board of Works for the Wandsworth District. (Credit allowed for present old stabling for six horses.) Mr. P. Murdin (acting surveyor), architect:—

Eastman	£500 0 0
Baker	500 0 0
Thornton	385 0 0
King (accepted)	330 10 0

For additions to Havenfield Lodge, Great Missenden, Bucks. Mr. Arthur Vernon, architect:—

King & Co.	£1,175 12 0
Harvard	1,130 10 0
Spicer	1,053 0 0
Snell	1,041 0 0
Berry	1,004 9 0
Senior & Holland	990 0 0
Johnson	970 0 0
Hunt (accepted as to part)	798 0 0

For alterations and repairs to the Green Man Tavern, Easton-road, for Mr. J. T. Smith. Messrs. Bird & Walters, architects:—

	Less if hands and bases in	Less if in Red Portland stone. Mansfield.
Gold & Brand	£1,400	£30
Williams & Son	1,387	55
Thompson & Smith	1,315	40
Mark	1,289	38
Bolding	1,257	58
M'achlan	1,229	30
Brown	1,217	72
Newman & Mann	1,185	65
Anley	1,147	37

TO CORRESPONDENTS.

Erratum.—The engineer to the Northumberland Graving Dock, Millwall, is Mr. E. C. Homer—not Horner, as printed.

T. C. H.—T. R.—H. S.—C. P. H.—G. M.—R. S.—M. G.—Mr. V.—G. M.—T. D. A. T. (not rectified)—R. P. S.—W. H.—A. V.—T. R. S. (next week)—H. R. (ditto)—L. L. (ditto).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

PERFECT DAYLIGHT.

WHY BURN GAS?

CHAPPUIS' REFLECTORS

IMPROVE NATURAL DAYLIGHT

AND SUPERSEDE GAS.

P. E. CHAPPUIS,

PATENTEE AND MANUFACTURER

No. 69, FLEET STREET, LONDON.

CHARGES FOR ADVERTISEMENTS.

	Situations Wanted.	Situations Vacant.
Six lines (about fifty words) or under ..	2s. 6d.	4s. 6d.
Each additional line (about ten words) ..	6s. 6d.	6s. 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to residents in any part of the United Kingdom at the rate of 12s. per annum, payable in advance.

Halfpenny stamps accepted for amounts under 5s. Any larger sum should be remitted by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to DOUGLAS FOTHERGILL.

NOTICE.—All communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent Garden. All other Communications should be addressed to the "Editor," and not to the "Publisher."

Bath Stone of best quality.

RANDELL, SAUNDERS, & CO. (Limited), Quarrymen and Stone Merchants. List of Prices at the Quarries and Depôts; also cost of transit to any part of the Kingdom, on application to

Bath Stone Office, Corsham, Wilts. [Adv't.]

STONE BROTHERS,

Bath Stone Merchants,

supply direct from their own Quarries:—
Box Ground, CORSHAM DOWN,
FAIRLEIGH DOWN, COMBE DOWN,
AND STONE GROUND.

Prices on application at Bath-stone Office, Bath. London Depôt, G.W.R. Mileage Station, Paddington. Stone Dressings prepared ready for fixing. [Adv't.]

Whitland Abbey Green Slates.—These Quarries are now fully opened out, and are producing Slates in all sizes, and in any quantity: sound, and of choice green tint. Orders can be executed without a day's delay.—For samples and further particulars, apply to the MANAGER, at the Quarries, Narberth-road, R.S.O. [Adv't.]

Asphalte.

Seyssel, Patent Metallic Lava and

White Asphaltes.

M. S T O D A R T & C O.

Office:—

No. 117, Cannon-street, E.C.—[Adv't.]

Bills of Quantities, Specifications, &c.

Lithographed by ROBT. J. COOK & HAMMOND, 29, Charing-cross, S.W., with accuracy and punctuality. Plans and Drawings Copied, Traced, or Lithographed.—[Adv't.]

MICHELMORE & REAP

Manufacturers of

CHARLES COLLINGS PATENT

COLLINGS' PATENT HINGES

LEVER, SCREW, & BARREL BOLTS

and IMPROVED GATE FITTINGS of every Description.

36A, BOROUGH ROAD

LONDON, S.E.

The Builder.

VOL. XXXII.—No. 1627.

The International Exhibition.

THE opening of the International Exhibition of 1874 cannot be considered otherwise than a success; the crowd of holiday-makers rendering it somewhat difficult to move about in the picture-galleries on the first day; and it is worth notice, after what has been said recently as to the value of such Exhibitions for giving practical instruction in technical matters, that the technical matters aforesaid seemed to attract a very limited degree of attention, and all the crush was in the picture-galleries. An Easter Monday crowd cannot be expected certainly to be in a very favourable mood for scientific and practical study; besides which, the actual exhibition and working of some of the technical departments are probably not fully developed just yet; no doubt later on there will be more attention paid to the varied schemes for warming and ventilation, the several sorts and species of building appliances and engineering construction, and the various sanitary appliances which are illustrated. Still it must be admitted that the attraction to the many seems to be the pictures; and we must in fairness take this fact into account while repeating, as we have already done for two successive years, the conviction that there can be no generally high class of pictures collected to fill so great a length of galleries year after year, and that a large proportion of the collection must inevitably sink down to a mere covering of the walls with anything that can be called a picture. This, of course, amuses ordinary sight-seers, perhaps as well as anything better would; but it woefully lets down the status and character of the institution, besides doing a positive injury by keeping before the less-instructed portion of the public a quantity of work which is doubtful in execution, and less than doubtful in regard to thought and artistic refinement. In spite, therefore, of the recognition of the all-important question of receipts, we are still most strongly of opinion that the picture-galleries should, at all events, be closed in alternate years, so as to lessen the demand, and give time and opportunity for a supply of a higher quality of work. Unless some effort be made to accomplish this, the Commissioners will drag the whole concern down in the effort to maintain it at an impossible level.

The *on dit* was that the picture-galleries were more worthily filled this year than last; but a general look round scarcely led us to this conclusion. The French contingent, however, has not yet arrived, as the Commissioners find it impossible to get many French artists to work up their pictures for any date earlier than the opening of the *salon* in May, an event which has not unnaturally fixed the termination of the working year in the *ateliers* of France for some time past. With the happy incapability of falling below a certain standard of merit, which

(thanks to their excellent education) characterises the painters across the Channel, we shall probably find, when their gallery opens, a good deal of fresh interest added to the pictorial department of the Exhibition. Of the present contents of the picture-galleries we may take an early opportunity of saying a word in detail, by way of indicating what there is which is worth looking at. In a general way, it may be here observed that Belgium is, as usual, largely represented as to quantity, with a certain average of execution which seems to be recognised as necessary, but with a general heaviness of style (as represented here), and a scarcity of even an effort beyond the commonplace, either of idea or colouring, which is positively oppressive to the mind. Landscape appears to be the weak point; architecture decidedly the strong one. In the smaller collection, included under the head of Germany, and occupying its usual place in the smaller division of Room XVIII., the contributors would no doubt be of opinion that landscape was a strong point, as it undoubtedly is, in regard to the proportionate number, the scale, and the finish of the landscapes; but the painters of this school seem still to have one great receipt for landscape-making, — a lake, a shore foreground, a mountainous background, and a scratch of bright light on the water at the base of the mountains; this last feature being apparently the recognised signature of a picture of this school. The receipt was not a bad one, as receipts go; pity its administrators cannot discover that the patient has nauseated it long since. The miscellaneous collection filling the remainder of Gallery XVIII., represents Holland, Italy, Austria, and Denmark, beyond which a temporary partition brings up the visitor at the entrance of what will be the French gallery (Room XIX.) when it is filled. In the west galleries, devoted, as usual, mainly to English contributions, but also occupied to a considerable extent this year by Bavaria, there are things to be looked at, chiefly small ones, and others to be avoided; but the general impression conveyed is not unfavourable, considered in relation to the average standard. There seems to be a fair collection of water-colours, including some good names, and some names which ought to be considered "good," if true and unpretentious artistic feeling can make them so, though with less general reputation. In general, however, it may be observed that the most celebrated names of the various nations are unrepresented; which, for the reasons hinted at in our first paragraph, is not to be wondered at; and what is to be studied here belongs mostly to that quieter class of work which does not force itself upon the notice; but from which, when found, a good deal of quiet enjoyment is to be obtained.

A collection of drawings and paintings by officers of the army and navy again forms a feature in the Exhibition, and one which will at least be of interest to the large class of visitors of certain grades who (like the Grand Duchess of Gerolstein) "*aiment les militaires*." Knowing what really able amateur artists are to be found in the two services, the general quality of the work is hardly what we should expect, and seems to argue, to a considerable extent, a want of perception as to what is worth doing and exhibiting, and as to the class of work in which amateurs may best succeed and do good service. Some gentlemen who are possessed of a fair proficiency with brush or pencil seem not to recognise the limitation of their powers, and attempt things which only the severe course of regular artistic training can enable any one to do really well, while they might very well do exceedingly good work of a less ambitious class. Amateurs can be most serviceable to art in works in which an idea, and a special manner of regarding it, are more exemplified than an attempt at absolute finished achievement of an elaborate kind; and by keeping on his own ground the

amateur may sometimes bring suggestions of great value to the artist, the more so as he does not run in the same groove in every way, and may bring to his work a mind more free from conventional "school" ideas than the professional artist can always bring. Amateur work may thus be very valuable and interesting even to artists; but we cannot say that much of this could be so regarded. It might be worth while another year to invite contributions of amateur drawings from members of some other professions: we have an idea that there are not a few architects who could turn out sketches, other than architectural, which would have their value anywhere; and we are not without good grounds for believing that the clerical and legal professions could make a very fair show.

The other and most important special department in the picture-galleries is one which scarcely calls for criticism, the works included in it having passed that Rubicon long ago, — we mean the gallery devoted to the works of deceased English artists. This idea, commenced last year by the exhibition of the works of Philip and Creswick, is a very good one, and there is probably material available to carry it on for some years; and it is desirable that we should see what there is in the old English school of artists, when viewed collectively. The experiment will probably lead to a conviction that there is much more to love and be proud of among our own painters of former generations than it is the fashion to think at present; and that with some marked gain in power and standard of execution, we have also lost some qualities not to be despised, and not easily compensated for. The collection this year includes a good many Constables, and a great many of the remarkable and powerful water-colour drawings of Cotman. Wilkie is also considerably, and not always happily, represented; and some of the works with his name to them remind us painfully how untrue to his real powers this able artist consented to become in his later years, in an unfortunate and ill-judged bid for aristocratic favour and patronage: a consideration which, in conjunction with the estimation in which these later works are now held, carries its own moral with it. An intention was announced of showing a large collection of the architectural drawings of Roberts, C. A. Pugin, and Cony; but this has scarcely been managed as it was hoped to have been: the selection of Cony's drawings is small, that of Pugin next to nothing; Roberts, however, is more largely represented, but if any fair proportion of his executed works could be got together, he might pretty well do with a room to himself.

Leaving the pictorial, some of the departments of decorative design this year certainly go far to make amends for any shortcomings in what are termed, *par excellence*, the "fine arts." The exhibition of lace in the ground-floor rooms of the east galleries is sufficient to turn many fair heads with admiration and despair. The collection includes ancient and modern work, and illustrates many varieties both of manufacture and design, in regard to which latter subject there is something to be said more particularly, when time and space shall serve; for lace design has, in some of the most delicate varieties of the manufacture, been allowed a little to run wild, and what are put forth in pattern books as the best designs sometimes seem to the more critically-educated eye to have, in fact, no design at all, but to wander at their own sweet will, — a manner much in vogue too among ladies who "make their own designs." If any one has any doubt whether lace is capable of more symmetrical treatment, there are specimens here which may open his (or her) eyes. The lace is classed, we observe, among the "industrial arts"; but so fascinating and delicate a form of decoration might surely

claim a rank less utilitarian than such a term implies.

In regard to another industrial art which occupies an adjoining room, that of harness equipments, we have sometimes felt surprised that so little attempt has been made to engraft on the mere necessities of horse accoutrements something more of distinctly ornamental treatment. The one attempt in this direction seems to be the time-honoured custom of making the seams of the upper leather of the saddle take the outlines of scrolls or conventional flower-work; it might certainly, we should think, be possible to treat the best class of harness decoratively without impairing its working qualities. In the military saddle and accoutrements (of which there is a specimen or two here) we have indeed something beyond mere usefulness, but it is a kind of "flare-up" effect got by much gilding, &c., and rather barbaric than artistic. In another department, however, of "leather" (which is the companion industry here to "lace"), the decorative element is largely, and in many cases, beautifully developed; and the collection of specimens of bookbinding, illustrating, like the lace, both old and new styles, will also, like it, repay closer observation than we can at this moment afford it.

Among the departments of work more directly allied to architectural design, that of furniture is represented much as usual in regard to quantity, and we are inclined to think better than before in regard to quality; at least, there appears to be more of what may be justly called artistic design, and less of the chamfered and angular school than before, and we hope that the more extreme forms of this ugly and affected fashion are falling into disfavour. The collection of art pottery is larger and more miscellaneous than usual. Of stained glass there is at present even less than the usual meagre display; but probably a few more specimens will find their way in presently. Let us hope the average excellence will be higher than it has been. To the practical building appliances and materials we shall return; and of the sanitary contrivances all we can at present remark is, that there is a great display, among other things, of facilities for the rite of ablution, and that the visitors seem exceedingly interested in a wonderful bath by W. Smeaton & Co., which combines all sorts of cleansing operations, throwing a shower from the top and a spray from the sides, &c. On the principle that "cleanliness is next to godliness," this is no doubt a very pious machine indeed.

Of the architectural drawings, of which we are specially bound to speak, we may observe at once that the collection is neither very large nor very good; and what we have to say about it may as well be said here. The drawings are placed on screens in the lower gallery of the Albert Hall, and therefore more accessible than when mounted to the top of the building. We are encountered here by two or three designs for "Gothic altars" (what we should call redressed in England), by an Austrian architect, Herr Zawidl. These are neat and tame line drawings, with not a particle of sparkle or effect, of neater and tamer designs; we observe that a considerable portion of the paper in each case is taken up by a gigantic official seal and "legend" conveying that the drawing has met with approbation of a special and official nature. If this is the kind of work they premiate in Austria, the development of modern Gothic must be limited in that part of the world. Among the other drawings (English) we may notice that the Gothic style and pen-and-ink execution prevail. Messrs. George and Vaughan's "Orrest Bank" (4,542), a country house, is picturesque with rather too much indication of the direct influence of another architect's style. It is a point for consideration whether the truly picturesque in domestic architecture may not possibly be combined with a little more of architectural symmetry, a little less of "rustic" treatment, than in the style or manner of which this is a type. Mr. Deshon's design for a public hall (4,540) is a good drawing, but looks more like a chapel. Mr. Waterhouse sends a water-colour drawing of the new buildings at Caius College, which we noticed some time ago, when they were just being completed, in the course of some notes on Cambridge. Some small drawings and photographs of the same architect's "Owens College, Manchester" are also hung. Two specimens of domestic architecture, by Mr. Avera and Mr. W. Young respectively (4,560-4), are pleasing examples of red brick design, more so than

the "school and master's residence," of Mr. Moye (4,566), which, not without merit, is decidedly "loud." Mr. F. Chancellor sends drawings of blocks of dwellings in course of erection in Farringdon-road, for the Society for "Improving the Dwellings of the Industrial Classes." These may be, very likely are, very well and economically planned buildings; but let us ask, can nothing be done, consistently with economy, towards improving in aspect the "dwellings of the industrial classes," making something more inviting, more home-like, than these large square masses of brickwork, repeated, one after another, like so many gigantic hives (only that beehives have a much more pleasing shape)? Among designs for schools, we may mention a small one by Mr. H. Hall, a "country school to accommodate 500 children" (4,576), as very pleasing as well as appropriate in composition and outline, the style being a very simple Gothic, with high roofs, and square mullioned windows of adequate proportions. Mr. Arthur Vernon's "Board Schools," for West Wycombe and High Wycombe (4,574, 4,575), are very commendable as simple but picturesque architecture; the former, however, is a little too pretentiously unpretentious, which is just the defect on which some clever architects are being driven now, in the reaction from over-ornament and showiness of design. Mr. Gaye Howard's drawings of Mr. Seddon's designs for the restoration of Great Yarmouth Church, hung in last year's Academy, are highly creditable to the draughtsman as well as the architect. The design for Municipal Buildings at Leicester, by Mr. E. M. Gibbs, several of the drawings of which are exhibited, we criticized at the time of the competition, though it was not then under the author's name; the design did not, as far as we remember, impress us favourably then, and does not now; it is heavy, and aims at unity to an extent which becomes monotony. The design by Mr. James Trubshawe, for "Elphinstone College, Bombay" (4,575a), a building in Italian Gothic character (a style suited to a bright but not to a hot climate, we should say), has a tower, with open timber lantern, characteristically and picturesquely treated, and forming a very good feature in an otherwise unobjectionable design. Looking at a perspective view of the schoolhouse, Marburg (4,503), by Herr Flattich (Austria), we may at least be thankful that architecturally we are "not as this publication"—better our wildest Gothic vagaries, which have, at least, some life in them, than that an architect should deliberately sit down to "design (save the mark!) a square block with holes-in-the-wall windows, and then send it to an exhibition in a foreign country as a specimen of his genius for the "architecturesque." They must be, indeed, in architectural low water in Austria. Mr. Roger Smith's school at Stepney is chiefly noticeable in that, retaining Gothic character and pointed windows, the author boldly goes in for keeping these windows large, and completely unobscured by mullions, proclaiming on the face of his building that "more light" at least is an object. Mr. Charles Barry's second premium design in competition for the Commercial Travellers' Schools, Pinner (4,568), is a large red brick building, with a very definite character, and looking very like a "charitable institution." We sometimes wonder how this character is obtained, for certainly there are buildings which you can associate with nothing but this idea; a number of small dormers repeated seems to have a good deal to do with it, but why, we cannot at this minute undertake to investigate. Mr. E. Clarke's proposed chapel, Christ Church, Wolverhampton (4,541), we note as a good pen drawing, without much of design. Some other drawings, of more or less merit, have already been noticed in our review of last year's Academy architecture; some have been seen a good many times in different places, and are getting quite old friends.

We should add, before concluding our notice of the architectural drawings, that among some of the engineering diagrams near the entrance from Exhibition-road, we observed a large oil sketch of York Minster, to the one response, as far as we could discover, to that touching request of the Commissioners for large drawings, "of a scenic character" of existing buildings, not less than 12 ft. by 8 ft., or some such dimension. We did not at the time think the idea likely to recommend itself either to those who were to execute the drawings, or those who were to look at them afterwards, and this specimen does not alter our opinion.

THE NEW METROPOLITAN BUILDINGS AND MANAGEMENT BILL.

A BILL for "consolidating, with amendments, the Building Acts relating to the metropolis; for making better provision respecting streets and sewers and drains in the metropolis; and for other purposes relating to the metropolis," prepared and brought in by Colonel Hogg, Mr. Grantham, and Sir Henry Wolf, has been read in the House of Commons and printed. It comprises 115 clauses and 17 schedules. It applies only to the metropolis, as defined for the purposes of the Metropolitan Board of Works, by which body the Act is to be executed; but there is a special power of extension of limits by provisional order, to be made with the consent of the Board, and confirmed by Act of Parliament.

The five existing Building Acts are to be wholly repealed, their provisions being reenacted as far as thought necessary.

One change is made by the Bill, so considerable as to be referred to in some preliminary observations. Under the present system the office of superintending architect of metropolitan buildings, and the office of district surveyor, are constituted by statute; and those officers have powers and duties independent to a considerable extent of the control of the Board. This condition of things the Board considers anomalous. The office of district surveyor was created at a time when neither the Metropolitan Board of Works nor any similar metropolitan authority existed; and the present Building Act of 1855, in which the office was continued on a footing like that which it had under the last preceding Act of 1844, was passed contemporaneously with the Act creating the Metropolitan Board of Works. The promoters of the Bill expect that an improved system of administration will grow up, and that the public will be better satisfied when the Board, and not a number of half-independent officers, are charged with the duties to be performed, and are clothed with the corresponding powers.

"This change is effected by the general repeal of the present Building Act of 1855 and the non-re-enactment of such of its provisions as relate to the superintending architect and district surveyors, and by the substitution of the Board for such officers throughout the clauses of the Bill. At the same time, power is given to the Board, if they think fit, to appoint, and continue, appoint, or supersede, superintending architect and such surveyors as they think requisite."

The personal interests of the existing district surveyors being to a certain extent protected. How this, for a time, double mode of administration would work can scarcely be foretold, at more than the ultimate shape the officers appointed to carry out the provisions of the Bill would take. The Board itself apparently does not know. Would they be clerks of the Board under a superintending architect, with Spring-gardens for head-quarters? No materials for reply are afforded. This is not the only question which is left unsolved by the Bill. And we are disposed to think it is upon this ground the opposition will be given to it in the House by abstract legislators. Throughout the Bill clauses begin thus:—"Unless in any case the Board otherwise allow." In one page this occurs six times, in another four times. According to clause 48—

"Where a building or structure or work is proposed to be erected or constructed or erected, and it is shown to the satisfaction of the Board that it is not necessary or expedient that the building or structure or work be erected or constructed or erected in conformity with this Act, or that this Act does not contain any provisions in conformity with which the building or structure or work ought to be erected or constructed, or erected, or the provisions of this Act are for any reason inapplicable to the building or structure or work, then in every case the building or structure or work may be erected, constructed or executed in such manner and on such terms and conditions as the Board allow, and not otherwise."

In many cases it is obvious that the term "Board" must simply mean the surveyor or other official to whom is entrusted the carrying out of the Act in that particular district of London. It meant that this same official is to have the discretionary power asked for throughout. When it is further mentioned that the Board have the power to make bye-laws with the concurrence of the Secretary of State, it will be felt that if this Bill were to become an Act, the law regulating buildings in the metropolis would still remain a matter of considerable uncertainty.

We desire to make it clearly understood that we are looking at the document before us in a captious spirit, and with no desire to discover objections. The Bill has been a long time

preparation, has been altered many times, and we feel assured that the gentlemen to whom its preparation was confided have worked at it with every desire to produce such a measure as would thoroughly answer its intended purpose. We should fail in our duty, however, if we omitted to draw attention to what we consider its weaknesses.

Proper provisions are introduced, making the owner or occupier of the building liable for the requirements of the Act, as well as the builder. The power taken to interfere "where it appears to the Board that a building or structure or ground is ruinous, or so far dilapidated as thereby or otherwise to have become and to be unfit for use or occupation, or is a receptacle for filth, or, from neglect or otherwise, is physically an annoyance to the neighbourhood or to passers-by" (clause 59), and in respect of balconies and stands, or seats, is a proper one; and we must support the Board in its endeavours to regulate the stacking and placing of timber, notwithstanding the objections that will be felt by individuals—the general safety must be the first consideration.

The preliminary clauses include a long-needed definition:—

"1. 'Building' means an erection comprising a cubical space defined by walls, piers, posts, or other structures, and a roof, whether the erection is wholly enclosed or not, and whether it is fixed on permanent foundations or not, and of whatever material it is constructed, and for whatever purpose it is used, or constructed, or adapted.

2. 'Structure' means a wall or other erection, of whatever kind, not being a building.

3. 'Roof' means a covering, of whatever kind, of a building."

With the definition of ground story we are less satisfied:—

"'Ground story' means that story of a building to which there is an entrance from the outside, on or near the level of the ground."

It is quite easy to imagine cases in which no entrance is provided in the actual ground story; and, as the Bill says,—

"'Basement story' means that story of a building which is next under the ground story"; and

"'First story' means that story of a building which is next above the ground story";—very considerable confusion might arise.

There seems to be some little confusion (or, at any rate, a dangerous exception) with reference to the retention of lights in party-walls. The Bill provides that there shall be no lights in party-walls, and that when an old building

"has been taken down or destroyed to an extent exceeding one-half of its cubical contents, the rebuilding thereof shall be deemed to be the erecting of a new building, and every portion of the old building not in conformity with this Act shall be taken down before the rebuilding thereof" (clause 19); "unless the Board otherwise allow."

And yet Clause 40 says,—

"Nothing in this Act shall authorise any interference with an easement of light or other easement in or relating to a party-wall, or take away, abridge, or prejudicially affect any right of any person to preserve or restore any light or other thing in or connected with a party-wall in case of the party-wall being pulled down and rebuilt."

Clause 86 makes it "lawful for Her Majesty in Council, at any time after the passing of this Act, by order in council, on the representation of the Secretary of State, to assign exclusively to one of the magistrates of the police courts of the metropolis the execution of the duties to be performed by a magistrate under this Act, with or without the execution of any duties to be performed by a justice under the Metropolis Management Acts"; also "to authorise the appointment of two assessors to assist the magistrate in the hearing of cases under this Act, the assessors being architects of fifteen years' standing or upwards in their profession, and being appointed the one by the Board and the other by the Council of the Royal Institute of British Architects; and to prescribe the tenure of office, duties, and remuneration of the assessors."

The thickness required for walls of various heights and extent is somewhat greater than by the existing Act.

The terms used in describing the required thicknesses,—for example, "If the wall does not exceed 30 ft. in length, it shall be 8½ in. thick,"—will be read by some as preventing the use of thicker walls where desired; "not less than 8½ in. thick" would make the intention clearer.

The instructions as to foundations in the present Act, found to be unsatisfactory, are retained. "The footings of every wall," the new clause stands, "shall rest on the solid ground, or on concrete, or on other solid sub-

structure as a foundation." The thickness of concrete, say not less than 12 in., should be specified. In buildings of the warehouse class the party wall is required to be carried up 3 ft. above the roof, instead of 15 in. as now. Party fence walls are legislated for when above 7 ft. in height. The powers taken by the Board as to public buildings are very great, but are left altogether vague, and will require a very precise set of bye-laws to ensure uniformity of practice; unless, indeed, it be intended that every such building is to be submitted to the central body.

By the 9th schedule, plant-houses, summer-houses, poultry-houses, &c., standing detached, and not less than 10 ft. from any other building; waterclosets not exceeding in area 25 ft., and not exceeding in height 7 ft. 6 in. to roof-plate, built on separate foundations, and external to the buildings to which they belong; and buildings not exceeding in area 50 ft., and not exceeding in height 7 ft. 6 in. to roof-plate, and distant at least 10 ft. from any other building, and from any street,—are exempted from the operation of the Act, and may be constructed of wood or brown paper. Such a change from the existing law would be fraught with danger, and should not be persisted in.

If such exempted buildings became ruinous and dangerous, how would they be dealt with?

We are compelled to draw those present observations to a close, and can add only a few words more. Under the new Bill the district surveyors, or other officers employed to carry out its provisions, will have much more work to do than in the case under the existing Act; and the fees are increased to the extent of 5s. for every additional story beyond two. The fees put down for the superintendence of public buildings,—namely, "on a theatre, two guineas; on any other public building, one guinea," except a school-house, and for which half a guinea is to be charged,—are altogether incommensurate, and need explanation.

ON MASSIVENESS IN ARCHITECTURAL DESIGN.

A WELL-KNOWN amateur writer on architecture, in urging his views as to modern church-building, expressed himself as being in favour, above all things, of size,—pure and unadulterated bigness,—in the modern town church. The predilection, however much at variance with the habits and conditions of economical communities where building land commands an enormous price, evinced a true perception of what has been in all periods one of the most direct and certain means of producing an effect upon the mind of the spectator, sometimes quite disproportionate to the real, artistic merit or evidence of thought in the building which produces it. The pyramids admitted them to be,—are a hackneyed instance; but even in regard to structures of directly architectural pretensions, it may be questioned, for example, what people would ever go to see St. Peter's for, but for its size. It is corrupt architecture, and fanfany construction; yet every one goes to see it, and even those who are critical on its defects admit its power over them, independently of association. People are interested by the Albert Hall for the same reason,—it is the biggest thing of the kind that has been done. We have, however, got so much into the habit of looking at and designing small buildings in modern England,—little country churches, smaller parsonage-houses to match, and so on,—that it is a gain that there should be a necessity for a really big building sometimes, and desirable that such necessities should be increased by any fair and reasonable pretext.

What, however, we do really seem to have lost in modern building, and in England especially (where indeed it never was the most predominant characteristic), is not the mere largeness of dimensions, which, as we see, can be realised occasionally, but largeness of style and treatment,—what we have here termed *massiveness*. This charge has before now been brought against English Gothic; against the genuine Mediaeval monuments of the country as compared with contemporaneous work in France. We are open to be reproached with a national tendency to littleness of manner, as compared with the cavernous vastness of the vaults and porches of

"Certainly, I have heard that the Ptolemies' pyramids are very goodly things,—without contradiction, I have heard that."—*Antony and Cleopatra*.

Continental Gothic. English Gothic, however, has qualities of its own to set off against this deficiency of mass. But if we take modern work generally, we think it must be admitted that the defect of littleness and meagreness of handling is a characteristic of the day, not limited to any special one among the styles or manners now practised. We are made to feel this when our notice is specially drawn to some relic of times when the cheeseparing spirit was not so prevalent. We remember that among a knot of architects who assembled one morning at the British Museum to inspect the remnants of the temple at Ephesus which had been sent over, the predominant feeling was a kind of surprise at the largeness of scale and manner in the fragments of columns and bases and ornaments. But we need not go back so far in architectural history as this. Looking at the view of the church at Finisterre in Brittany, which we published recently, we are impressed not by the style or design, which is mannered and impure in form, but by the square massiveness of the porch and buttresses, such a singular contrast to the starved flat character of the nineteenth-century Renaissance. We meet the same characteristic in buildings of about the same period in our own country; and there cannot be a more remarkable contrast than between the meagre, stingy-looking buildings called "Elizabethan" in the present day, and the heavy cornices, pilasters, and "window-dressings" of some genuine old mansion of the "golden days." Comparing the new with the old, everything seems reduced to a minimum depth and thickness, pared down to its lowest possible dimensions, as if the predominant object all the while were only to make a show with as little material as possible. Look at the old woodwork, too, of the same period: in going over an old house we are almost startled, by comparison with the modern work, with the scale of the wainscots, the stair balusters, and the architraves; everything is on a heavier scale, and beams seem to find place where beadings are almost enough for the modern joiner. Tracing the monuments of domestic architecture, in particular, from the early castellated period, through the Elizabethan, Jacobean, and Queen Anne to our own day, we find such a progressive *diminuendo* in the scale of details and general treatment, that it almost seems as if the progress of this branch of our art, at least, is towards the infinitely little.

This characteristic smallness of handling and want of breadth and massiveness in modern detail, can hardly, we think, be attributed solely to the economising spirit of the day; though this, no doubt, with its incessant counting of the cost of everything, and determination to get the greatest possible show for one's money, has a good deal to do with it. Probably engineering, the profession so greatly and rapidly developed in recent years, has by its strictly practical and utilitarian treatment of material influenced general building and architectural practice a good deal; and the engineering principle which in all cases keeps the material employed rigidly down to the mere practical necessity of construction, is certainly at variance with the architectural principle, in its greatest and most monumental forms at least. But we are inclined to attribute the timidity of much modern detail to the too exclusive practice of designing on paper, and on the drawing-board, without immediate reference to the building, and the effect of the work *in situ*. Those who have examined in detail such work as that of the front of Wells, for instance, must feel how little those capitals, with their dark hollows and mass of overhanging bosses at the angles, have to do with mere paper designing; how completely they bear evidence of having been cut for the situation and with an immediate eye thereto. This consideration is the one argument which can really be brought forward for that theory of the mason-architect,—of the spontaneous design of a building,—which has been carried (in theory) to such absurd lengths by certain persons. But without in any way impairing the position of the architect, as the real designer of the building, it is possible that detail should be designed more by personal direction and by sketches on the spot, than by finished drawings of details made in an office quite apart from the position they are to occupy. A move in this direction would, we think, have some influence in leading to more life, boldness, and vigour in the detailing of modern structures, and giving them thereby some of that interest and power of expression which strikes us in so many old works, even in so corrupt a style as

that of the striking and picturesque fragment of building from Brittany which we lately illustrated.

THE NEW HOME AND REFUGE FOR SHOEBLACKS.

A new building, designated the Shoeblacks' Home and Refuge, has just been erected in Saffron-hill at a cost of 4,000l., and is intended to be formally opened on the 1st of June by the Earl of Shaftesbury. The building, which has its principal frontage to Saffron-hill, is 60 ft. in length, and nearly 60 ft. high from the street level, having also a spacious basement. Its depth is 40 ft., and at the rear of the building, in the direction of Farringdon-road, there is a playground 30 ft. by 20 ft., a portion of which is covered in as a protection from inclement weather. The building and grounds, therefore, cover an area of about 4,000 superficial feet. The principal frontage consists of the ground-floor and three stories, in addition to the basement. It is built of yellow stock brick, with red brick bands. The ground-floor, and each story above, have four windows, having ornamental arched heads, in red, black, and white patent brick, with carved keystones, and a projecting hood in terra surmounting the arches of each window. A double band in red brick is carried across the face of the elevation above the ground-floor windows. The elevation is surmounted by a projecting cornice, dentilled, in white, red, and black bricks.

The interior arrangements and fittings have been carried out with the special view of providing for the particular objects for which the building is intended. The basement contains kitchens, fitted with all modern appliances for culinary purposes, together with warm baths, lavatories, and other conveniences. The ground floor contains the board-room, offices, and other business apartments. The first floor is exclusively set apart for the schoolroom, whilst the second floor contains the master's apartments, and the whole of the third floor is fitted up as a dormitory, containing iron bedsteads for sixty boys, the number who will reside in the Home, but the educational advantages of the institution will also be extended to those boys belonging to the brigade who may reside at their own homes, all of whom, as well as those boarding at the Home, will receive a gratuitous education. The building has been erected mainly through the efforts of Mr. John Macgregor ("Rob Roy"), and it is a noteworthy and interesting fact, as showing the earnings of the boys belonging to the brigade, that 2,500l. out of the 4,000l. which the new building has cost, have been subscribed from the savings of the boys themselves.

Mr. Home, of Gray's-inn, is the architect of the building; and Mr. H. R. Wagner, of Victoria Works, Buckingham Palace-road, the contractor.

RAILWAY, TRAMWAY, GAS, AND WATER BILLS.

PROPOSED EXPENDITURE ON WORKS.

WITHIN the last few days a highly interesting return has been made by the Board of Trade to an order of the House of Commons, showing the proposed expenditure and other particulars in connexion with Railway, Tramway, Gas, and Water Bills which will come before Parliament during the present session. From this return it appears that the number of railway Bills promoted by new companies is 53, and that of this number 49 are Bills in connexion with English railways, 3 Scotch, and 1 Irish. The total length of the proposed new railways in England is 395 miles, of those in Scotland 70 miles, and those in Ireland 100 miles, being a total of 565 miles. The share capital proposed to be raised for the several lines is for the English lines, 9,566,000l.; Scotch lines, 710,000l.; and Irish lines, 1,670,000l.—total, 11,946,000l.; and the capital by loan is on the English lines, 3,192,000l.; Scotch, 236,000l.; Irish, 707,000l.—total, 4,135,000l., or a grand total in shares and by loan of 16,081,000l. Of the railway Bills promoted by existing companies there are 107, of which 86 are for lines in England, 9 in Scotland, and 12 in Ireland. The total length of these several lines is 499 miles, 401 miles of which are for English railways, 40 Scotch, and 53 Irish. The share capital for the English lines is 22,880,000l.; Scotch, 1,533,000l.; and Irish, 1,040,000l.—total, 25,453,000l. The capital by loan is on the English lines 8,955,000l.; Scotch, 510,200l.; Irish, 343,200l.,

—total, 9,809,000l.; or a grand total in shares and by loan of 35,262,000l. The entire length of lines promoted by new and existing companies being 1,064 miles, the capital by shares, 37,999,000l.; by loan, 13,944,600l.; or a total capital proposed to be expended of 51,943,600l. Of this capital, 9,251,900l. are in respect of projected new lines and works within the metropolitan area, the total length of such several railways being 19 miles. They include the Acton and Hammersmith proposed line, 2 miles in length, with a capital of 480,000l.; Aldgate and Cannon-street, 77 chains, capital, 2,330,000l.; Bromley Direct, 1 mile 57 chains, capital 33,000l.; Crystal Palace, 2 miles 40 chains, capital 360,000l.; Crystal Palace and South London, No. 1, 1 mile 66 chains, capital 243,000l.; Crystal Palace and South London, No. 2, 40 chains, capital 53,000l.; Crystal Palace, High-level, 2 miles 69 chains, capital, 306,600l.; Ealing, Acton, and City, 6 miles 19 chains, capital 393,300l.; East of London and Alexandra Park, 4 miles, 52 chains, capital 160,000l.; Great Eastern and South-Eastern Junction, 45 chains, capital 1,200,000l.; the Metropolitan Inner Circle completion and Eastern Extension, 4 miles, 35 chains, capital 3,400,000l.; Midland, Highgate, and Alexandra Park, 1 mile 45 chains, capital 320,000l.; and the Wandsworth, Fulham, and Metropolitan Railway, 1 mile 7 chains, capital 160,000l.

The number of tramway Bills is 9, with a mileage of 25 miles, a share capital of 283,000l., and loan, 85,600l.—total capital, 368,600l. Although 6 of the Bills are, in respect of tramways in England, with a mileage of 16 miles, and 2 in Ireland, 9 miles in length, the capital for the Irish tramways exceeds that for the English lines, the former being 188,000l., and the latter 180,600l. There are also 10 applications to the Board of Trade for provisional orders relating to tramways, the length of which is 27 miles, and the capital 77,808l.

The number of Bills which relate to the supply of gas is 22, and those relating to the supply of water 29. The total capital for the gas Bills is 2,256,500l., and for the Bills relating to the supply of water 2,482,250l.

The applications to the Board of Trade for provisional orders under the general Pier and Harbour Act of 1861, include that for the construction of a pier at Bray, in the county of Wicklow, the estimated cost of which is 20,000l.; also an application for powers to construct a jetty and sea wall at Bockie, county of Banff, estimated cost 13,000l.; an application for powers to construct a pier or breakwater at Cattlewater, in the county of Devon, at an estimated cost of 27,778l.; for powers to construct a breakwater and other works at Great Yarmouth, at a cost of 14,000l.; for powers to construct a pier and other works at Sandown, Isle of Wight, at an estimated cost of 6,000l.; for powers to construct two piers at Sidmouth, at an estimated cost of 20,000l.; for powers to the Mayor and Corporation of Yarmouth to construct a pier and jetty at a cost of 2,500l.

A LOST WORD AND ART.

A PERUSAL of the paper entitled "Ancient Art-Work in Metal" forcibly brought to my recollection a passage that works very strongly on the imagination. It occurs in Jeremiah x. 9, and reads thus: "Silver spread into plates is brought from Tarshish, and gold from Uphaz; the work of the workman, and of the hands of the founder." It is a denunciation of idolatry and luxury, and very possibly the passage may chime in with the notion shadowed forth of a "lost word."

It has been stated that the term "gold plate" is a misnomer, and that "silver plate" is a pleonasm. To test the use of this word "plate" in Jeremiah, we must recollect that Tarshish is generally received as a name for pre-historic Spain, and that "plate" (*plata*) is the only native word for silver known to Spaniards. So sure is this, that when that people settled in South America they named a chief river "Río de la Plata," "Silver River," from its abundance there, just as we connect notions of "gold" with the coast of Guinea.

The Hebrew text reads כסף מירקן That כסף (*ceseph*) is silver admits of no doubt; but the other word is open to question; the following are references:—1. The root, ירקן means "to expand, spread out, overlay," as a verb; as a noun it is "a metallic plate." Thus we have in

Exodus xxxix. 8, "They did beat the gold into thin plates," in Isaiah xl. 19, "The goldsmith spreadeth it [the image] over with gold." 2. The root ירקן means "to scour or polish," hence we have, Jeremiah xlv. 4, "furbish the spears," and in 2 Chronicles iv. 16, "brightly scoured [or polished] brass [or copper]." 3.

The Vulgate renders the passage as "argenti tum involutum," but the Donay version agrees with the English A. V., as,—"silver spread into plates," an expression very wide of the Latin "involutum." The Septuagint, very singularly, repeats both the Hebrew forms.

Premising that the text of Jeremiah in the LXX. is hopelessly confused, we find in this very chapter x. that verse 5 joins verse 9, but the text reads on. Thus we have in part of v. 5:—ἀργύριον ροπαίνον . . ἀργύριον προσβαλόν . . Ἄρο θαλάρις (v. 9).

Here ροπαίνον is the equivalent of (2) *ירקן*, as "furbished, scoured, or polished"; while προσβαλόν answers to (1) *ירקן*, as, "clapped or glued on," i.e., "spread out, overlaid, or plated" (*appliqué*).

The date of Jeremiah may be 600 B.C.; of the Septuagint 280 B.C. There might be time for a "lost word" in the interval, but the date of the Septuagint corresponds exactly with the reign of Ptolemy II., who donated that magnificent tripod, so gloriously described in Josephus. There was no "lost art," then.

Was anything lost then or since? No one can read the references quoted above as 1, 2, and fail to see that the various descriptions of metals and their uses are simple and clear; the only question is, in what state was the silver here described as being brought from Tarshish?

Looking at the fact that silver=plate and plate=silver, taken roughly, in Spanish, the term "silver-plate" is proved to be a pleonasm. It then follows that the expression, "silver rolled into plates" is a form of expression derived from modern usage, rather than representing ideas current in the days of Jeremiah, of the LXX., or of Jerome and his Vulgate; so dropping "plates" as ambiguous, I ask, how would it sound if we read, "Silver in bars is brought from Tarshish"? A "bar" of silver being that metal wrought into malleable bars; we now call them ingots, which are each A. S. *gēttan*, "to pour out."

The Spanish word *plata*, now thoroughly indigenous, is the Greek *πᾶρος*, "broad": hence allied words are plat, or flat, and platter. The analogies of plate were extended to armour, a "plate" consisting of "broad" pieces, as distinguished from "mail," Lat. *macula*, "a spot"; and chain or ring armour.

Writing of a lost word and a lost art, one neutralises the other; for, both being only conjectural, by the doctrine of probability neither ever existed.

A. HALL.

A MONUMENT TO SHAKESPEARE.

SIR,—It is certainly a reproach to the admirer of literature, science, and arts that in the metropolis of Great Britain, in the latter part of the nineteenth century, it should be left to the spirit of a private individual to render due homage to the memory of one of, if not, our greatest of men. May it not be another opportunity that may never recur, by opening a public subscription in aid of Mr. Albert Grant's desire to repair the neglect, wipe away the reproach, and make this monument more worthy of the nation than it is? Likely any individual, however public-spirited, would accomplish?

I would suggest a statue of Shakespeare above life-size, in the act of noting down character or reading one of his plays to Queen Elizabeth, surrounded on lower levels by statues or groups emblematical of the numerous characters in his works; and the various phases of civilisation, religion or piety, history, justice, literature, poetry, the drama, music, and all arts which have benefited or been influenced by his genius. For instance, religion and piety by Henry VI. or Isabella, history by Julius Cæsar or Cordelia, literature by Prospero or Portia, the drama (tragedy) by Lear or Lady Macbeth, comedy by Rosalind or Falstaff, music by Ariel or Ophelia, the arts by Wolsey or Cleopatra. But attempting to select the representatives of the various classes of society, spiritual as material, makes one sympathise with the Lord Chamberlain, so numerous are the heroes and heroines who have a just right to claim a mitance and protest against being left out.

But, like numerous living celebrities, they must yield to fate, and depend on the state of the funds subscribed. The statues might yield employment to various sculptors, though I should protest against bronze being used, for it so soon becomes black, and the mass of the public are incapable of discriminating between the merits of the sculptor and the faults of his material; and the defects lately discovered by you in the bronze of Sir Edwin Landseer's lions shows that under some circumstances bronze may not prove more durable than marble, and marble, from its cold hue and liability to weather-stains in London, is scarcely more suitable. The warm terra-cotta used at South Kensington seems to promise more advantages than any other material for our climate. To prevent the Arabs climbing over the figures the whole should be surrounded by water, and the drinking-bountains arranged accordingly. The square is most admirably placed for the purpose, being flanked about the centre of the dramatic and musical establishments, and also, or nearly, of the various museums, galleries of art, and resorts of literary and scientific men. I presume Mr. Grant would not object to this extension of his idea.

G. B. MOORE.

THE LATE OVERFLOW OF THE THAMES.

RAISING THE RIVER BANK AT ROTHERHITHE.

The Rotherhithe Vestry have taken action, with the view of preventing a recurrence of an overflow of the Thames, and the injurious consequences which the inundation caused. A special meeting was held last week for the purpose of considering what steps should be adopted to avoid the future flooding of the parish by any overflow from the river, and in anticipation of such possible overflow on the occasion of the expected high tide on the 18th instant. The subject was discussed at considerable length, and ultimately the Vestry decided, on the recommendation of the surveyor, to raise those places adjacent to the river, over which they have control, to the requisite height to prevent the river overflowing. It was further decided to proceed with the works immediately, so as to carry them out if possible before the 18th, and they are now actively in progress. The Vestry further resolved that a notice should be served upon the owners of property abutting on the river, calling upon them to second the efforts of the Vestry in their attempt to prevent a recurrence of the evils consequent on the recent high tide; and it was also decided to call the attention of the Metropolitan Board of Works to the damage done on the recent occasion, in consequence of the sewers not being relieved of the extra pressure of water, and requesting that board to take measures to remedy the evil before the 18th, when another high tide is anticipated.

THE POSITION OF THE INSTITUTE OF ARCHITECTS.

SIR.—The writer of a letter published under the above heading, in your number for the 28th of March, has made an excellent suggestion respecting a diploma,—one which, if members of the profession will come forward and support it, may probably lead to much higher and better results than simply raising some money to pay off a debt.

But he has fallen into an error which ought not to be allowed to pass unnoticed. He says, and says with truth, that the official work done by the Institute, ought to be paid for, as it now is. No one conversant with the working of the Institute, will deny that the demands upon an honorary secretary's time, had become so serious, that a paid secretary was a necessity. But instead of referring to this, the true reason, as the cause of the change which has been made, he brings forward the inefficiency of the honorary work done, as leading to the substitution of paid work, and says that the work of the council and the committees consists chiefly in "sanctioning whatever has been cut and dried beforehand by one or two who have looked into the matter." Now, what may be the mode of conducting business at Conduit-street at this moment I am not at all aware, but a singular change must have come over the management of the Institute within a very short number of years, if this statement at all approaches the truth.

I have sat upon a large number of the Institute committees, and upon the council, and I

have no hesitation in saying that the amount of useful work done by these bodies is immense, and that not only is valuable time cheerfully given, but that the best energies of able men are put forth to the full. No one who has had an opportunity of personally seeing in detail what was done in the planning, organisation, and accomplishment of the voluntary examinations; the architectural portions of the Exhibition of 1862, and the Paris Exhibition; the schedule of professional charges; the architectural conference; and the reports and papers on building contracts; not to mention the unobtrusive but constant work of the professional practice committee, the examiners of district surveyors, and the council itself, can be willing to sit still and see the value of the honorary services rendered to the profession by the many members of it who take part in the work of the Institute disparaged.

The work formerly performed by the honorary secretaries now, no doubt, divides itself naturally. The routine work, the correspondence, the attendance on committees and councils, and the editing the Transactions, are all efficiently and excellently done by the paid secretary; and that management and general direction, which are now far more than ever centred, devolve mainly on the president. The effect of the change has been to render the position of president more than ever important, and to throw more influence into his hands than he has ever had; and when men like Sir Gilbert Scott are willing to fill the office, no one need doubt that his share of the honorary work of the Institute will be discharged with ability and discretion.

A FORMER MEMBER OF COUNCIL.

SIR,—A feeling of disappointment has arisen within me, because in your issue of last week no one has followed up the letter in the preceding number (p. 275). If the angels fear to tread, I suppose some other kind of person must rush in. Perhaps all the angels are on the Finance Committee. I cannot help thinking the Fellows, almost to a man, would vote against any increase of subscription, except it could be shown that there is no other course open.

My own impression is that any increase would cause serious secession. What do we get as it is for our four guineas? Do we receive more benefit, for instance, than from the Society of Antiquaries, to which the subscription is only one half? I opine not; indeed, for valuable publications the latter society carries off the palm. It is true there are nearly 500 members, but less than 1,000 guineas is the result, while nearly the same sum is received by the Institute from its 275 Fellows, without reckoning that from Associates.

If the *conversations* must be held it could be defrayed by voluntary donations, which the president should head, and the council should follow suitably.

It is hardly possible otherwise to reduce the expenses; the work is well done and not too well-paid for, but the unsatisfactory tea and coffee might be advantageously omitted.

In comparing the Society of Antiquaries with the Institute, I am aware we must take into account the free quarters of the former; on the other hand, it meets every week, and with tea which can be taken with some gratification.

The *Archæologia* is vastly superior as a publication to the Institute *Journal*, and the octavo "Proceedings" contains as much matter as our quarto.

Again, the Antiquaries have a sum invested, but it never ventures on a *conversation* at the cost of the society. When some benevolent individual, such as the Baroness Comte, generously places reception-rooms and refreshments at the disposal of the society, then, and then only, is such an entertainment given. In its early days the Institute wisely did the same. On the whole, the Society of Antiquaries bears comparison favourably with the Institute, and if the step be taken of increasing the fees, it will be long ere the Institute recovers from the consequent shock. Why not try the other tack, and by reducing the fees gain more members? The many cannot afford even the present rate of subscription.

I have frequently heard Associates explain that the fees are too onerous to permit them to change their status. If the subscription were reduced simultaneously with the addition of a by-law compelling qualified Associates to become Fellows, there is little doubt of its being popular and successful.

ANOTHER FELLOW.

THE METROPOLITAN RAILWAY EXTENSION WORKS AND MOORFIELDS ROMAN CATHOLIC CHURCH.

It appears that the fabric of St. Mary's Roman Catholic Church, Moorfields, has been placed in a dangerous position by the works of the Metropolitan Railway between Moorgate-street and Liverpool-street now in progress. The railway, after traversing under Finsbury-circus, passes almost immediately under Moorfields Church, and it is stated that the building has suffered seriously by the undermining of the subjacent soil. The consequence is that for the present the church has been closed, as it is considered unsafe to continue the services, and it is said that the clergy of Moorfields contemplate the erection of an iron church for the temporary accommodation of the congregation.

THE WALKER ART GALLERY, LIVERPOOL.

The plans for the Walker Art Gallery have been approved of by the council. The site is on the space of ground to the east of the Free Library; and the building has been so designed as to present its principal front to William Brown-street, extending from Mill-lane at the end of Islington Flagg on the east, to within 100 feet of the library. In designing the building, the architects have adopted the Corinthian order of Grecian architecture. In the centre of the principal front to William Brown-street, there is a portico consisting of four fluted columns with carved capitals, above which there is a pediment and attic, crowned by a figure representing the arts; upon each side of the portico are two blocks, with groups of statues below, and panels carved in bas-relief above; to the right and left the facade extends 70 ft., making with the central portion a frontage of 180 ft. to William Brown-street. The building, being seen along the whole length of Lime-street, will form a conspicuous object. The elevation of each of the wings at the right and left of the portico consists of four large windows upon the ground floor, with a continuous frieze and cornice above them, the frieze over the windows being ornamented with a fret enrichment; above these openings are long panels running nearly the entire length of the wings, and containing bas-reliefs. The whole of this portion of the facade is surmounted by a medallion cornice and open balustrade, the total height being about 50 ft. The extreme ends of the front are finished with coupled pilasters, having Corinthian capitals and bases, standing upon a plinth continued up to the portico upon each side. The building is approached from William Brown-street by a flight of twelve steps. The whole of the ground floor is appropriated to sculpture and museum purposes, lighted by windows at the sides, and consists of two large galleries, 70 ft. long by 30 ft. wide, and two galleries 46 ft. long by 35 ft. wide. Upon this floor retiring-rooms and other suitable apartments have been provided. The main staircase leads to a large upper hall, lighted from above, intended to be used as a picture-gallery; out of which opens two miniature rooms and six galleries of the same dimensions as the sculpture-galleries beneath, but being more lofty and having their light entirely from above. The architects are Mr. Sherlock and Mr. Vale.

SCHOOL BOARD SCHOOLS.

Tipton.—The foundation-stone of the first School Board school to be erected by the Tipton Board has been laid by the chairman, who explained that although the Board School was to cost 8,000*l.* or more, the payment of the debt was to extend over fifty years, so that $\frac{1}{2}$ d. in the pound would pay the debt and interest. These schools are being erected on a site leading out of the New-road, Great Bridge, the land having a double frontage to intended new streets. The total area of the land consists of 4,500 square yards, the accommodation being for 194 infants, 194 girls, and 194 boys, making a total of 582, thus allowing 8 superficial feet to each child. The school-rooms are each 60 ft. by 20 ft., each one having a class-room 19 ft. 6 in. by 18 ft. For each class of children there will be provided a lavatory. The play-grounds are intended to be walled in, and the necessary out buildings will be of a convenient character. The roofs will be open and the timber will be

exposed, being stained and varnished. The interior walls will be lined with white-glazed brick dados, 4 ft. high, finishing with a margin of encaustic tiles. The style is simple Gothic. The exterior will be of red brick with blue and white brick dressings, and strengthened with buttresses; the lobby to the girls' school will terminate with a spiret 60 ft. high. The whole of the stone-work to the sills, heads, buttresses, coping, &c., will be Hollington, and the roof will be slated with blue Bangor and sea-green Penmoyne slates, in bands alternately. The buildings will be well lighted and ventilated. The architects are Messrs. Charles Round (surveyor to the Board) and Henry Beddoe, Tipton; and the builders are Messrs. David Stockton & Son, of Oldbury, the amount of their contract being 3,116*l.*, exclusive of fittings.

Bradford.—At a largely-attended meeting of the inhabitants of Daisy-hill and the neighbourhood, held to consider the desirability of petitioning the Bradford School Board to grant a school for the district, it has been resolved unanimously: "That in the opinion of this meeting a Board-school is urgently required for the district of Daisy-hill, and that a requisition, signed by the chairman of the meeting, should be presented to the School Board at their next meeting, urging them to take immediate steps to supply the deficiency." A deputation was appointed to wait upon the Board and present the petition.

Newcastle.—At a meeting of the members of the Local School Board the chairman presented a report from the Eastern District Committee, stating that they had had before them an application from Mr. Shotton, the contractor, for the school at St. Peter's, asking the Board to add to his accepted tender (10,354*l.* 12*s.* 9*d.*) such a sum as would cover the estimated increase in wages since his tender was submitted. Mr. Shotton would be satisfied with 400*l.* more. Taking the altered circumstances into consideration, the committee recommended the Board to accept the amended tender, more especially as the contractor was willing to forego the proposed increase should prices fall to that extent during the continuance of the contract. The architect (added the report) considered the demand a reasonable one. The Board declined to grant the additional 400*l.* Mr. Shotton attended the Board, and said that, if they would allow him two years instead of eighteen months for the completion of the work, and give him 90 per cent. on the architect's certificates instead of 85, he would abide by his original estimate. The Board agreed to give the 90 per cent., and to extend the time for the completion of the schools to the end of 1875; and also to take into consideration any reasonable cause of delay.

SCHOOL BUILDING NEWS.

Knutton, Newcastle.—The new school building in connexion with the church at Knutton, which has been erected at a cost of about 1,600*l.*, raised by private subscriptions, was opened on Monday afternoon. The schoolrooms and classrooms will accommodate about 200 boys and girls. The new church and school accommodation when completed will have involved an expenditure of 12,000*l.* and upwards, contributed to a great extent by the liberality of Mr. Sneyd and a few other generous subscribers.

Chelsea.—School and class rooms for 250 boys and girls have been completed and opened, behind St. Jude's Church, in Turk's-row, Upper Chelsea. Additional space was obtained by building the new walls upon the old ones, previously strengthening the latter for this purpose, by introducing brick piers, in cement, every 15 ft. along the inside of each side wall. The old roof was then raised intact by means of a dozen screw-jacks placed beneath the four main trusses, and a couple of extra ones introduced, temporarily, at each gable-end. The operation was performed without the displacement of a single slate, or the smallest injury to the plastering beneath the rafters. The partition that originally divided the ground floor into two school-rooms for boys and girls, 29 ft. 3 in. by 27 ft. 9 in. respectively, has been removed, forming one large infants' school-room, 53 ft. 9 in. by 27 ft. 9 in., while the old class-room adjoining forms a babies' room, 27 ft. 9 in. by 14 ft. 6 in. The new upper floor, which is supported by wrought-iron girders above a single row of cast-iron columns, consists of two school-rooms, 29 ft. 6 in. by 27 ft. 9 in. each, for boys and girls respectively; a class-room for each, 14 ft. 3 in. by 13 ft. 8 in., being placed between them.

The height of this floor, which is open to the ridge, is about 18 ft. in the centre, and 11 ft. at the sides, while that of the ground floor is 14 ft. Penfold's warm air and ventilating grates are fixed in all the school-rooms. The gas-lighting is arranged to form circles round the iron columns in the infants' school-room (which will be used for parochial meetings). Two galleries have been fixed in the infants' school, and another in the babies' room, while reversible desks have been supplied for the upstairs rooms. The cost per head for the original contract-work came to something less than 3*l.* 4*s.* Entrance gateways, tar paving, and drains for playground, some additional fittings for the schools, and a few other matters have raised it to about 4*l.* 4*s.* The works have been carried out by Mr. John High; Mr. E. H. Lingen Barker being the architect.

Charminster, Dorset.—New schools have been erected for the parish of Charminster, situate about two miles from the county town of Dorchester; they consist of a school-room proper, 40 ft. by 18 ft.; infant school, 80 ft. by 18 ft.; class-room, 18 ft. by 18 ft., with separate lobbies and approaches. The teachers' residence, at one end of the block, consists of parlor, kitchen, four bed-rooms, and the usual offices. The desks and forms are of stained deal. The dry-earth system being adopted for the closets, the mixed system will be used. The schools will accommodate 180 children. The whole of the buildings, as also the boundary walls, are built in concrete, cemented and marked out in courses. Mr. Henry Barnes, of Dorchester, was the architect, and the schools were built by Mr. Miles, of Charminster, at a cost of about 900*l.*

Sheffield.—The foundation stone of new Wesleyan Schools has been laid near the chapel at Attercliffe. The building, which will be constructed of plain brick, will consist of two stories, and be 66 ft. long by 33 ft. wide. The lower and upper schoolrooms will accommodate 600 scholars. Mr. George Wright Wilson is the architect. It is estimated that the schools will cost 1,000*l.*

St. Alban's, Holborn.—On Wednesday the new Parochial Schools in connexion with St. Alban's, Holborn, were opened. The perpetual curate in charge, the Rev. A. H. Mackenzie, offered a site in Baldwin's-gardens, within a stone's throw of the church, worth about 2,000*l.*; and the amount required for the building, 4,500*l.*, was soon raised by voluntary subscriptions, aided by grants from the Government, the Bishop of London's Fund, and the National Society. The building has been erected in red brick by Messrs. Cubitt & Co., from designs by Messrs. Milham and Kennedy. The ground floor is devoted to the boys, the principal room, a lofty and spacious apartment, 57 ft. by 18 ft., and 14 ft. high, lighted by eight large windows, and calculated to hold 120 pupils, and a smaller one adjoining, 40 ft. The floor above will receive about the same number of girls. Underneath is a large covered playground.

A STRONG PIPE.

For the supply of Virginia City and Gold Hill, in Nevada, with water, it has been conducted across a valley over 1,800 ft. deep, and seven miles wide. Mr. Herman Schussler was engineer. An American paper gives some particulars:—

All the iron pipes used are coated, inside and out, with a mixture of asphaltum and coal-tar, thoroughly boiled together, each separate piece being plunged and rolled about in a bath of this mixture for seven to ten minutes before being shipped to its destination. The average diameter of the pipe is 11½ in., and its entire weight about 700 tons. Nearly one million rivets were used to manufacture it, and some 35 tons of lead were required in making the joints. At the point of heaviest pressure the iron is hot-riveted with one-eighth-inch rivets, there being a double row on the straight seam and a single row on the round seam. The pressure gradually decreases as the ground rises to the east and west, and the iron decreases in thickness from five-sixteenths to one-sixteenth of an inch towards both inlet and outlet. The inlet has a perpendicular elevation above the outlet of 465 ft., but just now only 300 ft. is used, as this head will supply ten times as much as the two towns have heretofore had. This head carries into Virginia about 2,000,000 gallons every twenty-four hours, and by increasing the

head to its fullest capacity, the supply can be increased to 2,350,000 gallons per day. When the water is running with its present supply, as used at Virginia city, it has a pressure of 1,720 ft. perpendicular, or 750 lb. to the square inch. But, while the extra tests were being applied, the pressure was brought as high as 800 lb. to the square inch, without injuring the pipe in the least.

EXETER.

IMPROVEMENTS and additions have been completed in connexion with the Victoria Hall, providing a second room for meetings, and subsidiary apartments for the convenience of large gatherings. The new portion of the building is in character with the rest of the premises, and in the Early Geometrical Gothic style of architecture, and the front elevation on the ground floor is an arcade of five arches, having limestone piers and bases from the Chudleigh Quarries, with carved Bath-stone caps and impostas, and limestone and Bath-stone vousoirs. Above the cornice, surmounting the arcade, is a large three-light window, with pointed heads, lighting the new hall. This window has Bath-stone columns, with carved heads and impostas. A traceried ventilated opening fills the gable over this window. The north-eastern corner is built in the form of a tower, having a steep slated roof, the eaves of which are carried on terra-cotta blocks. The walling is of Westleigh limestone. The internal arrangements of this block consist of a portico, running the whole length of the front, giving a ready means of access for carriage-givers; a vestibule with pay-place, and staircase to new hall; a spacious corridor leading to the large hall, and to a second staircase, that gives access to the new hall on the upper floor. Two large waiting-rooms occupy the rest of the ground floor. On the upper floor is the new hall, which will accommodate about 400 people, and has ante-rooms attached. In the basement a kitchen is provided, with ranges and large boilers for the convenience of tea and dinner parties. The present additions have been carried out from the designs of Mr. J. Chudleigh, architect, of Exeter. The stone carving is by Mr. Harry Hems; Messrs. Skinner & Gibbard are the general contractors; and Mr. R. Mitchell executed the soft stone work.

THE DRAINAGE WORKS OF READING.

THESE works, as far as the main drainage of the town are concerned, are almost completed. The works at the Sewage Farm will be considerable. The total cost of the sewerage works nearly completed has been about 80,000*l.* The works have been carried out by Messrs. Vickers & Crane, and other contractors engaged, and the work of "testing" the drains has been conducted under the direction of the clerk of the works, Mr. Donaldson. In a few instances leakage was discovered, and in the Queen's-road, where most of the brickwork is under water, some difficulty has been experienced. All the leakages, however, are said to have been stopped, and the whole system of drainage to be in thorough working order. In making the foundations at the pumping-station, it was found necessary, owing to a large quantity of water, which interfered with the works, to employ steam-pumps day and night, and the original contract has, thereby, been very much exceeded. The estimate for this portion of the scheme was 8,500*l.*, but the final bill amounts to 10,516*l.* Expensive dams have had to be made, and the work has been conducted in face of great obstacles. We understand that the whole of the work has been done under scheduled prices, and that, although the original estimate has been very considerably exceeded, there has been value received.

Opposition to the Inner Circle and East End Underground Railway.—It is already manifest that the promoters of the Inner Circle and East End Underground Railway will meet with several opponents when their Bill comes before Parliament. Although the Metropolitan Board of Works is giving a general support to the Bill as well as the Corporation, the latter declines to contribute anything towards the formation of the proposed new street, contending that if the Metropolitan Board contribute anything to the formation of the street the citizens will be paying as much as can be expected of them, by their eighth contribution to the general taxation.

OPEN SPACES AND HEALTHFUL LIFE.

LONDON, as opportunity offers, is compared to Babylon of old, and though so very unlike it in most ways, is like it in some, e.g., in extent. Babylon, says the guide-book, "approaches the miraculous" in extent. It was on plan a regular square, and was sixty miles in circuit—fifteen miles across from one gate to its opposite. Each of its streets was straight, and stretched from one wall to the other; these walls being no less, so Herodotus tells, than 300 feet in height. Not much like to London, most surely; but it is easy to find one or two things in which the modern and the old Babylon do come together. It is no less than thirteen miles by street-way from one end of this gigantic metropolis to the other, from west to east, according to the authoritative Post-office map. Thirteen long and, to not a few, wearisome miles must be passed over to get from one side of London to the other, and with but an occasional and far enough between green spot to interrupt the monotony of the plain, modern house-building. Houses all the way on both sides of you. Here and there may be a little architecture, but for the most part it is all mere house building, and nothing else. From Hammersmith to Poplar, for there is nothing to separate them, you cannot tell where any "town," as it once was, either begins or ends. It is now all London, and nothing else but London—one great wilderness of bricks and mortar, and glass. It is a mighty long walk, indeed, and there are but few, perhaps, even of old Londoners, who have ever walked right fairly across their own city. It is worth the following, if even but on a map. It is worth while, too, by the way, to compare the Post-office map of to-day with the curious map published in the reign of Queen Elizabeth, now in the Guildhall Library, and of which a *fac-simile* has just been published. It was the handiwork, at the time when maps were scarce, of one Ralph Agas. Thanks to him for it. But our more immediate and present purpose is not so much London, as the *lungs* of London, or those green spots in it which hold a little sweet-smelling fresh air; and it is striking to note, when looking at a coloured map, how small are the spaces, dotted about here and there, occupied by these lungs, in the wide expanse of the great brickfield. It is just four miles in a straight line from the Regent's Park to the Victoria Park; and between these "lungs" there is but a little speck, here and there, of green and open space. It is nearly four miles from Battersea Park, on the Surrey side of the water, to the open market-gardens, which are fast building over, at Peckham—as much London, by the way, as is Charing-cross. All the space between and around, with a two miles radius, hardly contains a spot of green open space. Lock's Fields, of evil memory, is one. It is a vast network of mere building; architecture, in any sense, having hardly a place in it! It is unknown country—a blank desert—to most mortals living in more favoured localities. What interest there is in it beyond its mere extent, and its number of street turnings, it would be a puzzle to say. Some of the new streets hereabouts are marvels of cheapness and uniformity, and thinness of building; and it does seem a pity that so much of new building all round London should be going on without provision being made for more grass-covered open squares, if not parks, to break the dull uniformity of the way, to get a little healthy colour now and then, and to inhale a breath of fresh air.

It must be noted that London, from north to south, is about eight miles across, say from Clapham Common to Finsbury Park. It is all street-way. Unlike the old Babylon, which was more than half planted and cultivated ground, with gardens and trees the modern Babylon is to be noted for the absence of these. The present parks, though they seem large, are but small spaces in the midst of so huge an oval of streets and houses. Hyde Park, the largest of them, is but a mile and a quarter long, including Kensington Gardens, by some three-quarters of a mile wide: good enough in itself, and it is fortunate that it has been permitted to exist as an open green and tree-planted space. One of the problems of the future of London will doubtless be, how, and in what best way, to add to Hyde Park other open spaces, as large as it is, in other places, and, to perhaps, connect them together in some way. And this might really be done, for the parks that already exist do form in the map a sort of irregular oval, with Finsbury Park to the north, Clapham Common or Park to the south, Hyde Park to the west, and

Victoria Park to the east, forming together a broken ring of open green space.

It is to be observed that the position of the parks round London accident has, to a great extent, regulated, and not design. Still is there a regularity in their disposal which makes it a pity not to complete the circle, or oval, of "lungs" in some way. It might be done, for the ground is but sparsely occupied,—in some spots not at all; and by a judicious selection of points, a really fine oval of green-covered ground would encircle London, and draw round it a new highway. And it here may occur to many who feel a little interest in the "improvement" of the metropolis, that these separated park openings might, with advantage, be joined directly together by tree-planted highways, as in some of the Continental towns—not quite so large as London. It has often occurred to us that a wide street or highway, with double rows of trees on each side of it, might be with infinite advantage formed from the Regent's Park to Hyde Park, thus making them one. These parks are about three-quarters of a mile apart in a direct line, and it would be difficult to imagine a more attractive "highway," or one more in the heart of things, or more "fashionable," than that which could thus be formed between these two grass-covered and open spaces. The lungs of London should have connecting arteries. A tree-planted street, with shops, not without them. It is told us sometimes that one of the problems of the future will and must be the rebuilding, on some great and architectural scale, of our "hideous metropolis," for this is the term used; and it is a certain fact that there is in modern London no one street that can be pointed to as really worthy of the first place in so gigantic and wealth-abounding a city. No one, we may suppose, would for a moment entertain the idea of building over the present open parks, but to connect them by worthy and magnificent thoroughfares would surely afford a guiding idea. Could but such a plan be commenced, it must needs help towards many new things, and might indicate the way to very many more.

There is one other point in this inquiry well worth note. It is this: how far, and how best to cultivate park ground; and, what is more, where to stop, and where to allow Nature a little latitude of expression. All our parks, Kensington-gardens included, are artificial; too much so, some may perhaps think. Nothing is allowed any wildness of growth. Not a bit of furze even grows, nor a wild flower, and in spite of all horticulture, good as it may be, and, in its way, there is always an artificiality about the growth of things under it, which makes them hardly distinguishable at times from *bona-fide* artificial flowers and leaves themselves. Wild flowers and weeds—beautiful things by the way, if looked at long enough—cannot be cultivated without their charm leaving them, their wildness of growth disappears, and that natural and unstudied freedom and grace which unshackled Nature alone gives, or can give. Grass as it grows, and wild flowers, are the natural and spontaneous productions of Nature, and spring up most marvellously everywhere, from pole to pole, in heat and cold, and in the most unpromising of soils, and the very brightest and most vivid of greens, and the most springlike, is even now to be seen every here and there even in London, on waste bits of grounds, out of the midst of brick rubbish, and the debris of fallen and ruined houses. Whatever, therefore, may be the advantages of the well-disposed and orderly laid-out grounds and flower-beds, and however charming such may be and are, still we would contend, here and there, for a spot or two of earth whereon Nature shall do her own work in her own lovely way, and without help or hindrance, and where the very "waywardness" of nature may find room to work in. Trees, too, as commonly seen in a well-kept park, are very different objects indeed from trees as they are found to grow in forests, left to themselves and to nature. Indeed, a naturally-growing tree and a park or town-made tree are quite different things, and show how vast the influence is of man's care and culture. It was an acute remark of Humboldt, that no true idea of the magnificent nature of tropical vegetation, of which he had seen so much, could be formed by the specimens of it, to be found in hot-houses and conservatories. To see it, he says, we must travel far, and penetrate into Nature's strongholds, and to where she holds sovereign sway. And of this there can be no doubt, and it applies to north latitude vegetation

as well as to that under the sun. Would it not, therefore, be a something desirable to have a future park,—say one in the bend of the river at Fulham, a right capital spot for one,—to nature a little. Let the trees grow without continual cropping and cutting, till nothing hardly, as on the Thames Embankment, is left but upright sticks, and a mop-head of leaves at the top of it. Let the wild flowers and furze grow a little at will; and grass and dock-leaves, may be; and things of "Architectural" import. How many the advantages here, which hardly need the indicating; and how very many more, which perhaps might startle the poor Londoner! A square mile or two of rough ground, with Dame Nature as sole gardener, close to London town, is a thing worth the trying after!

SOCIETY OF BRITISH ARTISTS.

"The language of inglorious days
Not equally oppressive is to all;
Him who ne'er listen'd to the voice of praise
The silence of neglect can ne'er appal."

Luck is a word not to be found in the dictionary of the prosperous; they ignore it. To them, success is but the equivalent of labour: "You are wrong, sir, you are wicked to arrogate a right to spell Providence in four letters: have you no sense of righteousness—no belief in the real result of earnest effort?" "Indeed," says poor Fawcett, "indeed I would not be blind if I could but see as you see." "Heaven knows me to be grateful for all the sense I have, but my knowledge is too much confined to effort, and too little extended by effort."

It is very well for you, Mould, Weldit, & Mould, and very comforting to you, Grind, Peccant, & Cave, that chance can be thought divine. Go and catch sun's rays in your hat, O Fawcett, and try to keep them alight all night.

"Of chance or change, oh! let not man complain,
Else shall he never cease to wail."

Art, empire, earth itself, to change are doom'd."

O Shade of Penelope! was ever patience more taxed than now; was ever chance of change more desirable than now?

It is the fifty-first annual exhibition of the works produced by the "Society of British Artists," sonorous amplification of an early untruth, and a wrong is perpetrated in each show the age carries of such big pretence. Messrs. Baxter, Clint, and Woolmer give but the flicker of the expiring light that once showed the possible way to better establishment of a "Society of British Artists." The right of such special denomination no longer exists, for there are so many associations now to compete for its title.

A thousand and fifteen frames hold all—but the sculpture, which is not of much account—that represents this claim in strong words of assumed dignity, and the most that can be said of it amounts to this, the Society of British Artists puts forth nothing this year likely to be so long remembered as the Tichborne trial, nothing so startling or shocking as the burning of the Pantechnicon, and nothing that would compare, as audacious experiment, with the cool claim for rent there of hot—very hot—ashes.

THE GLOBE THEATRE.

EARLY HISTORY OF THE STAGE.

THE renown of the Globe theatre is not merely due to its importance in the history of the stage, but chiefly to its intimate association with Shakspeare, which renders it an object of the liveliest interest to the whole civilised world. The name alone calls up to memory the poet's lines—

"All the world's a stage,
And all the men and women merely players,"

which were suggested by the motto of the theatre. The sign of the house was a figure of Hercules supporting the globe, under which was written:—"Totus Mundus agit Histrionem."

The hexagonal building with many windows in its walls, and little turrets issuing from its summit, so familiar to us in engravings, was not the theatre in which Shakspeare acted. The original Globe was burnt in 1613, and the only view of it in existence is one which Mr. J. O. Philipps (late Halliwell) has lately discovered.

In 1575 the players were expelled from the limits of the City by the Lord Mayor and aldermen, who shortly after had the mortification of seeing a theatre erected at Blackfriars under their very noses, but beyond their jurisdiction. This

was what was called a private theatre, and roofed over; the Globe was a public theatre, and open to the sky. It is usually supposed that the Globe was built about the year 1594, but Mr. Phillips sets the date five years later, in 1599, and his view is corroborated by Allein's proceedings in the Star Chamber against the Burbages for breach of contract in the matter of the Theatre at Shoreditch. Allein, the ground landlord, complained to the Privy Council that the rent was partly unpaid, and that Cuthbert Burbage had, on December 28th, 1598, "carried the wood to the Bankside, and there erected a new playhouse with the said wood." Allein's bill was referred to Francis Bacon, who decided that, being uncertain and insufficient, it required no answer. The Globe theatre was situated on the Bankside, at Southwark. Malone says *de Maid-lane*, but an official document of 1634, describes it as *near Maid-lane*. Chalmers writes, "I maintain that the Globe was situated on the bank, within eighty paces of the river, which has since receded from its former limits; that the Globe stood on the site of John Whatley's windmill, as I was assured by an intelligent manager of Barclay's brewhouse, which covers in its ample range part of Globe-alley."

The old Globe must have been a very artificial building, although when it was first erected it was the largest and best of the theatres. Shakespeare himself describes it in the prologue to his "Henry V.":—

"But pardon, gentles all,
The flat unraised spirits that have dared
On this unworthy scaffold to bring forth
So great an object: on this cockpit hold
The vasty fields of France? or may we cram
Within this wooden O the very casques
That did affright the air at Agincourt?
Oh, pardon! since a crooked figure may
Attest in little place a million;
And let us, signers to this great account,
On your imaginary forces work.
Suppose, within the girdle of these walls
Are now confined two mighty monarchies,
Whose high upreared and abutting fronts
The perilous narrow ocean parts asunder.
Piece out our imperfections with your thoughts:
Into a thousand parts divide one man,
And make imaginary puissance:
Think, when we talk of horses, that you see them
Printing their proud hoofs 'the receiving earth.'"

The interest of this passage is greatly increased if we suppose the theatre to have been built in 1599, for that is probably the year in which this play was written, and therefore these lines contain the first reference to the new building. This house had but a short life, for on the 29th of June 1613, it was burnt down. During the performance of "Henry VIII." or of a play called "All is True," relating to Henry VIII., a small cannon was discharged so carelessly that some of the wadding fired the thatch, and the wind being high at the time, the whole building was shortly consumed. Fortunately no one was hurt, although the audience was large:—

"Out run the knights, out run the lords,
And there was great ado,
Some lost their hats, some lost their swords,
Then out ran Burbage too:
The reproaches, though drunk on Monday,
Pray'd for the fool, and Henry Condy.
Oh! sorrow, pitiful sorrow, and yet
All this is true."

The householders of the Globe obtained a new lease, and without any delay rebuilt the theatre in a more substantial manner, at a cost of 1,400*l*. Taylor, the water-poet, writes of the new building:—

"As gold is better that's in fire tried,
So is the Bankside Globe that late was burn'd,
For where before it had a thatched hide,
Now a stately Theatre 'tis turn'd,
Which is an emblem that great things are won,
By those that dare through greatest dangers run."

Ben Jonson calls the Globe "the Glory of the Bank, and the Port of the whole Parish." In a list of tenements situated in the Liberty of the Clink, drawn up on the 27th of February, 1634, in obedience to an order from the Earl of Arundel and Inigo Jones, of the 5th of the same month, among the churchwardens' accounts of St. Saviour's, Southwark, Mr. Peter Cunningham found the following passage:—"The Globe Playhouse, near Maide Lane, built by the Company of Players, wth timber, about 20 yeeres past, upon an old foundation, worth 20⁰ p^{er} ann, being the inheritance of Sir Matthew Brand, Kn^t."

The discovery of some valuable documents of the following year (1635) has recently rewarded the research of Mr. J. O. Phillips, who has been for many years seeking for every scrap of in-

* Ballad "On the Pitiful Burning of the Globe Play-House."

formation that might throw some light upon Shakespeare's life, and also upon the history of the stage. About four years ago he found at the Lord Chamberlain's office a small thin folio manuscript volume bearing the title of "Presentations and Warrants in the Years 1631, 1632, &c.," containing a list of shareholders in the Blackfriars and Globe Theatres. These papers consist of petitions and counter-petitions addressed by the proprietors of, and actors at, these theatres, to Philip, Earl of Pembroke and Montgomery, the Lord Chamberlain of the time, with memoranda by his Lordship. They are all of great interest in the history of the stage; and although they do not add much to our knowledge of Shakespeare, they do add something. Every scrap of information relating to our great poet is to be received with thankfulness, and we are grateful to Mr. Phillips for printing a few copies of these documents, and to Mr. Furnivall, the director of the "New Shakespeare Society," who induced Mr. Phillips to print them at once. The facts to be obtained from these papers are, that in the year 1635, when the lease of the Globe Theatre was about to be extended, three of the actors, viz., Robert Benefield, Heliard Swanton, and Thomas Polard, appealed to the Lord Chamberlain to order a compulsory sale to them, at a reasonable rate, of three shares out of the total sixteen in the Globe, and one out of eight shares in the Blackfriars, held by other actors and non-actors. The petitioners pointed out that previously two actors, viz., Taylor and Lowen, had been allowed to purchase four shares in the Globe. The Lord Chamberlain granted the petition of the three actors; but his order was not at once obeyed, and, in consequence, the actors sent in a second petition. At this time the shares in the two theatres were held as follows:—

<i>The Globe:</i>	
Cuthbert Burbage, the eldest son of John Burbage, joiner, the builder of <i>The Theatre</i> at Shoreditch.....	3
Winifred Robinson, widow of Richard Burbage, the great actor, and wife of Robinson.....	3
Mrs. Condall, widow of one of the two editors of the first folio edition of Shakespeare's plays.....	2
Shanks, who purchased (surreptitiously as the three petitioning actors state) the three shares of Hemings, the other editor of the first folio.....	3
Joseph Taylor, who acted <i>Hamlet</i> when R. Burbage had grown too big for the part, and who was taught some of the points by Shakespeare himself.....	2
John Lowen, the original <i>Henry VIII.</i> , and one of the first <i>Falstaffs</i>	2
	16

The eight shares in the Blackfriars Theatre were apportioned as follows:—Shanks, 2; Burbage, 1; Robinson, 1; Taylor, 1; Lowen, 1; Condall, 1; Underwood, 1.

The counter petitions are from Shanks and from the Burbages. Shanks is loath to part with any of his shares, and pleads very hard to be allowed to keep them. He states that he gave William Hemings, of Christ Church, 35*0*l. for his father's shares. The Burbages entreat to be allowed to sell one only of their shares; and as their petition is by far the most important document of the whole, we will quote it here in its entirety:—

"To ye Right Honble Philip, Earle of Pembroke and Montgomery, Lord Chamberlaine of his Maiesties Household.

Right Honble and our singular good Lord. Wee, your humble supplantes Cuthbert Burbage & Winifred his Brothers wife, and Wm his sonne, doe tender to your honble consideration, for what respectes & good reasons we ought not, in all charity to be disabled of our liuelyhoods by men use some short y^e, since it by farre more antiquity and desert then these can iustly attribute to their selues. And first humbly shewing to your honor the infinite charges, the manifold law suites, the lease expiration, by the restraints in sickness times & other accidents that did cutt from them the best part of the gaires that your honor is informed they have receaved. The father of vs, Cuthbert & Richard Burbage, was the first builder of Play-houses, and was him self, in his younger yeeres, a Player. The Theater hee built with many hundred poundes taken up at interest. The players that lived in those first times had only the profits arising from the dores; but now the players receive all the commings in at the dores to them selues and halfe the Galleries from the Housekeepers. Hee built this house upon leased ground, by which means the Landlord and Hee had a great suite in Law & by his death the like troubles fell on vs, his sonnet; we then bebught vs of altering from thence & at like expence built the Globe, with more summes of money taken up at interest, which lay heavy on vs many yeeres; and to our selues we joynd these decre-

ing men, SHAKESPEARE, Hemings, Condall, Philips, and others, partakers of the profits of the theatrical House; but making the Leases for 21 yeeres hath been the destruction of our selues and others; for they dying at the expiration of 3 or 4 yeeres of tender Leases, the subscribers resolved to sue to strangers, as by marrying with their widowes, and the like by their children.

Thus, Right Honourable, as concerning the Globe where our selues are but Lessees. Now, for the Blackfriars, that is our inheritance; our father purchased it at extreme rates, and made it into a playhouse with great charge and trouble; what after was leased out to one Evans, that first sett up the Boyes commonly called the Queenes Maiesties Children of the Chappell. In proceesse of time, the boyes growing up to bee men, which the King's service, & the more to strengthen the service, the boyes daily wearing out, it was considered that house would bee as fit for our selues, and soe purchased the lease remaining from Evans with our money & placed some Players, which were Hemings, Condall, Shakspeare, &c. And Richard Burbage, who for 35 yeeres pained, costed labour, made money to leave to his wife and children some estate (& out of wh^{ch} estate soe many of other Players and their families have bene maintained) these new men, that were neuer bred from children in the King's service, would take away, with othes & menaces, that wee shall bee forced, & that they will not thank vs for it; soe that it seemes they would not pay vs for what we should have, or wee can spare, which, more to satisfie your honour, then their threatening pride, wee are for our selues willing to part with a part betwixt wee, they paying according as ever hath bene our custome, and ye number of yeeres the lease is made for.

Then, to show your Honour against these sayings, that wee eat the fruit of their Labours, wee redurre it to you, as we may sately maintaine, for it appeareth by their owne accounts for one whole yeere last past, beginning from Winton Munday 1635, to Winton Munday, 1636, each of these complaining actors gained severally, as hee was a Player, and noe Housekeeper, 150⁰. Besides Mr. Swanton hath receaved from the Blackfriars this yeere, as hee is there a Housekeeper, about 30⁰, all which, being accompted together, may very well keep him from starving. Wherefore your honours most humble supplantes intreats they may not further bee troubled upon their estates as hee have, seeing how deely it hath bene purchased by the infinite costs and paynes of the family of the Burbages, and the great desert of Richard Burbage, the first builder of playing, that his wife should not sterue in her old age; submitting our selues to part with one part to them for valuable consideration; and lett them seeke further satisfaction else where (that is) of the theate, and assignes of Mr. Hemings and Mr. Condall, who had their of the blackfriers of vs for nothing; it is only we that suffer continually.

Therefore, humbly relying upon your honourable charity in discussing their clamour against vs, wee shall, as we are in duty bound, still pray for the dayly increase of your honour's health and happiness."

The most important facts to be drawn from this very interesting paper are:—

1. That although Shakespeare was not actually a proprietor of the Globe Theatre, yet he, "Hemings, Condall, Philips, and others" were "partners in y^e profits of that they call the House," which profits are explained elsewhere to be a moiety of the receipts from the gallery and boxes, and of the money taken at the string-room door. The remaining portion, and the money received at the pit door, was divided among the actors generally. We cannot for certain say whether Shakespeare was an actual shareholder or not; if he were, we have no record of his shares; for the complaining actors neither mention Shakespeare nor Philips in their petition. They say that formerly the Globe was "divided into sixteen partes, whereof Mr. Cuthbert Burbidge and his sisters had eight, Mrs. Condall four, and Mr. Hemings four," adding "Mr. Taylor and Mr. Lowen were long since admitted to purchase 4 partes betwixt them from the rest, viz., 1 part from Mr. Hemings, 2 partes from Mrs. Condall, and halfe a part apiece from Mr. Burbidge and his sister," and "the three partes remaining to Mr. Hemings were afterwards, by Mr. Shakspeare, surreptitiously purchased from him."

2. That Shakespeare did not commence to act at the Blackfriars Theatre until a later period than is usually supposed. Although no dates are given, the Burbages expressly state that they did not purchase the lease of the Blackfriars from Evans, and act there, until "The Boyes commonly called the Queenes Maiesties Children of the Chappell" were grown up, which must have been several years after the seventeenth century had commenced. Shakespeare was most probably a partner in the profits of the house at the Blackfriars as he was at the Globe, but it is not so stated in this petition.

This paper is also of value as giving an authoritative account of the connexion of the Burbages with the early history of the theatres of London; and for the statement contained in it of the receipts of one of the actors. Swanton is said to have received in the year 1634-35, 150*l*. as actor at the Globe, and 30*l*. as housekeeper at the Blackfriars, making together 180*l*., the present value of which amount would be over 1,000*l*. The three complaining actors give a very different version of the affair to that given by the Burbages and Shanks. They put the

working expenses at "900 or 1,000 *li.*, or thereabouts, per annum, being 3 *li.* a day, one day with another, besides the extraordinary charge which the said actors are wholly at for apparel and poets, &c.; whereas the said housekeepers out of all their gains have not till our Lady Day last paid above 65 *li.* per annum rent for both houses, towards which they rayse between 20 *li.* and 30 *li.* per annum rent from the tap-houses, and a tenement and a garden belonging to the premises, &c., and are at no other charge whatsoever, excepting the ordinary reparations of the houses. Soe that upon a medium made of the gaynes of the howkeepers, and those of the actors, one day with another throughout the yeere, the petitioners will make it apperant that when some of the housekeepers share 12s. a day at the Globe, the actors share not above 3s." The real state of the case was, that those actors who were householders, and shared in the profits of the house, received double pay, first on their shares, and then in the division of the actors' receipts, and Benfield, Swanston, and Pollard, were anxious to participate with their brother actors in this agreeable arrangement. There is one very puzzling term used in these documents, which requires explanation. Who were the poets who are mixed up with hired men, apparel, and other miscellaneous articles, and who in a somewhat later document in Mr. Phillips's possession are said to have received 10s. a week between them? They could not have been such men as Beaumont, Fletcher, Ford, or any of the real dramatists, but may have been furbers or re-arrangers of old plays, or perhaps their duties were only to write ballads and other puffs in praise of the theatre.

The Globe was pulled down on Monday, April 15, 1641, by Sir Matthew Brand, the ground landlord, who built some small tenements on its site, so that the two theatres whose fame is as universal as their name would imply only existed for forty-two years.

When we laid down our pen after finishing the last paragraph we fell into a reverie and fancied ourselves in a small boat on the Thames with its head towards Southwark. It is nearly three o'clock in the afternoon of a fine day in the year 1601. When, having left the picturesque shore of the Middlesex side of the river, we see a flag with the Cross of St. George upon it unfurled from the summit of the Globe Theatre on the Bankside. In obedience to this invitation we notice troops of men, women, and children in all varieties of costume, pressing on to be in time for the performance which is about to commence. We land and follow the throng. When we step into the theatre we find that we are in a circular building open to the sky, excepting that the boxes and the stage are protected from the weather by a slight roofing of thatch, and that there is no scenery to distract our attention from the actors. The play is "As You Like It," and our eyes are at once riveted upon one of the actors whose finely-chiselled face, high forehead, and noble bearing bespeak him one.—

"To whom all scenes of Europe homage owe."

With sonorous utterance he is declaiming, in the character of *Adam*, the fine lines,—

"Let me be your servant;
Though I look old, yet am I strong and lusty;
For in my youth I never did apply
Hot and rebellious liquors in my blood,
Nor did not with unlash'd forehead woo
The means of weakness and debility;
Therefore my age is as a lusty winter,
Frosty, but kindly."

Adam and *Orlando* leave the stage, and our interest in the play seems then to cease; but we stop a few minutes after *Rosalind*, and *Kempe* as *Touchstone*, have entered. We ask a neighbour who the heroine is, and he answers, "Oh! one of our boys," but before we can learn the boy's name, the whole scene becomes less distinct, and it is clear at last that,—

"These our actors,
As I foretold you, were all spirits, and
Are melted into air, thin air!"

Nevertheless, it is something to have seen Shakespeare even in a dream.

Metropolitan Gas.—The Chartered Gas Company have succeeded in obtaining power to increase the price of the gas supplied by them. The Board of Trade Commissioners have decided that the price for 16-candle gas shall be 5s. per 1,000 ft., being an increase of 1s. 3d. per 1,000, instead of 1s. 5d. asked for by the company. The price of 20-candle gas is fixed at 6s. 3d. per 1,000.

A POETICAL ESSAY ON LONDON ARCHITECTURE.

Among the essays on the Architecture of London in the sixteenth century, which competed this year for the prize medal of the R.I.B.A., was one in verse by C. C. Ogle, from which we print the following extracts, being under no fear that the spirit of poetry will become rampant in the profession through the encouragement we thus give it.

The author defines the limits of his subject:—

"I may not wander by the stream of time
To cull the flowers that grow along its strand,
Nor bear away rich spoils from distant clime,
Nor gather gems in e'en my native land;
But waded back on History's stately wing,
Where fate has fix'd her song, the Muse must stay
Amid old London's walls their fame to sing,
To picture forms that now are pass'd away.
And tell of all that rose beneath the Tudor sway."

He utters his *Ichabod*:—

"Yes, all is gone: the witching charms that hung
In renovated form on every form uncouth;
Ay, that from which the moving magic sprung
Bold upretness—the peerless grace of truth.
Of changing gables, oriels, shapes grotesque,
With fiddle joints may age the art that's fled,
And vivid hues and lifeless arabesque
May mis-spent cunning o'er the surface spread.
Yet sighs our bosoms heave,—we gaze upon the dead."

There stood St. Paul's (another now commands
In swelling pomp yon ever-towering hill),
Is swelling pomp yon ever-towering hill,
No bastard scion snatch'd from other lands,
But wrought in native mould by native skill.
—king it stood, his pipe with glory crown'd—
A wreath the proud usurper cannot wear—
And many a princely fabric rear'd around,
His heavenward point the powers of hell to dare
His faithful lieges all in manly vigour fare."

He refers to things unutterable:—

"No cleansing power in civic stables ruled,
To haste pollution seaward, dark and deep;
Among unwhitening hives lay Death impool'd,
And foul disease did down mid-kennel creep.
Uprose the Fiend of Air from shadowy wing,
Scattering his black deathstempers far and wide,
A vampire dread 'neath gargoyled eaves to cling,
God help the house where such fell guests abide.
He sucks the vital breath and woes of death betide."

And turns from them to:—

"But cease these sounds of dole. There yet remain
Some few fair relics of the Tudor age;
Around their walls old Time has stalk'd in vain,
Unharm'd they heard the flame tyrannic rage,
And clung to a true love that never may fade;
Or fenced in holy charms defied his hand,
Lament no more, nor present ills upraid,
While asking song these stately structures stand,
They wake no notes of woe, but joyful strains demand."

He invites to an inspection of the exterior of Henry VII.'s Chapel:—

"Draw near and view this prodigy of art:
Superbly wrought in every stone, and yet
It cannot stir the pulses of the heart,
As the lone gem in frowning grandeur set;
Soon from the wearied eye the beauties fade;
Upward, upward, then, awhile the abbey view
With spacious tracts of restful light and shade,
Like great men's joys and griefs; now turn anew
To fugal smiles and scowls,—the chapels' changeful hue."

Is this the House of God? Then what are they?
Those clutching forms debauch'd that o'er it crawl;
Ghoul, lion, dragon, bound, a grim array,
And tortured man the ghastliest of all.
What mean the rose and grail so thickly strown?
What? Badges of the king. Then did he raise
All to Jehovah's glory or his own?
Churches have risen e'en in later days
To ill ambition's maw and sate base thirst of praise."

Look yet again! Lo, empty niches wake
Indignant anger. Not the cannon's boom
That wall of many faces e'er could shake;
Yet theologian throats hurl'd forth its doom,
And biot hands tore down a saintly host
From those tall pinnacles that show so bleak;
War trumpet, art, and wit of words the most.
Their *Allah* Ha the wild sectarians shrill,
And in such deeds as this their rabid vengeance wreak."

Yet it is beautiful. Fair leafage creeps
About the panelled wall, and all is life
And loveliness, that like the dewfall steep
Pier, buttress, pinnacle, and on the steep
For beauty's prize, assigning each a palm,
Yes, it is beautiful, and though it lack,
Amid such splendid waste, that holier calm,
To still a glorious way-mark on the track
Of art—the point, alas! where genius turned back."

The art had reach'd her hot meridian then,
And ere she sank, paused for a little space,
Showing most brilliant as the dolphin, when
The wave was coming, and it came apace;
For then her charms she loved to dissipate
In wild profusion, that may ne'er endure,
And she who lived all chastity of late,
No longer modestly struggled, and was pure:
O luxury! thy lap is ruin ever sure."

Go watch a little child in life's young glow,
Still all unconscious of admiring gaze,
In every movement countless graces show,
Twas thus with art in earlier, happier days.
Go, mark the ball-room pose if thou wouldst see
The type of fallen art. Do ye expect
To gather fruit from off a rootless tree,
And heavey keep while truth ye have neglect,
Veiling the frequent lie with that cursed word 'effect'?"

And a Promenade of Westminster Abbey:—

"Now through the Abbey move with reverent tread,
Yet bring no gloom where e'en stern Death can smile,
And rainbow hues from orient windows shed
Beside the tombs; but silent stand awhile,
And scan these monuments of men renew'd,
Too oft for deeds that saints fall well right rue,
And look how runs the fair triforium round
And stem and branch uprise in order due,
Bay after bay untold, sublimest avenue."

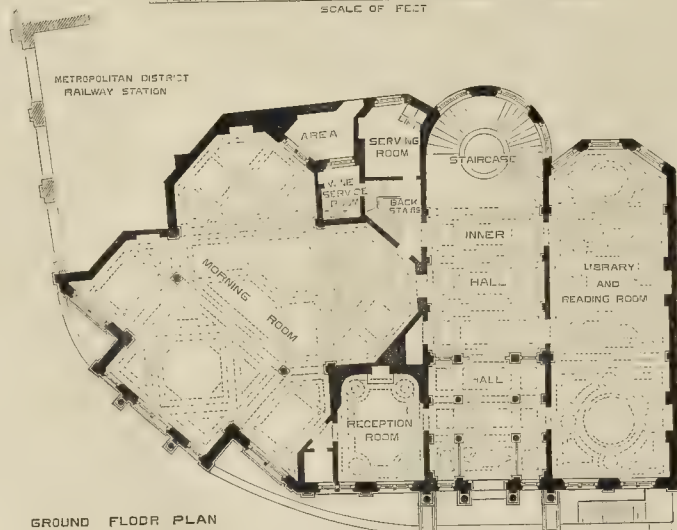
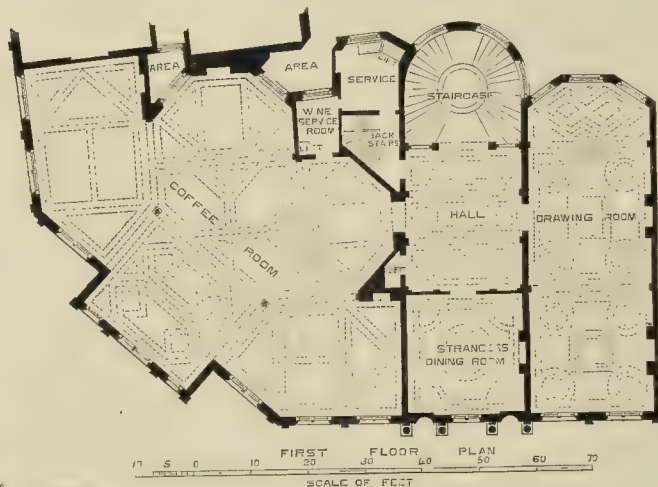
Oh! who hath ever paced that soaring nave
With soul uplifted to the Heaven above?
Nor heard the voice that calm'd the raging wave,
Hush passion's storm, and wake a holier love?
Who hath not yearn'd within that heavenly shrine
For what?—He knew not. Till the tear would start.
They may not live in feeble words of mine,
The joys the sorrows that oppress the heart,
Within those sacred walls,—Oh, Godlike power of art!
He begins to describe the interior of Henry VII.'s chapel.

"Aloft a lacen canopy is spread
In tassell'd splendour. Say not it is stone;
Stone hangs not a staccatist overhead;
Stone is not full of meshes. Ye who own
Cold reason's sway, what! do ye still contend?
Then be it so, a wonder yet more rare—
Strange are the ways, O man, that thou dost ward,—
Thy iron swine; thy rocks are poised in air;
Thy soul unbalanced, still deep sinks in vice and care."
And leaves his subject unfinished.

THE METROPOLITAN GRAND HOTEL.

LARGE palatial hotels in connexion with the several termini of the London railways have, during the last few years, been built in succession; and, from the dividends which are from time to time declared, they generally appear to be fairly profitable investments. A new company is now in course of formation for the erection of another of these large and ornamental structures, to be called the Metropolitan Grand Hotel. The immediate promoters of the undertaking are the directors of the Metropolitan Railway Company; but it is proposed that the hotel shall be erected by a distinct and separate company, the Metropolitan Railway Company, however, having an interest in it to the extent of 30,000*l.*, which they will take in paid-up shares as the value of the site upon which the proposed hotel is to be built. The chairman of the Metropolitan Railway (Sir Edward Watkin, M.P.) is also chairman of the proposed hotel company, as well as two other of the directors of the railway company. The site upon which the hotel is to be erected is a portion of the area in front of the Moorgate-street station, upon which, until recently, stood a number of houses between Little Moorfields and Moorgate-street, opposite the Finsbury-pavement, which have just been demolished by the railway company for the construction of their extension line between Moorgate-street and the Great Eastern station at Liverpool-street, now in progress. The building which will be of large dimensions, will cover an area of about 13,500 superficial feet, and have four distinct elevations, the two principal frontages being on the east and west sides, and facing respectively the Finsbury-pavement in Moorgate-street and the railway-station entrance. These frontages will be about 120 ft. in length, and the depth of the hotel will be 30 ft. According to the plans, the whole of the ground-floor of the building on each side of the four frontages will consist of shops, the hotel proper being in the upper portion. It is intended to be a lofty architectural structure, closely resembling the Charing-cross and other metropolitan railway hotels. The total estimated cost, including the site, the building of the hotel, restaurant, and the shops underneath the hotel part of the building, and the furnishing and stocking of the building, is 140,000*l.*, and the capital is fixed at this sum in 14,000 shares of 10*l.* each.

Gift of a Church by Mr. Bass, M.P.—A new church, the gift of Mr. Bass, M.P., has been consecrated at Burton-on-Trent. Including the parsonage-house, schools, and endowments, the cost will be about 50,000*l.* The organ, peel of bells, and other accessories were also given by Mr. Bass.



ST. STEPHEN'S CLUB, WESTMINSTER.



ST. STEPHEN'S CLUB, WESTMINSTER.—MR. JOHN WHICHOARD, F.S.A., ARCHITECT.

ST. STEPHEN'S CLUB, WESTMINSTER.

This new club has been recently established by the Conservatives, to supply a want which has been long felt by them, and to promote the objects of the party. The trustees and committee are men of very influential position, whose names are well known, and many of them hold a prominent place in the Conservative ranks.

During the erection of their club-house, the members of St. Stephen's Club have been accommodated at the National Club-House, Whitehall Gardens.

The members of the club are to be congratulated upon the eligible and altogether unique site which they have been fortunate enough to obtain in spite of some public opposition, close to the Houses of Parliament, at the corner of the Victoria Embankment and Bridge-street, Westminster. The piece of ground was part of the surplus land belonging to the Metropolitan District Railway Company, remaining after the construction of their line of railway.

The foundations of the new building were commenced towards the end of 1872, by Messrs. J. M. Macey & Son, who completed them in December of that year. The excavations had to be continued to a considerable depth owing to the character of the ground. The entire area was covered with concrete 6 ft. in thickness, the first 3 ft. being in Portland cement and the remainder in blue lias.

Previously to the formation of the embankment the river extended to within a few feet of the site, and close to it were the steps leading from the bridge to the water.

In making the excavations a massive stone wall was discovered, which formed three sides of a square, and was built on oak piling; the original purpose of this has been the subject of several conjectures. A few interesting antiquities were also brought to light, and have been carefully preserved.

One important feature in this site, which perhaps no other could have afforded, is the approach that is obtained at the level of the basement floor, to the new subway connected with the Houses of Parliament; by means of which members of the club who have seats in the House can instantly be summoned when a division occurs, and within two or three minutes after leaving the club-house they will be able to take part in the question at issue. The same entrance in the basement gives immediate access, under cover, to the railway-station and steamboat pier. There is little doubt that when these advantages become known they will largely contribute to the great success which is predicted for the new club.

The commanding position of the site presented an excellent opportunity for architectural display, and it is a fortunate circumstance that it fell into the hands of those who appreciated the responsibility which was involved in dealing with it.

On the one side are the Houses of Parliament, and on the other, Montague House, erected for the Duke of Buccleugh. St. Stephen's Club forms a link between the somewhat opposed styles of these two buildings. The style adopted bears the impress of the Renaissance work which prevailed in the French châteaux and hôtels of the period of Francis I. and Henry II., in the sixteenth century. The grouping is bold and picturesque, and must increase the reputation of the designer. The building consists of three stories above the ground line, and includes a range of dormer windows at the lower part of the steeply-pitched roof. The main entrance is at the centre of the façade, facing the embankment. The principal feature is at the angle, being Westminster Bridge, where a projection is formed, which is continued upwards, and is crowned with a lofty roof. There is a wide stone balcony at the second floor, supported upon four massive cantilevers, with some well-executed carving, the effect of which is very bold and striking. Still further emphasis is given to this part of the building by the dormer, which is two stories in height and elaborately carved. At the top of this dormer are two sitting figures representing Earl Fitzwater and Archbishop Langton, the prime movers in obtaining "Magna Charta," which secured the rights and liberties of the people.

All the windows, except those belonging to the attic story, are square-headed, and divided into stone mullions and transoms, the former being moulded and carved. The façade towards Bridge-street is terminated by two projecting

bays, and a high roof, similar to that at the angle. The ground story consists of arches, which form the approach to Westminster Bridge Station of the Metropolitan District Railway.

Portland stone is used externally, and the roofs are covered with Whitland Abbey green slates. The shafts of the columns are gray polished granite, and discs of similar granite are introduced in the ornamentally-pierced balustrade wall which encloses the forecourt.

The statues and carving have been very artistically carried out, in strict harmony with the architecture, by Mr. E. W. Wyon, sculptor, who has displayed great taste and skill in his department of the work. There are two niches above the principal doorway, which, we observe, are left unoccupied. We should think the committee will not long allow such a prominent omission in their building to remain. The statues proposed by the sculptor for these niches are King Alfred and the Venerable Bede.

Before proceeding to describe the interior of the building, it should be stated that the Committee of St. Stephen's Club were very unwilling to leave the unsightly end wall as it at present exists, next to the Embankment, and had the Metropolitan Board of Works, who are the owners of the small piece of adjoining land, been ready to meet them in any way, they were prepared to carry out a very graceful termination to the Embankment at this point, the importance of which, it will be remembered, was strongly insisted on when the erection of this club was first commenced. Speaking in the interest of the public, we hope some arrangement may yet be effected to bring this about.

The peculiar shape of the ground made it no easy task to arrange well-proportioned rooms; but the architect has well overcome the difficulties thus presented, and many of the quaint and novel forms which some of the principal rooms possess are due to this circumstance.

The building is designed to accommodate 1,500 members. The ground-floor contains an entrance-hall, 20 ft. square, from which are approached the inner hall and staircase. The library and reading-room is 58 ft. by 20 ft., and the morning-room is 49 ft. by 46 ft. There is also a small reception-room on this floor.

The coffee-room is placed on the first-floor, and this is a magnificent apartment, of irregular but geometrical plan, with a length of about 90 ft. and an average width of 40 ft. The drawing-room and strangers' dining-room are also on this floor, the former being 58 ft. by 20 ft.

The second-floor has a smoking-room, averaging 49 ft. by 33 ft.; card-room, 30 ft. by 20 ft.; members' billiard-room, 58 ft. by 20 ft.; and strangers' billiard-room, about 33 ft. by 21 ft.

The upper floors contain the kitchens and necessary residential accommodation for the servants of the establishment. Lavatories and bath and dressing rooms are provided in the basement, and on the same floor are the committee-room and clerk's rooms.

The sub-basement is devoted to extensive cellarage, besides steward's room and other apartments. A flight of granite steps gives an approach from the street.

The principal staircase commences at the basement floor, and is continued up to the second floor. It is entirely of polished oak with carved strings, newels, and balusters, on which Mr. G. A. Rogers is at work, and panelled dado and soffit; it is lighted by windows at the various stages, which are divided by carved oak mullions and transoms, and glazed with tinted glass supplied by Messrs. Heaton, Butler, & Bayne. At the top is a lantern, with a coiled ceiling enriched with decorations in plaster.

The entrance-hall is paved with encaustic tiles, which have been supplied by Mr. Minton Taylor. The inner hall, and the halls on the first and second floors, have polished wainscot floors with wide parquetry borders. All the corridors and halls are constructed with brick arches, and the floors throughout are pugged.

The service staircase is of granite, and the walls are lined with glazed tiles to a height of 3 ft. 6 in. Service-rooms are provided on each floor, and still-room, lavatories, &c., are obtained in mezzanines.

The ground and first-floor windows are fitted with Bunnett's curvilinear iron revolving shutters.

The kitchens, which are being fitted up by Messrs. O. Jeakes & Co., of Great Russell-street, Bloomsbury, will be second to none it is claimed in point of convenience and size. The same firm have also supplied the lifts, one of which is worked by hydraulic power, and the gas-fitting

work, hot and cold water supply, baths, and lavatories have been done by them.

The chimney-pieces have been made by Mr. Boucneau, and the stoves by Mr. Lowman Taylor. The entire cost of the club-house complete will amount to a little over 100,000l.

The works are rapidly approaching completion, and it is expected the club will be opened early in June next. Mr. John Whichcord, F.S.A., is the architect, and Messrs. Peto Brothers are the contractors.

RIOT ON CHELSEA BRIDGE.

A SERIOUS disturbance took place on Good Friday, on the Suspension Bridge leading to Battersea. The excited people would have forced the toll-gates both from the north and south sides of the river.

The facts of the riot, for such it became, may be simply summarised:—The Act of Parliament levying tolls on foot people, exempting passengers on public holidays and religious festivals, and specifying those days to be Sundays, Christmas-day, Easter Monday, and Whit Monday. By some oversight, Good Friday is not named in the Act, and the authorities at Whitehall have clung to the text. The police up to last week have assisted the toll-collectors in keeping the thousands back who came to the bridge under the impression that they could pass on a Good Friday the same as on Sundays. This year, however, Scotland-yard and the Commissioners of Works and Public Buildings fell out as to which department was to bear the extra expense of collecting tolls, and as no pay was forthcoming, Scotland-yard left the bridge to a solitary constable. Extra toll-collectors were appointed, and it was not long before the Chelsea lads found out the sore point between the two departments of Government. At first, the toll-collectors were pelted with proverbial Chelsea buns, but this piece of chaff did not make the men run from their post. Buns having failed, mud was next tried, and a free fight, in which those not engaged adroitly scaled the road gates, and then on to the footway, into Surrey, was so successful as to encourage the southern besiegers to try their chance.

This was the first part of the Good Friday's riot, and the next was the return from the Park to dinner. The mob here carried all before them, and very few paid the toll. In the afternoon the row became terrific, and the roughs, some hundreds in number, cheered on by the soldiers from the barrack windows, again got through, and the ruckus that occurred whenever the great gates were opened to let vehicles pass, fairly swung Mr. Page's chain-bridge like a child's cradle. The people, now re-inforced by women, got angered, believing that the toll-collectors were pocketing the money; and, moreover, those who would have paid to get over each way, were unable to get to the turnstiles through the mob around them. The national exchequer did not, it appears, recoup its extra expenses. Rain setting in pretty smartly, the people, ready for pulling down the toll-houses, returned home until next Good Friday.

It may, perhaps, not be out of place to state that but for the toll on this bridge thousands of artisans and of the middle classes, as well as the most needy, could find decent and cheap dwellings in Battersea parish, which even extends to the Crystal Palace. Eight-roomed houses can be had for eight shillings a week, without rates or taxes. Opposite to them a house cannot be got, or, if so, only at a rental very much larger. The opening of this bridge would benefit the over-crowded northern suburbs, and the longer it is deferred the worse it is for the whole of London.

The Victoria Rooms Organ, Bristol.—

The fine organ, which was built by Messrs. Hill & Son, of London, for the Panopticon in Leicester-square, and was afterwards removed to the south transept of St. Paul's Cathedral, has now been erected in the Victoria-rooms, Clifton, Bristol, having been purchased by the committee from the Dean and Chapter of St. Paul's in June last.

The removal and re-erection have been carried out by Messrs. Bryceson Brothers & Morten, of London, under the direction of Dr. S. S. Wesley, of Gloucester cathedral, and the work is now rapidly approaching completion. The opening will take place about the middle of the present month, when recitals will be given in the morning and evening, on which occasions Dr. Wesley and Mr. Walter Parrott, of Queen's College, Oxford, will preside at the instrument.

SOME PLANTS THAT ARE USEFUL.

THERE is scarcely a plant in nature, whether indigenous to the British Islands, or belonging to the Floras of other regions of the globe, but has its uses. The properties of many are still untried and unutilised, while hundreds of others, well known for centuries, possess useful qualities which have never been developed. Indigenous to Great Britain, in her green lanes, meadows, valleys, hedgerows, streams, woods, gardens, walls, and on her bosomtops, are to be found a numerous class of useful plants, the mechanical and economic value of which the dwellers in our cities and towns know but little. The progress of chemistry in the present century, and the development of the resources of the mineral kingdom, have led to the dense and neglect of several plants that were formerly, and are still to some extent, used in connexion with the industrial arts. There are many lost or extinct industries that were once dependent on the cultivation and collection of British plants, which it is not improbable will have to be revived in time to come; and even now, certain exigencies and common wants point in this direction. We propose to give here some useful particulars concerning a number of native plants, and we may premise that the information is to a considerable extent the result of personal observation or experience in several parts of the three kingdoms during the space of thirty years,—the uses to which a variety of plants, which we shall describe, were turned, and the processes by which they were made useful we have witnessed, and in some instances have taken an actual part in. It may be found that some of the plants we name are known by other names; for what is called one thing in parts of Ireland and Scotland, is sometimes known by another local name in parts of England. They can, however, be easily identified. The purely decorative uses of holly and ivy are too well known to need description, and though the former is found in most native woods, cultivation has developed numerous varieties. From the inner bark birch-lime is produced, and cabinetmakers have long used its extremely hard and white wood for inlaying purposes, and we have known it to be substituted for box for wood engraving. Whip-handles and walking-sticks are also made from the smaller stems. The wood takes a good polish or stain. The leaves are used, or have been used, in intermittent fever, and the berries are purgative and emetic, but many small birds eat them. The foreign varieties, abroad, are utilised for many purposes, both the wood, berries, bark, and leaves. In the British Islands it was formerly more extensively used in gardens for ornamental purposes than at present, being cut into fantastic shapes. It makes an excellent hedge, and can bear well the assaults of the weather, beast, or hedge-breaker.

The ivy taken from the root where thick, is often used by shoemakers, after they have sharpened their knives upon a whetstone. They draw their knives to and fro upon the wood to give the edge a keenness for clean cutting. Ivy does not generally grow thick, but we have known instances as thick as a man's arm or leg. We have also experimented upon ivy for inlaying purposes, and had it cut into veneers, which, after a short seasoning, we found to answer very well. The wood presented a white appearance, but by varnishing it was inclined to yellow. It took staining very well. The wood, though very soft when first cut, grows hard when dry. The old gardeners were wont to train it formerly into many fantastic shapes, making the plant to assume the form of animals, human figures, and birds, by training it upon a skeleton of wire-work. We have often witnessed black-birds and other song-birds feeding in the winter upon the leaves of the ivy, and sheep and goats, and even asses and cows, during the snowy weather, will feed upon the leaves for lack of better fodder. Medicinally the berries are emetic and purgative. Although the ivy tears asunder the roofs and stone walls it grows upon, by insinuating its roots & arms between the joints of the masonry, yet it has, at the same time, preserved many an interesting ruin from collapse. Antiquaries and archaeologists are indebted to the ivy; but we cannot say that architects in general view it with the same feeling as the former. Clergymen are given to train it up the church-walls where they are rectors, as it gives an ancient look to the ecclesiastical edifice. Indeed, there are many jejune and frightful examples of Gothic ecclesiastical edifices which would be much improved

by a complete covering of ivy. Like charity, in these cases, it would cover a multitude of sins. Ivy plants are at present cultivated in many nurseries around London, for the market, and it may be seen growing in these places, supported by stakes, like hops and other creeping plants.

Heath comprises several hundred varieties scattered over different parts of the globe, but the common varieties indigenous to the British Islands have many useful properties. Three or four varieties are much cultivated in this country, on account of the simple beauty of their flowers. In Ireland the ordinary uses of common heath are the making of them together for besoms or brooms. The Irish also used the stalks and tops for tanning leather. Dried in an oven and powdered, heath has been used instead of oak bark, and its use attracted the attention of the Parliament towards the close of the last century. In Ireland and Scotland, we have seen it used largely for thatching the cabins of the peasants and mountaineers. The walls were made with alternate layers of heath, and black earth and straw were used for the mortar. The roots of the heath were placed in the centre on the tops externally. This binding together of straw and heath, when well done, lasts for some years, and is preferred to other coverings, such as dried potato-stalks, used also for thatch by the peasantry. In the highlands of Scotland beds are made of it, the roots being planted downwards and the tops above. The hardy mountaineers consider it more wholesome and preferable to straw or chaff, which soon grows musty.

In hard winters heath will serve for fodder for horses, cows, and sheep, the tops being cut in August, when the plant is in bloom. The common heath, or ling, gives a fine orange-colour dye, which will stand washing. The woolen to be acted upon is first dyed in alum and water, and afterwards in a strong decoction of the leaves. The black-berried heath, or crowberries, will dye cloth of a black-purple colour, boiled with alum. Bees are very fond of the flowers of the heath, and extract from them a large amount of honey, but it has a reddish colour, and is not so much esteemed in consequence. The tops of heath will do as a substitute for hops. Heather-beer was made in Ireland anciently from the plant, and in our memory we have known two or three attempts in Ireland to revive the manufacture. We remember to have seen it sold and drunk in the public-houses; but the manufacture did not succeed, and on each occasion had to be given up. The manufacturers, however, lacked capacity and capital. Heath possesses some medicinal qualities. Some of the varieties are remarkable for astringent properties, and some are reported to be narcotic, and even poisonous. Personally we cannot vouch for the latter quality, but we know that the fruits of some of the varieties of the plant are edible.

The thorn or hawthorn, i.e., the whitethorn or May, is universally known, but its many useful properties are known to but very few. It is an admirable hedge plant for a fence, and its flowers possess both beauty and fragrance. The ornamented varieties have a pink or scarlet blossom, but even the common hawthorn blossom assumes a pink colour shortly before the blossom falls. The boughs burnt make a good ash for bleaching linen, and were some years ago in request. We have known the wood of the hawthorn to be used for manufacturing carpenters' and other artisans' rules, and the wood has been occasionally used instead of box for wood-engraving purposes. When even cut down green, with the leaves on, the whitethorn when once kindled burns well as fuel. In times of scarcity, the fruit or berries have been used as a substitute for bread by the poor, by being reduced to meal. We have known in several country districts the poor to use the dried leaves as a substitute for tea. The leaves of the white thorn, as well as the blackthorn, or sloe, are used for adulterating tea. The haws for feeding pigs, and formerly the fruit, as well as blackberries, were brought into the market. All farm cattle will eat the leaves and branches of the hawthorn.

Starting the plant by sowing the berries is a rather tedious process. A hedge or fence grown in this manner needs some years before it is of much service. The whitethorn is considered a good grafting stock for more than one variety of edible fruit.

Bog Yew (*Taxus subterranea*). This wood is to be found plentifully in Irish bogs, and some of it is so hard that it gives fire at the stroke of

the hatchet. A variety of useful domestic utensils and furniture have been made from it. We have seen rolling-pins, punch-lades, chests, tables, chairs, and various ornaments made from the bog yew. The ordinary varieties of the yew, foreign and acclimatised, are extensively used for furniture-making purposes, and the root of the tree is sawn into veneers on account of its fine feathery vein, which shows well when polished. The wood is applicable to the making of mathematical instruments, comb, and pipe making, and several ornamental uses, through the skill of the turner and carver combined. The common yew often attains a very large size, and several old churchyards throughout Great Britain furnish some good specimens. The yew formerly played no unimportant part in the history of England: before the introduction of gunpowder, it was extensively used for making bows, and when archery clubs were plentiful in the country the yew was in great demand. The timber of the yew is not only valuable, but is extremely durable. The leaves and young branches act as a narcotic acrid poison when eaten by man or any of the lower animals. It is the opinion of some that the pulp surrounding the seed of itself is very poisonous. It is generally known that it is an evergreen tree, and as such, of course it has its decorative uses for festivals, &c.

Bog Oak (*Quercus subterranea*). The ornamental uses of Irish bog oak are numerous, and within the last quarter of a century the common uses to which it has been applied are well known as an endless variety of personal and household, ladies' and gentlemen's ornaments have been manufactured from the wood. A very good trade has been driven in this line by certain houses in Dublin and Cork, and every National or International Exhibition shows that the trade has not yet fallen off. Bog oak is extremely black, and very hard, and takes a good polish. With a good gold setting bog-oak ornaments look well, and are to a degree fashionable.

The common British oak (*Quercus robur*) is a valuable tree, but is not valued now so much as formerly, when the success of good ship-building depended upon the use of this wood. All the foreign varieties possess properties peculiar to them. The bark of the indigenous oak, as well as the foreign, can be used for tanning purposes, but our supply of bark at the present day is dependent upon the imported articles. The bark of the native oak, and the wood and acorns, afford good dye stuffs. Oak saw-dust treated in various ways will afford different dyes for cloth, but principally for fustians. Great encouragement was given, towards the close of the last century, to efforts directed to the growth and cultivation of the oak in every form, but particularly in view of ship-building uses. It was feared that the supply of this country was on the point of exhaustion. It is claimed for the Irish and the Welsh oak that they possess more durable qualities than the English oak, but on what grounds we know not, and in Ireland for upwards of a century it has been boasted with some pride, that Westminster Hall, London, the Shire Hall at Chester, some of the colleges at Oxford, and the Stadthouse at Amsterdam, were, in their roofs and other fittings, composed of Irish oak. When the bark of oak is used for tanning purposes, what remains in the pit after the bark has been used is trodden fine and made up into a solid mass like turf (peat), and when dried is used for fuel. Its use in this way is better known in Paris and Dublin than in London. This refuse or tan waste is often spread upon the streets of Dublin before the houses where a personage of note is lying ill, to deaden the noise of the traffic. Oak, native as well as foreign, is used whenever it can be obtained for many building purposes and for furniture making. From some of the foreign varieties are taken those excrescences called *galls*, which are used for dyeing and tanning, and useful purposes in the arts. The acorns of the British oak and some foreign species are edible, but there is very little nutriment, we think, in them. Pig at times are fed upon acorns as well as upon haws, and horses, cows, sheep, and goats will feed upon the leaves. The oak-leaf, we may remark, has been used from the earliest times in connexion with architectural ornamentation.

Hops of the common order (*Humulus lupulus*) are known pretty well for their uses in the manufacture of beer. In Kent, Surrey, and Sussex there are about five varieties extensively cultivated, which give a large amount of employment in the picking season, but an employment of very unremunerative kind, and connected with

which there is a large amount of destitution, and even demolition, in consequence of the miasma and housing together of the pickers in some districts. It is unnecessary here to describe the different varieties catenated by the brewers for the manufacture of beer or bitter ales, as they go by several names. The Society for the Encouragement of Arts and Manufactures in the last century offered a premium for making a strong cloth from the stalks or binds of the hop plant. In Sweden a strong cloth is also manufactured from the stalks. Gathered in autumn, and soaked in water during the entire winter, it requires a longer time to rot than flax. It is dried in a stove, and is dressed and spun and wove as flax. The hop-plant may be utilised in gardens for the construction of temporary summer-houses by being trained up stakes or on a skeleton of wire. It makes a cool shade; the flowers are pretty and the scent is agreeable. We have experimented upon it in this direction ourselves, and were pleased with our success. When the flowers are out it will entice a number of bees to the garden. With a perpendicular pole or extending support it is difficult to say to what length or height the plant may be encouraged to grow. We should be surprised to see it topping the Nelson Column. Hops are not cultivated as an article of commerce in Ireland, but the plant may often be met with trained up trellis-work in front of cottages. There was a movement on foot to extend its cultivation to the sister kingdom for the purpose of cloth-making; but the growth of flax received primary attention. Medicinally, hops are used for their stomachic and tonic properties, and pillows are stuffed with them at times to induce sleep. The buds of hops can be used as an esculent, and when boiled, will do for a substitute for asparagus, with butter or oil, salt and vinegar. The tendrils when young can be also used. The country folk believe its use in this manner cleanses the blood in spring time.

Rushes are found in almost every place in the British Islands, and in both cold and temperate quarters at home and abroad they are plentiful. Before the introduction of tallow candles in this country, rushes were used by those both in high and low stations. Rushlights are still sold by our bachelors, and are used by the very poor, or for night-lights in sick-rooms. Among the peasantry in the country districts, we have often met with rushlights in numbers. The poor dip the rushes in any kind of grease or melted fat they can procure. Formerly in farmers' or gentlemen-farmers' houses they twisted great numbers of rushes together in Ireland, sometimes to the bulk of a man's arm, for house-lights or torches. The common hard rush is used still in country places for tying up bundles of flowers, giving previously bleached a little. The bulrush and the lesser bulrush are used for mats, foot-stools, seats for chairs, for baskets, and horse-dollars in Ireland, and in some of the Midland districts of England they make ropes of the peel. In Ireland also they make spancels for tying the fore legs of cows and horses, and it is used by cooper's commonly for driving between the joints of their staves, which is analogous to that of caulking vessel, with hemp or tow. The pith of bulrushes is used for candles. We have seen ropes, and plaited whips, boys' whips, and horse-whips made from bulrushes, and some being ingenious plaiting and maiting for ornamental purposes. The common soft rush was a rather solid pith, and has been used much for the wicks of candles. We have known it to be used (the soft rush) for thatching. By being separated from the grass in moist bottom lands and exposed to bleach in stacks, it can be rendered useful for thatching cottages or cornstacks, and one of the very poor have used it for stuffing beds, and pigs will eat the tops of the bulrush, and the latter will eat the roots of the club-rush when fresh, but will not touch it when dried. Rushes of all species are a very useful class of plants, and may be utilised in a variety of ways, many still unthought of. It is quite possible that a very useful paper might be made from rushes as well as from Esparto grass or wood. We hope the humble and despised rush or bulrush, which has a history older than Moses, will soon receive more attention than it has hitherto obtained. This very useful plant has passed into a proverb, and used in derision to express contempt, as "don't care a rush about you," tantamount to "I don't care a brass pin for you." Rushes, however, may be as valuable one day as they are now, and more carefully looked after than chemical slag or the poor man's cinders.

DUBAN'S TOMB, PARIS.

In a recent notice of the *Revue Générale de l'Architecture* (p. 145, ante), M. Viollet-le-Duc was termed, by a transient slip of memory, the designer of the monument recently erected to M. Duban, architect, in the place of M. Duc, the member of the "Institut," to whom was awarded, a few years ago, the famous imperial prize of 100,000 fr. There is an uncle of Viollet-le-Duc, bearing the same name (if he is alive still), who has written a good deal about the poets of the middle ages, of the thirteenth century particularly, and whose labours are also sometimes laid to the architect's account, as well as those of Duc, already named. A Paris correspondent, alluding to the misappropriation, says, acutely:—"These errors and accumulations are pretty well inevitable; it is the man the most frequently before the public eye who takes or bears the baggage of all of his name. Taleyard is given as the author of almost every witty word recorded during the first empire; and I suppose that your Sheridan must also have inherited a great many of other people's witty sayings."

MODELS: A PROPOSAL.

Sir,—I shall be glad if you can spare me a few lines of your valuable journal, in which to make a proposal to my professional brethren. I think it is an acknowledged fact that in order to make any advance in art or science it is necessary to know, as far as possible, all that has been done before. Now, many architects in practice and architectural students have neither the time nor the money to travel and see the interesting and instructive remains of ancient art scattered throughout the world.

Would it not be possible and expedient for the Institute of British Architects to form a collection of authentic models of some of the most valuable remains that are left to us?

From these could be taken sets of castings in plaster to be sold cheaply.

I should think if the Institute would advertise, and get together, say 500, subscribers for one set of castings each, they could form an accurate idea of the price of each set of castings.

It is very fine talking, but we want something done.

W. H. S.

THE NEW SURVEYOR FOR BATTERSEA.

At a meeting last week the Wandsworth Board of Works proceeded to the election of a surveyor for Battersea, in place of the late surveyor who was recently discharged under circumstances connected with the contracts, particulars of which appeared in the *Builder* at the time. The Battersea Committee reported that there had been no fewer than 49 candidates before them for the office, from whom they had selected the following gentlemen to submit to the Board:—Mr. J. T. Pilditch, Church-street, Chelsea; Mr. George Livingstone, borough surveyor's office, Maidstone; Mr. George Wakson, town surveyor, Crewe; Mr. J. P. Colbron, C.E., Cliftonville, Brighton; Mr. James Gibson, Acacia-villa, Southall; and Mr. H. S. Copland, C.E., Duke-street, Adelphi. The Board elected Mr. J. T. Pilditch, by 25 votes.

THE AMERICAN TIMBER QUESTION.

We have received a letter from Mr. William Little, of New York, calling attention to the waste and exhaustion of the supply of timber in the United States and Canada. He says that the President has just sent to the Senate and House of Representatives a memorial upon the cultivation of timber and preservation of forests, heartily approving thereof, and asking that Commission be appointed to ascertain what means can be adopted to provide against their waste,—a course, Mr. Little remarks, that should have been taken years ago.

It appears, continues the letter, you are now getting large supplies of your best timber from Canada and the United States, but from the rapidity with which we are stripping our forests for our own requirements it is quite evident to my mind that ten years will not have elapsed before we will be forced to enter into competition with you as purchasers in the North of Europe, since the only extensive pine territory we can then have will be that on the Pacific side, and this source of supply is so far away from the points of consumption, that it will be cheaper to get it from your side of the Atlantic.

The annual consumption of pine lumber alone in the United States is now over 16,000,000 loads. The amount of all kinds of sawed lumber, according to the Congressional returns for the year ending June 30th, 1870, was over 21,000,000 loads, to which, if we add the large increase which has taken place since that time, all descriptions of timber, round, flatted and hewn, the timber used in the manufacture of shingles, the import of timber from Canada the present annual consumption should not now be computed at less than 30,000,000 loads, or an amount more than double all the sailing tonnage of Europe and America combined.

From the foregoing some idea may be formed of the position in which we shall be placed in a very few years, for an article, to us so indispensable, considering that the greater part of our country is prairie and treeless.

ST. PANCRAS VESTRY HALL COMPETITION.

At a meeting of the Vestry held on Wednesday, the General Purposes Committee brought up their report on the three selected designs for remodelling and extending the Vestry and Guardians' Offices, bearing the signs "Red Circle," "S.P.P.," and "St. Pancras" (in an oval). The decision of the Vestry was in favour of "St. Pancras," afterwards found to be by Mr. H. H. Bridgman, architect, of Park-street, N.W.

WAREHOUSES OF MR. SAM MENDEL, MANCHESTER.

Sir,—On reading your description of the erection of the above, our attention is drawn to the absence (unintentional, we feel assured) of any mention of the warming apparatus, which, being a work of considerable magnitude, we venture to ask your kind permission of allowing us to supply the omission, by stating that the entire building is heated by one apparatus, erected by us, upon our "One Boiler System." There are, however, two upright tubular boilers fixed side by side, one acting as a reserve, and, notwithstanding the piping attached exceeds the prodigious length of two miles, it has never been found necessary, even in the coldest weather, to work the auxiliary boiler.

J. WEBS & CO.

THE ROCHDALE SYSTEM OF REMOVING NIGHT SOIL AND HOUSE REFUSE.

Sir,—A friend has to-day drawn my attention to a letter in your publication of the 21st ult., signed "A Resident," in which is the following:—

"The system had been previously tried at Leeds by Mr. Harscoug, in connexion with a Dr. Bishop, and proved a disastrous failure," and, "Oddly enough, the system was introduced to the ratepayers of Rochdale as Harscoug's, and recommended for adoption by Mr. Alderman Taylor, who was subsequently patented by that gentleman." The averments in these quotations are entirely untrue, and could not be made except wilfully by any person who had inquired into the question. The quotations may be taken as a fair specimen of the whole letter, which abounds in insinuations and strong words, yet being anonymous is not worthy of detailed reply.

But the respectability of the *Builder* makes it very necessary that its influence should not be allowed to remain on the side of misstatement and misrepresentation. I do not wish to enter into the merits or demerits of the system, and not having seen your strictures on it, I cannot say whether, as the letter quotes your words, "Our own opinion of the system is anything but favourable," the quotation is true or otherwise. The words may be correct; but, judging from the other parts of the letter, we are accustomed to speak out their opinions very freely, and should much doubt its representation. As the letter is very much founded on what you have said, I might ask you if it be likely that a town-council of forty men, who are accustomed to speak out their opinions very freely, would be so meekly led into so objectionable a system as represented by your correspondent, and that the council should, every succeeding year, increasingly approve of it? And further, suppose that the representations of your correspondent were correct, is it likely that almost, if not altogether, every investigator of note—including a special commissioner and others from foreign powers, medical officers of health from every part of Great Britain, including the Lancet commissioner, and amateur sanitarians as well as special deputations from numbers of important towns—has said that whatever faults it has, it is yet the best system he has seen in practice?

EDWARD TAYLOR, Alderman.

TRADES MOVEMENT.

Manchester.—A case has been laid before the Bishop of Manchester, as arbitrator, to decide as to the rate of wages and payment to be made to painters for overtime, and various other matters, and his lordship has made the following award:—

That the minimum rate of wage per hour shall be 7½d.; that overtime on full working days shall not be paid for at the rate of time and a half before nine o'clock p.m.; but that on Saturdays, whether a job is being finished or not, overtime shall be reckoned and paid for at the usual rate; that in per week extra be allowed to men employed on country jobs who are required to stay away from home on Sunday; and that the rules agreed to on January 6th, 1871, be altered in conformity with this award.

Blackpool.—The painters are now on strike,

the masters having declined to grant the application made to them for a reduction of hours, and an increase of 1d. per hour on their scale of remuneration.

Preston.—The painters made application to their masters to commence work at seven o'clock in the morning, instead of six o'clock, and also for an increase of 1d. per hour in their wages, which would bring their present allowance up to 7½d. per hour. The masters have held a meeting, and decided to concede the application so far as the reduction of hours is concerned, and they offered an increase of ½d. per hour on the present scale. This the men refused to accept, and some of them struck work, but many of them have since returned. Unless the offer of the masters is accepted when the men come to the pay-table, a strike will take place.

Birmingham.—The builders' labourers have struck for an advance of wages. The present rate is 4½d. per hour, and the men want 5½d. The employers would give a 1d., but declined to guarantee that, and arbitrate on the 1d. The men on their part were willing to give up a farthing of their demand. The matter could not be accommodated, and many hundreds of men are now on strike.

Tynemouth.—The masons and bricklayers having been refused an advance, declined to resume work, and have therefore been locked out by the masters.

Huddersfield.—A few weeks ago, the carpenters and joiners memorialised the masters for an advance of wages to the extent of 1½d. per hour. The masters and men referred the matter to Mr. Edward Huth, one of the borough magistrates, who has now given his award in favour of the men receiving 1d. per hour increase. Their wages will be now 31s. 2d. for fifty hours' work per week.

Taunton.—The majority of the carpenters and joiners are out on strike for a rise of about 4s. a week and a reduction in hours. The masters have offered a rise of 2s. without any change in hours, but refuse any further concession. The men have expressed their willingness to accept 3s. advance.

Hastings.—The carpenters and joiners have struck work for more wages and less hours on Saturdays.

Scarborough.—A short time ago, when the dispute in the building trade was pending, the painters negotiated for an advance of wages and a reduction of hours. Unfortunately, the masters and men have not been able to arrive at any satisfactory settlement, and the result is, that the men, acting on a notice previously given,—to the effect that if the advance was not conceded, they would not continue work after the last day of March,—ceased work accordingly. The present rate of wages among the painters is—for brush hands, 5½d. per hour; and for pencil hands and grainers, 6d. to 7d. per hour, the week's work consisting of 56½ hours. The men in the first instance asked for an advance of 1d. per hour for each class of workmen, and they also asked that the week's work should consist of 53 hours, which was a proposed reduction of 2½ hours per week. In the course of their negotiations with the masters, the men have since consented to forego the reduction of the hours previously asked for, and have also intimated their willingness to accept an increase in their wages to the extent of ½d. per hour instead of 1d. This, however, the masters have refused to concede, the latter only being prepared to grant an increase to the extent of ¼d. per hour. The men have declined to accept this offer, and the dispute has resulted in the men coming out on strike.

Glasgow.—At a meeting of 3,000 joiners on Saturday, it was resolved to go out on strike, unless an advance of ½d. per hour was conceded in the meantime. The following resolution has been adopted by the master joiners of Glasgow,—

"That this meeting considers the demand of the operatives for an advance of wages unequalled for and unwarranted, under the present prospects of trade, and that the demand for weekly payment of wages is harassing to the employers, and will not give to the workmen any benefit he does not at present possess; but that owing to the season of the year in which the demand is made, the employers meantime accede to the demands of the operatives."

The threatened strike is, therefore, meanwhile averted.

Greenock.—The joiners have been granted ½d. of increase on their wages, making the rate of payment 7½d. per hour. They wished 8d., but it has been arranged to await the decision in the Glasgow dispute before insisting on this.

FROM SCOTLAND.

Glasgow.—The new gas works for the city, at Dawsholm, Maryhill, have been examined by the Corporation. The productive power of the gas works is now increased from about 6,500,000 to 9,000,000 cubic feet in the twenty-four hours. It has been resolved to abandon the Townhead works as soon as the new works at Dawsholm can supply a sufficient quantity of gas. The ground occupied by the new works extends to about 22½ acres. On the one side of it runs the river Kelvin, and the other the Forth and Clyde Canal. The works were designed in such a way as that they should form three independent sections. One of these has been finished. The retort-house is 688 ft. long, with roofs of 70 ft. span, and contains about 510 retorts—one-third of the number which will ultimately be in use—all of fireclay. The coal-wagons enter directly into the stores, and their bottoms open and allow the coals to descend without any manual labour. Provision will ultimately be made in this manner for receiving about 1,000 tons of coal in the twenty-four hours. A couple of machines, invented and patented by Mr. Foulis, and worked by hydraulic power, charge and draw the retorts. The exhausters are patented by Mr. Foulis. Hydraulic cylinders are used for raising the tops of the purifiers, which are 16 in number. Meters having a drum of 15 ft. in diameter and capable of passing about 120,000 cubic feet of gas per hour, have been manufactured for the works by Messrs. R. Laidlaw & Son, of Edinburgh and Glasgow. Provision is made in the general plan of the works for the erection of six gasholders, to contain 1,250,000 cubic feet of gas each. Three of these are now ready. The outside holders are 160 ft. in diameter and 30 ft. deep, and the inside holders are 137 ft. 8 in. in diameter, and 30 ft. deep. For the purpose of utilising the coal tar and spirit, a chemical work has been built. When the Dawsholm works are completed the present productive power will be doubled, so that the supply of gas obtainable will be something like 18,000,000 cubic feet in the twenty-four hours. The estimated cost of the works is upwards of 200,000l.

Greenock.—The Garvel Park Dock, one of the largest graving docks in the kingdom, has been opened at Greenock in the presence of the provost, magistrates, and harbour trustees. The new dock was commenced in 1870, and is the first of an extensive series of works projected on the Garvel Park Estate, purchased for the purpose in 1863 at a cost of 80,000l. These works are to include two lengths of breastworks, two piers, a timber jetty, &c. The dock is constructed of Dalbeattie granite, and contains all the latest improvements, and the most prominent of these being the engineer's patent caisson as a substitute for the old swing bridges. The dimensions of the dock are:—Length at floor, 500 ft., capable of extension when required to 800 ft.; width at bottom, 70 ft., and at coping 80 ft.; entrance 60 ft. wide at coping, with a depth of 20 ft. of water at high tide. It is capable of accommodating the largest steamships on the Clyde, and the water can be retained in it at any level, so that a wet dock may be formed of sufficient size to accommodate six ordinary-sized vessels afloat. The entire works were constructed by Mr. Kirk, Woolwich; the pumping apparatus was supplied by Messrs. J. & H. Gwynne & Co., London; and the entire supervision was in the hands of Mr. W. R. Kinipple, of Westminster, C.E., and now resident engineer at Greenock. The cost of the works is 53,047l.; of pumping apparatus, 3,000l.; engine-house, &c., 5,000l.—in all, 61,047l.

CHURCH-BUILDING NEWS.

Widdrington.—The parish church of Widdrington, Northumberland, has been re-opened, after extensive restorations and additions, carried out under the directions of Mr. F. R. Wilson, of Alnwick, and mainly at the expense of Lord Vernon, the late owner, and of Mr. Hugh Taylor, the present owner of the Widdrington estate. The restorations are as follow:—Ancient three-light traceried east window in chancel; the same in tomb recesses in the north aisle; the chancel arch and ancient south arcade reset, and interior walls throughout cleared of plaster and whitewash, and pointed. The following are the new works:—North nave and chancel aisles and vestry; a three-light window at the east end of south aisle; two-light window at the west end of the nave, and the west end of the north and south

aisle; a two-light window in the chancel on the south side, this being a reproduction of an ancient one over the sedilia; open-timbered roofs throughout the church; open sittings throughout; floors and heating apparatus; glazing throughout; font and lectern, the former being 37 ft. and the latter 32 ft.; both however, are of the same width.

Great Horton.—The Church of St. John the Evangelist, Great Horton, near Bradford, has been consecrated by the Right Rev. Bishop Ryan (the Vicar of Bradford), officiating in place of the Lord Bishop of Ripon. The edifice which the new one has superseded was erected in the year 1806. It never was a structure of any pretensions to architectural merit, being square and perfectly plain, and in its old days it had become to look much more like a barn than a place of worship, and to be in a dilapidated condition. It was first intended to build on the old site. There were certain difficulties in the way, however, that part of Horton being undermined by pits; but at length Mr. F. S. Powell offered a site on the opposite side of the main road from Bradford to Queensbury, upon which the new edifice stands. The erection of the latter was commenced three years ago with subscriptions amounting to 5,264l. 4s. 10d. The church consists of nave, with north and south aisles, and apsidal chancel, with north aisle and tower, serving for vestry and organ-chamber on the south. The principal entrance is by the south porch. The church was originally designed to have a western door of large proportions, but this feature was abandoned, as the west end is much exposed to the west winds. The church is of large proportions, and has been designed so that a bay may be added.

Stafford.—The committee who have promoted the restoration of St. Chad's as a memorial of the late Mr. Thomas Salt, have met to consider their present position. The work proposed, in view of the funds contributed, to constitute the memorial, has been the restoration of the old Norman pillars and arches of the nave of this church, together with an entire re-building of the west front, which has now been thrown open to the street, and is to have a fence wall and entrance gate on that side. The completion of this work is rapidly drawing near. Sir G. Gilbert Scott, B.A., architect, who has furnished the designs for the work, has visited the church and expressed his satisfaction. At the meeting, however, matters took a somewhat new turn. In the belief that most of those who intended to contribute to the memorial had now done so, it was considered that that part of the work ended with what was in hand, but it was strongly urged on the part of several of the inhabitants of the town and neighbourhood that an energetic effort should be made to rebuild the ancient aisles of the church, which had long disappeared, instead of closing in the sides of the nave, as hitherto intended, with temporary brick walls. A new subscription list was accordingly opened at once, and about 120l. promised before the meeting separated. Till Sir G. Scott has furnished the plans, which he has been requested to prepare forthwith, it is scarcely possible to determine the cost of the work now to be entered upon, but there is every reason to suppose that each aisle would cost 600l. or 700l. It has been suggested that the tower greatly needs repair.

Burley in Wharfedale.—The formal re-opening of Burley Church, by the Bishop of Ripon, has taken place on the completion of the decorations which have been in progress for some time, and which have been executed at the sole cost of Mr. W. Fison. The whole of the interior of the building has been re-decorated. The decorations have been done for Mr. Fison, by Messrs. Clayton & Bell, of London. The nave, 64 ft. long and 36 ft. wide, is covered by a flat roof, 26 ft. high, divided into twelve large panels by ribs. These panels are again sub-divided geometrically by the decorations, so that the centre part of each panel forms a space to hold the figure of an angel. The twelve panels thus combined represent a choir of angels holding musical instruments. The other parts of the work are ornamented with designs. On the west wall is painted a figure of our Lord in glory; below are the four evangelists; on the north and south walls the spaces are filled with the figures of the apostles; and on the east wall, to the right and left of the chancel arch, are figures of Paul and Barnabas. The figures in the nave are life-size, and inserted in an arrangement of scroll and diaper work. The chancel has an open timber roof, which is decorated in gold and

colour. Upon the wall are twelve subjects: the Agony, Ecce Homo, Bearing the Cross, the Entombment, the Resurrection, Angels and Mary at the Sepulchre, Touch Me Not, the Confession of St. Thomas, Feed My Lambs, Draught of Fishes, Peace be unto You, and the Ascension. Next the wall-plate in the sanctuary is painted a choir of angels on blue background. The organ is placed in a chamber of the north side, and the pipes are disposed in keeping with the rest of the work. The subjects are separated from each other by borders, and form the gold diapered dado below by bands of gold roses, with white leaves on a green ground. The figures in the chancel are about half-size. The work is not yet fully completed, although a staff of artists have been engaged more or less since July of last year. It is said that the cost of decorations to Mr. Fison will be little short of 3,000l.

Ashton-on-Mersey.—The consecration of the new baptistery of the parish church of St. Martin has taken place. This has been erected recently at the cost of Mrs. Hunter, to the memory of her husband, the late Rev. John Hunter, who was for forty-one years curate of the parish. The baptistery is an addition to the ancient church, and has been erected at the north-east angle of the nave, with which it communicates by a stone archway. Octagonal in form, its walls inside and out are finished with Hollington ashlar. It is lighted by three quatrefoil windows filled with ornamental glass. The open timber roof is of pitch-pine, stained and varnished, and is formed by arched principals, springing from eight ornamental and carved corbels, which rise to a central king-post under the roof cornice. Within the baptistery a new font and its cover have been erected by Mr. Lightbourne, to commemorate the completion of his twentieth year of office as churchwarden of the ancient parish of Ashton-on-Mersey. The font, executed in Farnwick stone, is a regular octagon in form. The basin is panelled and carved, and supported on four polished granite shafts, having carved caps and ornamental bases, the centre being occupied by a figure of St. John the Baptist. The designs for the baptistery and font have been furnished by Mr. Brakspear, architect, Manchester; and the work has been executed under his direction by Mr. Wharton, builder, and Messrs. Williams & Millson, sculptors. The new church of St. Mary Magdalene, which is about half a mile distant from the old parish church, has also been consecrated. The foundation stone was laid two years ago by Mr. W. Cunliffe Brooks, M.P., the donor of the site; about 7,000l. have already been expended in its erection, and it is estimated to cost before its completion an additional sum of 2,000l. The design was selected in competition, and is of the Early Decorated character, executed in Yorkshire parquetry, with Yorkshire stone ashlar dressings, and consists of a nave 83 ft. long by 41 ft. 6 in. wide, with north and south transepts. The nave is spanned by a single open-timbered roof, the carried laminated straining-ribs of which spring from internal pilasters, from which an internal arcade is formed. The whole area of the church is open, and lighted by seven windows in the sides, four being upon the north and three upon the south side, the south porch occupying one bay. At the west end of the church a triple arched recess is formed, the centre of which is occupied by the font, and above is a large window. The two transepts are lighted by windows in the gables with smaller windows in the side walls. The seats, screens, and inner doors are all executed in figured French-polished pitch-pine; the outer doors are clad with oak, and have ornamental wrought-iron bands thereon. The whole of the interior of the church is of plaster, decorated with colour, and relieved with illuminated texts round the walls. The chancel, 31 ft. long by 19 ft. wide, is arranged for choral services, and open to the nave through an arch supported by double corbelled columns, with carved caps, representing the passion-flower and lily. It is lighted by a window in the east gable and two smaller side lights, and is approached from the nave by three marble steps. The tower and spire are upon the south side of the chancel, at the junction of the transept with the nave. The whole of the work, including the fittings, furniture, marble floors, and glass, have been carried out from the designs and under the superintendence of Messrs. Wilson & Oldham, architects, of Manchester. The chief portion of the work has been executed by Mr. Kirkley, builder, Sals. Subordinate contracts were en-

tered into with Messrs. Haden & Co., for the heating; Messrs. Lavers, Barraud, & Westlake, for the glazing; Messrs. Brown & Downing, for the gas-fittings; Messrs. Williams & Millson, for the stone carving, pulpit, font, and reredos; Messrs. Wharton & Burns, for the decoration; Mr. Oppenheimer, for the marble steps and floors; Messrs. Williams, of Liverpool, for patent stone diaper decoration; and Mr. Readitt, Sale, for plumbing.

DISSENTING CHURCH-BUILDING NEWS.

Ashton-on-Mersey.—The Baptist chapel recently erected in Ashton-lane, has been opened. The plot of land secured by the promoters of this undertaking contains 3,504 superficial yards, measuring to half the width of the side-road; but the conditions respecting the building lines are so strict that the net available area for building purposes is reduced to 1,850 yards. This, however, suffices for the school premises, which have now been in part completed and opened; and also for a large chapel, capable of seating upwards of 900 persons, which will be erected hereafter. The latter, as being the more important structure, has been planned to occupy the front portion of the land facing Ashton-lane. The former, or school building, lies in the rear, and for the present is connected with Ashton-lane by a temporary carriage-road, three yards wide. It is intended to use the schoolroom as a chapel. The school premises will eventually comprise, in addition to what is already erected, a residence for a caretaker, and two or more class-rooms. The portion now completed includes a schoolroom (or school-chapel) 55 ft. long, exclusive of recesses, by 30 ft. wide, and 25 ft. high from the floor to the central part of the roof ceiling; also a class-room, 20 ft. by 16 ft., and 13 ft. high; together with a small vestry for ministers' use, which may be cleared away when the future additional class-rooms are erected. Underneath the present class-room is a cellar, containing Messrs. Haden & Son's heating apparatus and boiler, &c., for tea-parties. All the external walls of the entire buildings are faced with Yorkshire stone parquetry. The quoins and dressings to windows and doorways are of Hooton ashlar stone. The roofs are covered with red and brown Staffordshire tiles. In the centre of the ridge is a turret containing one of Boyd's patent air-pump ventilators. Three of the windows on the south side of the room are carried up above the eaves, and have dormer gables with stone copings. The style of the buildings is English Gothic, of the geometrical period. The timbers of the roof exposed to view are stained and varnished, and the ceilings and walls, when sufficiently dry, will be suitably distempered. The total cost of the buildings and works executed so far, including boundary walls, gates, and roads, lighting, heating, ventilating, movable furniture, architect's commission, and legal fees, &c., will be about 2,500l. The contractor of the works is Mr. James Terras, of Manchester. The gas fittings are by Messrs. Hibbert & Co. The architect is Mr. H. J. Paull, of Manchester, and London.

Ringwood.—A Wesleyan Chapel has been opened here. The new chapel, which is built in Christchurch-street, is of Gothic architecture. The walls are of local red brick, with rusticated dressings; the columns and carved caps at the entrance door, weatherings to buttresses, front windows, finials, and label mouldings are executed in Bath stone, and the whole of the front is pointed in black mortar. At the back of the chapel are a vestry and the usual offices, over which is a schoolroom suitable for evening service and small meetings. The dimensions of the interior of the chapel are 40 ft. long and 25 ft. wide, with pew accommodation for nearly 200. The ceiling is arranged in panels, formed by the stained roof timbers, some of these panels being relieved by pierced quatrefoils for ventilation. The ground is enclosed by a brick wall, ornamental iron fencing, and gates hung to rustic brick piers. The cost of the whole, including purchase of land, will be about 700l. It was built by Mr. G. Witt, of Ringwood, from plans prepared by Mr. John Wills, architect, Kingsbridge.

Redditch.—A new Wesleyan chapel has been opened at Headless Cross, built on the site of an old one. The size of the new edifice is 60 ft. by 36 ft., and the seats are arranged so as to accommodate about 320 persons. The architecture is of the Gothic style. At the back of the

preacher, fixed against the wall, is a piece of ornamental woodwork, from the centre of which, standing upon a base of crimson cloth are the letters I. H. S. carved in wood. The cost of the erection will be 1,430l., including the expense of new class-rooms, and the improvement of the old school-room.

Books Received.

Mr. Waring's Works. Trübner & Co., Ludgate-hill. 1873.

UNDER the title, "A Record of Thoughts on Religious, Political, Social, and Personal Subjects," Mr. J. B. Waring, architect, has issued two volumes uniform with "A Record of My Artistic Life," which we mentioned on its appearance. It is something to have had thoughts that fill two volumes, and more to have put them down in readable English; but Mr. Waring has peculiar thoughts on religious and social subjects, and it would be quite out of our province to discuss them with him. We can justly give him praise for earnestness and good intentions. Since we noticed "A Record of My Artistic Life" (an interesting book, spite of its faults, and giving evidence of varied ability), Mr. Waring has cancelled page 212, in which he had betrayed a confidence in respect of some literary assistance to Sir Digby Wyatt, and has given some additional notes at the end of the work.

What am I? A Popular Introduction to Mental Philosophy and Psychology. By EDWARD W. COX, Sergeant-at-Law. Vol. II. The Mechanism in Action. London: Longman & Co., Paternoster-row. 1874.

THIS second volume of Mr. Cox's curious work treats mainly of what he has called "psychic force," and of various states, such as dream, delirium, somnambulism, clairvoyance, trance, and ecstasy, all of which must be well considered before we can have anything like a true and not a mere metaphysical and unpractical mental philosophy to deal with; and, although the whole subject is still in a very immature and unshapely form, the book is an important one, suggestively, but requires much more complete investigation than Mr. Cox has been able, even yet, to spare time to give it. The author relates particulars of strange results, which seem entitled to command belief, but this is sadly shaken when we find him giving a prominent place to the "manifestations," as genuine, of a coarse and clumsy impostor from America, called Foster, whom the conductor of this journal and others some years since helped to expose.

As to his leading idea of "psychic force," Mr. Cox says:—

"The proofs of the existence of the magnetic force are not nearly so many and so strong as are the proofs of a psychic force." "From facts familiar to all who have examined experimentally, it appears (but this is as yet only a suggestion) that psychic force operates, in some unknown manner, in antagonism to the force of gravity," and is the organised and human nerve-force, vital force, or soul-force, and those who especially manifest that force are called "psychics." "Mechanical proofs (the remarks) have been had of the existence of psychic force, and it has been subjected to positive measurement." "There is some resemblance in the operation of the psychic force (he adds) to the operation of magnetism, but certainly it is not magnetism." "Wood (a table, for example) is a better conductor than metal, in this respect differing from electricity and magnetism (but not much from diamagnetism, —Mr. Cox); and some woods are better conductors than other woods." "Every living human body appears to be a battery producing the force," which he also still regards as a "physical" force, as that of the electric cell, is only humanised.

May it not be asked, however, why, if there be a natural force of this kind, it is only within the last comparatively few years that tables have so ostentatiously begun to "levitate," and solid bodies to go through closed doors, whether "directed by intelligence" or not? This, we suppose, would be Mr. Cox's reply, though not quite satisfactory, to so natural an objection:—

"Man has existed for many thousands, probably many millions, of years; and, for all that time, the electric, the galvanic, and the magnetic forces were about him, and controlling him, as now they are; and yet the discovery of them is recent, and our knowledge of them has been gained in our own day."

There is an article on diamagnetism in the *Builder* of 1st May, 1852, p. 283, titled, "Magnetic Science in its Infancy," from which it may be worth while here to make a brief quotation, by way of suggestion, with reference to these

* See *Builder* of 11th July, 1863. On Geometrical Symbols; Psychological Key.

Engraved Emblems.—The United Society of Boilermakers and Iron Ship Builders offer a premium for the best design for a certificate of membership, or "emblem," awarded to premium to one by Mr. M. J. Fitschen, which has just now been engraved. Parts of it are fairly designed and drawn, that it is worth advising Mr. Fitschen to give some study to the principles of design, and he will then be placing a column in a hole sunk in the face of a pier, and throwing at the feet of a sitting figure as large as its head. We do not say that to give pain, but with a view to help on.

Engines without Steam-blast, Noise, or Smoke.—A trial has taken place on the Manchester, Sheffield, and Lincolnshire Railway, between the Grange-lane and Tinsley stations, of an engine constructed by the Yorkshire Engine Company, upon L. Perkins's patent system, for the Belgian Street Railway Company, Brussels. This engine emits no smoke or steam into the atmosphere, and makes comparatively little noise. The engine, it is said, used steam at 500 lb. to the square inch, and maintained this pressure by natural draught without any difficulty, in fact, worked half the time with the draught-doors closed. The engine is compound, and expands the steam to the most economical limits, and then condenses it by means of two air-surface condensers placed on either side of the machine. The boiler was inspected by the Belgian Government engineers, and proved by them to 2,800 lb. water-pressure per square inch. The engine can be driven from either end, all the driving-gear being duplicate, to obviate the necessity of turntables. It accomplished a speed of 15 miles per hour, drawing its full load up gradients varying from one in 200 to one in 80, and was pronounced by all, says our authority, the *Birmingham Daily Gazette*, to be a machine likely to work a complete revolution in the use of steam. The system has already been applied to stationary and marine engines.

The Improvement of Leicester-square.—A public meeting of the Defence Committee, inhabitants, and others, has been held at the Hotel de l'Europe, to protest against the attempt now being made to prevent the carrying out of the restoration and embellishment of the square. Mr. Albert Grant, M.P., was present, and stated that the Metropolitan Board's bill would probably be read a third time on the 13th instant, and there could be no doubt that it would become law by June or July next. If he had not by that time acquired all the rights privately, the Metropolitan Board would have power to expropriate them, and to take over the square and maintain it at the public expense; and upon the jury assessing the amount to be paid, he will provide it, and thus the square will be presented to the metropolis and the residents. Mr. Grant declared that he owned not a house nor a foot of land in Leicester-square, except the centre of the square, which he proposed to present to the public for the benefit of the people of the metropolis, amongst whom he had so long lived. He explained his projects, stating that he wanted to see if, through Leicester-square as a pioneer, it was not possible, as he believed it to be, to establish in London, as in Paris, those pleasant places where persons might go in the afternoon and sit down to breathe a little fresh air without any restriction, and without being compelled to go long distances to the parks.

The Cemetery Wall, Richmond.—Much excitement has been caused by the erection of a dwarf wall to divide the consecrated from the unconsecrated portion of the new burial-ground. The wall, 280 ft. in length, has, by the order of the Vicar, been erected by Mr. Sims, of Richmond, builder. There have been meetings to protest against such a wall as offensive and insulting to the Nonconformists as a class. Some persons took summary action and knocked it all down. The Vicar having informed the builder of the wall that he will be expected to comply with the terms of his contract, Mr. Sims has commenced rebuilding the wall. Application has been made for a special body of police to watch the cemetery and protect the wall from further molestation. A committee, consisting of Mr. Cave, M.P., and several clergymen and others, were appointed to submit to the select vestry resolutions passed at the public meetings condemnatory of the Vicar's conduct in building the wall after the expressed wish of the vestry to the contrary; and to obtain the removal of the wall. The vestry have since requested the Vicar to remove the wall within three days.

New Lecture-hall at Forest-hill.—The foundation-stone has been laid of a new lecture-hall in connexion with St. John's United Presbyterian Church, Devonshire-road, Forest-hill. The hall is being built from the designs of Mr. Vickers, who acts as honorary architect, having presented the designs free to the incumbent. The building, when completed, will seat about 100 persons. Of an estimated amount of 1,400*l.* required for the erection of the hall, 1,077*l.* have already been subscribed.

British Museum.—The fourth report of the Royal Commission on Scientific Instruction, &c., recommends a change in the governing authority of the British Museum. Referring to the national history collections, the report urges, "That the occasion of the removal of these collections to the new buildings now being erected at South Kensington for their reception, be taken advantage of to effect a change in the governing authority and official administration of that division of the museum." The following recommendation of the commissioners will be specially interesting to the managers of provincial museums:—"That, in connexion with the Science and Art Section of the Education Department, qualified naturalists be appointed to direct the collection of specimens in order to supply whatever deficiencies exist in the more important provincial museums; and also in order to organise typical museums, to be sent by the Department of Science and Art into the provinces to such science schools as may be reported to be likely to make them efficient instruments of scientific instruction."

The Walsall Arboretum.—The arrangements for the forthcoming opening of the Walsall Arboretum, on the 4th proximo, approach completion, when the inhabitants of Walsall and neighbourhood will be provided with a place of healthy recreation. The Arboretum grounds are about twenty acres in extent, and were purchased from Lord Hatherton and Sir George Mellish. Mr. R. Lowe, of Wolverhampton, who successfully laid out the Molineux Grounds, Wolverhampton, for the Industrial Exhibition some years ago, was selected as the landscape gardener, and has laid them out in a pleasing manner. The site consisted of a large lake, surrounded by small gardens and high and rough mounds of lime-waste and clay, all of which have been made good use of; and there are croquet lawns, terraces, promenades, islands, &c. The grounds are bounded nearly all the way with a high wall, and at the main entrance is a large lodge with a square tower. There are also refreshment-rooms, gardener's lodge, summer-houses, &c.

Somerset Archaeological and Natural History Society.—At a special general meeting of the members at the Taunton Museum, Mr. C. J. Turner took the chair, in the absence of the president, the Bishop of Bath and Wells. Mr. O. W. Mallet, one of the hon. secs., was authorised to enter into a contract on behalf of the Society for the purchase of Taunton Castle and adjoining premises for 2,850*l.*, and the fixtures and furniture for 870*l.* A cheque for 150*l.* was drawn to pay the deposit upon the purchase. Of the 1,643*l.* promised, 1,000*l.* have been paid into Stuckey's bank on deposit, and the bank has agreed to advance 1,500*l.* for one year at 4 per cent. One-half of the purchase-money is to be paid down and the other half to remain on mortgage. Taunton itself has raised 500*l.*, and it is stipulated that if the town increases the amount to 800*l.*, the inhabitants shall become entitled to the reversion of the property in the event of the dissolution of the Society or the removal of the museum from the town.

Worcester Diocesan Architectural Society.—The annual meeting of this society has been held at the Natural History Society's rooms, Worcester. Mr. G. J. A. Walker presided, and there were present the Revs. W. W. Douglas, E. Robinson, W. Thorn, T. King, H. Kingsford, and W. M. Kingsmill; and Messrs. J. Noake, E. Lees, J. Severn, Walker, Walker Rennick, and T. N. Stratford. Mr. J. Severn Walker (the hon. secretary) read the annual report, which was adopted. The patrons, president, vice president, and honorary secretary were re-elected, Mr. John Noake re-elected auditor, and the following gentlemen to form a committee for the ensuing year:—The Rural Deans, the Revs. Dr. Collis, R. Cattley, T. G. Curlier, and H. Douglas; Messrs. H. C. Goldingham (Mayor), E. Lees, W. J. Hopkins, Walker Rennick, and R. Woolf. The Rev. Canon Seymour was elected a vice-president. Several members were also elected.

The Eagle Sash-line Fastener.—Although a simple little matter, this sash-fastener is likely to prove profitable to the patentee. The title gives a notion of its form, or it might have been called the trident sash-fastener, though the central prong is elongated. It makes a sashline much more secure than the single nail now used will do, and can be readily taken out and refixed when a new line becomes necessary. It will doubtless come into use.

New Artificial Stone.—Mr. J. Fottrell, of Dame-street, Dublin, manager of a public company, has patented an improved composition for the manufacture of pipes and tubes, suitable for water at high pressure, and as conduits for sewage purposes, gas, brine, and other saline liquors. The invention consists in the manufacture (by fusion of the ingredients) of a homogeneous composition, forming a concretion or artificial stone, possessing all the qualities of hardness and durability of the natural substance, such composition to be employed in the construction of tubes for the conduct of water at high-pressure, gas, sewage, brine, and other saline liquors, or in the manufacture of useful or ornamental forms by moulding or casting the same. When greater density or special sharpness in the castings is desired, pressure is applied to the moulds.

Gas from Kimmeridge Clay or Shale.—It has been found by the Rev. Mr. Moule, that a good useful gas can be produced from the Kimmeridge clay. The gas is clear and soft, but is produced crudely, and is hence not yet of its highest order of illuminating power. It is produced by the destructive distillation of the shale, the gaseous products being submitted to purification before use. In this latter process, as also at other stages of the manufacture, chalk is used. No doubt good paraffine oil can be produced from it also. Young's paraffine has all been got, if we mistake not, from shale in Scotland, out of which immense sums of money have been thus earned.

The Tenders for New Workhouse for Derby Union.—Mr. Dusatoy, whose tender of 20,358*l.*, was said to be lower by about four thousand pounds than any other, and was accepted by the guardians, has written to them to say that he "omitted to allow for the extra price of material and labour, which was intended to be covered by an addition of 7½ per cent. to the prices at the new schools just built, and that he now adds that to his previous estimate, and submits for approval or otherwise." The guardians have voted for "otherwise," and have ordered Mr. Dusatoy to be written to informing him that the Board "expect him to carry out the contract in accordance with the tender accepted at the last meeting."

New Barracks at Upnor.—The barracks in course of construction at Chattenden Roughs, about two miles from Upnor Castle, approach completion, the contractors, Messrs. Ball & Co., of Rochester, having put a large force of men on the work. These barracks are for the troops who will guard the extensive powder-magazines which are to be built at Chattenden Roughs, the foundations of which are being prepared. The new magazines are to take the place of those at Upnor Castle, which were some time since condemned as a standing danger to the dockyard, to Chatham, and the contiguous towns.

The Kinson Sanitary Ware, Brick, and Clay Company.—The Kinson Pottery, situated at Kinson, in the county of Dorset, about a mile and a half from the town of Poole, is being turned into a limited company. The property includes, to a depth of 40 ft., beds of the finest descriptions of clays, which were found, by the analysis made by the late Professor Horepath, well suited to the manufacture of sanitary-ware, bricks, and so on. We have seen some non-absorbent bricks made at these works, which seem calculated to supply a want.

The Hydrostatic Van in Street-watering.—It is said that in more than twenty of the thirty-nine metropolitan parishes Bayley's hydrostatic van has been adopted in street-watering. According to a recent report of the Metropolitan Board of Works, the cost of street-watering in St. Pancras under the new system is 52*l.* per mile, while in an adjoining parish not so well watered it is as high as 80*l.* per mile, and in some other parishes much higher.

Prison Labour.—At Lewes sessions a report has been presented on the success of the system of remunerative labour recently introduced into Lewes prison. It was stated that during the nine months it had been in operation the net profit on the prisoners' work was 300*l.*, and still more favourable results were anticipated.

Sunderland Municipal Buildings Competition.—The drawings received in competition have been on view there during the week, at the Grange School, West Park.

Institution of Surveyors.—The next meeting will be held on Monday evening, April 13th, when the discussion on the paper by Mr. R. W. Clutton, entitled "The Self-sown Oak Woods of Sussex," and on that by Mr. D. Watney, entitled "Timber," will be resumed; and, should time permit, a paper will be read by Mr. W. J. Crawley, entitled "The Forests of England."

Salary of the Manchester City Officer of Health.—Mr. John Leigh, the Officer of Health to the Manchester City Council, has had a rise of salary from 500l. to 600l. per annum.

David Cox.—A handsome stained-glass window has been placed in the parish church of Harborne, as a memorial of the great water-colour-painter, David Cox.

The Society for the Encouragement of the Fine Arts will hold their second conversation of the season at the South Kensington Museum on the 16th instant.

TENDERS

For the erection of a dwelling-house, at Manners-road, Hampstead, for Mr. W. H. Stallard. Messrs. Spalding & Knight, architects. Quantities by Mr. Fleetwood:—
Browne & Robinson £2,710 0 0
Wicks, Bangs, & Co. 2,808 0 0
Scriven & White 2,532 0 0
Burford 2,442 0 0
Carter & Son 2,397 0 0
King & Son 2,380 0 0
Shepherd 2,360 0 0
Boyes 2,293 0 0

For the erection of three houses, Brick-Jane, Bethnal-green, for Mr. J. Swyer. Messrs. Wadmore & Baker, architects:—

Allen & Sons £3,058 0 0
Merritt & Ashby 2,751 0 0
Johnson 2,637 0 0
King & Son 2,670 0 0
Langmead 2,605 0 0

For additions to Borough Jewish Schools. Mr. Lewis Solomon, architect. Quantities supplied by Mr. H. F. Gritten:—

Longmore & Barge £2,053 0 0
Colls & Sons 2,000 0 0
Henson, Brothers 1,855 0 0
Simpson & Co. 1,820 0 0
Palmer 1,759 0 0
Cohen 1,632 12 0
Ditto, reduced work (accepted) 1,472 12 0

Repairs to five houses, in Nichols-square, Hackney. Mr. Lewis Solomon, architect:—

Schwarz £245 0 0
Turrell 205 0 0
Cohen 185 0 0
Richards 180 0 0
Woods 163 16 0
Pittman (accepted) 145 0 0

For the erection of farm homestead, Anley, Herts, for the Rev. G. J. Hesse. Messrs. Smith & Justin, architects:—

Glasscock £1,050 0 0
Gilm 1,871 0 0
Gimson 1,760 0 0
Saggers 1,753 0 0
Lawrence 1,726 0 0
Gibbons (accepted) 1,677 0 0

For painting the external parts of Highgate Infirmary:—

Fitters £450 0 0
Ball & Wicks 387 0 0
May 350 0 0
Charlton & Martin 345 0 0
Wagner 330 0 0
Dunsford 308 0 0
Holmes (accepted) 293 0 0
Seed 270 0 0

For works at the premises of the Metropolitan Bank, Nos. 76 and 78, Cornhill. Mr. Alfred Nickerson, architect. Quantities supplied:—

Taylor & Son £423 10 0
Green & King 339 0 0
Hottam 350 0 0
Bottom, Heywood, & Hanks 321 10 6

For new church, Mile-end-road. Mr. A. W. Blomfield, architect. Quantities by Messrs. Goodman & Vinal:—

	Church.	Separate Estimate for Foundations.
Ashby & Sons	£1,835	£400
Downs	4,790	450
Turner	4,399	410
Dove	4,383	395
Roberts	4,343	397
Adamson	4,324	400

For rebuilding South Mills, Blunham, Beds, for Messrs. Powers. Mr. John Usher, architect:—

Edey £5,238 0 0
Masley & Rogers 5,233 0 0
W. Carter 5,183 12 0
Moore 4,925 10 0
Spencer 4,833 0 0
Hall 4,406 0 0
S. & W. Pattinson 4,400 0 0
Twelvetrees 4,322 0 0
Hobson & Taylor 4,100 0 0
R. Carter 4,100 0 0
Coles 1,000 0 0
Langmead & Way 3,975 0 0
Foster 3,898 0 0

For pulling down and rebuilding No. 14, Horrietta-street, Covent-garden, for Mr. S. Williams. Mr. R. E. Worsley, architect. Quantities by Messrs. Franklin & Andrews:—

Longmore & Barge £2,723 0 0
Eyer 2,658 0 0
Little 2,475 0 0
Bird 2,444 0 0
Macey 2,390 0 0
Hockly 2,355 0 0

For taking down old, and erecting new, malthouse, situated at Farnon-field, in the parish of Farnon, near Newark-upon-Trent, for Mr. Joseph Richardson. Mr. Charles Baily, architect:—

Lovely £3,350 0 0
Hill, Brothers (too late) 3,355 0 0
Pattinson 3,300 0 0
Mackenzie (accepted) 3,180 0 0

For the erection of a residence and stabling, in Bezel-road, Eltham, Kent, for Mr. Alfred Warner. Mr. H. A. Alexander, architect. Quantities by Mr. Sidney Young:—

Rider & Son £3,109 0 0
Colls & Son 3,149 0 0
Bayes & Ramage 3,128 0 0
Outhwaite & Son 3,084 0 0

For rebuilding Town Mills, Melkham, lately destroyed by fire. Builder's work only. Mr. Frank Whitmore, architect:—

Light & Smith (accepted) £2,469 0 0

For additions to steam flour-mills, Barking, Essex, for Sir Edward Hulke. Builder's work only. Mr. Frank Whitmore, architect:—

Brown (accepted) £1,897 0 0

For triple villa residence, Plot 12, Crystal Palace Park Estate. Mr. John Norton, architect. Quantities by Mr. Thacker:—

Joplin & Co. £6,907 0 0
Smith 6,860 0 0
Kenst & Co. 6,759 0 0
Stephenson 6,633 0 0
Gilmour 6,600 0 0
Niblett 6,489 0 0
Tall 6,457 0 0
Robbins 6,450 0 0
Bayes & Ramage 5,960 0 0
Simpson & Baker 5,763 0 0
Garrad 5,547 0 0
Woods 5,091 0 0
Seed 4,972 0 0

* Mr. Seed has since written to say his tender should have been 5,672l.

For the erection of a water-tower, and other works in connexion therewith, at Middleton Park, near Bicester, Oxfordshire, for the Hon. Earl Jersey. Mr. William Eversden, architect:—

For the Tower. J. & T. Davis (accepted) £1,700 10 0

For the Iron Tanks. Fildesley (accepted) 615 0 0

For the Iron Joist. Dawney (accepted) 105 0 0

For three villa residences (triplet), Portdown-road, Maiden-vale. Mr. T. Wilkinson, architect:—

Temple & Foster £3,455 0 0
Cross & Son 3,393 0 0
Thompson & Smith 3,467 0 0

For alterations and additions, at rear of No. 70, East-street, Brighton, for Mr. E. Booth. Messrs. Goult & Gibbins, architects:—

Nash & Co. £275 0 0
Lockyer 750 0 0
Barnes 735 0 0
Newham 703 0 0
Fatching & Walker (accepted) 605 0 0

For alterations and additions at Stonebridge Park, Willesden, for Mr. John Bugeyne. Mr. Wm. Brachear, architect:—

Prebble & Morley £273 10 0
Steel 269 10 0

For rebuilding the Lord Wellington public-house, Basinghall-street, Bermondsey, for Mr. Baker. Mr. W. T. Hollands, architect. Quantities supplied by Mr. W. Plimsall:—

Contract No. 1.

Arnold £1,779 0 0
Taylor 1,867 0 0
Cook & Green 1,849 0 0
Thomas (late) 1,870 0 0
Kipps (late) 1,128 0 0
Hurns 1,258 0 0

TO CORRESPONDENTS.

J. C. D. B. C. & M. F. R. C. C. O. M. L. S. J. E. J. F. G. D. K. B. C. B. F. W. J. E. M. F. J. J. H. R. J. N. C. & Sons. E. E. C. P. R. & Co. W. R. H. H. B. R. (shall have attention) — V. C. (not suitable) — W. C. T. (next week) — C. W. B. (next week) — J. B. (next week) —

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the names and addresses of the sender, not necessarily for publication. Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

T. TRELOAR & SONS,

SUPERIOR
COCOA-NUT
FIBRE
MATTING
AND
MATS.
Manufacturers and Warehousemen,
69, LUDGATE HILL, E.C.
GOOD
FLOOR
CLOTH.
KAMPTULICON
CORK
CARPET.

CHARGES FOR ADVERTISEMENTS.

	Situations Wanted.	Situations Vacant.
Six lines (about fifty words) or under ..	2s. 6d.	4s. 6d.
Each additional line (about ten words) ..	6s. 6d.	6s. 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to residents in any part of the United Kingdom at the rate of 12s. per annum. *Public on Advance.* Halfpenny stamps accepted for amounts under 5s. Any larger sum should be remitted by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to DOUGLAS FOURBURNER.

Advertisements cannot be received for the current week's issue later than THREE o'clock p.m. on THURSDAY.

NOTICE.—All communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent Garden. All other Communications should be addressed to the "Editor," and not to the "Publisher."

Bath Stone of best quality.
RANDELL, SAUNDELL, & CO. (Limited),
Quarrymen and Stone Merchants.

List of Prices at the Quarries and Depôts; also cost of transit to any part of the Kingdom, on application to
Bath Stone Office, Corsham, Wilts. [ADVT.]

STONE BROTHERS,

Bath Stone Merchants,
supply direct from their own Quarries:—
BOX GROUND, CORSHAM DOWN,
FALEIGH DOWN, COMBE DOWN,
AND STOKE GROUND.

Prices on application at Bath-stone Office, Bath, London Depot, G.W.R. Mileage Station, Farringdon. Stone Dressings prepared ready for fixing. [ADVT.]

Whitland Abbey Green Slates.—The Quarries are now fully opened out, and are producing Slates in all sizes, and in any quantity: sound, and of choice green tint. Orders can be executed without a day's delay.—We sample and further particulars apply to the MANAGER, at the Quarries, Narberth, R.S.O. [ADVT.]

Asphalts.

Seyssel, Patent Metallic Lava and White Asphalts.

M. S T O D A R T & C O.

Office:

No. 117, Cannon-street, E.C.—[ADVT.]

Bills of Quantities, Specifications, and Lithographed by ROBT. J. COOK & HAMMOND,
29, Charing-cross, S.W., with accuracy and punctuality. Plans and Drawings Copied, Traced, or Lithographed.—[ADVT.]

The Builder.

VOL. XXXII.—No. 1628.

Notes in the International
Picture Galleries.

HE place of honour in the gallery devoted to the works of living English artists, both as regards size of canvas and central position, is held this year by Mr. Burchett's painting of a supposed (and very probable) scene during "The Making of the New Forest" (662), which would certainly have

claim to its position if the conception and execution were as forcible as the actions represented. It needs the genius of a Gérôme to render scenes of violence and bloodshed subservient to some of the highest ends of art. Nevertheless this work is creditable to Mr. Burchett. Of smaller figure-pictures, chiefly *genre*, may be noted here Mrs. Jopling's (late Romer) all study of "A Mother and Child" (500), as clever and agreeable bit of work, slightly but unconsciously painted; E. Roberts's "Early Edition" (506), much reminding us of the manner of Rankley; J. Clark's "First Letter" (448), written by a small scribe under the guidance of an older sister; Miss Turek's "Lady Eazle" (608), in her unmarried days, sitting over the tambour-frame so contemptuously referred to by Sir Peter, a figure which realises a character very well; and J. Morgan's two contributions, "School's Over" and "Toddles" (69 and 628), the former of which is a work of more elaboration and importance than the others mentioned: the picture has fun in it, but scarcely humour, the artist has caught rather the outer manner than the character and nature of the schoolboy at play; but it attracts spectators, and is composed and studied with care. In a very different way the scene from the "Taming of the Shrew" (534) by H. C. Selous, interesting, as happily hitting the manner of Strachio and Katharine at the moment when the lady comes (in the last scene) in obedience to her husband's orders: the quiet assertion of premarriage in the latter, and the dignified submission of the lady, are very well given; the composition emphasises the leading figures well. An artist's large picture, illustrated by, or illustrating, a verse of Shelley (686), is an ill-judged and prosaic attempt at allegories in painting the poetic metaphor embodied in the words, "The untains mingle with the river," &c. The result only to utterly vulgarise a fine idea: pity that an artist who has shown considerable ability in the execution of this and sundry other works of similar type should bestow his labour on things which none but a very weakly sentimental or aesthetically-minded person would care to possess. The portrait of "Thomas Thornycroft, esq." (27), by Miss Alyce Thornycroft, is a half-length of considerable character and individuality,

and painted in a broad and effective manner: the sculptor appears to be lecturing, and holds in one hand a small statuette in green marble; a greyish coat gives the prevailing tone. Among a few foreign works interspersed here, a small one by Palavin (Russian), the interior of a fisherman's cottage (543), is worth notice for a good effect of light, character in the principal figure, and careful finish of accessories.

Among landscapes in the English gallery are some very pleasant little bits. A contribution from Scotland, by J. Cassie, A.R.S.A., "Mouth of the River Tay" (501), shows that its author sees with his own eyes, and can find poetry in a flat brown beach, with two big guns and a signal-staff, and a lighthouse on a distant reach of land. F. Cor's little bit "On the Thames," with its quaint high wooden bridge (493), and Farrer's "Sun setting in a Fog, London Bridge" (518), are both good little things, the latter the most original, though rather hard. "Daybreak," by G. Prendergast (611), gives most truthfully and feelingly the effect of the grey of early dawn glimmering on a barge and two swans on a river, and just cutting out from the sky the rather misty outline of houses above the opposite bank. Barclay's "Autumn Moonlight on the Tay" (609) is good, and H. Moore's small work, "Coast of North Wales,—Cattle basking on the Beach" (637), serves to show what a genuine artist can make out of sandhills and cows, discreetly handled. It is an admirable little work. A. Clint's "Look at Wallingford" (845) is a small canal scene of great freshness and truth of tone, to some extent recalling the feeling of Constable. The water-colours on screens in the English Gallery do not call for much remark. There are some good architectural subjects among them. A small drawing of St. Paul's by R. K. Thomas (742), W. Richardson's "Poets' Corner" (774), Dobbin's "Burgos Cathedral" (784), and a fine drawing by J. Chase of the interior of Antwerp Cathedral. Several drawings of the same class by T. C. Dibdin are good in regard to execution and finish, but all fail artistically from a want of definite point in the light and colour composition. They are too "all-overish," so to speak. Mr. Spiers exhibits some of his well-known drawings. Among a miscellany of not very interesting productions, two small drawings, by C. Millard, "Near Festiniog," and "Mountain Torrent" (801-3), commend themselves as original; as also "Showery Weather," by E. Bernard (758); "Niton Beach, Isle of Wight," by Miss A. White (843); and two or three others.

The Bavarian Gallery (Room X.) has its large central picture also, Professor Wagner's "Roman Chariot Race in Time of the Emperor Domitian" (1,224), which seems to be an attraction to visitors, as well, perhaps, on account of a certain novelty in the subject, as of the undoubtedly spirited treatment of the composition. The scene is taken near what may be called the "grand stand," in front of which several four-horse chariots (*quadrigæ*) are rounding the small end of the amphitheatre, rushing straight up to the spectator. The foreshortening of the galloping horses is ably achieved, and a sufficient variety given to their action and attitudes; and the almost grotesque energy of the drivers is true to life, and has no classic conventionality about it. Perhaps it would be difficult to define decisively where this work falls short of being wholly satisfactory, as it certainly does; the fault is to be laid a good deal to a hardness and "paintiness" of tone and texture, and also to a want of refinement and truth in detail. Meisel's "Last Meeting between Louis XVI. and his Family" (1,119) has much of pathos, and the composition tells the story well; the jarring note is in the manner in which the white satin dress of the unhappy queen is forced into prominence, in order to gain a strong high light on the right: the result is to

remind one of Tilburnia "mad in white satin," besides the being, under the circumstances, at variance with probabilities. "An Auction," by Stelzner (1,130), shows a collection of figures of considerable variety, as representing the character of low life; the composition wants concentration as a whole. An original thing, and with much of local character is Mali's "Cattle Market in Swabia during Rainy Weather" (1,083); the architecture most picturesque, the expanse of wet umbrella-tops in the straggling street, with a detachment from the mass struggling up the inn steps, the long rain-spouts projecting two or three yards from the houses with the water blown away in showers from the end of them, constitute a highly characteristic scene, evidently from reality. For character under very different circumstances and people, Holmberg's "Difference of Opinion" (1,090) between certain elderly silk-stockinged figures, over their wine in a luxuriously-furnished room, may be mentioned as a scene of much point and humour, and well worked out both in composition and detail. A half-length by Leibl of a "Peasant Woman and Child" (1,217), a stern-looking woman in black dress and with a round fur cap on her head, should not be passed over; and Kuppelmayr's "Italian Concert" (1,237) is interesting as recalling a favourite kind of composition of the old Venetian painters, a group of half-length figures massed together into one picture and forming by their costumes a study in colour; the colour in this case wants brilliancy, but is fine and harmonious in tone; the treatment is rather flat and fresco-like. A really original little work near this is "Polish Jews at Morning Prayer" (1,232), by Von Kerwin-Milenski; the composition is simple and unaffected; the long robes and dignified aspect of the officiating priests contrast curiously with the bare uncelled garret, apparently lighted from a skylight, in which these Israelite worshippers, reversing the state of things at the rise of Christianity, would seem to have shant themselves for fear of the Christians. There are some good landscapes here, the most ambitious being Neubert's "Sunrise on the Grossglockner" (1,226). The artist has scarcely escaped the danger which such subjects lead to, of portraying colour rather than light on the snowy mountains lighted by the rising sun; but it is a powerful thing, very well attempted, and at least partially successful. The same artist's "Winter Evening" (1,131) is fine, and shows that he is not restricted in his range. Among other works of true feeling in landscape are Heffner's "Evening on the Isar" (1,162); Kappis's "Fishermen on a Foggy Morning" (1,206); "The Pond of a Monastery," by Hellrath (1,222), a fine quiet scene of water and dark trees with the old building as a background. The screens in this gallery are occupied by water colours, chiefly English, among which are small works of interest here and there: two drawings by Jas. Price "Scene in Sussex" and "Common in Kent" (1,303, 1,309) show artistic skill; and there are originality and ability in the two small companion works by Miss Beatrice Meyer (1,335, 1,340), representing phases of city life on its comic and tragic sides, "At the Pit Door" and "A Scene at the West End." Several of Mr. Ernest George's drawings sustain his reputation as an artist-architect.

Coming round to the East Galleries, we find Belgium numerously represented in Room XVI. The treatment of material in interiors, &c., and a general ability in the finish of texture and detail, seem to have become a tradition in this school, and equally so the want of pure light and atmosphere in almost the whole of them, landscape especially: the sunshine seems as if viewed through a dingy medium interposed. The average in regard to figure pictures is, however, higher here than in the West Galleries. The best thing in the room is Slingenev's

"Street Scene in Tunis" (1,656), which really is not a "scene," but a three-quarter length of a handsome Algerian woman, draped in a heavy blanket kind of robe, caressing a little copper-colored lad seated against the wall beside her: the figures are carefully studied in pose, the flesh-tints clear and good; the picture is lighted up by the touches of positive colour in the boy's red cap and the basket of lemons behind. "Italian Woman and Child," by Alexandre (1,521), forms a good contrast in the same class of subject to the last-named, and is very pleasing in colour, composition, and the picturesque form of the cradle introduced. "The Regatta," by Chysemar (1,558), is one of a class of subjects in which certain French artists so much excel; a lady in a brown silk dress, her face in shade from the parasol she holds, is seated at an open window watching the yachts; the attitude and pose of the figure, the treatment of the accessories, and the distant glimpse through the window of the hot bright shore and blue water, are equally well given; it is a work quite removed from the commonplace. The same may be said of the two small works by Impens, "Hush!" and "The Picture-book" (1,541, 1,599). "An Italian Window," by E. Smits (1,551), a study of girls arranging flowers in a balcony, has merit in character and composition, though rather muddy in colour. The large work by Soubre, "A Noble Family before the Council of Blood" (1,554), is far from being a bad or inferior painting; but it is so like so many others on similar subjects, that it is impossible to see what was to be gained by painting it. Linnig's "Curiosity Dealer" (1,585), an old original of a collector in the middle of his *bric-à-brac*, examining a picture on his knee, is clever and humorous; here again the want of clearness and purity of colour is the defect. The picture by Hermanns, "Tent in the Convent" (1,593), is in its way one of the cleverest things here, especially the figure of the fat brother in the foreground advancing to the table with more good cheer; but it is a somewhat coarse thing, a vulgar rendering of what is probably in great measure a vulgar calumny. The same artist sends another work, equally well executed, and much pleasanter in subject, "The Parents' Sunday Visit" at St. Pierre's Hospital, Brussels; the picture is cold and dead in effect, for no attempt is made to soften away the absolute realism of the bare white-washed walls, but the unaffected and simple feeling of the whole will appeal to the sympathy of many. We can see in this gallery the frightful havoc which English drama and English legend make among the Continental painters; De Vriendt's attempt at an "Othello" (1,604) is absolutely ludicrous; and Van Lierus, who again copes with English legend, is scarcely more successful in his "Cinderella" (1,706). There are humour and nature, and effective grouping, in Gerard's painting of the "Artist in his Studio" (1,637), in the interior of a house in the Black Forest, engaged on a sketch of the old *gross-mutter* of the house, while the host stands behind critically, and the children look on. Another work by Hermanns, in quite a different style to the two mentioned, is the "Young Slave waiting for her Mistress," who is going to a masked ball (1,724); a negro girl in a bright buff dress, holding a cloak, &c., and backed by a light-toned striped silk curtain, — a clever study in colour. Markelbach's half-length group, "The Guardian" (1,549), a florid, jolly, old Dutchman, taking care of a pretty, timid girl, who seems anxious to escape, may close the list of figure pictures that are specially worth noting.

There are some good landscapes, marked by that peculiar heavy manner which we have noted as so prevalent. Van Luppen's "After Rain, near Dinant" (1,582), though at first sight anything but attractive, is a picture the result of a good deal of study, and embodying well the phase of Nature which it professes to represent. We meet one or two of these thick heavily painted landscapes, of which the works of Cosseman are a type, the best is this artist's "Allé de Hétreux—Autumn" (1,574), a powerful study of forest scenery, fine and interesting in its way, though we should hardly in general care to see Nature so much "translated" as here. Bouvier's "Bay of Algiers" (1,583) is a good little coast picture; and Verheyden's "Orchard in the Neighbourhood of Brussels," in the "Chick" style before alluded to, Heyman's "Stormy Weather on the Scheldt" (1,601) is a fine thing, the weight and swing of the water very well given, though with a tone and texture that no English sea-painter would dream of. Indeed,

"the Scheldt" must be a peculiar river, or its painters libel it much; Durand Brager's painting, "Twilight," on the said river (1,629), makes the water a deep red-brown, not without effect of a kind. De Schampelaer's "Banks of the Amstel—October" (1,640), is a fine thing, and the high light catching the sails of the boat, and the middle of the stream is a positive relief, and is almost the only real piece of sunlight in the gallery.

Francis's "Old Mill near Ostend" (1,548); Musin's "Island of Walcheren" (1,681); Vust's "Coast of Norway," with a fine dark sea, all have merit and originality in treatment. Bossuet's architectural subjects, "Naples from the Quai de Marinella" (1,676), and "Rome from the Tiber" (1,540), have all the painters' finest characteristics, and seem almost to sparkle; certainly these are an exception to our charge of want of light against the Belgian pictures; and there is a fine architectural painting, by Stroobant (whose works in this kind we have noticed in previous years), "The Castle of Heidelberg" (1,704), remarkably good in the treatment of the tones of the old red and brown masonry, and in effect of light and shadow. In still life, a branch of art in which the Belgians excel, there is little exhibited; but one excellent work may be noticed, Huygen's "Hawthorn and Roses" (1,620), with vases of Venetian glass standing among the flowers and catching the light in a most sparkling manner.

The Smaller Gallery (Room XVII.), devoted to the now great name (in one sense) of "Germany," does not, as we hinted in a previous article, offer anything very remarkable, unless the spectacle of a mass of cotton-wool coming down some rocks, and passing itself off for a waterfall (1,915), be considered so. Von Eckenbrecker's "Street in Constantinople" (1,907) is, however, an exceptionally good architectural scene, in regard especially to the management of the tones in shadow and the brilliant and dazzling brightness of the buildings in full sunlight, of which a glimpse is seen in the background. Burger's "Death of the Stag" (1,935), from the price put on it, seems to claim to be a great work, but can scarcely count as such; the country of Landseer, Gassow's "Autumn Flowers" (1,950) is a really clever thing; two figures (little more than the head and shoulders) of whom an old wizened man, with his back nearly to the spectator, presents flowers to a half-smiling, half-contemptuous woman, of a coarse type of face; the thing is thoroughly original both in motive and execution. "Elegy," by Arnot (1,955), is a poetical little work; the bare side of a hill, down which a single small figure clad in black descends from a little white house, part of which is seen over the brow of the hill; the whole is very suggestive. Not far from this is one of the few first-class things in the galleries, a small picture by Fritz Thaulow, called a "Norwegian Pilot Boat" (1,972): a boat sails up to the foreground on green, transparent, rippling water, put in with the broadest and simplest touches; an old pole sticking out of the water as a bank-mark, one or two distant craft, and a line of yellow sand-hills on the distant shore with sunlight upon them, given with most perfect truth of tone, complete the picture, which has not a superfluous touch, and in tone, atmosphere, and the motion of the boat on the water, is nearly perfect. Gallery XVIII. contains a mixture of Austrian, Danish, and Italian works. A small work, by Offermans, "In the Dutch Dunes" (2,083), recalls Mason a little in style and subject. Vogel's "Dutch Landscape," with houses and mill (2,108), is a very good little bit of the land of dykes, with one strip of bright sea seen over the dyke. One or two of the Danish pictures are characteristic, especially that by Rasmussen, "A Steam Whaler off the Coast of Greenland, Midnight" (2,119), which at first sight seems to be a work in a most eccentric and violent scale of colour, but it bears evidence on examination of being true to the peculiar effect represented, the sun being just on the horizon, and giving most peculiar hues and tones to the water and floating ice. Italy is scantily represented, which one regrets the more as two or three of the contributions are so good. Gilardi's "Game at Morra" (2,141), outside an Italian hostelry, recalls Meissonnier, and is not without some of his excellences. Giuliano's "The Draught" (2,143), represents a number of peasant figures, chiefly young girls, at a well in a rather rocky landscape; there is a bright, cheerful tone in this, and an interest and grace in the groups of figures, which somewhat remind us of Leslie, though with a difference. Trent's "In

the Alley," a little work, showing a broad walk under full and heavy summer trees, with strips of sunlight finding a way through the foliage, and two little figures in the half distance, will bear looking into.

CO-OPERATION AND COMMON SENSE.

CO-OPERATIVE association has made considerable strides since we last took occasion to invite the attention of our readers to the consideration of the subject. It has pushed northward, and eastward, and westward; and, whether it has struck its roots deep into the soil or not, it has made a fair display of branches. Members of co-operative associations now exceed 300,000 in number. They have subscribed a capital of 2½ millions sterling. They are doing business to the amount of between ten and twelve millions a year; on which they have made something more than seven per cent. by way of profit—or we may say in round numbers, 300,000. Content with the silent eloquence of success, the friends and supporters of the movement have now added to the number of those "Congresses," which are becoming such common features of the day; and have sent 200 delegates to Halifax, where they have met under the presidency of a gentleman who has a hereditary claim on the gratitude of the working classes.

It seems evident from what has transpired at the meetings during the past week, that the development of the co-operative principle is, at present, at a critical period of its growth. To the sound practical good sense displayed in the speeches, both of Mr. Brassey and of Mr. Walter Morrison, we are happy to bear an unhesitating tribute. Those gentlemen have used many arguments, and cited many authorities on experiences, that are not unfamiliar to our readers. And we think that in the remarks which we wish to offer, we shall have the hearty concurrence of all the more educated and thoughtful of the well-wishers to co-operative effort.

The point to which we refer as critical in the course of this movement has been indicated in the inaugural speech. Co-operation has two branches—distribution and production. The respectable balance-sheet to which we have referred, chiefly tells of the operation of the former. As to the latter, which is comparatively young and unformed, the chief example cited is one of misfortune; namely, the Onseburn Co-operative Engine Works.

We must, before proceeding further, express the satisfaction with which we observe the firm, manly, and modest resistance opposed by Mr. Morrison to an effort to shift the operations of the members of the Congress to a field not only alien, but hostile, to the genuine purposes of this association. There is nothing which, as it seems to us, the scientific and industrial press is more bound to bring before the world than the necessity of conducting every business, and every scientific inquiry, according to its own rules and principles. The greatest enemy to truth, and thus to progress, and thus to welfare, is jumble. There is no doubt that half the wars and fightings that take place among mankind are due to jumble. An improvement is suggested which is, on mature consideration, worthy of adoption. Its actual advantage may be computed at something considerable. Its contingent advantages may promise to be far more extensive, than the scientific and industrial press is so prone to give. But with this is connected the disadvantage of some vested interest; or the possible call on some old-established custom to betake itself to a new groove; and the consequence is an amount of indirect and valid opposition, before which the improvement collapses. It is not treated according to its merits, but on altogether different principles.

The great thing is, to lay aside passion and prejudice, and to learn what true regulating principles actually are. For this reason every attempt to bring class interests, or political party interest, to bear on what is specially an industrial question, is most mischievous. We congratulate Mr. Morrison on the tone he has taken in the matter.

On the other hand, our readers are aware of the attempts made, repeatedly and openly, by the retail traders to stamp out co-operative distribution. These efforts have, no doubt, failed. It was right and proper that they should fail. But there is a point of great difficulty involved here, and one which, we fear, will involve much suffering, and perhaps, much in blood, before it is finally settled.

In a complex system, such as that of modern civilisation, no very mighty change can be introduced in any part, which does not affect the whole organisation. The last half-century has witnessed the greatest change in the physical means of distributing produce, manufactures, and information, that has ever occurred in the history of the world. The effect of this change is now painfully felt by a large number of those persons who get their livelihood by distribution.

It is all very well to cry out against the great profits of the retail tradesman, and the ease with which he acquires wealth. And retail dealers have given cause for this. But what are the other circumstances of the case? Persons who have not visited foreign countries are often little aware of the claims of the retail dealers of this country to public gratitude. We owe to them a service which for excellence, promptitude, and, generally speaking, courtesy, is unrivalled in the world. Also (though this has its black side), the public owe to the retail trader a very large amount of forbearance and good faith in money matters. Let us take one instance. Look at the provisioning of London! What military commissariat was ever equal, in aptness, promptitude, excellence, and economy, to the great unorganised but ever active body which daily supplies bread, meat, fish, vegetables, fruit, ale, and wine, to a concentrated mass of three millions and a third of human beings?

The fact, however, may be, that a rate or ratio of profit which, before the introduction of the railway system and its collateral facilities (such as the telegraph), was fairly due to the retail traders, as the recompense of his exertions is, all things considered, now too high. This rate may be taken as one-third of the price paid by the consumer. Our present anxious experience in India tells us how much depends on the bringing to the hungry mouth of the food that is a drug in another part of the country. Thirty, fifty, or a hundred per cent. is not a question, then, of immutable proportion of what is "fair," but an actual estimate of the remuneration properly due for service actually done. What does the distribution cost? That is the matter that should decide how much the distributors should receive.

Here it is that the railway distribution has thrown retail trade off its balance, while preparing the way for a better adjustment. For the very existence of retail trade two prices are necessary,—that paid to the producer, and that, including the repayment of the former amount, paid to the distributor. If the second, or retail price vary; if it be lower, for instance, in great centres of population than it is in rural districts; that is to say, if the difference is more than the cost of carriage to such districts, the certain tendency will be to accumulate all retail trade, as far as possible, in the cities. The country retailer is thus in danger of extinction.

That tacit sympathy and combination which frequently subsists between members of the same commercial class has hitherto checked a movement which, none the less, is making progress, and is sure to go on. For many objects it is now far more convenient for persons resident in the country to write to a well-known London establishment, with the certitude of receiving exactly what is wanted by return of post or of train, than to market in a country town. So long as the ordinary rate of trade profit is kept tolerably equal, this tendency is checked. But the effect of this equality is, to give very large profits to the large dealers, simply because of the large amount of their business. The little dealer, mean time, is starving, because he has not enough business to get a living out of his air trade profit on the amount.

At this point co-operative distribution comes in to complicate matters. You find, in round numbers, that by taking a certain amount of trouble on your own shoulders you save certain charges made by the retail tradesman. That is matter of give and take; fair matter for every one to decide for himself.

Next, you find that, by avoiding certain risks, as well as certain costs, to which the retail tradesman is subject, you effect a certain economy. Let it be 30, or 20 per cent.

The danger here is, that by bringing forward the actual saving in price, irrespective of other qualifications, the large tradesman may be driven to make a reduction in profits, which, in fact, he can well afford to do. But then, what becomes of the small tradesman? He must reduce prices too, whereas he can hardly live as it is.

The ultimate effect, no doubt, will be the reduction of the number of retail tradesmen.

Bearing in mind the increased facility of distribution, it may well be the case, both that their numbers are far too large, and that trade profits are far too high. But the misery that will be involved before these things right themselves will, we fear, be very great.

Here then, we are fain to hope co-operation will rather prove to be an influence tending to confine trades or rather the profits of trade—within due limits, than a permanent element in the social order. Certain expenses attend every kind of provision. If a co-operative bakery, or grocery, or any other store be established, the bakers, and purchasers, and carriers, and all other labour and cost involved by the production of the loaf, or the collection of the pound of currants, that is set on your table, must be paid. The co-operative store, as compared to the shop, has two advantages. First, it has no risk of bad debts; secondly, it has no risk of want of custom. For how much these two items of risk count in our daily expenditure it is hard to say. But if we suppose that the two together may amount to ten per cent. on the cost value, the tradesman, in self-defence, must make a charge of something like 20 per cent. to cover the risk.

On the other hand, the tradesman has a great advantage over the store. There is long, perhaps hereditary, knowledge of the business, and there is the proverbial benefit of the master's eye. The manager is a far less efficient man than the master. That is to say, that, human nature being what it is, the same man would manage his own shop far better than he would manage another man's store. This is an old, old truth, but one which is constantly overlooked. Its influence is unsleeping and immense.

We think, then, it is pretty certain that, with the course of time, the present standard of retail profit will be reduced, and that by perhaps from one half to two-thirds of its actual amount. We admit the great amount of suffering that will be caused by the change. We think that a reduction in the number of retail dealers throughout the country is imminent. But we are convinced that no effort will avert such a change if it once commences. It may be painful, but it is inevitable. By hook or by crook, the average price of distribution will adjust itself to the average cost of distribution, and as that takes place, there will come less and less inducement to interfere with the old-established channels of trade. The tradesman will be the best distributor of his own wares, so soon as the number of those for whom the business has to provide a maintenance be reduced to that of the persons who are actually required for its efficient performance. If no more cats are kept than catch mice, no one will grudge the useful animal her saucer of milk, even if it happen, in some instances, to be rich with cream.

If we are at all correct in supposing, in accordance with the sound principles of economic science, that each business is best conducted by its own members, and that the great function of our present co-operative distributing associations will be rather to place trade on a sounder and more truthful footing than permanently to divert it from those self-formed channels, in flowing through which it has fertilised and blessed our country for eight hundred years, the same observations will apply with much more force to co-operative production. Such, in fact, is admitted in plain terms by Mr. Brassey. The difficulty of obtaining efficient superintendence for a co-operative factory is found to be extreme. That gradual growth by which individual businesses, such as the gigantic operations of the late Mr. Brassey, attain magnitude, may well be considered essential to success. You can no more create a large, sound, well-ordered business than you can create a crop of corn. Each has to be carefully watched, and tended in its growth from the germs.

None the less do we heartily desire to see the fullest play given to experiments of this nature. We confess, however, the belief, that the co-operative system is of most avail when it is applied, not to originate, but to aid. It is when the master of a large establishment, or the head of a large firm, makes plain to all his hands that, by working for him they are working for themselves, we have the truest and most efficient co-operation. The name of Mr. Briggs is most honourably associated with this aspect of the case. We believe that there are more than one large establishment in the North where a real partnership exists between master and men, and where a definite and agreed distribution of profits is made, between those who find the actual

labour and those who fulfil the far more difficult task of finding employment for that labour. To this we look, we confess, as the brightest and most permanent phase of co-operation. It is no new thing to us, and we hope before long it will cease to be rare. It will be always more easy to find and to pay workmen, than to find and pay a good master or manager.

There is no royal road to wealth, any more than to learning, nowadays. Every business has its own laws, and misfortune will attend their breach. Even co-operative factories are not free from strikes. What we have to do is, to remember, on the one hand, that human nature will assert its own tendencies; on the other hand, that trade will obey its own certain laws. We want to bring these two influences to pull in the same direction. When they are opposed, the result is misfortune and confusion; when they go together, it is the public welfare.

CHURCH BUILDING IN SOUTH LONDON.

SEVERAL new churches are about to be erected in different parts of South London. Amongst others a large church is immediately to be erected close to Kennington-park. It will be centrally situated in a new district, which has been formed out of the parish of St. Paul, Walworth. The new church, which is to be dedicated to St. Agnes, is intended to be a large and handsome architectural structure, and will cost about 10,000l. In connexion with it there are to be new schools erected, and also a parsonage-house. The site has been secured at the sole expense of one gentleman, and the sum of 5,000l. has already been subscribed towards the building. The ecclesiastical commissioners have also granted an endowment. Another new church is also about to be erected in Ferndale-road, Shepherd's-lane, Brixton, close to the new baths, which are now nearly ready for opening, and where a large number of new houses are in course of erection. The new church of St. Gabriel, which has just been erected in Newington church-yard, is now finished, and opened, as elsewhere more particularly mentioned in our columns.

ST. GABRIEL'S, NEWINGTON.

THE mission church, which was designed to replace in part, a few yards from the original structure, the to-be-demolished parish church of St. Mary's on the Butts, is now finished and opened. The building is plain, and is erected upon piers and arches, instead of continuous footings, in order to disturb as little as possible the graves in the churchyard. The piers were first built up to the springing level of the arches; the ground between the piers was then cut away at the proper curve, forming an earth centre, which was rendered in mortar to make the curve true. The brick rings were then built over. Oblong in general form, the new church consists of chancel, nave, two aisles, and vestries; the architecture is Early Gothic; and the materials used in building are red brick, with stone sills, weatherings, window traceries, &c. The building has an open-timbered roof covered with slate and surmounted at the chancel arch by a bell-gable, moulded brick strings relieving the exterior wall-surfaces. The nave arcades consist of four pointed arches, carried on stone moulded caps and bases, and blue stone shafts; above there are eight clear-story windows on each side. The chancel floor will be 3 ft. 6 in. higher than that of the nave. The reredos will be chiefly of stone (carved), and supported on each side by ornamental panels, which will return some few feet into the chancel. Messrs. Lathey, Brothers, of Battersea, are the builders. The cost was 5,000l. Mr. E. J. Cuts, of Hammersmith, was the architect.

Designs for Cards and Certificates.

The Committee of the London School Board brought up a report, recommending that a letter be addressed to the Science and Art Department, stating that the Board were prepared to offer a reward of 5l. for the best design of an attendance card, of a drill certificate, and of a musical certificate, respectively, with the understanding that the names of the successful designer or designers should be published, and asking if the department would assist the Board in obtaining a few designs. The recommendation was agreed to.

DECISION AS TO THE EXETER REREDOS.

A GOODLY crowd assembled outside the Chapter House of the Cathedral Church of St. Peter, at Exeter, on Wednesday, anxious to hear the judgment of the Lord Bishop touching the erection of Sir Gilbert Scott's much-talked-of reredos. The doors were opened at ten minutes to twelve, and in a very few minutes the place was densely packed. The Chapter House, situated to the south of the south Norman tower, is some 75 ft. by 30 ft., the lower portion being Early English,—built by Bishop Bruere,—the upper part Perpendicular, and covered by a richly-decorated oak roof. The cathedral library of upwards of 8,000 volumes is kept here, and chapter business usually transacted therein. The ancient walls have seldom looked down upon a more expectant audience than they did on Wednesday,—an audience so crowded that the bishop's attendants made room for his lordship to pass with some difficulty. The bishop, arrayed in his robes, took his seat precisely at twelve o'clock. The dean was not present; the chapter, however, were there, arrayed in their academic gowns.

Bishop Temple proceeded, amidst an impressive silence, to read Justice Keating's opinion. This occupied exactly one hour, and was against the defendants on both points; thus giving the bishop full jurisdiction over his cathedral, and condemning the reredos *in toto*.

The decision created some sensation in court amongst the audience, and the excitement was added to when Archdeacon Freeman got up and endeavoured to speak in defence of the reredos. This he was prevented doing, and the Bishop then pronounced judgment, ordering the removal of the reredos, and the substitution of a stone screen without images, or a continuation of the grating on each side, and the erection of the Ten Commandments in such a position as to meet the requirements of the canon. He added, that he should be ready to receive an application for a faculty to vary the above order, and to make such arrangements as, without involving anything illegal, would contribute to the architectural beauty of the cathedral. In the event of there being no appeal against his judgment, and the reredos not being removed, the petitioner would be at liberty to apply for a monition to enforce the order.

We have already given our readers an engraving of this ill-fated work. It is not perhaps the most successful of Sir G. G. Scott's productions, and contrasts somewhat harshly with the charmingly graceful sedilia close by.

Chancellor Harrington and Dr. Blackall, M.D., have paid the whole of the expense for the erection of this reredos.

SCHOOL BOARD SCHOOLS FOR LONDON.

Grove-road, Forest-hill.—The formal opening of this school, which is situated in a pleasant green valley, about half a mile distant from the Forest-hill station of the London, Brighton, and South Coast Railway, has taken place, under the auspices of Sir Charles Reed, M.P., chairman of the London School Board. The proceedings commenced with a careful inspection of the school buildings, which are better provided with means of ventilation, educational apparatus, healthy playgrounds, lavatories, &c., than many of the high-class schools either in or out of London. Sir Charles Reed handed the key over to the Local School Board authorities. He cited the work that had been done by the Metropolitan School Board in the Greenwich district, to which the Grove-road belongs, as a proof that the Board was a Board of action. In that district there had already been provided school accommodation for 12,186 children, and the school they were then opening would accommodate 858 more. He hoped that before the end of the year the Board would have about 90 schools in full work, and they would then have reached the limits of the Act of Parliament, but he believed they would soon have to build still more schools for the ever-growing population. The Grove-road school and its surroundings occupied 19,370 square feet of ground, and had been erected at a cost of 6,733*l*. It would accommodate 152 girls, 152 boys, and 281 infants. It was generally, he said, the custom to put the boys first, but he gave the girls precedence, because the Board was of opinion that in educational matters our girls had hitherto been very much neglected, and it was the intention of the Board to use its

utmost power and zeal to repair the injustice. The architect of the new school was Mr. H. Saxon Snell.

Wandsworth-road, Battersea Park.—Sir Charles Reed also presided at the formal opening of the school erected by the Board on a plot of ground facing Lower Wandsworth-road, and immediately adjoining Battersea Park. The building, besides possessing every modern educational appliance, is an ornament to the neighbourhood. According to a statistical paper read by Mr. Molyneux, the official district correspondent, it will accommodate 297 boys, 290 girls, and 319 infants. The cost of the site, 32,670 square feet, was 2,258*l*. 3*s*. 6*d*., and of the building 6,866*l*. 13*s*. 9*d*., making a total of 9,124*l*. 17*s*. 3*d*., or 10*l*. 0*s*. 2*d*. per head. The school fees will be twopenny per week for infants and threepence for boys and girls; and no doubt whatever prevails that, within a week of its opening, the school will be quite full in each department. Sir Charles said it was erroneous to speak of these institutions as State schools; the more correct definition would be to style them schools of the people, built and supported by the money of the people, and managed by the representatives of the people. In fact, the schools were the property of the people, and not of the State.

Commercial-road.—Another new school in connexion with the London School Board has been opened in Gloucester-street, Commercial-road. Mr. E. H. Currie, the chairman of the Works Committee of the Board, presided over the proceedings. He said that the school which had been thrown open was the eleventh permanent Board School that had been erected in the Tower Hamlets. There was now permanent school accommodation in the Tower Hamlets division of the metropolis for something like 12,000 children, and four more schools were in the course of erection, which, when finished, would make the school accommodation amount to 15,000. The school which they were opening was large enough to educate 388 boys, 380 girls, and 285 infants, giving a total of 1,053. Those assembled would be glad to hear that 400 children had attended that morning. The school was an expensive one; but this was due to the necessity of having to make a deep excavation in order to reach a good foundation. By November next the School Board would have erected 86 new schools, which would give accommodation for 81,000 children.

Mansfield-place, Kentish Town.—A very large number of the inhabitants of that portion of the borough of Marylebone which lies between upper Kentish-town and Hampstead crowded to the new schools in Mansfield-place, Kentish-town-road, built by the London School Board, the occasion being the official opening. Sir Charles Reed presided. The schools stand on a very large site, and provide for 1,100 children, at a cost of little more than 8*l*. per head. There are three departments,—boys, girls, and infants, all with separate open playgrounds on the level, part covered. Each department is fitted with cloak-rooms and lavatories, and there are classrooms in addition to open general school-rooms. In the room which is to seat some 240 children upwards of 800 adults had crowded on the occasion of the opening. All the walls are decorated with pictures illustrative of natural and scriptural history, oleographs of standard pictures, and sketches of various industries. Classes can pass to the general school-room by out-galleries, so as not to disturb other classrooms on the one hand, or to take up space by passages on the other. The old "form" system is entirely abolished by the use of the newly-invented desks, which provide seats, desks, and a shelf for each child's books and utensils, thus training the child from the first day to habits of order and care. The architect was Mr. Robson, the architect of the Board, and the builders were Messrs. Niblett & Son. The chairman stated that the Board had received eleven new sites in the Marylebone division, in which this school was situated. Besides these eleven sites, the Board had had schools transferred to it, and had hired temporary buildings, making provision in 29 schools in this division for 13,800 children. The site on which the set of schools then to be opened stood had an area of 17,945 square feet, and cost 2,500*l*., and the cost of the whole was 9,800*l*. The provision was for 327 girls, 240 boys, and 462 infants. For the number of children provided for he considered these to be cheap schools.

Henry-street, Hampstead-road.—The formal opening of the new schools in Henry-street,

Hampstead-road, took place in the presence of a large number of persons. Mr. Currie, vice-chairman of the Board, occupied the chair. After an inspection of the building, which, like the other schools erected by the Board, consists of a series of rooms plainly but substantially built, admirably adapted for the purposes of instruction, and provided with all suitable accommodation for so large an establishment, the chairman congratulated the audience that the present fine building was erected on the site of the Brook-street Refuge and Ragged School. They had been accused of extravagance in their buildings, but he defied any one to point out in that building a single thing that could be well left out. To be sure they gave pleasant and healthy rooms, and would provide the best teachers. The cost of the building was at the rate of 8*l*. 2*s*. 8*d*. per child, and there was accommodation for 755 children; 303 infants in that room, 204 girls on the floor above, and 248 boys on the top floor. They had also capital play-grounds attached to the building. The value of these schools might not be apparent at the moment, but he believed that the state of London would be different twenty years hence from what it was now. The cost of the education of each child would be 1*l*. to each ratepayer, and that was a wiser payment than perhaps 20*l*. or 30*l*. for maintenance in perhaps a different place?

THE FIRST HANTS ARTILLERY NEW DRILL HALL.

THE new drill-hall provided for the accommodation of the First Hants Artillery, at Southampton, has been inaugurated by the Mayor. The site is at the junction of Nichols and Northbrook-roads, about 200 yards from the north end of St. Mary's-street, and 300 yards from the new railway station at Northam. The building, which has been designed by and executed under the superintendence of Mr. W. H. Mitchell, architect, and in the arrangement of which the strictest economy had to be observed, is built of red bricks, relieved by white brick bands and dressings, and is intended to be pointed with black mortar. The principal entrance is at the south end, by a pair of large folding doors placed in a projecting vestibule (intended to be hereafter supplied with inner doors) giving access to the drill-hall, which is 92 ft. 8 in. in length between the walls, by 41 ft. in width, which, although shorter, is 2 ft. wider than the Carlton Hall, the headquarters of the 2nd Hants Rifle Corps. At the north end, or opposite the entrance, there is a raised platform, intended for the accommodation of the band of the corps, and other purposes; whilst beneath this are situated the orderly-room, 22 ft. by 11 ft., and the armoury, 208 ft. by 8 ft.; each of these rooms is 8 ft. 6 in. high, and heated by open fireplaces, and the walls lined with match boarding. A door placed in the side into Northbrook-road gives easy and convenient access at any time to the platform or lower rooms without disturbing an audience in the hall; and the staircases are arranged to allow of the orderly-room being used as an assembly or retiring-room, connected with the platform without in any way interfering with the drill-hall or armoury. The roof is supported on seven semicircular trusses, springing from stone templates, placed 4 ft. from the floor, giving a height of 26 ft. to the under side of the truss in the centre of the hall. The roof, which is open timbered and boarded, is distempered in two colours. The hall is lighted from the roof, and the floor is of wood, the portion intended for heavy drill being laid with 2½ in. battens. A door in the west wall, near the platform, gives access to an enclosed yard, 30 ft. by 20 ft., containing coal-store, lavatory, and offices. The work has been executed by Mr. Jonas Nichols, the lessee of the land, whose tender was lowest in a public competition. The old gas-fittings have been re-used, under the direction of Mr. Durkin, and the space between the building and footpath has been planted with evergreens by Mr. W. H. Rogers.

New Hall at Haywards's Heath.—The new recreation hall at the County Asylum Haywards's Heath, has been opened. The hall at the end of which is built a permanent theatre was designed by Mr. H. Card, of Lewes. It is capable of holding, seated, about 500 persons. The stage at the end is raised from the floor of the room, and the size of the proscenium is 16 ft. wide by 17 ft. high.

VAUXHALL AND RANELAGH.

It is a very curious fact, that while on the Continent the public take the chief portion of their summer amusements in the open air, we in England have scarcely any *à fresco* entertainments for respectable people. The usual explanation given of this difference in national habits, is that our climate is unfitted for outdoor recreation, and that, therefore, had we the settled weather of more southern countries, we, like their inhabitants, should live a more open-air life than we do now. But this cannot be a sufficient explanation in face of the actual fact that Vauxhall Gardens existed for nearly two centuries. There can, we think, be little doubt that the national characteristics of Englishmen have undergone a considerable change since the end of the last century. In the 16th, 17th, and 18th centuries our countrymen appear to have lived a life much more like the Continental one than we now live. What has caused this change it is foreign to our present purpose to inquire. Most travellers on their return from the Continent must feel the want in London of such outdoor amusement. English families have no place where they can go on fine evenings to hear good music and meet their friends, for, without stepping aside to censure such places as Cremorne and North Woolwich Gardens, we may safely say they are not the places to which a gentleman would care to take his family. Our fathers did take their children to Vauxhall, and we will now see what the place they visited was like. A forgotten poet of the last century supposes Eden to have been borne undestroyed by the flood, and that—

"After floating many a year,
At length it did settle here";

but our standard authors were little less laudatory when they had to describe the beauties of Vauxhall. Fielding writes in his "Amelia":—"The extreme beauty and elegance of this place is well known to almost every one of my readers, and happy it is for me that it is so, since to give an adequate idea of it would exceed my power of description." Goldsmith is not behindhand in laudation, and he puts the following words into the mouth of his Chinese philosopher:—"A thousand illuminations began before we arrived, and I must confess that upon entering the gardens I found every sense overpaid with more than expected pleasure: the lights everywhere glimmering through scarcely moving trees; the full-bodied concert bursting on the stillness of night; the natural concert of the birds in the more retired parts of the grove, vying with that which was formed by art; the company, gaily dressed, looking satisfaction; and the tables spread with various delicacies, all conspired to fill my imagination with the visionary happiness of the Arabian lawgiver, and lifted me into an ecstasy of admiration."

Vauxhall, Fawkeshall, or Foxhall, takes its name from Fulke de Breauté, who built a manor-house in the manor of South Lambeth, and from his time the manor was called indifferently Fawkeshall or South Lambeth. In a record of the reign of Edward I. it is declared to contain twenty-nine acres of meadow land and eighty acres of arable land. The hall built by King John's mercenary follower was destroyed in course of time, and another building, known as Copped Hall, took the name of Vauxhall. Here the unfortunate Lady Arabella Stuart was a prisoner, under the custody of Sir Thomas Parry, Chancellor of the Duchy of Lancaster. Hardib, in a letter to the Hon. Robert Boyle, dated 1649, writes:—"Fauxhall is to be set apart for public uses, for which is meant making it a place of resort by artists, mechanics, &c., and a depot for models and philosophical apparatus;" and in 1664 Hardib again writes:—"The Earl of Worcester is buying Fauxhall from Mr. Treachard, to bestow the use of that house upon Gaspar Calahof and his son as long as they shall live, for he intends to make it a College of Artizans." Sir Samuel Morland, the projector, possessed the house for some years, and filled it with his inventions. He built a room in the garden which he lined with looking-glass and filled with fountains, to which many visitors flocked. The manor of Vauxhall was famous for its pottery, its plate-glass, and its gardens. The latter were long known as the Spring Gardens, and this name was continued as late as the year 1765. The Spring Gardens in St. James's Park, although

attached to the palace at Whitehall, was a place of public resort in the reign of Charles I. and during the Commonwealth, but at the Restoration the entertainments were moved to the New Spring Gardens at Vauxhall. Evelyn notes in his Diary on the 2nd of July, 1661, that he "went to see the New Spring Garden at Lambeth, a pretty contrived plantation." Pepys was a constant visitor at the new place, and the name Fox Hall often occurs in his Diary. In June, 1665, he watches the humours of the citizens, "pulling off cherries and God knows what"; but in the following month he chooses a bad day, for he sees no guest there. In May, 1667, he appears to have been very pleased with his visit:—"A great deal of company, and the weather and garden pleasant, and it is very pleasant and cheap going thither, for a man may go to spend what he will, or nothing, all as one. But to hear the nightingale and the birds, and here fiddles and there a harp, and here a jew's trump, and here laughing and there fine people walking, is mighty divertising." He afterwards expresses himself as greatly shocked at the conduct of Harry Killegrew, young Newport, and other gay sparks of the time. The Spring Garden is constantly referred to in the fashionable plays, but the next incident of interest in its history is Sir Roger de Coverley's visit in 1712, as described in the *Spectator*. This trip of the [worthy old knight from the Temple Stairs to Vauxhall is more vividly brought before our eyes, and therefore appears more real to us than that of any actual visitor to the place. We have little to record until the year 1730, when the premises were leased to Jonathan Tyers, who made great alterations and improvements in the gardens, and opened them on June 7th, 1732, with a *ridotto al fresco*, then a novel entertainment. On this occasion the Prince of Wales, and about four hundred visitors (mostly masked), were present, besides one hundred soldiers to keep order. The success of this and subsequent repetitions caused the proprietor to open the gardens every evening during the summer months. He spared no expense in his decorations, and obtained paintings from Hogarth, Hayman, and other artists. He erected a handsome orchestra, and placed the since-famous statue of Handel (Roubiliac's first work in England) in a conspicuous part of the gardens. Hogarth also designed for his friend Tyers, a set of tickets of admission for subscribers, which were struck in silver; one was in gold for Hogarth himself, to whom it was given as an acknowledgment of his services. The favourite mode of reaching the gardens was always by rowing-boats, and on a gala day the Teams must have exhibited a very brilliant appearance. Thus Pepys and Addison went, and thus the visitors journeyed almost to our own times. The author of "A Trip to Vauxhall" (1737), describes how he went there, in company with two ladies:—

"Lolling in state, with one on either side,
And gently pulling with the wind and tide,
Last night, the evening of a sultry day,
We sail'd triumphant on the liquid way,
To hear the fiddlers of Spring Gardens play,
To see the walks, orchestra, colonnades,
The lamps and trees in mingled lights and shades.
The scene so new, with pleasure and surprise,
Feasted awhile our ravish'd ears and eyes.
The motley crowd we next with care survey,
The young, the old, the splenetic, and gay."

We have a later and more amusing picture by Hookham Frere in the "Loves of the Triangles":—

"So thy dark arches, London Bridge, bestride
Indignant Thames, and part his angry tide,
There oft return from those green retreats,
Where fair Vauxhall decks her sylvan seats,
Where each spruce nymph from City commons free,
Sips the froth'd syllabub or fragrant tea;
While with sliced ham, scraped beef, and burnt champagne,
Her pretence lover soothes his amorous pain;
There oft in well-trim'd wherry glide along
Smart beaux and giggling belles, a glittering throng."

In 1749 immense crowds were attracted down to Vauxhall by a musical performance, which is described as follows in the *Gentleman's Magazine*:—"April 25th, 1749, was performed at Vauxhall Gardens, the rehearsal of the music for the fireworks (to be given in St. James's Park on the 29th), by a band of 100 musicians, to an audience of above 12,000 persons: tickets, 2s. 6d. So great a resort occasioned such a stoppage on London Bridge that no carriage could pass for three hours." Walpole gives an amusing account, in a letter to Montague, of his visit to Vauxhall with Lady Caroline Petersham and other gay friends, in 1750. Miss Burney describes the gardens in her "Evelina" (1778).

Mr. Smith considered Vauxhall to be the first pleasure in life; but Evelina herself would have liked the place better had the walks been less formal. One of the favourite sights at this time was a cascade, which played for so short a time that all the company rushed to it, in case it should be over before they arrived. The ladies of Evelina's party got separated from the men, and are insulted in the Dark Walk; and this leads us to say a word as to the character of some of the visitors. In a "Description of Vauxhall," published in the last century, we read, "This walk in the evening is dark, which renders it more agreeable to those minds who love to enjoy the full scope of imagination, to listen to the orchestra and view the lamps glittering through the trees." This a purely imaginative picture, and the sober truth was described by the newspapers, which speak of the loose persons of both sexes who frequented the Dark Walk, "yelling in sounds fully as terrific as the imagined horrors of Calverton's bloodhounds." Ladies were sometimes forcibly driven from their friends and wantonly frightened. In consequence of these enormities, the licensing magistrates, in 1763, bound the proprietor to do away with the Dark Walk, and to provide a sufficient number of watchmen to keep the peace. A poet, in 1773, gives but a sorry account of some of the visitors in his day:—

"Such is Vauxhall—
For certain every knave that's willing,
May get admittance for a shilling;
And since Dan Tyers doth not prohibit,
But rather seems to strip each public,
His clean-swept, dirty, boxing-place,
There is no wonder that the thief
Comes here to steal a handkerchief,
For had you, Tyers, each yul rascal'd,
Or issued an Insolvent Act,
Inviting debtors, lords, and thieves,
To sup beneath your smoke-dred leaves,
And then each knave to kindly cram
With fusty chickens, tarts, and ham,—
You had not made such a collection
For your disgrace and my selection."

On the 29th of May, 1786, there was a jubilee night to celebrate the fiftieth anniversary of Jonathan Tyers's management, although, as he opened the gardens in 1732, it was four years over-due. Tyers made a large fortune during this long period, and he retired to his country seat, Denbies, near Dorking. The Prince of Wales, afterwards George IV., was very fond of Vauxhall, and during his time it was a place of fashionable resort. During the present century the chief attractions have been the fireworks, and the ascents of various balloons. The first exhibition of fireworks took place in 1799, and in 1802 a Frenchman, named Garnerin, ascended in a balloon and tried the capabilities of his parachute. A kitten was sent down first, and her exploit was celebrated by George Colman, the younger, in a song,—

"Poor puss in a grand parachute,
Was sent to sail down through the air,
Plump'd into a garden of fruit,
And play'd up old gooseberry there.
The gardener transpir'd with fear,
Stared just like a hundred stuck hoar;
And wore, though the sky was quite clear,
'Twas beginning to rain cats and dogs."

Garnerin afterwards trusted himself in the parachute.

The musical arrangements were always carefully attended to, and at one time Dr. Arne was the chief musical composer. In 1812 the salaries given to the two principal singers were 200l. to Charles Taylor and 250l. to Mrs. Bland for the season. The prices of admission have varied considerably at different times: thus, prior to 1792, the price was 1s., in that year it was raised to 2s., but this sum included tea and coffee. In the present century 4s. were paid without refreshment, and in the last years of the existence of the gardens the entrance charge was reduced to 1s. In 1848 it was reported that Vauxhall was to be transformed into a Winter Garden, but in 1850 it still existed as an open air one, and a pictorial representation of the Kremlin of Moscow was exhibited. It was deserted in its last years by its former patrons, and it was therefore well when houses occupied its site, and it became a thing of the past.

We will now pass on to Ranelagh, which was opened long after Vauxhall, and was finally closed long before those gardens ceased to exist. It occupied the site of the gardens attached to the villa of Viscount Ranelagh, which adjoined the gardens of Chelsea College. In 1733 Lacy, the patentee of Drury-lane Theatre, and one Solomon Rietti, took a lease of the premises with the design of establishing a new and magnificent place of entertainment, but the undertaking was too large for their purses, and the property

was therefore divided into thirty-six shares of 1,000*l.* each, the greater number of which were held by Sir Thomas Robinson, a well-known man in his day, who was called by Mrs. Carter, the Knight of the Woeful Countenance. The Rotunda was begun in 1741, and opened with a public breakfast on April 5th, 1742. For a short time morning concerts were given, but Sir John Barnard complaining to the magistrates that the young merchants and City apprentices were frequently seduced from their counting-houses and shops by these morning amusements, they were prohibited, and the doors opened at six o'clock in the evening. Ranelagh at once became the rage, and so universal was the public admiration of the place, that we find such totally different men as Dr. Johnson and Horace Walpole writing in its praise. Johnson said that the *comp-d'air* was the finest thing he had ever seen. "When I first entered Ranelagh it gave an expansion and gay sensation to my mind such as I never experienced anywhere else," and Walpole wrote to Conway—"Every night constantly I go to Ranelagh, which has totally beat Vauxhall. Nobody goes anywhere else—everybody goes there. My Lord Chesterfield is so fond of it, that he says he has ordered all his letters to be directed thither." Masquerades were got up with great expense and magnificence, and Goldsmith and Reynolds often visited them. Goldsmith was singled out by the wags, who knew him through his disguise, and teased him with their jokes. His literary enemy, Kenrick, wrote some verses, "On seeing Dr. Goldsmith's name in the List of Mummies at the late Masquerade." Ranelagh was usually frequented by a more distinguished company than Vauxhall, as we may see from "Evelina," for in that novel the heroine visits Vauxhall with her vulgar relations, the Brangthons, and Ranelagh with her aristocratic friends, the Mirvans. It was at first the custom for ladies to go to Ranelagh in undress, as they did to Vauxhall, but afterwards the fashion was to appear there in full dress. The usual entertainments provided do not appear to have been very interesting, and consisted principally in walking backwards and forwards round the great Rotunda. The poet Bloomfield ridicules this social treadmill in some verses commencing—

"To Ranelagh once in my life
By good-astured force I was driven;
The unsexed had coveted their long strife,
And Peace beam'd a her radiance from heaven.
What wonders were here to be found,
That a clown might enjoy or disdain;
First we traced the gay circle all round,
Ay—and then we went round it again."

In April, 1749, a "grand jubilee, in the Venetian taste" was given by command of George II., who attended it, accompanied by his court and about 6,000 visitors. In 1754 the evening amusements were advertised under the name of Comus's Court. There is a curious engraving of the Rotunda, representing the notorious Sir John Hill without his hat or wig, and a man pulling his ear. It is entitled "A Night Scene at Ranelagh, on Wednesday, 6th of May, 1752," and from the *Quaker Journal* we learn that M— B—, Esq., was brought before a magistrate to answer for this assault. Hill had many enemies, and probably no friends, for he took much pains to obtain the former. He published a pamphlet entitled *The Petition of I*, in which he charged Garrick with pronouncing the letter *I* like *u*. Garrick replied in a very happy epigram, ending—

"Most devoutly I wish that they both have their due,
And that I may never be mistaken for *U*."

Hill also got embroiled with Woodward, the comedian, who issued a pamphlet with the motto, "I do remember an apothecary, culling of simples," alluding to a story that Hill was forbidden entrance to some noblemen's gardens for having purloined several valuable plants. In May, 1767, the first concert of catches and glees took place at Ranelagh. On September 28, 1768, the King of Denmark breakfasted with Sir Thomas Robinson at Prospect-place, a house close by, and afterwards visited the gardens. On June 23, 1775, the Thames was a floating town, owing to the large numbers who wished to see the regatta. After the sight was over, the evening was concluded with music and a supper at Ranelagh. The elegant ticket of admission, engraved by Bartolozzi, is sometimes to be found in collections of curiosities. On June 26, 1793, the Chevalier D'Eon fenced publicly with a French professor of the art. The Picnic Society gave an afternoon breakfast to about "two thousand persons of the first distinction" on June 28, 1802. In 1803 two magnificent enter-

tainments were given. One was the Installation Hall of the Knights of the Bath, and the other a ball and supper by the Spanish ambassador. These were the last exhibitions of Ranelagh splendours, for the Rotunda was never opened as a place of public amusement after the 8th of July, 1803. On the 30th of September, 1805, an order was made for its destruction, and soon afterwards all trace of this once fashionable place was effaced, the gardens being added to those of Chelsea Hospital.

The Rotunda was so remarkable a building for the time it was erected, that we will give some description of it before we conclude. From the views that exist its external appearance seems to have been much like that of the Albert Hall, although it was, of course, not so large. The external diameter was 135 ft., the internal 150 ft. Round the whole on the outside was an arcade and over it a gallery, the stairs to which were at the porticos. Over the gallery were windows, sixty in number. Within were forty-seven boxes round the building, and in each of these boxes there was a table with cloth laid for the refreshments of tea and coffee. In the centre of the Rotunda was a very striking erection which reached from the floor to the roof. It was originally intended for the orchestra, but being found to be unsuited for that purpose the players were moved into one of the porticos, and this was altered into a fireplace. At night the building was lighted by twenty-eight chandeliers which hung from the ceiling in two circles. Such was the hall which according to Faulkner was frequently graced with the presence of two thousand five hundred "of perhaps the most beautiful and best dressed personages Europe could produce."

THE RECENT INUNDATION, AND PROPOSED EXTENSION OF THE ALBERT EMBANKMENT.

The great destruction of property, and the disastrous consequences to families caused by the late inundation of the Thames, has led to a proposal for the extension of the Albert Embankment, which is warmly supported by the Lambeth Vestry, and also by the St. Saviour's Board of Works. We stated last week in the *Builder* that the Rotherhithe Vestry had taken steps to prevent the consequences of a recurrence of the overflow, and we now perceive that other local boards on the south side of the Thames are pursuing a similar course. At the meeting of the Lambeth Vestry last week, the Committee of Sewers reported in reference to causing all banks, wharfs, docks, or defences abutting on any river or stream in the parish, to be raised, strengthened, or repaired, where it may be necessary so to do for effectually draining or protecting the district from floods or inundations, and a resolution was agreed to to the effect that notices be served on wharftingers and others occupying waterside premises to execute the requisite works to carry the 69th section of the Metropolitan Local Management Act into early practical effect. Mr. Fowler stated, in the course of the meeting, that it was his intention to move at the Metropolitan Board of Works that the Albert Embankment should be continued to Vauxhall Bridge, as the most effectual preventive of future disasters in the parish, and the Vestry warmly concurred in the proposal. It is urged that the only way in which the southern bank of the river can be effectually secured is by the extension of the Embankment, and on this point both the Lambeth Vestry and the St. Saviour's Board of Works appear to be thoroughly agreed. At the meeting last week of the last-named body it was decided to address a circular to the several Boards and Vestries on the southern side affected by the inundation, inviting their co-operation in memorialising the Metropolitan Board. It is considered that the extension of the Embankment will not only be of great benefit to the inhabitants south of the Thames, but also improve the picturesque appearance of the river.

Screw Piles.—The process of screwing in the first cylinder pile in the extension of the new iron pier at the Royal Arsenal, Woolwich, has just been accomplished. The plate is 5 ft. in diameter, and when completed to the proper level it will be 32 ft. long, and will be filled with concrete. It is said to be the largest screw-pile which has yet been employed in pier foundations.

HOMES OF RUSSIAN WORKPEOPLE.

With a Russian princess a daughter of England, a livelier interest is taken in her father's empire than formerly, and this interest will, no doubt, be materially increased by the approaching visit of his Imperial Majesty the Czar. With that in view, it may, perhaps, be useful to glance at a few facts concerning the homes of Russian workpeople.

Throughout the empire the agricultural labourers live almost entirely in houses of their own, which are constructed in the following simple fashion:—Logs of the red pine are cut into the required lengths—three, four, or five fathoms—according to the proposed size of the house. The lengths are placed one above the other, the ends being dovetailed together, thus forming, as it were, a huge box of logs. The doors and windows are then cut out, and the doors carefully numbered by notches; the box is now taken to pieces, and the actual building commences. This is done by placing the lower tier on boulder stones and wooden posts for foundations; then each succeeding tier is added, moss or hemp and tow being used between each layer to fill up all interstices. The walls thus completed, floors and ceiling of red or white pine boards are added, both ceiling and flooring generally being double, with a layer of earth between, and the whole is crossed with boards. The roofing generally consists of wooden tiles. In one corner of the room a large brick stove, similar to an English baking oven, is built, a chimney either of bricks (put loosely together without mortar) or of wood, is carried through the roof, and the house or hut is complete. Here the whole family live. Generally the house contains but a single room; but sometimes a waiting peasant has a house of three or four rooms, and even uses plaster and paper hangings for the walls of his hut. This is especially the case in grain-growing governments, such as Tamboff, Voroneje, Pensa, Saratoff, Samara, &c., where the peasantry are more industrious, better fed, housed, and clothed than in the northern governments.

Where the houses are not so many boxes of logs, such as in the district of Nicolaeff, the cottages are usually built of mud, and thatched with reeds, and may be considered tolerably comfortable in summer, but very close and confined in winter—indeed, almost stifling, as the intense cold necessitates the stopping up of every crevice, crack, and keyhole of windows, doors, and apertures through which the icy air could well penetrate; and when all the holes are well stopped up, caulked and puttied over, the heating and cooking by reeds are felt as most oppressive, and highly conducive to sickness. Foreigners, however, it is as well to say, have suffered equally much, and in some instances more, through sickness from cold by pursuing an opposite course, and foregoing native precautions against the inclemency of the winter.

The mill people in large towns or their suburbs for the most part live as lodgers in houses varying in size from the peasant's hut to large buildings of two or three stories, but in no case are comfort and cleanliness taken into consideration. The rooms are generally small, low, badly ventilated, and crowded; the same room is used for sleeping and eating; shelves or benches serve as beds; the occupants are generally only known to each other from working at the same mill; very few, indeed, are members of the same family, and children, even where employed in the same neighbourhood as their parents, seldom live with them. Separate sleeping apartments are almost unknown, save in the case of the superior workmen who rise to be overlookers, foremen, &c. These men have often neat, tidy lodgings, and live not altogether careless of appearances. It is a general practice among mill-hands to form themselves into *artels*, a kind of club or mess, consisting, according to the size of the room, of 5, 10, 18, or 20, or even a greater number of members. Each *artel* engages a woman to cook, and appoints a treasurer to encash monthly subscriptions due to the general fund for provisions, &c. The food of the workmen generally consists of black bread, fresh and salt fish, soap consists of black bread, fresh and salt fish, soap from cabbage, meat, potatoes, mushrooms, cucumbers, &c. As a rule in the neighbourhood of large towns the people live very fairly, comparatively speaking, generally at an average rate of about 1*l.* per month per man; at other places, however, the living is very wretched, the food consisting of little else besides black bread and water, and occasionally a little tea.

Of late years the better class of mill-owners

have adopted the plan of providing lodgings for their own workpeople, and in many instances have built large houses constructed on sanitary principles; here the people are divided into three classes, the married, the unmarried men, and the unmarried women. To each is allotted a separate house or part of the house; the supervision of the lodgings is entrusted to competent persons, and an extent of cleanliness and comfort is attained which would be quite impossible to arrive at in any other way. The inmates pay for their lodgings according to the size or the number of rooms occupied by them, the amount due for rent being deducted every month from their wages. Under this system a single man will pay from 3s. to 6s. a month, married men from 6s. to 9s. Attached to these houses there is generally a store where the people can purchase the necessaries of life of good quality and at reasonable prices; the store is under the control of the millowner or manager. The hands work on an average thirteen hours per day, commencing at 5.30 a.m. in the winter, and stopping work at 8 p.m. In summer they begin work half an hour earlier. One hour in the middle of the day, generally from twelve to one, is allowed for dinner, and the operatives have usually a short time allowed for breakfast and tea. Workpeople are merely engaged verbally; the rules of the factory are explained to them; they cannot leave their employment without giving a fortnight's, or in some cases, even a longer, notice. It may be as well to say that the rules of the factory have previously received the sanction of the police authorities, and also that masters are bound not to engage any workpeople who are unprovided with passports duly *visé*. Some of the more wealthy mill-owners have already established hospitals in direct connexion with their works, the ground and buildings being provided by the proprietor, while the hands generally support the hospital by a payment of 1 to 1 per cent. on their wages. At several mills schools have been opened, no charge being made at some, while at others expenses are covered by the deduction of a small per-centage from salaries.

Many of our countrymen are employed in the industries of Russia, but invariably as masters and foremen. The native workmen are generally competent but careless, and demand constant supervision. They seem to be indifferent as to the quality of the work they turn out, and unscrupulous in undertaking any work given to them without reference to their characters as workmen. Russian artisans are, however, acquiring great skill in all departments of their trade, for the Russian is of an initiative if not an inventive turn, and as he improves in skill he will naturally, one may suppose, improve in care and the quality of the work he executes. At present, however, nearly all the large establishments are directed in their several departments by Englishmen and other foreigners. But employment in Russia is, owing to the climate and severity of the winter, and other causes, very precarious; and in general it may be said that there is no opening for the introduction of foreign labour save of one kind, and that is skilled labour. Intelligent men, having the power of self-restraint with the faculty of commanding obedience, will find an opening for their abilities in Russia, whether as foremen in mills, engineers, or farmers.

THE GOLDSMITHS' ART IN LIVERPOOL.

THE Liverpool Art Club, following metropolitan examples, has made a valuable collection of specimens of goldsmiths' art for exhibition. It includes 413 specimens, arranged and catalogued. A preface to the catalogue by Mr. Edward Quail brings together some information on the subject, doubtless appreciated by those who examine the collection. We print a few passages—

"From A.D. 600 to 900, not only was nearly all gold work for the Church, but the best workers were, in many cases, monks, as in the case of St. Aloys, whom the goldsmiths adopted as their patron saint. A simple monk, but remarkable for his skill in metal, and still more for his honesty, he was made a bishop by King Dagobert, 600—620, and made minister and king's treasurer. Yet favoured as he was with the friendship of the king, he continued working at his forge as a simple artisan, assisted by his servant and scholar, 'Thillon Saxon,' making, his biographer says, 'many vases enriched with precious stones or the king.' He founded also a monastery, that the knowledge he possessed might be learnt,

and the art practised. No doubt the men who illuminated our missals were able to practise kindred arts in ornamenting Church vessels and ornaments, of which every shrine could absorb an unlimited quantity. During this period the great Charlemagne did much for the art, and his interment was one of the last instances in which valuables were placed in the tomb, and many almost priceless articles were buried with him; they did not, however, remain long undisturbed, and all of them that now remain are his sword and crown, which are at Vienna. One of the most striking monuments of the goldsmith's art of this age is the altar of St. Ambrose at Milan, which, notwithstanding its great value, has survived many risks and dangers; it is in existence still, and any verbal description could hardly give any idea of its magnificence. An inscription states it to have been made by V. Wolfinus, whom Dr. Rock considers, from the name, to have been a Saxon. And now, perhaps, a few words ought to be given to Anglo-Saxon Britons had before the Romans arrived it is impossible to say. The resistance offered by people, and as they had come in use among them, that argues considerable civilisation. They were in a state, under ordinary conditions, prepared to adopt any superior arts shown them by the new comers. The Saxons, who came after the Romans had left, seem to have had more knowledge than the Britons, and to have had ideas of ornament of an original kind; from their custom, common to all pagans, of burying valuables with their dead, we have many of their brooches preserved. They are generally of bronze, coated with silver or gold, with raised edges and sunk centre, and patterns of lines in zig-zag, curves, or interlacings, forming varied and beautiful patterns; and what is strange is, that each of the different tribes of which the nation was composed, Jutes, Angles, and Saxons, had a special pattern for their brooches, which must have been settled by some agreement among themselves, much as the Highland clans adopted a badge or a tartan. They knew, we have seen, how to coat other metals with silver or gold, and practised a kind of enamel or inlaying of coloured stones. There was, however, an entire absence of any power in drawing, and any efforts to represent animals utterly failed. They sometimes attempted to copy Roman coins, but the imitation was very poor. Such people were ready to receive instruction from what the first missionaries brought them in the shape of articles of higher artistic value than they had seen, and to acquire from them a more practical knowledge as to fusing and working metals. The Saxons seem to have done credit to their teachers, and to have acquired a reputation for special skill; for we see that St. Eligius had a Saxon for his right-hand man, and that the shrine of St. Ambrose, at Milan, may have been made by one. The bell of St. Mura, in Lord Londesborough's collection, though claimed by the Irish as Celtic work, seems probably to have been made by the Saxons of Northumbria about 700—800. Certain it is that the few missals which remain of that period show that the Saxon illuminators compare favourably with, if they do not excel, any others of the same period. The rings of Alfred and of his father, Athelwulf, are preserved in the British Museum; the one of Athelwulf is considered of Saxon work—especially as one of the same kind, belonging to the Bishop of Sherborne, about 850, was found in Wulf and his son, Alfred, had seen Rome, and the rings might have been made by an Italian to his pattern, or by a Saxon monk under Italian influence. A great number of gold ornaments have been found in Ireland, where the metal was formerly comparatively abundant; many still exist, and some show rude attempts at ornamentation. Great superiority in gold and silver work is claimed for the Celts, but their superior skill is not at all proved, though the Tara brooch is a wonderful piece of work. The division of the island among chiefs or kings, and the constant warfare in which they seem always to have been engaged among themselves, must have been eminently unfavourable for the practice of an art like that of the goldsmith. We know that a large number of gold ornaments have been melted down, without any account being kept of their peculiarities, and among them may have been some that would settle the point; but if ornamentation had been understood and practised, there would, we think, have been more evidence than now exists on those that remain.

Most of those we possess have been found in bogs, as if dropped in flight from sudden danger.

We have seen that in the early ages most of the goldsmith's art was exercised on objects for the Church. When tournaments were the fashionable meeting-places, ornamented armour and trappings received equal attention with the appointments of the banqueting-hall; after armour was laid aside, richly-decorated daggers and sheaths were, to noble dress, indispensable; later, when watches were introduced, ingenious and skilful work in engraving and enamelling was employed on them. Snuff-boxes had also their day, and were the vehicle for the exhibition of much taste—good and bad. In the present time in England, many works beautiful in design and execution have been produced, and much exactly the reverse; and if any particular article has received more attention than another, it has been those called testimonials; the intelligent inquirer of the future will be astonished and pleased to find that in the nineteenth century there have been so many people who, in their own estimation, and in that of their friends, had so much wealth and so many virtues. When we consider the changes in art, taste, and skill, during the last two thousand years, it is, perhaps, pertinent to ask, Has perfection been found anywhere, or shall we have such artists as the Greeks of the best period, or see better works than they, or Benvenuto Cellini of the Renaissance, produced? Some questions are best answered by asking others: Shall we have greater men than Homer or Shakespeare? We think not—neither in their province nor in that of art; but this we may without presumption believe, that as no actor does justice to himself nor to his part before a cold or slender audience, so such societies as ours, though not founded specially to promote art, but from a common taste in its enjoyment, must tend to encourage all artistic efforts, by assisting in preparing for such a warmer and more intelligent appreciation."

WANTED, A MUSEUM OF CASTS.

It is cheering to find that, amidst all the wild and disorderly janglings of French political life, a voice speaking up for art can make itself heard and listened to.

M. Félix Ravaisson, who is well qualified to speak upon the subject, appeals to his Government, and to all those of his fellow-countrymen who are art-lovers, on behalf of a new museum,—a museum of plaster-casts. As we are of opinion that M. Ravaisson proves his case, and as, further, most of his statements and pleadings apply to our own art necessities, we think it advisable to present our readers with a *précis* of the French critic's paper. We do not forget that we have a number of casts scattered here and there, and that South Kensington has done much towards inducing foreign governments to exchange fac-similes of fine works. Indeed, the proposition to which we are now calling attention may be viewed as one result of what has been done in this direction in England.

In the year 1856 M. Ravaisson proposed to his own Government to take a series of casts of the genuine portions of some excellent Greek works in the palaces and gardens of Italy. He exhibited a specimen in the Palais d'Industrie, which most favourably impressed the best judges of sculptured art; but the establishment of a museum of plaster-casts yet remains as an item amongst artistic agenda.

The scheme, on being considered, is by no means an unpractical or extravagant one, for the idea rests upon a sound and truly artistic basis. Any country which possesses a museum of the kind now advocated, must be aesthetically the better for it. In no country more than England, where we already have energy and strength in abundance, does the elevating influence of beautiful objects act so beneficially upon the national character. We have the force,—we shall be all the better for an influx of "sweetness and light."

France already possesses a fine gathering of sculpture in the Museum of the Louvre; still there are many statues of the greatest beauty at Munich, Athens, Rome, Naples, Florence, Venice, Mantua, London, Dresden, and St. Petersburg, copies of which would add an incalculable value to the collection. The same remark applies to our collection at the British Museum. M. Félix Ravaisson, in urging his case from his own point of view, shows that it would be most advantageous to supplement the *chefs-d'œuvre*

which his country already possesses with a series of reproductions of absolute exactness of proportion and form of the many noble works which are spread over Europe. There must be no more copies, which are rarely true to the originals, and are never accepted as perfect reproductions by artists. They must be genuine casts taken from moulds made on the original statue, bust, or relief. The operation is purely mechanical, but the fidelity of the cast can never be contested. In examining these plaster-casts, whether of sculptures, or of engraved stones, or metals, may we not imagine that we have before our eyes the precious treasures themselves. What a service to the history of art, and to the practice of art, would be the gathering together of fac-similes of the finest works in marble, ivory, bronze, and wood! The obscurities of antique art have not all been cleared away. Even in the richest museums the number of classical works whose dates have been precisely determined, is comparatively few. Now, if we had gathered together the faithful reproductions of classical treasures, those of an ascertained date could be ranged in such a way as to serve as fixed points between which the works of uncertain date would fall. As our knowledge increased, and after a comparison of resemblances and differences of age and school, we should be enabled to fix the date of a large number of works hitherto classed as of uncertain periods.

The marbles which glorify our museums have, for the most part, been exhumed from the earth in a mutilated condition. Time has only spared us fragments. As these fragments came to light in other times, the first use made of them was to set them up as ornaments in the palaces and gardens of the luxurious and the wealthy. They were far less prized as rare models of good taste and beauty than as a means of embellishing sumptuous halls and galleries or the geometrically regular garden-alleys in vogue. As fragments they lacked interest and importance to their owners, who, consequently, had them "restored." This is the reason why, notwithstanding the fact that there are few antique busts, statues, or reliefs really complete, we find in our collections so many works—most of them from the villas of past days,—which at first sight appear to be in a perfect state of preservation.

When these antiques were found, the idea prevailed that the best mode of completing one set of fragments was by the aid of another collection of *débris*. In one instance, a statue, wanting a head, had one adjusted to it which never could have belonged to it. Those works which were deficient in legs, feet or hands, nose, lips or ears, or portions of drapery, or other accessories, were "completed" by the chisel of a modern sculptor. At the outset, when, as yet, antiques were rare "finds," the most celebrated sculptors were asked to undertake the work. Thus a *Marsyas*, which one may see in a gallery at Florence, was restored by Michelangelo. When the Farnese Hercules was discovered, both legs were wanting. To supply these recourse was had to Guglielmo della Porta. At a later period the real antique legs turned up, and they took the place of those members which the modern artist had supplied. The Laocoon wanted a right arm; Baccio Bandinelli, at first, and then Agnolo Montorsoli, supplied the deficiency. To the latter sculptor we owe the left arm of the Apollo Belvedere; and Montorsoli also restored that statue of Hercules to which the name of Commodus was given in error, though it is still retained. In the French collection the Diana with the Fawn was restored by Barthélemy Prieur; the Venus of Arles and the colossal Jupiter, by Girardon. Unfortunately restorations were too often confided to the hands of the least able; but even the happiest renovations of the most gifted artists have frequently damaged the effect of the antique work. For this reason many of our most important classical monuments present a composite, not to say hybrid, character, calculated to lead astray the judgment of the historian and the art-critic, as well as to confuse and misdirect the artistic mind. Let us take, for example, some of the statues in the Louvre. The Discobolus has a head which may have belonged to a Hercules, and two modern arms. The head of the Jason is of a beauty superior to that of the body, but it does not belong to the statue; the left arm, and a portion of the right are restorations below mediocrity. In the wounded Amazon there is of antique only the head and the upper portion of the body. The lower portion, ably restored as it is, displays a robe flowing down to the feet, whilst the costume of the original

must—according to a number of examples of the same type of statue—have consisted of a tunic reaching not lower than the knee. On the other hand the Polyzonia in the same hall, has only the lower portion of antique workmanship, every part above the hips, coming from the hand of a modern artist. The so-styled "Bonnus Eventus" is an Apollo of a very ancient type—the head and torso only being antique. This statue has been restored after a design on a Roman medal, hence a Greek god of the earliest epoch has been transformed into an allegorical divinity, belonging to the era of the Imperial Roman dynasty. A statue of a female, remarkable for the design of the drapery, the arrangement of which would seem to indicate that it belonged to a Diana, had neither head nor arms. Algardi, the Italian sculptor, bestowed upon it arms of a bronze, a head of bronze also, and as a consequence, it has been named the Zingarella, or Bohemian Gipsy Girl! M. Félix Ravaisson distinctly tells us that, of the many Imperial Roman statues which his country possesses, in very few does the head really belong to the body which carries it. We are in fear lest the same startling statement should be made by this outspoken expert in respect to our own marbles! The admirable and justly celebrated Augustus itself is a composite of a splendid head of that emperor, and of a body draped in a toga, which belongs to an epoch more ancient and even more refined than that of the head. The sitting statue called Trajan, is composed of a head of Trajan, and the body of some Greek personage, as the costume and the feet-covering prove. Our worst fears are realised when M. Ravaisson stoutly declares that the same may be said of all other collections: "In every museum of antique marbles—no matter in what country—perhaps not one-half the heads of the statues properly belong to the bodies they surmount. In relics thus composed it is difficult for any one not experienced in this particular kind of analysis exactly to distinguish the heterogeneous elements of which they are built up."

This mode of "making up" a statue has proved a pitfall in the path of more than one art-historian. Three eminent antiquarian writers, Winckelman, Marini, and Visconti, have recorded that a certain statuette in the Villa Albani is a representation of Diogenes. In fact, how could one fail to recognise Diogenes in the statue of an old man with severe and dissatisfied expression of countenance, staff in one hand, in the other the porringer so often alluded to in the history of the cynic, and followed by a dog? That which Winckelman, Marini, and Visconti did not observe was, that the staff, the porringer, the dog, as well as the arms and legs of the statuette, were restorations. It was the modern restorer who had created almost all the characteristic portions of a Diogenes!

To the young artist especially, this misleading *mélange* is peculiarly detrimental. Amongst these heterogeneous fragments lie hidden many beautiful relics of the past. In the Louvre, for example, there are many beautiful works whose beauties are buried beneath the restorations which have "completed" them. In the "Salle des Caryatides" there is a colossal Alexander, which, to an ordinary glance, offers nothing specially good. This is because the head, the arms, and the legs are restorations; we miss seeing that the torso is admirably executed, and of the finest period of art; the general effect is mediocrity.

We cannot, however, undo the work of the restorers. The monuments of art which are treasured up in Europe, in museums, are known to us in their restored shape. In this shape they have been described and figured in works to which even savans and artists turn for information. No one would think of subjecting our antiques to an operation which would reduce many of them to unrecognisable fragments. We might, however, mould such portions of these works as are of undoubted antiquity. These portions might be cast, and would form a collection which would present in all their native truth and purity, the most beautiful remains of ancient art, which time has spared. In the proposed plaster-cast museum, the treasures of antiquity might be supplemented by others of a later date. The Middle Ages, the Renaissance, modern days have produced works which are not unworthy to find a place beside the gems of classic periods. What may be termed the nucleus of plaster-cast museums exists in London, Berlin, Dresden, Bonn, and Zurich. They are in course of formation at Moscow and Christians-

Paris does not possess a museum worthy of the name, and neither does London. In the French capital an attempt to establish one was made a very long time ago. Francis I. commissioned Primaticcio to buy antiquities at Rome, and to take moulds of the valuable pieces he could not acquire. This was a most enlightened idea, whoever originated it. Primaticcio acted up to his instructions most faithfully; he went west so far as to make bronze castings from the moulds. These bronzes, after having successively decorated the gardens of Fontainebleau, Versailles, and the Tuileries, found a resting-place in the "Musée des Antiques." Poussin, under Louis XIII. renewed the laudable attempt of Primaticcio. He sent from Rome a large number of plaster casts, some of which were in existence in the French capital as late as a quarter of a century since. M. Ravaisson's idea has in a measure been carried out. The plaster casts exhibited in the Exposition of 1856 have been collected under a glass roof, in a court of the "Ecole des Beaux Arts." There they are open to the inspection of the public at certain times. This arrangement does not please M. Ravaisson, who is of opinion that a museum of the kind ought to be always open to the public, with as few restrictions as possible.

Why cannot we have a plaster-cast museum? We might even go so far as to ask why we have not one in Manchester, Liverpool, Edinburgh, Glasgow, Dublin, and in every important town in Great Britain. There are difficulties in the way of course, but the advantages are greater than the obstacles. We might acquire a great many works by exchange with Athens, Paris, Naples, Munich, and elsewhere. The castings are easily multiplied. The museum would be one of the best, and certainly the least expensive of all our art institutions. We must, however, popularise the somewhat too exact ideas of the French proposer. By all means have the precious fragments of antiquity, in all their unassisted beauty, and nothing but the fragments, for the service and the educated taste of the artist and the art-patron; but let the general public have also the restored statue side by side with the originals. Fragments, however good, will not attract the general public. So, in order to teach the people, we must begin by pleasing the eye and interesting the mind. No good notion is any the worse for being popularised.

EDINBURGH IN EARLY DAYS.

According to the account of Simon of Durham, Edinburgh in 854 must have been a considerable village. From the period of the cession of Lothian to the Scots, in 1020, the Castle continued to be a frequent residence of their monarchs. Margaret, the pious and worthy widow of Malcolm Canmore, died in 1093 in the Castle. The chapel within the ramparts, in which she used to worship, has not yet been improved off the face of the rock. David I. founded the Abbey of Holyrood, and granted permission to its canons to build a subterranean westward from their church along the ridge of the rising ground, to meet his *burgh*, which by this time had advanced about halfway down the sloping surface of the hill from the Castle. The monks named the new town reared upon this privilege Canonsburgh, or Canongate, which latter title it still retains. Though built in a somewhat regular manner along the face of a ridge, with a wide street in the centre, then called Market-street, now High-street, running the whole length between the Castle and the Abbey, the houses must have been of a very mean order, for we find that for a considerable period after David's time they were thatched with straw. In the 16th century Edinburgh had become a place of resort from all parts of the kingdom, and the magistrates for the first time had the High-street repaired and paved, and other measures were adopted to remove the reproach of its deformity and to order the pulling down of a row of offensive tenements at the lower end of the town. There is in the British Museum a sketch in water-colours of the Edinburgh of the 16th century. The houses are represented as of one story, some roofed with thatch, others with tiles.

In 1610 the Town Council purchased ten acres of the lands of High Rigs, which they enclosed with a wall, and which, in 1618, were annexed to the burgh by Royal charter. These are the grounds now occupied by Heriot's Hospital, the Candlemakers'-row, Greyfriars' Churchyard, &c.

Houses were now being speedily erected beyond the walls and along the roads leading from the city gates. Nearly all these streets date back to the middle of the 16th century. By an Act of Parliament of 1621 it was ordered that henceforth the houses should be covered with slates, lead, or tiles. In 1677, in consequence of frequent disasters by fire, the Town Council enacted that no person should presume to build a house with wood, or cover a new building with thatch, but that in time coming all houses were to be built with stones, and covered with slates or tiles, under a heavy penalty. There were few leading streets in the Old Town. In imitation of the Parisian architecture of the period, the houses were built very high, consisting of from twelve to thirteen stories, each story constituting a distinct dwelling, and frequently a distinct freehold, the access to each being by a stair common to the whole. One object for erecting such lofty houses was to save ground-rent, but the practice was carried to such an extent that an order of Council limited the number of stories.

From the middle of the 16th to the middle of the 18th century the city increased very little in any direction. In 1751, in consequence of the falling down of an old house six stories in height, by which a person was killed, the public attention was called to the state of many of the other houses, which, being in an insufficient state, were ordered to be taken down. On the site of these ruinous houses was erected the Royal Exchange, the foundation-stone of which was laid in 1753. In 1763 the drainage of the North Loch, a muddy lake on the north side of the Old Town, and the foundation of the North-bridge were commenced. The North-bridge spanned the valley, beyond which, in 1767, a new Edinburgh was to spring up, and "stretch its white arms to the sea." Craig was the designer of the new town, and by the year 1778, so successfully had the new building scheme been carried out, that its most prominent streets were built and occupied. The taste for new buildings being now excited among the citizens, the extension of the town to the north was rivalled by a similar extension towards the south, and George-square, sacred to the memory of Sir Walter Scott, rose into existence. The rapid rise of these southern buildings suggested the idea of opening up a communication to them across the Cowgate, the southern valley. In 1788 the South-bridge was opened for passengers. The construction of this bridge involved the destruction of one of the oldest stone houses in Edinburgh, which belonged to Sir Simon Preston, of Craigmillar, the Lord Provost of Edinburgh. In this house Queen Mary took refuge after the defeat of her party at Carberry-hill. The building areas on each side of this new bridge were in so great demand that exorbitant prices were paid for them. Some of these areas sold at the rates of 96,000*l.* per acre, 109,000*l.*, and some 150,000*l.* per acre. As years rolled on the city extended itself eastward, another bridge, the Regent, was flung across another valley, and beyond this the buildings of Waterloo-place were erected, together with the perhaps too conspicuous castellated jail. Once more the valley of the Cowgate "stopped the way." In 1827 a number of old houses were pulled down on the south side of the Castle-hill, and the foundation of George IV. bridge laid. This bridge spans the Cowgate, and consists of ten arches. An approach was also opened up, and a bridge built, on the south-west side of the Castle-hill. (All the bridges mentioned above would in London be denominated viaducts.) The Dean-bridge, consisting of four lofty arches, leads across a filthy river known as the Water of Leith, to a new suburb, which is yearly increasing in its dimensions. A short time previously to this Stock-bridge, consisting of a single arch, was constructed across the same river, and another suburb sprang up on the site of the property of Raeburn, the celebrated portrait-painter.

"Westwards the course of empire holds its way,"

and westwards, as well as southwards, Edinburgh is trending. The Grange, which a few years ago was the thickly-wooded park of the old Grange-house, is now covered with villas, and beyond the Grange the houses stretch away for nearly a quarter of a mile. Eastwards the city has made many attempts to go, but beyond the Royal and Regent-terraces, has achieved but slight success. Northwards little progress has been made of late. When the sewage fields of Dalry on the west, and those of Portobello on the east—both of them veritable "Marcmias," teeming with plague and pestilence—are swept

away, Edinburgh, doubtless, will still further, and in new directions, extend her borders.

The above brief sketch of the rise of Edinburgh has been suggested by a letter in the *Builder* of March 28th, 1874. The antiquary and the archaeologist may regret many of the modern "improvements" of Edinburgh, but on the whole they have proved beneficial. John Ruskin, speaking many years ago in the hall of the Philosophical Institution of Edinburgh, said, "Verona is the finest town to look into; Edinburgh the finest to look out of." This was paying but slight compliment to the architectural features of the Scottish capital; yet, apart from them the dictum is true. Stand on the bastions of the Castle or climb to the breezy summit of Arthur's Seat and look around,—

"Traced like a map the landscape lies,
In cultured beauty stretching wide;
There Pentland's green acclivities,
There ocean with its azure tide;
There Arthur's seat, and gleaming through
Thy southern wing, Dunedin blue!
While in the Orient Lammer's daughters,
A distant giant range are seen,
North Berwick-Law with cone of green,
And Bass amid the waters."

So sang David Macbeth Moir, the "Delta" of *Blackwood* forty years ago. It would seem that the site of Edinburgh is of such a peculiar formation that it defies stone and lime, and the vagaries of architects and builders, to destroy its beauty.

ARCHÆOLOGY IN ROME.

At the last *conversazione* of the British and American Society, Mr. Pullan gave an account of his exploration of the west coast of Asia Minor, from the borders of Caria to the Troad, a distance of 200 miles. In the course of this journey he visited the sites of several temples, the chief of which were those of Apollo Smintheus, in the Troad; Bacchus, at Teos; Minerva Polias, at Priene; and that of Apollo Branchidas, near Miletes; and reported to the Dilettanti Society upon the desirability of excavating the places mentioned. These temples we examined between the years 1863 and 1870, and found all of them to be of the Ionic order, and that of Priene in a remarkably fine style. The sculptures found there are now in the British Museum. Mr. Pullan added that it would be interesting to his audience to learn that there was a gentleman present who had excavated on the site of the fourth temple mentioned, viz., that of Apollo Branchidas. Mr. Thomas, who was sent out last year by Baron Rothschild, with two companions, for the purpose of digging for sculptures, would give some account of his excavation. Mr. Thomas proceeded, with the aid of a series of photographs, to explain his operations at the temple at Branchidas, and stated that he subsequently visited Priene, where Mr. Pullan had, in 1870, left walls and columns standing to a certain height, but that the natives had overturned some of them in order to obtain the lead and iron used in the construction of the temple. On Friday, 17th, there was an excursion to the circus of Maxentius. Mr. Pullan, in explaining the chief features of the building, began by saying that it was difficult, even for English people, who were addicted to "sport" of all kinds, to realise the passion of the Romans for the races of the circus, owing to the circumstance that these races were sanctified by religious ceremonies. We could not well imagine the feeling produced by the combination of zeal for religion and a zeal for the race. The expression, "*Panem et circenses*," became proverbial. The Romans derived their games from the Etruscans, and originally from Lydia; hence the games were denominated "Ludi." There were seven circuses in Rome; that of Maxentius was the most perfect, and the chief features are still visible, among them the *spina* or central longitudinal division, with its goals, one at each end. In the centre of every circus was an Egyptian obelisk; that from this circus was now in the Piazza Navona. There also remained the *carceres*, or cells, from which the chariots started; the *precinctiones*, or places reserved for spectators, consisting of rows of steps and seats all round the building; the emperor's seat, which communicated with the adjoining villa by means of a passage. The circus and the adjoining tomb and temple of Romulus were excavated by Nibby, for Prince Torlonia, in 1825. The party subsequently visited the church of St. Urbani, an interesting example of a temple converted into a church; the pseudo grotto of Egeria, and the tomb of Cecilia Metella.

NEW RAILWAY WORKS AND BUILDINGS.

THE proceedings at the half-yearly meetings of the railway companies which have been held during the past few weeks, and which have now been brought to a close, show that as respects several of the leading companies very extensive new works are about to be undertaken during the current half-year, involving an outlay of many millions sterling. In addition to the enormous expenditure which the London and North-Western Company have incurred during the last one or two years in new lines, and other works, together with new and enlarged station buildings, the proprietors, at the recent meeting, voted a sum of no less than 3,100,394*l.* for still further works, and new rolling stock. The sum of 1,939,788*l.* of this large amount is for the new lines, and other works, authorised by the Act of 1873, and the Holyhead Harbour Act; whilst 860,606*l.* are for intended new and enlarged stations, additional sidings, and other accommodations, and new works of a miscellaneous character. Beyond this expenditure, 300,000*l.* are about to be laid out in new engines, carriages, and wagons. Amongst the principal items in this prospective large expenditure, 300,000*l.* are for widening the line from Bletchley to Roade; 40,000*l.* for widening the tunnel on the Bettws and Festiniog line; 40,000*l.* for a warehouse and branch line at Cardiff dock; 30,000*l.* for hydraulic machinery and cranes, at Garston dock; 27,500*l.* for engine-sheds, at Abergavenny and Cannock Junctions; 21,950*l.* for new rail mill furnace and signal-making machinery at Crewe; and 10,000*l.* for the improvement of the New Street Station at Birmingham. There is the sum of 169,666*l.* set down for additional siding and general station accommodation at several places enumerated along the company's lines, and 134,000*l.* for the purchase of land for the purpose of carrying out the works. Beyond this expenditure, the shareholders agreed to subscribe, individually, a large sum for new church and school buildings at Crewe. The report stated that the rapid growth of the works at Crewe, and the requirements of the Elementary Education Act, necessitated an increase of accommodation for religious and educational purposes at Crewe; and as the directors had no power to apply the company's funds to such objects, they had no alternative but to appeal to the shareholders to assist them. In addition to the above-named expenditure, the company have two Bills before Parliament, seeking powers to construct new lines and works, at an estimated outlay of 1,666,000*l.*

The Midland Company's report shows that this enterprising and spirited body are still expending a heavy amount in new works in addition to the enormous outlay which they have been continuously incurring for several years past. The capital expenditure during last year was no less than 3,000,000*l.*, and the estimated further outlay for the current half-year is 1,270,000*l.*, of which 571,000*l.* are for new lines in course of construction, and 100,000*l.* for subscriptions to other railways, and contributions to joint lines. In addition to this intended expenditure, the company are applying to Parliament for powers to construct other new lines and works at an outlay of 3,573,000*l.* Amongst the works intended to be carried out during the present half-year is laying down another double line of rails between London and Bedford, a distance of fifty miles. The chairman stated at the meeting that the company possessed a capital of upwards of 50,000,000*l.*, and that their gross revenue last year was 5,387,312*l.*

The Great Northern Company are also about to expend a considerable sum in new works in addition to those already in progress, and also for rolling-stock; and for this purpose the shareholders at the recent half-yearly meeting voted the sum of 333,753*l.* Of this amount 50,000*l.* are for the erection of a large new station, and the construction of other works, at Doncaster; 29,000*l.* for the extension of the Peterborough, Easington, Grantham, Newark, and Retford stations; 15,000*l.* for additional lines through Boston station; 11,000*l.* for the enlargement of the Bradford station; 5,500*l.* for the enlargement of the Lincoln station; 10,000*l.* for new lines and improvements at Ardeley; 13,500*l.* for locking apparatus at junctions and stations; 7,338*l.* for shunting-sidings at Peterborough; 6,000*l.* for an additional up-line at Grantham; 3,300*l.* for the enlargement of the Nottingham station; 7,000*l.* for additional lines at Leeds; and 2,000*l.* for reconstructing the Ratcliffe

viaduct. 10,000l. are also to be expended out of the sum voted in the purchase of the site of an intended new goods warehouse at Southwark; and 126,260l. are to be laid out in new rolling-stock. The report also states that much inconvenience is experienced in working the goods and local traffic of the company to and from the City by the Metropolitan Railway, in consequence of the crowded state of that line; and that relief in this respect will be afforded by the new railway between Finsbury Park and High-bury, now being made by the company, for the carriage of their traffic via the North London line. It likewise adds that the building of the goods depot at Farringdon-street is in progress, and that alterations of the King's-cross station at its north end have been commenced, with the view to improve the working of the local trains. The company is also applying to Parliament for powers to construct new lines involving an expenditure of 1,333,300l.

The Great Western Company are about to expend a large amount in new works of a varied character. The meeting of this company sanctioned the expenditure of 375,000l. in the construction of a new line between Paddington and West Drayton, and also the sum of 290,000l. for the conversion from the broad to the narrow gauge, and alterations of stations over a portion of the main line between Swindon and Bristol. Beyond these items of expenditure, 90,000l. are to be spent as follows:—25,000l. on the extension of workshops and machinery at Swindon; 21,000l. in additional siding and station accommodation at Paddington, Oxford, Kingsland, Stratford-upon-Avon, and other places; 25,000l. on the Bristol Port and Pier; and 15,000l. in locking apparatus at junctions and stations. Added to this 120,000l. are to be spent in new rolling stock, making a total expenditure during the current year of 870,000l. The company are also applying to Parliament for powers to construct new lines, including a railway to their goods station at Stourbridge; and also for alterations of levels and works of certain lines of rails on the part of their railway between the eastern side of Green-lane-bridge and the western end of the Bishop's-road Station, at Paddington. The estimated cost of these several proposed new works is 500,000l.

The shareholders of the London, Brighton, and South Coast Company at their meeting sanctioned the expenditure of a heavy sum on new works and undertakings, and also on new rolling stock. The intended expenditure includes 75,000l. on the Portsmouth Waterside Extension, which is to be constructed jointly by the Brighton and South Western Companies; also 25,000l. for interlocking points and signals; 65,000l. for new steel rails on the Main and Metropolitan lines; and 50,000l. for stations and sidings. The intended expenditure on new rolling stock is 235,000l. With respect to this item of expenditure the report says that the continued growth of Brighton and other watering-places on the coast, the constant extension of building at suburban stations, and the increased facilities given by reduced periodical tickets, improved train service, ample third-class accommodation, and otherwise, all tend to increase traffic, and that it would be unwise not to anticipate and be prepared for a further large increase, and that accordingly the locomotive superintendent estimated the probable additional requirement for engines, passenger carriages, and wagons, at the sum above named. The aggregate expenditure which the shareholders sanctioned is 450,000l.

The South Western Company at their meeting agreed to commence the construction of the Ascot and Farnborough line, and it also appeared from the proceedings that the engineers had been directed to prepare the necessary plans and estimates for the Portsmouth Waterside Extension, which the company are about to construct in conjunction with the London and Brighton Company.

At the meeting of the North Eastern Company, the chairman stated that the directors were going to spend nearly half a million in making additional sidings and other accommodation. It also appeared from a further statement of the chairman that an immense amount of capital is now being expended in new rolling stock.

The directors of the Manchester, Sheffield, and Lincolnshire Company report that the estimated expenditure during the current half-year, on station extensions, sidings, and other works, together with new rolling stock, is 235,000l.; of this sum 40,000l. are for new station

buildings at Sheffield, Guide Bridge, and Lincoln. The report also states that it is proposed to purchase the Free Trade Hall and other buildings of Manchester, for the purpose of erecting a new station on the site. The company are promoting a Bill for the construction of new railways, 25 miles in length, and also for powers to purchase certain other railways, the capital for which is 2,317,000l.

It will thus be seen from the figures given above, that on the several leading railways the extent of new works about to be executed must necessarily give employment to a very large number of artisans and others.

THE ASPHALTE AND WOOD QUESTION.

A FURTHER report has been made to the City Sewers Commission upon the Asphalt and Wood Pavements, by Mr. Wm. Haywood, C.E., their engineer and surveyor. The conclusions of this report are:—

1. *As regards Convenience.*—That asphalt is the smoothest, driest, cleanest, most pleasing to the eye, and most agreeable pavement for general purposes, but wood the most quiet.

2. *As regards Cleansing.*—That wood may be kept cleaner than it hitherto has been, but will be more difficult and expensive to cleanse effectually than asphalt. That as both pavements require occasionally strewing either with sand or gravel, there is not much difference between them in that respect.

3. *As regards Construction and Repair.*—That asphalt and wood, taking all seasons and weathers into account, can be laid and repaired with about equal facility, but that the smallest, neatest, cleanest, and most durable repairs can be made in asphalt.

4. *As regards Safety.*—That whether considered in reference to the distance which a horse may travel before it meets with an accident, or the nature of the accident, or the facility with which a horse can recover its footing, or the speed at which it is safe to travel, or the gradient at which the material can be laid, wood is superior to asphalt.

5. *As regards Durability and Cost.*—That wood pavements, with repairs, have in this City had a life varying from six to nineteen years, and that with repairs an average life of about ten years may be obtained; that the durability of the asphalt is not known, but that under the system of maintenance adopted, they may last as long as wood, that, contrasting the tenders for laying and maintaining for 4 years the two best pavements of their kinds, wood will be the dearest.*

These remarks apply, in most cases, to asphalt and wood pavements generally, but are more strictly applicable to the compressed asphalt of the Val de Travers Company and to the improved wood pavement. They apply to streets of much traffic and in London, for where the climate and other conditions are widely different, different results, as regards safety and cost, &c., may be expected.

The following table shows the duration and cost of certain Asphalt and Wood Carriageway Pavements, according to tenders made by the respective contractors:—

Situation	Description of Pavement	Years to be laid by Contractor	Cost per square yard	Cost per square foot
ASPHALTE.				s. d.
Chesham and Poultry	Val de Travers (Compressed)	17	2	4 1/2
Gracechurch-street	Ditto	17	1	10 1/2
Piney-pavement	Ditto	17	1	7 1/2
Lincoln-street	Limmer (Mastic)	17	1	7 1/2
Corahill	Ditto	17	1	6 1/2
WOOD.				
King William-street	Improved Wood	16	2	6 1/2
Ludgate-hill	Ditto	16	2	6 1/2
Portion of Great Tower-street and Seething-lane	Ditto	16	2	2

THE SOUTH LONDON MUSEUM.

A FEW weeks ago we noticed the intended immediate erection of the South London Museum, the funds for which are being supplied by Messrs. Clements. The arrangements for the commencement of the building are now almost completed, and it is definitely understood that the foundation-stone will be laid in June. The building will have two main frontages, one in New Kent-road, and the other in Gurney-street. Although not so large as was at first intended, it will, as at present arranged, have a floorage about the same as the National Gallery, and will contain several fine-art galleries, one of them being about 100 ft. long, by 40 ft. wide. It will also contain libraries, reading-rooms, coffee-rooms, and other like conveniences. Mr. Samuel Morley, M.P., agreed to become treasurer until the land was secured, and this having now been effected, he has resigned, having no local connections with South London. Colonel Bouverie, M.P., has now become treasurer, and will receive

donations in aid of the building. The Bishop of Winchester has accepted the office of vice-president, which became vacant on the death of his predecessor, Viscount Wilberforce.

WHAT IS A HOUSE?

A RATHER singular action in connexion with the building of a house near the Crystal Palace came on for trial last week at the Lambeth County Court. The plaintiffs were Messrs. Davis & Nicholls, brickmakers, of Queen's-road, Peckham, and they sued the defendant, Mr. Nash, a gentleman residing at Rutland Villas, Crystal Palace-road, for 19l. 10s. 10d. for bricks, sold and delivered under the following circumstances:—Mr. Lane, a builder, was employed in building a house for the defendant, but the plaintiffs declined to supply bricks for the purpose unless the defendant gave his written guarantee for payment. This he did, in terms dictated by one of the plaintiffs, commencing, "Please supply Mr. Lane with bricks to build my house." It appeared that a garden wall had also been built, and on the part of the defendant it was contended that this was not part of the house, and that this guarantee did not extend to the bricks supplied to build the garden wall. The learned counsel for the plaintiffs urged that the wall was part of the house, saying that he had numerous authorities on the point; but he should ask His Honour to define the word "house."

The Judge: I shall do nothing of the kind. I shall take it to mean what the parties meant by it at the time, if we can ascertain what that was.

The defendant's counsel, in resisting the claim, said his case against the guarantee was that it was given when only the "house" was in contemplation, the garden wall being a subsequent "extra." The bricks claimed for were actually used in building the wall, and had been supplied after the defendant had withdrawn his guarantee; so that on one of two grounds the plaintiffs must fail. The guarantee did not include the wall; and if it should be held that it did, then the written withdrawal before the bricks were supplied for the wall absolved the defendant from responsibility, and the question was simply one between him and Mr. Lane, the builder.

Amongst the witnesses examined was Mr. Lane, the builder, who deposed to the foregoing statement as to the wall being an after arrangement. He added that his affairs were in liquidation, and that he had tendered the plaintiffs 8s. in the pound of this claim, which had been refused.

The Judge said he must nonsuit the plaintiffs, and order them to pay the costs.

THE CHURCH OF ALL SAINTS, PLYMOUTH.

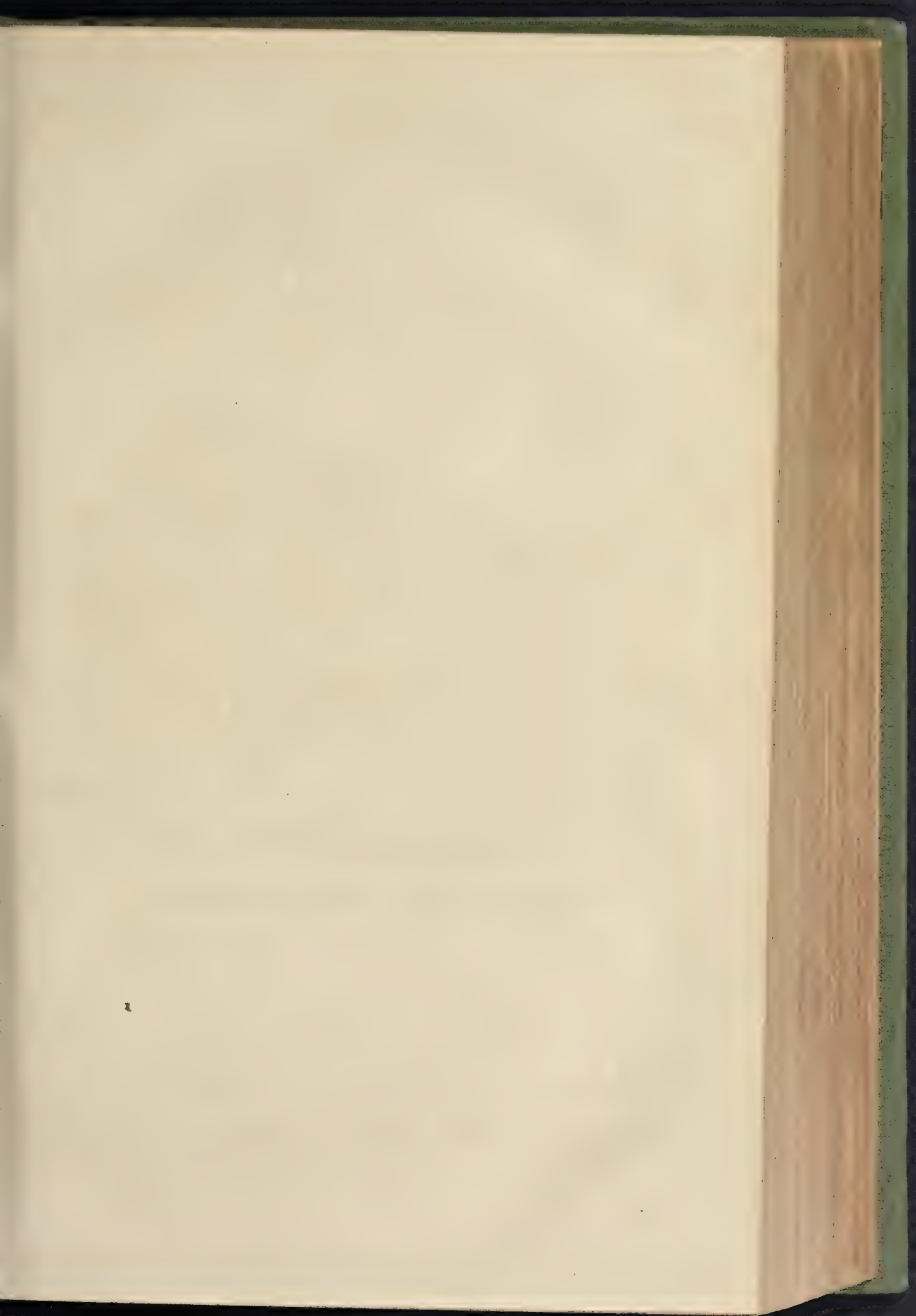
ALL Saints' Church, of which we now publish a view and plan, was commenced at the end of last year by Mr. Pethick from the designs of Mr. James Hine, architect. It will include a nave, 80 ft. by 28 ft.; north and south aisles; tower, with baptistery at south-west angle; chancel, with organ-chamber on north side and vestries on the south. The walls externally will be of wrought limestone, dark and light, with dressings of Boxwood and Portland stone.

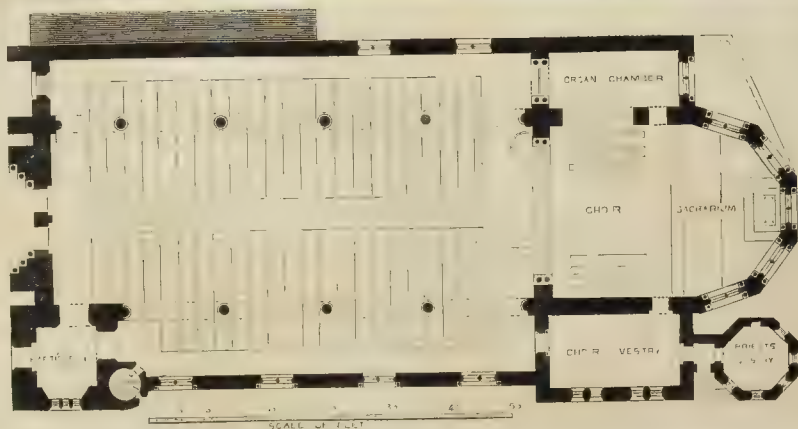
MEMORIAL OF THE DUCHESS OF SUTHERLAND, DUNROBIN, SCOTLAND.

IN our volume for 1872,* we published a view of the monument set up in memory of the late Duchess of Sutherland, in Trantham Church, and at the same time described the memorial which was about to be erected on a site within the policies of Dunrobin Castle.

The latter has only recently been completed, and we now illustrate it. It stands on an elevated site, and has been erected by the subscription of the clergymen and tenantry on the Sutherland estate. It is in the form of an Eleanor Cross, rising to the height of about 40 ft., and is built of white and red freestone, from the quarries near Dornoch. Within the canopy is a colossal bronze bust of the Duchess, by Mr. Noble. The work has been executed, from the designs of Mr. John Robinson, by Mr. John Rhind, of Edinburgh, under the direction of Mr. Fowler, of Dunrobin.

* See pp. 84, 87.





THE CHURCH OF ALL SAINTS, PLYMOUTH.—MR. JAMES HINE, ARCHITECT.



MEMORIAL OF THE LATE DUCHESS OF SUTHERLAND, DUNROBIN.—MR. JOHN ROBINSON, ARCHITECT.

CONSTRUCTION OF CONICAL ROOFS.

On a previous occasion we reported briefly the discussion which took place at the Royal Institute of British Architects after the reading of Mr. Scott Russell's paper on the "Central Dome of the Vienna Exhibition Building."* We now add in full Mr. Scott Russell's reply, as containing much interesting matter.

I will now endeavour to answer the points on which you have asked for information as concisely as I can. I am afraid when I say anything it may have the appearance of being too dogmatic, but I hope you will not accept it in that way. I feel deeply grateful to gentlemen who have deduced the points and exceptions and difficulties which they have done, because in answering them I think I shall give them the conviction that the cone possesses greater merit than I could have satisfied them it possessed if they had not been good enough to make these objections. I will now run through the matter as quickly as I can. In the first place, permit me to say that almost every one of the suggestions you have made, as to the alteration of the cone, and the different views of its theory, are perfectly true; and allow me also to say, I have confined myself in that article to the pure cone, because if I had gone out of the pure cone into the region of new structures, the quantity I could have laid before you is so enormous, that you would have been lost in a maze of confusion, as I was; and I had enormous difficulty in selecting out of the multitude of applications of principles of this kind the form of the cone at Vienna. You would imagine men of taste would be in love with the beautiful spheroidal form, and would not take the strictly straight cone when they might have the more beautiful spheroidal form. I will tell you how I came not to adopt it: I drew it out and discussed its peculiar qualities, and it was only the peculiar state of conditions which led me to adopt this form, which I think is not so beautiful as if I had made it spheroidal. A multitude of questions rose. It has been properly said, that time is a real element in practical construction, and engineers and architects are often obliged to abandon what they wish to do by want of time. Now, want of time and want of money are two things against the spheroidal dome. I will tell you why. The conical form has enormous advantages in construction. All the iron plates are plates of single curvature—straight in one way, gently curved the other. What is the consequence? We can put between them where we can manufacture them by hundreds, and bring them out ready for the building. Take a surface of double curvature; you have to heat it in the fire, you have to cut its edges to a conical surface, you probably encounter great difficulty requiring much time to surmount, and you have to do it, it is always badly done; whereas my cone can be manufactured by machinery, on the most simple but still most effective mathematical principles. The reason why I prefer an absolutely straight cone to the cone of double curvature is this: Mr. Penrose has touched upon the point. I have shown you that all my cone longitudinally is in compression—that all my cone circularly is in tension. Now a straight column under compression is much stronger than a bent column, and therefore that part of the cone in compression is far stronger than it is straight. The next point has been very properly stated, viz., that the ribs of this cone are very much deeper than you would imagine, on investigation of the cone itself. You are correct. The ribs of the cone, as originally designed, were much shallower than they are now. Why were they altered? Simply for the reason Mr. Crace has stated, that all the conditions of the original design were altered. The cone was made for being put upon masonry or brickwork, which was to have been carried out to the edge of the cone, and the cone was to have been set on that. Then the chance of the cone changing its form was very small, and these ribs or rings which have a peculiar function with reference to columns had no such functions when resting on masonry, and therefore were very small. These girders were enlarged, because we were agreed, from circumstances of time, to keep away the whole of the solid foundation; and one fine morning I was told "you are not to have a wall to put the cone upon; therefore, you must stick it upon iron columns in the best way you can." Then to arrange the iron columns

to carry the buildings, but to carry the cone, and that resting upon solid masonry foundations, are two things totally and entirely distinct. To sum up the whole question with regard to cone and girder, permit me to say, that these girders were by some people thought very strong when they were put up. Only there came a little wind after they were put up, and people who went there saw a slight vibration in the wind which satisfied them that the girders must come down if the weather were at all tempestuous. It was only after they got the cone to rest upon, then they acquired a great strength at all. What they have is great strength in their place; out of their connection with the cone have they none. If you take the great thickness of the girder, which is more than double what was designed, and then look at the length of it, 166 ft.; and then if you take the depth, not at the extreme end, but at the centre of gravity, where the strength is, you will find that these beams, which you think strong, are hopelessly weak to carry any structure, and then you will see that the beams had no strength till they became a part of the building. Coming more to the question of cones made of homogeneous metal, I may state that about three years before the opening of the Exhibition of 1851, I discovered that the cone was the successful structure which I have endeavoured to show you it is; and it is a curious fact that I owe to you, and the reception which you gave to me in some papers I read, the original ideas of this cone.

I read to you some thirty years ago a paper, describing a principle by means of which the greatest number of spectators could be arranged in a large building, so that they should all equally well see any spectacle they were brought together to see. I then, I dare say, satisfied you that you could make a building in which 10,000, 20,000, or 100,000 people could have sat together, all witnessing the same spectacle, and each one thinking he had got the best place in the room. That was solving a difficult problem, but it was leading you on to the construction of very large buildings with very large audiences. Twenty-five years ago I read you another paper, which you discussed with the same friendly energy as you have this, viz., on the question how to combine the largest number of people in a building, so arranged that all sounds should reach the ears of those present in the most perfect and distinct manner. I also tried to explain certain principles by which echoes and influences which impede sound, and impede the clear hearing of separate sounds, might be removed. I hope I persuaded you that a building could be made in which 5,000 people could comfortably listen to a single speaker, or an audience of 25,000 people could comfortably and agreeably hear a musical performance, but at the same time I know you did not believe that such buildings were necessary. But such buildings now have become so. You have had the Exhibition building of 1851, in which 100,000 persons were collected at one time, and you have had arrangements for the performances of music by orchestras of 3,000 persons, which have been listened to by 25,000 persons. [A Voice.—You cannot hear.] I have a deaf ear, but I could hear comfortably with my deaf ear; and the orchestra which you have now in the Crystal Palace has carried out in the most perfect manner the theory I then gave you. I call attention to this theory of seeing and hearing, because it compelled me to think how I should roof this large building, and thinking over the problem you discussed, I arrived at this fact, "that if you are to have large amphitheatres to hold many thousands of people to view spectacles in London, in the way that the Romans did, you must make them with a cone, and I have invented this cone to cover your great buildings when you are pleased to build them, and if you make those great buildings in London—and you will have to do it, for buildings are growing larger every day—I expect you young men here will have to make roofs, not of 360 ft. span, but of 720 ft., conical roofs, and after that you will go on to make them 1,080 ft., and perhaps you will not go farther in your lifetime, but I undertake to say the task will be easy, and the cost what in those days will be called moderate."

Coming now to this small cone. The moment the idea had not only occurred to me, but was proved by investigation to be an idea in which you could use material much more economically than any other form I knew, I immediately developed the other form of cone to which you alluded. I saw that in my kind

of building it would be possible to cut away all the dead matter of the cone, and put it into skeleton; and many years ago, in conjunction with an eminent member of your own profession, I designed a building in which all you have said was done: in which we threw away the entire homogeneous cone, in which we take away those trusses of which you speak, which are as old as wood construction. I have seen in the Rhenish countries the cone with wooden roofs applied to those semicircular Romanesque buildings, which for a time on the Rhine were competitors with Gothic architecture. I think I have seen wooden cones 250 ft. in diameter. In like manner you use iron girders, and do what you cannot with wooden struts, and you make a truss which requires no useless beams, no wasteful doubling, which is a perfect cone like my homogeneous cone, but I have always called that a skeleton cone; and, therefore, when you get these two circumstances together, if you are wise, you use a homogeneous cone for all it is good for, and a skeleton cone for all it is not good for: as it is not where columns are inserted below; and, therefore, you add these additional struts at the point where the local strain requires it. If you construct a cone with large foundations and continuous walls you find a solid, homogeneous cone is the cheapest and strongest form. If you make it on a small scale, where enormous strength is not required, you find the skeleton cone will answer all your purposes, and you can fill in with glass or any material you like. I like a homogeneous cone for this reason,—there is not one atom of waste. In common roofs you have slates and wood. The slates and wood do not carry themselves, but are a burden upon the structure. I have a large cone which justifies the use of iron plates, a half or three-quarters of an inch in thickness. I take these plates and form a roof of them alone, and then we have only to rivet and caulk the cone properly: and I believe it would stand without repairs for 100 years, and with repairs for 200 years; but you can modify this to any extent, and yet preserve to a large extent the principle of the cone. A gentleman mentioned the Exhibition of 1851 as having an iron dome proposed for it. You may remember that in 1851 many architects and engineers met and designed a building for the Exhibition. That was somehow eclipsed by Sir Joseph Paxton's wonderful invention, but allow me to say that a spherical dome can only be truthfully made by making curves of double curvature to every plate, and there is no difficulty except that you have to put your plates individually into the fire, and have them all hammered into ultimate shape. But I will show you a way of converting my cone into a dome at once, which was the very thing proposed in 1851. I would have built my cone in 1851: I had it all ready then. The cone I had ready was 400 ft. diameter. Why did I not? For this reason,—it happened I was one of the four persons who, with Prince Albert, originated the Exhibition of 1851. He insisted that I should be his secretary, and that I should be charged with the whole details of the Royal Commission. I had instantly to put all my plans into my pocket. I willingly assisted Sir Joseph Paxton to bring forward his. I told Mr. Henderson, Mr. Fergusson, and Capt. Fowke all about it, and they kept my secret, and nobody spoke about the cone till after Mr. Crace had prepared my designs for the Vienna dome.

About cones: I am glad to see the drawings of the cone which was then designed. That dome is what I would call a skeleton dome. First of all, I will show you an ugly dome, which I would (illustrating on board) make with a series of cones. If I were obliged to make a dome, and were ordered to make an ugly one, but retain, if possible, the same principle and the same economy which belong to my present dome, I would do it without incurring the difficulty of double curvature, in this way, by uniting a succession of cones of increasing taper. I should thus make what people call a dome. That you see is very ugly; but if I wanted to reduce the ugliness of it, then I could reconcile these patches by a filling of wood or other material, and thus I should have got a cone which, geometrically speaking, one would call perfect and beautiful. Now, in like manner, I was delighted when Professor Kerr suggested that we might have a great number of buildings of that sort, and ever since I studied the cone I have been astonished at the small number of buildings of that sort which exist. I am astonished to see in your buildings and in ours, the waste of

* See p. 167, ante. The greater part of the paper itself is found at pp. 123, 147.

material you go to, when you might do without it. Suppose this to be an enormous square building; suppose you wanted to cover this with a roof. Why not make a parabolic roof? Make it a cone with four flat sides. Make it an octagonal cone, which you could do by cutting off the corners and putting in girders. Then you have no occasion for ties. Captain Fowke did that in some of his beautiful buildings at Kensington. You can make a series of structures, all self-contained, all without waste of material, and all under certain circumstances beautiful. Gentlemen have alluded to oval buildings. You find them immensely disposed to change their form, but there are remedies which consist of addition of material. You must put in material to counteract that tendency to change of form. I will now tell you a secret, which I am sure you will keep confidentially, and not allow it to go out of these walls. It was proposed to me, once upon a time, to put a conical roof over the ancient amphitheatre at Rome. That would have been an architectural desecration. I went to a friend, who was an architect, and asked him, "What would you advise? I do not like to refuse these people. I am fond of the cone, and I should like to see it carried out; but would it not be a barbarism?" My friend replied, "Don't do it." I wrote back that I would not do it; but I had gone into the calculation, and I found there would have been no difficulty in putting up a cone, moderately expensive, which would have preserved the building for 200 or 300 years.

A gentleman asked me whether I would like to take away all the columns, or a few of the columns in the Vienna building, and some of my friends have asked how the building is supported. I introduce that as an illustration of the difficulties I had to contend with. I was informed that my solid walls were to be taken away, and that I was to put my cone upon a series of iron columns. I was aware that they would press upon the margin of the dome very much. I did not expect the slabs of concrete put into the gravel of the Danube to give way; but, as earthquakes have taken place there, I argued the possibility of another earthquake happening after my crack building was put up. So I tried to make my cone stand even without continuous walls and foundations; and even in case of an earthquake coming, I considered what would happen if one foundation of a column gave way. "Very well," thought I, "if one foundation gives way, what must I do? I must carry the edge of the cone on the two adjacent columns, otherwise it will sway, and come down." Therefore I have put a strong rib all round the edge carrying the cone from one column to another. But two columns might have given way. When two or three columns give way, this beam becomes too long to carry the columns. What must I do? I have only to keep a good thickness of metal in the cone itself, and then I should be extremely near having a catenary; that is, it is in one case a stretched chain. Take the case of three columns giving way. You will ask me, if three columns gave way, what will carry the cone above them? Professor Kerr did not like my terming the catenary an inverted arch. I do not think that is very strong. But it is not that which carries my columns. Think of the position. Three columns are taken away. Remember, the three corresponding columns on the opposite side are not taken away; therefore there is the weight of the cone on the other side balancing the preponderating weight on this side, and all united together by the catenary surface, out of which you can make any number of links you like. The chain is there, and this catenary I am now showing you is the catenary or parabola which has the whole of these columns hanging on this side, and the corresponding ones balancing them.

I have one final word to say, and that is, we have exhibited in a railway station not far from where we now are, a combination of engineering talent, with architectural skill, which is seldom witnessed, and there is no doubt the St. Pancras Station, with its roof of 220 ft. span, and its noble frontage, is a model of which your profession and mine may be proud. Only I must remind you that, if you want to go further, if you want much larger spans, you would find the circular ground plan has enormous advantages for a railway station, which no construction of railway stations hitherto appears to have had; and I recommend to your serious consideration the construction of a very large circular railway station with a domical roof. You will find it has enormous advantages. When you take the

matter into consideration, you will see if you are required to design very large buildings in London, such, for instance, as on the great Embankment taken from the Thames, you will find a circular plan with a conical roof possesses infinite advantages, and if it were necessary to make buildings, such as railway stations, twice as long and broad, which I think would be foolish, but you must do it if your masters order it, all you have to do is to put two circular roofs alongside one another instead of one oval, and the two close alongside will be much stronger than one oval roof equal to the area of the two.

"ENGINEERING—ITS EFFECT UPON ART."

The above was the title of a paper read before the members of the Civil and Mechanical Engineers' Society, by Mr. Driver, on Friday last, at No. 7, Westminster Chambers, Westminster. The chair was taken by the President (Mr. C. H. Drew).

Mr. Driver commenced his paper by giving a definition of art. Art, he said, was old, and dated from the first mention of man. He contended that it was universal and essentially human. The results of the work of many birds, insects, and animals were artistic, but in carrying out their work they were but following a line of action they were unable to alter. Art was, therefore, human in that it was confined to man. All alterations of form and colour done with an intelligent idea of arrangement was art, and therefore all manufacture was art. Wherever man was found, there also was art to be found, in some shape or other. Good works of art were rarely imitations. The design or art of manufacture was the choosing and placing of form and colour so as to enhance all the other forms and colours to which it was opposed. Fine art was that in which the hand, head, and heart of man worked together; and the effect of that combination was seen in painting, sculpture, music, and poetry. As in art, so in engineering; it could be traced to the earliest period of the world's history; it could be taken to mean the art or science of construction; it was only another name for construction, and it was, therefore, universal. Nothing was too vast, nor was anything too small, to be undertaken by the engineer. A people might live without painting, sculpture, music, or poetry, although it would be a dreary world without them; but it would be utterly impossible to exist without the mighty science of engineering. It was the most necessary, and the root and foundation of all sciences. Neither the astronomer, the chemist, nor the artist could do without it. It was difficult to say how dependent the art of war was upon engineering. Art and engineering had been at all times co-existent, but while art was dependent upon engineering, the reverse was not the case. Many of the grandest artistic effects had been produced not so much by the architect as by the engineer, the roads, aqueducts, and other great works of the Romans fully proved what great engineers they were. In the grand old cathedrals there was to be seen the evidence of the engineering knowledge of our forefathers. Engineering had both a good and a bad effect upon art. As one of its good effects might be mentioned printing. The thoughts and the words of poets, philosophers, and other great men which at one time were confined to a very few persons, were now so nullified as to be brought within the reach of almost every one. By the multiplication of artistic works, both art, artists, and the art-loving public were greatly benefited. It was also true that there were evil effects upon art caused by engineering; but whatever they were they resulted from misapplication. When it ceased to be truthful, when it endeavoured to make an inferior material represent and pass for a superior material, then it had an evil effect. Speaking of the relative position of engineering and art, he said he did not wish to place the former above the latter. Art was the superior of engineering, which should be the servant of art. Art should supply the master-mind, and engineering should be a useful workman. In conclusion, Mr. Driver spoke in favour of combining the work of architects and engineers together. He considered that each should know something of the other's work, and he believed that it would be very advantageous for a practising engineer to have an architect as a partner, and *vice versa*. He also believed that young engineers would be greatly benefited by giving some portion of their time to free-hand drawing.

A discussion followed the reading of the paper in which Mr. Ueill alluded to the difficulty of the engineer to produce an artistic work, owing to the very low price all contracts were taken at.

Mr. Whitaker was in favour of architects and engineers keeping to their own work.

Mr. Haughton referred to the difference between the art of construction and fine art, with the latter of which the engineer had nothing to do. By familiarising himself, by the study of beautiful buildings and works of art, with an idea of what was a beautiful object, the engineer would be able to carry out his work in a more artistic manner. The buildings in London, he believed, would be erected in a superior style if the people of London were less deficient in their love of art.

THE HARVEY MEMORIAL AT FOLKESTONE.

SOME two years since a meeting was held at Folkestone to consider the desirability of erecting some memorial to the great Dr. Harvey, the discoverer of the circulation of the blood, who was a native of Folkestone, and it was decided to erect a statue upon the Lees. The vicar of Folkestone, however, had previously and for some years floated a scheme with the same intention, and considered himself not bound by the action of the second committee, in which opinion he was supported by a great number of the most influential inhabitants. The vicar's memorial was to consist of a stained-glass window and a memorial aisle in the old parish church where Dr. Harvey was baptised, and no doubt worshipped during the greater part of his life. Appeals were made to every medical man throughout Great Britain and Ireland, and the result was an immense response in the way of small subscriptions, ranging from 6d. to 2l. 2s.

The memorial window was opened on Thursday, the 9th inst., with great ceremony. It is of five wide lights, with handsome tracery in the style of the latter part of the fourteenth century, erected at the west end of the nave expressly for this memorial, there being no window previously in the church sufficiently large for the purpose of a national memorial. The subject of the window is "The Tree of Life," which rises from its roots in the middle light, and there hangs the crucified Lord, the healer of the nations, nailed to the tree, the branches extending throughout the whole window, covered with leaves and fruits, and many subjects of miracles of healing are brought in in large panels in the four other lights, while in a large central piece of tracery, above, a small "Annunciation" has been introduced. Of course there are two opinions as to the work.

The new memorial aisle is now in course of erection at the south side of the nave, in the same style of architecture as the large window, i.e., the latter part of the fourteenth century, which corresponds with the date of the old tower. At the west end will be a large 4-light window, and at the side three 2-light windows and one 3-light, which will at present be glazed with temporary glazing. The roof will have moulded timbers, and will also be decorated in polychrome, as will also the walls of the aisle when sufficiently dry. The architect engaged upon these works is Mr. Slingby Stalwood, of Folkestone. Mr. Kemp, of Beaumont-street, is the artist who was intrusted with the execution of the stained glass.

SLAUGHTER-HOUSES AND FUTURE LEGISLATION.

At a recent meeting of the Social Science Association, Dr. Hardwicke read a paper "On the Abolition of Private Slaughter-houses in Towns, and on Future Legislation for Noxious Trades." At the close of it he said:—

Having denounced in rather strong language what I conscientiously believe to be the eradicable evils of the present cattle-killing sheds, my paper would be incomplete if I were to omit to mention what are the essential features of an establishment to cope with them, and capable of reducing to a minimum all nuisances that at present beset, and will in future embarrass, the sanitary authorities of cities that neglect to legislate for civic purification. I am satisfied that noxious trades must sooner or later be all regulated under stringent municipal bye-laws, and that they cannot be left entirely to private speculation.

The site most convenient for the establishment of a public abattoir should be an open space

field, not farther distant in the suburbs of a town or city than a short drive or walk; it should be suitable for one or more blocks of building, near a railway, water communication, or the cattle-market. The following buildings should be contiguous, but distinct from each other:—

1. Slaughter-house for bullocks, sheep, and pigs, with good water supply at high pressure; open ventilation, good drainage, asphalted floor, with convenience for the removal of blood, offal, and carcasses of animals.
2. A set of cattle-pens, or layings, with store for fodder, water-trough, facility for cleansing, and the removal of manure, &c.
3. An engine and boiler-house, with tall chimney for carrying off gases, according to the necessity of trade, with sufficient steam-power for the tallow-melting tanks, greaseworks, bone-boiling, glue-making, &c.; hot water for washing and cleansing.
4. A store-house for hides, for bones, wool, hair, &c.; and the blood and offal, and all offensive materials, to be kept in covered tanks. The making of animal charcoal may be desirable, and other processes which I need not mention here.

5. In an adjoining part of the same premises, or field, should be the knacker's yard, with suitable appliances.

6. Dwellings for men and stabling for horses may have to be provided for those who have to be employed on the premises, or for carrying out the work.

The main points I endeavour to prove are these:—

1. The impracticability of attempting to reconstruct the old slaughter-houses in built-up parts of towns.

2. The impossibility of securing, in the present private slaughter-houses, ample air space, means of cleansing, and drainage sufficient to prevent them from becoming nuisances injurious to the health of people living in their vicinity—nuisances arising from the pollution of the air, rains, and subsoil.

The remedy I propose is the erection of battoirs in convenient suburban localities, or where the objectionable practice of driving cattle in streets and thoroughfares can be avoided; where cattle can be kept sweet and can in well-kept pens, duly provided with pure water, fresh air, shade in hot, and shelter in cold weather; where they are less exposed to violence and brutality of persons; and where the transport of blood, offal, hides, and tallow can be effected, without nuisance or complaint of neighbours, to places where they can be either killed, or preserved by methods free from objection, or utilised at once for the owners thereof.

And lastly, this is the most important recommendation, where, as I maintain, there is no fault in the inspection, by competent judges, the cattle before they are killed, or of the eat supplied, either in carcasses or otherwise, to the public markets, or to retail dealers.

In conclusion, permit me to remark, that it is neither be creditable to Parliament, nor to the local governing bodies of the metropolis and large towns, to endure the present state of things a day longer than is necessary. The state, as I have said, will shortly come into operation, and a great achievement will be performed by simply remaining quiet and doing nothing at all. Should any efforts be made by persons interested in the prolongation of the state, it will then, I urge, become the duty of this association to make some representation to Government with a view to effectually putting a stop to a system so offensive, so injurious, and so repugnant to the feelings of all right-minded persons.

THE NEWINGTON BUTTS IMPROVEMENT AND THE NEW PARISH CHURCH.

The scheme for the widening of Newington Butts, which some time ago almost threatened to lapse in consequence of a misunderstanding respecting the old parish church, the demolition of which is involved in the improvement, is now to be carried out at once, the sum of £100,000, which under the Act of Parliament, is to be deposited with the Ecclesiastical Commissioners towards the erection of the new parish church before the old one can be touched, being assured. When this is done the Metropolitan Board of Works will pay down the stipulated £100,000, as compensation for taking possession of old church and site for the purposes of the improvements, when it is expected that the

works will be at once commenced. Meanwhile, in anticipation of the demolition of the old church, the materials of the three houses in Kennington-park-road, which stand upon the site of the intended new parish church, will next week be sold by auction by Messrs. Stuart Barker & Son, and immediately cleared to make way for the new building. The new mission church (St. Gabriel's) which has just been erected in a portion of Newington Churchyard, near the old parish church, is now nearly completed, and is to be opened in a few weeks, and it is expected that this will admit of the Metropolitan Board taking possession of the old church, and proceeding with the improvements before the new parish church is completed and opened. The Ecclesiastical Commissioners, who, it is stated, are the owners of about two-thirds of the whole of the property in the parish of Newington, have subscribed £5000 towards the new parish church.

HEALTH AND DISEASE IN GLASGOW.

The annual report for 1872 of the health of the City of Glasgow, by the medical officer, James B. Russell, M.D., and the report for 1873 on the operations of the sanitary department, by Kenneth M. Macleod, sanitary inspector, have been presented to the Health Committee for the information of the Lord Provost, magistrates, and others, and issued in a printed form.

The medical report is an elaborate and complicated one, in which new groups and districts are formed for statistical and other purposes by the reporter, who states that "in the course of time, when the statistics of several years will afford a safe average for each of these statistical subdivisions, it will become profitable to examine into the mortality of each apart. At present, however, no safe conclusions could be drawn from such a laborious inquiry."

The subdivisions with the five lowest death-rates in 1872 were—Blythswood, 19 per 1,000; Exchange and Kelvinhaugh and Sandyford, each 20 per 1,000; Montcith-row, 21 per 1,000; and Woodside, 23 per 1,000. Those highest were—Brownfield, 35 per 1,000; Bridge-gate and Wynda, 35 per 1,000; High-street and Clooses (East), 36 per 1,000; St. Andrew's-square, 37 per 1,000; and High-street and Clooses (West), 39 per 1,000.

The different diseases which prevail in different districts of the city at different periods of life are all set forth in connexion with numerous tables, and much explanatory matter as to each group of districts, and each cause of death, so that no brief and useful summary of any value at present is possible, except be that the moral of the whole inquiry seems to be that artificial conditions surpass all natural conditions in the causation of the high death-rate of Glasgow. In reference to the comparative vital statistics of different towns in Scotland, in general, there was more agreement in the marked points of the vital statistics between Glasgow and Dundee in 1872 than between any other of the towns specified. The general death-rates are not greatly different: they agree in having by far the highest death-rates in childhood. Glasgow has the highest mortality from diarrhoeal diseases, from consumption, and from acute diseases of the lungs, on the west coast, and Dundee has the highest mortality from the same causes on the east, and in acute diseases of the lungs trends close on the heels of Glasgow.

Notwithstanding the constant water supply from Loch Katrine, cistern collection, as appears from Mr. Macleod's report, is still largely used in dwellings throughout the city, and is the source of almost daily complaint. Of the cisterns the report says:—

"Some of these, on examination, were found placed on ceiling joists, immediately under the roof, of both large and small tenements; some in bath-rooms, some in dark, confined, unventilated water-closets, some accessible for inspecting and cleansing, others inaccessible for other, and all close at the top for the reception of whatever filth, animate or inanimate, may fall therein; so that, in addition to the foul gas absorbed by the water, and the greasy-looking, dust-covered, cracked skin usually seen floating on the surface, complaints asserted that it was no rare discovery, on diving to the bottom, to find, in a fulsome combination with the water, the dissolving remains of rats and mice, dominant water-closet drippings, nameless creeping things, and sand, supposed to be formed by street-sweepings, blown through the slates in dry weather, forming a mixture, apart altogether from the consideration of injury to health, abhorrent to imagination, sight, taste, and smell."

Unfortunately, the existing Public Health Acts do not confer absolute power on the City Sanitary Department to entirely sweep away

this unsatisfactory mode of supply; but some owners, at the request of their tenants, backed by the friendly persuasion of the department, have arranged the supply direct from the main, which, with the unceasing flow from Loch Katrine, is the only pure and proper mode; while others have expressed willingness to adopt it, but find the strength of the original pipes in their property unequal to the pressure from the main, and have meantime protected the water from impurities by covering their cisterns and arranging for periodic inspection and cleansing. Tenants desirous of obtaining their water direct from the main do so at a very trifling cost, by merely carrying a connexion from the main cistern supply-pipe to their kitchen sink.

WORKS AT OXFORD.

THE main drainage works are being rapidly proceeded with by Mr. G. T. Acock, the contractor, under the direction and superintendence of Mr. W. H. White, the engineer to the Local Board. The first contract is nearly completed, and plans and particulars are being prepared for other portions of the works of which this contract forms part. The sewers in most of the principal streets and thoroughfares are made, and the town is again assuming its usual appearance.

The surface drainage works of the lower-lying district of Jericho are also done; the greater portion was completed before the winter season was over, thus preventing this part of the town from being flooded, as it generally is in winter time; and the citizens of Oxford will soon be able to congratulate themselves upon an undertaking which has now engaged the attention of the sanitary authorities here for more than twenty years, inasmuch as the time is not far distant when the city of Oxford will be freed from that obnoxious system of drainage which allowed all foetid matter to be located in cesspits.

A short time ago the Corporation gave a large piece of ground to the Local Board,—in Hythe Bridge-street,—for the purpose of widening the street at this point, which is situate on the banks of the Isis, and where the road was extremely narrow; the old stone arched bridge was consequently taken down and its place supplied by a new cast-iron girder bridge, thereby widening the roadway from 17 ft. to 47 ft. As money was borrowed to carry out this work, Major Tallock, of the Local Government Board, held an inquiry, and the necessary amount being granted, the works were immediately commenced by Mr. G. T. Acock, from the plans and under the supervision of Mr. Lloyd, the assistant surveyor to the Board. New buildings are in course of construction near the bridge, thus completing the houses in what now is a very fine thoroughfare leading directly from the Great Western and London and North-Western Railway stations to the centre of the town.

WESLEYAN CHAPEL BUILDING.

THE tenth annual report of the Wesleyan Chapel Committee (including the 55th of the chapel fund) has just been issued. It states that the ordinary income of the fund steadily increases. The amount received for this year from collections and subscriptions is £5,201. 8s. 4d., or 2111. 8s. 10d. more than last year. The North Wales Committee report an increase also. During the year 362 cases have been sanctioned by the general committee, namely, 134 chapels, at an estimated cost of £12,448; 14 ministers' houses, £10,155; 28 schools, £18,366; 86 enlargements and alterations, £46,271; 74 modifications of cases previously sanctioned, at an estimated additional outlay of £23,330; 28 organs, at an estimated cost of £6,042, making a total as above, of 362 cases, at an estimated outlay of £116,612. Schoolrooms were built in connexion with new chapels, and forming part of the same trust property, are not separately reckoned, and the erection of a new school upon land belonging to a chapel trust, when the whole outlay cannot be raised in twelve months, is treated as a case of chapel enlargement. The net additional accommodation proposed is 35,438 sittings (some of the new chapels being intended to supersede former erections). The temporary debt sanctioned, including all cases, is £49,861, being between 15 and 16 per cent. of the total outlay. The difference between the total estimated outlay of

316,612*l.*, and the debt allowed of 49,386*l.*, is 267,226*l.* The entire cost of all the completed erections and enlargements, regular and irregular, has been, for the past year, 250,482*l.* The debt left on them is 50,596*l.*, which is between 20 and 21 per cent. of the total outlay. Deducting this, and grants to the amount of 12,054*l.*, received from different funds, and allowing 2,578*l.* as the surplus proceeds from the sale of old property, there remains a sum of 185,254*l.* as the amount of local voluntary contributions. This sum is 18,739*l.* above that reported last year, and the largest amount raised for similar objects in any year except in 1867. If to 258,482*l.* (the cost of new erections and enlargements during the year) there be added 53,170*l.*, which has been applied to the extinction of debt, and 950*l.* additional loans repaid this year by the North Wales committee it will appear that the entire amount expended during the year on Wesleyan trust property has been 304,602*l.* The report consists of above 130 pages. It contains a great many schedules giving full particulars as to the various erections, &c., the contributions and donations, allusions to and explanations of various laws bearing on trust property, architectural descriptions, lithographs, and woodcuts of various new erections, trust clauses of deeds constituting a board of trustees for chapel purposes, &c.

EXPIATORY ÆSTHETICS, EDINBURGH. ST. GILES'S KIRK.

SIR,—A considerable amount of uneasiness and dissatisfaction having been experienced recently in Edinburgh through some of her many charitable institutions having their funds and palatial buildings turned to questionable utility by the Merchant Company, while they have gained the purpose and plain intention of those who left their money to endow these charities, which are bones of contention now, would it not be well, while the progressive educational spirit of the age is sweeping all before it, that some sort of æsthetic expiatory cleansing was at once made in the interior of St. Giles's? Seeing that the Merchant Company of Edinburgh seem no longer to require the lumbering galleries for the hospital children in West St. Giles's, it has been suggested that they should clear them away from obstructing the view of the expiatory Albany aisle, which Dr. Daniel Wilson informs us contains the two chapels as erected by Robert Duke of Albany, second son of King Robert II., and by Archibald, fourth earl of Douglas, in expiation of some foul deed—"their arms being prominent ornaments on the capital of the centre pillar, which is clustered, and very light and elegant. The ornamental sculptures of this portion of the church are of a peculiarly striking character." A view of this interesting and beautiful part of the interior of St. Giles's Kirk, with the galleries and pews removed, forms the vignette at the head of the "Chapter Memorials of Edinburgh," vol. ii., p. 137. Strangers often wonder that the empty and lumbering galleries should so long be allowed to hide and mar the attractive and elegant architecture of these old historic chapels and the adjoining aisle. A very small sum of money indeed would be required to remove the galleries on both sides of the pulpit, which is placed at the west gable. Allowing that only the spaces between two pillars on either side were cleared away, the symmetry of the groined roofs, and the tracery of at least six windows, would gratify the sight. It may be rather a new idea to make such improvements expiatory for those who seek to undo the work of their fathers, ever forgetting the amenity of Edinburgh. By the way, Dryden's lines I quoted and applied to this city are from his "Annus Mirabilis."

J. K.

THE FUTURE OF CONCRETE FOR BUILDING PURPOSES.

SIR,—I perused with interest the condensed report of the paper, "On Concrete Building," read by Mr. Drake, before the Civil and Mechanical Engineers' Society, a few weeks since, given in the *Builder* of the 28th ultimo.

It will be admitted by those who have devoted themselves to the study of the possible utility of concrete for building purposes, that the essay of Mr. Drake contains no original ideas upon the subject it treats of; nothing but what we have had practically illustrated in buildings erected with the apparatus patented by that gentleman in 1868. The paper abounds in information gathered from history, and from practical tests

and experiences, and does credit to the author; but it suggests no new remedy for original and still existing evils attending every system of concrete building yet known to the world.

Mr. Drake was fortunate in evoking a discussion, which dealt, with crushing cogency, with the evils of present systems of building with concrete. Permit me to reproduce a few of the pointed sayings uttered in the course of the discussion.

Mr. Rew (chairman of the meeting) said,—"While concrete might be suitable for engineering work for heavy foundations, it was totally unfit for any architectural purposes."* "In an architectural point of view," Mr. Pain said, "he considered it a failure entirely. . . . Anything in the way of architectural decoration which he had seen in concrete buildings had been either cement mouldings or cornices, and the appearance was poor and wretched." Indeed, there seemed to be but one opinion concerning the "plainness and unsightliness" of concrete buildings as now constructed, among the gentlemen who participated in the debate which followed the reading of the paper. Even the writer himself made but a weakened defence of the system which he advocated, when its inadequacy from an architectural point of view was assailed. Mr. Drake, in the remarks which brought the discussion to a close, said,—"There was little or no difference between the brick-built and cemented house of the West of London and his concrete houses, which were also cemented."

I conclude that Mr. Drake considers the "cemented house of the West of London" either his *beau idéal* of an edifice, or about the highest style attainable by his concrete system.

The public are tired of those miserable cracked and blistered cemented fronts, whether seen at Llandudno or at the West of London. Neither will they long remain satisfied with a system of concrete building which does not even pretend to architectural style and elegance of a high character.

What we really require is a system of construction that will at once defy the corroding and destructive influences of the atmospheres of our large manufacturing cities and towns; that will satisfactorily meet the requirements of elaborate and ornamental architectural design; and that will be far less costly than either brick or stone construction.

By the combined use of tiles and concrete, I believe all our present difficulties as to the cost, style, and durability of buildings may be overcome.

In another letter,—by your kind permission,—I will endeavour to explain the merits and *modus operandi* of a new system intended to meet the requirements of the times.

J. J. LISH.

THE QUESTION OF A NEW STYLE MATHEMATICALLY CONSIDERED.

FROM time to time we are exhorted to be original and adopt a style of our own. There is a prevalent notion that we have an infinity of choice, and consequently that there may be an infinite variety of styles. This betrays an ignorance of that fundamental science of proportion which underlies nature and art. The possibility of variation in ratio, though infinite, lies within definite limits, and the eye, as the ear, only concerns itself with a comparatively few simple relations,—that is to say, as marked and distinct in their character in the gamut of ratio. About one-half of the possible variations of ratio are either too divergent or too approximate in proportion to please. It is very difficult to make this subject clear to those who may not have studied the science of proportion: we will therefore attempt to illustrate this science, with reference to style, by the possibilities of variation of ratio in intercolumniation. Let us commence with the central or most symmetrical arrangement of equality, X : X, between interspace and column, 1 : 1. Then, in one-half of all the possible proportional relations between interspace and column the interspace will be less, in the other greater, than the column. But one-half of these possible relations have long since been regarded as too extreme, viz., one-fourth in which the interspace to column would exceed 3 : 1, and another fourth, in which the interspace to column would be less than 1 : 3. So that our choice is narrowed to the variations within the tenor half of the gamut of ratio, and by other

reasons, and even within these limits our choice is restricted to the simpler features of ratio, viz., 1 : 1, 1 : 1½, 1 : 2, 1 : 2½, 1 : 3. The ratio of 1 : 2 was noted by the ancients as being that of mean variation from equality. The relation in which the column stood to interspace as 1 : 4 was regarded by the Greeks as extreme, and termed *aerostyle*. Now as there is but one gamut of ratio, and all phenomena are quantifiable, and a healthy taste is bound within these tenor limits, art can only utilise a few simple ratios which are the modes, or keys of style. These have already been recognised and adopted; therefore an entirely new style is an impossibility.

W. CAVE THOMAS.

DISCLOSURES FROM THE NORTH OF ENGLAND.

SIR,—During fourteen months of 1871-2 I was surveyor to the Local Board of Spennymoor, within the Auckland Union, whose sanitary condition has been recently reported upon by Dr. Thorne. Finding that several pit-rows were without yards, and that all the refuse of the body and the house was taken to public cess-pits, partly sunk in the roadways of the back streets, and partly built up, to about 3 ft. above the roadway, I recommended to the Board in my first report an enforcement of their bye-laws, in requiring the appropriation of a yard to each house or pair of houses, the construction of privies, and an abolition of the open cesspools. The back street, on which I recommended the first enforcement of the bye-law, had more than 38 ft. 6 in. from house-wall to house-wall, thus allowing 14 ft. yard room to each house, and also a roadway for the scavenger. The thing was ordered to be done, but the order remained a dead letter on my quitting office.

One of my last acts as surveyor was to open up a main sewer in a back street to the cottages, in which lived Slane, Hayes, and the others who were six months afterwards convicted of murder by kicking, their victim also living in the same cottage-row. I do not know how long the sewer had been laid, but the Local Board had only existed seven years. The sewer consisted of 9-in. glazed pipes, and every pipe was as full of the black-clinder ash, with which the streets are made, as a sausage-skin is full of meat; and not one yard drain (6-in. pipes) was in connexion with the main sewer, nor ever had been. The drain-pipes were carried down to the sewer, but none of them entered a junction. In most cases there was no junction in the sewer, but the drain-pipes came against the unpierced side of the sewer, and had no connexion. In one case the junction was at the right place, but was turned skyward, and the drain-pipe touched the unpierced sewer-pipe below the junction.

I give these two cases as illustrating the sanitary uselessness of a Local Board such as that at Spennymoor. I could add greatly to the number of such facts.

Allow me to add an incident not of a sanitary character. On the day that Slane and Hayes were hanged, I went over to Spennymoor from Darlington for the purpose of testing the truth of some of the post-trial statements submitted to Mr. Bruce, the Home Secretary, of which had strong doubt. When measuring the distance from the street-lamp to the passage in which the murder was committed, a woman, standing unconcerned at Hayes's door, held up unsolicited my tape-line. As I walked up the street, the builders' boy at my side informed me that the woman was the widow of Hayes—widowed the very morning by the hangman!

C. W. E.

New Theatre, Fera.—A scheme is on foot for providing Fera with a better theatre than the present building at the Palais de Cristal. The site in view for the new edifice is close to the Alhambra in the Grand' Rue,—the old Fera resort, the Jardin des Fleurs,—and the proprietors propose to cede it for a term of ten years for an annual payment of T. 1,000*l.*, giving up at the same time to the contractors a quantity of material at present on the ground. The theatre contemplated would be commodious, but not very costly building, and the project, in which M. Manasse, director of the existing Fera theatre, will take part, is favoured by some influential capitalists. To assist in carrying out the undertaking, it is intended to form a company.

* The italics are mine.

EXTENSIVE COAL-MINING OPERATIONS
IN THE MIDLAND COUNTIES.

The reduction in the price of coal which is fortunately now taking place may reasonably be expected to continue until the price falls down to the minimum rates which ruled some two years ago. The general condition of the market and other circumstances combine to render such continued reduction almost a certainty, and amongst other causes which will in all probability contribute to produce this result, are the enormous mining operations which are at the present time going forward in the Midland coal-field, which is said to be the largest in England, extending from Leeds to Nottingham. In this district the greatest engineering activity is opening out new mines prevails. At Beestwood Park, the seat of the Duke of St. Alban's, and which adjoins Butwell Forest, shafts are being sunk to what is known as the "top hard," or Barnsley thick coal; and it is confidently expected that the seam will be reached at a depth of about 600 yards from the surface. Another immense coal-field at Linby, near to Newstead Abbey, embracing the immense area of 5,000 acres, is also being explored, the depth of the shaft being 500 yards. This new field is on the estate of Mr. W. A. Montagu Williams, of Melton Hall, Yorkshire. The dip of the Clifton Colliery, situated close to the town of Nottingham, is also about to be opened out, with a view to decide the point whether the coal measures proceed in the direction of the Vale of Belvoir. Again, at Newstead Abbey, the thick coal is being sunk in the centre of a district where the coal-field is supposed to extend under several thousands of acres; and the same seam is being opened out at New Walsall. An extensive field of coal is said to extend a considerable distance to the eastward of Mansfield, as well as to the north, proceeding towards Doncaster, near to which there is said to be an immense virgin field of coal. These two districts are also being opened out; and it is stated that the proposed Mansfield and Worksoop railway will open out a large tract of mineralised ground, intersecting a straight line of collieries to the extent of between 30 and 40 miles. The output of the twenty-eight collieries in Nottinghamshire, which have been several years in course of working, is at the rate of 2,500,000 tons a year; whilst the production at the several new collieries is estimated at 1,000 tons a day, and it is calculated that the annual production in Nottinghamshire alone will shortly reach 4,000,000 tons, in addition to which there will also be an enormous production from the many thousand acres constituting the Doncaster coal-field. It is, therefore, not too much to say that in all probability the supply of the London coal market will very shortly be both abundant and reasonable.

A PARK LEFT TO NATURE.

Our suggestion in this direction has been hoed in several quarters. Amongst other vocates, the *Morning Advertiser* says:—"Who does not recollect some such garden, with its privet hedges and moss-grown paths—its garden where the sweet peas twined round a broken sundial, and great blackbirds whistled the apple-tree over the tumble-down old seat; where the thick grass was spangled with daisies, and violets hidden away under the laurel bushes, and sturdy wallflowers formed their harmless rows *de frise* on the top of the lichenousness that were the boundary of the tangled wilderness of scent and colour? This is the garden that inspires the poet. This was the garden Hood remembered, with its 'roses and white, the violets and lily-cups, those versers made of light!' Here were 'the lilacs are the robin built,' and 'the fir-trees dark high'; and there down by the labourer's hut was he 'was used to swing.' This is the kind garden that Cowper immortalised in 'The Kew,' that forms the background of many a 'Tennyson's' delicious little lyrics, and adds a text to Wordsworth for some of his most charming verses. But there is absolutely no room in the modern garden, which at best but a kaleidoscopic combination, and appeals to most prosaic of our attributes. Feeling all this so strongly, we repeat that welcome *con amore* the suggestion of the *der*, that we should enclose yet another park, having done so, should leave it to Nature as has possible. Let there be very little of levelling and planning which is so fully car-

ried out in our existing parks. Let the green hillock remain, and the undulating greensward be let alone. Let the wild flowers grow if they will, and let the furze and the heather flourish where they may. Other flowers we would have, but let them be of the good old-fashioned sort. The rose-bushes should be rose-bushes—regular tangles of scent and thorns; and there should be patches of white pinks, and groves of hollyhocks, and thick laurel hedges where the birds might build. The experiment is worth trying."

IMPROVEMENTS AT ST. HILDA'S
COLLIERY, SOUTH SHIELDS.

THE present mode of ventilating St. Hilda's and Harton Collieries is by utilising the shaft of the latter as the down-cast shaft, and the shaft of the former as the up-cast, and in order to create a sufficient current to drive the ventilating air through the many and extensive workings of the two collieries, two large furnaces are kept constantly burning at the foot of the St. Hilda shaft to cause the necessary draught to force the air from Harton through the ramifications of the two mines. The furnace system of ventilating, though simple and very efficacious for pits of limited dimensions, has been found to be unequal to the requirements of the modern plan of extending the coal workings under ground. Of late years several inventions have been devised to drive a large refreshing current of air through the gas-loaded ramifications of the coal-mine, and of these the most simple and successful is the fan invented by Mons. Guibal, of Belgium. The workings of the Harton and Hilda pit have already extended so far underground in various directions that the proprietors have deemed it advisable to substitute M. Guibal's fan for the furnace mode of ventilating, and hence the important alterations now in progress. The fan is of a similar description to that which was erected at Pelton Colliery a few years ago, but will be the largest as yet designed in connexion with any colliery in this country, the diameter being 50 ft., and the width of the wheel 12 ft. This huge fan is intended to be driven at a speed of 50 revolutions per minute, and at this rate the velocity of the outside blades will be one mile and a half per minute, or 90 miles per hour. The fan is being manufactured at Messrs. Black & Hawthorne's, engineers, Gateshead-on-Tyne. Mr. George Foster, of Washington, is the contractor for the building works, which have been designed by, and are being carried out under the superintendence of, Mr. J. J. Lish, architect, of Newcastle-upon-Tyne, who is about to erect similar works for the Bedlington Coal Company, at one of their collieries in Northumberland.

THE TEXT OF SHAKESPEARE: THE
GLOBE.

Men's minds are much exercised, in the present day, about the correct text of noted authors: we rush into the *Times* and get lost in a sea of advertisements; some court the well-established *Athenaeum*, others "standance find, though few," in the *Academy*. Blessed shades of Academe, where we may learn about the earliest Acaodian cuneiforms, and just smell the flavour of the last new novel.

Thus Homer has bequeathed endless controversies about the "shield of Achilles," and the true site of old Troy; though we now begin to suspect that there was an older Troy than Homer knew of, and that even Priamus did not build the first Troy, but feathered his nest in an older settlement.

Chancer bids fair to beget a book for every line of his original production; we know what the "chaffing" school of Italy did for Dante, sifting out the bran (*crusca*) from the genuine grain of their great author, of which school Boccaccio, whom Chancer calls "Lollius," was the first professor: thus originating the *De la Cruscon* academy.

We must follow suite for Shakspeare; but shall we take warning by the vagaries of our predecessors, or on-Herod them?

It is a sign of the times, arguing well for the beneficent reign of our gracious Victoria, that we can find time for it; even so was it in the time of the peaceful Augustus, and in that earlier period when arose the great Alexandrine school of Greek.

It appears to many people that speculative conjecture with respect to Shakspeare's text is

now carried too far; it being sufficient to deal with palpable errors, rather than to indulge ourselves with speculative emendations.

Even with palpable errors there is, owing to altered customs and fluctuations in the meaning of words, a vast field to work upon.

In the case of the "Henry V." prologue we have an illustration; the particular passage runs thus:—

"— May we cram
Within this wooden O the very casques
That did affright the air at Agincourt?
Oh, pardon! since a crooked figure may
Attest in little place a million;
And let us, ciphers to this great account."

The printed text of the first folio, 1623, has "this Wooden O" the last letter or figure being represented by a capital "O" of the ordinary italic type, just as in the next line but one, where we have "O pardon."

It cannot be admitted, as has been suggested elsewhere, that the actor would be at liberty to substitute the word "globe," or "world," and elide the "O"; and for several reasons: 1. It is quite unnecessary, for the audience would be as quick as the actor in catching the allusion, and comprehending the meaning. 2. It spoils the text, which abounds in puns. We have the wooden "O" which leads naturally up to a "crooked figure," and attests a million; thus 1,000,000, where the last ought is the complement of the whole sum, and makes the actors all "ciphers" in the "great account."

3. It leads to endless trouble, since we might argue for a wooden "hoop" just as well as for a wooden globe or world. It might be "ought" or "nought." One might even argue, by way of hair-splitting, that it reads "wooden shoe," playing on the word "show," for many persons sound shoe and show alike, with a digression on Chancer's poor widow, who had but "oo sho." We can only guess what he meant; nor do we know how to sound it rightly.

The text reads "woodden O." Had the author meant "globe," he would have so expressed it. Take the analogous case in the "Tempest," act iv., s. 1:—

"The solemn temples, the great globe itself."

Shall we strike out the word "globe" and insert an "O," because the meaning is so palpable?

A. H.

A BETTER MODE OF CONDUCTING
CREMATION.

SIR.—There was a suggestion in the *Times*, some few days ago, that bodies should be consigned to the gas-house and retort. Without accepting this rough-and-ready mode of utilising the dead, I had proposed, many years since, that the following should be the mode of conducting cremation:—

1. That there be parallel rows of graves, having subterranean passages running between each two rows.
2. These temporary graves should be lined with brick or masonry, and covered with stones, so mounted that they could be easily rolled aside or over them.
3. That the dead should be lowered in shells into these vaults with the usual rites.
4. From these vaults the dead would be removed for cremation, withdrawn through the openings into the subterranean passages.
5. There would not only be proper arrangements for collecting the ashes, when desired, but for collecting the gas evolved in the retorts.
6. That the gas so generated should be conducted to, and feed the flame of, a lamp raised on high, by day and night.
7. That this lamp should be supported by a column of artistic design, or by a colossal figure in bronze or marble.

This plan would not only obviate any shock which the new system, if clumsily conducted, would produce, but facilitate examination in suspected cases of death from poison.

W. C. T.

New Buildings at Halton.—On the 8th instant, the new houses built at Halton by the Cottage Improvement Society were formally opened. There are, in all, thirteen houses, viz., ten in Lennox-street, and three in Priory-road, built of concrete by Mr. Richard Avard, of Maidstone, from plans furnished by Mr. George Friend, of Maidstone, architect. Each house contains five rooms (three of which are bedrooms), and is supplied with a range, with oven and boiler, and water drawn from a tap.

WOLVERHAMPTON NEW GRAMMAR SCHOOL.

THE foundation-stone of the new Grammar School building at Wolverhampton has been laid by the lord-lieutenant of the county, Lord Wrottesley.

The site is an eligible one, fronting the Compton-road, and bounded on one side by Merriwell-lane. Here is to be erected a building whose scholastic hall will give space for 300 boys, with sleeping-rooms above for 40 boarders. Externally, the general character of the building will be the Domestic style of the fifteenth century, freely treated, to give a collegiate appearance. It will be built of brick, with facings of Kingswinford red pressed bricks; the dressings, string-courses, &c., being of Bath stone.

The principal front of the building, including the master's house, will be to the Compton-road. The head-master's house occupies the western, the great hall and class-rooms the eastern, side; the dining-hall and entrance-hall being in the centre; the principal entrance to the school being nearly in the centre under the clock-tower, and approached by a flight of steps to the entrance-hall, which is 19 ft. by 15 ft. From the entrance-hall is directly approached the great hall, a room 80 ft. long by 34 ft. wide, having an open timbered and panelled roof. This hall is 23 ft. high to the wall-plate and 42 ft. to the ridge, lighted by a range of windows the whole on one side, on the opposite by windows over the roofs of adjacent buildings, and by a lofty one in the eastern gable. There is in this hall upwards of 3000 sq. feet each of superficial area allowed to 300 boys. The actual working-seat room that might be required for 150 or more would be obtained by placing three or four rows of desks the whole length of one side. In the centre of the great hall there is provided a room to be used, during school hours, as the head-master's room, or, as occasion may require, for a governor's room or library, or, on special occasions, as a stage or rostrum. It will be separated from the hall by an arch, and the level be raised some four or five steps, and fitted with curtains to draw and enclose when desired. From this room is provided on one side a retiring-room, on the other a lavatory, &c. A master's sitting-room will be placed adjacent to the entrance-hall. Three class-rooms are provided, each 22 ft. by 16 ft. 6 in., capable of seating forty boys each, and two 16 ft. 6 in. by 16 ft., each capable of seating thirty. These are approached by a corridor running directly from the great hall. These class-rooms are all arranged with side light, and have upwards of 9 ft. super. per boy. A writing-room entered direct from the great hall, is 56 ft. long by 21 ft. wide, arranged to seat 120 boys at 20 in. each, in four rows of desks and benches on one side of the room. There is a superficial area of nearly 10 ft. provided to each boy. From the entrance-hall, running westward, is a corridor connecting the master's house with the school, and from this the dining-hall is entered. It will be 36 ft. by 20 ft., with bay, which will give room for 100 to 120 to dine. It has separate entrances for boys' service, &c. The staircase for boarders to the dormitories is immediately opposite the master's sitting-room, and adjoining are lavatories and other conveniences. The first-floor plan shows over the dining-hall and entrance-hall, &c., three associated dormitories for 23 boys, while over a portion of the class-rooms, &c., provision is made for 11 boys in single rooms. On the second floor, over the entrance-hall and in the tower, provision is made for seven boys, which makes up the number 40. The building will be warmed by open fireplaces, fitted with Pierce's or other approved ventilating stoves, by which the air is admitted at the back and passed into the room heated to almost any desired degree. There will be further means of heating the great hall and dining-hall by means of coils in connexion with an apparatus in basement. Extracting ventilating flues are provided adjoining smoke-flues and fitted with Boyle's ventilators; while, in addition to the greater part of all the windows being made to open, Sherringham's ventilators for the introduction of fresh air will be provided, and thorough ventilation is arranged for wherever practicable.

The master's house is approached from the school by a corridor into the hall, thus giving access while keeping the house quite distinct. On the ground floor provision is made for a library 16 ft. by 14 ft., immediately adjoining the school corridor; drawing-room 24 ft. by 17 ft., with bay

window (between these two rooms is the entrance and principal staircase); dining-room 23 ft. by 17 ft., also with bay; a large kitchen 20 ft. by 16 ft.; pantry, scullery, back staircase, &c. A serving-room for dining-hall is provided from kitchen to corridor. On the first floor are six bedrooms and dressing-rooms, bath-room, &c., with others above.

The architects, Messrs. Giles & Gough, of London, claim the following as the more special and peculiar features of their design:—The complete separation of the head-master's house from the scholastic part, and yet the convenient position of the same on all floors. The provision of single sleeping-rooms for the senior boys, each with a separate fireplace, and the ample space given in halls, class-rooms, &c. Also to the easy capability of enlargement, should this at any time be required, without interfering in any way with the arrangements now proposed, or with the working of the school while such extension was in progress.

CHURCH-BUILDING NEWS.

Huddersfield.—Almondbury Church has been re-opened, after having undergone extensive alterations both internally and externally, the work of restoration having extended over a period of about eighteen months, and entailing an expenditure of upwards of 4,000l. The nave and aisles have been restored, new oak seats taking the place of the old high-backed pews. The gallery has been removed, the stone pillars have been refaced, and the western tower, formerly in disuse, has now been opened with a stained-glass window, the present of Mr. J. F. Briggs, J.P., Huddersfield. The sum of 350l. has been subscribed by Mr. J. Hurst, J.P., of Wileshaw, 100l. of which are for the restoration of the chancel—a work which has not yet been commenced—and the remainder towards securing open pews. Sir J. W. Ramsden, bart., has promised 1,000l., which is to include the cost of a window to be inserted at the east end. Amongst the other improvements promised are the restoration of the Kieve Chapel, towards which the Earl of Dartmouth has promised 300l., a memorial pulpit to be presented by the family of the late vicar, the Rev. Lewis Limes, and a large window by Messrs. John Taylor & Sons. An arcade has been erected after the style of the Kirkstall and Fountains Abbeys. Two new bells have been added, in addition to carved work on the exterior of the building.

Ipswich.—The church of St. Mary at the Quay, or St. Mary Key, Ipswich, has just undergone partial restoration. St. Mary at the Quay much needed the restorer's aid. The entire building was in a wretched condition. There have been two new platforms laid down, on which are ranged, temporarily, the benches formerly in use at St. Mary-le-Tower, which have been given by the owners. A few of the old pews are left in either aisle. The pulpit has been taken down and placed at a lower elevation, at the junction of the nave and chancel, while a reading-desk has been placed at the opposite angle. In the chancel some benches from the Old Grammar School, which were formerly in use at St. Mary-le-Tower, have been placed. A new east window has been inserted, in the Perpendicular style, to correspond with the rest of the building, and a reredos will be placed beneath when the funds are forthcoming. The organ, which formerly stood in a gallery over the west entrance, has been moved into the south chancel, opposite to the tomb of Tooley, the great Ipswich benefactor. The total sum expended has been about 250l., of which, however, only about 150l. have been raised. Mr. Robert Smith, of Ipswich, has done the work, under the superintendence of Mr. H. M. Eytton.

Godalming.—The chapel of the new Charterhouse School at Godalming, forming the right wing of the quadrangle, has been consecrated. The new chapel has been erected by Mr. Philip Hardwicke, in completion of the block of buildings which the school now occupies on the hills above Godalming. The chapel is in the Second Pointed style, consisting of a nave and sacristy, with an aisle on the southern side, and calculated to hold about 400. It is expected the school will reach that number of boys by the end of the present year. It has a wooden wagon-headed roof, and the windows on either side are filled with geometrical tracery of various patterns. They are nearly all adorned with painted glass, the east window containing the Crucifixion,

being the gift of her Majesty the Queen as a governor. Other windows on the north and south sides have been given by Lord Dalhousie and the Duke of Buccleuch (governors), by the Master, by Dr. Curry, by the Head Master, by Old Carthusians on the Foundation, by boarders in the masters' houses, by the former day-scholars, and by one or two private persons, including the children of the Head Master. The reredos and decorations of the eastern wall, including a mosaic of the Last Supper, were gifts from the "gown boys," or collegers, and Mr. G. T. Clark; the sedilia, from former orators; the organ, for which 1,150l. have been subscribed by Old Carthusians, masters of the school, boys in the masters' houses, and friends of the school, is built by E. Schulze, of Erturt, and will be placed at the west end of the chapel in the course of a few months.

Bugsworth (Derbyshire).—St. James's Church was consecrated on the 6th inst., and is in the Early English style. The plan comprises the nave of four bays with south porch, chancel with organ-chamber, and vestry adjoining. The choir-stalls are in the chancel, which is approached by five steps from the nave. The north and south elevations have buttresses with coupled lancet windows. The west elevation is pierced with two traceried windows, and is supported by a lofty belfry. The roof of the nave is open framed principals, those of the chancel being more elaborate, and it is covered with slates of two kinds. The church is built of random rubble wall stone from the local quarries, with dressings, &c., of Darley Dale stone. The chancel is laid with Maw's encaustic tiles, and the windows are of stained glass by Messrs. Lavers, Barrard, & Westlake. Accommodation is provided for 190 persons, and the cost about 1,300l. Mr. G. Napier, of Hulme, was the builder; and the architect, Mr. John Lowe, of Manchester.

Derby.—The ancient parish church of St. Werburgh, which has been closed during the last three months, for extensive alterations and improvements, has now been re-opened for Divine service. The appearance of the church is improved by the removal of the old pews, and the substitution of open stalls, which have been supplied by Messrs. Chapman & Son, of Hanworth, near Norwich. The west gallery, which formerly made the entrance to the church dark and gloomy, has been removed. The lighting has been re-arranged with a sun-light from the centre of the dome, acting as a ventilator. The whole of this part of the work has been completed by Mr. Thomas Cramp, of Derby. The floor of St. Werburgh's was almost undermined by badly-constructed and ill-protected vaults; these have been now sealed, and a considerable depth of concrete placed over the whole area of the church. The decorative work done by Mr. Cantrell. The chancel walls are diapered in Greek design. The reredos has been slightly altered, and is now coloured and illuminated. The organ pipes have been ornamented, and the ceilings of the chancel and body of the church are now coloured. The pulpit is of stone, with alabaster panels, which latter material was found in the church. The design is by Mr. F. J. Robinson, architect, and has been executed by Mr. W. Walkerdine.

Oakenorth.—After being closed for some months for restoration, enlargement, and repair the quaint old church of St. Nicholas, Oakenorth, has been re-opened. The restoration comprises the lengthening of the old nave about 10 ft., making additional room for about 20 seats; a cleansing of the outside from rough cast, whitewash; and a new west end, in Early English style. The window of this is to be filled with stained glass, in memory of the late Sir John Rolfe, whose vault in the churchyard is covered with a granite slab of enormous magnitude and weight. Sir John contemplated the restoration of which we are writing, and which is now being done mainly through his son and successor, Mr. John Rolfe. The floor throughout is laid with encaustic tiles. The tower has now a wood roof, admitting the former belfry window into the church, and giving the effect of a lancet. The bell is placed in a chamber above this, and is rung in the church. The chancel is fitted with oak stalls and reading-desk, and a reredos of encaustic tiles is built against the east wall. The chancel windows, with the exception of the east window, are memorials to the Gutteridge family. The architect was the Rev. W. Lowdow, of Liverpool; and the builder, Restall, of Bisleigh.

Burnage, near Manchester.—The corner stone of a new church at Burnage, near Manchester,

which is to be called St. Margaret's, has been laid. Burnage is a township and village in the parish of Withington, and the necessity for a church there has long been felt. Lord Egerton of Tatton gave a site for the proposed church. A house and garden for a parsonage have also been secured, and the church, schools, and parsonage will be in close proximity to each other, encircled by a ring fence. The church, the plans for which have been prepared by Messrs. Paley and Austin, of Lancaster, when complete will consist of chancel, nave with five bays, north and organ aisles, tower and spire at the west end, organ transept, &c. It is only intended at present, however, to build the chancel and three bays of the nave and south aisle, providing accommodation for about 250. The contract of the work has been let to Mr. Winward, of Wigan. The church will be built in the Gothic style, with Runcorn and Lynn stone, and is to be roofed with slate. The estimated cost is £3,855.

Grindale, near Bridlington.—A new church has been opened here. It has been erected at a cost of over 2,000l., by the Rev. Yarburgh Lloyd Greame, of Sewerby House. Messrs. Smith & Broderick, of Hull and Bridlington Quay, were the architects, and Mr. John Rennard, of Bridlington Quay, the builder. The style is Gothic, of twelfth and thirteenth centuries. The building consists of a nave with porch at the north side, and chancel with vestry at the south side. At the west end of the church there is a bell-gable, which is supplied with two bells from the foundry of Messrs. Taylor, at Loughborough. In consequence of many of the old stones belonging to the original Norman church being discovered in excavating for the foundations of the present church, the original design was altered,—notably here was the old Pointed chancel arch, which has been rebuilt almost as it must have stood in the original Norman church. Portions, also, of two Early English lancet windows have been rebuilt in the porch of the new edifice. The font of the original church, taken from the one pulled down, has been replaced within the north door of the nave of the present edifice. The walls of the church are built of brick, faced externally with Witby Cragmoor stone. The roofs are open-timbered roofs of fir, stained and varnished. Green slates cover the roofs. The edifice is capable of seating 150 persons, the seats being pen benches of pitch pine,—those in the chancel being relieved with carving. The pavement is executed in three varieties of Mansfield stone, which is relieved with Normanton blue stone. The portion within the Communion-rails is paved with encaustic tiles. Remington's heating apparatus is provided for warming the church.

West Clendon.—The Church of St. Peter and St. Paul has been re-opened. The church has been restored. The south window in the chancel is by Messrs. Hardman & Co., and is presented by Mrs. Dunkin. The pulpit is of Caen one, with serpentine dark marble pillars, supplied by Mr. Moore, of Guildford. The rosettes also of Caen stone, with a Devonshire marble abacus, Minton's tiles at the sides, and a brass altar-cloth. The west window is ornamented with the arms of the several intermarriages with the Osnowslaw family. The chancel arch is new, the apex being about 16 ft. high, and the present arch taking the place of a very insignificant one, which looks more like a disused doorway than anything else. This arch is worked in one chalk. The windows generally are dressed in chalk, with an occasional infusion of Bath stone. The old vestry has been converted into south porch, and a new and much more commodious vestry has been erected, on the north side of the chancel. The oaken seats have been renovated, and some new ones added. The arch was decorated.

Annesley.—A new church at Annesley has been consecrated by the Right Rev. the Bishop of Lichfield, of Nottingham. The edifice stands on a site in New Annesley. Mr. Masters consulted towards the cost of the new building a sum of 1,500l. Started on such a promising footing the fund was speedily increased, and letters were given for the commencement of the work. Mr. F. Graham Jackson, of London, was commissioned to prepare plans, and from these the building has been erected by Messrs. Halliwell & Cave, of Oakham. Mr. Edwards officiating the clerk of the works. The church is situated on the summit of a hill, beneath it standing rows of colliers' houses, whilst close by are the oaks and recently provided burial-ground. The structure is built of stone procured from the quarries of Sutton and Annesley, and the dress-

ings are of Ancaster stone. The church is in the Early Decorated style of architecture, consisting of a nave with north and south aisles, a chancel, and an organ-chamber in the tower. There is to be a spire and a tower with six bells, the workmen being still engaged at the place in their erection. The roof is of stained Baltic timber, and the seats are of the same material, except the seats for the choir. These are of pollard oak, and in front there will be wrought-iron work decorated. The pavement of the chancel is of thick coloured glass from the establishment of Messrs. Powell & Son, of London, who have also supplied the stained-glass windows, which are on the right hand side of the chancel, and are to be supplemented by a third. The subjects of the two already put in are the Pharisee and Publican, the Good Shepherd, the Sower, the Wise Virgins, &c., each subject occupying a fourth of the space, with medallions of saints in the centre. We are informed that it is intended to fill up the whole of the windows of the church with stained glass, in accordance with the design of the architect. The subjects for the windows on the left will be taken from the Old Testament, and those on the right from the New Testament. The organ is being built by Mr. Willis, of London. The accommodation provided in the new church is for 320 persons.

COST OF PLANTS AND FLOWERS IN PARIS.

The *Paris Journal* says,—Ladies who admire the shade, the flowers, and the rare plants of our parks and public walks, do you know what it costs the city to obtain these pleasantnesses for you? Here is the total of the little bill payable annually:—

	Francs.
"Bois de Bologne (entretien)...	387,000
Bois de Vincennes	270,340
Squares	545,220
Achat de plantes, fleurs, &c.	40,000
Entretien des serres.....	11,000

Total..... 1,253,560"

[50,142l.]. You see there are no roses,—with-out thorns!

MANCHESTER NEW TOWN-HALL.

The new Town Hall for Manchester is approaching completion; externally, the only unfinished features being the great centre tower in Albert-square and the Cooper-street tower. These are completed as far as contracted for; the former being finished to the first story, a height of 146 ft., the total height to which it will have to be carried being 266 ft.; and the latter stopping at present at 90 ft. high, having yet to be raised 90 ft. higher. The builders, Messrs. George Smith & Co., of London, have made rapid progress. Upwards of 1,000 men have been engaged on the building at one time. For more than twelve months upwards of 700 masons were kept in constant employment. The Albert-square façade, part of which we have already illustrated, is 328 ft. in length; the Princess-street front is 387 ft. 9 in. long; the Lloyd-street front, 350 ft.; and the Cooper-street end is 94 ft.—giving a total frontage of 1,159 ft. 9 in. The principal entrance is under the great central tower in Albert-square; there is another entrance-porch under the tower in Cooper-street, and in the Princess-street front there are two entrances adjoining each other, the one for the Mayor, giving access to his private rooms, and the other called the Tradesmen's Entrance, which will also be used as a general entrance for the public. The public hall is 100 ft. long, 50 ft. wide, and 58 ft. high. The hall is seven bays in length. There is a two-light traceried window in each bay, and they are separated by clustered columns, with rich foliated Early English capitals, which support the massive solid oak principals of the roof. The hammer beams have grotesque heads carved in solid oak, in which iron tie-rods are fixed to act as pendants for the gas. The roof is panelled, and the panelling is perforated so as to ventilate the hall, and carry off the vitiated atmosphere. At the Albert-square end of the hall, over the two doorways leading from the vestibule, there is a large six-light traceried window. The orchestra occupies the Cooper-street end of the hall. It is within a deeply-recessed arch, with clustered columns, and the mouldings are filled in with finely-carved roses and foliage.

The *Manchester Courier* gives the following statistics:—

The three staircases at the three corners of the building have been called the English, Irish, and Scotch staircases, from the fact that in each of the staircases so named, English, Irish, and Scotch granite have alone been used.

In the raising of the superstructure the following materials have been used by Messrs. Smith & Co.—390,000 cubic feet of stone, 5,500,000 bricks, 60,000 cubic feet of timber, 133 tons of lead, 900 square feet of slating, 450 tons of iron girders, and 50,000 ft. of 3 in. and 9 in. deals; and the labour of all kinds, viz., plain and moulded, equals 1,500,000 superficial feet. The builders' plant used to carry on the work cost 20,000l., consisting of three 20-horse power portable engines, three 10-ton steam overhead travellers, one 20-ton hand ditto, two 3-horse power steam overhead travellers, seven 3-ton hand travellers, eight saw-frames worked by steam (these were worked night and day for more than two years); eight steam polishing tables; one sandwasher worked by steam; two lathes, one for turning and the other for polishing stone, both worked by steam; and one circular saw-bench, also worked by steam. Ten tool sharpeners had to be employed, each man turning out about 600 tools, or a total average of 6,000 per day. 6,200 ft. of iron guttering and drain pipes have been used. Of Donnett's fire-proof arching 197,000 superficial feet have been used in the building.

The advance which has taken place in wages and materials since Messrs. Smith entered upon their contract for the erection of the building, in September, 1870, is worthy of note. Labourers' wages have advanced $1\frac{1}{2}$ per cent.; masons', $1\frac{1}{2}$ per cent.; and carpenters', $1\frac{1}{2}$ per cent. The increase in the price of materials has even been still greater. Timber has advanced 25 per cent.; stone, 15 per cent.; lead, 50 per cent.; glass, 40 per cent.; iron, 100 per cent.; lime, 50 per cent.; bricks, 50 per cent.; coke, 350 per cent.; coal, 100 per cent.; gas, 15 per cent.; and coke cartage, 20 per cent. The effect of these advances is shown in the fact that for coke alone an extra sum of 1,500l. has had to be paid. From this list it will readily be understood that whilst their total account against the Corporation will amount to about 230,000l., the large advance which has taken place in the price of work and materials since they undertook the contract will have caused a heavy loss to the builders, as the greater the outlay the greater would be the loss.

It remains to be stated that during the erection of the building Mr. Osborne has acted as clerk of the works, and Mr. Matthew Mackie as manager of the works for the builders, Messrs. Smith & Co. Mr. Alfred Waterhouse is the architect.

GETTABLE SASHES.

MANY arrangements have been devised to supersede the present method of removing ordinary sash-windows for the purpose of cleaning or reglazing, a method so awkward as to be almost impracticable. The last invention with this object in view has been patented by a gentleman, of Edgbaston, near Birmingham, Mr. J. A. Jones. It is extremely simple and inexpensive, and almost any existing window can be altered to the design.

The appearance of the sash when closed is the same as that of any other window, and the vertical action of the sash is also the same.

But this new window sash is made to open inwards and laterally, each sash being hinged, the top one to the right and the bottom one to the left side of the frame. These hinges attach each sash to a sliding piece, to which the cord is fixed; and upon the opposite side are two flush bolts, attaching the sash to a sliding piece also fixed to the cord. When it is required to open, say the lower sash, the instruction would be,—withdraw the top bolt and push the sash up, then withdraw the bottom bolt, the sash is then free, and can be drawn down and opened into the room.

After cleaning or glazing, as the case may be, the sash is raised and rebolted. If it is required to treat the top sash in like manner, this can be easily performed. Cheapness and tight-fitting are amongst the advantages claimed by the inventor.

In the case of wide heavy windows especially, care would of course be required to give sufficient strength at the hinging. The arrangement certainly deserves examination.

FLAXMAN'S WORKS.

The beautiful and varied curves of the human figure are never so advantageously exhibited as when in proximity to the nearly straight and almost vertical lines of a Grecian portico, and a bright thought was accomplished when the authorities of the London University ordered the metal casts of the Gladiator and the Discobolus to be placed in front of the portico in Gower-street. Recently they have yet further enhanced the beauty of the portico, by bringing out from their treasury of art the group of Hercules and Hebe, by Flaxman; but unfortunately, this fine piece of sculpture is not cast in metal like the other two statues, but is in plaster of Paris, which will not resist the humidity of our climate, and if left exposed this noble work will be destroyed in a very few years, and be entirely lost to the world, for I believe no other cast exists of this restoration of the famous Torso Belvidere by our immortal sculptor.

JOSEPH BONOMI.

LONDON SEWAGE.

MIGHT not the present main-drainage channels on either side of the Thames be made suitable to conduct the sewage inland instead of as at present polluting our river?

J. K.

“* Doubtless: if the right places to receive it and the right mode of dealing with it could be agreed on.

SEWAGE OF TOWNS.

SIR,—The contests between filtration and irrigation have engendered irritation in big and little corporations. Gravitation from stagnation is not everywhere attained: innovations for preservation of populations must be gained; precipitation means purification of rivers now defiled. Administrations are seeking information to stay the hydro-hydra decimation in this our land. Let precipitation wed irrigation, the consumption will be *aqua pura* and rich cult. Then generations' gratifications will vation; then generations' gratifications will revert to sewage pioneers throughout the nations.

R. T.

THE METROPOLITAN GRAND HOTEL.

SIR,—As architect of the above-named building will you allow me to correct one or two trifling errors that appeared in your description of it last week? The length of the frontage in Moorgate-street will be 186 ft., not 120 ft., and the depth of the building an average of 64 ft.; and instead of having four distinct elevations it will only have three, as on the fourth side it joins the houses in Moorgate-street. On the ground floor in Moorgate-street there will be two arcades, each 20 ft. wide, with shops on either side, each arcade giving covered access to the station in Little Moorfields in the rear. In consequence of a large portion of the basement being required for purposes of the railway which passes directly under the building, the whole of the kitchens and other domestic offices and servants' rooms will be in the Mansard roof, which is two stories in height, and from which the service will be conducted by means of hydraulic lifts. In the centre of the building is a large central hall lighted and ventilated from the roof, and surrounded by galleries on each floor giving access to the various rooms, somewhat on the principal of the old “hostelries,” with the exception that it is not, as in their case, open to the air.

WILLIAM J. GREEN.

THE TRADES MOVEMENT.

Newcastle and Gateshead. The joiners have come out on strike. The masters adhere to their offer of a compromise of 4d. per hour advance, with the breakfast half-hour all the year round, or to have the question decided by arbitration; but the men persist in their original demand of 1d. per hour. It is said that not more than 200 of the 700 men who have come out are connected with the society, the remainder being altogether unprovided with funds, except in individual instances of thrifty men. Some of the less extensive jobbing employers have conceded the full amount of advance asked, but the large contractors show a determination to go no further than the offer of a compromise named above.

The Trade Unions and the Royal Commission.—A delegate meeting of the London trade societies has been held, at the Rose Tavern, Old Bailey,

for the purpose of expressing an opinion as to the future action of the trades in reference to the Royal Commission appointed by the Government to inquire into the operation of the labour laws. Mr. Shipton, the secretary, stated that he had forwarded the resolution passed by the Trades Council, asking the Trade Union Parliamentary committee to reconsider its resolution not to give evidence before the Commission, to that committee, and had received a reply stating that the committee had decided to adhere to the resolutions already passed in reference to the Royal Commission. A resolution endorsing the action taken by the Parliamentary committee was then moved and seconded, after which Mr. Richardson moved the following amendment:—

“That this meeting of trade society delegates, hearing from Mr. Hughes that the Home Secretary has given his word that the Commission is not intended to delay legislation, and that the Government intend to legislate upon the labour question during the present session, advise the trades generally to give evidence before the Royal Commission.”

Mr. George Odger supported the amendment, and it was ultimately adopted by a large majority.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

YORKSHIRE DISTRICT COMMITTEE.

The first meeting of this branch of the Association was held in the Council Chamber of the Leeds Town-hall, on Saturday, January 17th, under the presidency of Mr. A. C. Morant, C.E., borough engineer for Leeds. Mr. Henry Alty, C.E., Keighley, was elected honorary secretary. Being the first meeting the business was of a routine character.

The second meeting was held in the Town-hall, Leeds, on Friday, April 10th. After the usual business had been gone through, the members visited several interesting engineering works in progress, and afterwards dined together.

A meeting will be held April 24th, when the members will visit the Metropolitan Pumping Station, Abbey Mills; the West Ham Pumping Station, to inspect the lime process and Major-General's Scott's process of converting sewage sludge into Portland cement; and Lodge Farm, Barking, where the phosphate process will also be in operation.*

STEALING FROM BUILDERS.

Last week, a foreman carpenter, named Robert Shelton, and Charles Ramms, a joiner under him, were fully committed for trial to the next Middlesex Sessions by the Marylebone police magistrate, on the charge of stealing a large quantity of timber, the property of their employers (nominally, the Midland Railway Company).

The evidence adduced showed that the foreman Shelton, during the month of March, had superintended the erecting of new fences and removing old ones on the Tottenham and Hampstead Lines. That the other prisoner called upon the manager of a laundry at Highgate, and inquired if he were open to buy a quantity of timber for firewood. A bargain was struck, and the laundry people sent on to the works, and got the wood whilst Shelton, the foreman, was present.

The detectives, on apprehending the foreman, searched his house, and there found a further quantity of wood, alleged to belong to the railway. Shelton asserted that he did not know the wood was stolen, and it was urged that foremen looked upon old wood as their right, to do what they chose with it, and beer was given all round from the proceeds. That it was a very old custom.

The money paid for the wood by the laundry people amounted to 15s. 10d., and the police, not understanding measurement, weighed it to 8 or 9 cwt. The quantity found at the foreman's house was sighted only as a quantity.

The other prisoner urged that “it was all right.”

The prosecutors on the other hand contended that it was “all wrong,” and that it was the duty of the foreman to see that no timber, old or new, left the premises, that if so, old materials would be a cover for stealing new and valuable building goods.

Mr. D'Eyncourt said it was a matter for a jury to consider. It was time no ancient custom of the right of workmen to take their employers' timber and sell it was settled.

Lydney Park.—Last week, the foundation-stone of this mansion was laid, by the Rev. W. H. Bathurst. Mr. David Wingate, in a few suitable remarks, presented him with a silver trowel, with the inscription, “Presented to the Rev. W. H. Bathurst by Messrs. Wingate, the builders, in remembrance of his laying the foundation-stone of his new mansion, 7th April, 1874.” A bottle was laid in the wall under the foundation-stone, containing the *Times* newspaper of the 7th inst., and the coins of the present realm. Mr. C. H. Howell, of London, is the architect.

* For other meetings about to be held our advertising columns may be consulted.

Books Received.

Practical Instruction for Painting on China, &c. Translated from the French of A. Lacroix. London: Barbe & Co.

This can be regarded only as a trade book, and its other object is to show that M. Lacroix's liquid colours are very superior to the English ones. Nevertheless, it gives some useful information and instruction as to painting on china and earthenware, an art which many might pursue with advantage. We know an English lady resident in France who, being suddenly left a widow with small means, turned her attention to it, and makes thereby about 100l. a year in a ladylike and pleasant way.

A Handy-Book for Visitors of the Poor in London, with Chapters on Poor Law, Sanitary Law, and Charities. By CHARLES B. P. BOSANQUET, M.A. London: Longmans, Green, & Co. 1874.

Mr. CHARLES BOSANQUET has long been a pains-ful labourer in the field of social reform. Of late years he has devoted himself to the work of the Charity Organisation Society, of which he is the secretary, and the little volume before us is published by the Council of that Society. The subjects treated of include House-to-house Visitation, General Suggestions to Visitors, Poor-Law Notes, Out Relief and Special Classes of Cases, Relations with Charities, Sanitary Law in London, the London School Board, the Metropolitan Charities, Schools and other Class Charities, Provident Institutions, Pawnbroking, Loans, Workmen's Clubs, Emigration, and Migration. It will be found very useful by those who are anxious to assist in the work of the Society, and it may be expected moreover to increase the number of them by showing what good work there is to be done. The main object of the Handy-book is to prevent the misdirection of effort,—to make it as effective as may be, and this it will do if the advice it gives be attended to.

Will a Sewage Farm Pay? or, Theory combined with Practice. By Lieut.-Col. A. S. JONES, V.C., &c. London: Longmans, Green, & Co. 1874.

COLONEL JONES here gives the results of a two years' practical study of the sewage question; and, though not pretending to any special discovery or specific, he hopes to afford some slight aid towards a satisfactory solution of the problem. “In a sanitary point of view,” he remarks, “my experience only confirms that of others that there are few more healthy residences than a well-managed sewage farm, or more unhealthy ones than any neighbourhood whether town or country, in which sewage is allowed to ferment in a stagnant condition.”

The motto of all who deal with sewage should be that of the policeman in a crowd, viz., “Move on”; for Nature's great law demands that all dead and decaying matter shall as speedily as possible produce new life and be built up into fresh forms of vegetable and animal tissue. The man, the intelligent police who should facilitate the operation of the law, neglects his duty, the majesty of nature will assert itself through the process of fermentation to loosen the cohesion of sewage atoms in order that they may reach the vegetable life for which they are destined in the form of gas if they cannot do so as a liquid, and let us remember that the law of diffusion of gases will then operate without regard to the sufferings of animals who may chance to breathe an atmosphere more suited to the other kingdom of nature than to their own.”

VARIORUM.

“A BRIEF Memoir of the Princess Charlotte of Wales, by the Lady Rose Weigall (John Murray).” is founded on letters addressed by the Princess Charlotte to the mother of the accomplished author, and her mother's recollection of occurrences in the course of a close intimacy. Her Majesty the Queen, to whom the book is dedicated, graciously added materials for confirmation, and the result is a most charming contribution to the history of the time,—a delightful account of a pure life passed amidst influential influences. As Lady Rose well says,—“With every disadvantage of a neglected childhood, a loveless youth, with few good influences brought to bear on her in early days, she yet remained as we have seen, upright, sincere, warmhearted and truthful; surrounded by people who

morality was governed by expediency, she clung to what she believed to be right; and neither in happiness nor in misery was ever swayed by the frivolous ideas or selfish designs of which she had witnessed so much."—"The Trial of Sir Jasper: a Temperance Tale in Verse, by S. O. Hall, F.S.A. (Virtue, Spalding, & Dalry), some notice of which we have already given, has proved a great success, more than 40,000 copies, as we hear, having been sold. Encouraged by this reception, Mr. Hall has now issued a more costly edition of the book, a copy of which is before us, believing that it may thus find entrance into places where ordinary temperance tracts are seldom received. We have no doubt this will be the case. Notwithstanding what appears to us a mistake in the argument, it is a very remarkable work, the poetry is of a much higher class than has yet been devoted to the great end in view, and the illustrations are most admirable and numerous. It would not be a bad speculation for those who invest in good works, and look to the future for payment, to place a copy of this new and handsome edition of "Sir Jasper" on every drawing-room table in England.—A paper, "On the Prevention of Railway Accidents," read on the 18th ult., in the Institution of Civil Engineers of Ireland, has been printed for the author, Mr. John Chaloner Smith, member, by John Falconer, Upper Sackville-street, Dublin. The reading of the paper is to be followed at the next meeting of the Institution, on the 22nd inst., by a discussion on it.—A volume of Scottish Ecclesiastical Antiquities is announced by Messrs. Virtue as just ready. Its title is "Scotti Monasticon," containing a history of all the cathedrals, monasteries, collegiate churches, and hospitals, with steel-plate engravings, and round plans. There is no work of the kind, except the meagre compilation which its editor, Bishop Russell, said, 60 years ago, did not supply the gaps which ought to be filled up in Scottish literature. The author is Mr. Mackenzie Walcott. Sir Gilbert Scott will read a paper on Scottish architecture in May, at the Congress in Edinburgh.

Miscellaneous.

Society of Engineers.—At a meeting of the Society of Engineers on Monday last, a paper was read by Mr. George G. André, on the ventilation of Coal-mines. In introducing the subject, the author alluded to the imperative necessity which exists for establishing the principles of mine-ventilation upon a definite and certain basis. A careful investigation of the matter had led him to conclude that one cubic foot of air per second for every 100 yards of face was an adequate quantity in a dry mine, taking but little gas of any kind. That allowed for the exhalation and formation of '067 cubic foot of impurities, i.e., noxious gases, vapour of water and solid floating matter, per second. In other words, one cubic foot of air to every 100 yards of surface is equivalent to a film about $\frac{1}{2}$ in. thick spread over that surface, which film is changed every minute. And '067 cubic foot of air is to the same extent of surface is equivalent to a film about 1.20 in. thick, formed every minute. This quantity is, under the favourable conditions assumed, only just sufficient, and is as analogous to the breaking strain in materials. Every case, it will have to be multiplied by appropriate factor of safety, the value of which must be determined by the conditions of the case: the value of this factor will vary from 2 in. non-fire to 6 in. very fiery seams. This mode of treatment, which will be recognised as novel, brings the matter at once within the range of calculation, and furnishes a ready means of comparison.

The First School-Board School for Burton-on-Trent.—The foundation-stone of the first School-Board School for Burton has been laid. The school is to be a Gothic structure, and will be built to accommodate 800 children. It will be a red-brick building with dressings, 14 ft. in height from the eaves to 18 ft. in the centre. The entire cost, with contingencies, is estimated at 5,000*l.* The site is in Victoria-road, and the local Board have arranged to erect a school for 150 children in Wellington-street. The area of the Victoria-street site is one acre, and the accommodation supplied is for 300 boys, 300 girls, and 200 infants. The design of the buildings is by Messrs. Giles & Co., and the contract has been let to Dunsutry.

Water Pipes in Frost.—The invention for the prevention of the bursting of water-pipes in frost, patented by Mr. J. A. Calantariens, M.B., of Scarborough, has now been used, it is said, with success, during the past winter in Scarborough. It is well known that when water freezes it expands, and that the force exerted is so enormous that no pipe can resist it. This invention endeavours to solve the problem by simply preventing any resistance at all, by securing in the inside of the pipe a space equal to the difference of volume between water and ice, so that when the water freezes and expands it occupies the space thus reserved for it, instead of exerting its force on the pipe and bursting it. This is practically carried out by passing through the water-pipes a small india-rubber tube, specially made for the purpose, and of such a diameter that the space inside it is a little more than equal to the increase in volume of the ice. This air-tube is always kept full of air, so that when the water freezes, it finds at every point the necessary space to occupy; for by compressing the air-tube it displaces the air and takes its place. When the ice melts, the air-tube again expands, becomes filled with air, and is ready to be acted on by another frost, and so on repeatedly for any number of times without requiring any attention.

The Cole Testimonial.—The committee are again bestirring themselves in this matter: they invite the co-operation of those who are interested in the arts and manufactures of this country, in collecting a tribute that shall be worthy of the great services of Mr. Cole, by whose ability and perseverance mainly, the art treasures at South Kensington have been brought together; and through whose active and efficient aid so many museums and schools of science and art have been established and organised throughout the kingdom, in which no fewer than 280,000 students are now receiving instruction in the principles and practice of science and ornamental art; to say nothing of other important public services. His Royal Highness the Prince of Wales and His Royal Highness the Duke of Edinburgh head the list of subscriptions, which is already a long one, but should be greatly increased. Mr. J. G. Grace, of 38, Wigmore-street, and Mr. Peter Graham, of 38, Oxford-street, will receive anything that may be sent to them in aid of the object in view.

Handyside's Smithies.—Among the objects in the present Exhibition at South Kensington, are the exhibits of Messrs. A. Handyside & Co., of smith's hearths and portable forges, which form part of the International Show in Class IX. The arrangement of a number of hearths in a single shop occurs in one of the smithies at the Royal Small Arms Factory, Enfield. They are set around the walls, for the combined purposes of keeping a clear central space, leading the smoke-pipes into the wall-flues, and providing for the fixing of cranes to the wall for lifting heavy forgings. Annular hearths can thus, in addition, be usefully placed in the very centre of the shop, where long rods, crank shafts, &c., may be heated. The circular hearth employed at Enfield is curious. This is $2\frac{1}{2}$ ft. in outside diameter, and is adapted for small forgings. A projection of the hearth-plate at each side of the "through and through" opening nearly doubles its breadth, giving a table 4 ft. 4 in. long, recessed in its centre for the fire, so that a forging of some length can be heated in the middle.

Production of Wood.—Mr. D. F. Mackenzie, forester, Meldrum House, writes to an agricultural paper on the subject of manufacture of timber by landed proprietors, and says that there is no reason why the producer should not be the manufacturer, and save the large profits. The prices offered at wood sales depends, he says, upon whether the purchaser is to be content with 10 per cent. or 25 to 35 per cent. He states his own personal experience as regards profits to his employer, as follows:—In each case the wood was bought either by private tender or at a public auction. One wood, bought at 3,000*l.*, gave 1,700*l.*; one at 2,750*l.* gave 2,100*l.*; one at 5,000*l.* gave 2,025*l.*; and a number of others gave 10 to 12 per cent. A number of minor purchases gave 130 per cent. clear profits, and in course of twelve years I have only known two cases of loss or net return. Not far from this, I am aware of one case where the timber merchants realised over 300 per cent., and seeing no competition for the lot he backed out with 10*l.* more when paying his account, as it seemed to be a bad bargain.

Sir John Lubbock's Bill for Protection of Ancient Monuments and Buildings.

This Bill, which has been thrown out on the second reading, was substantially the same as that which fell through last year. But to the official conservators Sir John now wished to add seven special Commissioners, named in the Bill, whose successors were to be appointed by the Crown. The powers of the Board would have been very great. The Commissioners might buy the monuments, enclose them, open a right of way to them, and prevent the owner from doing anything which the Commissioners might believe likely to bring about their destruction or injury. The class of monuments principally aimed at were those which suffer from carelessness, ignorance, and neglect, rather than wanton mischief. Such structures as cathedrals, churches, castles, abbeys, crosses, and ancient houses, were also to be protected.

Swanscombe Church.—The *Maidstone Journal* reports at length a lecture on Swanscombe Church by Mr. Henry Ross, F.S.A. At the close, the rector said he was most desirous to see the church thoroughly restored, but he could not admit that it rested entirely with him to do the remainder of the work. Dr. Lory Marsh said he had hoped to see the restoration of the chancel contemporary with the restoration of the nave. The rector, however, had stated that the task was too heavy for him; he (Dr. Marsh) therefore suggested that a movement should be initiated to do this, as the amount required was comparatively small; it would be a graceful compliment to the lecturer to start a subscription at once.

The Charles Knight Memorial.—Our readers know that it has been determined "that a memorial should be raised in honour of one whose life-long efforts in the creation of cheap, pure, and elevated literature have nobly contributed to the mental and moral welfare of his countrymen." We understand that upwards of 600*l.* have been received; but it is hoped that all classes will gladly co-operate to give a national character to the Memorial. Its form must, of course, depend upon the subscriptions, and it is intended to invite the opinion of subscribers upon the subject. Mr. George Routledge, of the Broadway, Ludgate-hill, E.C., acts as hon. secretary.

Discoveries at Keynsham.—Mr. J. T. Irvine writes:—"Further excavations in the ramp or mound of rubbish which covers the remains of Keynsham Abbey have laid open the south wall of the choir (?). Part of the rich tile pavement of the chancel was found in its original position, and some very beautiful specimens of carved caps in Dundry and Lias stone have been brought to light. It is somewhat remarkable that a fragment of stone with Saxon interlacing strap ornament was discovered among the remains in the chancel. Mr. Cox has also laid open some very ancient foundations a short distance from the Abbey Church.

Enlargement of Yarmouth Gaol.—The Gaol Committee of the Great Yarmouth Town Council have recommended the enlargement of the gaol in accordance with plans and elevations which were laid upon the table. It is proposed to purchase property adjoining the old Toll-house, and erect a new building in the Elizabethan style, with a frontage to the street of 120 ft., an enlarged court-room, and with ante-rooms and offices more in accordance with modern requirements. The Council adopted the recommendation without discussion.

The Gas Supply of Birmingham.—At a recent meeting of the Birmingham Town Council, as already stated, it was resolved (with only one dissentient) to purchase the business of the two local gas companies for terms said to be advantageous. In accordance with previous custom, it was resolved to call a meeting of the ratepayers to sanction the purchase; and the meeting has been held, when the intended purchase was opposed, but the resolution was carried approving the scheme.

Fishing for Statues.—We understand that a company is now soliciting from the Turkish Government a firman for dredging the port of Rhodes for the bronze guns and culverins which are said to have been committed to the waters in the times of the struggle between the Knights of St. John and Solyman. The petitioners offer to give the Government one-third of all that they may recover. Besides the Colossus, there were at Rhodes 3,000 other statues, 100 of which were colossal.

Terrible Fire in America.—The New York papers of the 1st inst. report a fire as having taken place at Millerstown, Pennsylvania, which resulted in the destruction of no less than 71 buildings. One of the first edifices attacked by the flames was the Central Hotel, the escape of the inmates being cut off. Three of the guests and three servants were known to be burnt, and others are supposed to have perished. The fire originated with an explosion of gas.

Crystal Palace.—Miss Helen Ashton, a young lady likely to take a good position in her profession, has generously offered to perform the part of *Hero* in Shakspeare's Comedy of "Much Ado about Nothing," at the Crystal Palace on Wednesday next, the 22nd, for the benefit of Miss Caroline Parkes, a deserving actress, who is temporarily unable to pursue her professional vocation in consequence of an accident lately sustained.

The Wall in Richmond Cemetery.—The Vicar of Richmond has, upon the advice of the Bishop of Winchester, given way upon the question of the cemetery wall which has lately excited so much attention in that place. Meanwhile an Inspector from the Home Office declines to sanction the Nonconformist portion of the Cemetery as being too near the Workhouse.

Dinner to Mr. Holman Hunt by the Liverpool Art Club.—On the 13th inst. the members of the Liverpool Art Club entertained Mr. Holman Hunt, the painter, at dinner, at their Club-house, Seagrave-street. Mr. James L. Bowes, who occupied the chair, proposed the health of Mr. Hunt, which was drunk with acclamation.

Fire in Montreal.—On the 20th ult., the Queen's Hall, a new building in St. Catharine's street, and the most commodious in the city, was totally destroyed. The building was owned by Sir Hugh Allen. The origin of the fire was from the overheating of a defective flue near the main furnace.

An Orphan Asylum for Newcastle.—The foundation-stone of an orphan asylum to be erected at Newcastle-upon-Tyne, at a cost of 10,000*l.*, by Mr. Hilton Phillipson, as a memorial of his late mother, has been laid. Sir W. G. Armstrong, C.B., took part in the ceremonial.

Stained Glass Windows.—The *John Bull* hears that Mr. Fox, the new vicar of Christ Church, Westminster, has, from his dislike to stained-glass windows, refused to allow one to be placed in his church in memory of his revered predecessor, the Rev. Cyril Page.

Conversations.—The President of the Institution of Civil Engineers (Mr. T. E. Harrison) will hold his *conversations* in the West Galleries of the International Exhibition, on Tuesday, May 19th next.

The Channel Passage.—The suggestion we printed recently (p. 253, ante) should be attributed to Mr. R. L. Roumieu, architect, not M. Roumieu.

The Margate Drainage.—The Town Council have resolved to submit the drainage plans to public notice by exhibiting them in the Oriental Hall for a fortnight.

Royal Institute of Architects.—In our notice of the last meeting we omitted to mention that Mr. Arthur Cates was then elected as Fellow. We very gladly supply the omission.

New Barracks at Upnor.—The contractors are Messrs. Ball & Gammon, of Lambeth, not Rochester, as stated, p. 317.

TENDERS

For alterations and additions to the Boot Tavern, Corner-street, Gray's-inn-road. Mr. E. L. Paraire, architect:—	
Kelly & Bros.	2963 0 0
Sawyer	953 0 0
Hyde	920 0 0
Deacon	879 0 0
Faulkner	975 0 0
Canning & Miller	970 0 0
Sharpley	888 0 0
Chapman	824 0 0

For the erection of a house and shop, Northam-road, Southampton, adjoining the St. Mary's-street Railway bridge. Mr. W. H. Mitchell, architect. Quantities supplied:—

Sanders	2,922 0 0
Dyer	198 0 0
Chapman	133 12 0
Brinton & Bone	929 0 0
Stevens (accepted)	960 0 0

For alterations to the Greyhound public-house, Old-street, St. Luke's, for Mr. Batchelor. Mr. Edward Brown, architect:—	
Jago	£350 0 0
R. Marr (accepted)	625 0 0
Steed	593 0 0

For alterations to the White Hart public-house, Walworth-road, for Mr. Lipson. Mr. Edward Brown, architect:—	
R. Marr	2,837 0 0
J. Palmer (accepted)	467 0 0
Brooks	372 0 0

For the erection of a dwelling-house, Bath-road, Swindon, Wilts. Mr. W. H. Read, architect:—	
Phillips	£1,700 0 0
Wiltshire	1,048 0 0
Darrett	1,673 18 0
Forshaw	1,330 0 0

For the erection of Vagrant Wards at Stratton St. Margaret, for the Highworth and Swindon Union. Mr. W. H. Read, architect:—	
Wiltshire	£298 0 0
Darrett	28 0 0
Thomas	278 16 0
Phillips (accepted)	278 0 0

For the erection of houses in Arthur-street, Newry, County Down, Ireland, for the Right Honourable the Marquis of Downshire. Mr. Wm. James Watson, architect:—	
Whelan	£1,230 0 0
Mahood (accepted)	1,850 0 0

For the erection of two cottages in Bridge-street, Newry, County Armagh, for Mr. James Fennell. Mr. Wm. James Watson, architect:—	
Mahood	£272 0 0
Lavery	263 0 0
Moshane	260 0 0
Whelan (accepted)	260 0 0

For the erection of houses in Barrack-street, Newry, County Armagh, for the Right Hon. Viscount Scary. Mr. Wm. James Watson, architect:—	
Mahood	£1,110 0 0
Whelan (accepted)	1,608 0 0

For warehouse, 8, Salisbury-court, Fleet-street, for Mr. T. N. Debenham. Mr. Sextus Dyball architect:—	
Kelly Bros.	£1,853 0 0
Pilkington	1,668 0 0
Faulkner	1,635 0 0
Brown & Robinson	1,533 0 0
Martler	1,489 0 0
Rudkin	1,481 0 0
King & Son	1,383 0 0
Taylor	1,305 0 0
Newman & Mann	1,235 0 0
W. & F. Croaker	1,249 0 0

For new farm house, Suddridge, Oxon. Mr. Arthur Vernon, architect:—	
Reavell	£275 0 0
Snell	800 0 0
Eyred	885 0 0
Hunt	818 0 0
Spicer (accepted)	789 0 0

For the erection of warehouse in Canonville-street, City, for Mr. H. Lange. Mr. Chancellor, architect. Quantities prepared by Messrs. Curtis & Sons:—	
Sharlington & Cole	£3,997 0 0
Kilby	3,990 0 0
Brown & Robinson	3,949 0 0
Merritt & Ashby	3,735 0 0
Brown	3,700 0 0
Ryder & Son	3,668 0 0
King & Son (accepted)	3,550 0 0

For Congregational Church at Caterham, for the Building Committee. Mr. John Sulman, jun., architect. Quantities supplied by the architect:—

Extra Cost of Wainscot in lieu of Deal for Seating:	
Newman & Mann	£5,815 0 0
Nacey	5,377 0 0
Hill, Higgs, & Hill	5,089 0 0
Dore Bros.	5,073 0 0
L. H. & R. Roberts	4,748 0 0

For rebuilding No. 61, and reconstructing No. 69, Old Broad-street, for Messrs. Samuel Montague & Co. Mr. S. B. Wilson:—	
Hearn	£1,306 0 0
Trotter & Sons	4,463 0 0
Brass	4,384 0 0
Merritt & Ashby	4,280 0 0
Perry & Co.	4,135 0 0
Langmaid & Way	4,096 0 0
Scribner & White	1,675 0 0
Conder	4,073 0 0
Brown & Robinson	4,043 0 0
Newman & Mann	4,038 0 0
Kilby (accepted)	3,972 0 0

For alterations and additions at the Bull's Head public-house, No. 23, Cross-street, Ratton-garden. Mr. E. A. Burrell, architect. Quantities not supplied:—	
Thomas	£603 0 0
Longmire & Burge	503 0 0
Newman & Mann	503 0 0
Wagstaff (accepted)	494 0 0

For proposed farm, school, chapel, and new residences, Boys' Country Home, Bisle, Surrey. Mr. T. Heygate Vernon, architect. Quantities supplied by Messrs. Mann & Saunders:—

Farm, School, New Chapel, Residences.	
Cartier & Son	£1,945 0 0
Patman & Fotheringham	1,638 0 0
Brass	1,495 0 0
Newman & Mann	1,520 0 0
Stimpson & Co.	1,543 0 0
Watson (separate amounts)	2,285 0 0
Adamson (not given)	2,724 0 0

For alterations to the Red Lion public-house, Lower-road, Deptford. Mr. H. J. Newton, architect. Quantities by Mr. W. H. D. Cross, architect:—	
Golden	£280 0 0
Hockley	275 0 0
Taylor	247 0 0
Devent	265 0 0
Brindle	215 15 0
Shurmer	213 0 0
Boden (accepted)	223 0 0

For repairs, alterations, and additions to No. 37, Carey street, Lincoln's-inn-fields, for Messrs. Matthew Brown, Mr. Alfred Cross, architect. Quantities supplied by Mr. John Glenn:—	
Thompson	£1,319 0 0
Lawn	1,249 0 0
Howard	1,210 0 0
Patman & Fotheringham	1,077 0 0
Fitchard	1,025 0 0
Newman & Mann	991 0 0
Richards	961 0 0
Wilson Bros.	920 0 0
Baugs & Co.	598 0 0

For alterations and repairs for Mr. Leings, Croydon. Mr. Robins, architect:—	
M. Lachlan	£434 0 0
Green & King	355 0 0
Chandler	330 0 0
G. & S. Smith (accepted)	343 0 0

For alterations to the Rose and Crown tavern, Tottenham-court-road. Messrs. Tolley & Dale, architects:—	
Newman & Mann	£235 0 0
Sabey & Son	343 0 0
Thomas	270 0 0

For Presbyterian Church, New Barnet. Mr. G. F. Stalker, architect:—	
Add for Transacts.	£760 0 0

Hill, Higgs, & Hill	£2,447 0 0
Pattinson	2,070 0 0
Tibbett	2,070 0 0
Niblett & Son	2,037 0 0
Staines & Son	2,014 0 0
Sabey & Son	2,029 0 0
Gilmour	1,885 0 0
Servant	1,620 0 0

For the erection of factory and chimney-shaft, at Lodi-ford Mills, Wincoburgh, Surrey. Mr. H. Peck architect:—	
Mason	£1,714 0 0
Moon	1,692 0 0
Nitchell	1,581 0 0
Garrett	1,512 0 0
Pearce & Clark	1,531 0 0
Goddard & Son (accepted)	1,474 0 0

For alterations and shop fronts to Nos. 93 and 95, High-street, Guildford. Mr. Henry Peak architect:—	
Pollard & Son	£251 0 0
Mason	229 0 0
Stradwick	254 0 0
West	222 0 0
Goff (accepted)	216 0 0

For additions and alterations to the Horse and Groom, Guildford. Mr. Henry Peak architect:—	
West	£241 0 0
Nelson	390 0 0
Pollard & Son (accepted)	364 0 0

For the erection, including fixtures and fittings of the central portion, of the Children's Home, at Northampton, for the Metropolitan Convalescent Institution. Mr. H. Saxon Smith, architect. Quantities supplied by the architect, and Messrs. Lansdowne & Pollard:—	
Bulmer	£5,351 0 0
Manley & Rogers	5,065 0 0
Todd & Saunders	4,994 0 0
Simpson	4,994 0 0
Wall Bros. (accepted)	4,900 0 0

For house at Kingston, Surrey, for Dr. Shea. Messrs. Henry Jarvis & Son, architects:—	
Lane	£1,215 0 0
Mansfield & Sons	1,234 0 0
Todd & Saunders	847 0 0
Wright	815 0 0

For erection of church of "Our Lady of Consolation," West Grinstead, Sussex. Mr. J. Crawley, architect:—	
Bushby	£29,315 0 0
Patman & Fotheringham	8,935 0 0
Penhill	8,165 0 0
Kilby	7,899 0 0
Cowland	7,447 0 0
Stimpson & Co.	7,165 0 0
Longmire & Burge	6,774 0 0

For pulling down five warehouses on the Charterhouse Estate, and erecting three new warehouses, for Messrs. Tabbs & Lewis, Mr. John Collier, architect:—	
Niblett & Son	£4,892 0 0
Crockett	4,200 0 0
Staines & Son	4,151 0 0
Croaker	4,100 0 0
Lawrence	4,315 0 0
Marl	4,265 0 0
Crabb	4,130 0 0
Morland & Nixon	3,995 0 0
Elkington (accepted)	3,994 0 0

TO CORRESPONDENTS.

H. F. W. C. C. C. L. E. A. J. H. M. R. W. F. R. E. L. J. P. & Co. Dr. M. W. W. & Son. Mr. C. J. J. L. E. R. B. W. J. C. H. J. W. R. W. R. H. R. G. J. W. G. J. C. C. H. & Son. C. F. H. W. J. S. E. A. H. O. S. H. H. S. A. J. J. L. S. & Co. R. E. R. L. E. & Co. making drawings and specifications complete, ready for estimate, the charge allowed by Institute scale is 2 per cent. If tenders be procured 1 per cent. more—B. we are free to decline. We could not print estimable—B. we are free to decline. We could not print estimable—B. we are free to decline.

We are compelled to decline pointing out books and give addresses. All statements of facts, lists of tenders, and must be accompanied by the name and address of the sender, not necessarily publication. Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

The Builder.

VOL. XXXII.—No. 1629.

Sculpture in the International Exhibition.



THE sculpture in the International Exhibition this year, though not in great quantity, includes works of no inconsiderable merit and originality. Italy continues to be the chief contributor in this department of art; and among the sculptors of that country, Signor Pozzi, of Milan, makes a decisive bid for an English reputation by his

two large, and, in many respects, original works, "the Youth of Michelangelo" and "Byron" (3,000-1), which occupy a central position in the West and East Galleries respectively. The former is a specimen of the realistically costumed statue, which so many of the modern Italian sculptors affect, and represents the great artist, as a youth just grown up, at work upon a figure, the head of which is just hewn out from the block of marble below him: he leans forward with knitted brows, and in deep thought, considering his work; one hand holds the mallet behind his back, in an attitude of abstraction, an action which greatly helps both the composition and the feeling of the work; the pose has been well studied, and in a side view especially is very satisfactory, and well balanced in outline; there is, however, scarcely so much made of the subject as we should think there might have been, and there is a touch of the prosaic about the work which its high finish and careful composition cannot altogether atone for. This statue is in marble; the other work, "Lord Byron," in plaster. The latter is the finer work artistically, and has more of the broad and ideal treatment which should characterise sculpture: the poet is represented in a sitting posture, leaning his head thoughtfully on his hand, the elbow resting on the back of the seat (which is turned sideways); the right hand is stretched out in a mild, but, perhaps, slightly theatrical attitude, and rests on a manuscript on his knee. The back which he wears is finely disposed, so as to add and give dignity to the whole composition, and the ideal impression is decidedly fine; but, fortunately the head, as a portrait, is a failure; at least it conveys a different impression from that with which we are familiar in the best known representations of the poet. We can see for whom it is intended, but the face is too long, and the head altogether rather large, and the work were executed in marble, it might be possible to reconsider and modify the upper part of the head. Returning to the West Galleries, where most of the sculpture is disposed, we find among the most prominent ones another Italian work, Migliorotti's "Lesbia's Toilet" (2,966); a figure ideal in its aim, realistic in execution. "Lesbia" (must we say it?) is in a "sponge bath,"—a "practicable" bath, as they would say in the ge directions,—a towel drops from one hand,

the other is occupied in adjusting or wringing out a lock of hair over her shoulder; the face and head are pretty, and the whole action natural, but the figure has evidently been minutely copied from a model not of the highest type; in front view especially it is ill-formed and angular in line, and too thin for real beauty; the side view is much better in every way, and is very elegant in line and pose; but on the whole, though with very high finish and some ability, this cannot be considered a very pleasing work; the arms, moreover, are exceedingly poor, whether the fault of the artist or his model one cannot very well say; perhaps both. The work facing this, called "The First Flowers" (2,992), by Pandiani, of Milan, illustrates again the tendency of the Italian sculptors to seek for novelty at any price. This is a figure of a young female leaning forward with a smirk, rather than a smile, and offering flowers from a collection which she carries in her drapery, which is bundled up about the middle in such a manner as to produce, in conjunction with the stooping attitude, a most awkward effect in the side view, making a kind of bunch at the middle of the back. The modelling of the legs is stiff and poor. It is a pity, too, that modern Continental sculptors so much affect the smirk alluded to; quiescence is the true condition of the countenance for the sculptor, and it is almost impossible to realise in marble anything nearer to a laugh than that faint reflective kind of smile which scarcely disturbs the lips; unless, indeed, the artist is really aiming at the grotesque. Behind this is one of those more pleasing studies of child-life to which modern sculpture is very much turning; "A Child on the Seashore" (3,033), by Bossi, of Milan, which is a good specimen of naïve, natural action and expression, and of thoroughly realistic modelling. Its defect is that, though not suited very well for a niche, it is certainly not a work which will bear looking at all round. The back view is awkward and unsightly. This "all round" theory of statuary, to which Thorvaldsen attached so much importance, seems a question scarcely considered in the majority of works of this class; yet it is highly important, and must either be fully considered or entirely ignored: a middle course is impossible. As an absolute contrast to the last may be noted J. Bell's little girl with dove, "Colombellina" (2,843), which is as generalised and conventional in treatment as the other is individual and realistic. The face is very pretty; the kneeling figure entirely covered with the frock makes, however, on odd little lump without much meaning. Biganzoli's portrait statuette of "Manzoni" (2,851), claims a word on account of the reputation of the original. It is a literal representation of the novelist "in his habit as he lived," to wit, a long overcoat and a round cap; he holds an open book with an inscription from Goethe. The face has that individuality which indicates that it is a good likeness. Further down the room we come to a work of very opposite character, a representation, almost "heroic" size, of the "Lady of the Lake," by Mr. Adams-Acton. Scott's heroine is represented, of course, fully draped, standing erect, with the left hand resting on the head of a large deerhound by her side. The face is slightly upturned to the right, the attitude and manner conveying the idea that she is in the act of welcoming a guest to "the enchanted hall." The expression of noble and dignified courtesy in the face and bearing of the figure is very finely felt, and it is not often we see a work of this class which more completely answers to the idea of the imaginary poetic creation which it is intended for. The drapery might perhaps have been made a little more of; it is rather tamely treated. Near this is a half-size figure by an artist whose works we have before met with in this gallery, Mr. Lawlor, whose productions always embody an original

idea. The present work, "Musing," (2,950) is a coloured plaster statue, representing a young and beautiful female figure, undraped, seated apparently on rocks, looking round to the right, with a thoughtful face and parted lips, her head leant on her hand; the position, with the left foot drawn up to a higher ledge than the other, gives a graceful line and pose to the whole; the right leg appears to us a little over-thick in the lower part, but the whole work is very refined and suggestive in feeling, and is well worth the more finished execution in marble which we hope its author may be commissioned to give it. Among the busts of female figures which are so common now, is a very piquant and characteristic one by Villa (Milan), under the title of a "Pompeian Girl" (3,048). "Girl with Pigeon" (3,402) is a little statuette well worth attention, by Jakob Ungerer; the pose and action of the figure, holding back her dress with one hand, is most natural and sprightly, and the execution remarkably free, not polished up, but chiselled in bold clean strokes, as by a hand certain of its aim, and not dependent on after-finishing. The "Satyr," by Peduzzi (2,906), with some cleverness, we can only chronicle as a remarkably ugly and repulsive thing, not worth the trouble of carving. Landseer's "Mother's Love" (2,946), a plaster model, is a very pleasing and carefully-composed half-size group; the child asleep on the mother's knee, who looks tenderly at it; the drapery over the lower limbs is well arranged. Count Gleichen's terra-cotta "German Flower Girl" and "Como Fisher Boy" were seen in last year's Academy: the latter is admirable as a realistic statue; the figure is full of boyish life and cheerfulness. The four busts by Calvi of the seasons (2,865) should be noticed, "Summer" especially, a very fine, handsome, placid type of face, with heavy masses of hair overshadowing it on each side. "Flown" (3,453), another of the child-figures, is a very pretty specimen of a portrait statue treated with some novelty; it represents a little boy (second son of Sir W. Stirling Maxwell) in the act of chasing, or pointing eagerly after, something that has taken wing, a bird or a butterfly; it is a very successful attempt at life-like portraiture: "Caught" (3,052) is a likeness of the elder brother, treated in a similar spirit; Mr. F. J. Williamson is the artist.

Most of the sculpture is in the West Galleries; among specimens on the east side we notice Laumann's very elegant statuette, "The First Letter" (2,947); a clever portrait bust, "Dr. L—" (2,857), by Bouré: an old wrinkled face, with much character, finished entirely with the tool and unpolished. Samain's large statue, a "Woman of Cervara" (3,025), despite its size and pretension, is a commonplace work, somewhat coarse in execution, and very poor in idea. The same artist's small terra-cotta, "Love on the Watch" (3,026), has humor and originality. Pagan's "Love in Ambush" (2,982) is a very elaborated treatment in marble of a somewhat similar motive; his Cupid stands tiptoe on flowers (a bad treatment for sculpture), with finger to chin, bow hidden behind his back, and an arch look of expectancy; the modelling and finish very fine, but somehow the work fails to interest us. Persina's "Paolo and Francesca," with Dante's celebrated line out round the base, is one of the most tame and soulless renderings of the subject we ever saw; the figures are utterly without passion, and the sculptor seems to have bestowed his chief attention on the lace and ornaments of the dress. It is painful to see a great art thus degraded, and a great poetic idea trifled with. Fraikin's marble bust of "Tethys" (2,899) is a small thing worthy of the artist's reputation; it is in slightly yellowish marble, a face with a profile of exquisite regular Greek beauty, turned towards the right shoulder, with a coronet of coral and sea-weed, and a gold neck-lace (gilt in the marble). It is not unamusing

to contrast this beautiful imaginative head with a neighbouring portrait bust (2,881), by De Kessel, of a regular fat, well-fed, mounted German "Philistine,"—the ideal and the real in sharp contrast. The terra-cotta busts, by De Brackeler, in this gallery should be noticed; they are artificial in coiffure and "get-up" generally, but the faces have plenty of character and individuality, and are very clever indeed in their way.

The sculpture at the International this year will certainly repay attention; if there are only one or two things of the highest class, there are a considerable number that possess merit and interest above the average. Probably the excellent opportunity which these galleries afford for exhibiting sculpture attracts artists, since their only alternative in this country is the dull and badly-lighted room at the Academy.

THE WATER-COLOUR EXHIBITIONS, PALL-MALL.

THE Water Colour Society and the Institute of Painters in Water-colours have thrown open their doors simultaneously, as is their wont at this season, and each and both may be congratulated on the collection of drawings forming their present respective exhibitions; for, however general a proficiency in the use of that brush that may be sucked sometimes with impunity has become, the two societies maintain a supremacy only to be divided between themselves.

At the gallery of the former, Sir John Gilbert, A.R.A., is gloriously prominent in a scene from "Othello" that he has already treated once before (what of all that is to be illustrated or painted has he not already done before?) the Council Chamber wherein Desdemona, avowing her knowledge of wife's duty to the husband, decides to abide by it (16). Though it is nearly possible to guess without seeing it the admirable use Sir John would make of the dramatic and picturesque opportunities offered by the subject, he has never produced anything that excels it for colour; it is certainly a superb specimen. This, and "The Recall" (52), a trumpeter of course, and mounted on a sort of dun-creamy-coloured horse peculiar to the artist's taste and study; with a more quiet but equally unmistakable production, a knight and attendant resting by the way-side listening to the fortunate minstrel, described by Wordsworth (230), will be considered the best of seven works contributed. Mr. Frederick Taylor presents "One of Cromwell's Troopers" (235), reinvigorating his stable mind, with his stable steed, saddled for emergency, refreshing in another way more invigorating to its mind. A "Wild Boar Hunt" (135) at which the first spear has been too slow for the first bound or two, that with wide-open eyes are fast losing sight of the fact in dusky death; and a bright little bit of flirtation on horseback, suggestive that jovial young hunters prepared for the chase—who "Rise at the sounding of the horn, and health with sport embrace, when a hunting they do go,"—have time for more pursuits than one (237), have all Mr. Taylor's dash and masterly effect. Mr. F. W. Topham is as conspicuous as of old, and whether recounting Spanish episode "At the Church Door" (128), or investing with his pencil's poetry so simple a personage as a "Girl at a Spring" (140), or embodying the poetry of others with this same pencil (149), maintains his reputation.

Mr. Alfred D. Frupp appears not to share the nearly common horror with which authors, painters, musicians, and mathematicians regard that hairy, harried vagabond, the organ-grinder, judging by the interest and care shown for the subject, "Starring in the Provinces" (122), and who is creating a great sensation with assistance from the ballet department of his establishment—the monkey, amongst the astonished natives of what must be supposed to be a very distant village, with a taste for music less nice than Mr. T. R. Lamont's charming young lady friend of our very great grandmothers setting right the energetic old fiddler, who is "Out of Tune" (122). The damsel's pretty face would be the better for better drawing.

Mr. J. D. Watson contrives to turn to picturesque purpose every little nook in the greenwood (224, 236), or orchard (88), or such morsels of primitive building (10) as by the introduction of one, and sometimes two, pretty or gallant figures variously posed but similarly disposed, he can make premises for a title: all his small drawings are as

appositely designated as happily designed. The number of them indicates great industry, and their merit an aptitude that is remarkable; it accounts, no doubt, for a sameness and done-after-recipe look that will become detrimental at last, though.

It is said that a painter is the better for being national, and it will be quite to be regretted if Mr. G. J. Pinwell does more than give temporary attention to Eastern affairs, and does not return all the more devoted to his own country. "The Beggar's Roost, Tangier, Morocco" (88), is marked by many fine qualities, but it is pre-eminently disagreeable beyond any quality else.

Mr. E. K. Johnson's flower-garden in "Summer Time," with a couple of English girls of very probable loveliness changing the dead and scentless *roses* of their china vases for freshly-gathered *roses-leaves* (44), is a marvel for finish, and so delightful as a picture, that it will take as long to become an object of no further attractiveness as it would for its admirers to grow weary of the reality it represents, almost. Judging by prevailing taste for elaborate imitation, the charm of perfect naturalness that does not always accompany it, should render this extraordinary work very popular indeed. For equal finish, with the same good taste, but far more telling effect of light and shadow contrast, "The Reader" (7), by the same artist, goes even beyond this in arresting attention. Two sisters, one of whom is quaintly perched on the conveniently-bowed arms of an old apple-tree, are rapt in the description of some exotically theme read to them from a book by a gentleman who evidently appreciates the author, and consequently leads one to suspect that the gentleman and the author are one. Although the tree, with its moss and small ivy decoration to its riven, var-coloured bark, and the whole orchard, indeed, with its shades and its lights coming just in the right places, seem made and intended for the special accommodation of the party occupying it just now there is, again, such an air of naturalness about the composition, with such thorough completeness of depiction for all its components—heads, hands, costume, apples, and grass, to wit,—that it is amongst the most delightful things of its kind to be seen, and is so forcibly painted that it makes everything near it look weak and washed out; Mr. Birket Foster's drawing of "The Spring" (75), included, which is not the best of Mr. Foster's exhibits, "Parity" (107), by Mr. W. C. T. Dobson, R.A., is a life-size study, and looks exceedingly pure, indeed. Mr. Alma Tadema's peculiarities for the most part are distinguishing excellences, yet include some his most ardent admirers could never count as such. His resuscitations from the antique, so far as the once living are concerned, are galvanised corpses only; or only partly revived, seem to sit, or lol, or lie, by reason of a semi-paralysed condition, that makes any other position than the one assigned them a physical impossibility. It is very difficult to identify the sombre, heavy appearance that his method of representation entails, in, for instance, "Autumn" (249), or in (268) "A Roman Artist," and in (285), wherein an exceedingly long lady, with very small head and arms, and who seems to have no use in her from the seventh rib downwards, with any possible time's influence of Southern atmosphere: and it is no easy matter to arrive at the right reason why ancient Romans should have had so little cause to call themselves good-looking. The charming ivory effect so often present in his paintings in oil-colour, and the beautifully qualified tints frequently to be noticed in these more important works, are rarely, if ever, to be found in his drawings, which, remarkable as they are for showing antiquarian research, archaeological knowledge, the power that characterises their workmanship being more ponderous than brilliantly effective, are less pleasing as pictures than instructive as illustrations of a past age, so far as the materials revived for representation being faithfully portrayed can make them to be.

With all the additions to the ranks of associate members, the Society must rely, as heretofore, on the superlative excellence of the great majority who practise what must be supposed to be the best and fittest application of water-colour art; to fix the passing season's fiftieth change for any season's contemplation. There seems to be some obstacle to prevent any very wide acceptance of the mediums used by figure-painters. The distich,—

"The world is full of horrors, troubles, slights;
Woods' harmless shades have only true delights."

may be selected for a motto to the catalogue of Water-colour Exhibitions generally.

Mr. Carl Haag, Mr. J. J. Jenkins, and Mr. F. Walker, A.R.A., are not represented at all; nor have Mr. Holman Hunt or Mr. Stacey Marks, A.R.A., sent any help on this occasion.

Mr. A. B. Houghton's two clever sketchy contributions beset him that he might be off to the East presently, if he sees any object in rendering more perfectly such illustrations from the "Arabian Nights' Entertainments" as he gives a taste of in (220), "The Jew examining the Diamond," and in (259), "A Mendicant"; and which is a taste that must be acquired, for both drawings are more funny than fascinating.

Whilst Messrs. G. Frupp, E. Duncan, G. Dodgson, T. Danby, Alfred Hunt, Paul Naffel, T. M. Richardson, Collingwood Smith, C. Davidson, H. Gastineau, and J. W. Whitaker lead such an army, armed with "beauty-breathing pencils," to contend with nature in any field, and make it prisoner, surely trophies will never cease to adorn the walls of their temple, though erected to the honour of Nature itself. Perfection of more than dexterity must be attained before nothing can hope to be enlisted; and there is no merit in deluding to those who cannot paint at all; nothing more disheartening to those who are passively clever than to witness the ease, gained from hard work and gift, that characterises wondrous done.

"The way to paint as well as they do," says Complacency,—who thinks he can do anything if he tries,—is "to watch 'em!" Is it? "To learn how they do it." Just so. The right railway is the right and most direct way,—rail which may,—for the British painter to arrive at some station; and for this he may learn timelessly from nearly any newspaper that advertises very largely. Our water-colour landscape-painters, who enjoy quite a monopoly; it is never insisted that they can learn very much from Continental schools' teaching; if it were, there can be very little doubt but what they would not. However, this immunity should make them proud, indeed, of all the praise they get, if it be not half as much as they deserve; for they help to endow the word "our," when so few things in particular seem left as specially belonging to us. No assertion can be more stupid than that which would go to ignore British influence on art; and so long as no foreign influence can be shown to have advanced it, to say whatever cultivation we can hope for, must be exotic. Kaubach, a lately dead, acknowledged his love and veneration for Flaxman; he showed it, too; and Constable, we are told, led and leads many followers than the sons of those fathers he lived amongst could ever believe to be the case, unless they could speak as well as understand a very good French. Who would not envy the life of a really gifted landscape painter? They who would aspire to teach the living how to see life,—to shape and cloth; for fact the record of what was, or satisfied the sight of all who see, or think they see everyone else can see, the purport of a lesson,—may come and fret to a life's end if chance or fashion be not their help. But the earth and the sea are to our view as to ours; and who would not wish for the power of hand to show that in their change and manifold charms to evoke the same wonder, the same worship? Him who made and rules? Yes, a landscape painter's way in the world, if confined to a county even, is glorious, if he really be a county artist, and if in humility he glories in glory from when the sun rises to when the sun sets, and the pale-faced moon keepeth watch over all things that sleep, and those who sleep never more be awakened by the sun. Oh, go your way, Scrutator Depictor, across plain, through sun-warmed fields, where nod the corn's emerald pastures spread; down the slopes with hare-bells for a blue catarract to a green sea of brakes that waves and ripples beneath the mast-like larches; down valley to the dale where little rocks, cushioned with soft mosses, a month of many a spring-come and autumn fall; where feathery ferns bow to the fact of the leaves of the dead help forth new life of life's knowledge,—that from rest shall come again energy. Forward on the uplands, again to oat-lands and barley plots, that tell man at least must drink and eat alike, but two before (man eats a flock and eat alike, but two before, cuts his wisdom-teeth), over green knolls and beach capped heights, down again to marshy plain where elder and dock and ground weeds, twisted luxuriance, stay your course, to whom why Nature should hide in sly corners so much

of its wealth of beauty; through thickets to the fen, with its earthy essence exhaling in shroud of vapour, that, rising and becoming a pearly wreath, entwines the highest mountain's top, like a fond soul embracing the last it knows on earth ere taking flight for heaven.

We have more to say presently.

REMINISCENCES OF WILHELM VON KAULBACH.

It is now many years since we were first introduced to Kaulbach. Stimulated by several works of Dyce which had appeared in the Royal Academy Exhibition, displaying a higher range of thought and a finer style of drawing and of composition than the students were accustomed to see there, the excellences of which they attributed to his German education in art, we, with some fellow-students, resolved to visit Munich, and there work with the thoroughness and determination of German students. We arrived in the Bavarian capital in the autumn of 1840. Having good letters of introduction, we were soon in communication with, and known to all the leading painters of the German Art Revival,—Cornelius, Schorn, Hess, Kaulbach, and others. We well recollect, for the first time, entering Kaulbach's studio in the St. Anna Vorstadt. He was working at the cartoon of the "Destruction of Jerusalem," but immediately turned and received us with the greatest frankness and kindness. For good manners, we were, perhaps, a little too distrustful, in consequence of the first impression which his great design had made upon us. The fine drawing and composition had riveted our attention upon the cartoon instead of the designer. But forcibly turning the current of our thoughts, we began to pay attention to the discourse of the professor, and to note more observantly his features, proportions, and general bearing.

He was about the middle height, slender, and habited in a long black collegiate gown. Our eyes rested upon an oval face, and deep-set, keen eyes; rather long, dark-brown hair bounding a high, smooth forehead, and close-shaven cheeks; a well-proportioned and slightly aquiline nose, in which the nostrils were evidently pre-empted to rise in harmonious concert with the outer angles of well-defined satirical eyebrows. A full, dark, drooping moustache hung over a well-formed mouth and pronounced chin. The roundness of the face was heightened by a light roseate flush in the somewhat olive complexion. The general aspect of his face might have been pronounced somewhat Mephistophilian, and bore unmistakable signs of a lurking satirical humour. He gave us good and merry counsel as to the course of study we would pursue, and so our first interview terminated. One of us afterwards became his pupil. We have stated that Kaulbach was, at the time referred to, working at the foreground of the cartoon of "The Destruction of Jerusalem." This, however, was but one of a series of cartoons, which, since that time, have been executed in the water-glass process in the new Museum at Berlin. The first of these has been painted in oil; and as this design and that of the "Geistersacht" are the two works of Kaulbach, which are the most frequently referred to in this country, we may take them as typical specimens of the master's style, and, as such, fit themes for critical discussion. The nature critics who pick up the set phrases of distio detraction ready to hand, and who hurl indiscriminately at the reputation of any avowed painter whose style they consider themselves bound to disapprove of, have in their ignorance dubbed Kaulbach *academic!* (Never was there a greater misconception of an artist's place in art. Kaulbach's style was, to all intents and purposes, a culmination of the tendencies of the early German school of designers. It has not, as a rule, the Raffaellian and Michelangelesque leaning of his master Cornelius, or of his other contemporaries. There is a same tendency in Kaulbach's larger works, in the early Flemish and German school, to be a picture a history,—an illustration of a selected series of events. In "The Destruction of Jerusalem," just referred to, we have the prophets who had foretold the fall above and within the composition. Below we see Titus entering, and the Temple rent midst thunders and strings. Lower still, and in the middle ground see the high altar desecrated by the Roman

soldiers, who are planting upon it the emblem of prey, but not of prayer, the eagle. The high priests putting themselves to death; the Jewish women in lamentations and despair, and there, calmly, in the foreground, as the result of these terrible events, the exodus of the primitive Christian church, guarded by angels. Whether we think this kind of treatment transcends the proper limits of pictorial art, or not, it is certainly not an academic treatment of the subject; it is essentially German. Neither is the style of the drawing academic, the human forms and the draperies have evidently been studied from nature. Kaulbach's whole teaching was, as that of his master Cornelius, an exhortation to study nature carefully, minutely,—an exhibition of the studies which our fellow-student made in Kaulbach's atelier, would in themselves be a lesson even to the English art students of the present day.

Of all his great compositions, that of the "Geistersacht" will probably receive the widest recognition as a work of art. The choice of subject, the beauty of line in its composition, the variety of action, the drawing, and above all, its singleness of purpose, will commend it to the critics and artists of all nations. Kaulbach was commissioned by the Count Raczyński to carry out the sketch for this work, in oil, upon a large scale. The Count, however, happened to see this great design when it was merely got in upon the canvas in chiaroscuro, in burnt umber, and was so delighted with it in this state, that he prevailed upon the artist to leave it so, and to let him have it without colour. This was a very wise suggestion of the Count's, for although Kaulbach was, of all the Munich painters of that time, by far the best colourist, he was not strong enough in this quality to have added to its attractions by putting it into colour. We have, however, seen many of his studies in colour which showed very conclusively that he might have become a colourist as well as a designer had he earlier directed his attention to this branch of artistic study. The "Geistersacht" may be seen in the Raczyński collection in Berlin.

If we have not lost the greatest painter in Europe by the death of Kaulbach, we have lost the greatest designer. The numerous works of this master would testify not only to his great and varied talent, but to his industry. The illustrations to the Reineke Fuchs will for ages exhibit his versatility and humour.

Kaulbach was a great admirer of the works of Flaxman and Hogarth. The engravings after Hogarth appear to have possessed great attractions for him, and to have imbued him with that spirit of "truth to the life" which is displayed in many of his performances. The "Mad-house" is one of the designs which he made when fully possessed by the genius of Hogarth. It is so terribly true that we were at last compelled to remove it from the walls of the studio. The great designer's charcoal drawings, in illustration of Goethe's and Schiller's works, are also Hogarthian in their leanings.

But how the years have rolled away! Kaulbach was still to us in the heyday of life and fresh in our memory, till the announcement of his death a few days since made us note the lapse of time, and that he must have been nearly seventy years of age. He was born in Arolsen, Westphalia, Oct. 15, 1805, studied at Düsseldorf under Cornelius, by whose influence he was called to Munich in 1825; he was made a correspondent of the French Institute in 1842; director of the Royal Academy of Fine Arts in Munich in 1849; Chevalier of the Legion of Honour in 1855; was promoted to the rank of officer in 1867. Kaulbach was also a member of many learned societies, and received various orders. Of such men nations may be proud, for it is they who raise the monuments by which posterity will estimate a people's place in civilisation.

Clerkenwell Technical School of Art.

The half-yearly exhibition of drawings by the students of the above-named institute took place on Thursday, April 16th, at St. John's Hall, between 133 and 135, St. John-street-road, and was well attended. Amongst the drawings noteworthy were those drawn by Messrs. John Kerr, George Ingram, Thomas Dixon, William Herring and Edward Croker, and several jewelry sketches by Messrs. Charles John and William Speight. Mr. Charles Meyer was the master.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At an ordinary general meeting of the members, held last Monday evening, the president, Sir Gilbert Scott, in the chair, Mr. John D. Sedding was elected Fellow.

The President, in opening the proceedings, said that it was with deep regret that he had that evening to record the death of one of the Institute's most valued members, Mr. Owen Jones. He regretted that he was not, unfortunately, at the time more prepared to say something in memoriam of the celebrated architectural artist; who throughout his professional career had been much esteemed. He cultivated particularly the coloured decorative branch of the profession, in which he showed wonderful ability. Amongst the various works he had issued upon that subject, the one by which, perhaps, he was the best known was that entitled the "Grammar of Ornament." His artistic works generally were executed in a beautiful manner; and in the decoration of the International Exhibition in Hyde Park, in 1851, his services were called into requisition, as also they were for the Crystal Palace, Sydenham, he being the designer of the Greek, Roman, and Alhambra Courts. St. James's Hall, too, was designed by him, and erected under his supervision. His great worth, admirable disposition, and other good qualities were well known to all; and he (Sir Gilbert) would inform those present that the funeral would take place on (this) Friday, at Kensal Green, at one o'clock, so that any who cared to attend would then have an opportunity of doing honour to the memory of their departed friend. The president announced the death of Mr. Furkin, of Leeds, also a member of the Institute.

Mr. T. H. Wyatt said that he had been brought much in communication with the late Mr. Owen Jones, and could fully testify to the fact that a more honourable man never lived. He was one of the Institute's gold medallists. His widow naturally felt the loss deeply; and he (the speaker) was confident that it would be comforting for her to know that her husband's remains had been followed to the last resting-place by some of the members of the Institute.

Mr. E. Vandrema was then elected by the meeting as honorary and corresponding member of the Institute. This gentleman was a former *pensionnaire de Rome*; and is one of the architects of the city of Paris, his chief works being the church of Montrouge and the prison of the same suburb, at Paris.

Mr. T. H. Wyatt then read a paper on "The Old Hall and New Assize Courts at Winchester," a portion of which we print. After the reading of the paper a short discussion followed.

Mr. Burt referred to what he considered a great point of interest in the paper regarding the alteration in the form of the old Hall; but he ventured to differ from Sir Edward Smirke as to the date of the alteration. He (Mr. Burt) had taken great interest in the subject, and had looked over the Government records bearing on the question, which he did not think would bear out Sir Edward's views as to the dates. These documents distinctly showed that the Hall was the great Hall of the Castle, and the question as to whether the alteration took place in the thirteenth or fourteenth century could be worked out by any one with patience.

Mr. Horace Jones, in proposing a vote of thanks, said that although the subject had not induced much discussion, it was one of considerable interest, and he for one would thank Mr. Wyatt for bringing the matter before them.

The President said that he had taken great interest in the paper, particularly the antiquarian part of it, as he had had the pleasure of visiting the work. Many of the discoveries which had been made in restoring the building were extremely interesting. Discoveries were always of interest, even in small buildings, but when found in such magnificent buildings as on the present occasion, they were of far greater importance. The whole subject of the Hall was worthy of attention, and their thanks were due to Mr. Burt for the interest he had taken in the matter.

It was then announced that the next meeting (the 4th of May) would be the annual meeting, when the report of the Council and the balance-sheet would be submitted; and that the election of officers for the ensuing year would take place.

* Hannenschlacht.

* Narrenhaus, Irrenhaus.

ON THE OLD HALL AND NEW ASSIZE COURTS AT WINCHESTER.*

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

This old Hall was for many generations supposed to have been an ancient church or chapel. The late Dr. Milner (whose history of Winchester has been held in much repute), and other writers on this room and the adjoining Castle, such as Warton, Grose, and others, have asserted, without hesitation, "that the Hall, used for Assizes and Sessions, was an ancient church or chapel, and that the round table in the Hall was made by King Stephen." It remained for Sir Edward Smirke to set at rest so erroneous and so long current a belief. In a learned and elaborate essay on this point, read before the Archaeological Institute at Winchester in 1846, this gentleman disposes of that theory in a manner that will, I think, be conclusive to all those who will take the trouble to refer to it. They will concur in his assertion that "no proof has ever yet been surviving relic of the ancient Castle at Winchester" was destined or has ever been applied to religious uses, and any eye moderately conversant with early architecture will easily convince himself that it never was destined for a church or chapel; and that the plan, arrangement, and finishing within and without, all announce it to have been from the first a Hall." In 1175 (21 Hen. II.), this "Anla Regis in Castro" was under repair; sufficiently attesting to its antiquity. In 1220 (4 Hen. III.), the Sheriff of Hants was ordered to prepare this Hall for the reception of the king. In 1222 (6 Hen. III.) occurs the first of a series of accounts respecting the Hall, and from this time forth, there are abundant records of works undertaken for the repairs and adornment of this Hall. In 1235 (19 Hen. III.), a new kitchen, buttery, and "dispensa" were made on the north and south sides of this Hall (hence probably the doors at this end of the Hall). In 1236 (20 Hen. III.), the capitals and wooden bottilis, or bosses, in the beams of the Hall were gilt; the Hall itself painted and whitened; and a seat for the king was placed at the head of the Hall, "versus orientum;" glazed frames were made for the windows, and in the gable of the Hall, "versus orientum," was painted "a wheel of Fortune." These works of decoration were done by "Elias, of Dereham, or Durham," who may be taken as the architect of the Hall. He was the architect of the Early English Chapel (now the Garrison Church) at Portsmouth; the Eastern windows of which are very like those of Winchester. In 1238-9 the king issued special orders that a "Mappa Mundi" should be painted for the Hall. In 1252 the Hall was repainted, and seven years later, in 1259, the picture was renovated.

I will not allude further to the records of works to the Hall in subsequent reigns, until we come to Richard II. and Henry VI. In the former reign there are three Rolls, and in the latter, six, showing considerable work to the roof, and to the north and south walls of the Hall. These probably have reference to the very important and interesting alterations made in the walls of the aisles and in the treatment of the roofs, to which I shall shortly have occasion to call your attention. In the reign of Elizabeth, the Corporation of Winchester repaired the middle roof of the Hall, and the Queen the south side. The Castle remained for more than 500 years the property of the Crown. James I. bestowed it in fee-simple on Sir Benjamin Tichborne and his descendants, for faithful and devoted services which he, as High Sheriff, had rendered to the king on his accession. In the "Great Rebellion" the Castle was garrisoned as a royal fortress, but subsequently taken by Oliver Cromwell, who *more suo* dismantled it and blew up the foundations, happily leaving the old Hall standing. Sir William Waller, whose sister was married to the real owner (Sir Richard Tichborne), obtained a grant of the Castle from the Parliament, whose cause he espoused, and either this Sir William or his son sold the great Hall to certain feeoffees for the purpose of a public hall for the county of Hants. In 1659, and again in 1668, this Hall was repaired by order of Quarter Sessions. How it was occupied from that period until the two ends of the Hall were partitioned off, I do not know. It had been, before that, the place in which the King's Commissions were held.

I have thus, gentlemen, traced this Hall from

a very early period down to its having passed into the possession of the county; it seemed desirable to do so, to show what historical and antiquarian interest it possessed, and what a privilege it has been to have to do with such a relic. In addition to the claim on the interest of the architect which this Hall must have, there is ample food for the appetite of the antiquary in the consideration of the purposes and antiquity of the "Round Table," which was till lately suspended against the eastern wall of the Hall, but which I have found it necessary to remove to the western wall, its old position "versus orientum," if it has anything to do with the "wheel of Fortune" of Henry III., or with the "Mappa Mundi" of 1238.

Sir E. Smirke says:—"In the beginning of the sixteenth century, and probably long before, a round table was an appendage to the Hall. In the reigns of Henry VI. and Edward IV. Hardyng the poet who lived in both reigns, alludes to the table of Arthur as hanging yet in Winchester." Leaving antiquaries to settle the date of this table, and the conflicting opinions upon it, I think we may take Sir Edward Smirke's view of it to be a safe one; he says, "Whatever may be the date of this identical table and its paintings, there is reason to think that if it be not substantially one transmitted to us from the first renovation of the Hall by Henry III., it is at all events a table of ancient lineage, the surviving representative of a very venerable work of art, which once occupied its place, with some allowance for repainting and repair; it is at all events impossible to deny to it an age of less than four centuries, and it is probable that this may be extended to six, but the chances in the present state of the evidence are in favour of some early intermediate date."

From two fine photographs of this table, it may be seen that the original framing of the table took the form of a wheel, with twelve radiating ledges, or spokes, in each of which is a mortise-hole to receive a tenon with two stout pins partly left in; that these could have served any other purpose than to receive legs on which the table would rest, seems utterly improbable; certainly they could have answered no purpose of mere suspension. In addition to these legs it may fairly be assumed that there was a central support. There are evidently two distinct dates of carpentry, the latter of which may probably be that alluded to under the item of "repairs." This table was only taken down from its eastern position at the last moment, when it became necessary to open the communication between the old Hall and the new buildings. I need hardly say that it was lowered and subsequently raised to its present resting-place with the greatest care and anxiety to your humble servant, who felt that if an accident had happened, and the table been smashed, he would most assuredly have had to occupy one of the cells below, which he had just been building for prisoners on their trial; so great is the veneration in Hampshire and Winchester for this relic. Before it was again raised it was secured on the outer edge with a wrought-iron hoop or band 5 in. wide, like the tyre of a wheel, securely key-wedged together, and this *quæstio vestæ*, is now, I am happy to say, securely hung upon the western wall of the Hall.

By the kindness of Mr. Baigent, of Winchester, whose antiquarian information is well known, I am able to show an old print of the Hall, supposed by the costume to be about the reign of Queen Anne. The perspective of the table is somewhat bewildering, it is called "The east Prospect of the County Hall, at Winchester." I venture to think that it is intended to represent the western wall of the Hall, as seen from the east end. The rude representation of a door in the right-hand corner being intended for the Early English one to which I shall refer presently, and the four openings over the gable under which the Judge presides, to the termination of a wooden tube which we have found in this western wall. If this view is correct, the round table, or Mappa Mundi, is in its original position, "versus Orientum."

It was not until the new courts were sufficiently forward to admit of one of them being ready for the following Sessions and Assizes, that I was able to have removed the partitions and fittings of the old courts in the Hall, and to commence opening the communication between the old and the new work. This required a good deal of management and energy and care on the part of the builders and clerk of the works, and of forbearance on the part of all attending the first Sessions and Assizes.

The eastern wall of the Hall and the old wall of the Castle, which abut against each other, give a united thickness of about 9 ft. at one end and 6 ft. at the other to drive through, and this in flint work of the hardest kind required both time and perseverance; and as the courts of the Old Hall had to be used up to the last moment, we were unable to begin removing the old roof of the Hall and putting on the new one, until the opening, and the new courts were ready for use.

The new roof had become a necessity, for I found it in a sad state of decay; and anxious as I was to re-insert one or more pairs of the rafters in the old roof as evidence and an authority for the form and scantlings adopted in the new roof, they were not able to find one pair sufficiently sound to re-introduce; I am therefore only able to assert that both form and scantlings have been religiously adhered to. The plates of the centre roof were trussed instead of having a large flat plate in one piece.

When I was requested by the committee in 1872 to report upon the practicability of erecting new Assize Courts upon the only site belonging to the county, viz. the old Castle ditch on the eastern boundary of the old Hall, I confess I was much puzzled and alarmed when I found that the ground at the bottom of this garden was more than 30 ft. below the level of the old Hall floor, and that in all probability we should find the ground very uncertain for the foundations of the new buildings. However, it seemed so important a point that the old Hall should form the "atrium," or vestibule to the new courts; and though in a secondary degree, that the existing pile of buildings to the north-west of the old Hall, and communicating with it, should be retained for the purposes of the county offices, that I resolved to recommend that we should adapt as best we might the site now built on. Our anticipations as to questionable foundations, were, I am sorry to say, more than realised. The deeper we went the worse they seemed; a mass of debris, cesspools, and pits, with remains of pots and pans, and in several places we had to provide 36 ft. deep of concrete, and none of the important walls less than 30 ft., before we arrived at anything like solid ground; then we came to a dry, hard species of gravel, above the chalk. This depth of concrete, and the necessity for having three stories in height, has involved us in a total height of 120 ft. from the bottom of the concrete to the top of the gables of the courts. As the superficial area for the new building was certainly limited, it was not without advantages that we had considerable height to deal with. It was necessary to provide separate cells for more than fifty prisoners, with accommodation for gaoler, turnkeys, &c. &c. These, with separate staircases leading to the docks, in both courts, and vaults for the heating-apparatus, are situated in the basement story, slightly raised above the adjoining ground, the height of the story being 11 ft.

An iron grille, wide, which gives access to the corridor 20 ft. wide, and to their private lobby, judiciously separating each court, serves also as the communication to the courts for magistrates, counsel, and attorneys; and by means of the two side staircases opening from this corridor access is given to the intermediate floor already referred to.

There can, I think, be little doubt that the smaller Courts of Justice can be made consistent with adequate accommodation for the Bar, for attorneys, and for jurymen, and with a minimum of accommodation for the public and for loungers, and the better will be the working of the courts and its practical usefulness. It is at best a difficult problem to arrange the position of judge, jury men, witness, and prisoner within the smallest radius that leaves sufficient room for barrister and attorneys; but that difficulty becomes proportionately increased as you add to the size of the courts. The committee, sharing this feeling, sanctioned the adoption of courts of very moderate size; the Crown Court being 55 ft. by 32 ft. 6 in., and 31 ft. 6 in. high, having its grand-jury box 18 ft. by 12 ft. opening out of it; the Nisi Prius Court being 30 ft. wide only, instead of 32 ft. This reduction in width was necessitated by the limit of the county property on one side, but it has been found abundantly large for the class of trials which are generally conducted in such courts.

Flint mixed with stone being the material with which the old courts were faced, I felt that the new work which was ultimately intended to

* From a paper by Mr. T. H. Wyatt, read on Monday, the 20th of April; as already mentioned.

group with and form part of the older work, must be carried up with a similar treatment, and as that is so thoroughly the material of that district, I decided on building the main walls with that material, bonding them with courses of brickwork in cement and iron hooping at certain levels, the inner and thinner walls being of brick.

The concrete has been formed of local grey lime (which is an excellent material, like the Dorking lime), mixed with gravel and broken bricks, in the proportion of about three parts of each to one of lime.

It was not to be expected that in walls of such great height and considerable substance (the work being pushed on somewhat more hurriedly than I liked) there should not have been, with flint-work, some slight pinches or inequalities of pearing. They were however but slight, and as the mortar hardened and the whole mass consolidated, these ceased, and the walls appear perfectly solid.

I have already trespassed too far on your attention, and shall add but little here.

In the way of decoration, the Committee hope to fill all the windows in the old Hall with heraldic glass, giving the arms of all the celebrities in the history of Hampshire, painting on the walls of the vestibule the armorial bearings of all the Lord-Lieutenants of Hampshire, and the panels over the dado of the magistrates' room after the manner of college halls, the arms of the various Chairmen of Quarter Sessions, thus giving a sort of county historical interest to the dead new work. These architects present who have had the charge of large public works will, I am confident, agree with me in thinking that a small building committee is not only a boon to the architect, but in all probability of great benefit to the work in question. I was fortunate enough to have appointed, to aid me in this work, a building committee of only three magistrates, Mr. Melville Portal and Mr. Esdaile (the two Chairmen of the Courts in Quarter Sessions), whose experience in the working of law courts has been very extensive, and Mr. Yonge, a magistrate, residing in the neighbourhood, who inherits and bears himself, a great love for antiquarian objects. I cannot close this paper without bearing testimony to the incessant zeal and interest they have taken in this work, and to the personal kindness and confidence with which they have dealt with me. There have been some slight differences between us on matters of taste; but where those existed (and they have been very trifling), I felt that, as the guardians of the work, they had every right to decide; and I have contented myself with the expression of my opinion and of my reasons.

Messrs. Hill & Sons, of Islington, have been the builders engaged, and in the main I have much reason to be pleased with the zeal and energy shown by Mr. T. Rowland Hill, the partner who has had charge of the work. Architects know well how often it happens that up to a certain point in a large work of this kind, everything goes smoothly, and the progress appears all that could be desired; but that, in the later stages of the work, their patience is often tried, and (the fish being father to the thought), they fancy the work could be pushed on much more rapidly. I will not say that such may not have been my feeling in this case, but I do know that here, and in other matters, "there is a great deal to be done on both sides."

We had a most valuable and experienced assistant in Mr. Tooker, the clerk of the works, and the builders had a very trustworthy and anxious foreman in Mr. Houghton. The carving has been done by Mr. Broad, and the heating and ventilating by Messrs. Haden, of Trowbridge. The Purbeck marble shafts of the hall are now undergoing restoration by Messrs. White, of Albion.

The expenditure on these works will probably amount to 22,000l. on the new buildings; 1,000l. on the restoration of the hall, including new oak-roof throughout, and the restoration of the Purbeck marble; 2,510l. on the county offices.

The cost of the new buildings gives a price of about 10d. per cubic foot.

Monument to Lord Byron.—It is stated that a committee has been formed in Venice, composed of an equal number of Italians and Englishmen, for the purpose of organising a contest for the erection of a monument to Lord Byron at some suitable spot in the Venetian territories. Contributions are earnestly requested in furtherance of this scheme.

REPORT ON THE METROPOLITAN BUILDINGS AND MANAGEMENT BILL.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

WE understand that the following report, with some verbal alterations, has been agreed upon by the Council:—

This Bill, which has been brought in by the Chairman of the Metropolitan Board of Works, embraces so many points connected with the professional officers of the Board, as well as with structural matters, that we have deemed it necessary to consider its provisions. This we have done more immediately in reference to its general scope, than with regard to its details minutely; as no doubt they will be thoroughly examined elsewhere.

A most important principle of the Bill is alluded to in the opening observations, in relation to the office of superintending architect of the Board, and to that of district surveyors constituted by statute, who are stated "to have powers and duties independent to a considerable extent of the control of the Board," and this is considered by the Board to be an anomalous condition of things. Under this impression the specific duties of these important offices, as hitherto laid down by Acts of Parliament, are not recognised, but are to be superseded by *bye-laws to be made by the Board*, who concentrate in themselves the functions therein to be stated; and the Board reserve to themselves alone, Section 83, the regulating the qualifications of surveyors to be appointed, and supersede the joint power, hitherto given to and exercised by the R.I.B.A., "of examinations for ascertaining the fitness of persons desirous to be so appointed or employed."

It is also stated in this same paragraph, "that it is expected that an improved administration will grow up, and that the public will be better satisfied when the Board (who are quite irresponsible), and not a number of half-independent officers, are charged with the duties to be performed," who, however, it is omitted to be noticed, are amenable to the Board or Police Magistrates, and liable, by section xxiii., 2, of the existing Act (1855) to be dismissed and suspended. This power, which the Board possess, they would unquestionably exercise, were the superintending architect or district surveyors to be found incapable, neglectful of their duties, irregular, or guilty of improper practices.

But it is asked in how many cases since the Act of 1844 have the district surveyors been complained of, or convicted of arbitrary, or irregular, or illegal proceedings? How many are the complaints made by the builders or the public as to oppressive exercise of their powers, or as to neglect by the fifty-nine district surveyors, to justify their being superseded in the honourable status and position they occupy under the existing statutes? And to what extent would the public be more protected from malpractices, were they to arise, than at present.

We conceive, that the powers given by Sections 81, 83, and 84, in regard to the employment of district and other surveyors, are a most inexpedient substitution of the Board in the execution of the structural duties, as an uncontrollable autocracy, instead of the equitable superintendence by their officers responsible for every act and every omission. It is to be observed that hitherto the power of appointment to district surveyorships, by the Metropolitan Board, has been from an honourable and experienced and duly qualified body of professional men, passed by the R.I.B.A. But by the provisions of the Bill there is no guarantee that such in future will be the case. The district surveyor, in his position as a professional man, is totally ignored; and he may be called upon to execute duties incompatible with his professional status, and be treated as a mere clerk of the works.

Being thus degraded, his influence is lowered with the builders, who will consider him as a mere underling or servant, and he will be deprived of any personal authority over so influential a class of men, so necessary to induce immediate compliance with his requirements as to any irregularities.

The reservation to the Board of receiving all notices and fees, will introduce a complex and confusing circumlocution in such transactions, and may involve useless formal attendances at the central office of the Board, and unnecessary correspondence, when the time of the officers ought to be occupied upon the duties in their districts. Besides which it will necessitate the publication of two bodies of regulations—that is, of the law itself, and of the bye-laws. Be-

tween these the public will be unnecessarily perplexed; for by the Bill it is intended by the bye-laws to introduce modifications in carrying out the enactments themselves.

With regard to the examination and passing of persons, as qualified for the duties of district surveyor,—how are the Board, who are not necessarily duly qualified for this purpose, more exclusively competent than the R.I.B.A. to form a judgment thereon? for they have been hitherto authorised to that effect, conjointly with the Board. Are not the College of Physicians, the College of Surgeons, the Inns of Court, and the Law Institution, the bodies specially appointed for that purpose in their respective scientific departments, from their special qualifications; and have they not, from their professional responsibilities, the greatest interest to pass only duly-qualified practitioners in their several callings?

We trust, therefore, that the 33rd section of the existing Building Act, 1855, will be retained, as to examinations by the R.I.B.A. Allusion has been made to the assumed absolute powers of the Board. This may be illustrated by reference to sections 13, 16, 17, 18, 19, 21, 41, 42, 44, and 70, where the words *unless in any case the Board otherwise allow*, enable them to override or modify precise requirements, and which authority is more generally given in Section 48 of the Bill. And Section 72 seems to supersede in certain cases the powers of any Vestry, District Board, or the Commissioners of Sewers.

In Section 5, page 4, we consider that *Public Slaughter-houses* should be included under the definition of Public Buildings. In Section 21, Part II., we think, that any building erected on the grounds of a railway, if not for the immediate purposes of the railway, or if for the occupation, dwelling, or purposes of trade by other parties, should be subject structurally to the regulations of the Building Act.

In Part IX., Sections 50-5, we think that all notices for a new building should contain or be accompanied by a block plan, showing its position in relation to adjoining buildings, otherwise any intended irregularity of frontage could not be anticipated, as contemplated in Section 52. We submit that it would be desirable for parties, giving notice of any intended erection or work, to pay at the time half the amount of the fee. Because, 1st, very frequently buildings are not begun though notice be given; 2nd, and sometimes are begun but not continued, and are pulled down; 3rd, or are delayed completion for several years. In such cases the Surveyor has no compensation for entering on his books; reporting such notices to the Board; or for watching the commencement, as in the case of new buildings, or repairs in the rear; or for superintending part of an erection discontinued; and finally, making a return of discontinuance.

In Part XI., 63, par. 2, we consider that every building, structure, or work, ceasing to be exempt or privileged, should be made conformable to the Act before being used.

In questions of arbitration, section 97, we think that, where differences arise as to construction, the arbitrator should be an architect or surveyor.

In Part XIV., as to sewers and drains, section 80, it would seem that the requirement that the level of a drain for a building should not be below the level of the crown of a sewer must be an error; for the best point practically is, that a drain should enter a sewer only a certain distance, say 12 in., as hitherto practised, above the invert, which is directly contrary to this rule.

Section III. In previous Acts the duties and functions of the district surveyors are specifically laid down. Should not they, therefore, be specified in the Act as a guarantee to such officers? Otherwise the Board may require duties inconsistent with the position and technical duties of the surveyor, as perhaps to carrying out the Clause 73, where he may be directed to report upon and summon the "Street Artist" for stencilling, drawing, or painting on any pavement or footway in a street, in that clause prohibited! *De minimis curat lex*,—a duty more fit for the police than for a district surveyor.

As to the Schedules.

Part II.—It is not clear from its contiguity to previous Part I. whether Part II. is repealed or retained.

As to the definition of fire-resisting materials, the Board have power (8) to approve any material from time to time as fire-resisting, even felt,

brown paper, or canvas, which has sometimes been used for roofing.

And in 12, no reason is assigned why a stone or slate staircase shall not have its steps tailed into the wall.

Part III. Fire-resisting Doors.

The requirement as to filling in and rendering with concrete fire-resisting doors formed of sufficient wrought-iron framing, seems incomprehensible. And although iron doors are required to be put up in certain warehouses, there is no obligation to shut them at night.

Fifth Schedule.—We think there is considerable obscurity in the term "ground story," and it should not be used in the Bill, as it admits of various interpretations, and may mean a basement story on the lower level of a yard or garden behind a house, or the story on the higher level of the street or way in front. It would be better to adopt the words basement, entrance story, and first story above the entrance story, which will distinctly indicate the respective several lower floors or stories of a house, and avoid the confusion which has arisen hitherto and is likely to arise from the use of the term "ground story."

Sixth Schedule.—We think it desirable, in order to settle doubts and difficulties upon the subject, and to legalise the existing practice, that the following paragraph should be added at the end of the first division in regard to open spaces in the rear:

"Provided always, that the back space on the level of the entrance floor may be occupied by a shop or warehouse, if lighted and ventilated by a skylight above in the ceiling or roof, and be not used for sleeping in."

Schedule XII.—In regard to the fees, we presume that the sums to be paid on Public Buildings and School Houses are to be in addition to the amounts previously laid down for ordinary buildings, in consideration of the responsibility and extra duties required for them; otherwise the remuneration is inadequate.

Conclusion.—We are not aware that the Metropolitan Board has consulted the district surveyors, or required their advice and opinion in drawing up this Bill. In fact, we should think the contrary, for there is not a page relating to structural matters which does not require many corrections, which the experience of those practical officers would have suggested. We think there is much confusion in the requirements of this Bill as (*exempli gratia*) to party structures and the rights of building owners and adjoining owners, contained in one separate part of the existing Act of 1855, but here is this Bill confusedly mixed up with other matter.

In fact, we are of opinion that if, instead of an entirely new Bill, the old Act had been retained, being so well practically understood by district surveyors and builders and proved by experience, and had been amended as the working of so many years would suggest, the result would have been more satisfactory, both to the public and to all engaged in carrying it out. At the same time we consider the appointment of a magistrate with assessors specially for the Act, section 86, to be very judicious, as there will be a greater chance of correct decisions on matters most frequently of a purely technical nature; and greater uniformity in the interpretation of the Act will result.

THE MEDICAL OFFICERS OF HEALTH, AND THE METROPOLITAN BUILDINGS AND MANAGEMENT BILL.

At a meeting of the Society of the Medical Officers of Health, on Saturday, Dr. Liddell called the attention of the members to the Bill now before Parliament, "The Metropolitan Buildings and Management Bill." He said the Act was framed in so imperfect a manner, and fell so short of its requirements, that its second reading should be stoutly opposed. He criticised in detail several clauses, which were either ambiguously worded, or defective in their provisions. The precautions to insure proper light and ventilation were notably absent, and he strongly condemned the power vested in a Local Board by schedule 6, allowing discretionary powers in such an important matter as ventilation. The Bill did not prevent houses being built back to back, thus excluding light and air. It did not enact that each house should have a yard of its own, and a closet of its own. It did not touch upon roads or foot ways; and, finally, did not provide for proper drainage. A Bill more deficient in wise proposals, and altogether more impotent, he maintained, it was difficult to conceive. It was not so good a measure even as the one which it was intended to supersede, and omitted a very valuable preamble and clauses directly affecting sanitation. He wanted to see a law directing that no new house should be occupied until it had been certified by a competent person that it was, in all respects, fit for habitation; and this, if acted upon, would really practically serve all ends. The Bill was referred to the General Purposes Committee to report.

NEWS FROM PARIS.

New Churches.—The late Archbishop Lebow commenced, some years before his death, the execution of a simple plan for bettering the moral and material condition of the Paris labouring classes. This plan was the erection of a considerable number of churches in the more populous parts of Paris. He conceived that by this means the Voltairean labouring classes might earn high wages, and fashion at the same time the instruments of their spiritual regeneration. It is possible that the plan succeeded in a measure, for the present Cardinal-archbishop has taken it up, and is vigorously putting it into practice. No later than October the new church of St. François de Sales was consecrated in the workmen's quarter of Monceaux; and last week, in the Villette Faubourg, a second, named St. George's, in accomplishment of a vow of Mgr. Darboy, was formally inaugurated. This latter edifice occupies a space of 12,000 metres, which gives it about the same dimensions as St. Eloi and St. François de Sales. It numbers 32 metres in length by 23 metres (of which 17 metres are taken up by the nave) in breadth. The key-stone of the vault measures 18 metres from the basement. The body, containing seven arches, is flanked by rather spacious minor naves. The style of the edifice is Romanesque. Its façade terminates in a quadrangular tower, surmounted by a spire. The cost of construction amounts to no more than 200,000 francs. On the other hand, the projected church of the Sacré Cœur, at Montmartre, progresses but slowly. A fierce battle, it will be remembered, was fought on the subject by the legislative Right and Left, and to elicit a public condemnation of the Opposition, a subscription was set on foot to defray the cost of the building. This plan having produced but an insignificant sum, the works have been discontinued from time to time, and, after the labour of a year, are not yet raised above the level of the soil.

Archæological Restorations.—The Paris Municipal Council is endeavouring to unite the *utile* with the *dulce*. It is negotiating the purchase of a large block of buildings in the chiffonniers' quarter, which encumbers the historical tower of the Dukes of Burgundy, the ancient dwelling-place of Jean-sans-Peur. The tower is to form part of a series of school buildings, where poor pupils of both sexes will be received, and their teachers lodged. Moreover, a subsidy will be demanded from the Government for the renovation and maintenance of the historic monument. Another curiosity of old Paris is to be renovated by the Municipal Council, is an ancient bas relief on the façade of a house in the Rue Mont Parnasse, which represents Julius Caesar on horseback. It is set in a salient frame over the *porte cochère*, and measures 1 mètre 50 centimètres in height, and 80 centimètres in width. Caesar is represented with the imperial insignia and the laurel wreath; before him is a group of bareheaded. The origin of the sculpture is unknown. All that has been discovered concerning it is, that it served early in the sixteenth century as the sign of a Café de Jules César, in the Rue de la Harpe. The restoration of an historical monument has also been commenced in the Rue de la Ferronnerie. In 1610 the ground-floor was occupied by an apothecary, and it was here that Henry IV. was transported after his assassination by Ravallac. A terra-cotta bust of the king was placed over the doorway a few months after the event.

The right wing of the *Palace of the Institute* is undergoing a radical transformation. The alterations, which are nearly completed, are destined to afford room for the Archæological Museum of M^{me}. de Caln. The new museum is composed of a vestibule, at the further end of which a deep niche has been constructed to receive the bust of the lady, and of two parallel galleries, 25 metres long, situated to the right and left of the vestibule. Each of the galleries, lighted by five broad windows, is ornamented with pilasters supporting iron beams, which divide the ceiling into four parts. Each of these spaces will be covered by frescoes by the prizeholders of the *École de Rome*.

Medals.—An exchange of commemorative medals has just taken place between the cities of London and Paris. Among those from the latter capital are the medals struck in memory of the construction of the churches Sainte Clotilde, Saint Bernard, Saint Augustin, the Trinité, Saint Ambroise, Notre Dame de Clignancourt, and of the completion of the Central Markets, the Tribunal of Commerce,

the Abattoirs of Villette, and the new Palace of Justice. There are also the commemorative medal of the piercing of the Great Boulevard, and one reproducing the celebrated wall painting by Ingres, "The Apotheosis of Napoleon I."

The Venus of Milo.—M. Fieard terminates his studies in the *Temps* on the Venus of Milo with the mention of some curious artistic facts. He has already demonstrated that the statue was injured in a struggle which took place between the French sailors and the Greek islanders, who dragged it with cords through the rocky defiles of the coast. But his complementary statements relate to facts which are less known and more important. It appears that with the statue certain fragments relating to it were remitted to M. Marcellus, and these fragments are still in the cellars of the Louvre. The most important are,—No. 3, the upper part of the hair, vulgarly called the chignon, which I replaced with my own hands, and which adapted itself marvellously to the upper part of the skull. No. 4, a fore-arm of imperfect form, and mutilated. No. 5, half a hand holding an apple. These last two objects seemed to me to be made of the same marble, and similar in grain to the statue; but I could not affirm that they do not belong to a Venus of character unknown to me.

THE NEW PEABODY BUILDINGS, STAMFORD-STREET.

ONE of the largest piles of dwellings for the industrial classes which the Peabody trustees have hitherto built, is now in course of erection on a plot of land, upwards of two acres in extent, in Duke-street, Stamford-street. These buildings, which consist of sixteen separate blocks, are almost completed, and ready for occupation, the internal arrangements and fittings being in an advanced state, and it is expected that the tenants will take possession in the early part of summer. The several blocks are each 70 ft. long and 32 ft. deep. They are 50 ft. high, consisting of the ground floor and four stories above. At the entrance from Duke-street, out of Stamford-street, there is a block fronting each side of a spacious roadway of the same width as the street. Two other blocks, running east and west, have their frontage to Duke-street. Turning to the right leads into an open space, on each side of which there are three other blocks. In the centre of the two blocks facing Duke-street, a passage, about 16 ft. in width, leads into a large open square, containing an area of about 5,000 superficial feet. On the right hand of this open space there are two more blocks, having their frontages to the square; whilst on the left hand side there are three blocks running east and west, with openings, or what may be called streets, 32 ft. in width, between each block. At the south side of the square there is another block, alongside which, proceeding in a southern direction, there is again a passage the same width as that already named, which leads into another open space, on each side of which are the three remaining blocks at the south boundary of the site. The extreme depth of the site upon which the buildings stand, from the Duke-street entrance to the Rouppell-street boundary on the south side, is 445 ft., and the extreme width 300 ft. They are uniform in design and external appearance with the buildings in Blackfriars road, and their internal arrangements also generally correspond with those buildings; but in one particular they differ from the last-named structures. Each block has its separate wash-house, with coppers, wringing-machines, drying rooms, and laundry, at the top of the building, whilst at the establishment in Blackfriars the wash-house and laundry are in a separate building, used in common by the whole of the tenants. The new buildings will accommodate 386 families, there being 21 tenements in each block. The architect is Mr. Darbishire, and Messrs. Cubitt & Co. are the builders; M. Lumsden being clerk of works.

Ely Chapel.—A Roman Catholic paper states "That there is no longer any danger lest the noble monument of ancient Christian art, Ely chapel, near Holborn, should be doomed, as was lately apprehended, to destruction by railway iconoclasts. Ely chapel, which is now held on lease, shortly about to expire, by a Welsh community has been bought by Father Lochart, the Order of the Fathers of Charity, and may well soon again be offered up in that noble chapel for the first time since the Reformation."

OLD LONDON AS VISIBLE IN MAPS.

ALL have heard of that famous leather boot which has so many times been altered and repaired with new pieces, that at last nothing of it, as it at first existed, remained; yet still it was the same boot, and no other. This has puzzled not a few mortals who have looked at it, and thought of it as an exceptional phenomenon, but it is not so, for the very same process goes on, and is now going on, in most large towns and cities. The old town or city gradually and almost imperceptibly disappears, and the new one takes its place. It is the old town still, with the old name and remembrances, yet is all new and everything in it new, and not a fragment of the original work may remain in it. It is old, and yet it is new. Take London city, for instance, and compare it as it is to-day with the same town as it existed even a century back, and you will find again with it as in the days of good Queen Elizabeth, and in Shakespeare's time, and as it may be seen in the map we have already alluded to, published in 1560 (about), and then with the town as we may picture it to ourselves in the early Gothic days, before the "Renaissance" was even so much as thought of. A really good "History of London" is yet a desideratum, as it follows each other, and as all things in and about the great city passed away and became new again, and again grow old.

The world, indeed, has more than the usual reasons for feeling an interest in such building changes as these in the instance of great London. London was the stage in and about the year of 1600, and before and after, wherein our Shakespeare did his work in this world, and it must needs be of normal interest to get a glimpse, even if but a passing one, of the town, and its streets, as they were when he lived, and as they contrasted with those same streets and byways, and houses nowadays,—all the same in name and position, but still so different, so altered, and so metamorphosed. A right curious subject, growing stranger and stranger as you look at it. A few dates may help to make the subject clearer, and will help us to realise more thoroughly the changes that have occurred. It would seem to be vain to attempt to picture to ourselves old Roman London, though we have often wondered that some imaginative painter has not done to work on it, and tried to reproduce it. It is worth the effort, and is a thing in which much imaginative power and hand skill, if not your own, might well find delight. We have often thought of the old Roman London! Watling-street as it now is, and threatens to become; Watling-street in its old quaint Gothic and earlier building days; and the Roman Watling-street, or "via," this last perhaps the strangest of all, could we but get a glimpse of it. No maps in those days, and no record now of what it was right and left out of famous Watling-street. So we must come later down in time for first record, however faint. One of the earliest, may be the very earliest record of past London, is about 1547, and is not a plan or map, but a view, and the next is the bird's-eye plan and view, which may be seen in the City of London Library, done in the reign of Queen Elizabeth. It dates about the year 1560, as near as may be, and really and truly takes the spectator into the very city itself, and into its quaint and picturesque streets and highways and byways. It is not in any sense an imaginative production, but a picture of reality as it once was, quite as literal and truthful as anything Hollar ever produced. All the main thoroughfares are shown, and with their names early written on them, so that there can be no risk of mistake. There is of course the river Thames, in enough, with the Queen's state-barge and its following, and the Fleet Ditch, and other water-courses. And then there is what would be called now a-days the strangest sight of all—London-bridge with its row of timber-built houses on either side of it. A capital perspective of this strange street of houses is given on this map, and it shows more than all else how far off they now are from it and from things as they had existence in that strange and quaint time. If a picturesque be sought for, here in this bridge over the water, it must surely was to be found, for nothing can well be conceived to be more picturesque forming than the way down this broken row of quaint irregular and timber-built houses. There is nothing in London town now that has any place by the side of it as an architectural picture. This is to be seen in this matter-of-fact plan and likeness of

old London. Be it remembered that this unique bridge of houses disappeared in the Great Fire of London, in the year 1666, an important date to remember, when speculating on the old and new. Datasets dry reading to not a few people, but they are important, and not a little useful here; for it is noted in passing that Shakespeare came to London in, or very near to, the year 1585, so that in this picture of London we may see, not the city as it now is, but the city as he saw it, and must have seen it, and so looking down the narrow streets with gable-ended fronts, we actually do see the very streets down which he must have passed, almost daily, with his "company" sometimes to and from his famous theatres—sometimes the Globe, and sometimes the Blackfriars. Between a modern fine and fashionable highway, and these narrow and darkened passages, there is indeed a contrast; and to those whom it concerns food enough for thought and speculation. We could fill much space here with cogitations, theatrical and otherwise, but must needs forbear; the times are practical, and dreamings forbidden, but we cannot help asking here—what the loss or the gain, in the exchanging the London Bridge of the past for that of the present, with each its surroundings and belongings. There can be no doubt that the bridge, as at present, is by a long way the most convenient of the two, and the strongest and the easiest to pass over, as far as footways are concerned, and cart and horse traffic, and it may be the cleanest; but when we come to things artistic and picturesque, and picture-composing, and mind-entertaining, and eye-satisfying, then it is that the distance and difference between the two things becomes, indeed, noteworthy, and not a little puzzling. For the mere act of walking across with ease and speed the London Bridge as it now is, of solid granite, is of course an improvement on the old one, not so firm or so stable; but for the mental pleasure in the walk, and for the artistic and contemplative eye, the old bridge, as Shakespeare saw it, and walked over it, must have had the best of it!—the poetry of bridge-building, we will call it.

Successive "Londones," therefore, even as they are to be viewed and understood on maps, are things of note, and carry us into the several centuries in a way which hardly anything else can do; and it is interesting even to glance at a map of London as it was at the beginning even of the present century, before railways were thought of, or had any existence. We might imagine ourselves gazing at another town altogether. High-roads on a map, as in reality, are different things from railroads; and there is a sort of desolation about the outskirts of a town, when railroads are not scattered over it, which gives a map quite an antique and old-fashioned look. The smallness of the City becomes not a little striking when compared with its present dimensions. Shakespeare's London could have been barely three miles across from east to west, and not more than two miles from north to south. Contrast these small dimensions with the present mileage,—thirteen miles one way and eight miles the other, with "rails," which seem to indefinitely extend the brick-and-mortar streets, and to almost devour the country and the green fields as they thread their tortuous way through them. And then, again, the height of the present London houses in the thronged thoroughfares: why they reach well nigh to the old church towers and steeples, and serve but to dwarf them. What, we sometimes think, would the thoughts of the inhabitants of Fleet-street, as it then was when this map was drawn, have been, could they but have imagined to themselves what their low and humble tenements were destined in the future to grow up to? In this old map of London we can see a little of this.

So many questions crop up and force themselves on attention while looking at these maps of the present and past, that it is difficult to determine what to leave unsaid. But the main interest architecturally and artistically lies in the special and distinctive character of the streets, in their arrangements and planning, and in the individuality of the houses in them, and in the comparative narrowness of the streets, perhaps, more than all; for it is in those narrow ways that the "picturesque" grows so luxuriantly preserved, all this and a good deal more may be plainly enough seen; and the question forces itself on the attention, very difficult to get rid of, much less to answer satisfactorily. What is architectural, or rather perhaps artistic "improvement and progress"? We do not

hesitate to affirm that did but a *bond fide* old London street, with all its drawbacks and sins upon its roofs, still exist, it might be closed at either end, and opened now and then as a picture-show and book of quaint architecture, and would be pronounced a place full of artistic and architectural teaching, and means of improvement, and food for the artist mind in its many details, and quaintnesses, and architectural inconveniences. It is really mind *versus* matter, mental interest overpowering bodily inconvenience and discomfort. Can, then, the two be combined in any and in what way? It is a curious and artistically intricate problem, and may exercise the skill and ingenuity of those who love mystery, and difficulties, and hard problems. Such should study well this map, so carefully copied and reproduced in facsimile, that all may see it who care to do so.

MOVEMENTS IN EDINBURGH.

AN American gentleman visiting this city gives expression in the public prints to his admiration of its beauty, not the least remarkable items of which are the numerous buildings surrounded by ornamental grounds, erected for educational purposes. In the grounds attached to one of these—Stewart's Hospital,—his attention was directed to a notice that the ground attached to it was offered for building purposes, and he expresses his surprise that such an act of vandalism is contemplated. Public attention having been directed to this attempt an outcry was raised against it, and apparently the attempt is abandoned. This institution is under the charge of the Merchant Company, which body has three other similar institutions under its direction. These institutions were of a similar character to the Blue Coat School, but powers have recently been obtained for divesting them of their monastic character, and converting them into day schools, with a few foundationers, who are boarded out, and where a liberal education is given at a very moderate charge to the children of the citizens generally. It is difficult to see why this change in the character of the institutions should lead to the destruction of their ornamental surroundings, unless it be with the purpose of increasing the endowments, and thereby enhancing the benefits to be derived from them; but a gain in that direction would hardly be compensated for by the loss in another.

In our last building notes we stated that the ground to the north of the Queensferry-road had been offered for building purposes, and remarked upon the beauty of the situation, which commands fine views of the Forth, the Fife Hills, and the wooded heights of Corstorphine. This ground it is thought desirable to keep open, and a committee has been formed with the view of having it converted into a public park; so that we have here the anomaly of a recognised public body endeavouring to cover the ornamental grounds under their charge with buildings, and a voluntary association formed for the purpose of preventing building on unornamented private property, and converting it into an ornamental park.

The park question is also under discussion in the Town Council. A plan has been obtained from Mr. Kemp, of Birkenhead, for laying out the meadows. This ground consists of an oblong level grass sward, extending to about a mile in length from east to west, and about 300 yards in breadth. It is bordered by a belt of trees, and surrounded by buildings, except to the south-west, where there is an open space called "Bruntfield Links." The plan embraces numerous walks and clumps of shrubbery, and the contracting of the breadth of a broad central avenue, which bisects the ground from north to south. The south-west, being the prevailing wind, sweeps with considerable force down the Links and across the meadows, and any attempt at growing shrubs there hitherto has not been successful. The expanse of verdure is, on the other hand, in excellent condition, and it is contended that it would be inadvisable to cut it up too much and divert the ground of its meadow-like character, and that all that is needed is a judicious planting of forest trees and the formation of walks where absolutely necessary. It is also contended that, by contracting the central walk, it would not be improved, and that an inner row of young trees would not flourish under the overhanging branches of those now bordering the avenue.

The foundation stone of a Home for Sisters of

Charity, in connexion with All Saints' Episcopal Church, Broughton-street, has been laid at the north-west angle of that building. Mr. Robert Anderson is the architect.

The Royal Blind Asylum falling short of the requirements, a new asylum for females is in course of erection, at a cost of 13,000*l.*, from the designs of Mr. Charles Leadbetter, architect. The site is to the north of a new road to be formed connecting the old and new roads to Libberton. The front elevation shows a clock tower in the centre, rising to a height of 80 ft., surmounted by a dome; the body of the building is three stories in height, and is flanked by wings having mansard roofs. Besides sleeping-accommodation, there is a dining-hall 45 ft. by 28 ft., two workrooms 72 ft. by 20 ft., library, &c. It is to be surrounded by a space of four acres of ground, and laid out and planted ornamentally.

The great central hall of the Museum of Science and Art is now completed. The western wing still remains to be built in order to carry out the design in its entirety. Immediately to the west of this important public building, there is a congeries of old and ugly buildings, which it is to be regretted were not acquired by the Improvement Trust; their value has been considerably enhanced by the improvements effected in the neighbourhood, and there is small hope of their being brought into harmony with the surroundings.

A public meeting has been held with the view of promoting the collection of funds for the proposed new medical class-rooms in connexion with the University. Much sympathy was expressed with the movement, and upwards of 58,000*l.* has been subscribed towards the sum of 100,000*l.* required. It is expected that Government will give a grant in aid, and the balance will doubtless be forthcoming in due course.

The new Presbyterian Church at Palmerston-place, designed by Messrs. Peddie & Kinnear, in the Italian style (the design of which was formerly described by us), is nearly completed as regards the exterior; it is suitable to the locality, and not without merit as a design, though somewhat tame and characterless. A better effect would, we think, have been obtained if instead of two low towers one only of greater importance had been adopted.

The committee formed for the restoration of the choir of St. Giles's have now completed their undertaking. The eight niches in the veredos have been filled in with statuettes in Green stone of prophets and evangelists, and reliefs illustrative of the beatitudes have been inserted in the panels of the pulpit. The carving has been skilfully executed by Mr. Rhind, from the designs of Mr. Hay, the architect for the restoration. The expense of the restoration has exceeded the estimated amount by upwards of 3,000*l.*, and this it seems was caused by the action of the Government requiring the royal pew to be placed at the west end of the choir instead of near the east as at first contemplated. This alteration necessitated an elevation in the seats allotted to the judges, as also to those of the magistrates of the city. The town council for its part have doubled the original subscription of 250*l.*, but Government has only inserted in the estimates a sum of 500*l.* for its part, which falls far short of what was incurred by the position taken up by Government, and a movement is to be made in Parliament to procure from the Legislature an equitable adjustment of the debt.

Workmen are engaged in putting in concrete for the foundations of the new cathedral. It will be a considerable time before much appearance is made, and before a few years are over we trust the funds will be forthcoming for carrying out the entire design in an effective manner.

PROTECTION OF LONDON AGAINST CONFLAGRATION.

The Society of Arts' Committee on the means of protecting the metropolis against conflagration, having examined and obtained information from persons of the highest practical experience on the subject referred to them, have presented their report to the Council of the Society. In the outset the report says:—"It is proved that, by reason of defective mechanical and structural arrangements, as well as insufficient supply of water, in addition to the danger of ordinary fires in single houses, or a few houses at a time, the metropolis is exposed to such extensive conflagrations as have occurred in the United States, at Chicago and Boston. This danger is considered by insurance com-

panies to be considerable and well deserving attention."

The following are the conclusions adopted by the Committee from all the evidence, as well as that taken before recent Parliamentary committees, as that taken before the Committee itself:—

1. That of the separate sections of the eight trading water companies' services, in the metropolis, only about one-third of the mains are kept in a state of constant pressure, by the want of proper hydrants and apparatus, in constant use and preparation; there is frequent delay in obtaining adequate supplies for extinguishing and preventing the spread of primary fires, causing frequent loss of life and great loss of property.
2. That from these defects in the existing provisions for protection against ordinary fires and conflagrations, and from entire dependence on separate sections, and independent supplies with only the existing defective apparatus, the metropolis is now, from large and increasing masses of unprotected buildings, peculiarly exposed to increasing dangers on the occurrence of any fire from accident or design during hurricane winds, to devastating conflagrations, such as those which have occurred at Chicago and Boston.
3. That to guard against extraordinary conflagrations, as well as to check ordinary fires, measures ought to be taken with the least delay to put the whole of the metropolis on the constant system of supply, under such conditions that the entire force of the whole area of supply may be brought to bear upon any considerable fire occurring in any part of it.
4. That whilst there are frequently serious deficiencies in the supplies of water under the existing conditions, there is a constant waste of between thirty and forty millions of gallons daily,—a quantity equivalent to the adequate supply of between one and two millions of additional population,—a waste which lowers power and is being saved by putting the entire supply on a public footing.
5. That whilst the executive arrangements for the administration of the supplies are disjointed and defective in important parts, there is an estimate required of upwards of 1,000*l.* per annum of expenditure beyond what would suffice for the administration of a more efficient combined system of local administration.
6. That this sum, if managed with unity of management, would suffice to relieve the consumers of water from the expenses of altering their house services, to defray the expenses of the hydraulic engine, and of making the other arrangements needed for the protection of the metropolis against extraordinary conflagrations, as well as to give better protection against the ordinary losses of life and property from fire, as well as effect some needed sanitary improvements.
7. That under practical arrangements, whilst the shareholders and officers of the several companies may receive liberal compensation on recognized principles, the consumers may receive an improved constant supply, and the public may receive additional service without additional rates.
8. That, from the inadequacy of administrative areas, and from defective constitutions, inadequate functions, and from the want of the special scientific preparatory and special agencies needed, the chief existing local authorities, as now constituted, are ineligible to effect with efficiency and economy the complete change of the system of metropolitan water supply required.
9. That, under existing conditions, and the urgency of the earliest arrangements, the most expedient practical course for protecting life and property, and staying soaring waste, will be to appoint a special commission, provisionally, to get the several parts together, to supply the specified defects in the apparatus, and to get the whole into the earliest complete action, in one system, and that system a public one."

There are questions, adds the report, remaining for consideration,—as to the alterations required in the functions of the police in connexion with those of the Fire Brigade, for working an improved system of water-supply for fire prevention; also questions of structural arrangements for the prevention of fire; and the collateral sanitary question as to street-cleansing and road-watering by jets from the hydrants, which are not so immediately pressing as those treated of, and that may stand over for separate examination and report.

The report is signed, by order of the committee, by Mr. P. Le Neve Foster, the secretary of the Society.

THE NEW MEMORIAL PULPIT, PETERBOROUGH CATHEDRAL.

This important addition to the nave of the cathedral is the design of Professor E. M. Barry, R.A., and is the gift of the three sons of the late Canon John James, to whose memory it is dedicated.

It occupies a space about 14 ft. long, and 6 ft. wide, near the choir screen, and a little south of the northern range of piers, and is 10 ft. high. The length of the structure is at a right angle with the axis of the church, and the position of the preacher is towards the west.

The style and period of the architecture of the pulpit is that of the richest Norman, and is in accordance with the ancient cathedral. The materials employed are the red sandstone of Dumfries, the finer-grained red sandstone of Mansfield, the red Ipplepen marble, and the verd antique marble that of the veined serpentine character.

The principal feature in the design of the rostrum is on plan a large square. Its massive floor supports the walls on three sides, which,

with the cornice above, is canted octagonally at the four corners into recesses, which contain statues. Each of these statues is flanked by two columns, with bases and capitals, whereon the upper cornice rests.

The floor is upheld by a large central shaft and four angle pillars under the statues, and the whole is based on the nave floor by a massive plinth, which extends northward to carry its steps. At the foot of the steps are newel pillars, with caps and bases, against which abut the handrails, and between which are the two lower steps. On the platform, north of these, rises the spandrel masonry, which carries the other eight steps, and on this rest the two sets of four pairs of baluster pillars, which support the handrails between the last-named newel pillars and the upper cornice.

The details of the work may be thus briefly described. The plinth of the pulpit is square, having a moulded torus, with foliated angles. The circular base of the central shaft is richly moulded and carved with two sets of cable and bead ornament, and the circular cap of it is highly ornamented with indented semicircular inverted cone-work, alternating with scroll and bead ornament. The bases of the smaller pillars at the angles have enriched torus mouldings, and the four capitals are carved with foliages, animals, and scroll-work, resting on which is an architrave elaborately wrought into interlaced arcading and bead-work, with foliage pendants, surmounted with a bed-mould of billet-work. All this is of the red sandstone. The massive central shaft is of red Ipplepen marble, and the four angle-shafts are of verd antique. The whole is surmounted by a square slab of verd antique, on which rests the pulpit proper.

The ascent, commencing between two red marble pillars, with carved bases and caps (the latter surmounted by a marble abacus), is formed by five platforms, each 12 in. high. On these rest five red marble baluster pillars, with their stone bases and capitals, and on each platform is placed an intermediate step, shorter, and with canted ends, thus combining an easy ascent with a massive and effective grouping of the pillars and spandrels. Against the large pillars at the foot abut the handrails, rising to the cornice which surmounts the pulpit. They are formed of a lower bed of stone, moulded and carved with foliage and bosses, and capped with a moulding of red marble. The upper openings of the baluster pillars are united to the pulpit by arches. The western spandrel bears the shields of arms of the diocese and of the deanery.

The body of the pulpit is formed by three large square panels, enriched with deeply-cut circles, the mouldings of which consist of zigzag and billet work, surrounding respectively a floriated cross, an *Agnus Dei*, and a monogram. The panels (which have carved eyelets) are flanked by six marble pillars, with moulded bases and carved foliage capitals of stone, and these form recesses for the statues of the Evangelists. Between the bases is a moulded base to the panels, and between the caps an enriched foliage cornice. The whole is terminated by a massive marble capping, moulded and wrought with nail-head ornament, on which rests a desk of brass, and corresponding gaseliers of one jet each. It is further beautified by a large cushion of Utrecht velvet.

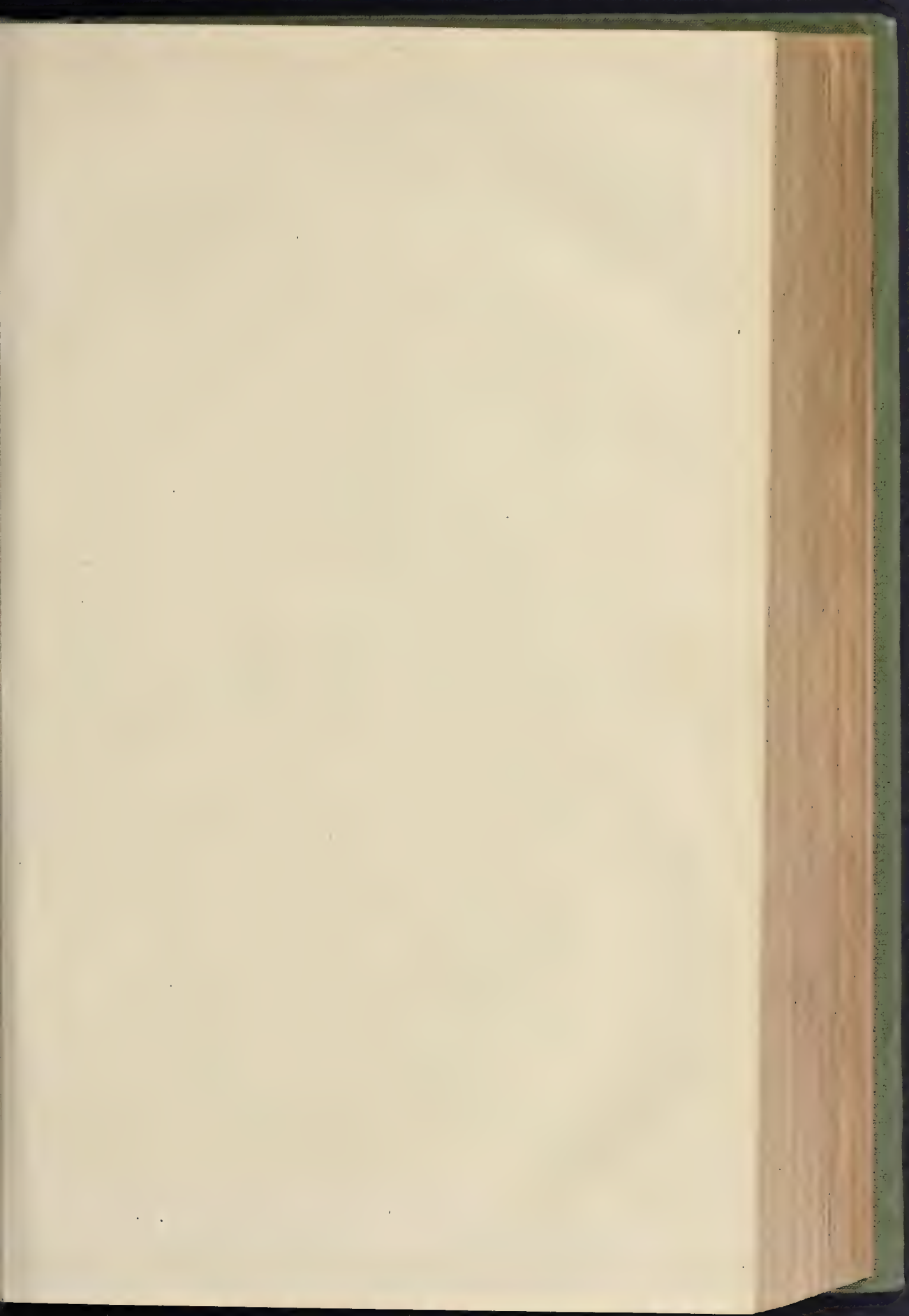
Around the edge of the marble floor the following inscription is engraved and gilt:—

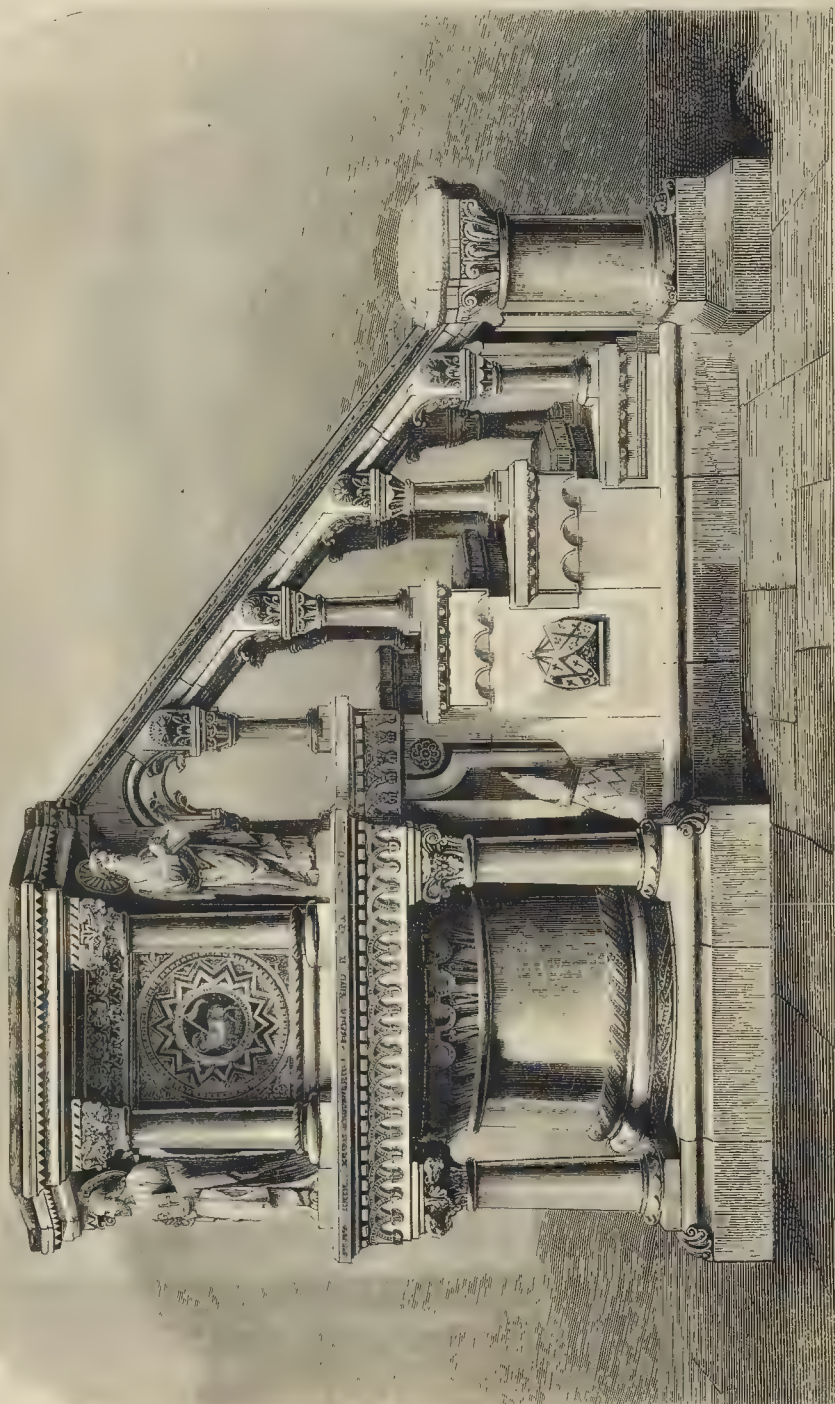
IN MEMORIAM JOHANNIS JAMES S.T.P. HUGO ECCLESIE CATHEDRALIS XL ANNOS CANONICI P.C. FILII SUPERSTITES A.D. MDCCCLXXIII. OB. XV. DEC. MDCCCLXXIII. ETAT. LXXXV.

NEW ALTAR IN THE CHURCH OF THE AUGUSTINIAN CONVENT AT BRUGES, BELGIUM.

Our engraving shows a new altar for the chapel in the Rue des Carmes, Bruges, for which Messrs. Porry & Hauson, of York Buildings, Adelphi, have been instructed to prepare working drawings and specifications. It is to be made entirely of Carrara and Belgian coloured marbles; the carved work heightened with gold.

The chapel in which this is to be the secondary altar, is a picturesque seventeenth century building, having a central dome, and with a choir for the ladies of the convent arranged as a second story over the nave. The present high altar is an elaborate work, manufactured in Rome, entirely of antique marbles.





MEMORIAL PULPIT, PETERBOROUGH CATHEDRAL.—PROFESSOR DARRY, R.A., ARCHITECT.



NEW ALTAR IN THE CHURCH OF THE AUGUSTINIAN CONVENT, BRUGES, BELGIUM.
MESSRS. PERRY & HANSON, ARCHITECTS.

THE SYMBOLISM OF ORIENTAL ORNAMENT.

In the course of the paper by Mr. William Simpson, which was read at the Society of Arts, the reader said:—In all styles, and in all countries, the mere enrichment of surface by means of form and colour is to be found, and it must ever exist as one of the natural divisions of ornamental art. Still it is low art in this walk. It only appeals to the eye. It was not till ornament became symbolic that it appealed to the mind, and became in a sense high art. Symbolism no doubt began early, still not till a certain stage of civilisation had been reached; for it implies thought, and the development of abstract ideas. The poetic faculty is to be found in very primitive races. The expression of this faculty in words we may be sure came first; its expression in symbols indicates more mature powers, and that definite ideas had been reached; for it implies thought, and the development of abstract ideas. The poetic faculty is to be found in very primitive races. The expression of this faculty in words we may be sure came first; its expression in symbols indicates more mature powers, and that definite ideas had been reached; for it implies thought, and the development of abstract ideas. The poetic faculty is to be found in very primitive races. The expression of this faculty in words we may be sure came first; its expression in symbols indicates more mature powers, and that definite ideas had been reached; for it implies thought, and the development of abstract ideas.

It is only beginning to dawn upon us how wide and comprehensive this system of symbolism had become in past times. It seems to have embraced everything. The flowers of the field were all symbols; the trees of the forest had each some sacred meaning; the animal world figures largely in the old system; the stars are known to us from the zodiac or forms of living things, which are older than any history we possess; the world itself became only a symbol, and man was made in the image of God, thus completing this grand and beautiful system. The ceremonies of each faith were all symbolical, and the temples in which they were performed were constructed with a meaning in each of their parts. From the primitive grove mound up to the elaborate Gothic cathedral, symbolism is known to have been expressed. In the parables, myths, fables, and legends of the past we have put into words only another form of this symbolic tendency of the human mind. The Oriental has at all periods been essentially a religious man, and his literature and art are all devoted to his faith. His art was employed in making figures of his gods, or images of them; hence ancient symbolism is nearly all purely religious in its signification, and the symbolism of art in those past times now holds the place of one of the branches of the new and important science of comparative mythology. He more minute study of ornament and its emblems is also becoming most valuable in the regions of archaeology. The explorations and excavations now going on in the East are giving us many remains of past times, and our only means of knowledge, in many cases, as to their makers or their date, has to be derived from the art upon them. Art knowledge is thus a branch of archaeology. I had a good illustration of this myself, which is worth recording, for it refers to an important point in history. When I went to India, I had heard of the celebrated gates of Omnath, and on visiting Agra made it a duty to make sketches of them. I may explain that Omnath was a Hindoo city in Western India, temple celebrated for its rich endowments. Mahmood of Ghaznee made a raid into Hindostan in the eleventh century, during which he took the city of Somnath, and looted the temple, carrying back with him its beautiful sandalwood gates. When Mahmood died, history says that the gates were placed on his tomb. When our army invaded Cabool, in the time of Lord Ellenborough, the ornamental gates on the tomb of Mahmood, at Ghuznee, were brought back to him in triumph, and have been kept in the port of Agra. When I sat down to sketch these gates, it never occurred to me to doubt their historical reputation, but the operation of drawing soon produced scepticism, for there was no old art or symbol upon them. It was only Mohammedan in every detail, and I came to the conclusion, which amounted in my mind to certainty, that they could not be the Gates of Somnath. I mentioned the matter to many Indians at the time, including the Governor-General, Lord Canning; and all told me that they could be no doubt, and Lord Ellenborough's celebrated proclamation was in every case referred to. It was only on my return to England

that Mr. Fergusson informed me that the wood had been inspected by a microscope, and this scientific test proved it to be of deodar pine, and not of sandal wood. Mr. Fergusson, at the same time, admitted that the ornament was in itself a sufficient evidence to prove that they could not be the original gates.

There is a model of the Sanchi Tope in Central India at South Kensington, and a perfect fac simile of one of its gates.

The lotus figures largely upon it, and if we analyse the signification given to this flower by both Buddhists and Brahmans, we find a key to much of the religious meaning of ancient symbolism. We have the lotus as an Egyptian ornament, and it figures in many ways in their system of decoration, but I am not quite sure whether our Egyptologists have exactly explained the signification of this beautiful flower. If they have not, the Buddhists give it a very definite character. It is the *Padmi* of their mantras, and according to the Brahminical form of expression, it is the *Sakti*, or a symbol of the female power of the universe. This very sacred character given to the lotus by both Buddhists and Brahmans, has made it perhaps the most prominent feature of their ornament. It became the throne of Buddha, and its petals may be seen on the base of every icon of this deity. The same form is repeated in the most of the Hindoo sculptures of their gods; and when lately in China, I was very much struck to find that this particular arrangement had been carried to that country, and was followed as the base of their architecture where marble or stone was used.

The gateway of the Sanchi Tope gives us another very important symbol, and that is the trident, or trident. I know of no symbol which seems to have been so widely used as this, and it was most sacred, for the sculptures represent it as being worshipped as the Deity itself. The Hindoos make this an emblem of Siva, and it is placed on most of the temples of Siva, and it is placed over the gateway of the Temple of Apollo at Delphi. In that case it assumed the form of a letter, and also as a letter of the Hebrew alphabet it was the symbol on the phylactery of the Jews. Some sectaries of the Hindoos have this symbol painted on their foreheads. Neptune is represented with the trident, and our own Britannia has it in her hand under some supposition that it expresses her relation to the sea. The Royal Sceptre of England, as well as other kingdoms, is surmounted with a triple form similar to the *fleur-de-lis*; and a certain gentleman, whose name is never alluded to in good society, also wields this piece of symbolism; to this may be added that the episcopal benediction is given with the three fingers in this trident position. The *fleur-de-lis* is most probably early a variety of this form. Its shape in early times is simply that of a trident, and it is only recently that it was made into a lily or iris. These numerous illustrations,—and many more could be given,—of this emblem will give an idea as to how widespread it has been in ancient times. With such a variety of purpose as I have indicated in these, it is a little difficult to grasp at the meaning which could have been intended. Something trine is generally the first suggestion made in explanation, but to this I have doubts. Duality was the ruling idea, and I take the trident to be formed from the crescent and a solar symbol combined. I know the usual origins given to the *fleur-de-lis*, but cannot accept them, and I believe they are also rejected by French archaeologists. I have a work by M. de Beaumont, who shows that the *fleur-de-lis* did not originate in France, but must have come from the East. If it be, as I suggest, founded on the solar and lunar symbols which represent the supreme power of the Deity, then we have an explanation why it became a sceptre and emblem of royal power. I have no doubt, but the trident in Neptune's case is an emblem in this sense, and this is the same with the form as repeated in the figures of Britannia.

The crescent is a very old emblem, and is common to the whole East. We associate it in modern times as being only Mohammedan; but the Christian has it, and the Hindoo as well. The Russian Greek Church places the crescent under the cross, and it is usually understood that this was to symbolise the triumph of the cross over the crescent, or of Christianity over Mohammedanism; but this is not so, for this particular form existed before the time of Mohammed, and was well known to the Oriental Church. The original signification of the cross is a subject which is being discussed in the present day. I

have heard more than one theory expressed, but I would scarcely venture in the meantime upon an opinion. The question of the cross involves also the question as to the meaning of the letter T, which is a cross in most of the old alphabets. If this letter gets involved in this symbolism, it must necessarily involve the question of all the other letters, and we begin to see what a vast subject gets opened up for our study, and how little reliable authority we have to work upon. Letters have always been looked upon as having been invented for writing, at least all theories have assumed this view of the subject; but it has occurred to me, and I put it only as a guess, that letters existed first as symbols connected with worship, and became developed into phonetic powers.

Up to the present day our ornament has been only a jumble of old forms, repeating in many cases the old symbols without caring about any significations they may have had. Modern ornament reached perhaps its lowest degradation of meaningless forms in that style known as "Louis Quatorze," and which I trust we have seen the last of. Now the beginning of a new era is evident. I do not think that we will go back to the old. The rigid interpretation of the second commandment is not now accepted, and the forms of vegetable and animal life are to be seen in the new style. Nature is being carefully studied, and her forms are used instead of conventional types of the past. This new style is not symbolical, nor is it religious. It cannot be so till the battle of the faiths is settled. If we were more fully agreed in religious points, the faculty in the mind which is always tending to symbolism would not be long in bringing forth fruit.

In the discussion which followed, Mr. Hepworth Dixon said any one who had travelled in the East could not but have been struck with the symbolical forms observable in all monuments; no one could go into the bazaars in Jerusalem, Cairo, Alexandria, Stambul, and other places, without being struck with what he might call the symbolism of the Oriental world. Mr. Simpson had told them that the chief symbols beyond the Bosphorus were religious, but he thought there were symbols in no way related to religion, viz., the symbols of the subjection of women. He was afraid that was as much in the minds of Orientals as the symbolism representing the high art. Rings, bracelets, collanets, and anklets were all forms of symbolism, for it was well known that a slave, whether caught in battle, or bought in the market, had a ring put on his leg, a collar round his neck, or a bracelet on his arm as a sign of subjection. He was afraid that ladies at the present time forgot that the beautiful symbolic art which they indulged in represented no other idea to the masculine Oriental mind than that of having put a stamp or mark upon what he was pleased to think the inferior part of creation, and the gold chains only represented his own wealth. At the present time the origin of these things was forgotten, and instead of being now worn as symbols of subjection they were worn rather as emblems of triumph.

At the present moment the Palestine Exploration Fund Committee had before them the question of the ornamentation of the Mosque of Omar, one of the most beautiful buildings of the Mohammedan world, but the date of which was uncertain. Some supposed it to be a Mohammedan, others a Crusader's, and others an early Christian building, as early as the time of Constantine, or certainly not later than Justinian. The particular date to be assigned to it depended somewhat upon the nature of the construction. This mosque had some of the most beautiful Saracenic ornamentation on it in the world; and there happened to be at the present time an awakening of the Oriental mind to the extraordinary beauty of this building, such as that which occurred twenty years ago in the Spanish mind with regard to the marvellous beauty of the Alhambra at Granada. The Sultan then sent a very clever Armenian architect and a devout Mussulman to peel off the outer modern work of the Mosque of Omar, to discover the state of the stonework beneath. The portions covered up showed the date when it was constructed, and drawings which had been taken of it having been laid before high authority on the subject, who had been referred to, his first opinion was that it was built in the time of Justinian, but afterwards he attributed it to the period of the Crusades.

Mr. Sandy said,—With regard to the Mosque of Omar he confessed himself overcome by Mr. Fer-

grasson's arguments. He was glad to hear that the architects of the Sultan were peeling off the outside of the mosque so as to discover its original construction. Some time ago a part of the pillars was stripped off and inscriptions were found said to be taken from the Koran, but on being translated, they were found not to contain a word about Omar, but referred entirely to Jesus the Son of Mary. This rather showed that a knowledge of these matters was of importance in determining the date of an old building.

Mr. Edwin Lawrence said Mr. Simpson had alluded to letters being derived from symbolical forms, and not phonetic ones, and he might mention that about three years ago a Jewish astronomer published in the "Astronomical Register," a series of diagrams showing how the whole of the Hebrew characters might be derived from the signs of the zodiac. He himself did not believe in this theory, but the astronomer had been able from the stars to form nearly the whole of the Hebrew alphabet with scarcely any stretch of imagination.

Mr. C. A. Fennell thought symbolism in art was one of the vastest subjects a student could take up. In fact, it covered the whole region of comparative mythology from the lowest form of fetishism to the most elaborate form of Christianity. This science was at present only in its infancy, but it was of great importance, and he believed would lead to many striking results. It appeared to him that symbolism did not attain any significant vitality until a union was brought about between the two main streams of religious thought, that one derived from the observation of external phenomena, which might be called the Aryan, and which developed itself in the form of elemental forces; and the other, the introspective form, the Semitic, which, after passing through various stages, finally culminated in pure monotheism. The symbol attained its greatest perfection and deepest meaning when these two streams were united. With great deference, he ventured to question somewhat Mr. Ilpworth Dixon's remarks with regard to the subjection of women, for he doubted if the bangles, anklets, and rings, which Oriental women wore, were really emblematical of slavery.

Mr. Soares thought Mr. Dixon's interpretation of anklets, &c., could hardly be correct, because there were many ancient monuments in existence, bearing representations of kings and conquerors wearing rich ornaments as emblems of sovereignty.

The Chairman, Mr. Hyde Clarke, in proposing a vote of thanks to Mr. Simpson, said:—With regard to symbolism generally, he should be inclined to doubt whether it dated solely from an epoch of advanced civilisation; he rather believed it went back to the very commencement of language, even to those times which were classed as pre-historic. He did not think the principle of duality was always observed in symbols, because there seemed to have been a period in the history of civilisation, when what might be called a Trinitarian system prevailed, which was impressed likewise upon the languages and the grammar. This was observable in our own grammar, in Greek, and many other languages with three numbers, three persons, three tenses, &c. All these questions were of great importance when properly studied, because each represented a particular epoch of thought. With regard to the gentleman who derived the Hebrew characters from the signs of the zodiac, it had been his fortune to meet with him many years ago, but he agreed with Mr. Lawrence, that the theory was not a tenable one; it depended in reality on the maps of the stars, which he need hardly say were quite artificial, and depended to a great extent on the views of the mapmakers. He thought a sounder doctrine had been put forward by Mr. Simpson, that writing began with the adoption of ideographic characters, and the symbols first used for religious purposes were afterwards used for the expression of sounds. The subject was so vast that it was impossible to deal thoroughly with it, but he might mention that only recently some of the monuments in the Indo-Chinese peninsula,—in Cambodia and Pegu,—had been found by himself to resemble greatly in form those of Mexico and South America, and at the same time strong affinities were discovered between the languages. He had just discovered also that there was affinity between the Akkad form of the earliest cuneiform inscriptions which remained even now almost without interpretation, and the Aymara, in Peru, thus establishing one historic chain from Babylon to the New World.

WOOD "UNINFLAMMABLE AND INDESTRUCTIBLE."

THE Rev. Thomas Jones, LL.D., of Harewood College, Tavistock, and recently of St. Austell, having discovered, as he states, means for making wood uninflammable, and patented the same, has made some apparently satisfactory public experiments at Lostwithiel, which are reported in the *Western Morning News*. He desires to form a company for the purpose of working, in Great Britain and the Channel Islands, the patent, which, he alleges, also prevents dry-rot and decay, and renders white and yellow pine, both in hardness and appearance, like oak and ash respectively. He purposes selling to this company the sole and exclusive right to work his patent, to grant licences, &c., excepting to the Government, with whom Dr. Jones has already made an agreement. He states that the application of the chemical used to wood does not injure it in any way, while the wood is still capable of being polished and painted as readily as ordinary wood, so that it can be used in the manufacture of all kinds of domestic furniture, and for the interior as well as the exterior decoration of houses. Dr. Jones asserts, that if the solution is forced, while hot, into and through unseasoned and green timber, it renders such timber immediately seasoned and fit for use. The present price of the chemical, he states, is 15s. a ton, and a ton is sufficient to treat twenty-four to thirty loads of timber, which would be from 1,300 to 1,500 cubic feet, at about 2½d. per foot. On a larger scale, he says, the chemical can be produced cheaper, but it brings 15s. at present for dyeing purposes.

OPENING OF THE WIGAN INFIRMARY.

THE Royal Albert Edward Infirmary and Dispensary, Wigan, has been publicly opened by the Earl of Crawford and Balcarres. The building is situated on the outskirts of the town, and the architect is Mr. Worthington, of Manchester. It is fitted up with modern appliances for surgical and medical cases. The establishment consists of residence for the house surgeon, and lady superintendent and full staff of nurses and servants. On the ground floor is the surgery, physicians' consulting-room, surgeons' consulting-room, secretary's room, and board-room. At each end of the building are the wards for medical cases, and at each also are well-aired and commodious day-rooms. There are two accident wards, which are capable of holding 14 beds. The whole of the building, excepting the accident ward has already been furnished, and the infirmary is open for the admission of patients.

NEW CEMETERY FOR DARLINGTON.

MR. ARTHUR PEASE, Mayor of Darlington, has laid the foundation-stone of the chapels for the new cemetery in the North-road, Darlington. Mr. Joseph Whitwell Pease, M.P., had offered to the Darlington Town Council the ground for the cemetery. Mr. Pease stated that the late Mr. Joseph Pease, his father, was much interested in the question of providing additional cemetery accommodation for those at the north end of the town, and he and his brothers offered to "convey to the town free of charge" the fourteen acres of ground, bought and planted for that purpose; to drain it; and to pay to the Corporation the sum of 3,000l. towards the cost of fencing, chapels, &c. The offer was gladly accepted, and thanks were tendered to the Messrs. Pease, and to Mr. W. Barningham, who had presented the freehold of a strip of land 60 ft. wide, to secure an entrance to the cemetery from the North-road.

The cost of enclosing and deep-draining the land, with the cost of the chapels thereon, proved greater than had been anticipated; and on December 23, 1873, at a special meeting of the Council, when a tender for erecting the chapels at a cost of 4,375l. was accepted, a letter was read from the Mayor (Mr. A. Pease), in which he stated that it appeared that the cost of completion of the cemetery, &c., would be about 5,000l. more than the sum promised by himself and his brothers. He therefore gave that sum in addition. The works of enclosing and draining the land have been carried out under the supervision of Mr. H. Reah, the borough surveyor. As it was probable, however, that some time must elapse before the chapels could be completed, iron chapels have been erected, at a

cost of about 323l., by Mr. C. Kent, London, intended to be used during the building of the permanent chapels. The style of the latter chapels, with the lodges, is Gothic; the work-ings are tooled steel blocking, of Houghton Bank stone, with Dunhouse stone dressings. The height of the spire of the chapels is 100 ft. The sittings and reading-decks are of pitch pine, stained and varnished; the roof is open timbered; the floors are laid with tessellated pavements; and the windows are glazed with rolled cathedral glass. The architect is Mr. George Gordon Hoskins, and Mr. R. Borrowdale is the sole contractor.

CARLISLE CITY IMPROVEMENTS.

THE awards of Mr. Edmund J. Smith, the umpire appointed in the arbitrations upon the value of Messrs. Nelson's marble-works and builders'-yard and Brookbank's timber-yard, which have been purchased under the compulsory powers of the Carlisle Town Improvement Bill and the Citadel Station Extensions Act, have been received by the town-clerk. They are as follows:—Nelson's Premises, 25,615l.; Brookbank's Yard, 6,000l.

Mr. Nelson's nominal claim, says the local Journal, was 37,000l.; while the Corporation only made a nominal offer of 50s. The award is 25,615l.; and in addition to that sum the Corporation will have to pay the whole of the costs. These will amount to about 400l.; and add to this the expense of the award, the fees to witnesses and other expenses incidental to the arbitration, and the costs in the Nelson award alone will not fall short of 1,500l. Thus the amount to be paid by the Corporation under this award will exceed 27,000l. By virtue of an agreement made at the arbitration inquiry, interest at the rate of 5 per cent. will accrue until the money is paid.

The award in the case of Brookbank's Yard falls far short of the amount claimed. 16,700l. was the nominal amount claimed by the City and District Banking Company; the value put upon it by the Corporation was about 5,000l. of 6,000l., and the award is for the latter sum. There are rather over 11,000 square yards of land, subject to an annual ground-rent of 65l.

A BRIDGE OR A CULVERT.

AT the East Sussex Quarter Sessions, as reported in the last week's *Kent Courier*, the Clerk laid before the Court a letter written by Mr. T. F. Simpson, as Clerk to the Mark Cross Highway Board, complaining of the bad state of repair of Washington-bridge, in Frant parish, near Eridge-green, alleged by him to have become a county bridge upon the lapse of the Tunbridge Wells and Lewes Turnpike Trust. The County Surveyor, the Clerk said, had inspected the place, and had given his opinion that it was not a bridge but a culvert, and, therefore, the county was not liable, he producing a drawing of the culvert or bridge.

Mr. Godlee: It is 3 ft. wide by 5 ft. high. Captain Noble questioned whether a culvert would not be barrelled.

The Clerk said he had a long report from Oxfordshire on a similar question, but it was found that the decision there given would not assist them.

Mr. D. Barclay, in answer to Mr. Courthope, said the bridge was in his district, and he explained that it was under the abandoned turnpike road between Lewes and Tunbridge Wells, and in his opinion was a bridge which should be repaired by the county, because it carried a stream liable to be flooded at any time and was at one time no doubt one of those old wooden structures frequently found in the county.

The question was referred back for the consideration of the Highway Board, Mr. Barclay undertaking to lay it before them at their next meeting.

Earl's Barton Parish Church.—The plain single light on the north side of the altar in this church has been recently replaced by a coloured one bearing three designs:—"The Agony," "The Transfiguration," and "The Baptism of Christ." It is dedicated to the memory of the late Mr. William Whitworth and his wife (lady and lady of the manor). The completion of the restoration of this old church is now settled, the tender of Mr. Allen, of Leicester, having been accepted.

DOINGS IN DUBLIN.

The Corporation of Dublin are in a strait. The citizens are determined that no more ruinous Bills shall be promoted for schemes that may never be carried out, though the costs of a number have had to be paid by them already. The collapsed Gas Bill of last session is being again brought forward, in a modified form, with the object of saving the members of the Council from being surcharged the costs of the first abortive measure. Four gas engineers have presented their little bill for payment for their labour in connexion with the former measure, in all amounting to the round sum of 1,800*l*.

In respect to the disputed case of the liability of the Corporation to pay county cess in relation to the water-works at Stillorgan, judgment has been given against the Corporation for the sum of 302*l*, the amount claimed by the collector of grand jury cess for the barony of Rathdown.

There is yet no sign of the O'Connell monument being ready for inauguration. It was promised that Mr. Foley, the sculptor, would have the statue and subsidiary figures completed, at very latest, this spring. It is, however, very likely that the inauguration will be a centenary ceremonial, as next year will complete the one hundredth anniversary of O'Connell's birth.

The building trade is not over brisk at present in the city. Although no strike is contemplated in Dublin, some of the provincial towns are disturbed by partial ones, and demands are made in two of the northern towns for an increase of wages on the part of the carpenters.

Some strong opinions have been freely ventilated as to the conduct of certain reputed members of the Irish Institute of Architects, in relation to an award in a recent public-hall competition.

EXETER CATHEDRAL.

In consequence of the Bishop's judgment in respect to the reredos, the Dean and Chapter have stopped the whole of the other works of restoration at this cathedral. All the men employed there were paid off on Saturday, and matters are now at a standstill. The Dean and Chapter have unanimously resolved to appeal against the Bishop's order for the demolition of their costly reredos.

PUBLIC SLAUGHTER-HOUSES.

The Board of Works, at their last meeting, presented a report, stating, with reference to the letter from the Society of Medical Officers of Health on the subject of the erection of public slaughter-houses, that the committee considers that, in no event of her Majesty's Government being of opinion that private slaughter-houses in the metropolis should be abolished, and a certain number of public slaughter-houses be erected on their stead, the Board should express to the Government its willingness to undertake the duties consequent thereon, and recommending that the matter be referred to the Parliamentary committee, with authority to communicate with the Government and take such action in the matter as they may consider necessary, reporting their proceedings to the Board.

Mr. Newton, in moving the adoption of the report, said the subject had been very fully brought before the Board during the last session of Parliament, and then they expressed their decided opinion that private slaughter-houses might be so conducted as not to become a nuisance. If Parliament should decide that private slaughter-houses should not exist in the metropolis, the Board was the only body representing the metropolis who ought to have the regulation of them. Personally, he felt strongly that it would be a great evil to destroy private slaughter-houses within the metropolis.

Mr. Freeman believed if they adopted the report, the Board would place themselves in a very anomalous position. His opinion was that they should wait and see what the Government tended to do.

Mr. Runtz thought that the interests of the poor would be very seriously interfered with if private slaughter-houses were abolished, and in winter weather it would be impossible to feed the people.

Mr. Watkins said there would be opposition on every part of the metropolis.

Mr. Richardson said there was no difficulty in

obtaining a supply of meat, in winter or summer, in Paris, and there would be no more difficulty in London if private slaughter-houses were abolished.

After a few observations from others, The Chairman put the question, when there appeared—For the report, 13; against it, 13,—majority against, 5. The report was accordingly negatived.

THE MARGATE DRAINAGE PLANS.

At a special meeting of the Margate Town Council, the following note, from one of their own body, was read:—

"Gentlemen,—I beg leave to prepare, at my own expense, and lay before you, a plan for the disposal of the sewage, on the condition that no charge whatever is to be made unless my scheme is adopted. It will take me some time to prepare such a plan, and I would not produce it until your present competition is decided; but the scheme I shall propose will be entirely different to any that is now before you, and less expensive."

"W. LANE SEAR."

The Mayor questioned whether Mr. Sear, as a member of the Council, could be allowed to prepare a plan.

Mr. Sear believed they had no plan before them which could be carried out, but that his could be adopted. In reply to Mr. Goodale, he stated that he would not produce his plan till the competition was decided.

Mr. Cadby thought the offer was ill-timed; but he had no doubt that Mr. Sear's intention was a good one. He seemed to think that none of the plans received could be carried out. But he (Mr. Cadby) thought that if they consented to receive the plan from Mr. Sear they would have,—and they would deserve,—observations made on their conduct in the *Builder*.

Ultimately the letter, which we cannot help regarding as exceedingly ill-timed and unwise, was withdrawn.

DULWICH COLLEGE AND THE PROPOSED BUILDING OF NEW SCHOOLS IN ST. BOTOLPHE'S PARISH.

The northern City parishes are energetically pushing their claim for the building of new schools out of the funds of the Dulwich College Estate, in the event of the new scheme of the Endowed School Commissioners taking effect. At the Easter vestry of St. Botolph, a report from a committee appointed for the purpose was submitted, which showed that although the Commissioners had repudiated the proposal to give 10,000*l*. to St. Botolph's, and 20,000*l*. to St. Luke's for schools, and 1,500*l*. for eleemosynary purposes, the governors of the college had admitted the justice of the demands of the two parishes in respect to the granting of 100,000*l*. to build and maintain schools on the northern side of the metropolis. The vestry were unanimous in regard to the sum of 100,000*l*., and referred the report back to the committee for them to bring the matter to a successful issue.

OPENING OF THE NEW GRAND STAND, LEWES.

The completion of the new stand recently erected upon the Lewes racecourse by Mr. J. F. Verrall, has been celebrated by a number of gentlemen of the town and district, who partook of a repast on the occasion at the stand, under the presidency of the Earl of Abergavenny. The stand is placed on a commanding position at a slight angle with the line of the course, the whole of which is in view from every part of the building; it is considerably larger than the inconvenient structure whose site it partially occupies, and is capable of accommodating nearly five times the number of spectators who could find standing room in the old place. The plans were furnished by Messrs. Clark & Holland, of Newmarket, and the work was done by Mr. James Longley, of Worth. The appearance of the new stand, from the course, partakes of the Swiss chalet character, owing to projecting eaves, balcony gables, and barge-boards, and at first sight gives one the impression of similarity to the race tribunes in the Bois de Boulogne. The masonry is of flint, with dressings of red brick. The building contains, on the ground floor, entrance and staircase halls, stewards' room, large refreshment and dining-rooms, with all necessary culinary offices. An oaken staircase of easy ascent leads to the first floor, on which is the grand saloon, extending the whole length

of the building, 80 ft. by 20 ft. in width, divided into steps for division into boxes or stalls if required. Adjoining this, the principal apartment, are rooms for light refreshment, ladies' and gentlemen's retiring rooms, &c. In the front of the saloon is the balcony, with stall divisions, and from thence to the ring is a terrace of steps 120 ft. in length, and furnishing space for upwards of 1,000 spectators.

A NEW TOWN-HALL FOR WOOLWICH.

A PROJECT has been started for the erection of a new town-hall at Woolwich. Last week a meeting was held at Woolwich for the purpose of furthering the object. Major-General Sir J. M. Ayle presided on the occasion. The idea is to erect a large public building to be called the people's hall, capable of holding from 1,500 to 2,000 persons. A series of resolutions were passed, to the effect that such a building was required, and the meeting pledged itself to support the undertaking by subscribing funds in aid of the erection of the proposed structure.

IMPROVEMENTS AT THE CHURCHYARD OF ST. GEORGE THE MARTYR.

THE vestry of St. George the Martyr are about to improve the appearance of the churchyard, which adjoins the High-street, in the Borough. The vestry have determined to lower the wall and railings in High-street, so that the top of the wall will be level with the ground inside. A considerable sum is also to be spent in ornamenting the ground with trees and shrubs both on the portion facing High-street, and that adjoining White-street. There can be no doubt as to the value of the improvement.

NEW AVIARY AT EATON HALL.

AMONG the alterations now in progress at Eaton Hall, near Chester, the seat of his Grace the Duke of Westminster, is the construction of a new aviary for British and other song-birds. It consists of a large double cage, 14 ft. 5 in. broad, 9 ft. deep, and about the same height, constructed of wirework, in one of the green-houses, with a glass roof above. With the exception of the ornamental front, the aviary is formed of galvanised wire, thus removing the possibility of injury to the birds by swallowing paint or other substances with which the wire is often coated. The front consists of four pointed Gothic arches, the arches springing from columns with gilded capitals and ornamented and gilded bases. In the spaces between the upper portions of the window stars, wrought in gold and vermillion, are introduced, with the representations of sunflowers attached to the wires. Between the columns already referred to, and at the base of the designs, are four smaller Gothic arches, two of which at the extreme ends are used as doors to the aviary. The ornamental wirework is throughout painted in dark blue, enlivened with gilding.

The work has been executed by Mr. Joseph Bramham, wireworker, Liverpool, who is about to erect other houses of a similar character for the Duke of Westminster.

FATAL ACCIDENT AT THE ALEXANDRA PALACE.

THE directors of the Alexandra Palace, Muswell-hill, having expressed their intention of opening the new building in June next, a very large number of workmen have been employed by Messrs. Kelk & Lucas, the contractors, for some time past. Externally the building is in an advanced state, and until now there had been nothing to interfere with the general progress of the work. At the time of the accident there were about twenty men, bricklayers and plasterers, at work on a cornice over the corridor near the third courtyard, and in close proximity to the middle transept. The cornice gave way, carrying with it a portion of the wall and the scaffolding, and precipitating the unfortunate workmen to the ground, a distance of nearly 40 ft. Two surgeons were quickly on the spot, and after having afforded temporary relief to nearly twenty of the poor fellows, the latter were conveyed to their homes, close by. Several of the cases referred to were those of men working below, and the scaffolding, &c., falling in upon them. One unfor-

fortunate man, a bricklayers' labourer, lost his life. There were eight other cases attended to in the grounds, but immediately removed to St. Bartholomew's Hospital. The cause of the disaster is not precisely known, but among those capable of judging it is suggested that a 14-inch wall with the material still green was not sufficient to sustain the cornice, with a projection of 18 in. One of the labourers jumped from the cornice and broke his fall by coming in contact with a scaffold underneath, the force being sufficient to break a 1½ in. plank; but fortunately he escaped with but little injury. Some delay in the progress of the work will be caused by this accident, which will be minutely inquired into by Messrs. Kelk & Lucas. An inquest is being held.

PROPOSED SCOTTISH NATIONAL MONUMENT TO LIVINGSTONE.

A MEETING has been held in Edinburgh, under the presidency of the Bishop of the diocese, at which it was agreed, on the motion of Professor Masson, seconded by Professor Blackie, "That, recognising the heroic services rendered to science and civilisation by the late Dr. Livingstone, this meeting resolves that steps be at once taken to erect, in the capital of his native country, a national statue to his memory." It was also resolved, "That, as the design [before them] for a statue of Livingstone has received the highest commendation from Sir Bartle Frere, Sir Francis Grant, and the late Sir Roderick Murchison, steps be taken to secure its erection, as a monument, on a suitable site in Edinburgh." An acting committee was appointed to carry out these resolutions.

RE-OPENING OF THE NATIONAL PROVINCIAL BANK, HANLEY.

THE premises in the Market-square, Hanley, of the National Provincial Bank, have been altered and enlarged. In the extension of the building a new circular end has been added, and the old stonework having been cleaned down, the whole erection appears as though it had been newly built. Additional offices have also been built at the rear. The windows in the front are glazed with embossed glass of special design, and are guarded by metal grilles. The banking-room is large and commodious, and is fitted up with mahogany counters and desks, bronze book railings and gas standards. A consulting-room is provided, the fittings being similar to those in the principal office. The heating is accomplished by a hot-water apparatus, and the coils are enclosed with ornamental castings. The two strong-rooms are fitted with Chubb's fireproof safes, and an iron door and gate. On the basement are lavatories and other offices for the clerks.

The architect for the alterations was Mr. John Gibson, of London, and the work has been carried out by Messrs. Matthews, of Hanley.

LANDSEER'S LIONS.

SIR.—Public attention has been called by you to the statue of the lions in Trafalgar-square, and you rightly say that something should be done. On inspection it does not appear that the whole of the casting is defective; but certainly that of the paws is very bad. On examination it will be found that many of what we should call pin-holes, had they been smaller, do not go right through the metal. This I proved by inserting the point of a pin in the holes. Other parts, especially the right fore paw, opposite the Sun Fire Office, has perforations right through to the hollow interior of the casting, one of them enlarging into a fracture, at which part the metal is not more than 1-16th of an inch thick, and springs with the pressure of the finger. As the various parts have been cast separate, it is very evident that these flaws might have been avoided, had a perfect paw been cast when the deficiency of the present one was discovered: as one would think it must have been before the parts were riveted together: no such indications as are now seen would be apparent. It is plain that these defects must have been present from the first; and it seems more than a pity that for the trouble of casting a few parts of these fine animals, the whole work should be spoilt. It would almost appear that the metal had run short or been insufficient to cover the inner face of the mould.

The something which requires to be done will call for much consideration, but it would appear to be essentially necessary that these paws should be made solid, which, perhaps, might be accomplished by drilling a good-sized hole or two in the top of them (the paws), and running them with lead, or even Portland cement. Without some such precaution the injury will soon become greater. It does seem strange that so many of our great works should be marred by some such oversight or want of ordinary care as this; take, for instance, the statue of George III. on horse-back—without a belly-band; the flax in columns at the Holborn Viaduct; the failure of the fountains at Kensington Gardens; the lamps in Hyde Park; and many other instances which present themselves to my mind at the present moment. Surely if the work was done for any private person it would not pass off so easily as it does with Mr. Ball.

F. D.

WASTE PLACES IN LONDON.

SIR.—It is very satisfactory to find that the attention of the First Commissioner of her Majesty's Works is being called to the neglected and ruinous wastes under his charge in the metropolis. The hon. member for the Tower Hamlets is anxious as to the people's promised garden in Bethnal-green. Another M.P. has asked questions as to the ground at the end of Whitehall-place; another as to the site of the demolished houses in Parliament-street, and Sir Charles Russell has given notice of his intention to inquire as to the ground to the south of Victoria Tower, which would, if laid out, make a beautiful addition to the Houses of Parliament. When we remember how long these places have been left in neglected condition, and the many years the site of the Law Courts has remained unprofitable, we grieve for wasted time, but hope to see in our lifetime these hoards removed, and the dreary wastes made places of use and gratification.

A BUILDER.

MORTUARY FOR ISLINGTON.

THE authorities of the ever-increasing parish of Islington, always ready to advance in improvements, have lately erected and publicly opened a mortuary. It is placed in the corner of the yard of the chapel of ease, in the Holloway-road, and entirely out of view from the road. There are two waiting-rooms (22 ft. by 15 ft. and 16 ft. by 12 ft.), with fixed seats round the walls, and ceiling half-way up the roof. Opening out of the smaller room are a "closet" and lavatory, left and right of a narrow way. There are three rooms for the reception of bodies, each separately entered from without, containing four slate slabs, one end fixed into the wall, the other end supported by a light ornamental iron standard from the ground. These rooms are open to the roof with lantern light at top. The encasings are movable for ventilation, which, nevertheless, appears hardly sufficient. Each division is separately roofed, having the appearance from without of a block of four, instead of one building. The exterior—about 90 ft. frontage—is of substantial-looking brickwork. The mortuary was not opened a day too soon, for within twenty-four hours it became tenanted. We congratulate the vestry on their work.

NEW BUILDINGS BILL.

SIR.—That this Bill should pass into law without very extensive amendments and alterations, in view of the public, the builders, and the district surveyors, is simply impossible.

By the Bill a virtually irresponsible Board is to be clothed with further despotic powers, and an "imperium in imperio" created, as you have already pointed out, that will bear most unfairly on the building public, and all connected with building matters.

No court of appeal, nor any challenge to the arbitrary powers that are called into action is provided.

Allow me to ask, on what grounds are these new powers asked for? Sufficiently stringent, some consider too much so, are the present building regulations. By *bye-law* the Board are allowed to vary this Act so as even to reduce it to a nullity; by its complex provisions the Board itself will soon be involved in inextricable confusion,—and the Board have already too onerous duties to discharge.

The present district surveyors, if continued, are to be reduced to mere clerks and messengers, and their status, so important to the public, would be destroyed, and their usefulness wholly impaired.

The removal of the jurisdiction to one magistrate, and taking away the jurisdiction of the whole body of police magistrates, is a proposal that requires the most serious consideration.

A general meeting of the members of the Royal Institute of British Architects should forthwith be convened for the purpose of opposing the creditable and absurdities involved in this Bill, one of which is to transfer to the Board of Works—a body quite incompetent to deal with such a matter,—the examination of candidates for surveyorships under the Bill. That this duty has been well and efficiently performed by the Institute, and is one for which it has special qualifications, is admitted.

ONE OF THE BUILDING PUBLIC.

WORKING MEN'S CLUBS.

WORKING-MEN'S Club-rooms are about to be erected at Mold, Greenfield, Bagillt, Rhyl, Llandudno, and Caerwys, in Flintshire, at the sole expense of Mr. P. Ellis Eytton, M.P. for the boroughs. The architect is Mr. Martin Underwood, Lamb-buildings, Temple, London, late of Denbigh, North Wales.

THE QUESTION OF A NEW STYLE MATHEMATICALLY CONSIDERED.

SIR.—I read with amazement in your last issue Mr. W. Cave Thomas's astounding argument that, "as there is but one gamut of ratios, and all phenomena are quantifiable, and a healthy taste is bound within these tenor limits, art can only utilise a few simple ratios which are the modes or keys of style."

Surely there thus still remains among us at least one descendant of the illustrious philosopher in "Hudibras," who,—

"By means of geometric scale,
Could tell the size of quarts of ale."

"When," says Dr. Whately, "the Teutonic theosopher announces that 'all the voices of the celestial joyfulness qualify, compare, and harmonise in the fire which was from eternity in the good quality,' I should think it equally impertinent to aver the falsity as the truth of this announcement." To whatever extent the same may be observed of Mr. Thomas's exegesis, his final conclusion of the ratios being *precisely* exhausted, or that from their "having already been recognised and adopted, a new style is an impossibility," is manifestly problematical, seeing also here how fertile in invention he himself is; and thus the advocates of a new, or rather true, style may yet be of good cheer, and stick to their task with a stout heart.

E. L. TARBURCK.

SLAUGHTER-HOUSES.

THE proposed retention of these nuisances, in densely-crowded localities, cannot be too severely condemned, and it must be universally regretted that the wholesome and salutary provisions of the Act of 1844 should be attempted to be set at naught. Most of the present dens are wholly unfitted for such purposes, and daily scenes repugnant to public decency and morality are the consequence. Public abattoirs, with ample light and water supply, are requisite.

The inconvenience that might arise would be easily remedied, and in the end all parties benefited.

LIGHTEN OUR DARKNESS.

THE NEW COURTS OF JUSTICE AND THE NATIONAL GALLERY.

MR. WAIT asked the First Commissioner of Works what was the amount of the revised contract for the erection of the New Courts of Justice, and was there any objection to lay the drawings on the library table for the inspection of members. He also wished to ask the noble lord what was the object of the iron-girded excrescence that had lately appeared on the roof of the National Gallery, and whether it was intended to be a permanent structure; and if so, how it was proposed to conceal it. Lord H. Lennox said that the final contract agreed upon for the erection of the New Courts of Justice amounted to 699,429*l.* This, however, did not include

either fittings or warming apparatus, which, when added, made the contract amount to £26,000. He regretted that he could not lay the drawings upon the library table, as they could not leave the Office of Works; but if his hon. friend would call upon him there he should be happy to make him aware of all the details of the proposed building. With reference to his hon. friend's second question, the iron-girded excrecences to which he had alluded represented the roof of the central octagon hall from which all the galleries branched off, and such being the case it was necessary that it should remain a permanent structure. As to whether it would always remain in view of the public depended on whether the First Lord of the Treasury and the Chancellor of the Exchequer would grant him any money which would enable him to build up something to hide it.

ITALY.

A FRIEND writes.—We left Rome on Tuesday and found Naples with grey sky and perpetually threatening clouds. We went to Pompeii yesterday (11th), not putting faith in the traditional report that rains cannot take place in Naples without rain. So while all the eye crowd flocked to the Campo Marte, we started for Pompeii, but had barely visited half when down came rain, with thunder, lightning, and hail. We were thoroughly drenched before reaching the station. I had always had the luck to have the sun with me at Pompeii on previous occasions, sometimes more of his company than liked. When we were in Rome some friends were enthusiastic over Raffaele's frescoes in the "Cassina," and Guercino's frescoes in the Farnese; but to my mind they do not come up to some of the lovely paintings on the walls of Pompeii—the very delicacy of the tints adds to the beauty of the gracefully-drawn figures. At present they are beginning on the third fifth of the city, and we to find it more interesting than the last. In Rome building is progressing wonderfully, and the part between St. Maria Maggiore, near the station, and St. Giovanni Laterano, which will be the west end of Rome, will have magnificent villas and streets, the houses very high, six stories generally. While excavating foundations, they are finding some remnants of ancient art. Castellani, quite a prince in his way, and in his manner of enriching the museums. Rome, has made a present to the Campidoglio museum of a splendid regal chair, in bronze, laid magnificently with silver: the bosses, small sculptured heads at the front of the arms of the seat, are of the finest workmanship. He has had a copy in wood made, which stands in his rooms. On the 23rd a Myrrha was found very perfect, in white marble, near the west end of excavations; near it a stone slab engraved with the sacrifice and inscriptions.

NEW TOWN-HALL, MANCHESTER.

Sir,—In your issue of last week you state Mr. Mackie was the manager for Messrs. George Smith & Co., although very great credit is due to Mr. Mackie, I wish to say the whole of the masonry and scaffolding connected with it was carried out entirely by Mr. Charles Edmonds, under the direction of Mr. Wm. Cross.

LOVER OF FAIR PLAT.

SEA-WATER FOR LONDON.

Sir,—You state that Mr. C. F. Fuller, C.E., does not regard his scheme for the above as specially new. I beg to inform you I some years since made a proposition to the Brighton Railway Company to accomplish the same object. I received a very courteous letter from the Company stating there was only one objection—that was want of means.

ROBERT FRANKS.

ANOTHER DISHONEST FOREMAN.

Our Assistant Judge of the Middlesex Sessions has expressed an opinion that if the building operatives are as dishonest as those set over them—judging by the numerous convictions against foremen—the employers are being indeed right and left. The last case is that of James Weston, many years chief man and storekeeper to Messrs. Deacon, Berry, & Co., who was indicted upon five counts, for robbing his employers to a very considerable extent, but the prosecution was content upon the finding of the first count—stealing a hall-lamp, value 11. 10s.—and did not go on with the others. The learned Judge, in passing sentence, said: James Weston, the jury have pronounced you guilty of having stolen this lamp from your employers. Even if this were only theft, you have committed what we must have regarded as a serious offence, because yours was a situation of trust. You were foreman and storekeeper, Messrs. Berry, Deacon, & Co. trusted you with the keeping of the raw materials, and the distribution of it to the workmen under your control. Unfortunately, you were entirely undeserving the confidence your employers reposed in you. The

possessing of this lamp is far from being the only instance of your criminal misconduct. The Court, therefore, although anxious in this and all cases to deal mercifully, feels that a light punishment would be inadequate to the character of your offence. The sentence upon you is that you be imprisoned and kept to hard labour for a fifteen calendar months. The prisoner said it would be his death.

EMPLOYMENT OF SURVEYORS.

Sir,—The Council of the Royal Institute of British Architects having requested the committee which reported to the General Conference of Architects in 1872, on "The Employment of Surveyors," to further consider the question and report thereon to the Conference, which will be held in June next, I am to request that the profession may, through your columns, be informed of the desire of the committee to be favoured with communications of the experience and practice of architects and kitchening surveyors with reference to the many questions which arise out of the custom of providing bills of quantities, and the relations which exist, under different conditions, between the client, the contractor, the architect, and the surveyor. The communications may be addressed to me; and, as the Conference will probably meet early in June, I should be glad to receive them within the next fortnight.

Hon. Sec. to the Committee.

7, Whitehall-yard.

TO PREVENT BURESTING OF WATER-PIPES.

Sir,—It has been said that "there is nothing new under the sun." This is certainly the case with regard to the patented method of preventing water-pipes from bursting from the effects of frost described in your journal of last week by your Scarborough correspondent, for in 1819 the precise arrangement and materials described were suggested by Mr. Pibro, C.E., and used by him at the works of the India-rubber Manufactory, Tottenham (where he was at that time residing), and I believe the invention was patented by that Company, or the (then) manager, Mr. Burke.

J. H. DRAXON.

WESTERN COUNTIES' IDIOT ASYLUM, STARCROSS.

The foundation-stone of the New Idiot Asylum for the Western Counties, at Starcross, has been laid by Lady Anna Maria Courtenay. The building is designed with a central block, containing the residence for the Superintendent, with the apartments for the boys and girls on either side; and a large dining-hall and suitable kitchen and offices in the rear. The whole will be connected by a covered corridor, giving access to the separate yards and play-grounds. The dormitories will be approached by stone staircases, and the lavatories, bath-rooms, and other offices are arranged in the wings behind the corridor. The walls will be built of naked limestone, with dressings of buff brick and Bath stone, and the roof covered with slates. The building when completed will provide accommodation for one hundred children; but the present contract is taken for the central block and boys' wing only, and it is intended to use a portion of the old house for the girls, until sufficient funds have been obtained to complete the new building. Mr. J. W. Rowell, of Newton Abbot, is the architect; Messrs. Towill & Coles, of Starcross, are the contractors; and Mr. T. Gale, of Exeter, is the Clerk of the Works.

Books Received.

On the Jurisprudence of Chargeability for Sanitary Works and for Poor-rates, and other Branches of Local Administration. By EDWIN CHADWICK, C.B. John Bush, Charing-cross.

This is a very suggestive and pregnant pamphlet: a little involved, perhaps, here and there, like its title, but eminently deserving study. Its main purpose may be gathered from the following sentences, with which Mr. Chadwick concludes his observations:—

"As the constitution and functions of a central authority as a means of consolidating and simplifying local administration, and conducing to its economy and efficiency, are greatly misapprehended; and as it is well that when popular speakers declare that they dislike 'centralisation,' it should be known what it is they do dislike, I will here state the principles of action, as laid down under the Poor-Law Commission. They are:—

"First, as a responsible agency for the removal of those evils, in the repression of which the public at large have an interest, but for which the people of the locality are helpless or incompetent;

"Next, as an authority of appeal in disputes between conflicting local interests;

"Thirdly, as a security for the correct distribution of local charges; and for the protection of minorities and absentees against wasteful wars and undue charges; and

"Fourthly, as a means of collecting and communicating to each local authority—for its guidance—the principles deduced from the experience of all other places from which information may be obtained."

As this authority is well or ill appointed; as its jurisdiction is sound and its action vigorous, or as it is

otherwise, so will be the general local administration correct in principle and remunerative, or wasteful and burdensome."

The Conqueror and his Companions. By J. R. PLANCHÉ, Somerset Herald. 2 vols. London: Tinsley, Brothers. 1874.

Mr. PLANCHÉ has endeavoured, as he tells us, to make this a readable book, as well as one of reference for all who take an interest in the origin or actions of our earliest Anglo-Norman nobility, and has certainly succeeded; so that his work will doubtless find its way to the hands of a much larger class than that afforded by historical students and the descendants of those who "came over with the Conqueror," considerable as the number of these alone must be. Mere entertainment, however, of course, was not his aim. He has sought to set right doubtful passages by careful collation, recognising the truth of Dryden's observation, that "We find but few historians of all ages who have been diligent enough in their search for truth. It is their common method to take on trust what they distribute to the public, by which means a falsehood once received from a famed writer becomes traditional to posterity." And a pretty tissue of blunders do the chroniclers and commentators, ancient and modern, in this case present, part of which at any rate he has exposed and set right. To Mr. Edward Freeman he gallantly throws down his glove more than once, and we shall doubtless see a pretty passage of arms by-and-by.

In commencing the book the first thing the writer had to ascertain was, who the companions of the so-called Conqueror (a title to which we strenuously object, unless its derivation be confined to *Conquistor*—"acquirer") really were. After some consideration Mr. Planché arrived at the conclusion that the only way to justify his title and avoid offence, was to limit his notices to those personages who are recorded by contemporary or nearly contemporary writers as having been present in the Norman host at Hastings, or at least conspicuous in England during the four years immediately following, at the expiration of which period (that is, in 1070) the entire kingdom was virtually in William's possession. "With this object," he continues, "I decided on taking the elaborate account of the invasion and the battle given by Master Wace in his 'Roman de Rou' as the foundation of my work, supplementing and illustrating it by the information directly or indirectly afforded me by writers who were actually living at the time of the Conquest, or must have known and conversed with persons who, if not present themselves in the conflict, retained a vivid recollection of the event, or had gathered the reports of it from those who were." Wace, born in Jersey at the commencement of the reign of Henry I. (A.D. 1100), some four-and-thirty years after the landing of Pevensey, was taken when young to Caen in Normandy for education, made a prebend of Bayeux by Henry II., completed his 'Roman de Rou' (a metrical history of the Duke of Normandy) in 1160, and died in England subsequently to 1173. The early portions of his "Roman" he copied from Dudo, Dean of St. Quentin, and Guillaume de Jumièges; but his materials for the history of William the Conqueror, and specially of the invasion of 1066, were drawn from original and independent sources, the verbal descriptions of the veteran survivors of the great battle, their sons or other relatives, and the gossip in general circulation, while the details of that momentous event were yet fresh in the recollections of numbers both in England and Normandy; some of whom, as children, might have been eye-witnesses of the muster at the mouth of the Dye, or the march of the invaders from Hastings to Hotheland.

The personages named, as apparently indicated by Wace, amount to 118, "twenty-seven," of whom (as stated in the introduction), are either progenitors of some of the most illustrious families in England, or have indelibly made their mark in its history for good or for evil. But this number is obviously a misprint,—probably for seventy-seven, which is about the number of the companions, of whom Mr. Planché has given information, both biographical and genealogical. We may not, however, pursue the subject further. The book is appropriately dedicated to the Duke of Cleveland, the present proprietor of Battle Abbey; and we heartily congratulate the author on the success which has attended his scholarly endeavour to bring the Conqueror and his Companions to the knowledge of the general public pleasantly and instructively.

VARIORUM.

THE new number of the *Quarterly* contains a delightful article on Dr. Schliemann's discoveries at Troy, concerning which our readers had the earliest information. The reviewer goes nearly all the way with Dr. Schliemann:—

"The vain attempt (and none could be vainer) to 'distil history out of mythology,' is quite a different thing from recognising (or, if you please, only suspecting) as historical basis in certain poetic myths, and searching for the real history by the proper independent methods. As in mathematical and physical science we constantly find that the *forms* we are investigating perish, like a seed, by the growth of the unseen germs within them; so, starting with the events, and still more the manners, forms of life, and other allusions found in Homer, and comparing them with the monuments of Hissarlik, and these with other monuments and records of Asiatic history,* we may perchance be led back to Homer, with the new conviction that he preserves wonderfully old traditions about the city whose ruins are now revealed. We do not try to reduce the Iliad to a story of the Trojan war; but, pointed by it to a real Troy, we make an independent search for the monuments and records of that city."

This is the vast service which Dr. Schliemann has so devotedly performed. He has found, indeed, no records and scarcely any certain inscriptions (though there is one which Professor Max Müller scarcely hesitates to read *FAIION* in Phœnician characters). But he has found monuments which place beyond doubt the existence of flourishing and civilised inhabitants on the spot that has always, within historic memory, borne the name of Ilium, and which prove the existence of a pre-Hellenic city, small but strong, civilised and wealthy, and having some most striking points of correspondence with the Troy of which Homer sang. The name of *Trian*, which we need not grudge Dr. Schliemann his resolution to use till he is supplied with a better, may be the post-Homeric name; it may be the true regal title handed down by tradition; we may one day read it as we have read the names of Bardanius and Bembrius; but the royal head which wore those golden fillets must have been more substantial than that mere shape, which 'the likeness of a kingly crown had on.'"

—The Theory of Fire-proof Construction, as applied to Wood Joists." By James John. (Chicago: printed by the Wabash Printing Co., Lake-street. 1874.) The object of the author is to explain and advocate a method, patented by him, of fire-proof construction as applied to wood joists, by protection of it with concrete and wired plaster or cement in an economical manner. Of his method he says:—

"I estimate the cost of filling between joists and plastering on wire, three coats, as specified, at 25 cents per super. foot, or \$2.25 per yard, to measure in one-half of all ordinary openings, such as stairs, hatchways, &c.; in lieu thereof, to lath with wire, 3 in. apart, the face of all header and trummer joists surrounding the same, and plaster one heavy coat of mortar to protect them in case of fire, and the weight of filling and concrete is about 20 lb. to the foot, when dry. I claim floors so constructed will admit of a stock of combustible merchandise being consumed by fire and the building be left standing."

—"A Treatise on an Improved Method for Overcoming Steep Gradients on Railways. By Henry Handyside. London: Spon." The author says that by his system any ordinary locomotive capable of hauling a given load up a gradient of 1 in 80 can take the same up 1 in 8. This is to be done by converting the locomotive itself into a stationary engine wherever it is required, thus economising locomotive power and weight of engine. The engine is to be supplied with a limited quantity of steel rope on a drum, and used on lines and gradients prepared for the use of such a system, so utilising all the power that can be obtained from the steam pressure, and devoting it entirely to hauling the train without the engine up steep inclines whenever and wherever it is requisite.

Miscellaneous.

The Bishops in Convocation.—Mr. Samuel A. Walker, of Margaret-street, who, as a photographer, has made "the Church" a speciality, has produced a picture of the Upper House of Convocation, assembled at Queen Anne's Bounty Office. The Archbishop of Canterbury is in the chair. The subject represents the late Bishop Wilberforce addressing the assembly a few weeks previously to the accident which caused his death. The picture is painted in sepia, and permanent autotype and Woodbury copies have been made from the picture, with autographs of the bishops underneath. It will doubtless interest a considerable number of persons. The difficulty in obtaining sittings from the bishops has made the completion of the picture a work of some years.

* The mass of matter on our hands compels us to omit all reference to the light thrown by Egyptian and Assyrian records on the history of Troy and Asia Minor in general, a subject fully treated by M. François Lenormant in recent letters to the "Academy" (Nos. 98 and 99, March 21 and 28). We regret this the less, as the discussion can only be regarded as begun. The same remark applies to Dr. Schliemann's inscriptions.

Winter Garden for Brighton.—We learn that a company is in process of formation for erecting a Winter Garden on the large piece of land between Regency-square, St. Margaret's-place, King's-road, and Cannon-place, Brighton, at present used as a private recreation ground. It will be another effort to construct what was twice unsuccessfully attempted many years ago by the late Mr. Henry Phillips:—on the first occasion, a large conservatory called the Oriental Gardens, where Silwood-place now stands; and, subsequently, the gigantic dome called the Antheum, on the spot now occupied by Palmeira-square, but which fell down the very day the scaffolding had been removed. But engineering and iron building have improved since then; Brighton is four times the size it was when these schemes were started; and the number of visitors has increased a hundredfold. Property, also, has more than doubled in value. The land now in question was lately to be bought for 30,000; but when the company offered to purchase, the price rose to 45,000.—*Brighton Herald*.

"Shakspearian Tableaux."—Mrs. C. J. Peake's *soirées* at Cromwell House, in aid of the Victoria Hospital for Sick Children, have proved grand successes. Tableaux so presented have been seldom seen; and, when we say that, under the general tasteful direction of the hostess, they were arranged respectively by Mr. J. Sant, R.A., Mr. J. O'Connor, Mr. Boehm, Mr. Hallé, Mr. E. M. Ward, R.A., and Mr. J. E. Millais, R.A., this will not seem matter for wonder. Mr. Arthur Sullivan contributed the music, and Mr. Henry Irving read admirably some of the passages referred to. On the first evening, Tuesday, the Duke and Duchess of Edinburgh, and the Princess Louise, were present, and any number of beautiful persons, beautifully dressed. Ten of the plays were illustrated. The charity, we have no doubt, will be substantially benefited. The great object desired is to purchase the freehold of the present premises, Gough House, in Queen's-road West, Chelsea.

Belfast Architectural Association.—At the last meeting of this association, Mr. Vere Foster in the chair, Mr. Thomas Stevenson read a paper "On Sound." The first part of the paper referred to the production and propagation of sound, and the laws relating to its reflection, conduction, and absorption, and explained how certain substances conveyed sound with greater rapidity than others. The law that the angle of incidence is equal to the angle of reflection holds good only when that angle is greater than 30 degrees. The second part treated of the materials employed in construction with reference to their acoustic properties, and discussed their application to some of our modern buildings. The best materials for acoustic purposes are those which do not reflect sharply, but assist the sound by vibrating in unison with it, and thereby strengthening it as it passes forward; and where the materials are of a highly reflective character, the use of draperies was recommended for preventing the echo.

Destructive Fire at St. Mary's College, Peckham.—A considerable portion of the building known as St. Mary's College, situate in Hanover-park, Rye-lane, Peckham, was destroyed by fire last week. The premises are extensive and commodious, having a very large school-room and numerous class-rooms, at the rear of the head master's residence, with open grounds southward, northward, and westward. In the eastern direction the premises are joined by a carpenter's shop, belonging to Messrs. Searle & Heather, builders, who are erecting houses on the adjacent plot of ground, and it was in this building that the fire originated. The flames crept under the eaves of the college, along the roof, and burst into one of the smaller class-rooms, and thence into the room used for music and drawing classes.

Royal Italian Opera.—Mr. Fred. Gye and the public are alike to be congratulated on the advent to Covent Garden of M. Bolis, a *tenore robusto*, destined, if we mistake not, to be a prime favourite there, and justly. He sang the difficult part of Arnold, in "William Tell," on Monday night, so admirably as to leave little to be desired. He had the house entirely with him from first to last. M. Maurel, as we have before had occasion to say, is also an acquisition of great value; and Mdlle. D'Angeri, who has sung in the "Huguenots," has improved so much that, considering the extreme youth of the lady, it is not too much to suppose that she is destined to take a very high place in the profession. These are great acquisitions.

The Erection of Memorials in Churches.—In the Commissary Court of Canterbury, held at Lambeth Palace, on Wednesday week, Dr. Tristram gave judgment in the case of "Moody v. The Rev. Cyril Randolph," in which an application was made for a faculty or licence to erect a monument to the memory of the late rector of Chartman Church, Kent, who had held the living for more than fifty years. The learned judge refused the application. The rector was willing that the tablet should be placed in any other portion except the chancel, and as the church was about to be restored, any further application would be considered. This application would be refused with costs. Mr. George W. Brooks, proctor for Mr. Moody, gave notice of appeal to the Arches Court.

Working Men's Hall and Public Baths for Gloucester.—A public meeting has been held in the Corn Exchange, Gloucester, "to take such steps as might be considered necessary for the establishment of a working-men's hall and baths." The meeting had been well announced, and working men "earnestly invited to attend and assist in a movement which is being promoted entirely for their benefit"; but the room was not three-fourths parts occupied, and a large number of those present were not working men. There were present on the platform Dr. Bond, Medical Officer of Health; several Aldermen and City Councillors; Mr. Small (City Surveyor), &c. Mr. Arden, architect, and secretary *pro tem.*, explained his plans, and resolutions in favour of the object in view were unanimously passed. The cost of the building was estimated at about 6,000*l.*

Report on Liverpool Free Public Library, Museum, and Gallery of Art.—The twenty-first annual report of the committee of the Borough Corporation of Liverpool, on this subject has been issued in a printed form. It states that the general success of the institution has been fully sustained during the past year. In the reference library 489,270 volumes have been issued, against 470,230 in the previous year. Nearly three-fourths of the books taken were solid works on science and philosophy, which is very satisfactory. The statistics of the north and south lending branches show little change during the last two or three years, as 4,000 readers at each library seem to be as many as can satisfactorily be attended to, or supplied with books, new readers crowding out the old. The Mayor's liberal gift of 20,000*l.*, for the erection of a building for an art-gallery, is of course recorded.

Handel Festival.—The necessarily gigantic preparations for the next festival at the Crystal Palace, to be held in June next, are now in active progress, the organisation of the several branches being from long experience tolerably perfect. The whole of the musical arrangements are carried out under the direction of the Sacred Harmonic Society. The provincial chorus will be well represented, contingents being supplied, in many cases in large numbers, from nearly all the cathedral cities and other large towns in the country, while the London contingent, which has from the first been kept together, with occasional reinforcements, will shortly commence special practice at Ekeater Hall. The whole musical force of 4,000 performers is under the direction of Sir Michael Costa.

Price of Land, Nuneaton.—Last week Mr. Thomas Clarke offered for sale thirteen lots of freehold property. Lot 1, a freehold farm, known as the Hipsley Farm, situate at Hurley, containing 97a. 3r. 39p., and in the occupation of Mr. Henry Towers, at the annual rental of 200*l.*, was bought by Mr. Eli Green, of Coventry, for 3,800*l.* Lot 2, a close of freehold land, situate at Tuttle Hall, containing 2a. 2r. 4p., was sold for 350*l.* Lot 3, 17 acres of freehold land, situate near Wash-lane, Nuneaton, was purchased for 1,350*l.* Lot 4, several closes of freehold land, containing 24 acres, was sold to Mr. George Turner, for 1,810*l.* Lot 5, 26 acres of freehold land, near Whitford-lane, Nuneaton, was purchased by Mr. George Turner, for 1,930*l.*

The King of the Belgians is building a marine villa on the dunes of Ostend, near the temporary residence which he has for the last few years occupied. The foundation of the villa is of brick, but the remainder will be of timber, and will be in style of architecture somewhat resembling the Greek in its character. The work is being carried out by an English architect and English workmen, and it is expected to be completed by the end of July.

Arsenic in Wall Papers.—"Pro Bono Publico" writes as follows to the *Manchester Guardian*.—"The illness of an infant led my medical attendant to investigate the probable cause of the unaccountable change from previous good health. An analysis of the wall-papers showed that in two rooms the papers contained considerable quantities of arsenic, and in the papers of four other rooms arsenic was also found. To replace the condemned papers twelve different patterns were selected and tested. Of these only four were found free from arsenic. The impression I had that arsenic was only used in some particular shades of green was dispelled, as it was traced in blue, buff, and other colours. The qualities of the papers were no criterion; it was found in papers varying from 3s. 6d. to 20s. per piece, and the production of various makers. Some of the newest, expensive, and decorative styles proved the worst."

The Thames Embankment.—Mr. Forsyth asked the First Commissioner of Works to inform the House in whom the ownership was vested of the piece of land on the north side of the Thames Embankment, between Hungerford Bridge and the gardens of Montagu House, and how long it was intended to allow the same to remain unoccupied and waste. Mr. W. H. Smith, who answered the question, said that under the Thames Embankment Act the ownership of the piece of land in question was vested in the Government, but that as soon as the Metropolitan Board of Works acquired Northumberland House, which they would do on the 7th July next, the land would be made over to them.

Douglas: New Street and Promenade.—In addition to the appointment of Mr. W. Dalrymple, I.R.K., as Government Commissioner, to act on behalf of the Insular Government in connection with these improvements, his Excellency the Lieut.-Governor has, in the terms of the Act, appointed three valuers for the purposes of valuing and ascertaining the property required to be taken for the purposes of the Act. The gentlemen appointed are Mr. W. Culshaw, of Liverpool, surveyor; Mr. John Thomas Lucas, who was one of the valuers for the whole island; Mr. Man, appointed under the Lunatic Asylum Act, and Mr. J. K. Greig, manager of the Bank of Mona at Douglas.

A Crystal Palace for Liverpool.—A local paper announces that "two important schemes are now in the hands of able and enterprising promoters. One, suggested by the remarkable success of the Aquarium at Brighton, is mainly viewed on the tempting model of that prosperous and truly beautiful resort. The other is a still grander character. It contemplates something less than the establishment of a Crystal Palace in Liverpool on a suitable site, with the intention of combining in it all the attractions which make the establishment at Sydenham not only a boon to Londoners, but a centre of observation and attraction to all the world."

Bursting of a Water Main.—One of the water-mains close to the reservoir on Pentonville-hill has burst, and the force of the water is so great that it upheaved a great portion of the roadway, and loosened the footway stones some distance down Pentonville-hill. The overflow of water was very great, and at the time of the main bursting the water was thrown with great force. Under the direction of the civils the workmen and excavators were immediately set to work to repair the damage. The inhabitants of the neighbourhood were deprived for the time of their water supply.

Proposed Thames Subway.—A crowded public meeting has been held at Woolwich as to proposed subway between North and South Woolwich, the idea having been originated by the drowning of nine workmen from a boat whilst passing over the river. Mr. W. T. Henley, proprietor of the telegraph works, North Woolwich, ere 2,000 men are employed, occupied the chair. The meeting was crowded to excess. A del of a subway lighted up with gas was exhibited. The estimated cost was 60,000l. solutions in favour of the proposal and for the appointment of a committee were unanimously passed.

Masters and Men.—Some of the house-keepers employed at the Devonshire Meeting-house in Bishopsgate-street, at 8d. per day, complain that on the 18th inst., without previous notice, they were all discharged, an alternative being that they came to work the following week at 8d. per hour, "the aged reason being the job would not pay."

The Late Miss Harrison's Park, Sheffield.—At a meeting of the General Purposes and Park Committee at Sheffield, a plan of the grounds as proposed to be laid out by Mr. Marzock, landscape gardener, was submitted for approval. The plan, says the local *Independent*, has not actually been decided on, but in all probability this will be done at another meeting. It is intended that the park shall be opened on the 4th of May. The committee have decided upon building two lodge entrances, one in Winter-street and the other in Western bank.

House Moving.—A Canadian paper states that recently, just before the ice on the Richelieu gave way, a frame house of considerable size, and of the ordinary French Canadian rural style, was put on runners at Sabrevois, and drawn to St. John's, a distance of eight miles, by ten yoke of oxen and four span of horses. The house was delivered in good order and condition, and no difficulty was experienced in moving it, except some little delay in getting it round the corners of the streets.

The Duke of Edinburgh laid the foundation-stone of a new orphan school and female orphan home, in connexion with the Royal Seamen and Marines, at Portsmouth, on Monday last.

Water Supply.—Major Frank Bolton, in his monthly report upon the metropolitan water supply, states that the number of miles of streets containing mains constantly charged with water, and upon which hydrants could at once be fixed, are as follows:—Kent Company, 64 miles; New River, 168; East London, 70; Southwark and Vauxhall, 160; West Middlesex, 65; Grand Junction, 41; Lambeth, 90; Chelsea, 60; making a total length of 648 miles.

Mr. Gosling, Architect.—Mr. Edward Cyrus Gosling, of Charlton, architect, was removed suddenly by death on Sunday morning last. The deceased transacted business principally in London during the previous week, and was noticed on Saturday to be particularly cheerful. On Sunday morning, whilst reading, he fell back in his chair and died without a sound. The deceased was in his thirty-sixth year.

The Alexandra Aquarium Company (Margate).—This company, we understand, has just been registered in the names of the following gentlemen:—Mr. T. D. Reeve, Mayor; Dr. Rowe, Dr. Pittcock, Mr. W. A. Fagg, Mr. John Dentry, Mr. John Bayly, and Mr. John McMillan, a director of the Brighton Aquarium. The works are to be carried out upon plans furnished by Mr. E. Birch, C.E., and Mr. Henry Lee will be the naturalist.

Opening of the New Drill Hall, Nottingham.—The new drill-hall, for the accommodation of the Robin Hood rifles, at Nottingham, has been opened. The floor of the building is of asphalt, and the structure is extensive: 200 men went through review exercise on the occasion. The builder was Mr. Wright, and the architect Captain Evans, who belongs to the Robin Hood.

The Lambeth School of Art brought its present season to a close on Thursday last week, when the prizes were distributed. The meeting was held in the school-room, Miller's-lane, and was presided over by the Rev. G. H. Herbert, who said the specimens shown upon the walls of the building evinced the possession of high qualities on the part of some of the students.

Destructive Fire at the City Saw Mills. Property to a considerable amount was destroyed by a fire that has occurred on the extensive premises of Messrs. Esdaile & Co., known as the City Saw Mills, Westlock-road, City-road. A brick building, 100 ft. by 40 ft., has been burned, and the roof is off. The cause of the fire cannot be clearly ascertained.

London and Middlesex Archaeological Society.—The Society will meet in the Trophy-room of St. Paul's Cathedral, on Tuesday, the 28th inst., when papers will be read by the Rev. W. Sparrow Simpson, D.D., Mr. C. Peckover, Mr. E. B. Ferrey, and others. The Society will afterwards visit the hall of the Company of Skinners, Dowgate-hill.

The New Chelsea Embankment.—The practical portion of the works in connexion with the new Chelsea Embankment is now completed. It is stated that the first monument erected will be one to Turner, the painter, and will be placed opposite his old house in Cheyne-walk.

The Late Mr. Owen Jones.—The news of the death of this gentleman has been received by all who knew him, or of him, with feelings of sincere regret. The occurrence is alluded to on another page of our present number, and we shall make an early opportunity to speak more at length of his career.

St. James's Hall.—A new entrance is about to be erected by the Company, who have purchased premises in Piccadilly for that purpose. Mr. Walter Emden is the architect engaged.

Warncliffe Arms, Sheffield.—We are informed that the drawings prepared by Mr. E. Bays, Cambridge, and Villiers-street, Strand, have been accepted for this competition.

Art.—Mr. George Browning will read a paper before the Royal Historical Society, on the "Art Revival in Italy," on Monday, the 27th inst.

TENDERS

For the erection of a new grammar-school and residence at Burton-on-Trent. Mr. George Seemell, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Gee & Son	£4,550 0 0
Grinwood & Son	3,985 0 0
Brown	3,750 0 0
Bowler & Beck (accepted)	3,750 0 0
De Ville	3,718 0 0
Mason	3,680 0 0
Wileman	3,630 0 0
Low & Son	3,618 0 0
Horsman	3,600 0 0

For decorating, gilding, painting, and restoring Liscombe House, Salford, Bucks, for Capt. P. C. Lovett, Mr. W. Barker, architect. Quantities by Mr. R. Carpenter:—

Haley & Hamerton	£998 14 0
McLachlan	822 0 0
Gibbons	878 14 0
Berry	756 1 10
Welcombe	727 0 0
Adams	725 0 0
Maynard & Son	707 0 0
Ray (accepted)	690 0 0
Biddle	646 0 0
Jacques	688 0 0

For the erection of a boys' and girls' school, to accommodate 100 children, at Bersham Village, Wrexham. Mr. William Turner, architect. —

Samuel	£1,600 0 0
Clark	1,637 0 0
Hughes	1,462 0 0
Bunn	1,437 0 0
Prigun	1,395 16 0
Williams (accepted)	1,386 0 0

For the alteration of the late National school at Bersham Village, Wrexham, for 135 infants. —

Samuel	£900 0 0
Williams	858 0 0
Hughes	798 0 0
Prigun	756 15 0
Clark	728 0 0
Bunn (accepted)	728 10 0

For alterations and additions to the boys' and girls' school, at Peaygell, Wrexham, for 37 boys and 64 girls. Mr. Wm. Turner, architect:—

M. Hughes	£1,945 0 0
E. Hughes	1,878 0 0
Clark (accepted)	1,280 0 0
Evans	1,242 6 0

For the erection of a new school at Tabor Hill, Pen-y-ged, Wrexham, to accommodate 315 infants. Mr. Wm. Turner, architect:—

M. Hughes	£2,620 0 0
E. Hughes	1,740 0 0
Evans	1,650 19 0
Clark (accepted)	1,500 0 0

For alterations and additions to Bredfield Rectory, Suffolk. Mr. R. M. Phipson, architect:—

Leff	£548 0 0
Dove (accepted)	536 14 0

For Rectory House at Burgh, Norfolk. Mr. R. M. Phipson, architect:—

Cornish (accepted)	£270 0 0
--------------------------	----------

For Brundish schools, Suffolk, Mr. R. M. Phipson, architect:—

Rudd & Spurling	£322 0 0
Grinwood (accepted)	735 0 0

For restoration of the chancel of South Reppe Church, Norfolk. Mr. R. M. Phipson, architect:—

Summers	£1,304 0 0
Clapham	1,283 0 0
Cornish (accepted)	1,205 0 0

For new roofs to the aisles of Denton Church, Norfolk. Mr. R. M. Phipson, architect. —

Grinwood (accepted)	£181 0 0
---------------------------	----------

For new cellars for Messrs. Barwell & Sons, Norwich. Mr. R. M. Phipson, architect:—

Howard	£295 0 0
Spinks (accepted)	460 0 0

For conservatory &c., at Clarence House, Clapham Park. Mr. A. G. Honell, architect:—

Amer	£470 0 0
Mason	465 0 0
Pritchard	467 0 0
Williams	447 0 0

For girls' school, mistress's residence, fence walls, &c., at Carshalton, Surrey, for the Carshalton School Board. Mr. A. G. Hennell, architect. Quantities supplied by Mr. W. W. Gwyther:—

Glarkin	£3,400 0 0
Turle	3,300 0 0
Peckett & Taylor	3,140 0 0
Hill, Higgin, & Hill	3,100 0 0
Masters	3,000 0 0
Keal	3,010 0 0
Downs & Co.	2,870 0 0
Rider	2,798 0 0
Cooke & Green	2,780 0 0
Fritchard	2,747 0 0
Staines & Co.	2,744 0 0
Wagner	2,700 0 0
Crookwell	2,630 0 0
Niblett & Son	2,634 0 0
Amer	2,630 0 0
Coles	2,565 0 0
Binks & Rampley ..	2,539 0 0
Braid, Jopling, & Co.	2,539 0 0
Longley	2,519 0 0
Stewart	2,388 0 0
Piston	2,165 0 0

For stabling, &c., at Mayon Park, Forest-hill, Kent. Mr. A. G. Hennell, architect:—

Amer	£1,000 0 0
Colls & Sons (accepted) ..	26,200 0 0

For block of improved dwellings for the labouring poor, Charterhouse-street, for the Corporation of London. Mr. Horace Jones, architect:—

Perry, Bros.	£10,600 0 0
Hart	10,430 0 0
Wignore	10,346 0 0
Asby & Sons	10,200 0 0
Condon & Son	10,098 0 0
Holland & Hansen ..	9,986 0 0
Tall & Co.	9,915 0 0
Servener & White ..	9,845 0 0
Mowers	9,643 0 0

For sewers at Chelsea:—

Feltham, Bros.	£3,701 0 0
Noel & Robson	3,300 0 0
Thompson	3,250 0 0
Vauwright	2,990 0 0
Dickinson	2,830 0 0
Killingback	2,758 0 0
Hobbs	2,657 0 0
Pearson	2,600 0 0
Wignore	2,540 0 0
Neave & Son	2,432 0 0

For the erection of a villa residence at Paignton, Devon, for Mr. Thomas Lidstone. Grates, mantelpieces, &c., not included. Mr. Geo. London Bridgman, architect:—

Dyer (accepted)	£980 0 0
For alterations and additional stabling at St. March Church, Devon, for Mr. W. S. Steele. Mr. Geo. London Bridgman, architect:—	
Eddles	£468 0 0
Isch	460 0 0
Vandone	390 0 0
Bovey	385 0 0
Chubb	336 0 0

For the erection of Pendley Manor House, Tring, for Mr. J. G. Williams. Mr. Walter F. K. Lyon, architect. Quantities prepared by Mr. Clement Dowling:—

Baker & Son	£14,839 0 0
Downs & Co.	12,844 0 0
Corder	12,770 0 0
Manley & Rogers ..	12,700 0 0
Pether	12,385 0 0
Chappell	12,344 0 0
Brown	12,310 0 0
Perry & Co.	12,238 0 0

For schools, residence, and boundary-walls, for the Westhead School Board, near Bury St. Edmunds. Mr. Frank Whitmore, architect:—

Firman	£1,460 0 0
Cadge	1,370 0 0
Pearson	1,145 0 0
Tooley (accepted)	1,145 0 0

For taking down and rebuilding No. 14, Water-lane, Thames-street, for Mr. M. Wheatley. Mr. John Whichcott, architect. Quantities prepared by Mr. W. Barrett:—

Turner & Sons	£6,263	Add if Sub-Basement is executed, £155
Hill, Higgin, & Hill ..	6,230	180
Asby & Horner	6,168	178
Browne & Robinson ..	6,851	180
Blundell	6,872	187
Newman & Mann	6,765	173

For alterations and repairs at No. 1, Carter-street, Broadway, Westminster, for Mr. F. Adie. Mr. T. Arnold, architect:—

Newman & Mann (accepted) ..	£266 0 0
-----------------------------	----------

For rebuilding No. 79, West-street, Brighton. Mr. Arthur Loader, architect:—

Cheesman & Co.	£7,660 0 0
---------------------	------------

For additions to the printing-office of the Brighton Herald, Prince's-place, Brighton. Mr. Arthur Loader, architect:—

Newham	£424 0 0
Colwell	374 0 0
Hackman	286 0 0

For new photographic studio and gallery for Signor Lombardi, Brighton. Mr. Arthur Loader, architect:—

Barnes	£27 10 0
Parsons (accepted)	615 0 0

For new road, footpath, culverts, &c., at Burgess Hill, Sussex. Mr. Arthur Loader, surveyor:—

Cox	264 0 0
Hobden	260 0 0

For repairs and decorations at Thurlston House, Berrieham, Surlston, for Mr. Dennis A. Druce:—

Newman & Mann (accepted) ..	£764 0 0
For new roads, drainage, bridge, and farm buildings, near Llantrissant, Glamorganshire, Mr. Arthur Loader, architect:—	
Ullmer	£4,220 0 0
Townsend	4,105 0 0
Hill	3,727 0 0
Wheeler (accepted)	3,420 0 0
Barlett	2,903 0 0

For Grocers' Wing, London Hospital. Contract No. 2. Mr. C. Barry, architect:—

Macey	£29,040	Extra to Fireproof Floors. £2,343
Ennor	28,214	2,337
Shedfield	27,894	2,680
Brad	27,535	2,653
Patman & Co.	26,840	2,168
Dumas & Co.	26,400	2,212
Lucas, Bros.	26,200	2,140
Hill, Higgin, & Co.	26,140	1,661
Holland & Hansen ..	26,097	2,100
Browne & Robinson ..	26,063	2,018
Perry & Co. (accepted) ..	25,765	2,112

For a new shop, and conversion of three houses into shops, at North End, Croydon, for the Trustees of the Wotton Estate. Mr. A. Latham, architect. Quantities supplied:—

Peckett & Taylor	£3,129 0 0
Hyda	3,048 0 0
Walker	3,017 0 0
Higwell	2,990 0 0
Hollidge & Co.	2,385 0 0

For the erection, including fixtures and fittings, of a new dispensary and retail station for the Northern District of the parish of St. Marylebone. Mr. H. Saxon Snell, architect. Quantities supplied by the Architect and Messrs. Lansdown & Folland:—

Brichell	£4,300 0 0
L. H. & R. Roberts ..	3,932 0 0
Patman & Fotheringham	3,925 0 0
Bangs & Co.	3,880 0 0
Temple & Forster ..	3,874 0 0
Anscumb	3,795 0 0
Mark	3,785 0 0
Braid, Jopling, & Co.	3,780 0 0
Stephenson	3,765 0 0
Wall	3,762 0 0
Morsman	3,760 0 0
Manley & Beger	3,646 0 0
Martin	3,600 0 0
Niblett & Son	3,650 0 0
Staines & Son	3,646 0 0
Simpson & Baker	3,616 0 0
Grinwood & Son	3,600 0 0
Stanes & Son	3,600 0 0
Wagner	3,603 0 0
Elkington	3,548 0 0
Crookett	3,500 0 0
Cullum	3,472 0 0
Hankin	3,400 0 0
Hook (accepted)	3,295 0 0

For finishing three villas, Norwood-road, Dulwich-road. Mr. Thos. Clarke, architect:—

Turner	£890 0 0
Mills	875 0 0
Stubbs	873 0 0
Palmer	859 0 0
Midwater & Sons	793 0 0
Blackmore & Motley ..	767 0 0
Upson & Ridsdale (accepted) ..	760 0 0

For villa and stabling at Addiscombe, for Mr. J. Taylor. Mr. W. Paice, architect:—

Randall (accepted)	£2,100 0 0
--------------------------	------------

TO CORRESPONDENTS.

C.D.—W.W.—A.M.—J.W.S.—F.W.A.L.—H.S.S.—W.E.—M.U.A.E.A.C.—F.R.W.—M.P.—J.—J.F.—S.C.—E.—J.L.—R.P.—J.—J.M.—A.D.—P.—O.—A.—J.—E.—A.T.—C.—W.—R.—J.—M.—S.—H.—C.—D.—A.—G.—H.—A.—H.—O.—L.—R.—F.—K.—C.—T.R.—S.—C.—H.—J.—R.—O.—H.P. (no satisfactory information as to the use of steel bars in lieu of bells can be obtained). R.K., report in type last week can be sent, as desired.—Dr. H. (next week).—I.G. (next week).—C.R. (next week).—G. (shall appear).

We are compelled to decline pointing out books and giving addresses. All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

N.B. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

	Situations Wanted.	Situations Vacant.
Six lines (about fifty words) or under ..	2s. 6d.	4s. 6d.
Each additional line (about ten words) ..	0s. 6d.	0s. 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to residents in any part of the United Kingdom at the rate of 18s. per annum in advance. Halfpenny stamps accepted for amounts under 5s. Any larger should be remitted by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to DOUGLAS FOURDNEY.

Advertisements cannot be received for the current week's issue later than THREE o'clock p.m. on THURSDAY.

Bath Stone of best quality.

RANDELL, SAUNDERS, & CO. (Limited), Quarriesmen and Stone Merchants. List of Prices at the Quarries and Depôts, also cost of transit to any part of the Kingdom, on application to Bath Stone Office, Corsham, Wilts. [ADVT.]

STONE BROTHERS.

Bath Stone Merchants, supply direct from their own Quarries:—Box Ground, CORSHAM DOWN, FARLEIGH DOWN, COMBE DOWN, AND STROKE GROUND. Prices on application at Bath-stone Office, Bath. London Depot, G.W.R. Mileage Station, Paddington. Stone Dressings prepared ready for fixing. [ADVT.]

Whitland Abbey Green Slates.—These Quarries are now fully opened out, and are producing Slates in all sizes, and in any quantity: sound, and of choice green tint. Orders can be executed without a day's delay.—For samples and further particulars, apply to the MANAGER, at the Quarries, Narberth-road, R.S.O. [ADVT.]

Asphalts.

Soyssal, Patent Metallic Lava and White Asphalts. M. S T O D A R T & C O. Office: No. 117, Cannon-street, E.C.—[ADVT.]

Bills of Quantities, Specifications, &c. Lithographed by ROBT. J. COOK & HAMMOND, 29, Chancery-cross, S.W., with accuracy and promptitude. Plans and Drawings Copied, Traced, or Lithographed.—[ADVT.]

J. L. BACON & CO.

MANUFACTURERS OF IMPROVED HOT-WATER APPARATUS, FOR WARMING AND VENTILATING Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.

OFFICES AND SHOW-ROOMS:—476, NEW OXFORD STREET, London, W. From FARRINGTON ROAD. Publishers of a Pamphlet on "Hot-Water Heating."

MICHELMORE & REAP.

Manufacturers of COLLINGE'S PATENT HINGES, LEVER, SCREW, & BARREL BOLTS, and IMPROVED GATE FITTINGS of every Description. 36A, BOROUGH ROAD, LONDON, S.E. Discount to Builders. Illustrated Sheet on application.

T. TRELOAR & SONS,

SUPERIOR COCOA-NUT FIBRE MATTING AND MATS. 69, LUDGATE HILL, E.C. GOOD FLOOR CLOTH. KAMPTULIGON CORK CARPET.

The Builder.

VOL. XXXII.—No. 1630.

Sanitary Work.

Soon after the passing of the Public Health Act, 1872, and when the sanitary authorities began to advertise for inspectors of nuisances, stating that they would be required to make a sanitary survey of the district, it was asked by some intending applicants, "What is a sanitary survey?" We devoted an article to an answer to this question,

which seems to have been of some use. Other questions have recently been put concerning the general duties of an inspector of nuisances, and whether the office is one that would be derogatory to an architect? Certainly not. The status of the office requires elevation. Its importance in the social economy of the country is immense, but the ordinary conception of its importance has hitherto been, or until recently was, low; in consequence, probably, of the inability of majorities of public Boards in the first place; secondly, of the small salaries; and lastly, of the intrinsic value of the services rendered (rather their valuelessness).

Foul houses and foul people go together, for the most part. It is the greater part, the majority, the mass,—that is to be regarded. The status of the many being low, that of the few cannot long continue superior. The superior physical condition of a family who by fortune obtain a good start, is soon brought low by the degradation of the other people with whom they are obliged to associate.

It might be supposed that the few worthy people amongst the many unworthy would be the means of elevating the status of the rest; but the disproportion of numbers is too great; the impression made is too soon effaced, and instead of an elevation of the many, we have in fact a lowering of the tone of the better few. The great thing to be accompanied by steady and persistent action in sanitary works is the elevation of the status of those people whose circumstances are at present low and base.

The inborn worth of people should be preserved; but in those exceptional cases where we find a clean house in a dirty neighbourhood, we do not see it long continue so. An evident struggle with adverse circumstances goes on for time, but despair ensues, and the worthy people sink to the common level. The causes of this degradation are numerous, and some of them (but they are secondary) are out of the reach of the inspector of nuisances; but the primary causes are want of drainage, want of a sufficient quantity of good water, want of fresh air in houses, want of sufficient "accommodation" to preserve the sense of decency, want of sufficient space in houses, and the continued sight of ugliness by children, leading them to base thoughts and actions. The secondary causes are irritability and ill-temper of the wife, carelessness and sickness of children, dissatisfaction and drunkenness of the husband. The evil to be overcome is gigantic, and it will not be much altered by attempts to rectify the secondary causes while those which are primary retain

their evil influence. They must be removed, and to do this sanitary affairs must be conducted on principles different from those upon which small commercial affairs are conducted. In larger commercial affairs there is a nearer resemblance between the principles upon which they are conducted, and those which should govern action in sanitary affairs. In both these hope and trust in future reward govern immediate action. With more or less confidence dependent on his judgment, the merchant hesitates not to make some present outlay of money, in order to achieve a future benefit. He may die in the interim; but he does not consider himself apart from his posterity, but as the present guardian of their welfare.

With confidence that proper sanitary action now will benefit the next, and the next, and every succeeding generation, each member of a sanitary authority would as little hesitate to do the work required. It is for those who know that by removing the causes of insanitary conditions people grow healthier to inspire this confidence in those who govern, but who have not turned their attention in any serious and sustained manner to the subject.

The analogy between an outlay of money by a merchant, who may die soon after, or even before, he receives any personal benefit from it, and the outlay of money on sanitary work by the present generation, who may possibly receive no direct benefit from the action, holds good in every way; but the importance of the one is much greater than that of the other, inasmuch as it is of a more permanent nature. To implant health,—or to remove the causes of ill-health,—in succeeding generations, is to lay the foundation of their prosperity, not only in the material, but in the moral sense.

The interest of each living person goes much further than his mere self; in the present it goes laterally as far as the welfare of all other living persons, and in the future it goes to that of all descendants. The interest of each member of a sanitary authority is to help those who cannot help themselves, to maintain their health, their rectitude of mind and body.

Sanitary work has two aspects,—one the rectification of permanent works, and the other a watchfulness over the small every-day occurrences and tendencies to go wrong which are natural in communities. Centuries of neglect have produced evils hardly removable, but, however gigantic the evil, it must be overcome before that desirable watchfulness over small insanitary beginnings can have any useful effect.

The large present outlay of money on sanitary works in order to rectify accumulated evils is the penalty of long-continued neglect of these small things, and it is hopeless to think of shirking the duty of rectification, as well as to begin the watchfulness desired. To do so would be to save over a canker which would necessarily exert its evil influence again and again until removed. What, then, is it that must be done? What are the larger evils to be remedied, and what the small ones to be watched over? Perhaps no one but an inspector of nuisances or a medical officer of health can tell us from actual experience. The clergyman might tell us, but he meddles not with mundane affairs. He hopes to conduct the soul to Heaven let its earthly body be ever so foul. He does well to inspire hope, but he does better who begets a hope that springs from the perfect health of the individual and the community in which he lives. A healthy individual can have no hope that springs within himself if he daily sees around him wretchedness and misery, and deformity of body and mind,—ugliness in many shapes, unconsciously expressed and therefore perpetuated.

A long time ago, the conductor of this journal said,—“As the homes, so the people,” and the experience of inspectors of nuisances must confirm that. The sanitary condition of a house-

hold embraces the quality of the air we breathe, the water we drink, the food we eat, the sights we see, and the sounds we hear. Does any one think we cannot have all these of good quality? He must then be without hope, for all are necessary to the health of the individual, and many more to that of the community.

Any one inclined to ask the question whether the acceptance of the office of inspector of nuisances would be derogatory to him may answer his own question, when he knows what he would have to do. He would have, then, to rise early, in order to have sufficient leisure to consider his day's work; to begin that work not later than nine o'clock; to keep as steadily before him as he can, in the midst of distraction, the principle above stated (and if he should not agree with that he had better not accept the office); to recognise the absolute right of the medical officer of health to dictate what shall be done, but to go about his own work in the absence of any specific instructions from that officer; to examine with sufficient minuteness the source from which the inhabitants of every house procure water for domestic use; to examine with like precision the state of the house-drainage; to see what "accommodation" there is to each house; to see, in the case of common outside privies, into what receptacle the contents are discharged, and in the case of waterclosets, whether sewage gas comes into the house by that means, or whether the soil-pipe is properly ventilated; to see whether there is a pigstye on the premises, and if so in what condition it is kept, and, if foul, to see whether that arises from the negligence of the occupier of the house to sweep out the filth and remove it daily, or whether the floor is so rough as to make this impossible, that being the fault of the owner of the house; to see whether the house is damp, and if so from what cause, and whether the rainwater of the roof is properly carried off by means of eaves-gutters, and whether it is caught and stored for use; to see whether there is a thorough communication of external air between the front and the back of the house; to observe, in a general and unobtrusive manner, whether there is a large family, and if so to see what bed-rooms there are, and, if a suspicion of overcrowding arises, to measure the rooms; to take, when required, a sample of any kind of food for analysis, under the Food Adulteration Act. If before structural sanitary defects can be rectified, an epidemic disease occurs,—as, for instance, small-pox, typhoid, typhus fever, or other zymotic disease,—then to disinfect drains, cesspools, houses, clothes, and generally to do what he can to prevent the spread of the disease (which, however, will probably be very little; still it must be done, for the sake of the bare chance of being able to do that little by this means); to inspect frequently, all slaughter-houses, tallow-melting-houses, and other premises where noxious trades are carried on. He will be careful of the respect due to the privacy of even the poorest person in his own house, and will always ask to be admitted before he enters. Entering he will quickly see the state of things, and if there are indications of want of thought in the tenant about such common sanitary work as he may do himself, the inspector will in the first instance explain what is required to be done; in the second he will warn him of the consequences of neglecting to do what he has been required to do, and he will mostly find that sufficient; but if the tenant is obstinate the third step is to summon him to answer to the magistrates for his fault. This is a very objectionable step, on many grounds, and ought to be avoided if possible; for an inspector must never lose sight of the fact that he is walking, talking, and ordering in the midst of ignorance and of faults, for which the individuals before him are not responsible; they

are the victims of the neglect of their forefathers, and by parity of reasoning the inspector may conceive how very important an office he holds, having the power—being, in fact, himself the means of improving the physical health of the people. He has two colleagues, each of whom he must faithfully serve—the parson and the doctor; the first passively, the other actively. The one he holds in reverence, the other he assists. He admits that any very much better state of things is not to be expected in our generation, but he expects that it will be hereafter, and he knows that unless it is begun it never will be brought about. While the parson prays he works. He allies himself with the doctor, and does what he can to transform ugliness into beauty. If he is an architect of the true stamp, all the better; he can then do many useful things which he who is not an architect cannot do. For one, he can explain to the sanitary authority how the air breathed in houses may be brought up to the standard of freshness fixed upon by the doctor as essential to good health. One good architect who would do this anywhere in England might be well assured that it would not be derogatory to him, even if he had to accept the office of Inspector of Nuisances in order to do it.

MODERN PARISH CHURCHES.

THE impression of some unenlightened readers on the perusal of this neatly got up little book,* would certainly be that the first adjective in the title was a misprint, and that the word should have been "Medieval." It will be found, however, that there are sentences in the book obviously incompatible with such a theory, and we must therefore accept it as a *bona fide* tract by a modern architect on what he believes to be the genuine requirements of modern churches. If in all his ideas upon these requirements he is really supported by the judgment of modern ecclesiastics, so much the worse, one may say, for the modern ecclesiastics. Regarding the book as a manual for the modern church-builder, we, from one point of view, should describe it as in many respects, antiquated and superstitious, but enlightened by gleams of practical common sense. It is but justice to add that the common sense, where it breaks out, seems to be mostly the writer's own, and that much of the absurdity he shares with a somewhat small, perhaps, but very vigorous and self-asserting, clique of church officials, church architects, and church milliners.

The object of the book, much of which first appeared in the shape of articles in a paper entitled the *Sacristy*, is to define the right treatment and arrangement of every portion of a parish church, from the general plan to the altar-box and notice-boards; and the author professes to ignore the standard set up as to what is "correct" and to inquire what is convenient and suitable, taking for his motto the rather jejune couplet of Pope,—

"Something there is more useful than expense,
And something previous *er'a* to taste,"—his sense."

If we could get "sense" into these matters it would be a great step gained, unquestionably; only we must be sure what kind of sense it is; for there seems now to be a sort of fantastic ecclesiastical or -gical sixth sense, which sadly cuts away the ground from our old, tried, homely friend, "common sense." To reconcile with common sense the existence, in a work like the present, of chapters "on minor altars and side-chapels" and "on confessionals" is fortunately not a part of our task; but it is impossible to pass over these and other indications of the spirit of the author without pointing out to him that in assuming that "modern parish churches" at large require all these provisions, he is simply begging a large part of a very large question, and claiming for a certain phase of ecclesiastical dilettantism a general acceptance which it has not obtained, and is not likely to obtain. His book would have been more correctly entitled "Churches for Revived Medieval Ritual."

One of the author's positions is that the churches which boast the greatest "correctness" of precedent do not deal fairly with the matter, even from the ecclesiastical point of view, and are designed in some of their details too much on a system of mere conventional or traditional "correctness," which is at times at variance with the very ritual it professes to subserve. An instance given of this is the placing of the

"credence-table" to the north of the altar, which is always assumed to be the correct position. Mr. Micklethwaite avers that there is no satisfactory ground for this at all, even in precedent, and that convenience dictates that the "credence" should be in the south wall of the chancel, because the "celebrant," standing in front of the altar, will then naturally turn to receive in his right hand anything brought to him from the credence-table, whereas in the ordinary position of the latter he would have to use his left. While there is sense in the inference, our readers will not fail to discover how much is assumed in the premises. Some readers will even think that the writer is insidious. While assuming an offhand tone, scoffing at "correctness," arguing for naturalness, the whole tendency of his teaching is to bring about the restoration of the signs and symbols of opinions pronounced erroneous by the Reformed Church of England.

We have long taught, and so concur in the opinion with Mr. Micklethwaite, that symmetry is in no way opposed to the spirit of Gothic architecture; on the contrary, that symmetry in plan is to be regarded in general as an object, when no special end can be attained by disregarding it; but we can hardly avoid a smile at one of the reasons in favour of symmetry, viz., that the separation of the sexes in church is a practice which is becoming more and more largely adopted, and which necessitates a symmetrical treatment and equal areas on each side of the central line. It is impossible to pass such a statement without an expression of more than regret for the revival of civilised days, of a practice which there can be little doubt arose from the fact that in the days of the early church the batches of Pagan converts could not be trusted to behave decorously, or without a hope that those bound by ties of family and of affection will long be seen joining together in worship. We are with our author again, however, when, in his chapter on "pews," or fixed seats (not necessarily with doors), he defends these as far superior in convenience and architectural effect to the ninepenny rush-bottomed chairs with which some of the latest churches have been ignominiously filled up. The employment of galleries is objected to, not on architectural grounds, for Mr. Micklethwaite sees, what is the common-sense view of the matter, that a gallery when designed from the first as part of the edifice, may be made to subserve architectural effect as well as any other feature; but because the occupants of side galleries must sit sideways to, and not fronting the principal point of interest in the building; this is a valid practical objection, just as applicable to other classes of buildings; side galleries in a concert-room, for instance, are always a nuisance. Into the *pros* and *cons* of the position of the font we cannot enter, but may note the injunction that the waste-pipe from it should not be connected with a common drain, "but with a dry well provided for the purpose, where the water may sink into the ground." On sanitary grounds the advice is good.

The chapter on the organ, which is contributed by Mr. Somers Clarke, jun. (who, we understand, is himself an organist and choir-master), is a very good and sensible one indeed, and shows considerable acquaintance with the subject. We may leave to those who are interested in such things the arguments as to "ro-tables" (which is the last new piece of slang in the ecclesiastical dictionary) and altar-shelves; but concur in the remark that a turned or capped wooden altar-rail is often very much better and more dignified in effect than the wrought metal flange which has become more the fashion, and that the simpler and plainer the table is the better, the more so as it is almost the universal practice to drape it.

Among the chapters devoted to practical subjects we may say that the remarks on warming and ventilating are worth attention, as also the account of the misguided and impious heating "engineer" who wished to carry his pipes behind the altar-table, and could not understand (poor man) why he should not do so. We think it is satisfactory to find that the value of wooden ceilings, in regard to warming and acoustics, is being more generally recognised; nor are we disposed to quarrel with the judgment that such ceilings, when well treated, are often better and more suitable in effect than an open-timber roof. The misfortune at present is, that they are too often made the excuse for gaudy and tasteless displays of vulgar coloured decoration. The remarks upon monuments and memorial inscriptions are also well-judged and sensible. Among

the minute directions for the furnishing of the sacristy and vestry, is a suggestion which we must not let slip: Mr. Micklethwaite has seen in Continental sacristies "two towels inscribed above, respectively, *ante Missam* and *post Missam*." This, he thinks, is "worthy of imitation," and we will endeavour to accept the hint with all becoming solemnity.

The chapters on Style, and on Architecture, contain a good many remarks which are true and which may be new to some of Mr. Micklethwaite's readers, combined with a lamentable amount of overstrong language and abuse of everything that has been done by other architects. Some of this is so overdone, and in such excessively bad taste, that it must defeat its own object, and only be laughed at by most readers. How refreshing it is to meet with such a sentence as this,—"But if ever again we are to have a national style we shall not get it by squalling." What a dignified and truly literary manner of turning a sentence is this. Some one advised young clergymen to strike out of their sermons "all that they thought fine."

If Mr. Micklethwaite wishes to make his book fit for the perusal of educated readers, he had better (if it comes to a second edition) strike out all that he thinks either forcible or funny; the result will be a considerable improvement in style, and a great reduction in bulk. Let us add, that when a member of a profession writes a book in which he constantly repeats language which, if it means anything, means that nearly all the members of his own profession, himself excepted, are foolish and incapable persons, the public may be apt to draw a rather opposite conclusion, which might be shortly expressed in a particularly homely and disagreeable old proverb.

On the whole, a certain number of the suggestions of a practical nature in this book are sensible, and some of them new. A good deal of the rest might have been spared, or put better and more succinctly; and the general value of the book will, no doubt, be variously estimated by those who do or who do not believe in the importance of all the subjects treated of. *Avropos* of which remark, we will close with a quotation from Mr. Micklethwaite's chapter on Clocks and Sundials. Speaking of the Medieval taste for mechanical clocks, he says (p. 132),—

"Their revival is most strongly to be condemned. In mechanism the wonders of one age are the toys of the next. In the fourteenth century these clocks were the dedication to God of the highest mechanical skill of the time. Now, at the nineteenth, Chanticleer flapping his wings and cock-a-doodle-doing the hour, or the twelve apostles nodding their heads in procession, or Balaam's donkey jerking out at one door and in at the other, are inconsistent with the dignity of a church, and fit only to excite the wonderment of children in a travelling peepshow." We leave our readers to make their own application.

POSITION OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE annual general meeting of the Institute will be held on Monday evening next, to receive the report of the Council on the state of the property and affairs of the Institute. The proposition to raise the entrance fees and subscriptions of members of the Institute will necessarily be brought forward, but there is reason to believe will not be persisted in.

The report is an interesting document, as the following extracts will show:—

"The issue of this report will no doubt be regarded with peculiar interest by those to whose information it is published, when they remember that in the present year the Institute has reached the fortieth anniversary of its foundation. It was in January, 1834, that some of the principal architects in London held a friendly meeting 'to receive the outlines of a plan for forming an Architectural Institution similar to the Institution of Civil Engineers.' The scheme thus originated supplied a basis for the rules under which the Society was formed, and subsequently became incorporated by Royal Charter. Of its original members few now remain to witness the success of their early efforts, and to note the steady progress which the Institute is making in numbers, in influence, and professional position, but to those few the Council desire to convey, by way of preface to this report, an expression of gratitude for services which, re-

* Modern Parish Churches: their Plan, Design, and Furniture. By J. T. Micklethwaite, F.S.A., Architect. London: Henry S. King & Co.

dered more than a generation ago, have been followed by so substantial a result."

"The present financial condition of the Institute has been the subject of some comment, and notwithstanding the explanatory details published last year, of no little controversy."

It is obvious that, if in the course of three years a sum of 637*l.* was expended on objects which had hitherto been regarded as beyond the ordinary demands on our income (but which had met with the formal approval of the general body), a deficiency might be expected at the close of the fourth year. To meet this deficiency, the Council of 1873 proposed to apply 300*l.* of accumulated surplus income invested in 1869, and the general body gave full authority for the sale of 200*l.* more. The latter sum has not yet been sold out, but will probably be required, before long, to meet the only liability now remaining from last year, viz., the sum due to the library fund. The existence of this fund is due to the exertions of the Council who, some time ago, issued circulars reminding members of a bye-law which requires newly-elected fellows and associates to read a paper at the Institute, or to make a donation to the library or collection. This donation frequently took the form of money, so that by degrees a considerable sum was contributed, which the Council held in hand for the library, and duly credited to the library account, making grants from time to time for the purchase of works as required. Thus in 1872 a sum of 74*l.* was disbursed from the fund, and in 1873 a further sum of 73*l.* The amount still remaining in the hands of the Council is 190*l.**

A comparison of the balance-sheet for 1872 with that of 1873, will show that, while the ordinary expenses of the past year have been in several instances reduced, the subscriptions for the same period have increased by 50*l.*

In the face of these facts, the proposal made at the last special meeting to raise the rate of members' subscriptions, may occasion some surprise. The truth is, that an addition to the income of the Institute is required, not to cover ordinary expenditure, but to meet those occasional claims for substantial aid that have been from time to time made in behalf of external objects and schemes of professional interest, which, though possibly within the original scope of the Institute, and certainly not to be ignored in its present position, have not, until lately, been aimed at. Within the last few years the Institute has subscribed liberally to the artistic education of students, and incurred heavy expenses in connexion with the General Conference. Anticipating the possible recurrence of such claims, the Council suggested a mode of raising the means to meet them, without at all interfering to press the suggestion, unless it should be cordially seconded by the general body of members. But for current expenses the present income of the Institute is sufficient, and it is only fair to add that those expenses have not increased out of due proportion to the increase of its income, its numbers, and the efficient organisation necessary for its work.

Before leaving the subject of finance, the Council desire to draw special attention to the magnificent bequest of 1,000*l.* made by the late Mr. William Tite, M.P., Past President of the Institute. This sum has now been invested in stocks, and the interest will be applied in accordance with the testator's wishes, 'to promote the study, in England, of Italian architecture,' a scheme for carrying out this intention has been already drafted by a committee appointed by the Council, and assisted by Mr. F. Overy, solicitor to the Institute. After having been submitted for legal opinion it will be laid before Lady Tite for approval before publication.

At the architectural examination held last year twenty candidates presented themselves. These, passed in both sections of the Institute class, one in the artistic, one in the scientific section, and twelve in the preliminary examination, while Mr. H. H. Stannus received the first prize awarded to candidates, in accordance with the bequest of the late Mr. A. Asplight. The sense which the examination involves in fees the examiners and moderators, printer's cost, &c., has hitherto been scarcely justified by result, but the Council trust that as the examination is now definitely biennial, the number of candidates will increase sufficiently to make self-supporting, in which case there can be no

*The cost of recently-published Library Catalogues, amounting to about 30*l.*, has been defrayed out of ordinary income.

question as to the advisability of maintaining a scheme whereby the professional skill of an architect may, to a great extent, be tested, if not insured, at the outset of his career. And if in course of time that test should be accepted and recognised by the public, it is impossible to over-rate its influence in maintaining the educational standard and social status of the profession.

In accordance with a resolution passed at the last general conference of architects, in 1872, a similar gathering will be convened this year."

"The novel and somewhat suddenly-issued notice that in the ensuing Exhibition at the Royal Academy, preference of place would be given to those architectural drawings which taken many members of the profession by surprise. However desirable it may seem to secure for such a purpose the autograph representation of an author's design, it may with reason be urged that the excellence of a design cannot always be measured by the skill with which it is transferred to paper. Nor can an architect, in full practice, be always expected to devote sufficient time to a work which, after all, only illustrates, and is not in itself a substantial specimen of the art which he follows."

Since the last report was issued, four examinations have been held at the Institute, under the Metropolitan Buildings Act of 1855. Thirteen candidates have presented themselves for examination, and ten, having satisfied the Board of Examiners as to their ability, have received from the Council certificates of competency to perform the duties of a district surveyor. The scrupulous care and strict impartiality with which these examinations have been conducted for a period of nearly twenty years, and the gratuitous labour which has been bestowed upon them, should render the Institute jealous of any attempt to withdraw from their corporate body a trust which has long been reposed in its executive, and which could scarcely be transferred from it without serious danger to professional interests. The Council are induced to offer these remarks by observing that in the Bill now before Parliament, and intended to supersede the Building Act of 1855, the official connexion of the Institute with the appointment of district surveyors is not recognised as it hitherto has been; and, having regard to the powers proposed to be invested in the Board of Works, they can scarcely escape the inference that the services of the Institute in this particular are likely to be ignored.

The New Metropolitan Buildings and Management Bill of 1869 was not laid before Parliament until the advice of this Institute on the subject had been sought and rendered in the shape of a careful report, drawn up by a special committee, after a series of meetings. On the present occasion, copies of the proposed Bill have indeed been furnished to the Council, but so late in the day that the committee have had but little time for their labours. A report, however, including some important suggestions, has been drafted and forwarded to the proper quarter, where, it is hoped, it will meet with due consideration."

"Complaint has frequently been made as to the insufficient ventilation of the Institute meeting-room, and the deficiency of accommodation in the adjoining offices. The Council are fully aware that there is ground for such complaint, but they fear that those evils could only be remedied by a partial remodelling of the premises now occupied by the Institute. Under these circumstances, the question naturally arises whether, if such a step were contemplated, it would not be preferable either to rent additional rooms in Conduit-street, or to seek more convenient quarters elsewhere. The real obstacle to either scheme is a financial one, would necessarily insurmountable, but one which would require careful consideration. It would be obviously undesirable to enter upon any arrangement, however necessary, which might involve an increase of annual expenditure; but it remains to be seen whether some plan could not be devised by which the Institute might obtain some return for the amount of outlay required.

Various schemes have been suggested, but up to this time not in a sufficiently definite form to enable the Council to discuss them. Among others, a proposition has been to effect such household arrangements at the Institute, as would enable it to assume to some extent the character of a club. This proposal is certainly deserving attention, but it presents material and obvious difficulties which must be met before it could be put into execution."

ART-UNION OF LONDON.

The thirty-eighth meeting of this Society was held on Tuesday last in the Royal Adelphi Theatre.

Professor Donaldson stated that Lord Houghton had been prevented by a domestic calamity from taking the chair; but that the duty would be performed by Mr. Godwin, F.R.S., whom the Council had had the great gratification of electing a vice-president.

Mr. Antrobus, hon. secretary, then read the following

REPORT.

The Council have to report to the subscribers that the amount of subscription for the year just closed is 11,311*l.* 2*s.* 0*d.*, and they are happy to find that the plate of "Dutch Travellers" has justified the anticipation of its popularity expressed in the report of last year.

The Council have, as usual, to return warm thanks to the local honorary secretaries and agents, both at home and abroad, for that co-operation which so largely conduces to the success of the Association.

On the present occasion they feel that an expression of recognition is especially due to Mr. Bailey, Birmingham; Mr. Fawcett, Clapham; Mr. Bannister, Grimsby; Mr. Hick, Wakefield; Mr. Hay, Japan; Mr. Brown, Sydney; Mr. Kennan, Hamilton; Messrs. Wilkie, Melbourne; Mr. Southan, Sandhurst; and Mr. Glazier, Hartford, U.S.A.

The Council have availed themselves of the elevation to the Peerage, as Lord Emsay, of the Right Honourable Lord Monson, M.P., to add his name to the list of Vice-Presidents. They have, at the same time, with the utmost cordiality, conferred the like honour on George Godwin, Esq., who has well earned this mark of regard and respect from the Council and members. As one of the founders of our Institution, by his invaluable services as Honorary Secretary for many years, by his personal influence, by his rare judgment and writings, he has essentially contributed to the present important position of the Art-Union in the artistic world.

Since the last meeting the Council have been deprived by death of the valuable assistance of Sir William Bodkin, the late assistant-judge. Mr. Grissell also, from impaired health, is unable to attend.

To fill three of the vacancies thus caused, Thomas Lucas, Esq.; J. A. Hallett, Esq., formerly a member of the Council; and Aston Webb, Esq., have been elected.

The following is a brief summary of the receipts and expenditure; a detailed account will, as usual, be printed in the report.

Amount of subscriptions	£11,311 2 6
Allocated for prizes	£8,154 0 0
For print of the year, almanack, report, &c., and reserve	2,764 3 10
Agents' commission and charges, advertisement, postage, &c.....	9,918 3 10
	2,382 18 9
	£11,311 2 6

The accounts have been audited by the Finance Committee, and by Mr. C. J. Atkinson and Mr. W. A. F. Raynes, to whom thanks are due.

The reserve fund now amounts to 17,085*l.* 7*s.* 6*d.*

The Council desire to say a few words as to the Permanent or Reserved Fund. By the 3rd Bye-Law the Council are required to form a Permanent Fund, the means of a reserve of not more than 2*l.* per cent. on the amount of each annual subscription, of sums not expended by prizeholders, and of interest on the funds of the Society. The simple mode of proceeding, had such a course been practicable, would have been to retain in each year a certain portion of the subscriptions; to invest such portion in productive securities so as to accumulate by way of compound interest, and to act in like manner with the other items forming part of the permanent fund; but this course was pursued, and had the Council thought fit to exercise fully their power in this respect, a larger amount; but such a course of proceeding was obviously impossible, regard being had to the necessities of the case.

It has been an unbroken practice, one which has met with universal approval, that in each year the subscribers should be presented with an original engraving, in addition to the chance of obtaining by lot a certain number of works of art, of various values. To carry out this scheme it is necessary to look forward, and make arrangements prospectively, for periods varying from five to ten years, during which periods large sums are expended in the purchase of copyright of pictures for engraving, in payments on account to engravers, in printing, and in other outlays necessary for the production of a first-class engraving every year. It will give some insight as to the magnitude and importance of these arrangements, when it is stated that the payments already made on account of prospective works, and liabilities incurred in relation thereto, amount to above 40,000*l.*

The Council had two courses before them, either to borrow money at a high rate of interest, or to make use of the reserved fund. They adopted the latter course, employing it, in fact, in working out the purposes of the Society, and all the property and assets of the Association are liable to renease such fund, should it ever be necessary to renease the whole or any part of it for the purpose of purchasing or constructing a gallery. In the course of proceeding as before detailed, certain pictures have become the property of the Association, having been purchased, on economical grounds, for the purpose of engraving, and it is part of the duty of the Council to settle when and how their value shall be realised. It may be advisable to sell them, and thus ascertain their market value, or to fix a value on them and allot them as prizes, in lieu of a larger number of less valuable ones; in either case their value must go to the credit of the reserved fund. This is purely a matter of discretion, vested in the Council by the charter; it is also a matter for mature consideration as to the time when, and the mode in which the pictures, when they have fully served the purpose for which they were acquired, should be disposed of. Should they be sold, the Council have reason to believe that their increase in value, since the time of their purchase, will prove that the course pursued has not been injudicious.

It is one of the leading duties of the Council to see that, in each year, the subscribers of that year obtain full value for their subscriptions, regard being had to all the circumstances.

stances of the case, and the Council here it will be felt by the subscribers that this duty has not been unfilled by this operation.

The foregoing explanation may not, at first sight, appear to agree with the statement of the exact amount of the reserved fund given from time to time in the annual reports,—the amounts stated have been the accumulations of the 2½ per cent. actually reserved from the subscriptions, together with certain small additions annually accruing, and also with interest calculated at the low rate of 3 per cent. (and that only since the year 1857), on certain portions of the fund, from time to time advanced towards the general purposes of the Association. This mode of proceeding has been very favourable to the annual subscribers, but it is not one that would be adopted were it necessary for practical purposes exactly to ascertain the amount of the reserved fund; a stricter mode of calculation, such as the one referred to in the outset, would bring the sum to a much higher amount; but, as the amount of the reserved fund is practically discretionary with the Council, they, in the interest of the subscribers, have been content to do it as the sum heretofore advertised.

In the case of the picture by E. W. Cooke, esq., R.A., "Dutch Travellers," engraved for copyright has been charged to the engraving account of the year, and the picture will be made the chief prize in this distribution, the balance of the purchase-money being charged on the prize fund.

The amount to be expended on prizes will be thus allotted:—

22 works at.....	£10 each.
22 " " " " " " " "	15 "
14 " " " " " " " "	20 "
12 " " " " " " " "	25 "
12 " " " " " " " "	30 "
10 " " " " " " " "	35 "
8 " " " " " " " "	40 "
6 " " " " " " " "	50 "
4 " " " " " " " "	60 "
5 " " " " " " " "	75 "
3 " " " " " " " "	100 "
2 " " " " " " " "	150 "
1 work at.....	200 "
1 oil painting by E. W. Cooke, esq., R.A., "Dutch Travellers," cost 1200	1200

To these will be added:—

6 Bronze Statuettes, "Gimabie."
20 Porcelain Statuettes, "Net-Mending."
150 Volumes of Engravings by the Etching Club.
60 Chromos of "Bellegio."
30 Statuettes, "Whittington."
275 Volumes of Landscapes after E. W. Cooke, R.A.
30 Silver Medals of Gibson, the sculptor.

These, with the prizes given to unsuccessful members of ten years standing, will raise the total number of prizes to 940.

For the coming year your Council have had the confidence to prepare a work, the expense attending the production of which, to be given at the price of one guinea, could not have been borne by any association unsupported by the thousands which form the strength of the Art-Union of London.

The great wall-painting in the Palace of Westminster, representing the meeting of Wellington and Blücher after the battle of Waterloo, gave Mr. Maclise six years of incessant labour; its reproduction in the form of a magnificent plate, in the pure line manner, has occupied Mr. Stocks for five years, and the result is one of the most important and expensive plates ever engraved, and the subject such as cannot fail to possess immense interest for every British subject.

Before proceeding to describe this work, it will be well to take this opportunity of setting at rest a question which caused some discussion at the time when the painting was completed.

It was stated in some of the journals of the day, that, in the supplementary despatches of the Duke of Wellington, he had distinctly stated that no such meeting between Prince Blücher and himself, as that depicted by Mr. Maclise, had ever taken place.

No such statement is to be found, but Mr. Maclise was so anxious that his labour should not be bestowed on the embodiment of an incident that never occurred, that through the instrumentality of Sir Charles Eastlake, her Majesty the Queen was induced to order inquiries to be made at the Court of Prussia, through the Crown Princess, our own Princess Royal, in order to obtain authentic information on the above-named subject.

In the Rev. E. R. Gleig's "Story of the Battle of Waterloo," in describing the battle of Ligny, which was gained by the French over the Prussians, on the 16th June, two days before Waterloo, he relates how Prince Blücher's horse, being wounded by a musket-shot, fell with him and half-buried him under its weight. Count von Nostitz, the aide-de-camp riding by his side, leapt from his saddle, and, drawing his sword, placed himself over the body of his fallen commander; and, fortunately, the French horsemen, intent on overtaking a mass of troops lying before them, rushed past without paying any heed to the two, and being subsequently driven back by the Prussians at that point, Prince Blücher was raised by his own men and borne to a place of safety.

It was this Count von Nostitz to whom application was made for information as to the fact of the meeting having occurred, and here is what he says:—

"Having had the honour of being the personal aide-de-camp of Prince Blücher throughout the campaigns of 1813, 1814, and 1815, and having been constantly at his side during those years at every important moment, I can answer the inquiry addressed to me respecting the meeting of the Duke of Wellington and Prince Blücher at the Belle Alliance, on the evening of the 18th June, most positively; that this meeting really took place; that the two generals congratulated each other on the brilliant victory jointly won by them, and concerted measures for the pursuit of the enemy during the night. I shall be very happy if this declaration of mine shall tend to remove doubts, for which, after the account given by the generals themselves of this historical fact, there has never been any justification.

(Signed) GRAY VON NOSTITZ."
In the preparation of this great work, Mr. Maclise displayed, in a prominent degree, that laborious and fastidious care which he always bestowed in order to render his pictures true. The Council are in possession of a portfolio, purchased at the sale of his effects, containing an infinite number of sketches of arms, accoutrements, guns, musical instruments, and the uniforms worn by the soldiers of that day. The acquisition of many of these was a work of great difficulty, in consequence of the

destruction of a vast quantity of such materials contained in the grand storehouse, destroyed in the disastrous fire in the Tower of London in the year 1841.

This wall-painting in the Royal Gallery, as well as the one facing it of the Death of Nelson, is 45 ft. long by 12 ft. high. It was painted in a tempera and oil, and is, unfortunately, in consequence of some error in the preparation of this liquid, or some other cause, a kind of efflorescence took place, which has begun to appear in some parts of the work, obscuring the colour.

In the centre of the composition the Duke of Wellington, mounted on his horse, is seen in full view, and his face shows clearly under his Prussian foraging cap. He is just on the point of moving off, as it was arranged that the pursuit of the flying enemy should be taken up by the Prussians, while the tired British troops rested on the field of battle.

Along the back of the picture are the British cavalry pursuing the artillery and wagon-train down a steep bank. In the centre the village, "La Belle Alliance," is skillfully used as a background to throw up the principal group. On either side of the two Generals are clustered the staffs of each. Just behind the Duke are General Somerset and Lord Arthur Hill, and between them is seen the face of the Honourable Henry Percy, afterwards Lord North, the Duke's despatches and the captured eagles. Not many officers are there of note, since most had been put hors de combat on that dreadful day.

Beyond this group a Prussian Highlander is carrying off the body of the "young gallant Howard," mentioned by Lord Byron; he was killed near the close of the battle, leaving a young widow and three children. Near the centre, in front of the wounded Life-Guards, brandish their swords and cheer. At the extreme right of the picture the wounded white horse of a Cuirassier is striving to rise from under his rider's body, which lies on a plain of water from her head. Close to her is a knapsack filled with crosses and orders taken from the slain, with which her infant is amusing itself.

Immediately on Blücher's left is his staff, Gaisensan, to whom the command of the pursuit was given; Von Nostitz, Bulow, and others. Nearer to the front is Sir Hussey Vivian, mounted on a magnificent white horse, which is a very important part of the composition, as forming a bright and telling centre in that portion of the picture.

In the front in this part is a Highland piper lying dead, his hand from his mistreated fingers are the pipes which he will never blow again, and his basket-hilted claymore. Below lies an English colour-sergeant, wounded the leg, and being attended by the surgeon. One of the most remarkable merits in this work is the admirable grouping of the horses, and the skillful variety of their form and action. Blücher's horse seems to be an answer to dash off, contrasting with the subdued air and quiet dignity of Copenhagen. The black horses of the English Guards form a fine contrast with the lighter coloured animals ridden by Blücher's men.

In all directions along the foreground of the picture are broken swords, muskets, and various musical instruments, cannon-balls embedded in the ground, and the remains of shattered gun-carriages and equipments. The plate engraved from this picture is no less excellent in its own department than the original. The skillful laying in of the lines, the bold and smooth sweep of the graver, producing a roundness and solidity of effect, a most striking contrast of light and shade, which leaves nothing to be desired. The Council have every reason to believe that this truly national work, commemorating one of the greatest triumphs of British arms, a work which every subscriber will feel proud of having on his wall, will induce a very large subscription for the coming year.

To do justice to this important work the Council did not hesitate in paying the engraver the large sum of 3,500l.

In reference to the art-education of the country at this time, there is much ground for complaint. The contemplation of the continual increase in the number of pupils attending the several Art-Schools. The number of young men, who, confined closely at business during the day, yet, in the evening, are very considerable, and though amongst so large a population as ours the growth and spread of a love and appreciation of art are, of necessity, in some degree retarded. That there are not now open to that reproach for the great universal which divided England from the Schools of Continental Europe, in the matter of artistic excellence, some twenty years ago. We are more likely to hear the fact that man has something more to do than to earn his livelihood; that he has a social as well as a material life to lead; and moreover that, even in earning that livelihood, the capacity of workers would be largely increased by the cultivation effected in our schools of art is calculated to produce.

It is undeniable that the general character of a large part of the designs of articles in use in every household is continually and rapidly changing, and that though many things may be of cheap or common material, they are good in form and colour, and, at least, not absolutely unsightly.

Amongst the causes which have led to this demand for an improved character in such works, the Council feel that the Art-Union of London may claim a share, and a large amount of merit must be conceded to the South Kensington Museum and the Schools of Art, which, with its 800 candid person will question the very great benefit which this Institution has conferred on the country, and when some months since it was announced that the management of the Trustees of the British Museum, a loud and angry protest went out from many of the leading journals of the day.

It is impossible to deny that at South Kensington the one ruling desire is to attract and interest the public, the circumstance alone that the building is open to all, and that the designs are to be sent in next month, and the Council look forward to the production of works afford-

ing ample proof of the high state of excellence to which our art students have attained, and which may supply graceful and attractive objects for the adornment of our houses, when distributed as prizes in future years. This mention leads the Council to advert to the continued advance manifested in the quality of the works selected by the prizeholders, and, even at the expense of repetition, they cannot refrain from urging those who may be successful to-day to endeavour to improve on the selections of foregoing years.

LEWIS POOOCK, } Hon. Sec.
EDWD. E. ARTHUR, }

The Chairman, in moving the adoption of the report, expressed sincere condolence with Lord Houghton in his affliction, remarking that he was no mere fair-weather president, but always ready with his aid whenever needed. Mr. Godwin then went on to say that one great satisfaction which he derived from being "raised from the ranks" in the Council was that it unlocked his eyes, and enabled him to bear testimony to the large amount of labour and constant supervision bestowed by the Council week after week, and year after year, on the affairs of the Society, not that, too, without a shadow of emolument of any kind,—or even of patronage,—which they had taken an opportunity of declining when, some years since, the Government wished to place the selection of prizes in the hands of the Council. This would, no doubt, have had the immediate effect of conferring on the Council a large amount of patronage as regards artists, but the result would have certainly been the destruction of the Society by taking from the prizeholders the right of selection. While speaking of personal efforts, he would take the opportunity to commend the continued exertions of the assistant secretary, Mr. T. S. Watson, and to thank Mr. John Hogwood, their honorary solicitor. The chairman went on to say he had often had the occasion to refer to the establishment of the Society with its 200 or 300 members, years ago, when with Mr. Ponock and Mr. Hayward, whom he was happy still to see by his side, they rocked the cradle of this now well-established Society, and saw it at last culminate in a list of 17,000 or 18,000 subscribers, and finally settle down to a steady annual income of 11,000l. or 12,000l. He pointed out how great had been the advantages it conferred on art and artists, and called attention to the evidence of its wide-spread action, suggested by two lines of the report, which gave thanks for the exertions of Mr. Farebrother, of Clapham, and Mr. Hay, of Japan. In all parts of the world, where the English language was spoken, the Association had a secretary, and its prizes and prizes were distributed, binding together distant communities in a good object. The kingdom of art had no boundaries:—

"In war renowned, in peace sublime,
Art moves in greatness and in grace;
Its power, subduing space and time,
Links realm to realm, and race to race."

He was glad to say that there were symptoms of awakening from that apathy as regards the encouragement of art, which had so long characterised both the central and provincial municipalities of the country. The Government ought to feel that money spent in providing frameworks for public enjoyment, instruction, and refinement is spent profitably.

Professor Donaldson in seconding the adoption of the report, adverted to the importance of the evidence adduced by the letter of Count von Nostitz as to the meeting of Wellington and Blücher, and commented on the importance of the plate produced.

Mr. Bennock, F.S.A., moved a vote of thanks to the Honorary Secretaries, and dilated on the amount of labour bestowed by them on the conduct of the Society. He stated that several members of the Royal Academy had declared the engraving by Mr. Stocks to be the finest of its kind ever exhibited on the Art-Union would constitute himself an agent to canvass for subscriptions for this magnificent plate, the subscription next year would be nearer 30,000l. than 12,000l.

Mr. Butterworth, F.S.A., seconded the vote of thanks to the Honorary Secretaries; and afterwards usual compliments to Mr. Chatterton and Mr. Churchill in regard to the use of the theatre, and to the ladies about to draw the prizes, and to the Scrutineers, proposed by Mr. Troughton, and seconded by Mr. P. Graham, the drawing was proceeded with. The following is a list of the principal prizes:—

An Oil Painting, "Dutch Travellers" by E. W. Cooke, Esq., R.A. (cost 1200l.). Hume, R., Arbuthnot Lodge, Blackrock-road, Cork.
200l.—Fleming, T., Bristol.
150l.—Byrnes, J. L., Oxford; Tatham, E., Moorgate Wharf.

* A view and plans of the house will be found in an earlier volume of the *Builder*

and it was suggested that portraits of the worthy alderman and his wife should be placed in the new mansion-house.

It may be mentioned, as a coincidence, that at the moment when his munificent offer was being made to the Town Council, Mr. Godwin, as chairman of the Art-Union meeting in London, had to declare Mr. Proctor the gainer of the 200l. prize.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

At the council meeting, April 22nd, Mr. G. R. Wright, F.S.A., in the chair, the balloting-list of the officers and council for the ensuing year was read and approved, and an announcement made from the chair, that Mr. Kirkman D. Hodgson, M.P., late governor of the Bank of England, would preside at the thirty-first annual congress of the Association, to be held at Bristol, from the 4th to the 10th of August next, succeeding to his Grace the Duke of Norfolk, Earl Marshal of England, as president for the year. It was also announced that the services of Mr. John Reynolds, of the Manor House, Redland, had been given for the forthcoming congress as honorary local secretary, and that an invitation from the Mayor and Corporation of the county and city of Bristol had been received.

At the evening meeting, the Rev. S. M. Mayhew, M.A., F.S.A., in the chair, interesting exhibitions of early English and later Dutch pottery, with some choice specimens of Venetian glass, were made by Messrs. E. Roberts, Bailey, and Mayhew, and afterwards a paper read by Mr. H. Syer Cuming, F.S.A. Scot., "On the Origin of and Causes which led to the Nine of Diamonds being called the Curse of Scotland." This subject, which was ably illustrated by quaint references and much historical research, was fully commented on by the chairman, Messrs. S. J. Tucker, Rouge Croix, R. N. Philipps, D.C.L., E. Roberts, F.S.A., and others. The evening was brought to a close by the reading of a paper by Mr. E. P. Loftus Brock, "On the discovery of an Ancient Interment, British or otherwise, near Beddington Park, Surrey," and the meeting stood adjourned until Wednesday, May 13th, when the annual general meeting of the Association will be held, at four p.m.

THE NEW BUILDINGS FOR THE "TIMES."

THE handsome and substantial new buildings which have for some time been in course of erection in Queen Victoria-street for the *Times* newspaper are now so far completed as to admit of their being opened for business on Monday next. This lofty pile, which has been erected not only for the publication and general business of the *Times*, but also for the manufacture of the now celebrated "Walter" printing-machine, may be designated as an exceptionally prominent architectural feature in Queen Victoria-street. The main elevation in Queen Victoria-street is about 60 ft. in length, and upwards of 80 ft. in height from the street level, the central portion, which is surmounted by a bold and massive carved pediment in stone, being carried to a height of nearly 80 ft. The building has a deep and spacious basement, containing one large workshop, extending over the entire ground area. This part of the building is 16 ft. in height from the floor to the ceiling, and is exclusively set apart for the manufacture of the "Walter" machine. The building, in addition to the basement, contains the ground floor, which is lofty, and four stories above. The materials used are red wire-rod brick, with yellow brick dressings, all of which were manufactured from the clay on Mr. Walter's estate, at Bearwood, in Berkshire. Each story contains a range of nine windows, which are segment-headed. The entrance is at the west angle of the building, and is an ornamental feature. It is upwards of 7 ft. in width, and very lofty. It is in carved stone, and circular in form, the arched heading being supported on each side by massive polished granite columns, and bold stone cantilevers. The façade is surmounted by a projecting stone cornice, 4 ft. in height, and above this, in the central portion of the elevation, and extending across nearly two-thirds of the entire frontage, rises the pediment already mentioned. The carving on the face of the pediment is a reproduction of the motto which has long daily appeared in the *Times*. In the centre a huge block of stone represents an open book, with the words "The Times" in-

scribed in large black letters; on one side is another open book also carved in stone, having on it the inscription "Times Past," and surrounded by a profusion of oak-leaves in full foliage, and bunches of acorns, the foliage of the oak-leaves obscuring some portions of the book of "Times Past." On the other side is a third book closed, on which is inscribed a "Future." In the central portion of the upper part of the pediment, over the carving just described, is a large and ornamental clock. The whole of the building, both externally and internally, has been erected in an exceptionally substantial manner for its intended purpose. In addition to the Queen Victoria-street main elevation, the building has another frontage in Printing-house-square, and the east side of the quadrangle in the square is about to be rebuilt, uniform with the structure which has just been completed.

The architect from whose designs the building has been erected is Mr. Deacon, the builders being the proprietors of the *Times* themselves, and Mr. Teague is the Clerk of the Works.

EXTREME PRICE OF GAS.

A NUMEROUSLY attended meeting was held (in Berners-street) on Tuesday night, to consider the question of the price of gas. After several speakers had denounced the exorbitant charges of the companies, a letter was received from Mr. Beresford, M.P., who urged that the gas and water companies should be bought up in the public interest.

Meetings have been held in various other places, and much indignation is everywhere expressed.

In America similar discontent prevails on the subject. We find some lines in one of the journals there, ending thus vehemently:—

"And all your lying meters,
Those never-failing cheaters,
Will lie in vain to save you
From a flood of public acorn;
A general indignation
Will make you rue the day, ma,
That ever you were born!
Gas man! Gas man!
It will come to pass, man,
If you don't repent,
And cease to plunder honest men,
That down where Satan revels,
With his twenty million devils,
You'll furnish endless light, and get
No money back again!"

THE MANUFACTURE OF FIRECLAY GOODS.

MANUFACTURES in fire-clay, comprising, as they do, many articles other than those which must necessarily possess fire-resisting properties, are rising in importance to an extent not generally recognised; some idea of which may be formed from the fact of fireclay goods being used for the lining of furnaces and domestic fireplaces, the drainage of towns, and the ornamentation of public buildings.

Fireclay is found in various parts of Great Britain; the most noted seams occurring at Dinas, in Wales; Kilmarnock and Glenboig, in Scotland; and Stourbridge, Plympton, Newcastle, Burton-on-Trent, Poole, Hedgerley, and Wortley, in England. The celebrated Dinas rock, when made into bricks, is almost pure silica; but generally the proportions are 59 to 84 per cent. of silica, 36 to 8 per cent. of alumina, with small quantities of peroxide of iron, lime, magnesia, potash, and soda. Generally speaking, the more the first and less the five last-named substances preponderate, the greater will be the value of the clay they compose.

The occurrence of fireclay, and the strata with which it is associated, vary in almost every case; it is usually found in the coal-measures immediately underneath the coal; and, as space precludes, and similar conditions render unnecessary a description of its position and mode of what is done in the Wortley district (near Leeds) will be given as sufficient for the purposes of this article.

In a district, remarkable from a geological point of view, broken up by faults in the strata into areas; separated, as far as the mining engineer is concerned, although continuous to the farmer; averaging rarely as much as 100 acres each, occurs a seam of coal from 8 in. to 18 in. thick, and from 10 yards to 120 yards below the surface, known as the "Better Bed," and remarkable for its freedom from sulphur, and consequent value for iron smelting. Underneath this bed of coal occurs a siliceous rock of

bluish-grey colour, containing impressions of plants, sigillaria, &c. When the depth is not more than about 80 yards below the surface, it is of a shaly nature, and falls to pieces after being exposed to the atmosphere, and is the fire-clay proper; but, as the depth increases, this rock becomes more of a stony nature, and unfit for manufacturing purposes. [The word "rock" is used in its geological sense, meaning any layer of material, soft or stony.] The thickness of the fireclay is about 2 ft., and it is obtained along with, and in a similar manner to, the coal.

The clay being raised to the surface and conveyed to the works, the process of manufacture commences by (1) grinding, separating, and mixing; (2) moulding and drying; and (3) burning and (when required) glazing. The clay being "weathered," or disintegrated by atmospheric action, it is thrown into a flat-bottomed circular revolving pan, about 9 ft. diameter, having two stationary rollers about 5 ft. diameter, 15 in. wide, and each 21 or 3 tons weight; by these the clay is crushed to a powder sufficiently fine to pass through gratings, 4 in. wide, in the pan below. After leaving the pan, the clay—now in a state of somewhat dry powder—is raised by an elevator, consisting of sheet-iron cans attached to an endless band, to the top of a series of screens varying in degree of fineness, by which the clay is separated accordingly; and any coarse lumps that will not pass the screens are returned to the grinding-pan.

The men who work near the screens have to breathe an atmosphere in which fine dust floats to an unpleasant extent. A plan is about to be tried at one of the principal works in the Leeds district to separate the clay by a fan in a long chamber, the air being filtered by having to escape through sheets of canvas at the end opposite to which the fan is placed; if this succeeds, the finest dust—which is the most valuable—will be available for the best class of ornamental tiles, &c., and the grinding-house a more tolerable workshop than it is at present. The clay is usually separated into four degrees of fineness, according to the work it is required for; and this being done it is thrown or mechanically conveyed into a pan similar to that described for grinding, but with a solid bottom and rollers about half the weight; with the addition of a certain quantity of water is mixed into a paste in a short time, and so thoroughly that a pastry-cook could not find fault with, but might wish for a similar apparatus to reduce the labour now necessary to provide for the demands of our juveniles for tarts. A scoop—which the attendant soon learns to handle dexterously—empties the mixing-pan while revolving, and deposits the pasty clay into a barrow or small four-wheeled wagon, in which it is conveyed to another department for further operations.

When the clay has to be used in large masses, such as for works for gas works, large drain-pipes &c., powdered firebricks, or fireclay goods that may have cracked while burning, are added to the clay when being mixed; and for the crucibles used by brassfounders and others, plumbago or carbon in some other form is added. Various mixtures are employed; for instance, the best terra-cotta is produced by certain proportions of fireclay mixed with Dorsetshire plastic clay.

As the treatment of the clay differs for the various articles made, it will be necessary to describe the moulding and burning for each kind. Premising that the clay is delivered to the workmen in a plastic condition, the manufacture may be said to consist of common firebricks, retorts for gasworks, sanitary tubes, glazed or enamelled bricks, and terra-cotta.

Firebricks are made in a large shed, in which tables are placed; at each table a man is stationed and kept supplied with clay. The moulded consist of what may be called a rectangular box, without top or bottom; the clay is first kneaded by the brickmaker to a shape roughly approximating to, and then pressed into the mould. [Here an intending visitor to the brickworks may be cautioned against going too near the table (if his coat is a good one), as brickmakers take a cruel pleasure in bespattering respectable clothing.] Two boys are required to carry away the bricks made by one man; and they are then laid upon the floor, heated by steam, or the products of combustion from fires placed at one end and that pass under the floor on their way to the chimney; by this means the bricks are dried so as to bear firing in the kiln. As an illustration of the necessity of employing material that is a good conductor of heat to form the floors of drying-sheds, of

may be mentioned that a floor made of cast-iron plates will cost nearly three times as much as a firebrick floor; but will only require about two-fifths of the fuel to dry the same quantity of bricks; the saving in coal being 56 per cent. in favour of the iron floor.* The bricks are now ready for burning. The kilns considered best are rectangular, about 40 ft. long, 20 ft. wide (outside), and 8 ft. or 10 ft. high inside; the top is arched over, and in this arch are small openings at intervals for the whole length, to allow steam and products of combustion, after having circulated among the bricks, to escape. The fireplaces are on both sides of the kilns; and according to the number on one side, they are designated "eight-holed" or "ten-holed" kilns.

Retorts are round, oval, and D shaped, about 12 in. thick, 4 ft. to 10 ft. long, and are built upon annular wood moulds. The clay, being used in large masses, must possess a certain degree of porosity to ensure thorough burning and non-ability to crack; this is secured by adding to the fireclay when in the mixing-pan, fireclay material that has been previously burnt, and afterwards powdered, as before mentioned (and sometimes sawdust also); so that when the built-up retort is being burnt, the raw clay bricks, while the "rough stuff" retains its original bulk (sawdust when used being consumed), and the finished article left sufficiently porous. The shrinkage of fireclay is such that it is to be 12 in. long after, must be 13 in. before, being burnt.

Sanitary tubes are made in a machine; the best consisting of a cylinder having an open top, and an annular opening in the loose plate that covers the bottom equal to the transverse section of the pipe it is required to produce. In the cylinder fits a piston, attached to the end of the shaft of another piston working in a steam cylinder placed immediately above that for the clay. When a pipe is to be made, the pistons are raised admitting steam into the lower end of the upper cylinder; the lower piston being then raised some inches above the top of the clay cylinder, so as to allow plastic clay to be thrown in. By admitting steam on the top side of the upper piston, the clay is forced by the lower piston through the annular opening in a manner analogous to the working of a sausage-machine.

By admitting steam on the top side of the upper piston, the clay is forced by the lower piston through the annular opening in a manner analogous to the working of a sausage-machine, so that a hollow instead of a solid stream issues from the pipe-press. The pipes are cut off by a wire to the required length (generally 3 ft.), and the sockets for small pipes (3 in. to 6 in. diameter) are luted on by hand, although large ones are machines with a pair of movable sockets to form the body of the pipe and its socket at one operation, similar to the larger machines, but little more than half the quantity can be made by the same machine when the sockets are also formed by it. The pipes are set vertically and dried by heat from a steam pipes placed about 4 ft. above the floor, in which the tubes stand, so as to dry the sockets first; after which they are turned over to the "spigot" (or plain end that fits into the socket of the pipe next to it when laid), to be "luted." By these machines tubes can be made with rapidity up to 30 in. diameter; in quantities varying according to size from 3,000 to 10,000 per day per machine. Sanitary tubes (and ports), are set in kilns with their axes vertical, so that the flame can pass both outside and through them. To give the tubes the glaze, which all who have seen a town drain being put down have doubtless noticed, chloride of sodium (common salt) is thrown into the fire; the heat being sufficient to volatilise it and cause a coating of silicate of soda to be formed on the glazed surfaces of the tubes.

The application of bricks having glazed or "painted" faces to the interior of bath-rooms, baths, fishmongers' and other shop walls, walls of entrances, and passages of private houses, lavatories, &c., is another advantage for which those who design buildings, and those who put them clean, are indebted to the manufacturer. For durability, cleanliness, and cheapness combined, these bricks are unrivalled. They are produced in various colours; Venetian and reds, black, greens and blues of various tints, grey, drab, buff, and white; the tinting being stated in the order that they are charged, red being the most difficult, and white the easiest to obtain perfect. After being moulded and dried, similar to fire-bricks, they are taken to powerful screw-press, from which they issue perfectly square and smooth on the angles and

surfaces. The colouring matter is applied by dipping the bricks into "slip," a felspathic and siliceous liquid of the consistency of good cream; they are then laid on shelves in the drying-shed until the following day, when the glaze is applied on a similar manner to the "slip." The bricks are ordinarily made as "headers," which are glazed in one end only; "stretchers" on one side; "played ends," having a triangular piece cut off one corner, and glazed on the three sides formed by what were two in the common brick; and "bull noses," having one corner cut off by a quarter of a circle, and glazed round it and the adjacent side and end. For all colours, excepting white, the bricks have to be burnt after "slipping," and again after glazing; no kind of coloured "slip" having yet been discovered that will bear the application of glaze before a preliminary burning. For this class of work the greatest care is necessary in every stage of the process, to avoid chipping the corners or defacing the exposed surfaces before and after burning, to maintain the proper heat in the kiln, and to see that a first-rate quality of coal is used.

Chimney-pots, and terra-cotta wares generally, are made in plaster moulds, the manufacture being more or less complicated, according to the degree of ornamentation; they, and the enamel-coloured glazed bricks, have to be burnt in "muffled" kilns—or those in which the flame does not come in contact with the articles being burnt. The good quality of these wares is indicated by a pure and regular colour, smooth faces, sharp edges, and a clear ringing sound when struck.

This description of the fire-clay manufacture is necessarily a very general, and, to some extent, an incomplete, one. Many modifications are thought to be advisable by some manufacturers both in machinery and methods of working; but as a brief account of the practice of some of the most eminent firms in the trade, it may be accepted as showing the degree of perfection at present reached; future inventors will, doubtless, increase the facilities for producing articles, the demands for which are now in excess of the supply. T. G.

ARCHITECTURAL DRAWING.

ARCHITECTURAL ASSOCIATION.

At an ordinary general meeting of the members held on Friday evening, the 17th ult., the President (Mr. E. J. Tarver) in the chair, Mr. Arthur Proctor and Mr. U. J. Wright were elected members.

The secretary (Mr. Bowes A. Paice) proposed votes of thanks to Mr. Lewis H. Isaacs, the architect of the baths and washhouses, Paddington, for his kindness in conducting the members over the building; and to Sir G. Gilbert Scott, for granting permission to visit the new Midland Hotel, St. Pancras, which votes were carried.

It was announced that on the following Saturday, the 25th inst., a visit would be made to the St. Stephen's Club, Westminster, and that the fifth annual excursion would take place the third week in August, the discussion upon the proposed routes being reserved until the next meeting.

Mr. E. Phené Spiers read a paper on "Architectural Drawing." In the course of his remarks he said that he proposed dividing the subject into three parts:—1. To include drawings made for the purposes of elementary study, as preliminary drawings for clients, and competition or exhibition drawings; 2. Working drawings; and 3. Drawings made whilst travelling for the purposes of study. By drawings made for elementary study, he meant those which a pupil on entering an office ought to make, in order to acquire a general knowledge of the use of instruments and of the brush. He believed that very few architectural pupils entered an office with a knowledge of architectural drawing. In the present uncertain state of architectural design, the subjects at first taken up might vary very considerably, and according to the style of the office, the five orders, or the Gothic work in Brandon's Analysis, or perhaps the elements of Queen Anne, were put before the pupils. He had no hesitation in stating that he considered the five Roman orders, followed by the three Greek ones, to be by far the best models for beginners, the reason being that the column and entablature of each order was complete in itself, without reference to its dimensions, execution, or surroundings. There could be no better training for the eye, therefore, as regarded the

study of scale and relative proportion of mouldings, than the Classic orders, it being clearly understood in the case that the end justifies the means. He looked upon the study and drawing of the orders as equivalent to the acquisition of Latin at schools, not necessarily intended for ultimate use, but only to form the mind. As regarded the execution of architectural drawings, the line should always be firm and of equal thickness throughout its whole length, and every fraction of an inch of that line should be ruled with great care. The thickness of the line necessarily varied with the scale of the work delineated. By the study of design, he meant work which was done in preparation for the Class of Design, the Academy, or for other purposes. He thought it very important in making first sketches to begin on a small scale— $\frac{1}{4}$ for dwelling-houses and public buildings, and 32 ft. to an inch for hospitals or large public buildings, and then gradually to increase the scale of the whole design or parts to $\frac{1}{2}$ for general drawing, $\frac{1}{4}$, 1, and 1 $\frac{1}{2}$ for details, and half full size or full size for mouldings. He thought, speaking generally, that it was a mistake to make the first sketches with a scale, for the imagination was apt to be cramped if they allowed themselves to be restricted by absolute dimensions at first. It was very important that the plan and elevation of their sketch designs should be blacked in or tinted. There was a method universally adopted in France, which was to make continual use of tracing-paper in studying designs. To trace all the features approved of, and insert new elements, takes very little time; and they had the advantage of being able to compare the first and the revised study, which they had not if the first had been rubbed out to give way to the second. Many of them might be aware that it was the universal custom in England to shade all architectural show drawings (if he might so term them), shadows being projected at an angle of 45°. It was still the custom, not only in France, but throughout the Continent. The revival of Gothic architecture, and the measuring of ancient Gothic churches for restoration and other purposes, led to the rejection of shading and preference for line drawing; possibly because a great deal of the effect of this old work depended upon the jointing of masonry. At all events, not only had the practice of tinting in offices quite fallen into disuse, but the principles of shading were not understood. The object of projecting shadows at 45° on an architectural design was purely a conventional one. It was fairly open to inquiry (1) whether such representation did convey a correct impression; and (2) whether there was any other equally simple way of obtaining the same result. As regarded the first point, he could only assert that, as far as his experience went, he had rarely if ever been mistaken in the opinion received from such drawings, and that buildings which had been erected from drawings he happened to have seen before their execution had conveyed to his mind precisely the same effect that he estimated when examining the shaded drawings. And, further, that not only architects but journalists perfectly understood the shaded elevations, and could critically analyse therefrom their ultimate effect if carried out. In answer to the second point, the other obvious way of obtaining similar results was to be found in perspective, although he would then say that he would be extremely unwilling to depreciate the value of perspective drawings. The projection of shadows was more adapted and fitted to Classic than to Gothic work, though in such designs as those by Mr. Godwin or Mr. Burges, in which there were rhythm and symmetry, and what he must be allowed to call Greek feeling, the projection of the shadows brought out all the qualities of the design. His objection to perspective as the only means of ascertaining the effect of a design was the difficulty of making use of it for the study of details, being far too complicated. The correct projection in Gothic, or a pedimented window in Classic architecture, was difficult to make, and even an error in the perspective, on the one hand, or a natural tendency to "cook" the feature, on the other, in order to make it look like what they desired, must entirely deceive them as to its ultimate actual effect; not to mention the difficulty of retracing their steps to obtain from the perspective changes made back to their geometrical drawing. None of these difficulties occurred with shaded drawings; it took so short a time to project shadows, that the student commenced to delineate them on his first sketch,

* From experiments by the writer.

so that from first to last it formed a part of the study of his design. A deliberate attempt at "cooking" would be detected at once by the first intelligent observer, and, in fact, it was not worth while to "cook," because it would take less time to alter the feature. The execution of geometrically-shaded elevations was so purely architectural, that it must be done in the office, and no architect's exhibition or competition drawing in France had ever been put out to his knowledge; whereas, the perspective drawings, on the contrary, if done to a large scale, took so long a time to execute, required so much room, and, generally speaking, an expert draughtsman, that it could only be done out of the office. With regard to the relative values of tinted and etched drawings, it was by the elementary instruction in, and their habitual practice of, tinting geometrical drawings that the student learnt how to use his brush. With respect to the finishing of perspective or geometrical drawings, whilst on the one hand he would be inclined to condemn the elaborate finish and the employment of body colour in tinted drawings; on the other hand, the waste of labour involved in etching seemed to him to be equally a mistake. He believed that the magnificent geometrical drawing of Sir Gilbert Scott's designs for the Edinburgh Cathedral took a month or six weeks to execute; whereas, Mr. Thomas Allom would have produced in colour a far better result, truer and more like nature, in a day or two.

Speaking of working drawings, Mr. Spiers said that he would warn them against employing the system of shadows, otherwise they might find some intelligent workman executing them. For working drawings the artistic effect should be quite of secondary importance, the object being simply to distinguish different materials for the instruction and guidance of the quantity surveyor, and of the contractor and workman.

(1) The colours should be those which were commonly found in every colour-box; (2) as a rule they should be unmixed, because it was difficult to obtain the same qualities of tone in subsequent mixtures; and (3) as far as possible they should be in accordance with the colour of the material indicated. He thought, for instance, that it was a mistake to use bright blue for stone, because such a use led to contrasts of effect which would be wanting in the executed building, and were therefore deceptive. The list which he would venture to suggest for the approbation of those present was the following:—Stone, burnt umber; brick, light red; tiles, Indian red; fir and deal, yellow ochre for unwrought, tinted over with burnt sienna when wrought; oak, warm sepia; iron (wrought), Prussian blue; (cast), if necessary, perhaps a green; lead, cobalt; brass, gamboge; copper, gamboge and indian red; slate, indigo; plaster, Payne's gray; glass, mottled cobalt; cement, cold sepia; concrete, mottled grey and sepia. The sectional parts should all be dark tints of the same colour, except fir and deal, which might be burnt sienna (yellow ochre being too light a colour), and sometimes iron, whilst it was found more convenient to tint vermilion in section; if the distinction be made between cast and wrought, emerald green would do for the former, and carry out the principle above laid down. This left two other colours (there being sixteen in all), viz., black and carmine, the former being best to represent old work, the latter useful (on account of its transparency) to tint in sections, the construction of which it had not for the moment been found convenient to determine.

For drawing on when travelling, he thought an imperial block and octavo sketch-book would prove the most useful. Some preferred quarto or smaller square sketch-books; but they were not so convenient to hold. For water-colour drawing the paper of a block had one disadvantage in its cockling up. He always, therefore, took a small board, and either mounted his paper with mouth glue, or fixed it with drawing-pins. He thought it was a great advantage to vary one's work, as one kind of drawing was a relief to another. Perhaps the best course to be taken (for the purposes of study) if they intended measuring or drawing in perspective, a building, or a portion of a large building, was to make a sketch plan, elevation, and section of the same before commencing; the plan could be measured with sufficient accuracy by pacing it, and the elevation and section could generally be obtained in an approximate way by measuring some 8 ft. or 10 ft. in height first, then retiring a few paces, holding up a two-foot rule perpendicularly, making the 8 ft. or 10 ft. accord in height

with 4 in. or 5 in. of scale, and raising the eye to some second line, such as a string-course. The number of additional half-inches would give them the number of feet to be added to the 8 ft. or 10 ft. That, say, gave them 20 ft. in height; again retiring let that dimension accord with 5 in., and ascertain in like manner the height of some other marked line. They would find it possible, if the rule be held perpendicularly, to obtain within 5 per cent. the real height of a lofty building. The rule of "measure and plot on the spot" was an infallible one, and could not be too much impressed on the student. For the measuring of mouldings an instrument called the cymagraph, invented by Mr. Sharpe, was of great value. The perspective drawing might be on shaded, white or tinted paper, and in pencil or shaded, outlined or etched, or tinted; and he thought that water-colour drawing was the best means of training the eye to recognise harmony and contrast of colour.

Mr. Ridge could not agree with Mr. Spiers regarding the use of projecting shadows at an angle of 45°. As a matter of fact, he fancied that one very seldom either projected a shadow geometrically and accurately in designing any work, or put it in perspective. The habit was so common of working back a plan, elevation, and section of anything that was to be designed, that one knew intuitively almost the effect which would be produced by that which was represented by the three drawings taken together; and he thought that it was very rarely necessary, for the purposes of design, either to go to the difficult process of projecting shadow accurately at two angles of 45°, or to that of throwing anything into perspective. He confessed that it was the last thing that he did,—that was to put anything in perspective. The remarks made upon colours by Mr. Spiers were such that would commend themselves to all present.

Mr. Ravenscroft differed from Mr. Spiers' view, that the question of drawings of competition being coloured or etched did not materially matter.

Mr. Mathews was of opinion that shadowing and perspective were distinct, and that the former could not supersede the latter. In some perspective was absolutely a necessity and must be resorted to. Neither one principle nor the other could be solely adopted.

Mr. Johnson reminded the meeting that the fact should not be lost sight of that the perspective drawings only represented a building from one point of view.

Mr. Robertson said, that with reference to the merits of shaded and perspective drawings, the great tendency in the latter was the strong temptation to "fudge"; and when a perspective was executed, it was very difficult to discover the "fudging"; but there was no such temptation in executing a geometrical drawing, because "fudging" would spoil the drawing. In several respects he believed the balance was in favour of geometrical drawings with projecting shadows as compared to perspective.

SCHOOL BOARD SCHOOLS AT PORTSMOUTH.

We give in our present number illustrations of Elementary Schools, erected by the Portsmouth School Board, in Kent-street, Portsea. The boys' and infants' schools are on the ground-floor, and the girls' school is on the first floor over the boys' school. The schools will accommodate 160 boys, 160 girls, and 206 infants, making in all 526 children. The amount of contract for this building, exclusive of fittings, was 2,518*l.*; but the cost of fittings, superintendence, &c., will bring up the amount to very nearly 6*l.* per child, and out of this a considerable amount has had to be expended in raising the surface of site to a level with the adjoining roads. The buildings are faced externally with red pressed bricks, and have Bath stone dressings, and are roofed with tiles. They are heated by Boyd's ventilating grates, and the foul air is extracted by air-flues carried up from the ceilings, and separated from the smoke-flues by iron flue divisions. Messrs. Davis & Emanuel, of Finsbury-circus, and Messrs. Milham & Kennedy, of Great Marlborough-street, London, have acted jointly as architects. Mr. Charles Morey is the contractor, and his manager is Mr. Cogswell.

Another Board School, to accommodate 684 children, is also being erected in Albert-road, Portsmouth, under the superintendence of the same architects; and in this latter case, Mr. Quick, of Southsea, is the contractor.

REEROS, WORCESTER CATHEDRAL.

THE recent decision against the reerodos in Exeter Cathedral has caused some trepidation in Worcester, where a work of similar character has been set up in the cathedral. We publish a view of it in our present number.

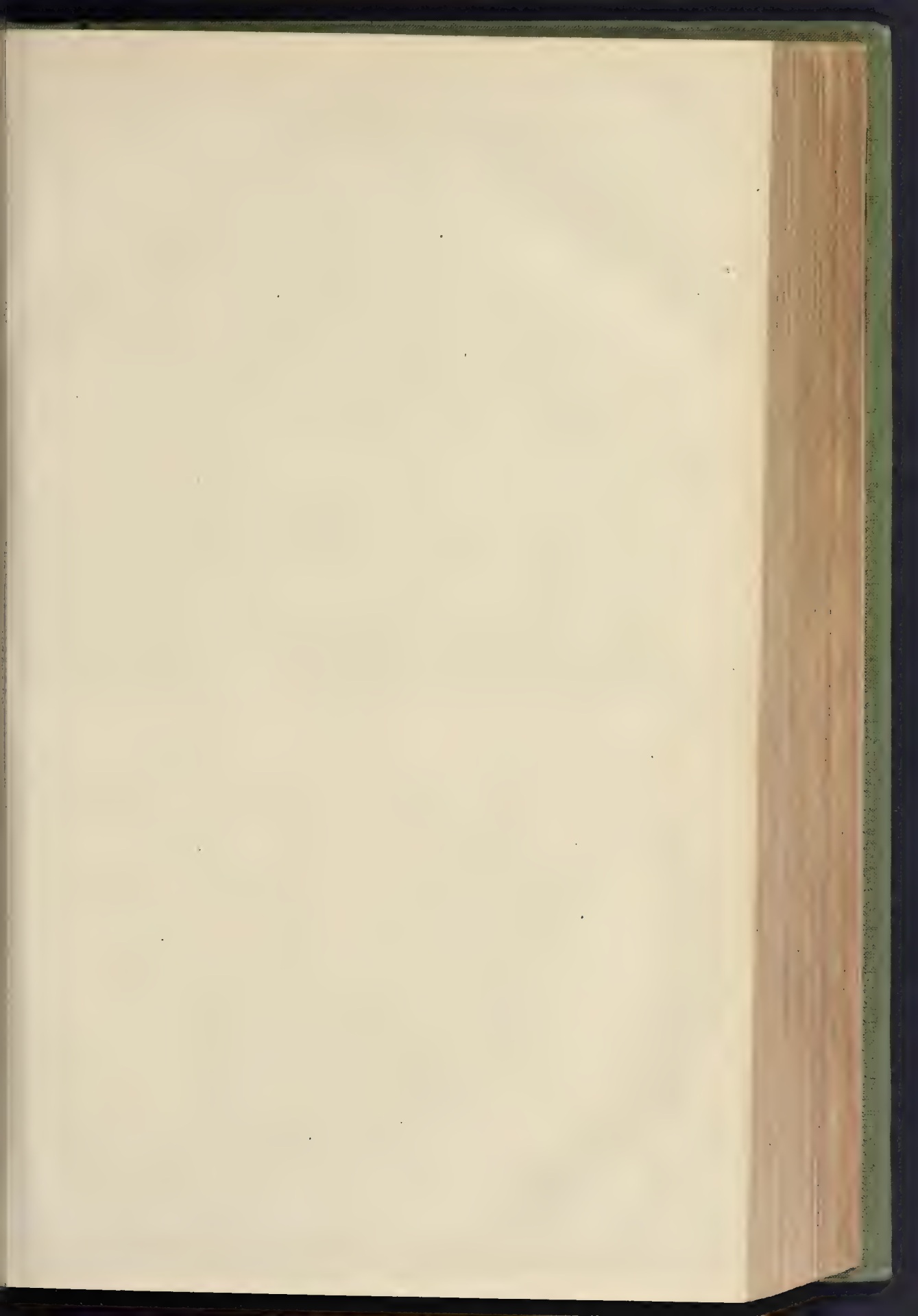
It is placed in the same position as the old screen which it supercedes, between the eastern piers of the intersecting bay at the eastern transept. The main portion of the design consists of five niches, each containing a seated figure nearly life-size, that in the central space the largest niche representing our Saviour in the act of benediction, those to the north St. Matthew and St. Mark, and to the south St. John and St. Luke. Below the figures runs a horizontal string-course a few inches above the altar-table. The niches are separated by clustered shafts, with richly-carved capitals and moulded bases supporting gabled canopies with elaborate cresting and finials. The arched head of each canopy is in the form of a trefoil, and between the gables are smaller canopies, similar in form, containing figures of angels sculptured in white alabaster. Above these again is a horizontal cresting supporting other angels.

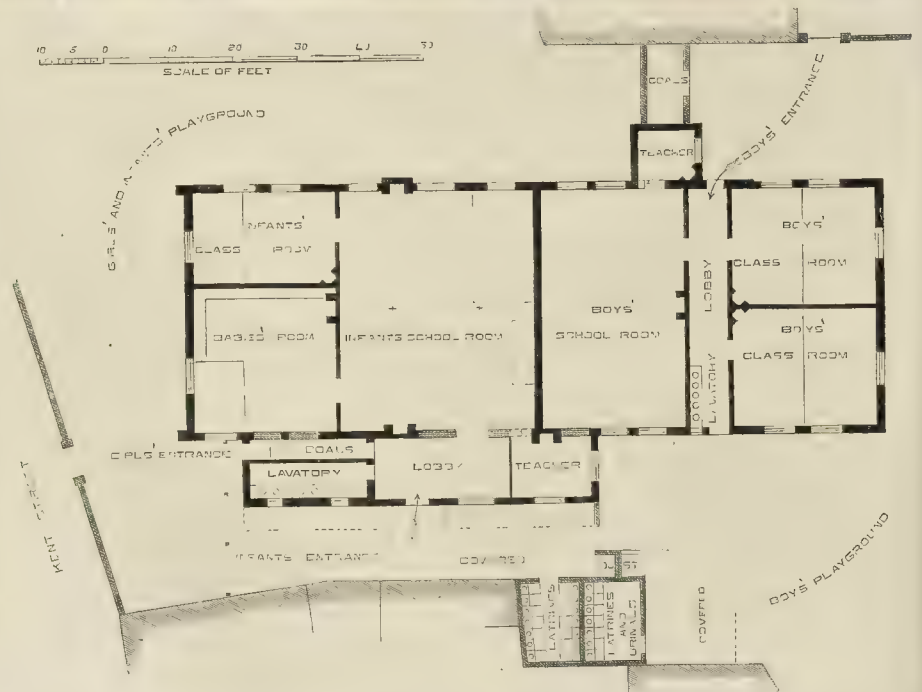
From the central gable rises an open canopy resting on four clustered shafts of coloured marbles, and surmounted by a pyramidal spire crocketed on the angles, and terminating in small inlaid cross. The spandrels and finials are richly jewelled with polished Derbyshire spar and pebbles, and inlaid with mosaics, and in the centre of each gable is a circular medallion with sculptured bust in relief. The north and south wings of the reerodos consist of open arcades of three gabled arches, similar to those over the figures, but somewhat less elaborate, each opening containing a light grille of wrought iron. The solid base extending on either side of the table beneath these arcades is relieved by diaper-work, enriched with gold and colour, and polished gems of Derbyshire spar of the most varied and beautiful tints. The outlines of the whole of the carving, as well as of the arches, string-courses, &c., are gilded, and the extreme brightness of the gold is subdued. The figures especially are skilfully treated. The materials employed throughout are polished marbles and alabaster.

The reerodos was executed from the design of Sir G. G. Scott, R.A., by Messrs. Farmer & Brindley; and the cost, including recent gilding and decoration, may be called 2,500*l.* It was presented by the dean (who has just resigned the Rev. Dr. Peel).

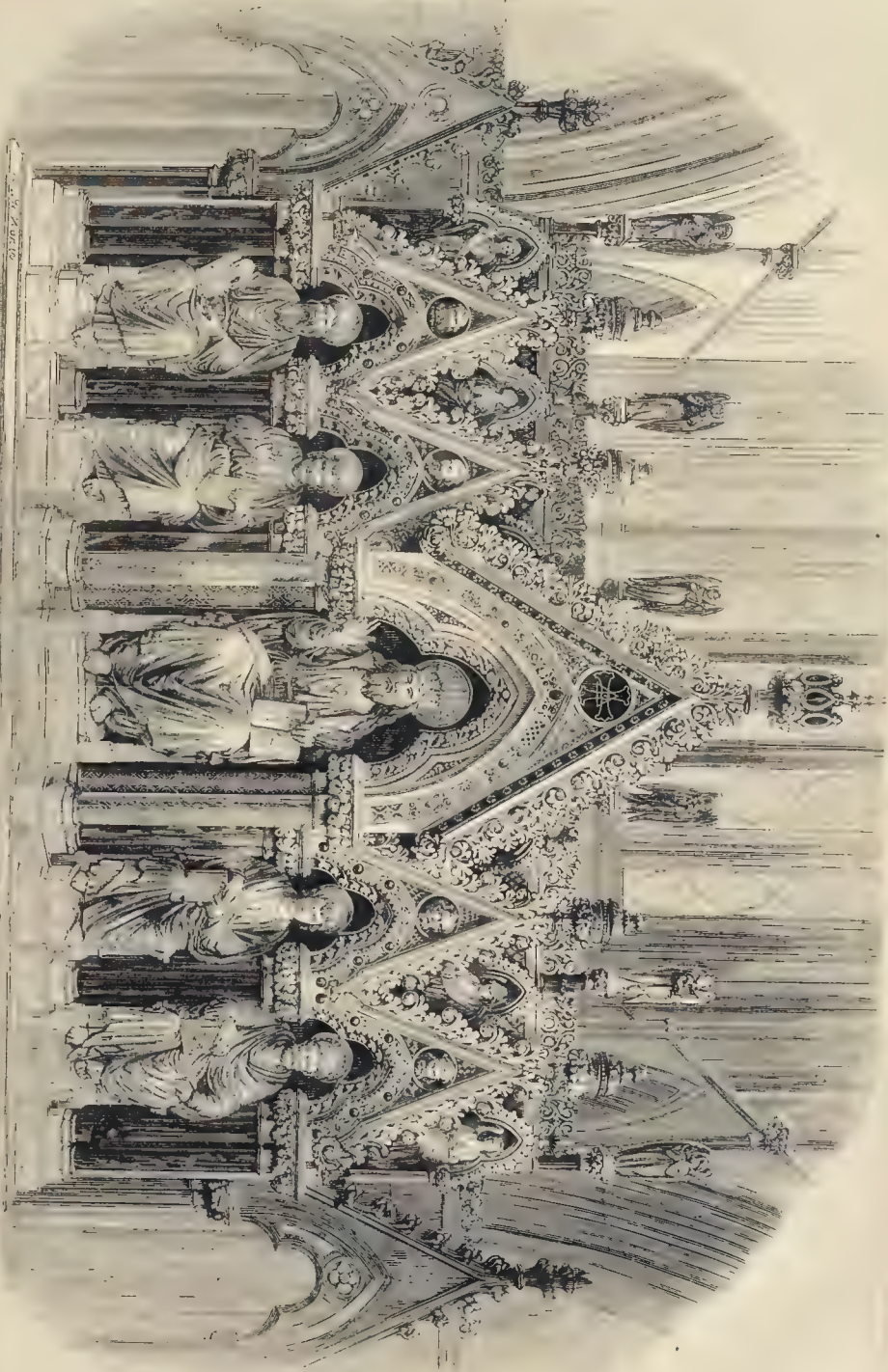
The total amount spent in the cathedral said to exceed 100,000*l.* It should be remembered that the principal part of the cathedral restoration was carried out from the designs and under the superintendence of the late Mr. Perkins, architect to the dean and chapter; and that Sir Gilbert Scott was engaged for the arrangement and decoration of the choir canopy. The firms which undertook the contract from time to time were Mr. Bennett, of Birmingham; Mr. Hughes, of Bristol; Messrs. Collins & Cullis, of Tewkesbury; and Messrs. Wood & Son, of Worcester. Decorators, Messrs. Harvey, of Birmingham, and Mr. Wells, of Worcester. Sculptors and carvers, Mr. Forsyth, Mr. Boulton, and Messrs. Farmer & Brindley. Brass and metal workers, Messrs. Skidmore & Coventry. The encaustic tiles for the choir and altar space were manufactured at Lurgard from designs by Sir Gilbert Scott, R.A.; and the marble for the same portions was supplied by Messrs. Poole & Son. The clerk of the whole works was Mr. Forrest.

The Cookery School.—On Saturday Mr. Buckmaster delivered the second of his weekly lectures on cookery. The school was crowded, and the illustrations were more successful than on the previous Saturday. He said the chief object of these lectures was to awaken more public interest in the National Training School of Cookery. General principles and a few useful hints may be given by lectures, but the art, like every other art, must be acquired by practice. We want, said he, 25,000 young women to go into the country and teach cooking. An important feature of the school was the training of instructors, but up to the present time very few suitable persons have offered themselves as teachers. A meagre or vegetable soup, sole au gratin, and savoury omelettes were prepared. One important feature of these Saturday lectures is that persons can see the beginning and finishing of every dish, and about ninety paid the extra 6*d.* for tasting.





SCHOOL-BOARD SCHOOL, PORTSMOUTH.— MESSRS. DAVIS & EMANUEL, AND MESSRS. MILEHAM & KENNEDY, ARCHITECTS.



HEROD'S WORCESTER CATHEDRAL. — SEE G. G. SOTT, R.A., ARCHITECT.

Sculptors, Messrs. Fooks & Brindley.

THE CHURCH OF ST. MARY, NEWINGTON, SURREY.

Now that the parish church of Newington, Surrey, is about shortly to be razed to the ground, and its successor, with a new face and form, to start up at some distance off, it may not be uninteresting to show that the original site of the church,—that, at least, of the Domesday record,—was where the church stands now. This is a matter which writers on the churches in Surrey have expressed some difference of opinion about; but by means of an old document, found some years ago among my grandfather's papers,—a copy of a *Terrier* of the glebe lands, houses, &c., made in 1729, and of which he took a copy in 1799, when Rector's Warden,—I am enabled to demonstrate that the church, since the Norman Conquest, has never changed its situation.

In that portion of Domesday Book which relates to Surrey, there is a description of the manor of WALSORDE (*Walworth*), where it is said there is a church with eight acres of meadow land.

The first mention of NEWTON (*Newington*) occurs in the Testa de Nevil (*siue Liber Prioburum in Curia Secacarii*), of the time of Henry III., or the first half of the thirteenth century; it is there stated that the Queen's goldenith holds of the king, *in capite*, one acre of land in Neweton, by the service of rendering a gallon of honey. In the taxation of spiritualities made by Pope Nicholas IV., in 1292, the church is spoken of as being at Newington; and in the Archbishop of Canterbury's Register, 1313, the parish is called Newington *juxta* London.

The living was a rectory, then in the Archbishop's gift, and of increasing value. In the time of King Edward the Confessor it was worth only xxx. solidos (90*l.*), but when the Domesday Survey was made it was worth double that sum. The manor, on the contrary, was becoming of less importance. The first notice we have of it is that Edmund Ironside gave it to Hildard, his jester, who, on going to Rome, gave it to Christ Church, Canterbury. In King Edward's time it was taxed for five hides (500 acres), but, at the time of the survey, for three hides and a half only, nearly one-third less. After the thirteenth century we hear no more of the church at Walsorde; from that time the church is said to be at Newington. The question, therefore, is, did the original church stand at Walworth, and was subsequently moved to Newington, or did it only change its name with the new name given to the parish? Lysons, who wrote in 1791, "Environ of London," suggests that the church might have been rebuilt on a new site, and becoming surrounded by houses, the locality received the name of Neweton, or Newtown, subsequently Newington. But this suggestion is a mere hypothesis. Where churches have been first built there is a general disposition on the part of ecclesiastics to retain them; the pious commonly desire to worship God where their forefathers knelt before them, and it is the duty of the clergy to encourage this sentiment. In those days there were no London improvements required at Newington to endanger the sacred fabric, and change its hallowed locality. When churches needed rebuilding, it has been the rule in England to rebuild them where they stood before, and I shall be able to show that the church at Walsorde, otherwise Newington, was no exception to this laudable practice.

The words of Domesday record are,—"*Ibi Ecclesia de viii. acris prati.*" These eight acres of meadow-land were attached to the church, and formed the church-field. They were also contiguous to the manor, which was of large extent, and, in King Edward's time, consisting of 500 acres, occupied nearly the whole of the present parish, which contains only 630 acres, including Walworth Common. Even the 350 acres, the extent of the manor at the time of the Conquest, supposing the present manor-house to stand near the site of the original one, and to indicate the probable centre of the manor, would bring the situation of Newington Church within the full meaning of the words "*Ibi Ecclesia de viii. acris prati.*" The old church at Newington had a low square tower of flint and rag stone, similar to other church-towers in Surrey that date from the fourteenth century, or somewhat earlier, and its becoming surrounded by houses was comparatively a recent event.

Manning and Bray, in their stupendous History of Surrey, have no hesitation in considering Walsorde (*Walworth*), still the name of the manor, to be the same as Newington; and the Rev. Mr. Hussey, in his account of the churches

in Surrey, remarks, if this be so, then the Domesday church was at Newington, not at Walworth. The Domesday church was where the eight acres of meadow-land were, and these were at Newington.

Among the *items* contained in the *terrier* of the glebe lands, &c., made in 1729, when the Rev. Wm. Taswell was rector, is one which begins as follows:—"Item. On the south side of the churchyard there lies a parcel of pasture and meadow ground, called the Church-field, in the occupation of the Widow Harwood, containing about 7½ acres. This church-field formerly contained 8 acres, but in the year 1648, part of it, containing in length about 200 yards, and in breadth about 4 yards, was taken out of it to make a footway leading from Newington to the east end of Kinnington-lane; and in the year 1718, the trustees for mending and repairing the road from Newington to Vauxhall, took about 14 ft. in breadth, and about 48 ft. in length, from the Church-field aforesaid, to widen the road turning from Newington to Kinnington, which road was before so narrow that two wagons could not meet there."

The *terrier* also states that two small pieces of the Church-field were taken, one about 1637, and the other in 1665, to enlarge the churchyard. There can be no manner of doubt, therefore, but that the church, with its 8 acres of meadow land, recorded in "Domesday Book," was one and the same with the church at Newington, and that we may say of this latter, as the record says of the former,—"*Ibi Ecclesia de viii. acris prati.*" though it would now be impossible to find any portion of the latter which has not been brought into subjection under the despotic law of the spread of bricks and mortar.

H. C. BARLOW, M.D., F.G.S.

ORNAMENTAL WORK IN METAL.

LAST week, at the Society of Arts, a paper was read "On Progress made in Ornamental Processes connected with Metallic and other Industries," by Mr. W. C. Aitken, in the course of which he said:—"The progress of a nation is not to be tested by the production of works for the few gifted with wealth, but in the abundance of those produced for the use and comfort of the many; the true wealth of a nation is not best represented by its mines of precious metals, or its works in these. It is in the abundance of its mines of useful metals, as iron, and the coal with which its ores are smelted, and in the energy and ability of its people to convert these into the thousand forms given to it, that the true wealth of a nation consists."

The production of iron in England in 1871 amounted to 6,733,213 tons; the united production of North America, Germany, France, Belgium, Austria, Russia, Norway, Sweden, Italy, Spain, Switzerland, South America, Asia, Africa, and Japan, the aggregate of the production of iron in all parts of the world, except England, only amounted to 7,107,324 tons. England therefore produces nearly as much iron as all the other countries in the world. Since 1860 she has nearly doubled her production; in that year it only amounted to 3,856,752 tons; in 1871, it was increased to 6,733,213 tons. It must not be forgotten that the means which have conducted to the development of the manufacture of iron in other countries are all our own. Dudley was the first who applied mineral fuel to the smelting of iron; Cort introduced the puddling-furnace and the rolling-mill; the genius of Watt placed in the hands of the manufacturers of iron the irresistible and unlimited power of steam to propel and give motion to their rolling-mills, to produce which the comparatively feeble and not always available force of water is totally unequal; Neilson economised the consumption of fuel by the application of the hot blast; Nasmyth rendered practically useful the steam hammer; Armstrong built up wrought iron and steel, and produced ordnance, the penetrating power of which necessitated an increased thickness of armour plating; Sanderson suggested the possibility of rolling armour plates, such as are now produced by John Brown & Co., and Cammell & Co., of Sheffield; the universal rolling-mill was the creation of Arrowsmith. At the root of the cheap conversion of iron into steel lies the discovery of an honored member of this Society, Bessemer, whose process is to be found applied all over the Continent, wherever iron is made. The case and economy with which iron will in the future be converted into steel, will owe its exist-

ence to Bessemer's discovery as the initial letter. Industry in iron has recently received a check, a shaft guided by a feather from the wing of a collateral industry has inflicted on it a serious injury. To this is due the origin of the paragraphs going the round of the public prints. The *Scotsman*, about five weeks ago, had the following:—"Belgium, France, and Germany are gradually ousting English iron from all the large foreign markets. Belgium bars, of a quality which could not be produced in this country under 12*l.* 10*s.* to 13*l.*, were offered at 10*l.* 10*s.* delivered at Birmingham." On the 10th of the present month it was stated in a Birmingham newspaper:—"If the reduction of wages which the masters are seeking to enforce should be accepted by the men, the price of coal may, perhaps, be reduced to a sufficient extent to enable ironmasters to compete with foreign producers, but of this we regret to say there is little present prospect, neither masters nor men being willing to make any concession."

A national industry is checked by the war between capital and labour, having its origin at present in the coal districts. No fact is more certain than that the wages of miners bear no relation whatever to the advances made in the price of coal, which has checked our manufacture of iron, and laid it open to the introduction of foreign iron, the cheap production of which is aided by the economical living of foreign artisans, who are also better educated industrially, and in whose countries a better feeling exists between master and workmen, and strikes are almost unknown; Governments aid their manufacturers by the publication of reports, written by their most able men, setting forth the improvements made in other countries calculated to advance their iron industry. The progress, even the very introduction, of the manufacture of iron into France and Belgium, is due to Englishmen. The largest iron works in France, "The Creusot," owe their existence to John Wilkinson, of Broseley, who, in 1782, made the first iron bellows, and built a canal boat of iron (the parent of iron-ships, steamers, and iron-clads). The industry in iron of Belgium is due to another Englishman, John Cockerell, who, in 1817, commenced works at Seraing, near Liège. On the industry in iron of every country England is inscribed. The superiority, where exceptionally recognisable in foreign iron or steel, is entirely due to English inventive skill, and no doubt aided by foreign scientific education on the part of workmen. England must industrially educate her artisans employed in the iron trade; want of intelligence will not be compensated for even by cheaper coal.

The significance of the rumour in 1867, about foreign engineers carrying away orders for locomotives, should not be disregarded. Ten locomotive engines were ordered from an English firm at 2,450*l.* each; ten more from Esscher, Weiss, & Co., of Zurich, at an advance of 100*l.* or 2,550*l.* each. The latter firm, on the completion of the contract, represented a loss had been sustained, and requested to be allowed to make ten more at an advance of 250*l.* or 2,800*l.* each. The secret of the whole affair is thus explained. When the order was given, English engineering firms were full of work and could not promise early delivery. The Zurich firm executed the ten engines. Two-thirds of the material came from England. In 1865, when fifteen locomotives were ordered from the Creusot, it was not known forty others were ordered from English manufacturers. An offer being made to the same establishment to produce twenty-five more at the same cost, M. Schneider, the director, declined to undertake the execution of the order.

The most wonderful work in the Vienna Exhibition was the internal cupola, twice the diameter of that Michelangelo "hung in their,"—in height and diameter two St. Peter's could have been stowed within it. "Hanging in the air" is simply a figure of speech, for much solid masonry helps to support the dome of St. Peter's; that at Vienna was only supported by slender rods of iron, bedded at their base in concrete. These rods descended down hollow pilasters of brick, which took no part in sustaining the cupola. This wondrous dome, "to which Diana's temple was a cell," the mightiest, the most overpowering in conveying the effect of vastness and immensity ever constructed "since the world began," owed its existence to the constructive skill of an English engineer—John Scott Russell.

The largest mass of iron exhibited was the work of an English firm—Johnson, Cammels, & Co., of Sheffield; in the rough it weighed

33 tons, was 20 ft. in length, 6 ft. 10 in. in width, and 10 in. thick, bent to a radius of 13 ft. 16 in.; it was not produced by a Prussian, though to be used for a Prussian ironclad.

The above as to progress of English mechanical genius, invention, and skill; then, as to her art industry. It is scarcely thirty-seven years since any effort was made to improve the character of our industries into which art enters by instituting schools of design. The work of changing the character of a nation is not the work of one generation, but of many; we must learn to labour and to wait. Fifty years ago such a noble monument as that which commemorates the virtues of Albert the Good—the Albert Memorial—could not have been executed by Englishmen. I am very doubtful whether it is the best way to encourage English talent in metal working by proclaiming, "in respect to certain works of art, especially in working metals, the work done was nothing like the work done three centuries ago. The conditions under which works of an ornamental character in metal are now executed are entirely different." With all the disadvantages under which we labour, there are firms in England who could rival the iron work of Metz; a well-known fact that at Antwerp could be produced if paid for, or iron work such as in St. George's Chapel, Windsor, is not beyond the skill and cunning of living Englishmen. Pay the price, and the work can and will be done. A good deal of old iron work owes its beauty and coherence to rust; besides there is no reason for supposing it was executed by contract, estimates advertised for, or the lowest tender accepted. A good deal has been said about "doing work for the work's sake"; the principle is a good one, but no really good work is now done without pay. You may catch some rising man to do one work for fame: that done, it is not likely he will continue to work for the same paymaster. Those who are not intimately connected with manufactures pronounce verdicts manufacturers alone know; the money expended by them is rarely repaid by the sale of works of excellence in metal, some examples of which are equal in merit to those produced 300 years ago. It may be anticipated other branches of industry labour under similar difficulties. At Vienna we have been told "we were utterly beaten in art as applied to certain manufactures; in silversmiths' wares and enamels we were lamentably behind." Respecting silversmiths' wares, in which character it may be presumed would be included *repoussé* working, I failed to observe any examples superior or even equal to those of Elkington's in the Vienna Exhibition. The truth, however, should be told that there were only two English exhibitors of silversmiths' wares in the Exhibition. Against these were arrayed the manufacturers of silversmiths' wares from every country, especially those of Austria, Germany, Russia, Sweden, and France. I here, in illustration, place for your inspection an example of the beauty and delicacy of their work on a silver executed in *repoussé*, in silver and iron damascened in gold.

Permit me now to direct attention to a few ornamental processes which it appears to me advisable to cultivate in connexion with English industries. There is the process of enamelling. Enamel is simply glass composed of lead and glass. When transparent, oxide of tin renders the transparent glass opaque; mixed with oxide of gold it changes the clear or opaque glass into a purple; red is produced by the addition of sulphate of iron, oxide of copper produces green, violet is produced by manganese, blue by oxide of cobalt.

The enamel is poured from the crucible in which it is melted into flat cakes; these cakes are broken up, and reduced to a fine granular condition, in a mortar, or to an impalpable powder, by grinding with a mallet on a slab; it is applied on metal which will stand a red heat without changing its form or fusing; gold, silver, copper, brass, or iron can be enamelled. There is no true enamel which has not been fused at a red heat. The modes of application vary; applied on a flat plate or plaque, it is worked with a brush. Of this class, are the Limoges enamels. Other methods of application consist in incising or cutting small troughs in the surface of the metallic object intended to be enamelled. In these the enamel is placed or applied; this method of application is called the "champlevé." It may here be remarked that in what may be called commercial as opposed to fine-art enamels, the "champlevé," or grooving, or cost of cutting the troughs, is obviated by

using a pattern in which the troughs have been cut, copies being multiplied by the ordinary process of casting. Another method of reproducing is by means of extra-deposition; this method is that adopted by Messrs. Elkington, who succeeded in getting the enamel to adhere to the deposited foundation; the French enamellers were unsuccessful in doing so.

The next variety of enamels is the partitioned or "Cloisonné." In this variety the cells are not cut out, but are formed by bending a flat narrow strip of ribbon or metal in such a manner as to form the retaining walls of the cells: cut in horizontal section a honeycomb, or examine the cutting-out tools used by a pastrycook to cut out paste with which to decorate pastry: this gives the best idea as to the appearance of an object prepared according to the "Cloisonné" method for the reception of the enamel. In proportion to the simplicity or complexity of the design, so are the number of cells or parts of cells. These, after being prepared, are arranged on the object and soldered to it. The various colours of enamel are then applied in the cells, and fired by subjecting the object to be enamelled to the heat of a muffle. Repeated applications of enamel with repeated firings are required to fill the cells. The superfluous enamel is finally removed by grinding it away with pumice stone, smoothing it with stones of different degrees of fineness. Apart from the labour of forming and placing the minute cells, there are difficulties attending the firing operation. Should one part of the muffle be too hot, and the solder become melted which holds the cells, the more the enamel is in a fluid condition, the colours mingle, and a confluent mixture of colours is the result. The examples which are now submitted for your examination were produced by Messrs. Elkington; they only commenced their experiments three years ago; the results are most satisfactory. Larger and more important examples by them will be exhibited in the coming exhibition of enamels which will shortly be opened at South Kensington. A complete series of examples illustrating the production of "Cloisonné" enamel are exhibited, and an illustrated example of the difficulties attending the process of enamelling.

Your attention will next be directed to the Niello process, not much or generally known, only incidentally applied in England, and only to the more elaborate and costly objects used for ecclesiastical purposes. It was extensively taken advantage of by Italian gold and silversmiths. Niello may be called a metallic enamel, composed of silver, copper, lead, and sulphur; in its preparation the most difficult metal to fuse is first melted, the next fusible added, and so on; the melted metals in the crucible are stirred with stick charcoal to ensure homogeneity; the result is a black compound, which, poured from the design the crucible, is beaten into strips.

To which it is applied is engraved on the metal object to be decorated, the lines being more pronounced and stronger than on an ordinary copper-plate for printing from. In testing an example of engraving, to which niello was intended to be applied, Finegarra, a goldsmith, of Florence, originated the art of copper-plate printing; he filled the lines of his metal plate with a black fluid, used damp paper to get an impression instead of taking a sulphur cast, and hence arose the art of copper-plate printing. The mode of applying the niello is by heating the vessel or object to be nielloed, and rubbing the niello into the lines: when skilfully applied, the niello adheres firmly; excess of it is removed by files, the surface is then stoned, and it is finally polished. Niello is undoubtedly by far the best means for decorating, in a quiet, rich manner, surfaces exposed to friction or wear; it preserves unbroken the contour of the larger objects where the preservation of pure form is desired; it is tougher than enamel,—no small recommendation. The Russians have cultivated the process very successfully; recently the French have adopted it. In the Vienna Exhibition it was shown very extensively applied to the decoration of trinkets, but there it was evident engraving, for the reception of the niello was dispensed with, and stamping took its place, the great bulk of objects to which it was applied being stamped.

Damascening, or inlaying one metal in another, is an art which has been practised a very long period, introduced chiefly in armour, and caskets, &c. There are two methods of practising the process. By one method the surface of the metal to be damascened is raised up into a file-like surface: the artist by his skill causes to adhere to

the roughened surface threads of gold or silver, which are applied and burnished down. Broad surfaces are produced by working the threads or wires side by side. Heat is applied; the degree necessary requires great judgment. In the other surface to be damascened is incised or cut into, the incision at the bottom being expanded; into this channel gold or silver is introduced and beaten down. An example of an iron plate damascened with gold, illustrated this process.

A considerable misapprehension prevails as to certain works supposed to be inlaid exhibited by French manufacturers. These were incised for the reception of the metal to be inlaid, but the introduction of the metal was effected by depositing not really inlaying.

Against English progress is arrayed cheap labour, united with higher intelligence. The wages of foreign artisans engaged in the various industries on the Continent are very much lower than those of England engaged in similar industries. High wages such as those paid to English artisans are earned only by the few in each country whose skill and power of manipulation very far exceed those of their fellow workmen; the exception being those of the United States of America, where every article used is more expensive than in England. A family, consisting of five individuals, living in England (clothing not included) cost £1. 10s. 6d.; in New York £2. 6s. 6d. To single men, board and lodging, including clothing, which in New York would amount to £57. 9s. 10d., in England comes to £57. 17s. 8d. In Germany, a working man earning 9s. 7d. per week (25s. per annum), supported his family on 21s., and had a balance of 4l. 10s. over. Another, who earned the exceptionally high wage of 29s. per week, lived, supported his family, and saved in the year 54l. 15s.

Low wages extend all over Austria, Italy, Switzerland, France, and Belgium.

The English manufacturer is placed at a disadvantage in the element of wages. But the power of endurance, arising from a better physically-constructed body, supported by nourishing diet, enables the English artisan to do more work than the foreign artisan, in a given time, especially where strength and sustained energy are required. The small industries in England are the large on the Continent, i.e., those into which art enters where physical endurance is less necessary than taste and neat-handedness. In these, owing to the superior education of the foreign artisan, the English manufacturer, especially of light fancy articles, is placed at a disadvantage. In this direction considerable progress has been made in light ornamental articles; those now produced in England are very much improved,—better, lighter, and more elegant in style; as examples of this there are the pen and needle cases of Messrs. Avery & Son, and articles known as *Novelties* &c.

For forty years I have been connected with manufactures, thirty of which I have spent in the great head centre of metallic industry—Birmingham. The study of the advancement of manufactures has been that of my life; there has been no scheme, local or national, for the advancement which I have not promoted actively engaged in. The future progress of manufactures is bound up in extending the means of diffusing education—scientific and industrial. The operation of the Education Act, by diffusing elementary instruction, is laying the best possible foundation for the higher, viz. the scientific, technical, or industrial, which must follow, the teachings of which will be largely assisted by local museums, such as the Council of the Society of Arts are now actively engaged in promoting.

THE ARCHITECTURAL TREATMENT OF CONCRETE BUILDINGS.

Sir,—With reference to a letter in your paper referring to a paper on Concrete Building, read before the Civil and Mechanical Engineers' Society, and the discussion thereon, allow me to say a few words.

The members of the Civil and Mechanical Engineers' Society pride themselves in hitting hard in their discussions, and evidently think that truth will be more fully and surely elicited the more strongly and pointedly the contest can be stated, not too strictly regarding whether or not these contrary statements are within the own knowledge or opinion. One of the "pointed" speakers who dealt with such "crushing" cognate against concrete from an architectural point

view, told me afterwards that he had never seen more than one concrete building, and that one unfinished.

The chief object of my paper was to call attention to the advantages of concrete buildings. This part of the subject was fully discussed, and my statements and claims were not disproved, or even attempted to be gainsaid by a majority of the meeting. And it was gratifying to me to see that there was so little in my paper to suit the hard-hitting propensities of some of the members, that they preferred to pitch into a branch of the subject not really before the meeting, having been reserved as a subject for future discussion.

I mentioned the architectural treatment of concrete only incidentally, and in very few words, which were,—"I have found architects too busy to care much about the study of a new system of wall-building, when they are already possessed of other systems which they understand, and are satisfied with, and which they find easier to treat architecturally." And then the concluding sentences,—"Surely a system possessing so many undoubted advantages deserves the earnest consideration of architects. No supposed difficulties of architectural treatment should deter them from securing for their clients the many and important advantages to be gained. Much has been written lately about the demand for a new style of architecture. May I suggest that this may be found in studying the right architectural treatment of concrete buildings."

The part of my reply quoted in Mr. Lish's letter is not fully correct. It should have been,—"There is little or no difference in architectural treatment between the brick-built cemented house of the west of London and many concrete houses."

This I said in complaint against the architects who will not take the trouble to give concrete a better treatment. But I also mentioned that many of our best architects had endeavoured to step out of the beaten track, and had given us buildings in concrete, finished without the appearance of the sham stone front which is invariably given to a cemented brick house. And I further stated that the objections of "cracking," blistering, and peeling off, so often urged against cementing on brick and stone walls, do not hold good against cementing on concrete walls. I have said enough to show that Mr. Lish was not justified in concluding that "I consider the ordinary cemented front to be the highest style attainable by any concrete system."

I am fully persuaded that concrete building is capable of high and legitimate treatment whenever architects of ability take it in hand. The subject demands and deserves a treatment more carefully considered and more vigorous than any it has yet received.

I may mention that tiles and terra-cotta have often been used in connexion with concrete, to give colour and relief, and many besides myself will look with interest for Mr. Lish's promised explanation of his process for applying tiles to concrete building.

CHARLES DRAKE.

PUBLIC BUILDINGS IN SUPPLY.

National Gallery.—On a sum to complete the sum of 30,000*l.* for the enlargement of the National Gallery, Mr. Beresford Hope asked for an assurance as to the speedy completion of the National Gallery. After the catastrophe at the Antechamber he thought they ought also to receive some assurance that the new building would be really or approximately fireproof. The present National Gallery was not so. Lord H. Lennox said he had every reason to hope that in the spring of next year the Galleries would be brown open to the public and the national collections in Trafalgar-square and at South Kensington both safely housed in them. As far as science enabled them to go in that direction the new National Gallery would be rendered fireproof. The vote was agreed to, as were also sums to complete the votes of 5,000*l.* for the Industrial Museum, Edinburgh, and 11,134*l.* for Burlington House.

Wellington Monument.—On the vote of 500*l.* towards defraying the expenses of the Wellington Monument, Mr. Beresford Hope inquired of the First Commissioner of Works whether any progress was being made with the work in question. It was a painful and, in some respects, a incredible fact that the completion of a work of so much public interest should be so long

delayed. That delay was occasioned, he regretted to say, by the ill-health of the sculptor, but it was clear that the monument must sooner or later be finished, and the design of Mr. Stevens must be carried out by Mr. Stevens. Sir G. Bowyer said he thought that if, unhappily, Mr. Stevens's health prevented his completing the work, some one else ought to be associated with him for that purpose. He would be glad to know where hon. members could obtain some idea as to what the monument was to be like. Lord H. Lennox said it was perfectly true that the distinguished sculptor to whom the work was originally entrusted had been for some years in grievous ill-health, but at times rallying so much as to induce him still to incline to the hope—a very natural one—that he might put the final stamp of his genius upon the work he had commenced. He had recently placed a gallant friend of his and another gentleman distinguished in art, in connexion with Mr. Stevens, and he asked the Committee, so to speak, to pass a short vote of confidence in the First Commissioner of Works. They would not, he was sure, require him to advert more specifically to the means he intended to adopt with a view to try and bring the matter to a successful issue. The hon. baronet asked where he could get an idea of what the monument was likely to be. He wondered it had escaped his notice that a Blue-book had been published in which were given copies of the various drawings and also the details of the expenditure. He hoped soon to be able to make a satisfactory announcement on the subject to the House of Commons. Votes to complete the sums of 80,000*l.* for the Natural History Museum and of 23,344*l.* for the Metropolitan Police Courts were also agreed to.

The Law Courts.—On the vote to complete the sum of 80,000*l.* for the new Law Courts, Sir G. Bowyer took occasion to complain of the delay in their construction, and the consequent loss, in the shape of interest paid, to the country, as one of the most remarkable instances of mismanagement that had occurred in the national history. He recollected, he said, that when he was in Parliament some years ago a design for the new courts had been exhibited in the library in which utility seemed to have been completely lost sight of and the picturesque and ornamental aimed at, without, however, the attainment of any general beauty of design. There were what appeared like two rows of almshouses on each side, with numbers of chimneys and buttresses, and he should very much like to know whether that design, which met with no approval either from the press or the public generally, was to be carried into effect. For his own part he should infinitely prefer a plain, business-like building, such as Somerset House or the Law Courts in Dublin. The designs were all too ecclesiastical in their character. There was plenty of time to reconsider the question, and he trusted that the present Government would distinguish themselves by adopting some economical plan which would give as a business-like, simple, and noble structure, instead of the one which he feared was to be followed. Lord H. Lennox would not follow the hon. baronet into the question of taste, upon which they might possibly differ. The design selected, however, was the design of Mr. Street, to which the juries had awarded the prize. A prize had also been awarded to Mr. Barry, but as that gentleman had the erection of the National Gallery on his hands, he preferred that the matter should be left entirely to Mr. Street.* He was happy to tell the hon. baronet that it was far too late for the First Commis-

* Mr. Barry very naturally objects to this statement. He says—

"The judges of the Law Courts designs declared in their final report that my design was 'the best in regard to plan,' and Mr. Street's 'in regard to elevation,' and they advised our appointment as joint architects, placing my name first in their recommendation. At Mr. Street's request, I joined him in expressing our willingness to work together, although, having regard to the emphatic terms of the competition as to the paramount importance of plan and arrangement, the declaration of the judges might be considered, as you, Sir, have already pointed out, an award in my favour. Mr. Street's separate appointment, to my prejudice, was made subsequently, without my knowledge or consent, and in direct opposition to the advice of the judges, the finality of whose decision had been guaranteed to the competitors by a Treasury Minute as an essential condition of the competition."

The National Gallery competition was quite independent of that for the Law Courts, and it was decided by different judges. In this case I was again fortunate enough to receive favourable notice. Mr. Street, who was also a competitor, was not mentioned by the National Gallery judges. Can it be, as Lord H. Lennox seems to suggest, that a double success has actually been turned to my disadvantage, and held to justify my exclusion from the greatest architectural opportunity of the day?"

sioner to attempt to reconsider the decision arrived at even if he had the audacity to attempt it. He agreed with the hon. baronet that great loss had already accrued to the nation and the Treasury by the delay which had occurred, and that being so, he did not see how matters would be mended by holding them still further in abeyance, and breaking a contract which had already been signed. Sir G. Bowyer said he had not suggested any lengthened delay. He believed that three weeks or a month would be sufficient for all that he contemplated. The vote was then agreed to, as were also the following:—730*l.* on account of Ramsgate Harbour; 10,000*l.* for the acquisition of land, &c., in connexion with the New Palace at Westminster.

R. I. B. A.

SIR,—It is with some surprise that I have seen so little discussion in your paper of the recent attempt to put the finances of the Institute on a better footing, and such a scarcity of suggestions for accomplishing that desirable result.

Will you, therefore, permit me to offer the following:—It appears to me to be a great mistake, in such a small and not very united community as the architects of this country, to split it up into two bodies, even when they hold their meetings in the same building (which is too suggestive of a house divided against itself); and I feel sure the influence of the profession is very much weakened in consequence. One good strong compact society would be worth more than half a dozen small ones, and I see no reason why they should not be all united under one head—probably in separate grades. The seniors might well remain "Fellows," the younger members, "Associates," and students a minor grade, with their subscriptions regulated accordingly. Honorary members could be also admitted, or a class created for amateurs and non-professionals interested in architecture, &c. On some such plan as this I believe the Institution of Engineers is founded, and this suggestion is respectfully recommended to the ruling powers of the R. I. B. A., as the most likely means of increasing the revenue and general prosperity of their society.

P.S. This idea could not, of course, be carried out, unless the co-operation of the Architectural Association were obtained, but I believe it might be quite as much to their advantage as to the elder institution.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

A MEETING of the district committee for Lancashire and Cheshire of the above association was held at the Town-hall, Chester. The chair was taken by Mr. J. C. Thorburn (Birkenhead), and there were also present Messrs. Matthew Jones (Chester), J. Proctor (Bolton), P. Smith (Blackburn), S. Kelsall (Stretford), George Dickinson (Pennington, Westleigh, and Bedford), J. Wilson (Bacup), A. Jacob (Barrow-in-Furness), W. H. Richardson (Tranmere), G. Watson (Crewe), J. D. Simpson (Buxton), J. Holland (Witton-cum-Twambrookes), J. Jackson (Stockport), J. Lobley (Huxley), A. Bell (Chester), A. M. Fowler (Salford), Lines (Manchester), and R. Vawser (Warrington), secretary. After formal business had been transacted, Mr. Bell, C.E., produced the plans and sections of the intercepting sewage works, and the members, accompanied by Mr. Bell, visited the main sewage works, all the details in connexion with which were explained.

On the return of the party to the Town-hall, the Chairman said that he thought Mr. Bell was to be congratulated upon the very comprehensive manner in which he had designed the works.

Mr. Lines asked Mr. Bell how long the water was to remain in the reservoirs.

Mr. Bell said it was not intended to rest, it would have a continuous flow, and be precipitated as it flowed from one end of the tank to the other.

Mr. Lines asked what would be the velocity with which it would move from one end to the other.

Mr. Bell said it would be very slow; from 2½ ft. to 3 ft. per second, and the tanks would hold about four hours' flow.

Mr. Vawser asked if each of the tanks would take four hours.

Mr. Bell said the pair of upper tanks would occupy about four hours, and one would be filled in two hours. The lower tanks were not quite so large.

Mr. Lines asked if the rate of deposit of the sewage had been calculated, and Mr. Bell said it had been calculated on general principles that it would be at the rate of about 1 in. per minute.

A vote of thanks to Mr. Bell for his lucid explanations was carried unanimously.

The next matter before the meeting was the discussion on the papers read at the Liverpool meeting by Mr. G. F. Deacon (Liverpool), on "Waste of Water," and by Mr. A. M. Fowler (Salford), on "The Utilisation of Sewage and the Water of Polluted Streams." In the absence of Mr. Deacon his paper was not discussed, but that of Mr. Fowler was at some length, especially the portion relating to the utilisation of affluent water for sanitary purposes.

The Chairman, in summing up, said the idea was a novel one, and it occurred to his mind that there might be cases, especially in large manufacturing towns, where such a process might become the only source for supplying water for that specific purpose. They knew also that the population of this country was growing at such a rapid rate, especially in the manufacturing towns of Lancashire and Yorkshire, that it would become a serious question where water was to come from to supply the towns. He thought the day might arrive when such a process might find additional supply necessary in large manufacturing towns for trade and sanitary purposes in the way Mr. Fowler suggested.

The members then proceeded to fix the place and date of their next meeting.

On the invitation of Mr. Jacob it was resolved unanimously to visit Barrow-in-Furness on Friday, the 7th of August next.

THE TRADES MOVEMENT.

Newcastle, Stationershire.—The master builders of the Potteries and Newcastle received notice in December from the operatives of an application for an increase of wages and a reduction in the hours of labour. After several meetings of the arbitrators, Mr. Balguy, late stipendiary magistrate for the Potteries, was appointed umpire. After hearing both sides that gentleman has delivered an award which gives a net cash gain to the men of 10½d. per week, and a reduction of 2½ hours in labour.

Blackpool.—About 60 brickmakers have struck work at Blackpool for an advance of 1s. per 1,000, to be divided among the various branches of the trade, and which would be equal to 2d. per man. Some of the masters have acceded to the demand, and the men in those instances have resumed work.

Northampton.—At a meeting of the joiners and carpenters, held at the Black Boy Inn, in January, it was decided to ask the employers, a Blisworth firm being also included, for an advance of three-farthings per hour, equivalent to a rise of about 3s. 6d. per week. A number of the employers had expressed their willingness to give a halfpenny per hour advance to their best hands. That offer was accepted; but it was resolved that the advance should apply to all grades of workmen. Happily a general strike has been averted. The men determined that those to whom the employers would give the advance should immediately resume work. A large number did so; in fact, there was only one firm that declined to give the advance to the whole of the men they employed, and that firm gave the advance to a majority of them. The strike was pretty general, but by the middle of the week nearly sixty men had "gone in."

FALL OF HOUSES IN NEWGATE-STREET.

ON Tuesday last two houses in Newgate-street fell. The premises in question, Nos. 27 and 28, were, with two adjoining houses, 26 and 29, sold on Friday last week, by Messrs. Horne & Eversfield, for the purpose of being pulled down. None of the four had been inhabited for some time, but the purchasers of Nos. 27 and 28 had upon them a gang of men to commence the work of demolition. This was not in a very advanced state, as the roof only had been partially removed, but some of the interior fittings in the lower stories were being operated on at the same time. Engaged on this work there were nearly twenty men and boys about the buildings in the course of the morning, while three only were on the roof. Michael Finn, one of the men em-

ployed, who was on the pavement in front, observed indications of the approaching fall, and he immediately raised an alarm for those who were inside to make their escape. Scarcely had they begun to act on his warning when the whole of the two buildings fell in, carrying with them all but one man, who clung to the roof of No. 26, and was subsequently rescued uninjured. The other two who had been with him came down with the ruins, and walked off the fallen materials scatheless. But there yet remained several less fortunate behind, towards the deliverance of whom the attention of the workmen was soon directed. The salvage corps worked gallantly in the same direction, and all were taken out, and at present no death has occurred.

As soon as all the sufferers were released, the rubbish, which had fallen out into the street, without injuring a single passer-by or vehicle, was removed, and the shoring-up of the adjoining houses was effected.

Mr. Mason, a solicitor, of No. 30, Newgate-street, whose office looks on to the condemned houses, states, that having for some time had great fears for his own safety, from the dangerous appearance of these houses, he drew the attention of the City authorities to the fact.

CHANCELLOR OF EXCHEQUER ON SANITARY AND OTHER IMPROVEMENTS.

In making his financial statement Sir Stafford Northcote said:—"What is it that the people mostly stand in need of? I venture to say that those who have paid the most attention to the condition of the people will admit that there are few objects of greater importance than the improvement of their dwellings—the improvement in sanitary arrangements—an improvement in their education in the highest and best sense of the term, and an improvement in the encouragement we can offer them for the adoption of habits of temperance and providence. It seems strange to say that these great objects can be attained by legislation, but undoubtedly by wise legislation they may be very considerably promoted, and it is a truth of which we, at all events, feel strongly convinced, and which, I think, will not be slow to commend itself to the minds of others, if we are really to deal with questions of the character to which I have just adverted—you will deal with them, and can only deal with them satisfactorily, through local action. We shall do very little to improve the dwellings of the people without calling to our aid the assistance of all local authorities; we shall do very little, or nothing, to improve the sanitary arrangements without their aid; we shall do very little for education without calling in the aid of local administration; and with regard to the great question of the encouragement of providence, I speak rather feelingly, because I have for the last three years been sitting with other members of this House upon a commission which has been inquiring into the important subject of the friendly societies and other provident societies of this country, and we have arrived unanimously at the clear and strong conviction that if anything can be done to fully develop these institutions, and encourage among the people true and sound habits of providence, it can only be done by a system of concerted local action. I am sorry to say that the report is not yet in the hands of members; but it will be in a very few days; and they may take it from me that the main gist of our recommendations is the constitution of a system of local arrangements by which a great improvement will be made in these institutions."

LONDON SEWAGE AND SEWAGE OF TOWNS.

Sir,—So long ago as March, 1855, I addressed you relative to the above subject, and said that the sewage should be taken on to the waste lands of Surrey instead of directly into the Thames, and then proposed, and as since carried out.

Further consideration of the subject has led me to confirm my opinion, not only for London, but for the towns on the Thames valley, the authorities of which are at their wits' end to know what course to adopt, and the sewage from which is very properly forbidden entrance into the Thames by the conservators thereof. I would also include other towns where drainage is necessary, and where is it not? What I now propose is, that one or more lines of general outfall sewer should be constructed from the edge of the metropolitan area, and even within it, through the southern counties, direct into the sea on the south coast, gravitation being assisted by pumping stations where necessary. One advantage would be this, that it could be tapped at any point, and irrigation could be carried on to a large extent along the route, without danger of spread-

ing typhoid by reason of the juxtaposition of human habitations; and when farmers did not require the fluid, which is a great matter, it could flow on its way to supply others, or be lost in the sea. There would also be ample scope for experimenting on precipitation, decoloration, and filtrations, of all kinds in suitable situations. Every town using the outfall would pay an annual rent for the privilege of getting rid of its sewage, and farmers for the use of it. So that no one need see that the financial part need be an insuperable difficulty. Government aid must of course be sought, and every year appears to me to render such a scheme more and more imminent.

THOS. GOODCHILD.

LIABILITY OF LANDLORDS AND NOT TENANTS FOR INSECURE PIPING.

At the last sittings of the Durham County Court, a case was decided of some interest to landlords of dilapidated or insecure houses.

The action was brought by a person named Jackson, against Mrs. Sarah Boyd, the owner of a tenement rented by a Mr. Lovegreen, the latter being sought to be made liable for an accident, by his landlady.

The plaintiff stated that, whilst passing the house owned by Mrs. Boyd, he was knocked down by a large piece of metal piping. The piping was a portion of the "downcomer" of the spouting of Lovegreen's house. The "box" also fell with the metal piping. His shoulder was injured, and he was taken to the county hospital where it was dressed. He was an out-patient for six weeks, and unable to work. He was earning 14. 10s. a week at the time he was injured, and now claimed 10l. damages for his loss of time, forgoing damages for the pain he had suffered. The middle of the "downcomer" had been hanging loosely some days before it fell. Mrs. Boyd wanted the tenant to pay for the damage, and denied her liability, offering him 5s., which he refused. Mr. Lovegreen, the tenant of the house, and he made no agreement when he took it to keep the tenant in repair. He sometimes paid his rent to the defendant, and at other times to her son.

Counsel for the defence urged that the wrong person had been sued.

The Judge.—Can you point out any authorities on the case?

—I have no authorities on the matter. Perhaps you will adjourn it to enable me to make a search.

On the next day, defendant's counsel indicated that he had searched 17 cases bearing on the point, but had been unable to find any.

The Judge (Mr. E. J. Maynell).—I did not expect that you would. The defendant is liable to keep the premises in repair, and I give judgment for the plaintiff for 5l. with costs of witnesses and attorney.

BUILDING ACT CASES.

SURVEYOR'S FEES.

John Brennan was summoned, before Mr. Bridge Hammersmith, by Mr. Knightley, district surveyor of Hammersmith, for the sum of 4l. 5s. for fees.

The defendant said he was not the builder, but he had the carpenter's work to the houses, and he could not afford to pay the fees.

Mr. Knightley said there had been a change of builder to the houses 20 and 21, George-street, Lutyen-road, at the time the defendant gave notice to demolish them. It was told that he would be liable for the fees. He (Mr. Knightley) had been referred from one to another, and last he was obliged to summon the defendant.

Mr. Bridge said the defendant had signed the notice stating that he had become the builder. He made an order upon him for the payment of the fees and 2s. costs as due from the builder.

Joshua Moore was summoned for 2l. 5s. fees in respect of 58, Southerton-road.

Mr. Knightley said he could not find the builder. I was obliged to summon the occupier, who had his name against the land.

The defendant said he was not the occupier. He was only a lodger.

Mr. Bridge said a lodger was not an occupier.

Mr. Knightley submitted that if a man built houses and let them out to tenants, he (Mr. Knightley) had power to go against one, who could deduct the fees from the rent.

Mr. Bridge said an occupier meant a person who was the occupier of the whole building. Mr. Knightley said to recover his fees from the whole house. He omitted the summons with costs to the defendant.

SCHOOL BOARD SCHOOLS.

Chelsea.—The opening of another new Bos school, situated in Crook's-ground, Chelsea, taken place. The Rev. Canon Cromwell, who occupied the chair, was supported on the platform, among other gentlemen, by the Parliamentary representatives (Sir C. Dilke and Mr. W. Gordon). The building is in close proximity to the new embankment, and when complete all its details will be replete with the requirements of a well-appointed school. At request of the chairman Mr. Wheeler furnished a brief sketch of the history of the school, the circumstances which led to its being placed under the direction of the Board. The average attendance for the past quarter amounted to 3. In the course of his address the chairman remarked that it was not their intention to interfere with or injure any other efficient schools in the neighbourhood. They, therefore, regretted the withdrawal of the parents who, in some instances, were withdrawing their children from the schools and transferring them to the Bos school. The boys' school was quite full, the benches were occupied by boys who had

a prior claim on the attention of the Board. Speaking roughly, he calculated that the cost of the building when completed would amount to about 8,000*l.*, and although some buildings had been erected at less expense he thought the schools were quite worth the money. Before handing over the keys, Mr. E. H. Ourrie, in the course of an address which had reference to the work of the School Board, stated that the building would accommodate 619 children, and the possession of over half an acre of ground allowed of there being a large space reserved for a play-ground.

Nottingham.—The first set of Board Schools erected in this town has been opened in Bath-street. The buildings consist of a two-story boys' and girls' school, and one-story infants' school, occupying a site of about 2,500 square yards, fronting Bath-street and Virginia-street, in close proximity to the public recreation-ground. The boys' and girls' school-room has a floor space of about 3,200 feet superficial, respectively, including class-rooms, giving accommodation for upwards of 300 children in each department, calculated at ten square feet per child, exclusive of entrance lobbies, lavatories, and teachers' private rooms. The infants' school-rooms have an area of about 2,300 superficial feet, and will accommodate 250 children, also exclusive of entrance lobbies, lavatories, and private room. No school-room in the building is less than 16½ ft. high. The rooms throughout are warmed by means of hot-water pipes circulating from one boiler, consequently there are no fireplaces in any part of the building. In addition to every window having a casement to open, there are ventilating flues through each department. The several entrances for boys, girls, and infants are separate, that for the boys being at the south-east end of the main building, those for the girls and infants next Virginia-street. The desk fittings are by Coleman & Glondinning, of Norwich, being arranged on the dual plan, i.e., one desk for every two boys, with narrow passages between each group of desks, giving the teacher access to every boy without passing behind him. The lavatories are Macfarlane's iron fittings. The out-offices are arranged on a new plan, possessing, it is said, the cleanliness of the ordinary water-closet without the frequent liability to get out of order, the flushing arrangements being of simultaneous action throughout under the control of the caretaker, whereby a large volume of water is passed through the closets into the drain. The chief contractor was Mr. John Rushworth, of Nottingham, his sub-contractors being,—Mr. Wheeler, for the plumbing, glazing, gasfitting, and heating arrangements; Mr. Dance, for the joiner's work; and Mr. McPherson for the stonework. Messrs. Evans & Jolley are the architects.

CHURCH-BUILDING NEWS.

Burton-on-Trent.—A new church, dedicated to St. Paul, has been built and presented to the town by Mr. M. T. Bass, M.P., the brewer, and was recently noticed, briefly, in our columns. It has just been consecrated. The foundations were commenced in 1865, but in consequence of a quicksand being tapped, the whole area of the church had to be excavated and filled in with concrete in some places, as for instance beneath the tower piers, to a depth of 17 ft. The general level of this bed of concrete is about 7 ft. below the surface of the ground, and the foundations for the walls and piers are built upon it and brought up to the surface in solid brickwork, averaging 4 ft. 6 in. in thickness for the walls, and 12 ft. in thickness for the tower-piers. Another layer of concrete 6 in. thick forms the foundation for the cement and tile pavements. The foundations and the laying out of the roads surrounding the churchyard involved an outlay of over 6,000*l.* The church, which is built from the designs of Mr. James M. Teale, of Doncaster, architect, was commenced by Messrs. Critchlow & Ward, of Uttoxeter, the contractors, in August, 1870. The general style of the church is Early Decorated, and it consists of nave and aisles, north and south transepts, north and south chancel and chancel aisles cruciform on plan, with the tower in the centre at the crossing of the transepts. The total length is 144 ft. within the walls from west to east, and 88 ft. across the transepts from north to south. The nave consists of six bays, is 74 ft. in length and 52 ft. 6 in. in breadth including the aisles (the clear width between the arading being 23 ft. 4 in.), and 10 ft. in height to the ridge. The seats through-

out the church are intended to accommodate 646 persons, and chairs have been provided for 180 additional, giving a total of 826 seats. It is the intention of Mr. Bass that the whole church should be free. The exterior of the church gives more the idea of solidity than of elaboration. The walls are faced with Coxbench stone; each stone scapelled in one direction—contrary to the usual custom hereabouts of scapelling each stone in quarters, and with all quoins and other ashlar work in Ancaster stone. The tower in the centre is the chief feature. It is 128 ft. in height to the top of the pinnacles. The belfry stage consists of three windows on each face, with traciced heads and filled in with thick glass louvers. The tower is finished with an open parapet and crocketed pinnacles 20 ft. in height, with a large gargoyle at each angle. The roof is covered with lead. The church is surrounded by a boundary wall in Stanton stone, with large stone piers about every 10 ft., the intervals being filled with iron fencing, cast from the architect's designs by Messrs. Morgan, Macnulty, & Waide, of Rotherham. The gates (to match) are hung from large octagonal stone piers, with gabled capitals surmounted by lamps. The entrances are all paved with Yorkshire stone and Stanton curbs. The churchyard is turf. Generally speaking, the whole of the foregoing work is executed in Coxbench and Ancaster stone, the whole of the interior being worked in Ancaster stone. All described has been executed, with exceptions, by Messrs. Critchlow & Ward, with Mr. H. Kershaw and Mr. W. Gould as foremen, and the carving by Mr. S. Tinkler, of Derby. The contracts carried out independently of the general contract are as follows:—The lighting, by Mr. R. Crosskey, of Lichfield, consists of a row of 12s above the string-course, immediately below the clerestory windows; the heating, by Messrs. Stuart & Smith, Sheffield, is accomplished by means of a large Gill stove, in a vault under the north transept, which draws the air out of the church by three large downcast flues, and sends it back reheated by seven smaller ones. This has been in action daily for about six months, and has been of great assistance in drying the church. The bells were cast by Messrs. Taylor & Son, of Loughborough, according to a specification prepared by Mr. E. B. Denison, Q.C., and are in the key of F. Their total weight is 101 cwt. 1 qr. 7 lb., the tenor bell, 52 in. diameter, being 25 cwt. 3 qrs. 21 lb., and the treble 6 cwt. 2 qrs. 4 lb. The lightning-conductor, fixed by Messrs. Gray & Son, of Limehouse, is elaborate in principle, the chief idea being to put every piece of metal about the building, and all the croices and pinnacles (being the most elevated points) in electrical connexion with the earth, and to accomplish this copper bands are carried from the top of each cross, &c., along the top of the ridge-tiles of the roof, and connected with the main conductor, which consists of a large copper tube. Small off-sets connect all the gouting and leadwork in the same manner. The east window, of stained glass, was by Messrs. Hardman, of Birmingham, the Life of Christ being the subject carried through the lights, with the twelve Apostles in the traceries above. The wrought-iron screens were by Messrs. Skidmore, of Coventry, from their own designs. The tiling of the floors was designed, manufactured, and laid by Messrs. Minton, Hollins, & Co., of Stoke-upon-Trent. The sacristy is laid with a special design (the whole of the tiles being designed and modelled expressly for this church), and illustrates, in seven panels, scenes from the life of St. Paul. The three centre panels are laid in mosaic. The organ was built by Messrs. Hill & Son, of London. The whole of the building and its contents and foundations complete, as described, have cost about 36,000*l.*, entirely borne by Mr. M. T. Bass, who will also endow the church with 400*l.* per annum, and has lately accepted tenders for the building of a parsonage adjacent to the church for 2,500*l.* The total sum expended at the completion of the parsonage and schools, with the building and endowment of the church, will probably reach 50,000*l.* Mr. Reginald Churchill acted as clerk of the works throughout the construction above-ground.

Barnston, near Hull.—The parish church of All Saints, Barnston, near Lowthorpe, Hull, has been re-opened after restoration. The chancel has been re-roofed, the stonework of windows renewed, and credence, piscina, sedilia, &c., provided. The floor, which has been raised to give greater dignity to the altar, is paved with Minton's tiles, and the foot-pace to the altar with

polished marbles. The windows are for the present glazed with cathedral glass, but it is intended to fill them with stained glass as soon as the necessary funds are obtained. In the nave and aisle, the walls have been restored, the old pewing, wood flooring, and pulpit removed, and the entire floor paved with red, black, and buff Staffordshire tiles. The whole of the fittings are new, comprising oak altar, oak stalls for priests and choir, oak lectern and fald-stool. The church is seated with movable open benches of white pine, with oak capping and bench ends. The pulpit is also of white pine. The altar, with its frontal and furniture, was supplied by Messrs. Jones & Willis. The builders employed were Mr. Thomas Barr, of Beccord, and Mr. John Lister, of Ashton, near Rotherham, under the direction of Mr. Hugh R. Gough, architect, London.

Haughton Dale.—The foundation stone of the new Church of St. Mary, Haughton Dale, near Woodley, has been laid. The church will seat 400 adults, and the plan comprises nave, south aisle, north and south porches, chancel, and chancel aisle. There is also an octagonal bell turret rising from the ground, the lower story of which will be used for a baptistery. The construction is that of many old buildings in Lancashire and Cheshire, namely, oak framing, filled in between with cement. The roofs will be covered with tiles. The chancel fittings will also be of oak, and those for the rest of the church of pitch pine. Everything is contracted for as the best of its kind. Mr. Thomas Wharam, of Hyde, is the builder, and his estimate is for 2,398*l.* The architects, Messrs. Medland & Henry Taylor, of Manchester, have recently enlarged the ancient mother church in the same parish.

Books Received.

The Hygiene of Schools; or, Education Mentally and Physically considered. By J. B. BUDGETT, M.D., &c. London: Lewis, Gower-street, 1874.

The object of this little work is to set forth opinions of recognised authorities on this subject. Food, exercise, clothing, sleep, recreation, and punishment, all pass rapidly in review; as well as the important elements of air, light, heat, and ventilation, in their influence to produce health on the one side and deformity on the other. This latter still prevails to the alarming extent of more than 40 per cent. in girls and 20 per cent. in boys, in the forms of high shoulders, spinal distortion, and so on, and it is evident that the School Board is only one step in the right direction, which must ultimately and certainly lead to the appointment of a minister of public instruction.

VARIORUM.

The Railways Amalgamated and Grouped in competing systems.—A paper read by B. Haughton, C.E., before the British Association at Bradford in 1873. King, Parliament-street, London. This paper groups the railways into the four competing systems which Mr. Haughton names,—the London and North Western, the Great Northern, and Midland groups, and the Great Western. The three former are competitive, north and south, and the last to a certain extent also north and south, but mainly east and west. The arrangement and regulation of these groups, both competitively and by amalgamation, by help of State interference, are the main object of the paper.

Mediæval Pottery in Nottingham.—Some discoveries which have been made prove that the manufacture of pottery was carried on in Nottingham at a much earlier date than is generally supposed. As men were excavating on the site of the old Parliament-street Chapel, at the lower corner of George-street, says Mr. A. J. Sulley, in the local *Guardian*, they came on an old kiln, in and near which they found jars, jugs, and flat-bottomed pots of Mediæval manufacture, and all of a red clay body, with the upper portion of the outside covered with green salt-glaze. They afterwards found three other kilns, and more pieces of the same description, and a number of fragments of encaustic tiles, with coats of arms, and one or two with inscriptions. Mr. Sulley is of opinion that the works must have been in existence as early as the latter part of the fourteenth century.

Miscellaneous.

The Accident at the Alexandra Palace.—At the inquest respecting the death of Abraham Branch, aged 27, late proprietor of the Lord Clyde, West-green, Tottenham, who died in consequence of an accident at the Alexandra Palace, on the 17th ult., it appeared that the supports at the southern extremity of the Palace suddenly gave way, and the bricklayers at work on that part of the building, including the deceased, were buried in the debris. Richard Dowling, a plasterer, superintending the portion of the work in question, deposed that, in his opinion, the materials were of excellent quality, and the construction was good. Mr. Barnard, foreman plasterer, stated that the cornice was completed on the early part of Tuesday morning, and in consequence the struts were removed. Mr. James Edmeston, architect, said that, acting upon the instructions of the coroner, he had examined the scene of the disaster, and found that the concrete was unusually strong. The materials employed in the construction of the cornice, judging from the portion left standing, were of good quality. Up to the cornice of the cornice the material used was mortar, and the bricks were placed on edge. In his opinion it would have been better to put them flat. The vibration inseparable from the construction of such a large building must have affected the work and caused a fissure. He believed the cement was thoroughly set. The accident was caused by some invisible defect, and by the scaffolding on which the cornice fell resting on a wall not sufficiently strong to bear it. The jury returned a verdict of "Accidental death."

Portsmouth Dockyard Extension.—Works of considerable magnitude are in process of construction, both at Chatham and Portsmouth, with the object of increasing the productive and repairing powers of these two yards, and it is expected that a considerable part of the Portsmouth Dockyard Extension will be available for the public service in the early part of 1875. Portsmouth Dockyard will be more than double its present size. The area of the yard, as we now know it, is 115 acres; it will then be 238 acres. Of the 178 acres thus added, 94 acres (principally basin accommodation) represent what, when the works were begun in 1866, was mere mudland, which was left uncovered at every tide. The scheme for the extension provides for the construction of four basins. From 700 to 800 convicts have been continually employed upon various tasks. The brickmaking, in particular, has been carried on entirely by them, and more than 130,000,000 of bricks have been made and used since the works were commenced. The bricks are made from clay obtained on the spot, and the average production is about 20,000,000 a year. It may be noted that the rise in the price of coals has added about 7s. per 1,000 to the cost of the bricks. The total estimate for the completion of the work was 2,207,000l. Of this sum 1,938,800l. have been already voted, and up to the 31st December last 1,633,633l. had been spent.

American Pottery.—Attention in the United States is drawn to this subject by the *New York Tribune* in a long article. The writer of it says:—The decrease in imports this year shows that home products are rapidly taking the place of foreign in the American market. This is most apparent in the iron industry, but is likewise very evident in that of earthenware, which has been growing steadily. Potteries have been established in Trenton ever since 1852. Trenton may be considered the seat of the American pottery business. At present there are at Trenton twelve firms with fifty kilns, who manufacture the white wares, the c. c. and w. g. of commerce; one firm with four kilns manufacturing Rockingham and yellow; and one firm with two kilns making porcelain hardware trimmings. In New York City c. c. ware is made by one firm with four kilns, and yellow-ware is made up the Hudson not far from the city, and at Geddes, a suburb of Syracuse. In Ohio, at East Liverpool, south of Pittsburgh, there are fifty kilns owned by thirteen firms engaged in making Rockingham and yellow. Should the public eye become tired of the monotony of plain white ware, the chances are that the American manufacturers would receive a severe blow. This is not a baseless fear. There are signs abroad that such a change is anticipated.

Leicester-square Improvement Bill.—This is a Bill promoted by the Metropolitan Board of Works to obtain compulsory powers to purchase the land in Leicester-square, and to throw it open to the public for recreation. The Bill was brought before a select committee of the House of Commons, Mr. Waterhouse in the chair. Mr. Rodwell, in opening his case, said that only one-fourteenth of fourteen-fourteenths was in the possession of Mr. Scaife, the only person who opposed the Bill, and no one else had interposed any difficulties. Mr. Albert Grant possessed now all but three-fourteenths of the land, and had offered to make the whole of it over to the Board of Works for the public use. It was suggested by the petitioner that there was some "collusion" between the Board and that gentleman; but such was not the case. Independently of Mr. Grant's offer, the Board were prepared, should power be given them, to proceed with the improvements, and convert the land into a place for public recreation and amusement. Mr. O'Malley contended, on behalf of his client, Mr. Scaife, that the proposed garden would attract a large number of immoral persons thither, and would not be a boon to the public. The Committee in a short time approved the preamble of the Bill, and proceeded to deal with the clauses.

The Pianoforte Nuisance.—The *Leisure Hour* says justly:—Many a studious literary man, and many a quiet family, have been driven from their homes, and compelled to seek shelter elsewhere, by the persecution of the piano next door or over the way. In London—and the case is even worse in some of the large towns in the provinces—the paring-walls of the houses are so thin that every note struck on the piano can be heard by the adjoining neighbours. So it will happen that a nuisance utterly intolerable is set up, for which there is no remedy but fight. Think of Mrs. Robinson's four or five daughters thumping away at the keyboard the whole morning long, and perhaps all the afternoon as well, practising at the scales for hours together, or blundering at a crabbed passage day after day, week after week, and month after month, and persistently reading it wrong the whole time! Nor, indeed, is the case much improved if the everlasting practice is ever so good. The plain truth as to this matter is, that no one has a right to inflict this suffering on his neighbour. People who are determined to practise incessantly are bound to manage it without annoying those who live near them.

The Great Steam Hammer.—The completion of the stupendous steam hammer erected at the Royal Gun Factories, Woolwich, for the manufacture of the great artillery of the future, is announced. At the first trial it worked with perfect ease, and the big trial cranes, each lifting 80 to 100 tons, swung round with the utmost freedom. Although it has been described as a 30-ton hammer, the weight of the falling portion is really within a few pounds of 40 tons, and the force of the falling weight is accelerated many times by the use of steam to drive it down from the top. It has been allowed a striking fall of 15 ft. 3 in., and nobody has yet determined what is the actual force of the blow it will strike. It has cost altogether about 50,000l., the greater part of which has been paid to Messrs. Nasmyth, Wilson, & Co., the patentees and manufacturers. One of the furnaces is large enough to make a comfortable dwelling-house, and an omnibus might be driven in at the doorway. The Emperor of Russia is expected to visit the Arsenal about the third week in May, when the heaviest portion of an 80-ton gun will be welded by this hammer in his presence.

Proposed Purchase of Birmingham Gasworks by the Council.—A meeting of the ratepayers of Birmingham has been held to authorise the purchase by the Town Council of the works and business of the Birmingham and Staffordshire Gaslight Company, and the Birmingham Gaslight and Coke Company. The Mayor occupied the chair, and moved a formal resolution empowering the Council to make the necessary application to Parliament. The resolution was carried. A poll, however, was demanded, and less than 2,000 persons out of about 53,000 entitled to vote took the trouble to go to the polling-place to record their votes, but the result has been a large majority for the resolution of the Council.

The Peterborough Pulpit.—The memorial pulpit of which we gave a view last week was executed by Messrs. Field, Poole, & Sons, of Westminster.

A Novelty in Preparation at the Alexandra Palace.—An instructive exhibition is being prepared at Muswell Hill. It is to consist of a series of models of the "characteristic dwellings" of different countries in the world, occupied by groups of living figures representing their inhabitants in the actual clothing of their country and surrounded by the ordinary furniture and domestic arrangements of household. The idea originated with Sir Edwin Lee, the chief director of the palace; and J. Dresser, who is carrying it into effect, has already constructed full-sized models of a modern Moorish and a modern Egyptian house. These were the subject of a private view on Saturday, and appeared to give satisfaction. The Moorish represents the dwelling of a middle-class, rather a superior, man in Morocco, and is an exact copy of a modern Moorish villa. The interior of the Egyptian villa is copied from an example in Cairo. The two houses have been built by Mr. Tooth, and the carpets have been supplied by Mr. Vincent Robinson.

Retrospective Fine Art Exhibition at Palais Bourbon.—The Retrospective Exhibition at Palais Bourbon is by far the most complete of the sort that has ever been held in Paris. The exhibition, is due to a suggestion of Duc d'Aumale. The idea was borrowed from the Fine Arts Galleries of the Museum. The Exhibition held some fifteen or sixteen years ago of the Universal Exhibition of 1862, and latterly of the South Kensington Museum. It has been got up ostensibly under the auspices of Comte d'Haussonville, the Duc de Broglie's brother-in-law, for a patriotic purpose. The proceeds of the sale of tickets will go to assist Alsati and Lorrainers of narrow means desirous of emigrating to Algeria. More than a thousand first-class pictures, representing every school, have been sent to the patriotic committee, which Comte d'Haussonville is the president. The pictures, tapestries, rare old furniture, curiosities forming the exhibition fill two galleries and twelve spacious reception-rooms.

The Horse Show at Manchester.—The preparations at Pomona Gardens are rapidly approaching completion, and all the arrangements are on a scale of magnitude never attempted in the northern counties. The stable affords accommodation for 600 horses. The stall is built with brick, with slate and glass roof, is staked off in loose boxes. Each stall is 6 ft. wide by 9 ft. deep, with rack and manger complete. The whole building is divided into lays, each of which is lighted with a longitudinal dome light, and measures 62 yards by 36 ft. wide and 32 ft. high. Each lay is provided with gas and water specially laid on, and conveniently at hand is the forage department. The demands for space are more numerous than can be met.

Preparations for the Destruction of Durham Cathedral.—A gentleman writing that a few days ago, while visiting "Durham's massy fane," he found, to his astonishment, a large coke fire in an oven, brazier, standing, upon three legs, upon the woodwork of the belfry. No one was by it. Searching for the origin of this strange phenomenon, the gentleman found a small army of plumbers upon the roof; and on speaking to them about the great danger of having an open brazier of live coke upon the woodwork, he coolly told them they had some water in case of fire, which consisted of two buckets half-filled with water, and made the destruction still more certain, but the reredos was stored about half a ton of shavings, with about one hundred planks of wood. Such gross carelessness needs no comment.—*North London News.*

The New Law Courts for Liverpool.—We understand that the negotiations for the sale of the Municipal buildings, as a site for the new Law Courts, have terminated in the purchase of the land by the Government. The Government had formerly offered to purchase 2,100 yards of the land in question at 9l. per yard, with the option of taking the remainder of the plot at 10l. per yard; but the Finance and Estate Committee of the Council demanded 9l. 10s. per yard, and at one time it seemed probable that the negotiations would fall through, and that another less convenient site would be selected. The Government has now, however, been effected on the terms the Government first offered, and, no doubt, the Town Council will ratify the bargain concluded by the finance committee.

Mr. John Kelk.—It is stated that her Majesty has conferred a baronetcy upon Mr. John Kelk, the contractor. Mr. Kelk represented Harwich in the House of Commons from 1855 to the dissolution in 1868; and erected, under peculiar circumstances the Albert Memorial, Hyde Park. Mr. Kelk is a son of the late Mr. John Kelk, of London, and was born in the year 1816. Having made a large fortune by his professional enterprise in the days when such fortunes were frequently made by railway contractors, he purchased Bentley Priory, formerly occupied by the Duke of Abercorn, about twenty years ago. He is a magistrate, and deputy-lieutenant for Middlesex, and holds a commission as major in the Engineer Volunteer Staff Corps.

Accident at the Dublin Gas Works.—A serious accident to life and property has occurred at the Dublin Alliance and Gas Consumers' Works. The new retort-house, the roof of which had suffered severely from the gales of last winter, was undergoing repairs, under the direction of Mr. Waterfield, O.E. Four men were engaged on the roof, when suddenly the principals gave way, and the entire roof, 325 ft. long and 60 ft. wide, fell in. Two of the men who were working outside were precipitated from a height of about 20 ft., and, by the falling of the metal principals and heavy iron pipes, received such injuries as render their recovery hopeless. They were conveyed to Sir P. Dun's hospital. The damage to the property is very considerable. One of the injured men died. The others are progressing favourably.

The Surveyorship of Macclesfield.—The committee met to go through the testimonials of applicants for the office of borough surveyor, consequent upon the resignation of Mr. Aspinwall. There were twenty-five applications for the situation. The following four persons have been selected as most suitable:—Mr. C. F. Mike, surveyor's office, Leicester; Mr. Joseph Dawson, surveyor's office, town-hall, Salford; Mr. J. B. Bram, city surveyor's office, town-hall, Manchester; and Mr. O. C. Robson, surveyor's department, town-hall, Stratford, London. These will be communicated with, and asked to attend the next meeting of the committee, when two of the four will be selected and recommended to the council.

Society for the Encouragement of the Fine Arts.—At a meeting of the Society for the Encouragement of the Fine Arts, 9, Conduit-street, on Thursday before last, Mr. George Browning read a paper on "German Poetry and Art." Dr. Doran, F.S.A., occupied the chair. The lecturer divided the poetry of Germany into three periods—ancient, mediæval, and modern;—telling more particularly upon the third or modern period, of which Goethe, Schiller, and Heine were the chief representatives. With regard to German art, Mr. Browning made some appropriate remarks on the great loss art had sustained by the recent death of Kaubach, perhaps the greatest artist of modern times.

Fall of a Crane.—A very serious accident occurred at Newcastle last week. The Civil Service Stores are in course of erection, and five men were engaged in building the chimney when a large crane suddenly gave way. It threw down the scaffold on which the men were standing, and two of them were thrown to the ground, one man died almost immediately, and one of the others received injuries of so serious a nature that they have since resulted in his death. The third man saved himself by clinging to the chimney when the scaffold gave way. His strength enabled him to climb to the top, and he there until it was possible to take him down.

Action for an Inch and a Half of Land.—The *San Francisco Chronicle* says:—On Monday morning, in the Fifteenth District Court, a judge, a clerk of the court, a sheriff, a short-deputy reporter, three lawyers, a plaintiff, two defendants, and six witnesses, assisted by an audience of outsiders, consumed half a day in determining who owned a piece of ground, an inch and a half wide, and in 50 ft. running down Broadway. The land was in the rear of a lot on Broadway, and worth at the utmost not exceeding five dollars. The Court told defendants to go in peace, and made plaintiffs pay the costs.

The Royal Academy.—The exhibition is an interesting one, and comprises 1,624 works. In accordance with the desire of the Council, we postpone our review till next week.

The late Mr. John E. Gill, Architect.—An effort is being made in Bath, the residence of the late Mr. Gill, to set up a stained-glass window in the Church of St. John Baptist, Bathwick, where Mr. Gill was a constant worshipper, as a memorial of him. The cost is estimated at about 210*l.*, rather more than one-half of which sum has already been promised by fellow-citizens and other friends. It is thought that some members of the Institute of Architects may desire to join in this token of respect for one of their late Fellows.

Dr. Schliemann and the Trojan Discoveries.—A Bordeaux telegram from Athens states that Dr. Dethier, the director of the Imperial Museum at Constantinople, has applied, in the name of the Turkish Government, for a sequestration of such of the antiquities found by Dr. Schliemann in the Troad as have been removed by the discoverer to Greece. Dr. Dethier made the application with a view to the consignment of the objects in question to the Turkish National Museum, but the Greek tribunals have decided it to be inadmissible.

The Proposed Tunnel between France and England.—The Council-General of Arras has approved the conclusions of the report upon this tunnel. The report states that all diplomatic difficulties have been overcome. The Northern Railway Company will furnish 40,000*l.* for France, and the South Eastern Company a similar sum for England, towards the construction of the preliminary works, on condition that the preference be given them in granting the concession.

Testimonial to the Marylebone Vestry's Assistant Surveyor.—At the last meeting of the Marylebone Vestry Mr. Edwards moved the adoption of the report of the paving committee, recommending the Board to present Mr. Hallett, the assistant surveyor with a cheque for 60*l.* for the service he had rendered to the parish during the interim between the death of Mr. Browning and the appointment of the present surveyor. This was agreed to.

High Tides.—Captain Saxby calls the attention of landlords to waterside property, in time to guard against the more frequent and threatening occurrence of high tides which will certainly happen in March, April, May, June, and July, 1875. Captain Saxby complains that his prognostications have not hitherto been paid for by the Government, and he threatens to strike if his services are not substantially rewarded.

Monument.—The first contract for the erection of the monument to Dr. Pierce, of Denbigh, has been let to Mr. Rhydwyn Jones, of Rhyl, for five hundred and eighty pounds. The bas-reliefs and statue of the Doctor are not included in this sum. The monument has been designed by Mr. Martin Underwood, architect.

A Memorial of the late Rev. Thomas Binney has just been erected in the Weighhouse Chapel, of which he was forty-two years pastor. It takes the form of a stained-glass window, and has been supplied by S. Gibbs & Moore, of London. The subject is after Raffaele's cartoon of "Paul Preaching at Athens."

Roundabout.—The following is an Irish way (clear and yet embellished by imaginative language) of denouncing an unsafe public building:—"Some of these fine days the public will wake up in the basement under about 14,000,000 pounds of brick and mortar, and find themselves all dead corpses."

Drainage in Reigate.—Mr. Grantham has been engaged by the Corporation of Reigate to examine and report upon the state of the sewer leading from that town to Earlswood Common, and to estimate the cost of putting it into working order.

The New Railway Station at York.—The tenders for the construction of the new railway station at York were considered at a meeting of the directors of the North-Eastern Railway at Newcastle on Friday last, when that of Messrs. Keswick, builders, of York, was accepted.

Peterborough.—The designs of Mr. William Eve, of London, have, in a limited competition, been selected by the Directors of the Stamford, Spalding, and Boston Banking Company, for their intended new bank in this town.

Old Hall and Assize Courts, Winchester. The restoration of the Parbeck marble shafts is in the hands of Mr. G. P. White, of Pimlico.

TENDERS

For villa residence, Steele's-road, Havestock-hill, for Mr. Alex. Maclean. Messrs. Batterbury & Haxley, architects. Quantities supplied:—

Axford.....	22,295	0	0
Cullum.....	2,298	0	0
Nightingale.....	2,210	0	0
Linnell & Son.....	2,163	0	0
Kelly, Brothers.....	2,150	0	0
Mansley & Rogers.....	2,063	0	0
Newman & Mann.....	2,016	0	0

For building a pair of semi-detached villa residences at West Ham, for Mr. G. Marshall:—
Charlton & Martin (accepted) ... 2,970 0 0

For the erection of three cottages at Leybourne, for Sir Joseph H. Hawley, bart. Mr. George Friend, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Avard.....	21,329	0	0
Gray.....	1,166	0	0
Clements & Wallis.....	1,151	0	0
Bridge & Cox.....	1,087	0	0
Anson.....	1,061	0	0
Chapman.....	1,003	0	0
Bishop.....	936	0	0
Hayfield.....	844	0	0

For the erection of Congregational church and manse, at Fentonston, Runt. Mr. Lait, architect:—
Bunting..... 21,837 0 0

For erection of bank and premises at Ely, for Messrs. Foster. Mr. M. Hutchinson, architect:—
Bunting..... 1,888 0 0

For the erection of a villa residence in Widmore-road, Bromley, Kent, for Mr. F. H. Luntley. Quantities supplied:—

Arvard.....	22,459	0	0
Wright, Brothers, & Goodchild.....	2,225	0	0
Boyes.....	2,179	0	0
Payne & Baldwin.....	2,126	0	0
Peacock.....	2,067	0	0
Crosley.....	1,837	0	0
Bullard.....	1,902	0	0
Blackmore & Morley.....	1,839	0	0
Lee.....	1,814	0	0

For new town schools for girls and infants, and out-buildings connected, at Waltham Abbey, Essex, for the Waltham Holy Cross School Board. Mr. C. Chapman, architect:—

Reed.....	23,468	15	6
Keyes.....	3,175	0	0
Boyes.....	3,015	0	0
Sanders.....	2,990	0	0
Beutley.....	2,985	0	0
Warr.....	2,982	0	0
Payne & Ramage.....	2,930	0	0
Johnson & Co.....	2,825	0	0
Stamp & Bowtie.....	2,815	0	0
Langham.....	2,804	0	0
Blackmore & Morley.....	2,785	0	0
Gardener.....	2,775	0	0

For the erection of house on the Silwood Estate, Sunningdale, Berks, for Mr. Milbourne Clark. Mr. C. W. Horne, architect:—

Gladman.....	24,924	0	0
Watson.....	4,400	0	0
Dowds & Co.....	4,099	0	0
Williams & Son.....	4,073	0	0
Niblett & Son.....	4,040	0	0
Langmead & Way.....	3,960	0	0
Pither.....	3,742	0	1
Wagner (accepted).....	3,703	0	0

For works in forming new north aisle and west porch to Christ Church, Finchley. Mr. J. Norton, architect. Quantities supplied by Mr. S. J. Tucker:—

Boyes.....	22,815	0	0
Garrud.....	2,783	0	0
Fife.....	2,581	0	0
Farnor & Brindley.....	2,560	0	0
Rankin.....	2,430	0	0
Hobbs.....	2,341	0	0
Jobling & Co.....	2,227	0	0
Bewett.....	2,160	0	0
Niblett.....	1,939	0	0
Gilmore.....	1,899	0	0

For the erection of three houses and shops, London road, Enfield. Mr. Thos. J. Hall, architect:—

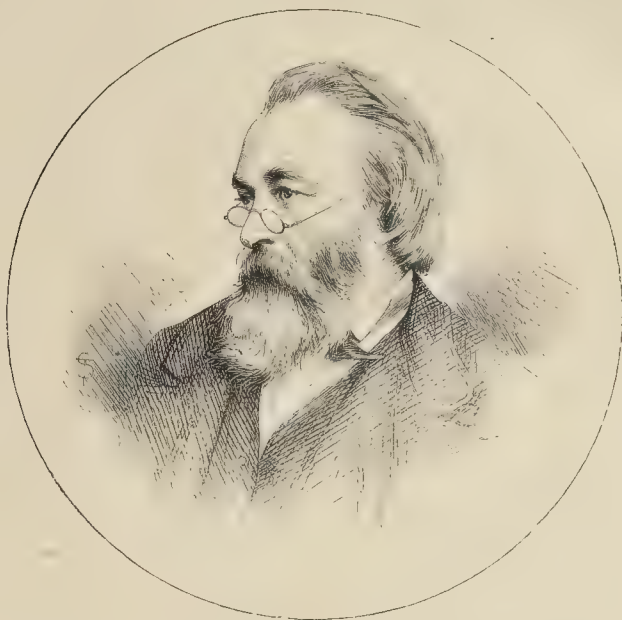
Patman, Brothers.....	22,134	0	0
Aoley.....	2,085	0	0
Sailey & Son.....	1,580	0	0
Hayes & Ramage.....	1,388	0	0
Fairhead.....	1,797	0	0
Childs.....	1,645	0	0

For the erection of pianoforte manufactory and show-rooms at Kensington, for Messrs. Charles Cadby & Sons. Mr. Lewis H. Isaacs, architect. Quantities supplied by Mr. L. C. Rodick:—

Patman & Fotheringham.....	230,874	0	0
Kilby.....	36,675	0	0
Browne & Robinson.....	30,168	0	0
Scrivenor & White.....	27,981	0	0
Adamson & Sons.....	27,187	0	0
Chappell.....	26,745	0	0
Elkington.....	25,200	0	0

For school buildings, Barton-on-Trent, for the Governors of All Saints' endowed schools. Messrs. Evans & Jolley, architects:—

Smith.....	26,305	0	0
Kershaw.....	6,116	0	0
Chamberlain.....	5,944	0	0
Patterson.....	6,030	0	0
Potter.....	5,930	0	0
De Ville.....	5,864	0	0
Mason.....	5,840	0	0
Bowler & Beech.....	5,770	0	0
Low & Sons (accepted).....	5,745	0	0



The Builder.

VOL. XXXII.—No. 1631.

The late Mr. Owen Jones.

OWEN JONES, whose death, at the comparatively early age of 65, all must mourn, was the most potent apostle of colour that architectural England has had in these days. The extent of his labours, and the amount of work he did, are scarcely known, even to those who consider themselves well informed on such subjects. Mr. Owen Jones was born in 1809, in Thames-street, London. His father, Owen Jones, born at Llanvangel Glyn y Myvyr, in Denbighshire, was distinguished as a Welsh antiquary. Making money as a furrier in Thames-street, he devoted considerable amount of it to the collection of the remains of the literature of Wales, published as "The Myvyrian Archaeology of Wales." He

also procured transcripts of Welsh poetry, extending to fifty quarto volumes, now deposited in the British Museum. When spoken of as a bard he is called in Welsh records Owen Myvyr, from the place of his birth. His labours have been recognised on the Continent as well as in England. Owen, the eminent son of whom we are about to speak, early lost his father; and at sixteen he became the pupil of the late Mr. Lewis Valliamy, the architect, and served with him a term of six years. Mr. Valliamy was a somewhat exacting master, and we hear of hours (from nine to seven) that would startle some students of the present time. In his office Mr. Jones learned to be an exact and a careful draughtsman. In 1831 he started upon the great tour, which the architects of that period considered it their duty to make. In those days,—when there were no railways,—when art-students walked over much of the ground,—and when there were no photographs, which might seem to render sketching unnecessary,—conscientious students had to work hard if they would fill their portfolios; and Owen Jones often had occasion to congratulate himself, later in life, on his labour during this period. We have heard him speak of the effect produced upon him by the first view he had of Italy from the Great St. Bernard. His eye for colour was opening, and in walking, afterwards, over Sicily, his taste was more and more developed in that direction. Thence he went to Greece, and there met Jules Gourey, a French architect, and student like himself. They never afterwards separated till the death of Gourey. They went to Turkey, and then to Egypt. In those days, in which there were no steamboats, few travellers but art-students or men of taste and knowledge who travelled for culture visited

Egypt. Owen Jones found there Mr. Joseph Bonomi, and a few others who were content to work quietly and patiently at their art, eating their rice, and living more or less with the simplicity of the Arabs around them. This training probably had a considerable influence on the life and thoughts of Owen Jones, for we ever find in him the same patient devotion to the object he had set himself to do.

Mr. Bonomi, writing to us on these times says:—"I recollect perfectly the arrival of Owen Jones at Thebes. An Arab had been sent up to my abode in a tomb, at some little distance from the river, to inform me that two boats had arrived full of Englishmen, and I went down to the Nile in the evening to offer my services. In one of these boats was Owen Jones, a fair young man, with his friend, Dr. Hogg; in the other, a French architect, M. Jules Gourey, and other travellers. Owen, I recollect, was in bed suffering from a slight attack of dysentery, and it was thought more prudent to continue their journey to Nubia than to expose themselves to the fatigues of sight-seeing at Thebes. The boats, however, remained that night and the whole of the next day under the shadow of the famous sycamore tree, and I repeated my visit, at the instigation of some of the travellers, on which occasion I was shown some sketches by the young architect and his companion.

On their return to Thebes, after an absence of six months, the two architects set to work with an extraordinary enthusiasm, and cleared out one of those crude brick arches which surround the Memnonium, and converted it into a comfortable residence, employing the fellahs, and some of their boats even, to build a wall across the arch separating the kitchen from the studio, which was lighted by a large hole in the

roof. I was struck by the facility with which the Arabs seemed to understand them with the smallest amount of words of a polyglot dialect, chiefly composed of French, and the discipline and order they had obtained in the arrangement of their folios and drawing implements.

From this improvised abode the two architects used to sall forth with their Arabs carrying their ladders, boards, and implements for measuring, and return in the evening with a store of architectural knowledge derived from the surrounding remains that was quite astounding for accuracy and detail, with sometimes not a few picturesque sketches in water-colour of the ruins and their present occupants. Never as it seemed to me did two men work together in better harmony and success.

The grand calm of the East, its poetry, the mythical style of its architecture, the great lesson to be learnt in its stones, doubtless had a powerful effect on him; and just at this moment the poems of Victor Hugo firing his imagination, he, with his friend Jules Goury determined to go to Granada. They got round to Spain through the amiabilities of French ships of war; and on arriving at the Alhambra, amazed and delighted, determined to make its beauties known to the world. Of the ultimate result,—the "Plans, Elevations, Sections, and Details of the Alhambra,"—we need scarcely speak. Most readers of this journal, if they do not possess the work, have studied the glosses of its pages in some museum or other. Mr. Goury died of cholera. Owen Jones then visited his friend's family in France, in fulfilment of a promise he had made to him, and came to England, where he commenced the reproduction of his drawings in colours and gold for publication. This was in 1836. In the following year he again visited Granada for twelve months, and then returned to London, and finished the publication of the work. This was done under great difficulties. When he first came from Spain, the art of printing in colours by means of stones was in its infancy. He seized the idea, obtained a press, and in an attic at his chambers in the Adelphi set to work to produce that book which, as a monument of printing alone, has never been surpassed. On its publication he spent his patrimony. Friends, of course, said he was wasting his time and his means: friends have often said the same thing before under similar circumstances: they did not see what use could be made of such studies in England, where colour was as much feared as the small-pox, and for some time it seemed as if they were right.

On the completion of the "Alhambra," he commenced his professional life. We need not hesitate to say he was before his age; few comprehended that there could be any applicability to life in England of his views, and, in fact, he, like others, remained a man who had sacrificed his fortune to the production of a work which at that time bore no fruit.

To keep together the few assistants he had trained to chromo-lithography, he published a few works which proved losses. About this time he married Miss Wild, herself one of a family of accomplished artists, and who survives him.

He then became connected with Messrs. Longman & Co., and with Messrs. De la Rue, and made for them numbers of designs. With the latter firm, especially, he was long and largely connected. He may be said to have metamorphosed everything in their establishment, and helped largely to give it the renown it has ever retained. He designed their playing-cards, their stamps,—in fact, all that they produced. He also made designs for the great carpet-manufacturers of Glasgow. His ornamentation has generally a character similar to that of what may be called the Moorish styles; the merit of which he has much advocated, and with justice, having regard to the amount of variety which is displayed in them with simple elements, and their recognition of one, much neglected, but correct, principle in surface decoration,—namely, the avoidance of imitation of relief. In 1842, he published "Designs for Mosaic and Tessellated Pavements"; and in 1844, in the exhibition of decorative work sent in to the Commissioners of Fine Arts, he showed a large plan of the Houses of Parliament, including designs for the pavements of all the chief halls and corridors of that building. In addition to his works above referred to, Mr. Jones was engaged in the architectural design and superintendence of some houses, for Mr. Blashfield, in Kensington Palace-gardens, and he competed unsuccessfully for the Army and Navy Club, as he did, much later, for the National Gallery.

In general architectural design, however, and even with the ornaments of Moorish character which he introduced, he did not at that time succeed as well as in interior decoration, as examples of which two shops in Regent-street, Houbigant's and Jay's, may be named.

On the formation of the staff of officers for the Exhibition of 1851, Mr. Jones was named one of the "superintendents of the works"; and when the question of design was set at rest by Paxton's blotting-paper sketch, still retained his post, and aided in giving architectural character to the structure. As the work progressed, the problem of its decoration, a novel one, was more and more discussed, and Mr. Jones's original proposals, which he stoutly supported by theory, were very freely canvassed, and became somewhat modified in the application. He, however, always maintained the propriety of adhering to the primary colours, and of using them in certain proportionate quantities in which the reflected rays are held to constitute white light, and also of using them on particular surfaces supposed to be adapted to the force of each colour. There was much conflict of ideas, and much difficulty, but his intense desire not to lose this opportunity to impress upon the world the effect of colour led him to persevere.

He ultimately made a large drawing, which he submitted, and some of his pupils and friends may still remember the look of triumph which pervaded his countenance when, returning from a meeting he said, "I have conquered." All who saw the building will remember the harmonious whole produced. In the year 1852, one of the lectures at the Society of Arts, relative to the Exhibition, was given by Mr. Jones, and afterwards published under the title,—"An Attempt to define the Principles which should regulate the Employment of Colour in the Decorative Arts, with a few Words on the Necessity for an Architectural Education on the Part of the Public." He gave courses of lectures subsequently at other places on the same subject, some of which will be found in our pages.

Shortly afterwards, the Crystal Palace Company erected their building at Sydenham, and Mr. Jones was appointed "Director of Decorations," and in conjunction with Mr., now Sir Digby, Wyatt visited many of the chief buildings and galleries of Europe, in order to collect the remarkable series of casts and works of art which are now exhibited at Sydenham. When the building was ready, the courts of architecture and sculpture were commenced; and the Egyptian, Greek, Roman, and Alhambra courts, and the decorative painting of the general fabric, were then completed under his directions. In this building he somewhat modified the scheme of decoration which he had endeavoured to exemplify in Hyde Park. "In that case, there are some distinct questions as to the painting of the columns, some of the objectors contending against painting them in stripes, others arguing for what they styled,—though in that particular case with inadequate reason,—structural truth; for which they supposed a bronze colour was essential." Notice of the discussions which took place both in this case and previously as to the Hyde Park building will be found in the *Builder*.

With reference to the system of decoration adopted by him, he was led to publish "An Apology for the Colouring of the Greek Court," in which he was assisted by Mr. G. H. Lewes and Mr. Watkiss Lloyd. In the Egyptian Court he had received material aid from Mr. Bonomi. A warm intimacy existed between Owen Jones and Sir Digby Wyatt, and they worked harmoniously together, there and elsewhere.

As illustrating Owen Jones's views on decoration at this time, we print one of several letters received from him:—

"9, Argyl-place, July 2, 1852.
My dear Sir,—Many thanks for your observations. I do not object to floral patterns so absolutely as you suppose. What I object to is that they should be treated with light and shade, appearing to stand out from the surface on which they are worked, so as to destroy the form and unity of the object they decorate. And I referred to the Indian mode, on the one hand, of representing flowers flat as a diagram; and to Mr. Pugin's Gothic papers on the other, as showing two well-defined modes of conventionalising natural objects, and yet totally dissimilar. I therefore think there are many other modes of conventionalising natural flowers open to the world, and I send for your inspection a magnified representation of a sword-handle, which shows how the Indians treat natural flowers. These are a very near representation of nature, yet perfectly conventional, and most graceful in the arrangement of the lines and balancing of the masses. Would not this make a useful wood-cut for the *Builder*, compared with a floral pattern paper, with its light and shade, and Gothic paper, and some old patterns of put Italian ornaments?
Geo. Godwin, Esq."

* English Cyclopædia.

We hear after this period of a time of great trial and disappointment; and he had but few opportunities to make his genius recognised. He worked early and late, however, and gradual obtained recognition of his views. He never altered. The great object he had at heart was to obtain a more general use of colour, and he was willing to make any sacrifice to bring this about. As he said in one of his lectures:—"Those who first will necessarily fall, but, as in the storming a fortress, the ramparts are at last reached by the dead bodies of the forlorn hope, so will the mistakes of those who lead the way in colour architecture contribute to the success of those who follow."

Though naturally modest and of a retiring disposition, Owen Jones never swerved from his principles,—never yielded, for the sake of momentary success, a single point to prejudice. He possessed an intellect of remarkable exactness and precision, and had mastered many branches of science in so far as they have upon architecture. Of geometry, for example, he had extended knowledge; which he turned to good aesthetic account in multiplying geometric designs of extraordinary beauty, from the simplest to the most intricate. Of his acquaintance with that still very obscure subject, architectural acoustics, he has left behind him the best possible proof in the building known as St. James's Hall, designed and erected by him expressly for musical purposes, and now universally recognised, amongst musicians, as one of the most satisfactory music-halls in Europe.

In St. James's Hall, Mr. Jones first introduced a system of distributed lights by means of small star-shaped burners, which have since been very widely used. The main object of the system is the avoidance of shadows. In this hall, as previously in the Crystal Palace, and in many fine private mansions, he practically illustrated the doctrine of chromic decoration in architecture, to the advantage of which so large a portion of professional life was devoted.

In 1857 Mr. Jones, who had joined the Institute of British Architects in 1843, was awarded the Royal Gold Medal, the gift of her Majesty the Queen, to architecture. The president, E. de Grey, in presenting it (we remember evening very well), said in his bluff and generous way, it would be almost an act of nonsense his part to state the grounds upon which Owen Jones had been elected as the recipient of this medal. He was known by his works of immense value, which might not have been so productive to himself as to his pupils, but which had certainly been of great service to his profession. These works had fallen within the reach of every one, but the Crystal Palace, which was accessible to all,—whether connected with art, science, manufactures, or the genius of Mr. Owen Jones was manifestly displayed. He had the greatest possible pleasure in presenting to that gentleman a testimonial of the respect and esteem of all his brethren in the noble and honourable profession of which he was so distinguished member.

Owen Jones earnestly acknowledged the award. He said he deeply felt the proud position which he was placed, and the very kind words which the noble chairman had referred to. It was one of the great privileges of an artist that if he had an earnest desire to advance his profession, his efforts would find many friends. He had been sustained under many trials, numbers of friends, and ultimately they given him that reward which it was now privilege to receive. The Royal gold medal was one which every architect might wear with pride; given as it was by the Sovereign, given by the profession at large. He himself regarded it as an honour which could not be too highly appreciated. He had been placed in his present position by the gentlemen around him, to many of whom he was known only by such efforts he had made to elevate their profession; and he felt that he must sustain the honour of gallant corps of those who had gone before, those who might follow him in the same distinguished position. Noblesse oblige.

He received several other medals and recognitions from abroad, notably the diploma of honour for decorative designs at the Vienna Exhibition of 1873. But this is getting on fast. The "Grammar of Ornament," which

* A view of his designs for the interior and exterior of St. James's Hall and a portion of the decoration of it, large, will be found in our Volume for 1856, pp. 543, and 571.

not consider his most important published work, was completed in 1856, and is recognised as a text-book throughout Europe. The facts that he has endeavoured to establish in that volume are these:—

First. That whenever any style of ornament commands universal admiration, it will always be found to be in accordance with the laws which regulate the distribution of form in nature. Secondly. That however varied the manifestations in accordance with these laws, the leading ideas on which they are based are very few. Thirdly. That the modifications and developments which have taken place from one style to another have been caused by a sudden growing off of some fixed trammel, which set forth free for a time, till the new idea, like the old, became again fixed, to give birth in its turn to fresh inventions. Lastly. He endeavoured to show, in the twentieth chapter, that the future progress of ornamental art may best secured by engraving on the experience of the past the knowledge we may obtain by a turn to Nature for fresh inspiration.

"To attempt to build up theories of art, or to run a style, independently of the past," he says, "would be an act of supreme folly. It would be as to reject the experiences and accumulated knowledge of thousands of years. On the contrary, we should regard as our inheritance all the successful labours of the past, not blindly follow them, but employing them simply as aids to find the true path."

To make his views more fully known, we will state, too, a few of the principles advocated in a work:—

"An architecture, so all works of the decorative arts should possess fitness, proportion, harmony, the result of all which is repose.

"True beauty results from that repose which the mind feels when the eye, the intellect, and the affections are satisfied from the absence of any want.

"Construction should be decorated. Decoration will never be purposely constructed. [That which is beautiful is true; that which is true is beautiful.]

"Beauty of form is produced by lines growing out of one from another in gradual undulations. There are no excrescences. Nothing could be moved and leave the design equally good or better.

"The general forms being first cared for, these should be subdivided and ornamented by general lines; the interstices may then be filled in with ornament, which may again be subdivided and enriched for closer inspection."

In his introduction to the series of Moresque ornaments in the book of which we are speaking, Mr. Jones testifies thus strongly to his admiration of that style:—

"Our illustrations of the ornament of the Moors," he writes, "have been taken exclusively from the Alhambra, not only because it is the source of their works with which we are best acquainted, but also because it is the one in which their marvellous system of decoration reached its culminating point. The Alhambra, at the very summit of perfection of Moorish art, as is the Parthenon of the Greek art. We find no work so fitted to illustrate a grammar of ornament as that in which every ornament contains a grammar in itself. Every principle which we can derive from the study of an ornamental art of any other people is not ever present here, but was by the Moors universally and truly obeyed. We find in the Alhambra the speaking art of the Egyptians, the natural grace and refinement of the Greeks, the geometrical combinations of the Romans, the Byzantines, and the Arabs. The ornament wanted, but one charm, which was the peculiar feature of the Egyptian ornament, nobility. This the religion of the Moors bequeathed, but the want was more than supplied by the inscriptions, which, addressing themselves to the eye by their outward beauty, also excited the intellect by the difficulties of deciphering their curious and complex involution, and delighted the imagination when reading the beauty of the sentiments they expressed, and the music of their composition."

In a succeeding volume, published some years ago, he showed the beauties that could be culled from Chinese Decoration; and we ought not to fail to mention, as amongst the earlier works of ornamentation, his "One Thousand and One Initial Letters," and "The Song of Songs."

Without attempting to record all his doings, we may note that in the year 1866 Owen Jones designed a kiosk for India, and superin-

tended its execution in iron. In a note to us mentioning that it had been temporarily set up on a piece of land adjoining the gardens of the Royal Horticultural Society at South Kensington, he gives this account of the transaction:—"Messrs. Trollope contracted with Mr. Crawford, M.P., to send out a kiosk complete to Bombay for a client of Mr. Crawford's, and Messrs. Trollope applied to me to make a design, which was sent out to Bombay and approved. I then made full-size drawings of every part of the work. Messrs. Ordish took the contract to supply the iron-work to Messrs. Trollope, and are responsible for the engineering details; they again let the castings to Handyside, of Derby." He somewhat prided himself on the mode he had adopted in this structure of treating ornamental iron-work, and we published a view of it in the *Builder*.

In the latter part of Owen Jones's life he was mainly occupied in the decoration of private houses, and this chiefly in connexion with Messrs. Jackson & Graham. We must speak of this connexion somewhat at length. Mr. Jones of course became known to this firm through his work on the Alhambra; but prior to 1851 his connexion with them consisted only in occasional orders for some of his clients. Then, however, when desirous of removing the doubts and fears of the Royal Commissioners for the Great Exhibition as to the colouring which he proposed to adopt in finishing the interior of the building, he applied to Messrs. Jackson & Graham for the means to enable him to prove that the most delicate colourings of the richest products of the looms of Lyons, as well as carpets and other fabrics, would not be disadvantageously affected thereby, and they hung up a variety of coloured textile fabrics in the portion of the building experimentally finished to illustrate his views. They and Mr. Jones were then thrown together more and more in the ordinary pursuit of his profession; but it was not until after the 1862 Exhibition that the firm began to have his professional assistance. The first work of great importance was a complete series of designs for the carpets, and wall and ceiling decorations for all the great rooms (fifteen in number) in the palace of the Viceroy of Egypt at Geseh. It was necessary that everything should be prepared and completed in London ready to apply on the spot, and herein his complete mastery of the principles and knowledge of the details of Arabic art shone most conspicuously in the production of fifteen series of designs applicable as dados, dado mouldings, walls, friezes, frieze mouldings, the different sections of cornice mouldings and ceilings, in a style as perfect and exact as is exemplified in the tombs of the Caliph in Old Cairo. An independent multiple, determined by the proportions of each separate saloon, was adopted throughout for all the designs for the carpets, mural and ceiling decorations. Mr. Jones regarded this both physically and mentally as the greatest triumph of his life. For three months, day by day, he worked not less than eighteen hours upon it!

About this time Messrs. Jackson & Graham had the satisfaction of introducing Mr. Owen Jones to Mr. Alfred Morrison, who required some additions and decorations to his country residence (Fonthill House), where he had a large and fine collection of Chinese porcelain and enamels, comprising many of the finest objects from the Summer Palace at Peking. The study of these objects was a delight to Mr. Jones, and induced him to publish his work, already referred to, on "Chinese Ornament," which is illustrated by many copies of parts of the objects in Mr. Morrison's collection. This collection, to use his own words, "opened to his mind a new world of ideas with regard to colouring in the practice of decorative art," the first fruits of which are to be seen in the decoration of the staircases at Fonthill House, in which the purest Greek forms are united with the delicate tones of colour in the finest specimens of Chinese egg-shell pottery. For the convenient display of a portion of these choice objects, a room was built, decorated, and fitted up by the firm in question, from Mr. Jones's designs, in the Cinque-cento style, of which it forms an exquisite example. The chimney-piece and fittings are entirely of ebony, inlaid with ivory, and the ceiling is of wood, panelled and inlaid, the mouldings being black and gold.

His next decorative work of importance, which the same firm executed from his designs, may be witnessed in the finely-proportioned rooms of the Fishmongers' Company. Here, by means of

colour, he gave force and expression to the pure Greek details of the building. His own feeling, as expressed at the opening banquet, after the completion of the alterations, was that "form without colour is like a body without a soul." The silk hangings and carpets for the principal rooms and grand staircase here are also from his designs.

But by far the most important and complete work in which he was associated with Messrs. Jackson & Graham is the decoration and furniture of the London house of Mr. Alfred Morrison in Carlton House-terrace. Here the woodwork of the panelling, dado, doors, architraves, and window-shutters in the outer and inner hall, staircase, and all the rooms on the ground and first floors, is inlaid from designs by Mr. Jones, with various woods of different kinds, the colours of which were carefully selected by him, with a view to perfect harmony of colouring.

The walls are hung with the richest Lyons silks, all specially designed by him, and coloured to harmonize with the ceilings, which may be described as perfect, in the proportions of their geometrical divisions and the designs and colouring of their decorations. The chimney-pieces, too, grates, and fenders; the carpets, and the furniture, which is all marquetry, were designed by Mr. Jones, and are in perfect keeping with each other. Unfettered by any limit with regard to cost, and working with the full confidence of Mr. Morrison in his artistic genius, this work was a labour of love to him, and he lavished upon it all his thought and all his knowledge, with this result,—that there are no accidental effects, and there are no defects, either in the association of colours or forms, or the unity of scale in the details of the different objects entering into the composition of a great harmonious whole. We may, indeed, say that no work of equal magnitude of an analogous character, and exhibiting at the same time such perfection of execution in all respects, is known to us, and it forms a monument to the genius of Owen Jones, and an example of the perfection with which such works can be executed in this country when entrusted to proper hands, cost not being regarded. We must guard ourselves, however, from having it supposed that we desire all decoration to be of this character. The absence from it of the human form, of animal form altogether, must prevent it from being regarded as of the highest class of art. In its own way, however, and within its own limits, this particular work is perfect.

Other examples of Mr. Jones's taste and knowledge are shown in his treatment of the hall, dining-hall, and drawing-room at Preston Hall (the seat of Mr. Henry Brassey, M.P.), and also in the decorations of the hall, staircase, and dining-room and library ceilings of his town residence.

Among other works of his we may mention the drawing-room of Lord Home at Douglas Castle as a pleasing example of an entirely original combination of colours; and the principal rooms at Beech Grove, Newcastle-on-Tyne. At Overstone Hall, and at Lockinge, there are also evidences of his power as a designer and colourist.

The last important work executed by the firm in question from his designs, and which is scarcely yet completed, includes the decoration and furniture, carpets, and hangings for Eynsham Hall, Oxford, the residence of Mr. James Mason. Here, as for Mr. Morrison, the whole of the decoration and furniture was designed by Mr. Jones, and carried out under his directions to a most successful and satisfactory result.

His versatility is evidenced by the plans he prepared for the garden and terraces surrounding the mansion, to the judicious arrangement of which so much of the very pleasing effect of the approach to it is due. We must now, however, bring our notice to an end, though not for want of materials and will to enlarge it. Mr. Owen Jones was a most estimable man as well as a remarkable artist. Those who knew him mourn his loss in both capacities. We are glad to understand that a committee is in course of formation to arrange an exhibition of his works, and to consider the steps that should be taken to raise some fitting public memorial of his name and worth.* At the request of some of Mr. Owen Jones's friends we republish the portrait of him which we gave five years ago.

* Let us add to this record a note that the mortal remains of Owen Jones were interred at Kensal-green Cemetery, where, in addition to the members of his family as chief mourners, there had assembled a considerable number of scientific men desirous to pay the last tribute

EXHIBITION OF THE ROYAL ACADEMY.

THE pictures that have become the temporary property of the bright shilling-paying shoals who could never swim through the whirl of the three months called a season without knowing all about the awfully good, the awfully nice, and the awfully horrid things, always in specific measure to be found at a Royal Academy Exhibition, will afford them more subjects for intermittent scrap conversation than usual. Pictures should be very valuable things, even taken as investment only (when we say pictures, we mean pictures): as floating capital, giving good and rising interest, with no determinable value so long as Presto, Payprize, and Itures can hold up the hammer. To love pictures is a fashionable passion, even for those who only know that their worth may be by the so many hundreds or thousands of guineas they may have cost them; and for the real lovers of "things of beauty that are joys for ever," the more they have the more they seem to want,—

"As if increase of appetite had grown
By what it fed on."

They waver sometimes, if of fickle mind. Frailty's name being woman, who is growing more masculine every day,—yearning for possession,—

"And yet, within a month,
Let me not think on't."

So Messrs. Presto, Payprize, and Itures make a small good thing of it, and a great gain for the next proprietor of the gain, if he thinks it one; for a picture's worth is often,—sometimes, only,—just so much money as will be given for it.

"You have seen that awfully, intensely clever Miss Thompson's picture, 'Calling the Roll,'—or what d'ye call it,—after an Engagement, Crimes'? Didn't it harrow you? Beg pardon, it's your turn." "Miss Thompson's picture? Ya-as, I saw it; it's awfully good, but I was more harrowed by elbows,—there ought to be a rail." "But I saw it before an engagement: I've booked you three deep, remember." "All right: Charlie Manslow engraved his name for the waltz; so I lost my card and threw him over; I shan't forget you." "Ha'w, don't." "Isn't Millais awfully good? The picture of health?" "Ya-as, he is." "Did you hear that Miss Thompson sold her soldiers for a hundred pounds on the canal, and was offered a thousand on private view day?" "She must have been awfully pleased! Poor, darling, clever creature!" "Yes, I think I'll have some ice." "But, stop, I must tell you; the owner of the 'Roll-call' sent the clever girl who painted it a cheque for a hundred and fifty pounds more, so soon as he knew he had laid his money out well; and it is said the Queen means to have the picture." "What a good, kind man! And how like the Queen!" "Give me my cloak." There are women and women, and men and men; and the world is a workhouse, with many guardians, many overseers. "It is a paradise," says Mr. Leighton, R.A., "and woman a houri." He really paints them as such, and has lately come from the East. "Take the world as we find it," says Mr. Millais, R.A. "It is magnificent and really lovely on the face of fact." And he makes it very evident that he thinks so. But the world is a workhouse, and the best of us are but "casuals" and in just such a fog as Mr. Fildes wonderfully well indicates.

It has become rather a difficult matter to pronounce an opinion if the Royal Academy Exhibition of the year present be up to its average character for excellence or not, with the very frequent assertion in the negative that has recurred in its course during a hundred and six years. Perhaps "average" should be taken as a synonym for expressing a not always very

of respect to a fellow labourer, whose unblemished and useful life will long hold a place in the memory of a wide circle of friends. The Royal Institute of British Architects was represented by Professor Donaldson, Sir Gilbert Scott, R.A., Professor Kerr, Mr. Edward Barry, R.A., Mr. Cockerell, Mr. Thomas Wyatt, and Mr. Horace Jones. The Commissioners of the Exhibition of 1851 were represented by Mr. Cole, C.B., and other gentlemen. The Crystal Palace Company sent two of their directors, Dr. Price and Mr. Geo. Grove, together with Messrs. H. A. Smith, Dickie, Rees, and Boate, members of the deceased's working staff in the Fine Arts Department, to testify their grateful respect to one who had done so much for them: whilst amongst the representatives of the scientific and artistic world, whose productions in the various phases of manufacturing ingenuity have been largely aided by Mr. Owen Jones's talent, were Mr. Warren Delarue, F.R.S., Mr. Peter Graham, Mr. Forster Graham, Mr. W. N. Delane, and others. The Rev. Dr. Peter Maurice, Captain Evelyn Roberts, Mr. Wild (brother-in-law of the deceased), and Mr. C. T. Wild (his nephew), Mr. F. O. Ward, Mr. Edward F. Pigott, and Mr. Warren W. Delarue, were also amongst the mourners.

reasonable expectation of what the quality should be for the time, as exemplifying the choicest selection of that special production that the members of this first national institution for promoting the fine arts are the accepted and noted leaders in ministering to the demand for.

Any comparison with previous displays is as unnecessary as ungrateful; for the exhibitions of modern British pictures at Burlington House may be trusted, without being seen, to be always incomparably superior to any others contemporary. It is always good so far as the workmen who provide for it have been enabled to make it so; and, beyond all doubt and evil, the Royal Academicians, with their Associates,—though some do not yet append to their names the coveted initials R.A.A.,—would be, with scarce exception, the very men an appeal to suffrage would return first as representatives of the living English school of painting. Every time the scythe of the inexorable mower has thinned their ranks, or nearly every time, the school has suffered irreparable loss; for it has been too seldom urged that our art-students have efficient means of education, or great patterns for emulating at home, to leave it probable that we should have a succession of Hogarths, Reynoldses, Gainsboroughs, Romneys, Flaxmans, Wilkies, Hiltons, Etchies, Machises, and Landseers, by which the school may remain so identified properly. There are those who insist that art should have but one great school; and it would be very feasible too; but though its language is universal, its method of utterance can never become so. If the long-postponed and anxiously-expected wedding of the Real to the Ideal ever came to pass, it would no doubt be found that ideas of the real and real ideas would differ in as many respects as there are nations in the world. But this Utopian view of such possible unity is very pleasing to contemplate as a consummation devoutly to be wished for; then such general content, opinion, and success would prevail, that one of its first effects would be to make the annual construction of any exhibition a labour of love and a delightful recreation.

But opinions and tastes act like tides on any stream—that of success included—and the stream that keeps afloat and moving all crafts, the one connected by the painter to the good ship "Perseverance" amongst them; though the special current that has carried along the ventures of artists of late years would seem to defy any tidal interference even if it were as strange as the one that befell Old Father Thames the other day, when, after imbibing to that extra degree as to become—to make the least of it—inconveniently elevated, he forced his way into peaceable folk's houses, and gave his own police more to do than they knew how to do (this would not be worth mentioning if it were not as a reminder that though he was ba()led out, he is not in any way bound to be of better behaviour for the future, and it can only be hoped that this excess will not become a habit). The painters know more of the world than most casual dwellers do, else how should they paint it? And there is epitome in prose, with here and there lines of poetry, that would give a history of any life that could be pictured, almost to be seen on the walls of the Burlington House galleries.

It is always best to take for very good the best of its kind offered; and no doubt the Royal Academy have been actuated by this axiom in very freely distributing expression of regret that want of room debarrd them from availing themselves of help from unsuccessful candidates who aspired to share in the glory of forming the great picture-show of the season. This is a very amiable mistake, for in ten cases out of a dozen it is calculated to add to the disappointment it is intended to ameliorate. The difficulty of selecting from such multitude of similar things that it is only too probable the bulk of picture productions rejected "for want of room" mainly consist of, is apparent enough in what may be seen of the sort in walled immunity from taking part in this present instance of never-failing complaint against those who arrange the exhibition of the year. It must seem an audacious extension of the critic's privilege to the judges, who have accepted for temporary society the happy anybodies they may have deemed fit to warrant the distinction and favour, that their own works should be examined like witnesses in proof of their right to judge. Neither favour nor chance is quite to be eliminated from the causes that have decided, and will decide all selection and election, everywhere, and in all times, but barring those who have not been

fortunate, and their kind friends who read them too confident, the general opinion must be that the first consideration for those who would be considered teachers as well as masters of entails a very just choice, inasmuch that claim for position will be partly measure their own recognition of the claims of others. And they are sure to be very well known.

ARCHITECTURE AT THE ROYAL ACADEMY.

THE announcement made shortly before the "sending-in" day at the Academy, of the hanging of the architectural drawings, preferred to be given to those which appeared to be executed by the architect himself,—an announcement supposed to have emanated from distinguished R.A. architect who is in the habit of making his own drawings for this occasion does not seem practically to have come to anything. As far as we can judge, the collection this year contains fully the usual proportion of show works, coloured up to the requisite point of effectiveness by the professed draughtsmen, the observable effect of the announcement being conspicuous addition in some instances of draughtsman's name on the drawing. The architectural part of the exhibition is attractive to the general public on the pre-system there can scarcely be a doubt, more than that it is of less value to interest to architects than it would be the vague threat were strictly carried out architects compelled to "make their own drawings." The draughtsman will take a different view; nor would we wish by any means at one stroke the ground cut away from the feet of these often able and valuable assistants to the architectural profession; indeed any such design the announcement allude came to naught in the day. But we must say a movement in this direction is desirable. The result of the present system is a great variety of individuality in the drawings exhibited, and are the work of draughtsmen who have fallen into a certain system of getting up perspective which gives them a family likeness, even not executed by the same hand, as sometimes they are; added to which are the spurious and reputation conferred on works which themselves may have little to recommend them, and the apparent excellences of which almost all on paper only. A larger proportion, of geometrical drawings combined with plans, would be desirable; a recommendation which may at least be accepted as disinterested for there is no doubt that the labour and reliability of "the critic" would be much magnified by having to examine and apprehend the result of a design shown in geometrical drawings, in place of having only to pronounce the effect as shown in a finished perspective drawing. The difference would be that in former case his judgment would be based on the architect really intends or has executed the latter case it is based on what the draughtsman chooses to show him.

The collection of architectural drawing larger this year than usual, and, on the whole, we should say, above the average in merit, though there are few very striking things, change too, which has been made in the collection is an advantage.

The churches, which we take first, because they are still the class of building in which the æsthetic side of architecture can be most profitably developed, are less numerous than we have accustomed to see them. Taking them in order of hanging, we notice as a good drawing Mr. R. Brandon's interior of the "Catholic Apostolic Church, Gordon-square" (1873), which scarcely calls for further comment. Another large interior, of a different type, Mr. Pearson's "Church of St. Augustine, Burn" (1888), illustrating well the preference of its architect for plain and solid building, rivalling most of its effect from composition constructive design; the plain walls are relieved by flat mural painting; the drawing, in respect to effect, is one of the best here, but the perspective is too sharp and sudden, and inclines to great an angle, a defect which is rendered more prominent by the drawing being hung low for a right point of sight to be obtained without stooping. Mr. White's small exterior "St. Mark's, Battersea Rise" (1890), showing outline and grouping well suited to its position on the side of a hill; it is hung too low to be very well seen. The view of the of the Selected Designs for Emmanuel Church

Dulwich," by Mr. Phipps (1,100), shows originality in the treatment of the tower, but on the whole wants refinement in feeling and detail. The drawing of the interior of a chapel, built by Mr. J. P. Seddon, with proposed decorations and furniture (1,106), is a very good one in general effect, and will bear examination in detail; the effect of the stained glass is good and well rendered in the drawing; the novelty of sticking out horizontally certain of the pipes in front of the organ is one which might have been omitted, or at least differently managed; there should be something like a designed architectural support for them, instead of their being hung by "tie-rods." Mr. G. G. Scott, jun., sends a pen drawing of a New Church to be erected in Warwickshire (1,110), which has character, but is only partially satisfactory. For the most part it is almost barn-like in its plainness. The line of the nave is broken by a double-gabled transept with good effect. The tower is finely treated, with more detail than the church, which, indeed, seems put to rest the tower. The latter would be better without the short spire dropped into the middle of it, like an extinguisher, and with no appearance of design, though not without ancient precedent. The style of the greater part of this church, and some others here, reminds us of what we have often had to notice lately, namely, the affected simplicity of design into which many architects, following a lead, appear to be falling. There is just as much affectation in some of this in the other extreme of pinacles and carving and on *ad libitum*, and the next generation will be wondering how some of the architects of the present ever came to erect such mere barns as some of the churches of which we see drawings from year to year. The façade in this design could certainly be modified; it is almost ridiculously poor. Mr. Ald's "Design for a City Church" (1,125), with a front forming a semi-octagon, with large windows on each face, and buttresses well massed at the angles, is decidedly original, and better worth executing than some of the churches we see here which are being actually carried out. The new church of "St. Peter-le-Bailey, Oxford," by Mr. B. Champneys (1,131: wrongly called in catalogue "interior" now), shows the same studied plainness which we have alluded to. There is nothing new in the detail; but the grouping is good, and the square tower and angle turret are in keeping with the general character of the building. The "Interior of Christ Church, Westminster Bridge-road," by Mr. Bickerdike (1,132), is a good execution of a somewhat doubtful problem in perspective drawing. Mr. Christian's "Interior of St. Mark's, Leicester" (1,138), shows a very highly-coloured interior, a wood wagon-vanish. The apse is decorated with mosaic under the windows. The design is somewhat heavy, and is effective rather from the point of the decoration bestowed, and the excellence of the drawing, than from any intrinsic interest in the architectural design. The south transept, section, and plan of "Christ Church Cathedral, Dublin, and the Synod Hall connected with it" (1,150), by Mr. G. E. Street, is one of the few geometrical drawings in the room. Mr. Street's restoration of the cathedral is already known through published illustrations, and has been a subject of discussion in our columns; the opinion in the new portions of the peculiarly heavy form of battlemented finish belonging to indigenous architecture of the neighbourhood, has always appeared to us a questionable thing. The bridge connecting the synod house with the cathedral forms a picturesque feature in the design, exhibiting at the same time the hideous horror of anything like a symmetrical arrangement of windows which its architect would not more encourage, and in which he is imitated by others. A great many of what we would call the vagaries of modern Gothic architecture arise, we feel sure, from not separating, in the study of old buildings, the pleasure of speculation from that of architectural design. People see a bit of old building showing some singular disregard of symmetry, which takes fancy; but they forget that the interest in a case arises mainly from the evidence given of some peculiar change in the habits of those once using the building, which led to derangement, and that in nine cases out of ten the irregularities in which we contrive to find so much charm are historically and not architecturally instructive. When Mr. Street divides his bridge into equal panels, and then shows windows in all but two of them, and those at one end, we only ask why one end of the

bridge should be lighted and the other not. The matter is but a small point in this design, but it is typical of a habit of treatment into which some architects have slipped. Mr. J. O. Scott's "Interior of Church for the Greek Community of London" (1,158), is one blaze of polished marble and gilding, which always makes an effective drawing. The building is an adoption of the Byzantine style. The anglepiers carrying the main arches of the dome are well treated, with a single column and narrow arch advanced from the mass of the pier each way, so as to give apparent lightness to the angle pier, while, in fact, increasing the stability of the whole by narrowing the main arch and extending its abutment. Mr. Blomfield's "Private Chapel at Tyntesfield" (1,161), like the last-named design, is a reproduction in point of style, English Geometric Gothic being the type followed here; the general result is what no one can find fault with. Mr. Street's small "Church at Kingstone, Dorset" (1,170), is a very different type of thing, and is one of the best instances we have seen of its architect's power of giving dignity and expression to small works. The main feature is a low, massive square tower, with triple lights on each face in the upper stage, and a heavy continuous "set-off" as a finish. The whole group is effective; the circular west window presents an originality of design in its thick and heavy geometric tracery. Adjoining this is a group (1,171) equally picturesque in another way, though much less powerful, Mr. Pugin's "Study for a Chapel, Bridge, and Lodge about to be erected over the Connecticut, U.S." (as stated in the catalogue). The buildings are half on a little bit of island in the river, and connected by the bridge. As a group it is charming; the tone of the drawing (water-colour) is not, however, very pleasing, nor the execution very satisfactory. In Mr. S. Clarke's, jun., "Church of St. Martin, Lewes-road, Brighton" (1,182), he has made an exceedingly well-meant attempt at solidity and breadth of design. This is only partially successful on account of the details of the tower not being forcible enough, or with sufficient unity of treatment to harmonise with its massive proportions; and the designer has made a fatal mistake in leaving a break at the line where the buttresses join the main wall of the tower, instead of continuing the face of the main wall into the buttresses. By this latter treatment the buttress would have been an integral part of the structure, and added stability and weight to it, instead of appearing as a mere addition. We cannot but wonder that this value of an expanse of finish wall-space, in giving the expression of solidity, is so little appreciated among modern Gothic architects. One architect who does understand this value in unbroken wall-space is Mr. Paley (now Paley & Austin), whose "Church at Milton, Cumberland" (1,129) we ought have mentioned before; though we have seen better specimens of its author's well-known ability as a reproducer of the spirit of Medieval Gothic. Mr. Deshon's "Competitive Drawing for Church and Parsonage at West Dulwich" has unquestionable merit; but the merit, and personage are too diverse in treatment, to our thinking, and scarcely seem to belong to each other. A "Study for an Apse and Campanile," proposed Addition to Hampstead Church," by Messrs. Hesketh & Watson (1,196), possesses originality; it shows a kind of effect in outline being Gothic, with angle pinnacles or canopies, but the detail Italian. The Gothic element is further continued in a spire, circular on plan, and crowned by a figure; which latter is rather questionable, as it dwarfs the scale of the whole. Under the head of Ecclesiastical Designs should no doubt be included Mr. Burgess's model for the decoration of St. Paul's, which forms the centre object in the architectural room. The design evinces much thought and consideration, and the model is very well executed, and will be valuable, we hope, in conveying a more distinct idea than at present generally exists, as to the nature of the scheme in detail, and its probable effect when complete. We have not in this article space to go into the matter as the importance and magnitude of the scheme would seem to demand, but will return to it.

Worcester Cathedral.—Mr. Forrest wishes it stated that he has acted as clerk of the works for two years and a half only, and that his predecessor was Mr. Alfred Weaver.

A NEW CATHEDRAL FOR MANCHESTER.

A PROPOSAL is now before the public in the form of a printed letter from "A Member of the Chapter" to the Bishop of the Diocese, in which he raises the question whether the diocese of Manchester is ever to have a cathedral equal to its wants, and "worthy of the position, and commensurate with the wealth, of the second city of the empire." In the letter he enters into all the reasons why such a building is necessary, and discusses at length the arguments for and against the retention and enlargement of the present cathedral and site on plans accepted by the Chapter.

To this letter the Bishop replies, expressing the most enthusiastic sympathy with the proposal, and his hearty approval of the plans, saying his influence will be exerted to commend them to his diocese, and states his confident belief that every one who sees the scheme and designs "will feel that it is an object almost worth dedicating a life to get accomplished."

The plans and drawings showing forth this scheme, and approved by the Dean and Chapter, have been for the last few weeks on view in the Chapter-house, and have been seen by many of the most influential residents of the city. They were prepared by Mr. R. Herbert Carpenter, of London.

It is perhaps not generally known that the present cathedral, locally termed "the old bishopric," was, before the creation of the bishopric, the parish church of Manchester, while the Chapter as freeholders of the entire estate have always possessed jurisdiction over it. The style of the "old church" is Late Perpendicular. The plan consists of a nave and chancel of six bays each, with aisles and chapels beyond them on each side, a west tower and a lady chapel at the east end, of the choir, of which the sixth bay formed the ambulatory between it and the altar-screen. The other chapels are known as St. John's Chapel, Jesus Chapel, St. Nicholas's Chapel, St. George's Chapel, and Holy Trinity Chapel. Some of these have been much altered in modern times in order apparently to obtain a straight line on the outside; and one chapel, known as Hulme's Chapel on old plans, has been swept away altogether. Externally there are, excepting in one or two places, no remains whatever of the old work; nearly all has been entirely refaced, and speaking generally this has been done in accordance with the ancient details. The West Tower has been, excepting its arch, entirely rebuilt.

The interior, for the reason perhaps that the stone had decayed, is nearly all covered with plaster, and painted. However, when we come to the nave and choir roofs, it is most satisfactory to find them in an apparently very perfect state of preservation, as are also the grand range of caupied stalls belonging to the old Chapter and many of the wooden screens.

The site of the building was most judiciously chosen by the founder on a rocky eminence, above the Irwell, and the building gains greatly from the general lay and disposition of the ground, especially when viewed from the north and south-west, and now that the improvements going on in the neighbouring streets are getting into shape and form, especially in that fine street, Deansgate, the excellence of the choice of site becomes still more evident. Before describing the plans, it may be mentioned that on the north side of the cathedral is Fennel-street, leading to Corporation-street, and adjoining the lady-chapel is a narrow and tortuous footway called Half-street, and between this and Corporation-street and Hanging-ditch are some houses and factories. It is proposed to obtain all necessary powers, and to divert Fennel-street in a more direct curve from Half-street to Corporation-street, and to acquire so much of the property to the east of Half-street, and to the south of the churchyard up to Hanging-ditch, as is necessary to gradually carry out the new buildings.

As regards the Cathedral, the proposal is to build at the east end of the present choir a great octagon lantern tower, of about 60 ft. internal diameter. Eastwards of this is the new choir, of seven bays, with ambulatories on each side, and returned round at the east end behind the reredos wall; north and south of the octagon are transepts with east and west aisles. The great tower will rise in successive stages to a height of about 300 ft.; the first stage above the roof lines will have sixteen two-light windows, forming a lantern to the interior of the Cathedral; between them rise the ribs of the domical vaulting.

The four great arches of the lantern are of the full height of the vaulting, the four lesser arches are of the height of the aisles and ambulatories. Over them, on the north-east and south-east sides, it is suggested to place the great organ and swell in arches opening into the lantern and choir. The present nave and choir will then form the nave only, and it is proposed to make it of a more dignified proportion by raising the clearstory windows and roof. The chapels would be separated off by screens, and thus the effect of a spacious five-aisled nave will be obtained. The western tower is shown to be raised another stage to give it greater dignity and importance, and opening into it by arches are north and south transepts, to be used, perhaps, as consistory and probate courts; and on the west is a lofty gabled porch with a flight of steps up from Hunt's Bank. Besides the works to the church it is proposed to erect a complete set of buildings for chapter and cathedral purposes on the east side of a new cloister court. On the south side of the cloisters is a great hall for meetings of the synod and other diocesan purposes, with offices and rooms under it, and on the west side of the cloisters for all diocesan and church societies. Besides them will be sets of buildings for the choir, college, and other necessary offices. The great object aimed at is to include all buildings necessary for the transaction of ecclesiastical business in one great whole with the cathedral church.

THE WATER-COLOUR EXHIBITIONS, PALL-MALL.

In resuming these discursive notes on what is and is not to be seen just now at the two galleries in Pall-mall devoted to the exhibition of water-colour art, it may be mentioned that their discursiveness was quite pre-intended, and they had no such objects as a formal notice of the present collections' contents. It is much to be wished that the practice of this art that is allowed to be English *par excellence* should be applied to far more important use than is seen to be the case year after year, and that it should be extended beyond the limits assigned it in a supposed inferiority to oil painting as a means for doing great things. The question is if its resources ever have been thoroughly displayed, with more particular reference to what history and narrative painters have done with the medium hitherto; for it would seem hardly to believe that in its application to landscape-painting the present perfection attained could ever be surpassed.

So long as that genuine love of nature prevails that is characteristic not only of English artists but of the English people generally, a *forte* in landscape-painting is likely to continue with us; and if it be not very frequently emphasised by the appearance of a Wilson, a Gainsborough, a Constable, or a Turner amongst them, there are those in numbers who testify to the probability of the same soil producing some extra fine growth at any time hence. The seed may be latent, but not lost. This general "genuine love of nature," no doubt, dominates the painter in two senses: so far as he delights to paint such purely simple phases of it as most readily appeal to his and a universal recognition—practice with observation have made his work for him a pleasure long ago—for one; the perfect satisfaction that any thorough transcript of, even, the most purely simple phase of nature, so long as it be a pleasant one, would secure from those who love it in all phases, for the other. Easy identification is the pass-word to such pictured success; and out of a hundred appreciators of Mr. H. G. Hine's beautifully soft sunny drawing of "Folkington Hill, Sussex" (133), for instance, at the Institute of Painters in Water Colours, scarcely four of these but what would prefer it to anything they could see by Richard Wilson. Girtin or Cozens would have about as much chance of being valued by any but artists now-a-days, as Stothard of being accepted for a book illustrator; and yet they will be cited as exemplars so long as the tradition may endure that it is right to accept them as such. It is very certain that many who bow to given opinion are stiff in their own, often; and only bow because they know the weight of opinion, the respect due to an honest opinion.

A forty years' retrospection is no great feat of memory for some of us who wear spectacles, though so long is the bigger half of man's allotted time in this world. It may be quite natural and easy to conjecture what the relative position of the Institute of Painters in Water Colours might

have been to the senior society had not secession from the one to the other respectively weakened and strengthened them, and if other cause of loss of less possible avoidance had not happened to the junior. The exhibition at the Institute is nearly, if not quite, as much indebted to its president, Mr. Louis Haghe, as the Society is to Sir John Gilbert; for two of the most prominent drawings are contributed by him amongst the seven or eight examples of his well-known style to be found here. There are few who could compete with Mr. Haghe in depicting ecclesiastical architectural interior; and, whether giving in all its elaboration fanciful Gothic carving, such as the "Roodloft in the Church of Dixmude, Belgium" (65), is curiously remarkable for, or more than indicating the grand mural decorations of the Sistine Chapel, by Michelangelo (142), he is as conspicuously admirable as ever. To Mr. Edward H. Corbould, likewise, the success of a display here is sure to owe something more than a nominal support. Chaucer's "Canterbury Pilgrims" (129) have before now given him the opportunity of showing his knowledge of fourteenth-century manners, customs, and costume, though it had not arrived at such a pitch as the present illustration indicates, and in which all and everything is as picturesque and perfectly appropriate as in a "Kean revival" of former times, or a crowded scene at Covent Garden theatre, under Mr. F. Gye's management now. Mr. John Absolon, again, is inseparable from all recollection of this Society,—he is as natural, and nice, and national as of yore. "The Gleaners" (71) are cleanly-washed, but not hyperbolic, specimens of Kent or Surrey Ruths, either in vestment or feature, who, with their many sisters, show their parentage very plainly; so nearly only as Mr. Absolon can make any one of them appear plain; for he would have to go long miles out of his way to make them in the least degree ugly. He is the Herrick of painters,—

"He sings of brooks, of blossoms, birds, and bowers,
Of April, May, of June, and July dowers."

Of May-poles, too, occasionally, and, as now, of harvesters, as he used to do of pretty milkmaids and jolly anglers, to the detriment of all faith in the beatitude of other rural existence, saving that in merry England. It is all very well for a clever draughtsman like Mr. Guido Bach to add more mythic belief in the possible joyousness of foreign peasantry: plump and strong as his Italian maidens, men, and old people look, headed by a puffing piper, and a picture of the blessed Virgin, they could no more withstand five days of a "lock-out" than a cross message from the Pope. The "Vintage Procession in the Campagna" (181) is a very clever, large sketch, but looks no more real in its embodiment, or significant of proud and grateful triumph, than a British trade-union's convocation marching in Hyde Park on a Sunday. Continental schools' teaching has evidently affected Mr. James D. Linton: he makes so much of nothing, and does it so well. The first impression derived from an inspection of his beautifully-toned and highly-finished drawing of "The Lotus Eaters" (58) is similar to that of a visitor to the green-room of a theatre, wherein the company assembled, dressed and ready with their parts, wait but the call to play them perfectly, all seeming in fit form to act when their time comes.

They are all positively awake to the fact of having something to do presently, and if it be to give the artist's meaning for keeping their stage waiting so long, it will be hard work enough. The next impression is, that such widespread means to no purpose at all can leave no impression whatever. It is a wonderful dream of performance, however, in the days when patience is so scarcely to be counted amongst common virtues; and it may be almost accepted as a satire to illustrate the all-in-all of a picture's worth now,—elaborate general completeness of everything, and nothing in particular.

It was once suggested by a very clever painter that there was a business open to a wide-awake reader with a big luxury, who could furnish subjects to which special artistic property might be most readily applied. Craster had bought for thirty guineas a suit of sixteenth-century armour, and had a chair and six yards of tapestry, with a gown said to belong to one of Katherine Parr's ladies in waiting, and a lute, and some fire-dogs and andirons of the period. How could he apply them by book? Span had gone in for Anglo-Saxon, and had got a lot of illuminated MS. learning with a taste for cross garters, knowledge of pottle-shapes, and a good telling

guess of how they prototyped dining-room illumination when fingers were forks. How should he use his learning? Farlow, who was sick of portrait, wanted to do history. His wife was very jealous; so his only female model was light-haired. He had a St. Bernard's mastiff, monk's habiliments complete, with any amount of point-lace; how could he use these? Then Drippet, with a cousin's "costume," would be glad to know of a lot of subjects.

There is no doubt it might be a business, if then Mr. Andrew C. Gow might have been supplied with a better means of employing all trouble and time "Lord Foppington's Levelling" must have cost him (50). Mr. Gow has no conception of the butterfly beam: his pen-tray might pass for the likeness of the painter, Cowper, who, however bare-brained, was Foppington. In no respect does this completely quickly-arrived-at partial similitude of former and better work fairly represent Mr. G.

When the Royal Academy repealed a law, left painters eligible for election to their rank if belonging to any other society, they did no harm than good to all other societies but their own; and it is a question if they have vantage themselves very much in this respect though the law was rightly repealed, and by most liberal views. It has very obviously affected the water-colour societies.

If such capable men as Mr. Walker, Watson, Mr. Gow, and Mr. Green could be valued on to do with all their might, they could to dignify the character of water-colour art,—it deserves it of them,—shun for a time the very smell of copal and turpentine there would come a fresh, if not a new, era in it, with augmented renown for them.

Mr. Haghe Carter shows some power of a old-fashioned kind in "A Fisherman's House" (23), similar to that of Mr. Israels, whose single figure, "In the Orphan House" (47), gives an idea that the character and cognate performances exists much what is left for the imagination to supply.

THE ALHAMBRA, GRANADA, AND ILLUSTRATOR.

THAT we northern nations are "progressive" is certain, but to say what has perplexed a prime minister. Whatever this progress indeed mean, it is quite certain that it does always imply the same thing everywhere, and all nationalities progress in the like way, the same rate. North and south march into Spain, for example, does not seem much more to "progress" as we do, yet have the Spaniards a progression of a singularly and not an instructive kind—indeed unique, and poetic romantic, and, when looked at closely, hardly to be believed. Oriental romance has entered Spain, and left behind it memorials which other European country can boast of. The lamented death of Mr. Owen Jones, who did much to make us acquainted with these materials, may be our plea, if any be needed, dotting down a few facts and thoughts about it. It is well worth a little attention for its sake, and will serve to show how very diffused has been the historical progress of humankind even within the confines of Europe in all its art and architecture.

It would, perhaps, be impossible to find in pages of history a stranger story than that of the dominion of the Moors in Spain, in its origin, and doings, in its origin and in its ending, and art and architecture. It seems hardly reality, but rather as an unsubstantial dream, and even the very material architecture, which we may yet see the remains in Alhambra, in Cordova, and other places, that to be rather like some poetic fancy than that where men lived and worked, and went through all the matter-of-fact duties of ordinary existence. If ever proof were wanting that architectural forms and arrangements might be more most assuredly it is, and the lessons drawn from it are neither few nor far between. Let us glance at one or two of them.

Spain, says Gibbon, in a state savage and orderly, had resisted for two hundred years the arms of the Romans, yet was overcome in months by those of the Saracens. The invaders were not a little surprised at the sight of Roman magnificence which they saw besides around them, and it was but fitting such a race should be ready with an architecture of their own worthy to rival which they saw about them. That they

able to do this we see in the remains of the palace of the Alhambra,—indeed, more than equal them.—Mr. Jones affirms that this style of architecture of the Moorish conquerors of Spain possesses all the refinement and grace of the Greek, and even excelled it in variety and imagination. It would be difficult, indeed, to find anything in architecture, anywhere, more exquisitely finished, and with so high a sense and feeling of the beautiful: so near to idealism.

It may be as well to remind those who cannot remember all things, that the Alhambra, or the Red Castle, is, or was, a fortress, in which was the famous palace of the Moorish kings. It is magnificently placed, as is the Athenian Acropolis, and is thought by some to be unrivalled in position and surroundings. The exterior, by the way, studded with towers, is almost as remarkable as the interior, though in a different way. Nothing can possibly be more "picturesque," in the true sense of that word, than it is; and the most in which the walls and towers fit into each other, and rise from the uneven surface of the ground, on which the whole structure stands, cannot be surpassed. It had four entrances,—the Tower of Arms, the Tower of the Catholic Kings—a name which it must needs have got after the final fall of the Moors,—the Tower of Seven Stories, and the Puerta de Justicia, or Gate of Justice, so called; and this in itself is not a little noteworthy, from the antique practice—one of the oldest of things in this world, and everywhere to be found all over the East—of the king sitting under "the gate," at stated times, to administer justice to all and every one. A remarkable gateway it is, in very many ways, structurally of concrete, brick, and marble. It was built in the year 1348 A.D.; in the "glorious month of the birth of the Prophet," in the year 749. It has written over the inner doorway, "May God make this gate a protecting bulwark, and write down its erection among the imperishable actions of the just." It is melancholy to think of what time and the course of events sometimes do with the mightiest of man's doings, for there, in this once enchanted palace, even now going on three, at least, baneful influences,—neglect, restoration, and misuse.

The ancient citadel is now used as a receptacle for convicts, and neglect is apparent everywhere; no restoration is going on, and that restoration, where it is persisted in, is, judging from some photographs we have recently seen, a mere mechanical reproduction by men who know nothing of the style of the old architecture, and who cannot enter either into the spirit of the work or into the *handing* of it. They are doing the work which artist-workmen do in the true sense of the word can do. It is infinitely worse than the neglect or the misuse, a great deal of this wonderful place has for ever disappeared, as the great Mosque, and the house of the Cadi, which existed during the occupation of the French in 1812, but of which now no trace whatever can be discovered. We owe not only to Owen Jones for what he has recorded in his folio volume; but still it is much to be regretted that he did not go a little more deeply and thoroughly into the constructional part of this unique building. A working-man's drawings need are what we should like to see,—the handwriting of the workman and then the polish of the artist hand. Nothing, we repeat, can be more profitable than the restored work as seen in the photographs. Surely the Spanish people could, or the world at large might, feel it a waste to protect these wonderful ruins from destruction. It will be needless to attempt to describe the chambers and halls that are left of the Casa Real, as the Court of the Fishpond, near to the Renaissance Palace of Charles V., and the Palace of the Cisterns, and the Hall of the Boat,—a corruption from the Arabic *al-kah*, or "Blessing," from the fact of the word "blessing" being so many times repeated on the walls of it. Within the Tower of Comares the celebrated Hall of Ambassadors, 37 ft. square by 60 ft. high. The Court of the Lions, with its pond and marble fountain, and which has been in part reproduced by Mr. Jones, at the Crystal Palace: it is 100 ft. long by 50 ft. wide. This celebrated court would seem to have gone through the world-famous process of whitewashing, more than once, so that that serving nostrum is not confined to this country, or to Gothic buildings. We need but mention the Hall of the Two Sisters, the Hall of Abencerrages, and the Hall of Justice. It

is sorrowful to think of how much is gone, for, as Mr. Jones reminds us, on comparing these remains with other residences of Eastern sovereigns, such as the Seraglios of Constantinople, much is found to be wanting,—there are no traces of the number of apartments needed for guards and attendants, and the Harem is totally wanting. Much probably might come to light by a little judicious and careful digging, as at Jerusalem and other famous sites all the wide world over. It is a curious circumstance that the palace of Charles V., to make way for which so much of the old work was destroyed in 1526, was never completed, or even roofed in. The genius of the old palace, may be, rose up during the night time to undo the work done in the day. The palace was commenced in 1243, by Ibnu 'l Ahmar, and finished by his grandson, Mohammed III., in 1314, so that some years were occupied in the building of it. It would be most interesting to see a little more closely into its practical construction; the tower walls are of concrete, the interior walls of brick, the columns of marble, and the ornamental parts and details of gypsum; the mosaic pavements and dados of baked earth and glazed earthenware, ceilings, beams, doors, &c., of wood.

One of the most instructive lessons to be found in the courts of the Alhambra is in the inscriptions interwoven with the ornaments, and nothing can surpass the ingenuity with which this is done, or the appropriateness of the inscriptions themselves. One of their favourite writings, "Look and Learn," was full enough of practical application, for to look at the wall surface was indeed to learn, whether you would or no. These inscriptions, according to Mr. Cayangos, who worked out this part of the subject, are of three kinds. *Āyāt*, or verses from the Koran; *Asjās*, pious sentences; and *Ashār*, that is, poems in praise of the builders or owners of the palace. The two first are written in the *Arabic* handwriting, and are so managed that they can be read from right to left, and *vice versa*, or upwards and downwards. The long poems are written in the African character, with the utmost care and attention,—no letter is wanting, and all the grammatical signs are duly inserted. They serve to show how this architecture of the Moors was bound up with the religious habits and thoughts of the people: the architecture, in short, expressing materially those feelings and thoughts. These halls and chambers were open books, wherein all might read wisdom on their walls who would; and it was no mere poetic flight when it is said that in these apartments are "so many wonders that the eyes of the spectator remain for ever fixed upon them, provided that he be gifted with a mind to appreciate them." In these days of universal writing of some kind or other, advertisements, and huge posters, might not some instruction be got from the old Moors, in the way of correct taste, and ingenious letter-forming and writing? Compare, by way of testing artistic progress, a wall of Alhambra inscriptions with the wall-paper lining of our great railway stations.

It is not a little instructive to compare the final outcome, so to phrase it, of two such opposite "civilisations" as that of the Moors of Spain in the past centuries, when the Palace of the Alhambra was in its full glory and prime, and with all its picturesque surroundings and uses, with that of the scientific outcome and final results of the London of the latter half of the 19th century. In the old Moorish Palace a fine art and architecture in a certain indigenous style may be fairly said to have arrived at a state of completeness and harmony almost perfect; proving how near to artistic perfection it is possible to bring art—and to satisfy the artist-mind. It is most certainly not everything either in art or architecture; but it is a phase of art and architecture which it is a real pleasure and delight to contemplate. It tells us, even in Owen Jones's book, what it was that the men in old Spain could do, and what it was such men could and did progress to. And we may well and usefully ask whether in an architectural way we of this age can accomplish so much—so uniformly harmonious, and so full of classic science rather than in original art and creative art that we in this age excel in such things as the elaborate mechanism of the telegraph, and in the conveyance of thought and written thought. It would be a curious thing to pass from the halls of the Alhambra, were it possible, so rich in artistic thought, to the bald rooms, so full of science, of the Post Office. Thanks to

Owen Jones, we are able, in a certain sense, to do this, and to compare art with science! Which is mentally to be the most prized may remain a lesson for the curious, and may lead them to study this great book of the Alhambra. They cannot do better, as we can testify.

THE NEW TATTON ARMS HOTEL, NORTHELDEN.

THE new Tatton Arms Hotel, Northenden, near Stockport, although not quite finished, has been inaugurated and temporarily prepared for visitors, 108 being enabled to partake of a collation which was laid in the assembly-room. The new erection is built on a parapet stone base, with polychrome brickwork above, having projecting diapers, quoins, and moulded string courses, with Beesley-moor stone dressings to doors and windows. The roof covering is formed into a diaper, with green, amongst blue slates; the walls are built hollow, and bound together with iron ties; the windows have plate glass in the lower portion, with leaded quarry glass in the upper. Some of the timber work of the gables is projected on moulded corbels, while others are decorated with the conventional English roses and incised ornaments. The building is planned that it may be easily enlarged at a future date. Attention has been paid to obtaining the best view from the windows, which embrace the river Mersey, with its wear, boating, and bridges, the corn-mill, the Yorkshire and Derbyshire hills, Didsbury church, &c. The chimney-pieces of dining-rooms, bar-parlour, and tea-room are of stone, designed in character with the building, and carved in spandrels with the vine, barley, and hop plants. In the basement story are liquor-stores, large back-entrance porch, kitchen, and offices. On the ground floor are two dining-rooms, separated by a movable partition, which, when taken down, converts them into one assembly-room, 31 ft. by 22 ft. by 13 ft. high. There is on the ground floor a spacious entrance-hall and front staircase, 22 ft. 2 in. by 12 ft. 7 in., wainscoted, with stairs, newels, balusters, and an ornamental open-timber roof of pitch pine, which will be varnished.

The hotel and outbuildings have been erected from the designs of Mr. James Bedford, of Manchester and Northenden, architect, under the supervision of Mr. Thomas Worthington, the land-steward, and who has also planned and executed, with the workmen on the estate, the terraces and grounds about the building, and the excavating and drainage required.

The various artificers' trades have been contracted for separately. Mr. H. Chandley, of Gatley, was the bricklayer; Mr. J. Taylor, of Manchester, the mason; Messrs. Brundritt, of Didsbury, the carpenters and joiners; Mr. Walton, of Altrincham, the plumber, glazier, gasfitter, and bell-hanger; Mr. Bardeley, of Cheadle, the plasterer and painter; and the grates have been supplied by Messrs. J. M. & W. Leigh, of Manchester. The new building will be completed in a few weeks.

A NEW RAILWAY STATION AT ANERLEY.

THE present station of the London and Brighton Company, at Anerley, is a very small and inconvenient structure, there being neither waiting-rooms nor other general accommodation; and as a large and constantly-increasing traffic is daily arriving at and leaving this station, in consequence of the extensive building operations which are going forward in the neighbourhood of Anerley and Sydenham, the directors have decided upon the erection of a new and much larger station, fitted up with spacious and convenient waiting-rooms, offices, together with covered platforms, and the works are at once to be commenced. The engineer is at the present time occupied with the preparation of the plans. It appears that one reason why the building of the new station has been delayed is the difficulty of getting work executed in these times of strikes, and the rise in the price of materials.

Stone.—We notice that Messrs. Charles Denham & Company, stone merchants and quarry owners, of Halifax and Bradford, Yorkshire, have purchased the well-known Robin Hood, Potter Newton, and Scott Hall Quarries, with saw-mills both at the quarries and at Leeds, lately belonging to Mr. B. Gill.

cutting in patterns from a mould. Such lines of sharp environment serve to set bounds to the little rivulets of flowing colour, when fused and fluid by the intense heat of the kiln. They seem to limit the flow, which, if not thus checked, would run down the surface of the vessel.

8. Again, it is quite possible to stamp or seal on a disc, or series of dots, with such a material that will burn away with the fierce heat and leave a small circular inlay of beautiful crystallised brown-grey substance, flush with the surface of the ware. This method opens up a new field of decoration not yet developed.

These eight heads of methods seem to classify the schemes of decoration applied to the Doulton ware up to the present time, but scarcely a kiln is burnt off that does not yield a suggestion of a new line of trial for new systems, and these are stored to be taken up in the future as the demand for newer methods is made.

In the course of the growth of this new branch of manufacture, there have been one or two clear principles laid down for the guidance of all engaged in it. One is, that there shall be no copy of old work. We have taken old work, it is true, as our guides as to processes, as to the methods of scratching in of patterns, as to the sticking out of dots or bosses, and as to the plan of colour, but there our dependence on the old work has ceased. The endeavour has been constant, to work on the principles observed in the works of the old patterns, to use their experience in their treatment of soft clay, to start with all the advantage their practice gave us, but to imitate nothing.

The second principle was to make no duplicates. It was felt that the art value of each piece would be found in the thought and skill bestowed on it. Neither thought nor skill, nor the finest perception of beauty, can make their mark on a piece of pottery that is mechanically reproduced. Thus each piece is unique, its artistic value is not, nor ever can be, lessened by the repetition of its decoration on the same or other forms. The sole exceptions to this rule are found when a pair of vases is required, or when a copy of a fine piece is required to make good the loss of the original.

It is the deliberate aim of all, those who plan the work and those who execute it, to bring about the greatest amount of variety and originality; but other causes besides deliberate intention come into play to aid us in giving the originality to the ware we so much desire to see. These are accidental, from numerous causes difficult to classify; more or less exposure to the fire, more or less shelter from a draught in the kiln, more or less salt in the glazing process; all these causes, and others, may, and do sometimes set at naught the most elaborate plan of colour, and ruin the best intentions. But there is a set-off in this, for we do not unfrequently happen that some of the very best effects of colour we have obtained have come from the partial burning away of the pigment. It is especially beautiful when blue, turns at the edges, and comes from the kiln with its exposed edges, fading into green or brown. These accidental effects are often exquisite.

The artist who has given to the new ware one of its strongest characters is Miss Hannah B. Barlow. She was introduced to me some six years ago by Miss Rogers, a lady who has written a most charming little work on "Domestic Life in Palestine." She is the daughter of Mr. Rogers, the well-known wood carver. An artist herself, she had an artist's quickness to perceive that her young friend, Miss Barlow, was destined to do good work in art. Miss Barlow's quick sketches of the creatures you see here show an intense feeling for the spirit of the beasts and birds represented. These etched out figures are, up to speak, instantaneous photographs of the animals—a certain Japanese faculty of representing the largest amount of fact in the fewest words, all correct, and all embodying in a high degree the essential character of her subject. Yet there is little tendency to run into a picturesque treatment, but the fitness of her work for the manufacture, the recognition of the limitations under which the designs are made, are eminently kept in view in all her work.

The artist who has done greatest service to the arts of all kinds in Lambeth is George Tinworth. He was originally brought up as a wheelwright, under his father's mastership. He had early tendencies to be a sculptor. These were shown by his untutored carvings of Gargaldi and other heroes of the time. The carving of these things formed the occupation of his midnight leisure. His father, deeming these

works of art dangerous, as likely to prove a bar to the proper attention his son ought to give to his wheelwright business, broke them to pieces whenever he found them. An arduous childhood had educated in him a deep patience, which has borne wonderful fruit. After his father's death, he tried to carry on the business single-handed, but he was unsuited to the work, mentally and physically. He had entered the Art School some time before this, and I was happy in being able to introduce him to Mr. Doulton as a modeller suited to his needs. His first works were some large medallions modelled from some of the Syracusan and Terina coins. These were done with astonishing spirit. When the demand for artistic stoneware came, his general grasp of the intention enabled him to do works that were more than equal to the occasion, and since that time he has done some of the best pieces the factory has produced. He prefers the clay soft from the thrower's wheel,—so soft as to be too tender to handle. His delight is a spiral band or ornamental ribbon, sometimes deeply-interdigitated, or elaborately frilled. The ornament usually covers as much surface as the ground, and creeps or flies over the surface in wild luxuriance; bosses, belts, or bands of plain or carved moulding keep this wild growth to its work, put it in its place, and subject it to its use. No two pots are alike, and, although he has done quite a thousand, all different, he will still produce them in endless variety out of the same materials. Of course no one could produce such ever new combinations unless he had invention. In his art as a modeller he has achieved marked success; and I trust the forthcoming exhibition of the Royal Academy will prove his right to recognition as an exponent of religious art, such as seldom arises in any community in the present day.

I have said that the utmost care and the greatest artistic skill would be simply valueless if the actual details of manufacture were not equally cared for. This, however, has been done in a remarkable manner by those by whom Mr. Doulton has surrounded himself. All that has been accomplished in colour is due to Mr. Rix, who, by incessant experiments and cautious intelligence, has produced blues and browns which equal the ancient ware, and are in some senses superior to them. He has also introduced some new tints, notably a pink and green, which have the rare merit of withstanding the intense heat of stoneware kilns and the decomposing vapours of the salt. He too, has organised the class of young girls who do the subordinate part of the work, such as the sealing on of dots and bosses, and has thus rendered it possible to produce these highly finished hand-works at reasonable prices.

What a small school in a Lambeth lane has done under all kinds of adverse circumstances surely could be done, in a different form no doubt, by every school in the country, and would be done if masters and managers had the self-dependence that would allow them to say they would have no regard for a South Kensington regulation if it went clearly against the best interests of their school—a self-dependence that would lead them to consider, first, the welfare of their students and the demands of local manufacturers, and last of all, whether their students were to be worked down to the South Kensington standard, on which it grants its "payments on results."

It is unfortunately the case that the manufactures and the art school are, in nearly every case I know of, antagonists. South Kensington does not take account of manufactures. The aim of too many art-masters,—for whom every excuse is to be made,—is to work their students to the South Kensington standard for payments on results: that done, all is well. They get a handsome subsidy, and a congratulatory report from head-quarters. But what have the students got, and how is the manufacturers' demand for artistic help met?

The secret of this failure to meet the wants of the day lies in a nutshell. All great schools of ornamental art have either grown up side by side with great high-art schools in painting, sculpture, or architecture, or they have been actually produced by the active life of one or all of these great arts. The study of the human figure is the only basis on which a truly great school of art can ever rest. The greater includes the less. The training in many arts that the figure-painter goes through produces at the same time the designer of ornament. He has but to change his practice; his principles are common to both sections of art.

DIFFICULTIES IN ARCHITECTURAL PRACTICE.

THE ARCHITECTURAL ASSOCIATION.

At a meeting of the members, held last Friday evening, the 1st inst., the President (Mr. E. J. Tarver) in the chair, the following gentlemen were elected members:—Messrs. H. C. Harris, C. Owen, and W. Benton.

The Secretary (Mr. Bowes A. Paice) proposed a vote of thanks to Mr. Whichcord, the architect of the St. Stephen's Club, Westminster, for allowing the members to visit, the building on the 25th ult.; and to Mr. Conder, managing assistant, for conducting the members over the club and explaining its different features.

Mr. Paice then stated that the Association would make its next visit on the 9th inst. to the new Home and Colonial Offices, by the kind permission of Sir Gilbert Scott.

It was then announced that on that evening the members had arranged that the annual excursion this year would be to Paris; and that Mr. Sharpe had prepared a most interesting programme for them. They purposed starting the third week in August, and the expenses were roughly estimated at 8l. each.

Mr. J. S. Quilter then read a paper entitled, "Some of the Difficulties in the Study and Practice of Architecture." In the course of his remarks he said that the subject he proposed to treat of that evening was suggested to him by the valuable course of lectures lately delivered before them by Mr. T. Roger Smith, and also by a paper on the popular opinion of architecture read last session by Mr. F. Chambers. The first difficulty which beset the young architect, affecting the whole character of the profession, was the great extent of the field of knowledge that an architect was required to cultivate, the architect having to combine in himself the engineer with the artist, and to study at the same time both the science of construction and the art of design. This was a difficulty not met with in any other profession. Many examples might be quoted in proof of this of the various professions, especially in the higher branches; for the architect must be equally prepared with the painter and sculptor to devote his attention to colour and to form, whilst with the engineer he must be able to calculate the strength of the various materials he employs, and the best methods of making use of the qualities that each possesses. His knowledge of law must enable him to define the limit of a contractor's responsibilities, or the rights of an adjoining owner; and he even competes with the doctor of medicine in his knowledge of the rules regulating health, and must be prepared to suggest every sanitary appliance that might be necessary, either to sustain life or to remove the evils of disease. Under these circumstances it was not to be expected that architects would do more than obtain the most rudimentary knowledge on any one of these subjects. Pope truly says that,—

"A little knowledge is a dangerous thing."

and thus the architect stood a fair chance of being a "Jack of all trades, and master of none." Was it possible that any one man could do justice to his profession, under the peculiar circumstances of the case? Much of the cause of the evil complained of had been attributed to a want of knowledge on the part of an offending public, who unreasonably expected architects to be able to carry out all they undertook; but he thought that a little closer investigation would convince any one that the evil arose rather from architects undertaking to carry out more than they were able to perform; and if ever they were to claim that position to which their profession should entitle them, it would be necessary to define more clearly their duties, and how far they were responsible for what they undertook. This he considered to be the cause of one of the difficulties that every architect met with in the study of his profession. It would be found, however, that any architect who had risen to distinction owed much of his practice to the knowledge he possessed of that branch of his profession to which his whole energy had been devoted; and it would not be until architects as a rule were content to confine their attention to some one branch of their profession, that they would ever obtain from an unreasonable public that position they were so anxious to secure. He would recommend every young architect, before commencing practice, to endeavour to ascertain in which branch of the profession he had the greatest chance of success, and to make that his especial study. The reasons that must

influence him in making the selection would be various, and would, of course, be decided individually. With regard to the difficulties that arose from the insufficient, or rather ineffectual, means of study that were available, it was quite possible for an architect to fail in the knowledge he required, even in the face of such numerous opportunities; and this arose from the want of definite purpose in these various studies. The student, eager to grasp every means within his reach in order to secure that knowledge which was necessary to prepare him for the duties of his profession, plunged into the great head-centre of all wisdom at South Kensington; he wandered among the endless book-shelves at Bloomsbury, or woke the silent echoes of the Institute; he entered the classes of the professors at the university or King's College; visited the various museums, or joined the ranks of the Association, with its numerous opportunities; until, when wearied with the incessant application this involved, he at last attempted to put into practice the knowledge he had obtained, but found that his mind was like the well-known box with everything uppermost but nothing to hand, and it became necessary for him to begin the real lessons of his profession in the school of experience, with many regrets at the wasted energy of the past. Such was the too frequent experience of those who commenced the actual work of an architect's life! The difficulty arose chiefly from the fact that the greater portion of architects' studies were intended for other professions, and however valuable they might be in themselves, they failed in the application necessary to qualify them for their profession, because they required so much sifting from extraneous matter that the real lessons which an architect required to learn were lost among a mass of other subjects which he could easily dispense with.

Another of these difficulties was the want of means for obtaining a practical knowledge of the various works that an architect was required to superintend; and it was no doubt this that had given rise to the popular opinion of the advantage of employing what was known as a practical man, notwithstanding his want of knowledge on the principles of architecture; and it was remarkable how great was the want of the practical knowledge even amongst architects who occupied a high position in the profession. In principle it was supposed that an architect was acquainted with the proper method of executing any detail of a building; but in practice this knowledge was very seldom to be found, although architects were required to give instructions for all kinds of works, and to see them properly carried out. He would then recommend the occasional employment of architects' pupils as resident clerks on any building that might be in hand, in order that they might have the advantage of seeing the works carried out, and of keeping a diary of the works for future reference: this plan would often save an architect much unnecessary labour, and in many cases avoid the necessity of a clerk of the works. Another difficulty was that in reference to the study of the profession there was the want of some clearly-defined basis of architectural design. He did not mean necessarily a uniform architectural style, but some common platform on which the advocates of all styles might stand, each up to that point acknowledging one principle, however much they might differ beyond, instead of the practice at present adopted in which the advocates of different styles left no means untried to force their own particular views at the expense of every other consideration. Generally they might consider the difficulties under which an architect laboured under the following heads:—(1) Those that arose in obtaining work; (2) those caused by the individuals with whom he was brought into contact; and (3) those that arose from the nature of the work he had to superintend. The difficulty of obtaining works to carry out was the first to present itself, and various means had been recommended in order to meet it; but still it was a difficulty. So great was the competition that existed in the present day, and so many were the eager aspirants for favour in the architectural world, that a young architect who started life with ability alone was sure to find the struggle a very severe one if he attempted it single-handed; and he (the speaker) was of opinion that it would continue to be so until some means were adopted to preclude the use of the title of architect by unqualified persons. Any speculative builder had a power, if

not a right, to call himself an architect, and no one could prevent him, although he might be as unqualified for the duties as any journeyman carpenter. It was, however, satisfactory to know that some steps were being taken towards placing the profession of architecture on a better footing; and he could not do better than recommend all who wished for the attainment of this object to show their practical sympathy by passing the voluntary examination. Competitions had been recommended as one of the means to be adopted in overcoming the difficulty of obtaining work, but this hitherto had not worked very successfully; for competitions were only too often gained by other methods than merit. Patronage or influence claimed by far the largest share in obtaining work; but the difficulty in generally so great, as obtaining the work itself. Speaking of the difficulties caused by the persons with whom an architect had to transact business, he said that they were very numerous. In regard to those arising from the nature of the work, there the ability of the architect was called into action to a far greater extent, and the necessity of a thoroughly practical training was far more evident than under any other circumstances. It required a knowledge of the character of every description of building materials, upon which it would often be necessary to give an opinion off-hand, which would be the most difficult when it was remembered that qualities varied in different localities. Another difficulty arose from builders endeavouring to pass off inferior materials as the best that could be obtained. The same remark might apply to inferior workmanship; although in this respect it required more discrimination to detect inferior work after it had been executed. Another difficulty was the great number of appliances, whether patents or not, that were so strongly recommended, and were each said to be better than the others, that a young architect became fairly bewildered, and ran a risk of selecting some work with great pretensions, and only to find his mistake when the mischief had been done. A suggestion had been made that architects should be able to refer any matter of difficulty to another for advice; and if this plan could be adopted, it would introduce, he thought, a much better spirit between the elder and younger members of the profession; but it could only be made use of on some secondary matter in connexion with any work.

Mr. Blashill differed almost in toto from all that had been urged by Mr. Quilter in his paper. He did not know that the profession of the architect was more difficult to study than any other. With regard to the suggestion that specialists should undertake particular branches of art, he thought that the profession was sufficiently split up already. In the profession of medicine the subject of specialism might be open to much objection; and he understood that all medical men were against its introduction. With few exceptions, his experience had taught him that it was well architects were thoroughly grounded in all the details of the profession. The question of consulting another more experienced architect in any difficulty might answer in some very exceptional cases; but in matters of ordinary difficulty he hoped that the profession had not arrived at such a pass that one member could not advise or counsel another.

Mr. Johnson said that in the medical profession the public recognised the title of "M.D.," but they did not know what was meant by a graduate of the Royal Institute of British Architects. If it were practicable, he thought it would be extremely desirable that architectural diplomas should be granted.

Mr. J. Douglass Matthews was of opinion that, as regarded the subject of specialities in architecture, it was the duty of the architect to become possessed of all kinds of knowledge, without devoting himself to one particular branch; but yet it was very desirable in carrying out certain works to obtain the assistance and advice of other architects especially versed in that particular class of works. However, this would take them out of their groove if they were to confine themselves to special subjects, and would also entail a connexion seven or eight times larger than they now possessed to be of equal value, and might also lead to all sorts of complications. He quite agreed with Mr. Quilter that a systematic course of study should be adopted by the young architect; and he was fully convinced that the educational opportunities afforded by the Association were not yet sufficiently developed. The Institute, it

should be remembered, was an examining, not an educating body; and it was therefore incumbent upon the Association to carry out to the utmost the educational part of the work.

Mr. Sulman said that, with regard to the diversity of the work of the architect, it must be remembered that this carried itself to a great extent from the fact that the practice of particular architects nearly always ran in one kind of groove. He thought that better opportunities should be afforded to enable the young architect to obtain an acquaintance with a practical share of his work.

Mr. Robertson advocated a more systematic and exhaustive course of study. It was too often the practice for the young architect to go to hold of isolated items of information without obtaining a sufficient mastery of general principles.

Mr. S. Flint Clarkson was by no means convinced that a specialist was always successful in his own particular branch, and this observation would apply to the cases of portrait painters, whose productions, although excellent in their way, were tainted with a kind of mannerism. He feared that architects sometimes assumed too large a responsibility; they supposed that they were responsible for everything; but he did not think that the public was too exacting in this respect.

The President thought that the profession of architecture was such that no one should enter into it without having friends in the profession. As regarded specialities, if they were all of a generous state of mind, they would soon fix what their special department was.

NEW PUBLIC BUILDINGS AND IMPROVEMENTS IN BARNSELY.

ALTHOUGH the want of houses for the working classes was never more keenly felt in Barnsley than at the present time, the state of the building trade is not so active as might be expected. This no doubt arises from the high wages demanded, and the increased prices of building material, which deter capitalists laying out the money in the erection of cottage property. Many parts of the immediate colliery district cottages are being erected by the owners of the pits so as to find accommodation for their work people. It may also be stated that the mason and labourers have served notices upon the employers for advances of 4s. per week in summer, and 5s. per week in winter, which notices expire on the last day of the present month. There are, however, a goodly number of residences in course of erection and about to be built, in addition to which several buildings, which partake more or less of a public nature, are approaching completion.

The first of the schools erected by the Barnsley School Board was opened on Monday last, and in the course of a week or two, a second will be so far completed as to admit of the children being transferred from hired school-rooms to their new quarters. The first school, which is situated in Park-road, Beechfield, has been erected from plans furnished by Messrs. Wade & Turner, architects, of Barnsley. There are, as it were, three blocks of buildings. The centre block, facing what is known as Beechfield street, is set apart for infants. The building to the north side is to be devoted to the girls, and that on the south side to the boys. The infant school-room measures 60 ft. by 20 ft., and has two class-rooms, each measuring 18 ft. by 12 ft. The boys' and girls' school-rooms measure 60 ft. by 20 ft., and 34 ft. by 18 ft. There are also class-rooms provided for both boys and girls measuring 18 ft. by 12 ft. 2 in. The superficial area of boys' and girls' school-rooms and class-rooms amounts in each case to 2,000 sq. ft., which, at the rate of 8 ft. for each child, provides accommodation for 250 children. When the building is finished it will have all the necessary conveniences, including lavatories, &c., and also spacious play-grounds. The outside walls are of stone, with an inside lining of brick, a cavity being left between the outer and inner walls for the prevention of damp and for effectual ventilation. The style adopted is Gothic, and the total cost, according to the estimate, was to be 2,000l., but the total amount of the tenders was 2,593l. 5s., exclusive of the railings for fence walls. The contractors were as follows:—Masonry, Messrs. Medley & E. Craft; joiners' work, Mr. J. Carr; plasterers, Messrs. T. & J. Shaw; slating, Mr. Fleming; plumbing, Mr. Brown; and painting, Mr. Fidler.

The new offices belonging to the South Yorkshire Miners' Association, which have been erected in one of the best parts of the town, at a cost of about 4,000l., are fast drawing towards completion. The front elevations face the Victoria and Cockerham roads. The structure is in the Italian Gothic style of architecture. The offices for the transaction of the business of the Association are approached by the main entrance from the Cockerham-road, and are found on the ground floor. The large office measures 22 ft. by 23 ft.; second ditto, 25 ft. by 13 ft.; private ditto, 15 ft. by 13 ft. On the first floor will be a council-room, measuring 50 ft. by 25 ft., in which the meetings for the transaction of the general business of the Association will be held fortnightly, instead of at rooms hired for the purpose, as is the case at the present time. Private residences will be provided at each end of the buildings for the secretaries, Messrs. Normansell and Casey. These are replete with all the necessary conveniences. The site measures 1,371 yards, and the total cost of the land and buildings will be about 4,000l. The trustees for the building are seven in number. Messrs. Wade & Turner are the architects.

New public baths, which have been erected at the expense of the Corporation, are now nearly completed, and will, after much delay, be opened shortly. They are situate in York-street, and are erected on a site presented to the town by Mr. Thomas Edward Taylor, J.P., the largest linen manufacturer in the town. The building, which is of stone, is a very substantial and somewhat ornamental structure, and is replete with plunge, slipper, and other baths, in addition to a residence for the manager.

It may be stated that several villa residences are about to be erected in the town from plans furnished by Messrs. Taylor & Senior, architects, of Barnsley. Within the past few years villa residences have greatly increased, and from the prosperity connected with the coal and iron trades in the district there can be little doubt that they will continue to increase.

THE METROPOLITAN BOARD OF WORKS. IMPROVEMENT BILL IN COMMITTEE.

ALLEGED DEPRECIATION OF BUILDING LAND IN FINSBURY PARK.

The Bill promoted by the Metropolitan Board of Works for improvements in different parts of the metropolis was before a Committee of the House of Commons last week. The most important feature in the Bill was the proposal to close certain roads through Finsbury Park, and substitute in lieu of them a new road on one side of the park, 40 ft. in width; and the Bill also seeks for powers to erect gates, and close the park at night. By the 20th clause of the Finsbury Park Act of 1857, the Board of Works undertook to provide roads through the park, communicating with lands belonging to Mr. Frank Wallen, and in consequence of the inconvenience and injury to the park which had arisen from the manner in which these roads were used, the Metropolitan Board sought to get rid of the obligation to Mr. Wallen under the clause named. The Bill was strongly opposed on behalf of Mr. Wallen, on the ground that the closing of the roads through the park as proposed, would have the effect of seriously depreciating the value of his property as building land. The Bill was before the committee for four days, during which several surveyors, architects, builders, and other professional gentlemen were examined for and against the Bill respectively, and their evidence as to the injury which Mr. Wallen's land would sustain for building purposes, in the event of the roads through the park being closed, as very conflicting.

Mr. Rodwell, in stating the case on behalf of the promoters of the Bill, described the great injury which the park was now sustaining in consequence of the roads through it being open. Large herds of cattle and sheep were weekly driven through the park, which was also used as a yard for cattle. Night-soil and manure, and every kind of traffic, passed through the park, which was completely spoiling it. Beyond this, in consequence of the Metropolitan Board not having power to close the park-gates during the night, a vast amount of immorality was carried on; outrageous profligacy in defiance of decency abounded; and the park, instead of being a source of recreation for the public, had become a perfect nuisance. All round the park the evening a certain class of unfortunate

persons plied their trade, Finsbury Park itself affording opportunities for its practices, and this the Metropolitan Board wished to put a stop to by obtaining powers to close the gates during the night in the same way as several other parks in London were closed.

Mr. Thomas Cochrane, superintendent of the park, deposed to the nuisance caused by cattle and sheep passing through the park, as also to the manure and other traffic, and the immoral scenes which took place at night.

Mr. George Valliamy, superintending architect and surveyor to the Metropolitan Board, and under whose superintendence the park was originally laid out, said that the proposed new road commenced at Seven Sisters-road and ended at Green Lanes. It would give to Mr. Wallen's land an excellent carriage-road, 40 ft. wide, and complete access to his building land.

Mr. Bazalgette, engineer-in-chief to the Metropolitan Board, said that the objections which had been explained by the park-superintendent were tangible objections, really preventing the enjoyment of the park. Owing to the roads in the park being at all times open for public traffic it was necessary to have all round the ornamental portion of the park a fencing, which cut up the park very much, and to a great extent spoiled it. If the new road as proposed were made it would be possible to remove that fencing, and then the park might be thrown open like other parks in London, which would be of the greatest importance. The new road would occupy between four and five acres out of the 120 acres which the park contained, but the park would actually only be infringed upon to the extent of three acres and a half, as some portion of the five acres was now occupied by footpaths. The estimated cost of the new road was 10,000l. His view was that the road would materially assist the owners of the land adjoining the park in developing it for building purposes. The road involved the construction of a new bridge over the New River of 40 ft. wide, and also 40 ft. span.

Col. Hogg, chairman of the Metropolitan Board, said there were no other means of preserving the park, and preventing the scenes of immorality which were now constantly witnessed, but that of closing the park during the night. If this were not done, the park could not be preserved for the benefit of the public.

In opposition to the Bill, and on behalf of Mr. Wallen, the petitioner against it, Mr. Driver, land agent and surveyor, was called, and stated that on the land belonging to Mr. Lucas, immediately adjoining that belonging to Mr. Wallen's estate, a large number of houses were already erected, and that the land was selling for 1,000l. an acre, and increasing in value. He considered that the building value of Mr. Wallen's land would be interfered with, and seriously depreciated in value by the new road. There could not be a better approach to the building estate than through the park by the present roads, and if the proposed new road were made, and the present approaches shut up, the land would not be nearly so valuable for building upon. The class of houses would be much depreciated, and there would be a difficulty in getting builders to take the land. Mr. Wallen's land was 70 acres in extent, and he considered that the new road would reduce its value by 100l. an acre.

Mr. Frederick Wallen, architect, said that the whole of the land adjoining the park belonging to the petitioner, was being rapidly developed into a building estate, and would come into building very shortly.

Several farmers and cattle salesmen were also called, who denied that there was such a nuisance caused as that stated by the cattle and manure passing through the park.

The committee, at the close of the evidence, declared the preamble of the Bill proved, the cost of maintaining, repairing, and lighting the new road, to be defrayed by the Metropolitan Board for a limited period, and the repeal of the 20th section of the Finsbury Park Act of 1857, was not to debar Mr. Wallen from obtaining any compensation to which he might be entitled under the Lands Clauses Consolidation Act.

Mr. Denison, Q.C., on behalf of Mr. Wallen, said, that unless he got a clause in the form which would satisfy Mr. Wallen as to compensation for the alteration of the roads, and not for land taken under the Lands Clauses Consolidation Act, he should oppose the preamble in another place.

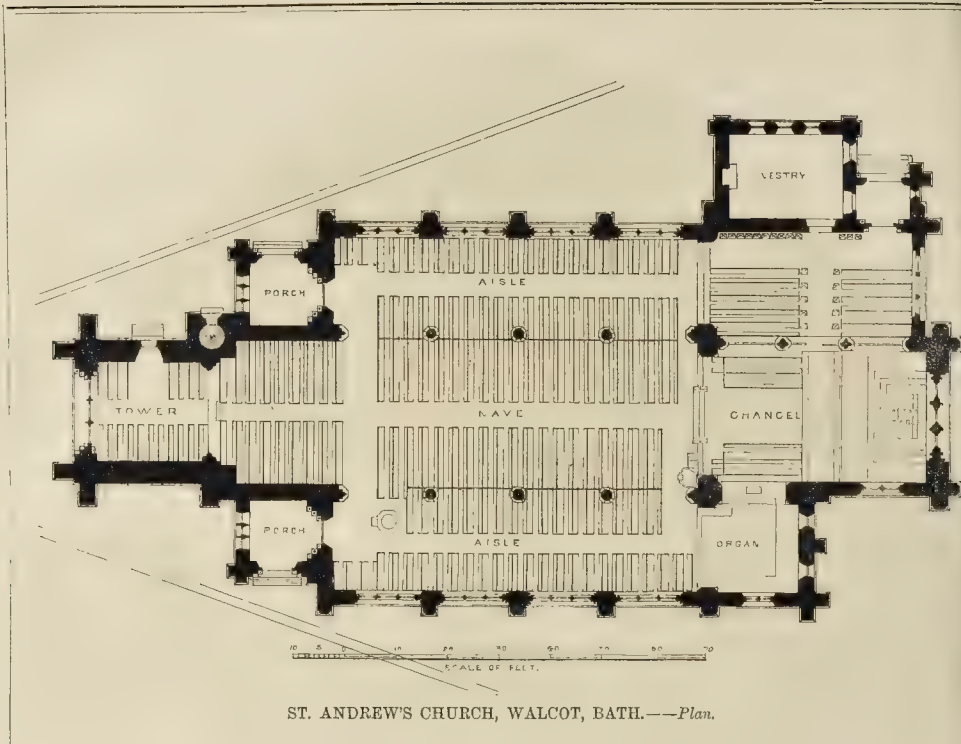
Ultimately the committee inserted a clause as to compensation to Mr. Wallen, which his counsel declined to accept, and the probability therefore is that the Bill will again be fought before a committee of the House of Lords.

THE NEW DWELLINGS FOR THE INDUSTRIAL CLASSES IN FARRINGTON-ROAD.

THE new buildings for the industrial classes, in Farrington-road, which have for some time been in course of erection by the Metropolitan Association for Improving the Dwellings of the Industrial Classes, are now nearly completed, and two of the blocks, at least, will be ready for occupation in about a month from the present time. These buildings are about the largest of the kind which the Metropolitan Association have yet erected. They consist of five lofty blocks, 67 ft. in height, having a frontage to Farrington-road upwards of 320 ft. in length, and altogether cover a ground area of more than an acre and a half in extent. In addition to the basement, the windows of which are almost on a level with the ground-line, the buildings are six stories in height, and the ground-floor of the Farrington-road frontage consists of shops, two in each block, there being thus ten shops altogether, in addition to the numerous dwellings which the buildings provide for private families and others. Each block is 45 ft. in width, and between each there is a spacious area 20 ft. wide. Externally the architectural features of the buildings are plain. They are built with yellow stock brick, and red brick bands, the dressings and window-heads and sills being composed of a mixture of Portland cement and coke residuum. The Farrington-road frontage of each block, as well as the return frontage of either side to the extent of several feet, is surmounted by a gable. Three piers are carried up the face of the elevation of each block, and also one at each angle. The several blocks, which are all upwards of 100 ft. in depth, have flat asphalted roofs, which serve the double purpose of drying and recreation space. In addition to the shops, each block contains fifty-two tenements, consisting of one, two, and three roomed dwellings, all of which have sculleries, fitted up with copper, and all other domestic conveniences for washing and other purposes. The fifty-two tenements in each block consist of ten with three rooms, fourteen with two, and twenty-eight with one room, the entire number of tenements in the five blocks being 260, and calculated to accommodate altogether a population of about 1,000 persons. A special feature in the internal arrangements of these buildings gives each tenement comparative privacy, although several families may live under the same roof. On each floor landing there are gates which, when closed and locked, shut out all but two families. The buildings throughout are fireproof, the floors being laid with concrete on iron and fireproof joists. At the top of the buildings in each block there are two tanks, which will hold 750 gallons of water each. Perfect ventilation is secured by an air-flue in the walls of every room, the air, after passing about 3 ft. along the flue, having its outlet into the street and areas within the buildings. A new feature has for the first time been introduced by this company into the buildings approaching completion. Each tenement is fitted with gas, the tenants being charged with the gas consumed in equal proportions. Mr. Chancellor is the architect; and Mr. Brown, of Chelmsford, is the contractor. We understand that already there are more applicants than the number of tenements.

ALTERATIONS AT ST. VEDAST CHURCH, FOSTER LANE.

CONSIDERABLE alterations are proposed to be made in the structural features and interior arrangements of the ancient church of St. Vedast Foster and St. Michael, Foster-lane, City. The house and premises, No. 2, Foster-lane, of which the Saddlers' Company are the owners, immediately adjoins the church on the south side. The Saddlers' Hall also adjoins the church on the south-east side, and as the church possesses two windows on the south side, which overlook the premises in Foster-lane, the Saddlers' Company are apprehensive that in the event of a fire on those premises, the risk of damage to the church would be very great through these windows. The Saddlers' Company therefore propose to close up both the south



ST. ANDREW'S CHURCH, WALCOT, BATH.—Plan.

windows of the church at their own expense, and in substitution of them to construct an upper light in the roof of the church. The rector also proposes to make very extensive alterations in the interior of the church, amounting almost to its entire re-construction. These include the removal of the whole of the western gallery; also the removal of the organ from its present position in the western gallery to the eastern end of the south aisle; the removal of the whole of the existing high pews in the nave and chancel, and the re-seating with open benches; the lowering of the nave 18 in.; the removal of the pulpit to the south side of the church; the taking up and re-laying of all the old gravestones, and repairing the vaults and walls; the cutting down and altering of the present oak chancel-screen to a height not exceeding 3 ft. 6 in., and removing the gilt crowns from the same; the removal of the old square box pews in the chancel, and the construction of new choir-stalls; the removal of the altar-railing and enlarging the steps to it; the completion of the reredos with ornamental carved and moulded figures on the existing pedestals, representing our Saviour in the centre, with the figures of St. Vedast and St. Michael on the right and left; the removal of the decalogue, the Lord's Prayer, and the Creed, from the centre of the reredos as at present, and placing them in other parts of the church; the filling up the panels from which the Creed, the decalogue, and the Lord's Prayer are taken, with Mosaic, or other paintings, representing the Nativity, the Crucifixion, St. Vedast and St. Michael; the filling in the circular panel in the tympanum, above the cornice, with a cross painted in mosaic, or otherwise with the emblems of the Evangelists. Also to generally repair the structure and buildings whenever requisite. At a meeting of the Vestry last week the proposals of the Saddlers' Company were agreed to, but those of the rector to make the above-named alterations were strongly objected to, on the ground that they were illegal and intended for rinalistic purposes, and a resolution to oppose the rector's application for a faculty to carry out the proposed alterations was passed. The rector, however, stated that the Bishop of London had approved of the alterations, and that he should apply for the faculty.

ST. ANDREW'S CHURCH, WALCOT, BATH.

Our engravings illustrate the new church recently erected at Bath, from the designs of Sir G. G. Scott, R.A., of which a description has already been given in our pages. We need simply mention that the builder was Mr. Joseph Bladwell, and the clerk of works, Mr. J. T. Irvine; the chancel fittings were executed by Mr. Robinson, of High Holborn; the pulpit and font by Messrs. Twigg, of Bakewell, Derbyshire; iron-work, gas, &c., by Messrs. Tuck & Pike, of Bath. The external walling is of Lansdowne stone; the internal, Farleigh Down stone. The whole of the dressings, internally and externally, are of Bath stone and stone from Bishop's Lydiard. The roofs are covered with Whitland Abbey slates; and the total cost has been between 12,000*l.* and 13,000*l.* It seats about 1,000 persons.

ART AND ARCHITECTURE.

At a recent meeting of the Manchester Literary and Philosophical Society, the Rev. Brooke Herford read a paper "On some of the Perplexities which the Art and Architecture of the Present are preparing for the Historians and Antiquaries of the Future." He said: One of the most interesting elements in historical and antiquarian studies is the consideration of the age of the various remains which have come down to us from the past. It continually occurs that points of great importance depend upon our being able to assign an approximate date to a document, an inscription, or some architectural feature of a building. It is thus that vague tradition is often eked out by corroborative fact, and questionable chronicles become susceptible of verification. Even in cases in which it is out of the question to assign actual dates, it is something to be able to be sure of the general period to which an object belongs; and even the iron, bronze, and stone periods afford distant landmarks by which we may grope our way back into an antiquity which may not always be so dim as it is at present. Now, all who have gone into the study of the dates or periods of ancient remains or monuments must have been struck by one feature which is almost universally characteristic of them. I refer to the marvellous reliability of whatever indications they carry in

themselves of style or stage of development. Once get back beyond a certain borderland of confusion and deception, and almost everything speaks for itself. You can tell,—approximately of course,—when it was done, by the how it done. The fact is, that as the arts of life gradually developed, men did everything simply according to the best idea they had attained. The worked by the clearest light of their own time. There was a sort of sturdy self-respect in their workmanship. You can trace our architecture from the great Norman builders, who first taught the English how really to build, down to the exaggeration of the sixteenth and the debasement of the seventeenth centuries, by unbroken steps,—Norman, transitional, lancet, geometrical, cusvilinear, perpendicular,—every one of which opens up new studies of interest. And even later still, though the architecture of Elizabethan time is only reckoned of the poorest (and ecclesiastical architecture there is nothing, for the Church was too weakened by the Reformation to do much building), yet in domestic architecture we have a type of house with many an sometimes fantastic gables, and massive mullioned and transomed windows, which, at an rare, stands for itself, and is an interesting study in many of our halls and manor-houses.

It will hardly need that I should enter very much into detail as to the perplexities which the art and architecture of the present are preparing for the students of future times. For every style in which I have been showing these trustworthy characteristics of the past must have reminded you how different things are to-day. I tremble sometimes to think of the curses which many some day be heaped upon this self-complacent nineteenth century, with its great affectation of taste and art, by those who in some remote future may have the task of disinterring and endeavouring to interpret our monuments. They will find inscriptions in every variety of character,—Lombardic, Old English, the antique Roman type of the end of the seventeenth century, and (very sparingly) in the beautiful characters which our modern type-founders have elaborated, such type as never was in the world before, but of which modern Englishmen seem ashamed. They will find drinking-fountains of Queen Victoria's reign inscribed in characters which would betoken an origin under the Plati-



ST. ANDREW'S CHURCH, WALCOT, BATH.—SIR G. G. SCOTT, R.A., ARCHITECT.

agenets, and ridged tombstones of decent Manchester merchants hardly distinguishable from those of the old spurred and belted border knights who compounded for their sins by leaving estates to the monks, on condition of burial within the cloisters. They will find books printed in carefully-imitated types of the sixteenth century referring to matters which ordinary history would have led them to believe happened in the nineteenth. But it is in matters of architecture that they will experience the most bewildering perplexity.

Perhaps the most important feature in this matter is that what we are doing by this artistic and architectural confusion will not stop the perplexity which it will cause concerning the remains of our own time. That might be suffered. Some may say, our buildings, at least our considerable public buildings, are all dated; so are our books and our sculptured inscriptions. True. But the difference between those of our day which are dated, and those of six centuries ago which are not dated, will grow less distinguishable every century, until at last they will all be touched with one equal aspect of antiquity, and the utter confusion which will then appear among those which are dated, and lastly discredited upon those which are not. I do not think that this is a light matter, though I have pointed out in passing a certain ludicrous aspect which it undoubtedly possesses. I think it points to deeper defects in the mental and moral life of the age; to a craving for the excitement of the picturesque rather than an appreciation of the really beautiful; to a want of originality in the higher forms of art, that is amply compensated by the skill with which we imitate lay Etruscan and Pompeian vases or mediæval cathedrals under contribution; and to the miserable depreciation of our contemporary forms, even when, as in the case of our printed characters, they are really of surpassing clearness and excellence.

THE GREAT NORTHERN RAILWAY COMPANY'S NEW GOODS DEPÔT IN FARRINGTON ROAD.

ONE of the heaviest engineering and building undertakings going forward in the metropolis, is the extensive new goods depôt in Farringdon-road, now in progress for the Great Northern Railway Company. The extent and magnitude of the works will be seen when it is stated that the depôt, when completed, will cover an area of about 25,000 superficial yards, or upwards of five acres. The land for the depôt has been purchased from the Metropolitan Railway Company, and is situated immediately to the westward of the Farringdon-street Station of that company's line. It extends in a southerly direction to within about fifty yards of Charterhouse-street, and is upwards of 1,200 ft. in length.

The approach to the new depôt is formed by a double junction with that portion of the Metropolitan Railway used by the Great Northern, Midland, and the London, Chatham, and Dover Companies, and is a short distance from the middle-level sewer, which runs under that line. The preliminary engineering works in connexion with the construction of the new depôt commence close to the sewer last mentioned, and have necessitated a heavy amount of labour as well as the exercise of much engineering skill. One of the first portions of the works was the clearing away of the network down to the railway level of the extended depôt, and during the necessary excavations upwards of 50,000 cubic yards of earthwork have been removed. It may be interesting to state that in the course of excavating, it was found necessary, in consequence of the peculiarity of the strata, to go to a considerable depth below the railway level in several places, for the foundations of the basement of the piers for the warehouses, and whilst so employed the workmen several times came upon huge beds of bones, of 1 ft. and 6 ft. in thickness. The bones left no doubt that they were those of horses or other animals, and it is therefore supposed that in former days there must have been a knacker's yard, or some similar establishment, in the neighbourhood. Another heavy portion of the preliminary works has been the underpinning of the Farringdon-road retaining wall from the middle-level sewer to Charles-street, where the Metropolitan line passes under that street. The underpinning of this wall is 12 ft. in thickness,

and in carrying out this part of the work more than half a million of bricks have been used, set in cement supplied by the Burham Cement Company. In addition to the underpinning, the recesses in the Farringdon-road retaining-wall, extending to the entire length of the depôt as far as the Charles-street bridge, have been filled in to the general face of the wall with Staffordshire blue bricks.

The depôt will commence immediately to the west of the entrance to the present Farringdon-street Station, and will ultimately be carried under the Charles-street bridge, and to the boundary of the land purchased by the company, near Charterhouse-street; but for the present the works in hand extend only a little beyond Charles-street, and the warehouses will be erected immediately over the ground-floor of the depôt or railway level, extending from the entrance to the Farringdon-street Station to the Charles-street bridge. The warehouses will be the superstructure standing upon piers, arches, and iron columns, rising from the railway level of the depôt beneath, the ground-floor of the warehouses being level with Farringdon-road. Along the centre of the railway level of the depôt, extending to Charles-street, enormous piers and arches, carried up to the level of Farringdon-road, have been built in blue Staffordshire brick. The piers from which the arches spring are 18 ft. by 3 ft. 9 in., and the foundations for these several piers are carried to a depth of 16 ft. below the railway level. On either side of these central piers and arches there are massive iron columns, upon which, as well as upon the piers and arches, the superstructure above will stand. In carrying out the works, which, as has already been stated, extend nearly to Charterhouse-street, and pass under the Charles-street bridge, it has been found necessary to remove the iron columns which support the bridge carrying the street over the railway, and substitute in their place brick piers. This has been a formidable undertaking. These piers are three in number, on each side of the bridge, and are of large dimensions, being each 11 ft. by 8 ft., and built of Staffordshire blue brick. In removing the iron columns, and replacing them by the massive brick piers just named, hydraulic jacks had to be used. Each of the columns displaced bore an average weight of 200 tons, and in lifting the girders by the hydraulic jack it was calculated that on one occasion no less than 700 tons were lifted at once.

The construction of the Farringdon-street level, above which the warehouses are to be erected, is rather peculiar in its character. It is supported by iron stanchions of enormous size, some of them weighing eleven tons, and upon the cast-iron columns are placed massive wrought-iron box and other girders. The floor is covered over with corrugated iron plates 4 in. thick, the corrugated portion being filled in with Portland cement concrete, of an average thickness of 5 in. The portions of this flooring used for platforms are trowelled off, and those for the carting space are paved with granite, filled in with boiling asphalt. The materials to take up the building from the foundation and railway level to Farringdon-road include 1,300 yards of blue Staffordshire brick, set in cement, and 1,600 yards of stock brick in mortar; also 251 tons of wrought and cast iron girders, 121 tons of cast-iron columns, 96 tons of wrought-iron stanchions, 28 tons of wrought-iron principals, and 29 tons of cast-iron girders. The warehouses to be erected above this floor will be 350 ft. in length, and 95 ft. in width at the Charles-street or south end. In addition to the ground-floor already described, they will contain three floors, the first-floor being 20 ft. in height, and the two upper floors 15 ft. high each. The facings of the Farringdon-road, and the north and south elevations, will be in Burham wire-cut brick, Pether's ornamental brick being introduced for string-courses and dressings.

The entrance to the depôt or railway level under the warehouses for the receipt and delivery of goods will be by a circuitous inclined plane approached from Charles-street, immediately opposite the entrance to the Farringdon-street Station of the Metropolitan Railway, and there will also be an entrance to the warehouses in Farringdon-road.

The contractors for that portion of the works up to the Farringdon-road level, already described, are Messrs. Westwood & Bailey, of Poplar, the estimated cost being upwards of 30,000l. The contract for the warehouses is expected to be closed next week, when the buildings will be at once proceeded with, and

the entire outlay, exclusive of the cost of the land, is set down at 100,000l. The whole of the works have been designed by Mr. Johnston, the Company's engineer, and are being carried out by Mr. Wilkinson, the resident engineer in charge.

ENLARGEMENT OF THE WATERLOO STATION AND STREET IMPROVEMENTS IN LAMBETH.

THE proceedings before the Committee of the House of Commons last week on the Bill for the enlargement of the Waterloo Railway Station disclosed the fact that important street improvements in the neighbourhood of York-road, will accompany the works in connexion with the enlargement. It will also be seen that the Metropolitan Board of Works have availed themselves of the opportunity to secure certain streets affected being made 40 ft. in width.

From the evidence of Mr. Jacobson, the resident engineer of the line, it appears that the new station will extend in different directions both north and south. The extension on the north-west or the Richmond and Windsor section of the station, will cover an area of more than two acres, and about one hundred houses have been purchased for the purpose in Ann-street, Agnes-street, and Vine-street, all of which will be demolished. Vine-street, which leads into the York-road, will be absorbed, and diverted into Cross-street, which at present is approached merely by a foot-passage. The Company propose to do away with this passage, and to convert Cross-street to the York-road into a street 30 ft. in width, instead of 20 ft. as at present. The Company also propose to make a new entrance to the station from York-road, 50 ft. in width, and there is to be a communication between York-road and Waterloo-road. On the south or main line side the station is also to be considerably enlarged, and for this purpose several houses have been purchased. The whole of St. Aubyn-street is to be boarded over, and near it a new street 30 ft. in width in lieu of one of 20 ft. is to be constructed.

The station is chiefly built on arches, forming bridges or tunnels carrying the railway over several streets, and in effecting the enlargement the company propose to extend these bridges or tunnels on both the north and south sides, to the extent of nearly 200 ft. in length, making them about 400 ft. long from the extreme north to the south side of the station. The present width of these bridges is 30 ft., and the company propose to lengthen them, limiting them to the same width; but the Metropolitan Board of Works require them to be made 40 ft. wide, and Mr. Bazalgette, the engineer to the Board, in his evidence in support of this requirement, said that Granby-place and York-street, which were two of the streets under the station the bridges in which it was proposed to lengthen, were objectionably dealt with in the company's Bill. At present the narrowest part of Granby-place was 22 ft., but 30 ft. might be taken as the general width of the street. The present roadway under the railway was 200 ft. in length, and 30 ft. wide, and it was proposed to extend the length of the tunnel 200 ft. more, which would make it 400 ft. and dark; 40 ft. span, therefore, was as narrow as it ought to be, and in order to get as much light as possible into the tunnel the entrance ought to be bell-mouthed. If piecemeal it were allowed to be extended from time to time it would become a dark tunnel and not fit for public traffic. Although the present width was only 30 ft. the additional portion should have a 40 ft. span. The width of 40 ft. had been named because under their Act the Board were required to make all new roads of that width. The time might arrive when the Board would have to widen these streets to the full width of 40 ft. The metropolis had already suffered from legislation which dealt with things as they were at the present time, not looking forward to the future; and it therefore behoved the Board of Works, in considering Bills of this kind, to look somewhat ahead, and he felt that having regard to these considerations the extension of the bridges should now be 40 ft. wide, and it might be hereafter necessary to take out the 30 ft. of the other portion, and widen it to 40 ft., because the Board might have to widen the streets to 40 ft.

It was urged on behalf of the company that 30 ft. was wide enough, and that if the extended portion was to be 40 ft., the recesses would cause a nuisance. The learned counsel for the company also instanced the case of the Cannon.

street and Charing-cross line where it passed over streets by bridges not more than 30 ft. wide; but Mr. Bazalgette's reply was that at the time when the Cannon-street and Charing-cross line was sanctioned, the attention of the Board of Works had not been drawn to that very important question. "It was," he said, "the permanent throttling of these thoroughfares going on in different parts of London, to so large an extent, that awakened the attention of the Board and of Parliament to the necessity of looking ahead and making provision for the future."

The Committee, in deciding in favour of the preamble of the Bill, adding, that although they were of opinion that there was not any great necessity for the enlargement of the width of the bridges in this particular case, still thought that the promoters had not made out a sufficient reason for dispensing with the provisions of the General Act and interfering with the discretion of the Metropolitan Board of Works. The consequence is, that unless the decision of the Commons committee is reversed, the bridges will still have to be 40 ft. wide.

A "LIQUOR WAR."

Rise in wages and increase in drunkenness go hand-in-hand throughout the country, and the women, who, with their children, are the chief sufferers, have at length broken out against the great curse of the country, as they have also done in the United States, in the women's "Whisky War," as it has been there called, and which has its ludicrous side, no doubt, but is for all that a very serious subject. Considering that the public authorities, and even the Legislature, in this country may be said to be now engaged in this same sort of warfare, it is earnestly to be hoped that good may come of it. The reports of Her Majesty's Inspectors of Constabulary in England and Wales for the year ending at Michaelmas, 1873, have been issued. Captain W. J. Elgee, who superintends the northern division, reports that the year's returns show an increase of more than 20 per cent. in the number of persons proceeded against for drunkenness, as compared with the preceding year, the increase being very much larger in Durham. He has no doubt that the unprecedentedly high wages and short hours of labour have contributed to the excess in drinking, but he observes that under the new Licensing Act the police proceeded more strictly than before in cases of drunkenness. Towns are much more quiet at night under the new Act, however. He is of opinion that the increase in the fine for drunkenness and the endorsing convictions on the licence are attended with advantage in the maintenance of order. It appears from the police returns that the northern police district of England had a population of 7,866,139 at the census of 1871, and that at Michaelmas, 1873, there were in that district 22,119 public-houses, 16,556 beer and cider houses, and 1,085 refreshment-houses with wine licences. In the course of the year 1872-73 there were convictions against 984 public-houses, 659 beer and cider houses, and 25 refreshment-houses. There were no less than 94,900 persons convicted of being drunk, or drunk and disorderly. Captain Elgee, in his report on the northern district, notices that in the proceedings against public-houses and beer-houses the proportion of convictions was less than in the preceding year. The returns show a total of 137,477 persons convicted of being drunk in the year 1872-73, the number in the preceding year being only 111,354.

A women's "liquor war," as we may call it, has been commenced in Manchester. From a temporary platform, erected in the fair-ground at Knot-mill, about a dozen working men's wives recently addressed an attentive crowd on the evils of intemperance. The chairwoman said she had been a teetotaler twenty-seven years, and had never regretted it. Some of the speakers were members of Good Templar lodges, and were styled "sisters"; and all had, in some way or other, been brought over to total abstinence through the terrible examples of drunken husbands or fathers. One woman introduced herself as "the daughter of old Joe Blake, the drunkenest man in Deansgate"; another speaker said she "had been twenty-one years drink-cursed, having for a husband the greatest drunkard that ever walked the streets of Manchester." This woman's husband, who was at one time never without an excuse to strike her, was now a reformed character.

A similar movement has begun in Dundee. A

deputation of between sixty and seventy women waited upon the Provost and magistrates, and presented a memorial bearing nearly 10,000 signatures of females. The memorial asked the magistrates not to grant new licences, to withdraw those whose holders had been convicted, to give no transfers, and not to permit the plurality of licences. Several women spoke at length, contending that it would be better to pension the publicans than to allow them to continue their traffic. Mrs. Inglis, wife of a clergyman, expressed the views of herself and sisters in a long speech, and other ladies having spoken, the deputation was assured that the memorial would receive attention.

THE METROPOLITAN BOARD OF WORKS' ANNUAL REPORT.

THE Annual Report of the Metropolitan Board of Works, showing the work done in 1873, which was presented at the meeting of the Board last week, is an interesting document. A considerable portion of it has reference to the drainage works which have been executed during the past year. On this subject the Report states that the drainage is now all but complete, the only portion not finished being that extending from the Chelsea Suspension Bridge, westward, to the temporary pumping-station at Fulham, and of this last portion about three-quarters of the distance are at the present moment finished. The Western pumping-station is rapidly progressing, and the machinery will raise 38,000 gallons of sewage and rainfall per minute. The system of main drainage, when it was first brought into operation, was found to be incomplete without bringing various old main sewers into a better condition, and during the year those in Shoreditch, the Fleet Valley, Hammersmith, and Hackney Wick, have been specially attended to. Local drainage has been effected under the Board's direction to about twenty-one miles in length. The ventilation of sewers has formed an important part of the engineering work of the Board. Various plans have been considered, and preventive measures taken, to exclude the illegal introduction of deleterious matters into the sewers, while sewer effluvia have been combated with by means of sulphurous acid and chlorine gas.

With reference to metropolitan improvements the report says, that in respect of the Northern Embankment, the chief matter was the obtaining power to form an approach from Charing-cross via Northumberland House, and that the privilege of destroying that mansion will cost the Board half a million pounds. The Chelsea Embankment is approaching completion, and is to be opened to the public shortly. Negotiations for the acquisition of property for improvement purposes are progressing in Wapping, Shoreditch, Old-street to New Oxford-street, Harrow-road, and Newington Butts.

The various parks and commons under the Board's control, the largest of which is 267 acres in extent, and the smallest 1 acre, have an aggregate acreage of nearly 1,017 acres. The Board have abandoned the idea of building on a portion of Finsbury-park, and this determination will give to the public 20 acres more than was contemplated. Shepherd's-Bush-common, which it was proposed to convert into a park, is to remain simply as a common. Tooting-Beech-common had been obtained possession of by the Board, under the Act of last session, and was to be improved and laid out for recreation purposes. Leicester-square will shortly be handed over to the Fire by Mr. Albert Grant.

The Fire Brigade, which is under the management and control of the Board, is named in the Report. In 1873, the number of fires was 1,548, of which only 166 were serious. By day 90 firemen were constantly on duty in the metropolis, and by night 181. Altogether there were 107 land and floating engines, 125 fire-escapes, and 396 firemen. The cost of maintenance last year was over 74,000l.

Estimated Cost of the New City Gaol, Bristol.—We understand that the estimated cost of the new city gaol, the design and plan for which have been, or are about to be, forwarded to the Secretary of State for approval, is 65,000l. This is independent of the price of the land,—7 acres,—purchased for a site at Horfield, and which is about 5,000l. It is thought that by the sale of the sites of the old gaol and the Bridewell the city will recoup itself for the outlay to the extent of about one-half.

HOUSE BUILDING IN THE FEEJEE ISLANDS.

In the construction of their houses the Feejeans employ professional carpenters, who are held in high estimation. These houses differ from those of the other groups, although the materials of which they are formed are similar. Before commencing to build certain ceremonies have to be gone through. A present of whale's tooth is made to the king or chief, who is at the same time informed as to the size, height, and other requirements of the building. The king, or chief, then orders the men who are generally employed for such purposes to prepare the timber, and get all things ready. The direction of the work is entrusted to a chief superintendent, and from one to five hundred men more, if necessary, are employed. Their construction is in this manner, posts of cocoa-nut wood are set in the ground, and are placed about 3 ft. apart; rafters of the palm are set upon plate resting on the post; these have a very steep pitch, and support a cocoa-nut log which forms the peak of the roof, the ends of the peak extending beyond the thatching at each end, and are covered with shells. The roof is made by beginning at the peak and thatching downwards with the wild sugar-cane under which are placed fern-leaves. Thatching is made thickest at the eaves, which are about 3 ft. thick, projecting some distance over the sides, and are square off. The frames and sills are made of the cocoa-nut and tree-fern, and there are two doormats on opposite sides, from 3 ft. to 4 ft. high and 4 ft. wide. Mats are hung before the doors and the sides are closed in with small cane square wicker work. A house is finished in fifteen to fifteen days, and is considered tenanted for upwards of twenty years. Each house has a fireplace almost in the centre of the floor; it is nothing more than an ash-pit, with some led stones to build the fire and place the pot on. Few partitions are to be found in the house, which at each end have an elevation at the height about 1 ft. from the floor. These platforms, which are covered with layers of mats, are used as beds. The common houses are oblong, 8 ft. from 20 ft. to 30 ft. in length. In each town to be found a Mbure or Spirit-house, in which the various deities are worshipped, and which is also used for entertaining strangers, as well as for holding councils and other public meetings. These Mbures are built after the same manner as the houses, but the roofs are more peaked, they are generally 15 ft. or 20 ft. square, and about 30 ft. high. The decorations of all the buildings are confined to the shells and the cane wicker-work.

Such is a brief sketch of the architecture of people between whom and Englishmen a close intimacy may ere long be found.

PUBLIC BATHS FOR WAKEFIELD.

The design of Mr. William Watson for the new public baths, situated in Alms House-lane, is a red brick building, relieved by white brackets, cornice strings, &c., and stone dressings. It has a frontage to Alms House-lane of 125 ft. The central part of the front is two stories high and projects from the line of the main building towards the roadway. The entrance to the baths is placed in the centre of this portion, and is wide and spacious, reached by a flight of steps, right and left; and also on the first-floor are rooms for the carekeeper; a screen, part of glass, is placed across the rear of the entrance hall, behind the middle of which is the ticket office, and on each hand is reached the ladies' and gentlemen's corridors, communicating with their respective waiting-rooms and private baths, three of the latter being provided on each side.

The hall containing the swimming-bath, reached from the gentlemen's corridor, and is 90 ft. long by 43 ft. wide and 30 ft. high; swimming-bath is 70 ft. long by 30 ft. wide, and the depth of the water will be from 2 ft. 6 in. to 6 ft. 6 in. Twenty-nine dressing-boxes are fitted on one side and both ends, as well as other conveniences. A gallery across one end is reached by a staircase; wash-house, drying-house, engine and boiler house are also provided. The bath will have white glazed brick and tile sides at bottom; the walls of the bath buildings and corridors will be built with white glazed bricks 4 ft. 6 in. high. The private bath rooms will also be lined with white glazed tiles. The bath building will have a wrought-iron roof, with

brought purlins covered with matched boards and slated. The promenade round the bath will be laid with Seyssel asphalt, finished to a one curb. The private bath rooms will be tiled with enamelled cast iron baths and lavatories, with hot and cold supplies. The cost of the site and buildings, including the engineering work, will be about 4,000l. The first stone was laid on Saturday, the 18th of April.

A WOODEN RAILWAY.

The South Carolina Central Railroad had been allowed to drop through the hands of the original projectors, and a considerable amount of cutting and grading had been accomplished, when Messrs. Land & Pritchett, large turpentine stillers, says the *Clarendon Press*, purchased the right of way and set about to construct a road that would take their products to market. The road from Manning to Lane's Turnout is 11 miles long. The bed is constructed precisely as all other railroads are; but in place of wooden stringers, which are laid upon their face, and the tracks or wheels of the running stock are 5 in. upon their face, the friction in running being distributed over the surfaces, the injury to the rails will be much less. The flanges to the wheels are 2½ in. ap, thereby preventing any probability of derailing off. A portion of the road has been in operation five months, over which trains have been running daily, and most of the stringers are smooth. The rolling stock on the road is iron, but quite effectual. The engine is worth only 1,800 dollars, but is sufficient to carry ten or eight cars, loaded, at the rate of 15 miles per hour. The road is regarded as a success, and answers all the purposes of a first-class iron road. The cost of the road has been about 1,200 dollars per mile. By this road 50,000 lb. can be sent twice a day. In the days of horse traction, before the modern railway era, wooden railways, may remark, were common in this country.

MESSRS. MINTON'S PATENT OVEN.

MESSRS. MINTON, of Stoke-upon-Trent, have taken out a patent for an improved oven in the firing department of the pottery manufacture. It is difficult, without the assistance of diagrams, to give a correct idea of an invention of this kind. The improvements commence where we get to the oven itself, for the hovel is finished, a low lean-to shed round the oven opening ample. In existing ovens the feeders or mouths of the fireplaces are constructed partly round the circumference of the oven, and partly under the walls of the same; but by an arrangement a large portion of the general heat is expended on the contiguous brickwork, and has no direct action on the ware to be baked. In the new oven the old mouths are discarded with, the combustion being effected solely within the inner circumference of the oven, and this leads to a large reduction in the quantity of fuel consumed. The patent provides for the erection of a chamber over the oven by which heat which might otherwise be wasted is used for the firing of articles requiring a comparatively low temperature. The flame is directed towards the upper part of the oven, as there is no opening at the top of the oven the heat is compelled to travel downwards until it reaches the floor, where it finds a number of openings. These openings give access to several horizontal flues, and from these the flames reach the upper chamber by passing through a corresponding number of upright pipes constructed within the thickness of the walls of the oven. From the upper chamber, which acts as a regulator of the draught, they pass into the open air. At various heights above the mouths of the fireplaces are small openings for introduction of the air requisite to ensure perfect combustion. Under the floor of the oven a flue which communicates with the external air is kept shut all the time the oven is firing, and is opened afterwards to assist the draught. A damper in the centre of the vault is removed, after the firing, with the same object. It is claimed for this invention that it has several advantages over the old form. Chief among these is that of economy. The original draught is less, and the consumption of coal is greatly reduced. Messrs. Minton have a 15-ft. biscuit-oven which they have fired twenty times—a pretty severe test—with an average of less than nine tons per oven, and this has never yet turned out a piece short fired,

In the first large biscuit-oven built on this principle (18 ft. 2 in. in diameter), the consumption was 12 tons 18 cwt. in 56 hours. It contained, besides cream colour and best earthenware, parian, stoneware, and majolica. At the first trial of a 15-ft. glost oven 3 tons 8 cwt. of coal were consumed. The quantity of coal consumed, and consequently the saving, will depend to some extent upon the class of ware fired, but the saving is put generally at one-third for biscuit-ovens and two-fifths for glost ovens. The combustion is said to be perfect, and consequently the oven smokeless. Messrs. Minton have appointed Messrs. Scrivenor & Son, architects, Hanley, their agents for the patent. The royalty for the use of it has been fixed at a very moderate figure.

ROTHERHAM INDEPENDENT COLLEGE

The foundation-stone of the new Independent College at Rotherham was to be laid last week. The new building is to cost over 13,000l., and the cost of the site in Moorgrate, and of furnishing, &c., will make the total outlay about 20,000l. The new college occupies a commanding site, rising considerably from the road, and is approached by an avenue some 200 yards long, terminated by the terrace on which the college is being built. The whole work is in the collegiate Gothic style of architecture prevalent in the fifteenth century, and is to be carried out in the local red sandstone, with dressings of Roche Abbey stone. The main feature of the principal front (that facing the avenue by which the college is to be approached from the high road), is the moulded entrance, surmounted by a tower, flanked on either side by a range of large, mullioned, and traceried windows, which give light to the dining-hall, library, &c. On the extreme left is the principal's residence, which shows on this front two gables, and a bay window lighting the drawing-room. In the rear of the main building, on the north side, are two long wings, arranged for studies and dormitories for the students; the south or left wing being appropriated to the principal's residence and offices of the college. Immediately opposite the entrance mentioned is the principal staircase, which leads to the upper floor of the college buildings and students' rooms. On the right on entering is the library, 45 ft. by 20 ft., lighted in the front by three large two-light windows; on the left of the entrance is situated the dining-hall, which is lighted by three windows in the front, similar to those in the library. Leading from the entrance-hall on either side, is a corridor 7 ft. wide, running the entire length of the college. Entered from the corridor at the north end are students' wings, the studies being situated on the ground-floor, and the bedrooms above. At the south end, behind the dining-hall, are the domestic offices and servants' rooms. On the first-floor, over the library, &c., are the various class-rooms. The remainder of this floor is occupied by the bedrooms already mentioned, and by the sick and convalescent rooms, which are shut off from the remainder of the building. The upper floors of the tower contain additional studies and bedrooms for students; altogether, there will be accommodation for twenty-eight students. The works (commenced in November of last year), are being carried out in accordance with the drawings and specifications prepared by Messrs. W. G. Habersham & Pite; the builder being Mr. Moore, of Bedford, whose contract amounts to 13,400l. Mr. Birchell, of London, is clerk of the works.

NEW CORN EXCHANGE, BEDFORD.

This new building has been opened. It is of mixed style of architecture. The front is Italian. The material is principally white pressed bricks, with Bath stone dressings, and carved capitals. The basement consists of four corridors, entered from the front side: seventeen rooms, intended for offices and retiring-rooms, averaging some 12 ft. by 15 ft.; and a large committee or refreshment room, 68 ft. by 19 ft. In addition to these, there are lavatories and other necessary conveniences. The rooms are lighted from the front and sides. The large hall is entered from the main street by a flight of ten steps and two entrance porches. It measures some 100 ft. by 60 ft., but at the far end of the room is a platform raised some 3 ft., and measuring 19 ft. across by 60 ft. long, thus reducing the exchange floor proper to less than 90 ft. Over each entrance a small gallery, calculated to seat some 35 people, has been constructed. The platform is reached by a flight of steps from the hall or from ante-rooms on either side without going into the large room. The room is lighted from the front and sides, and also from three glass domes. Artificial light is secured by five 60-jet gas coronas,—three along the centre of the hall, and one at each entrance. Altogether, the hall is calculated to seat some 1,500 persons, the room itself holding some 1,100; the platform, 300; and the galleries, 70. The total cost of the building is about 9,000l. It occupies a central position, being situated in the middle of St. Paul's-square, just opposite the church. The old corn exchange, which stands a short distance off, is now used as a market-hall.

Considerable difficulty was found in obtaining a good foundation for the new building. The ground turned out to be hollow over the centre site, forming a cave from 2 ft. to 5 ft. high, between two thicknesses of rock. This cave was filled with water in some parts, and in others a portion of clay. The water had to be pumped out, and the upper thickness of rock blasted, and the foundations carried down to the second rock, which was a work of some considerable trouble and time, costing about 700l.

The contractor for the building was Mr. L. B. Moore, Bedford, and Mr. C. J. Day for the carpenter's and joiner's work. The architects for the building were Mr. John Ladde and Mr. W. H. Powell, of London, who were selected in open competition.

THE TALE OF TROY DIVINE.

DR. SCHLIERMANN'S persevering researches in the Troad will of necessity rekindle some old controversies; he has found a real buried city with abundant proofs of pre-historic civilisation, but it will take the labour of generations to assign a true value to his discoveries.

A primitive, but well-constructed hill-fortress, of solid masonry, is proved to have lain unknown beneath successive depositions of more transitory material; all surmounted by the historic site of the later Troy of Hellenic civilisation.

Homer is so far confirmed in this, that there really was a pre-historic city buried to the ground, in the exact locality where he places Ilium or Troy; and the tradition of this fact has never been lost. But the poet, be he Homer or not, can never have seen the city he has professed to describe; he may have drawn his descriptions from the later Ilium of authentic history, to which the hill-fortress of the mythical or heroic, i.e., the pre-historic age, was a mere dwarf. This solid fact, while it confirms the general accuracy of the traditional material on which he worked, proves how recent is the recast of those traditions which we now call the Iliad of Homer.

Hissarlik, the site on which Dr. Schliemann has laboured so earnestly, is a mere village; it means "the fortress," and is the modern representative of the Palladium or tower of refuge, deemed fabulous, but now proved to be of that style called Pelasgic. It was to the rude natives of the Troad, what Richborough was to the ancient Britons, what the Tower of London became to the Saxons. It was burned, but possibly suffered a more fatal injury in the setting up of its harbour; the port, if there was one, or the bay, had shifted by Homer's time, and there he figured his Achaean hosts.

Homer calls the chief stronghold a Pergamos or Pergamon. This word should mean "fortress" too, it being the palladium. Dr. Schliemann writes:—"Troy" had no especial Acropolis, but . . . Homer invented one, and called it the Pergamos, a word of utterly unknown derivation." The *Quarterly Review* confirms this so far as to remark that the "name may have been handed down by tradition": just so, but why doubt its etymology, with the Greek word πύργος, "a tower," at hand?

I read "Perga" as equal to "Berg" or "Borough," and identical with the Celtic "Breg," "Brig"; all these may be compared with the Semitic "Byrsa" or "Bursa," "a fortress," it being the root of Byzantium, the modern Constantinople. The proof of the transition from P to B is found in the Anatolian city, variously Pergamo and Bergamo, famous for its parchment.

Byrsa was the Acropolis of Carthage; Bursa is the name of two Scriptural places. "Berg" and "Breg" are "hills"; "Burgh" is a synonym for "castle"; from "Brig" we get the Brigantines or

Briganti, hill-men, or mountaineers, of Celtic-Roman days.

Hissarik stands in close relation to the Phrygians, whose name appears as Phryges, Bryges, Briges,—here, may be, the hill-men or mountaineers of Asia Minor.

The name of Troy is sometimes classed as Celtic; compare the "Tre" of Cornwall, but we must not forget Tyre, i.e., *Tzur*, "a rock." Ilium, also, is said to be Semitic, meaning "well-walled."

Dr. Schliemann's illustrations open a wide field for conjecture. There are some wonderful pendants for the head, very suggestive of a "golden fleece"; the owl-headed ornaments I would call imitations of a shield; the palladium; and of a tower, palladium again; the latter do somewhat like the dice-box shape, but might do as well for a *corselet*, or body-armour. However, Mr. Newton is to lecture on them, and Englishmen will be much guided by his mature opinions. A. HALL.

A LOST WORD AND ART.

SIR,—There are two or three points raised under this head in your journal which I fail to see.

1. The Spaniards in the time of Jeremiah were not likely to have had any word like *plate*, because Tarsish was then Phœnician, the language of which race resembled the Hebrew. Hence, the Greek word *πλάτος*, if ever it got into Spain, must have got in considerably later. The Greek and Phœnician languages belong to two totally different classes.

2. The best lexicons which I have derive מִן, not from מִן, but from מִן, as Fürst, in his Lexicon (a great authority), whose words are מִן, participle מִן—to be beaten out; Jer. x. 9, "a beaten silver-plate."

Your author could not derive it from מִן, as any Hebrew scholar would tell him, as the fourth letter נ is part of the trilateral root, and not a mere termination, the non-radical letter being the participial מ at the beginning, and the quadrilateral מִן being here impossible. In fact, in Hebrew the initial מ corresponds with our final *ing*, or *ed*, or *en*.

Radical.	Accidental.
מִן	נ
מִן	נ
מִן	נ

Whether active or passive, depending partly on the small vowel-points.

מִן	passive, "beaten";
מִן	active, "beating";

מִן does, indeed, mean to "polish," but is impossible here. The passage in Jeremiah is thus translated by Bagster's translator from the Septuagint,—*"It is wrought silver: they will not walk: it is forged silver (9) brought from Tharsis."*

Πασσάβριον might mean "clapped on," being properly "added to," "joined on to," but "spread on" is an additional notion.

Τραπέζιν is rather "engraved," "embossed," than "polished," and is used for the carved work on cups or chariots. I append three translations of the Hebrew from three good authorities,—two German and one French:—

"Beeschlagen [beaten] Silber wird aus Tarsis gebracht, und gold aus ufas, werk des kunstlers und der Hände des Goldschmidts."—*De Wette*.

"Silbernes Blech [silver-plate] bringt man auf dem Meer her; Gold aus Uphas, durch den Meister und Goldschmid zugerichtet."—*Luther*.

Here Luther would not translate Tarsish at all, but merged it in the idea of "sea," because people had to go by sea to get there.

"L'argent qui est étendu [spread out] en lingots [ingots] est apporté de Tarsais, et l'or d'après, pour être mis en œuvre par un ouvrier et par les mains d'un fondeur."—*Ostervald*.

NEMO.

RESTORATION OF WARWICK CASTLE.

THE builder's work may be considered practically finished, but the apartments must for a long time remain in the hands of the painter, decorator, and upholsterer. The amount of Mr. Bromwich's contract for builder's work is 16,000l. to 18,000l. Lord Brooke's suite of apartments is, so far as structural arrangements go, finished; and the same may also be said of the private rooms in the east wing; while the burial hall is being cleaned down. The latter grand apartment presents a contrast to its appearance on the memorable 3rd of December, 1871. The roof is of stained pitch-pine; new freestone windows overlook the Avon, and the

Gothic arches of the hall are newly executed. Additional archaeological interest is imparted to the renovations from the fact of the disaster of 1871 having disclosed a part of the original structure of this portion of the building which had previously been masked. The relaying of the tessellated marble floor will be commenced as soon as the six-branch chandelier, containing fifty lights, has been fixed to the centre of the ceiling of the hall. Mr. J. Syer, the armour restorer, of London, is successfully continuing his work, and the loss of ancient armour will be reduced to a minimum. When ready for their reception, the baronial hall will be enriched with as many suits of armour as it was before the fire. The total amount of the public subscriptions towards the restoration fund was 9,651l. 5s. 9d., which will be but a very small part of the entire cost of the restorations and renovations.

OPENING OF THE STEBLE-STREET BATHS, LIVERPOOL.

THE new baths, erected by the Corporation of Liverpool, in Steble-street, Tootth Park, for the benefit of the inhabitants at the south end of the town, have been formally opened, in the presence of a crowded assembly, and the event was inaugurated by a swimming-match.

The new baths contain six private first-class rooms for men, seven second-class baths for women, twelve second-class baths for men, and fifteen third-class baths also for men. There are also a first-class plunge-bath, 50 ft. 6 in. long, by 36 ft. 3 in.; a second-class plunge-bath, 52 ft. 6 in. by 38 ft. 3 in.; and, in addition to these, there is a commodious plunge-bath for juveniles. In the building, provision is made for all classes, and the rates fixed are very moderate. In addition to the baths, a washing-room has been provided, containing fifty-four stalls for washing purposes, each of which is provided with a washtub, boiler, and dolly-tub. An ample supply of water, which can be heated to any required degree up to the boiling-point, can always be obtained. In connexion with this department there are six drying-chambers, each of which is divided into eight compartments; and beyond this there are wringing-machines, and every appliance that modern engineering skill can suggest. Tootth is indebted for the boon to Lieut.-col. Steble's movement in favour of it.

ARCHITECTS AND THE HEALTH ACT.

SIR,—According to modern form and custom, I read my *Builder* every Saturday morning, and most eagerly do I look out for public appointments, especially of the "town surveyor" type; at all events, I have been doing so for the last two or three years. I want to allude to a paragraph in the *Builder* of the 4th April referring to the "Public Health Act, 1872," &c., wherein your correspondent asks what salary, &c., and if it would be derogatory to an architect to undertake the post of "surveyor" (I think, &c.). I positively indulged in a laugh, and of a true thirteenth-century character, too, but subsided into a train of thought under the serious glance of a portly, spectacled ecclesiastic opposite. But, to return; is your correspondent aware of the precarious existence eked out by members of the profession? Does he ever read such paragraphs as this?—

"BUNBLEDROM LOCAL BOARD: APPOINTMENT OF SURVEYOR, &c., &c.—Mr. Hedgecarpenter, of Bunbledrom, jack-of-all trades, was appointed at a salary of 120l. per annum, to devote his whole time (if not found out). There were forty-three applicants."

And would he believe that there had been applications from "real live architects" for such posts, men whose works no man need be ashamed of? Yes, sir, there are gentlemen who seem doomed to execute only a certain few works of merit, and then are no more heard of. I know of several, and have myself struggled desperately for an existence, of late years, as a private practitioner. Private means quickly disappear if you go in for much competition without friends on the committee, or if you possess a numerous, young family. It is when these means are gone that a man begins to find out what is derogatory for him to do; and what class of people will "do plans," if he will not? I often think over the glorious interiors of cathedrals which I once saw, and the clover "little bits" of Gothic in various places, and also of the students whom I knew when getting my architectural tuition in Town. Of the latter,

there are but few following the profession now: one "cut" the profession in seven years; took an hotel, and retired very comfortably eight years after; three went to India; four a yet in London offices, getting—on in years, I assure; three are architects proper; and one an architect not quite so well off as when he did his "bone" at the Institute (or rather on friends' bone), and has been on the look out as stated in the beginning of this, and narrowly escaped being a "selected candidate" for a post of Architect to the Government of Ohio (We shall now be deprived of the experience, earthquake-proof buildings, as I suggested, the time.) I am convinced that it is useless to an architect to apply for a thorough surveyorship; these posts are usually given to engineers, men out of such offices. When a proper Bo exists, however, let him try it. And again, let him have been in private practice thirteen or fourteen years, and through misfortune have tried and got occasional employment in an office and he will find he has something to learn. CUM MULTIS ALIIS.

THE PAVEMENT QUESTION IN MONTREAL.

FROM the report of the Montreal City Surveyor, Mr. P. Macquis, of the various works executed by the Road Department of the city during the year 1873, presented to the Council on the 9th of March, 1874,* it appears that the pavement question between wood and asphaltum is progressing there. The following is a quotation from the report:—

"I would again bring under your notice the need of a steam road roller for our macadamised streets. The Provincial Government last summer sent one, with a breaking machine attached, to the Provincial Exhibition here. We furnished a quantity of stones, which were broken by the machine, spread on the extension of Bleu street through the Park, and rolled by the roller, which although rather less in weight than required for the purpose, showed the great advantage it would be to have one. This roller is now lying on St. Catharines road."

The Ballard paving on Place d'Armes was completed. On Jacques Cartier-square, the Nicholson paving between Commissioner and St. Paul streets was renewed, and the stone blocks across St. Paul-street were taken and replaced by Nicholson paving; the flooring below wooden blocks of the Nicholson was found good, and did not require renewal. The Nicholson paving was laid in 1866, the blocks then laid have been in very bad condition for two years, and should have been renewed in it. Judging from the experience of this portion of the Nicholson pavement, its duration on a good grade, where water lodges, is six years. We have not yet had sufficient experience of the Ballard pavement to compare its durability with that of the Nicholson—its cost is, however, greater, being nearly 30d. each, per square yard, whereas Nicholson can be laid for about 25d. each, per square yard. There is a waste of timber in preparing the blocks. Ballard, and the quantity of sand required for its foundation makes that portion of it more expensive than planing.

About 7,000 3-in. cull deals and 17,168 square yds. of so-called asphalt were laid (on side-walks) during the past year. I have in former reports objected to the use of deals for footpaths; they are unhealthy, uneven, and sometimes the cause of accidents, entailing damage on the corporation. The Road Committee has ordered the council to council authority to purchase 75,000 pieces third-quality pine deals. Instead, however, using deals, I would suggest for at least the suburban streets that a tamarac curb be fixed on to posts all the way down the street, the space between the curb and the street-line to be filled with a mixture of engine ashes, sand, gravel, and coal-tar, sprinkled with sand, and well rolled. This will make a path as good as and cheaper than the so-called asphalt we have been laying. It will be superior to the deal walk, and will last, the tamarac curb will last for at least ten years. We have proof of that in the one which was laid in Tiger-square in 1869, some parts of which are still good. The mixing and laying of the composition after the proportions have been given, require only a little profit by an ordinary labourer.

The Corporation being now authorised to expend 1,600,000 francs on paving streets and laying side-walks, I would propose Nicholson pavement for such streets as Notre Dame, McGill, Radeboue, Beaver Hall Union-avenue, St. Catherine, Mountain, Craig, St. P. St. Denis, and St. Mary streets; it would not be advisable to have St. Joseph, Bleury, and St. Lawrence streets paved until they are widened as proposed. If good stones for footpaths can be obtained at a reasonable price, I probably next season, I recommend the laying of them in all the principal streets.

MODERN SYMBOLISM AND THE SYMBOLISM OF THE FUTURE.

TALKERS may talk for ever about the possibility of a new style, but the *onus probandi* lies with them: they are as unable now, as they were 20 years since, to point out in what that new style is to consist; they have not brought us one nearer to its realisation. It is more speculation and that a not feasible speculation. They have no data. The symbolism of to-day and to-morrow, however, remains a fair and open field for gleam suggestion, and conjecture.

Mr. Simpson's interesting lecture at the

* Montreal: Stevenson, Printer, 245, St. James-street.

Society of Arts was marked by some very just, philosophical remarks. The poetic faculty, he took occasion to say, is to be found in very primitive races. The expression of this faculty in words, we may be sure, came first; its expression in symbols indicates more mature powers, and that definite ideas had been reached. The existence of a symbol implies something like a system with durability, for it requires the understanding of it by many who are organised into some form of society to accept the significance which is meant. Without this condition no sign or symbol could exist; and they indicate that a state of progress had been reached by the human kind. As civilisation advanced, symbols seem to have multiplied with it, until a vast system came into existence.

Oriental symbolism is a subject for the antiquary. It is a symbolism in which we can never take any vital interest. It is too remote and remote. There is perhaps nothing which a sensible man would rather know than not. Life is short, however, and he must prefer to know those things which have a more immediate utility and interest.

The symbolism of Christianity is very simple and beautiful: it was, and is still, perfectly understood. It could be introduced, in some form, into painting, sculpture, architecture, and ornamental art. The Gothic style may almost be said to have sprung out of symbolical forms and arrangements. Christian art has an intelligible symbolical language, and Mr. Simpson very clearly indicates the function which symbolism fulfils in art when he refers to the Mohammedan substitution of texts from the Koran, in ornament.

To the Mohammedan, with his iconoclastic tendencies, swept away all these, or at least, nearly all these symbols.

Modern symbolism is much more extensive than we may at first be inclined to imagine. It requires looking up. The symbolism of the future will probably include many symbols derived from science, representing immutable principles. The symbols themselves in this case will be of universal import, symbols for all time, and expressing the same idea to all civilised peoples. For instance, the compasses, half open, to the limits of the middle-half of a rule—its golden middle, or mean,—will imply moderation, temperance,—throughout the civilised world. The balance will alike imply the stability of the moral state, health, and beauty. The circle is, *par excellence*, the symbol of symmetry, of perfection and universality. The level denotes equality, the levelling system; the dumb-line, truth. The square is representative of rectitude, justness, fairness. Geometrical figures, in which the longer to the shorter diameters are as 2:1, would also imply moderation; geometrical figures having extreme relations would, on the contrary, imply intemperance, extremes, eccentricity. In fact, there is not a symbol which is not an analogue of some human condition. Mechanism will also furnish us with symbols. The balance-wheel of the watch and the "governor" of the steam-engine are fit emblems of the formation of a ruling or governing power. The mariner's compass would indicate moral guidance; a wheel, wings, a full sail, a seed, flower, and fruit,—progress; an acorn could be emblematical of modest beginnings and results; a dog, of fidelity; a peacock, of vanity; a trumpet and wreath, of fame. In short, there are a host of symbols, modern symbols, ready to hand, if some one would only take the trouble to collect them for general use, and the ingenious man might invent more. The multiplication of a collection of intelligible symbols should, we have little doubt, repay the author for his gleaming.

W. C. T.

INDUSTRIAL ART-EDUCATION IN MASSACHUSETTS, U.S.

The first annual report of the Board of Visitors of the Massachusetts State Normal Art School, together with the second annual report on Industrial Art Education, by Mr. Walter Smith, State Director of Art Education in Massachusetts, have been issued in a printed form at Boston.*

The visitors' report says:—

"The most important event of the past year connected with the educational interests of the Commonwealth, was the establishment of the State Normal Art School. It is a most laudable step, with totally unsuitable and inadequate accommodations, and is carried on at an insignificant cost, compared with the vast industrial interests it is designed to promote. But its importance is

* Wright & Potter, State Printers, corner of Milk and Canal streets, 1874.

seen in the purposes which it is intended to subserve. It is an essential element in that system of agencies which the government of the State is beginning to put into operation for the purpose of diffusing art-culture, not only as an indispensable constituent of a competent general education, but as a means of enabling our manufacturers to compete more successfully with the manufacturers of Europe. . . . By cautious experiments, Massachusetts has made a beginning in this new education. The marked and gratifying success of these experiments, as demonstrated in the exhibitions of drawing which have been held, will, it is hoped, induce the Legislature to provide, without delay, more adequate means for carrying forward this important educational enterprise. Thoughtful men are everywhere becoming more and more impressed with a sense of the value and importance of technical education, and drawing is now recognised by sound pedagogues as lying at the foundation of all technical education."

"Thanks to the earnest co-operation of all parties concerned, this beginning of a great work has been wonderfully successful. It is really a marvel of success, considering the disadvantages which had to be encountered. But the visitors wish it to be distinctly understood that it is simply a successful beginning, on a very small and inadequate scale."

The report is signed by John D. Philbrick, A. A. Miner, Phillips Brooks, and Joseph White, visitors.

Mr. Smith's report is dated 31st December, 1873, and professes to be

"A report on the progress of industrial art-education for the year 1873, the second year (says Mr. Smith) of my official relationship to the Board, and the third year after the passage of the Act relating to free industrial drawing by the Legislature of Massachusetts."

"The passing of this law imposed on all cities and towns having above ten thousand inhabitants the obligation of establishing free classes for the study of industrial education, either in day or evening schools, and upon all school committees the duty of including drawing 'among the branches of learning which are by the first section of chapter thirty-eight of the General Statutes required to be taught in the Public Schools.' The law has been very generally complied with. . . . The study of art and drawing as a branch of and for the purposes of education, had not been seriously pursued in this country, so that the drawing committees of the various school boards have had to depend upon draughtsmen and specialists for the teaching required. . . ."

In the public schools little else than drawing from flat copies, having no particular bearing on either art or industry, has been attempted. In every city where I have examined the instruction given in the public schools, I found the admirable skill of the teacher very much hampered by want of a progressive and simple plan of instruction and of examples with which to give their lessons, and a general absence of confidence in their own powers arising from their having had little or no instruction in the art."

MONUMENTAL.

Disputed Monument at Chartham.—Dr. Tristram, the Commissary-General of Canterbury, has given judgment in the Chartham Faculty case,—one of considerable importance, as defining the power of a rector as to erections in the chancel of his church. Mr. Moody had applied to the Court to grant a faculty authorising him to erect on the east wall of the chancel of the parish church of Chartham, a monument of a particular design, to the memory of his father, fifty years rector of the parish. The rector and the parishioners were in favour of a monument being erected, but not in the chancel. It is said that Mr. Moody, who is instructor in decorative art and chief decorator in South Kensington Museum, wished the monument to be in what opponents called the "Debased Pagan" style of architecture. The chancel is a Gothic structure, and there is already in it a monument in the "Debased Pagan" style to a former rector, Mr. Bungay, erected in 1696. The rector considers this Bungay monument a disfigurement of the church, and that a couple of them would be unbearably ugly. Mr. Moody had admitted that architects might consider the proposed monument ugly, and some years ago he induced his father, without the authority of a faculty, to remove a monument to a former rector and of the same style as the one he now proposed to erect, from the chancel, as being unsuited to a Gothic building. But at that time, Mr. Moody apologetically observes, he was "afflicted with the Gothic mania." The Court held that the grounds assigned by the rector for his dissent were not without reason, and while regretting that the wishes of the late rector expressed on his death-bed could not be carried out, refused to grant the faculty asked for, and ordered Mr. Moody to pay costs.

The Mayo Statue at Cockermouth.—The Mayo Memorial Committee at Cockermouth have decided that the statue of the deceased nobleman shall be placed in Main-street, between Station-street and Sand-lane, subject to the approval of the Local Board of Health. Lord Leconfield has been consulted on the subject, and has expressed his approval of the site selected. It was expected that the statue would have been ready

for placing in the position chosen for it by June but it appears from a communication received from Mr. Wills, the sculptor, that, owing to an unavoidable delay, it will not be completed and ready for putting down at Cockermouth before August next.

A Double Memorial.—When the plaster cast of the bust of the late Richard Cobden, by Mr. Neville Burnard, was presented to the Corporation of Brighton, the sculptor made an offer, on loan, of the hand of Cobden (in white marble) resting on the Bible and pointing to the verse, "Give us this day our daily bread." The Fine Arts Committee of the Free Library and Museum, not feeling justified in taking charge of such a work on loan, their chairman (Mr. Henry Willett, F.G.S.), ascertained that the owner was Mr. John Bright, M.P., and wrote to that gentleman asking if the committee might venture to hope that he would present this work to the town of Brighton as a memorial of two fellow-workers in the grand national and benevolent plan of endeavouring to aid the needy to obtain that daily bread which we are taught to daily pray for. Mr. Bright, being on a visit to Brighton, has called on Mr. Willett, and consented to present the town with this piece of sculpture.

Status of Napoleon.—The committee for erecting a statue of the late Emperor Napoleon in Milan has entrusted the work to Signor Baraghi, a sculptor of great reputation. The statue will be of bronze, representing, on horseback, the late Emperor, to whom it is raised in token of Italian gratitude. The figure will measure 8½ metres in height, the pedestal 4½ metres.

THE SEWAGE OF SOLIHULL AND BALSALL HEATH, BIRMINGHAM.

At a special meeting of the Solihull Union Rural Sanitary Authority, Mr. Arnold Taylor, C.E. (the Commissioner appointed by the Local Government Board), was present. The first question discussed was the application of the authority for certain urban powers required in the parishes of Solihull and Yardley. Mr. Taylor suggested that it would be far better to obtain the powers for the whole area of the Board's administration, and this was unanimously adopted. The Clerk then made a statement respecting the threatened Chancery proceedings against the Board, on the part of the Birmingham Waterworks Company, as regarded the drainage of Solihull into the river Blythe. Other complaints had been made of nuisance from defective drainage. The main difficulty in Yardley remained unsolved, and building was increasing every day. The clerk concluded by reading Dr. Wilson's report upon the sanitary condition of Yardley, in which he strongly urged the necessity for a comprehensive scheme. Mr. Pritchard, C.E. (of Warwick), then submitted his plans for the disposal of the sewage by means of a sewer of considerable size. At Olton it was proposed to carry the sewage to some low-lying land near Chapel-fields Farm, away from all buildings, and to treat the sewage there by downward intermittent filtration. It would be impossible to deal with it by irrigation, as the quantity of land required for that purpose would be so large. About twenty acres would, however, be ample for the scheme now proposed. Mr. Arnold Taylor expressed an opinion that combination was desirable, if possible; and it was ultimately arranged that steps should be taken to bring about a combined action for the drainage of the district.

COMPLETION OF THE INNER CIRCLE.

ALTHOUGH there are two proposals on foot in the present session of Parliament for joining up the present termini of the Metropolitan and the Metropolitan District Railways, and thus completing the inner circle of metropolitan railway communication, it seems improbable, from the number of hostile petitions that have been lodged against the Bills, and the influential bodies on whose behalf they have been presented, that either project will receive legislative sanction. The Aldgate and Cannon-street Railway (completion of the inner circle) Bill proposes that the Metropolitan Railway Company should be empowered to make a railway from their authorised Tower-hill extension, at Gravel-lane, Aldgate, passing in tunnel or covered way under

two new streets and a portion of Fenchurch-street and Cannon-street, to the Metropolitan District Railway, at the Mansion House Station. The Bill also proposes the formation of two new streets, one between Bishopsgate-street and Aldgate High-street, the other between Rood-lane and Gracechurch-street, and the widening of portions of Fenchurch-street. The company ask powers by the Bill to abandon a part of their authorised Tower-hill Extension. The line would be only 77 chains in length. The additional capital proposed to be raised for the purposes of the undertaking is,—by shares, 1,750,000*l.*; by loan, 583,000*l.*—Total, 2,333,000*l.* There are twenty petitions lodged against the Bill, the petitioners praying to be heard by counsel. It is probable that the parts of this Bill relating to new works will be withdrawn, and only that portion of the Bill adhered to that relates to the abandonment of the Tower-hill extension. In this case a number of the petitions against the Bill will probably be withdrawn.

The Metropolitan Inner Circle completion and Eastern Extension Railway Bill is a more extensive project, being 4 miles 35 chains in length. The proposed capital is 2,700,000*l.* in shares, and 900,000*l.* by loan, or 3,600,000*l.* in all. The objects of the Bill are to incorporate a company for making a railway from the Metropolitan District Railway at Queen Victoria-street to the western side of the North London Railway, with junctions to the Metropolitan Railway Tower-hill Extensions, with the East London Railway, and with the North London Railway; and to authorise the company to make a new street, and to widen and improve other streets. Trains for the labouring classes at 2d. per journey, with limit of compensation to 100*l.*; to provide for the vesting of the undertaking in the Metropolitan and Metropolitan District Railway Companies; the Metropolitan Board of Works to be authorised to contribute towards the undertaking; and for working agreements with several railway companies in the metropolis. There are no fewer than thirty-eight petitions deposited against the Bill, the petitioners praying to be heard by the committee.

These Bills are cast in Group I. of Railway and Canal Bills. It is expected that they will cause keen and protracted contests.

THE NATIONAL GALLERY.

Mr. WAIT, in the Commons, asked the First Lord of the Treasury whether it was the intention of the Treasury to authorise the necessary expenditure for the construction of the new National Gallery in accordance with the understanding long ago come to with Mr. E. M. Barry, a new façade being rendered necessary owing to the unsightly additions lately made to the present building.

Mr. Disraeli, in reply, said,—I cannot find any trace whatever of such an understanding being come to with Mr. Barry, but I suppose the real question is, whether Her Majesty's Government intend to propose the erection of a new façade. Now, the erection of a new façade is a very delicate business; and, considering that we have not been in office three months yet, I must say I should require a considerable time to inquire into the subject before I could embark in such an enterprise. Therefore at present I would say that the Government have no intention of appealing to the House to raise a new façade to the National Gallery.

RE-OPENING OF THE CHILDREN'S CONVALESCENT HOME, RHYL.

This enlarged institution, which owes its existence in a great degree to the Ven. Archbishop and Mrs. Foulkes, of Llandysul, has been opened with Divine service, by the Bishop of Bangor, his lordship being one of its chief patrons. The Children's Convalescent Home will accommodate more than 100 children when it is completed. It has a commanding site on the eastern side of the Rhyl promenade. It extends in length towards the sands 102 ft., and is 63 ft. wide. The new portion of the institution, attached to the front, is three stories high. It is built of the white limestone from the Craig Quarries, Denbigh, in clean pointed masonry, with blue slate roofing and bright red brick chimneys. Around the southern and western sides of the Home there is a light verandah, the post and panels being of ribbon pattern, and the footway laid with blue stone flags, 3 ft. wide. Twenty-five new rooms have been added to the Home, comprising a small

chapel, four large sick wards, four convalescent wards, a cheerful dining-hall, and the rest are mostly bedrooms, there being in all eighty-seven beds for the patients, who, by the rules, include girls of any age, and boys not above twelve years. The walls of the interior walls and ceilings are plastered with Parian cement, which has a polished marble surface, and can be washed at any time clean. The bedroom floors are stained and varnished; all the woodwork is red and pitch pine lightly stained and varnished. The chief sick wards are made open with windows to the chapel, so that the infirm patients can have the benefit of the services without being disturbed. The chapel is lighted by a stained-glass window. The subjects of the illuminations are children of the Old and New Testaments. The window is mostly the gift of children who have been in the Home. Bath-rooms are fitted up on each story for hot and cold water, as well as sea-water baths; and in the event of any infectious cases arising a wing of the new building is provided, which is entirely isolated from the rest of the wards, and has a separate entrance from the outside. A great boon likewise for crippled children is that they can be taken out through the casement windows into the fresh air on the verandah without being removed from their lounges. All the rooms are ventilated. The children have amusements of all kinds, including swings in the day room, and an enclosed play-ground on the stands, some 55 yards square, under the bay window of the chapel. Mr. John Rhydydd Jones is the builder of the extension works, which are now nearly finished.

CONTRACT OR NO CONTRACT FOR SALE OF A COTTAGE.

In the Court of Exchequer (Sittings in Banco) in an action for an alleged breach of contract or agreement as to the sale of a house called "Holly Cottage," situate in a suburb of the metropolis, the result had been a nonsuit.

Mr. Morgan Howard, on behalf of the plaintiff, moved for a rule to set aside the nonsuit and for a new trial, on the ground that there was evidence to show that there was sufficient memorandum of a contract. The plaintiff, on the 3rd September last, visited the cottage, and saw the defendant. Plaintiff asked defendant the price. The defendant said it was 700*l.*, which the plaintiff there and then agreed to pay, adding, "I will write to you confirming what has passed between us." He accordingly wrote to defendant on the same day, saying, "I accept the house known as Holly Cottage, the lease of which has to run 23 years or so, and I will pay the sum of 700*l.* on obtaining possession." The defendant's solicitor on the 6th of September wrote to the plaintiff from Enfield, Middlesex, saying that his client, Mr. Bridges, had instructed him to carry out the sale of the cottage at the price mentioned, but adding this observation, "It will be necessary that some details should be embodied in the contract of sale, which contract will be prepared and sent to you for your approval and signature." Plaintiff afterwards received a letter from the solicitor, informing him that as further consideration had been decided not to proceed with the contemplated sale of the cottage. The plaintiff thereupon brought the action for breach of contract. The defendant pleaded a denial of the agreement and that the plaintiff was not ready nor willing to perform his part in the matter, which was necessary towards the completion of such contract.

On the trial Baron Cleaver was of opinion that there was no evidence of a complete agreement between the parties; hence the nonsuit.

The Court were unanimous in opinion that the rule should be discharged and that the nonsuit should stand, on the ground that the words quoted from the solicitor's letter of the 4th September, that it would be necessary to embody some details in the contract of sale, &c., showed that there had been no contract entered into to satisfy the statute.

Rule discharged accordingly.

LIABILITIES OF LANDLORDS AND TENANTS TOWARDS THIRD PERSONS.

Sir,—In the case, reported in your last number, of Jackson v. Boyd, where it was sought to make the tenant of a small house, and the landlord ultimately adjudged, liable for a down-pipe falling on a passenger, it is to be regretted that precedents, for which the hearing was adjourned, were not cited either by the judge or by counsel retained.

The matter evidently turned on two points: liability between respective parties to tenancy, thence deducing which was liable towards the public.

Now Woodfall (8th edit., by Cole) says:—"There is never any covenant or promise implied by laws, on the part of a lessor of a house, that it is reasonably fit for habitation; nor that the house will endure during the term; nor that the lessor will do any repairs whatever. Even where the premises become in a dangerous state for want of substantial repairs, and the landlord has notice to that effect, there is no implied obligation on his part to do any such repairs."

Next, landlords, as being absent, are usually not impliedly liable to strangers (except some times to public authorities) any more than to their tenants, through premises becoming in a dangerous state,—as from neglect in finding openings, repairing trap-doors, &c.; but, of course, become so, if any legal duty can reasonably be presumed. Otherwise, action lies against occupiers. "Generally speaking," Woodfall observes, "the tenant or occupier and not the landlord, is liable to third persons for any accident or injury occasioned to them by the premises being in a dangerous condition. Again: "Where a public nuisance is caused by a ruinous house, the occupier is chargeable to the public." Even as regards the lowest class of houses,—those let weekly,—occupiers are, at least, bound to use premises in a tenant-like manner, and to exercise reasonable care and precaution.

It is manifest, therefore, that much may be said on both sides of the question; but, if somebody must be to blame, the sounder opinion seems to be, that when a tenant has not expressly or impliedly undertaken to maintain partially or wholly, the landlord, although it may be under no obligation towards his tenant, is answerable for damage to third parties except probably where this is traceable to willful injury to premises caused by and known only to the occupier, who then (besides becoming liable to the owner) creates for himself contingent responsibility to the public. E. L. TARBUCK.

ARCHITECTURAL ASSOCIATION OF IRELAND.

At an ordinary meeting of this association held on the 23rd ult., Mr. Charles H. Brien read a paper on "Technical Education."

Mr. Thomas H. Longfield (hon. sec.), said that Mr. Brien's proposal with reference to public lectures was a good one, both for the profession and the public. It was absolutely necessary to elevate the public taste, as there was great ignorance in society of architecture and different styles. Such lectures as those delivered at the Royal Academy would do a great deal of good.

Mr. Mitchell (vice-pres.) said that he could help thinking that the suggestion with reference to public lectures was impracticable, on account of the great want of interest displayed by the industrial classes, who, as a general rule, will learn unless knowledge is forced upon them. He thought that mechanics, mathematics, a drawing ought to be taught in the Government primary schools. Even with all the present advantages, any man who wishes may raise himself. Hogan, the great sculptor, is an example of a self-made genius. A poor boy of very humble parentage, he learned anatomy by listening clandestinely outside the door to medical lectures and was not discovered for a long time, when he begged to be allowed to listen to them. This shows, if the desire to learn is there, men will make opportunities for themselves, and succeed.

Mr. J. J. O'Callaghan (president) said that architectural cultivation is neglected by the Government; the country in such a disgraceful way as it was thought the Association could do but very little. In England there were systematic efforts made by the Government to educate the people in art. He wondered that Irish workmen are so intelligent and clever as they were, considering few opportunities thrown in their way of learning anything. He thought the duty of the Association was to work amongst the members of the profession, and to go outside the programme.

Mr. Brien said that everything brought forward only convinced him more that an effort ought to be made by the Association to popularise art and architecture. If there were public lectures in England, was it not a reason that ought to imitate them? And if, as the president said, the Government will do nothing in the way, the Association ought to step in, and the Government might possibly follow its initiative.

Brickmakers' Earnings.—According to the statement of the Inspector of Factories, earnings of brickmakers are pretty considerable. A moulder, his wife, and boy on an average earn 5*l.* 10*s.* 6*d.* per week. He mentions an extreme case of a moulder, his wife, and three children earning 8*l.* 7*s.* 2½*d.* per week.

METROPOLITAN BUILDINGS BILL.

In moving the second reading, Col. Hogg did not offer to yield much. He said the district surveyors were to some extent independent of the Board of Works, and the Bill proposed that they should be obliged to report everything to the Board, who would be responsible for whatever decision was arrived at. He would be quite prepared, however, if it was desired by the Institute of British Architects, to insert in the Bill the clauses relating to surveyors in the Act of 1855. He said, further, the Bill contained provisions prohibiting the exhibition of placards and advertisements on hoardings, and preventing the pavement from being turned into a medium for advertisements. The proposals with regard to placards had excited a great deal of discussion, and representations had been made that if bill-sticking were prohibited a vast number of men would be thrown out of employment. Under these circumstances the Board thought that they would not be justified in pressing this clause; but with regard to the sticking on pavements, they would leave that point to the decision of the committee.

For the withdrawal of the clause as to bill-sticking, Colonel Hogg was questioned by some of the members of the Board of Works at a recent meeting. It seems to be that the step was a wise one. The opposition to the proposed prohibition, by which a considerable section of the public would be injured, was very strong. It would, of course, be a good thing to prevent the disfigurement of hoardings and walls; but the necessity for cheap means of advertising must not be forgotten. Re-introducing the clause which gives the Royal Institute of British Architects the power to examine as to the competency of candidates for the office of district surveyor, was, in reality, doing nothing, as the clause enables the Board to elect candidates who have been examined in such other manner as they may have directed.

The district surveyors in their report on the Bill demur to the union of the regulation of buildings with matters of local management. They think it a mistake to combine these in one Bill, more particularly as the matters of local management are already regulated by a principal and several amending Acts. The better course they think would be to consolidate the several Acts relating to the local management of the metropolis, with the amendments now proposed; and to confine the Buildings Bill to matters relating only to buildings. This would enable the public much more readily to ascertain what the law is on each of the two subjects. They of course further object to the doctrine set forth in the two concluding paragraphs of the "observations." They believe that no combination of things exists which can be called anomalous. They submit that for a century past the administration of the Metropolitan Buildings Acts by the district surveyors has been advantageous to the public and the building community; and they therefore deprecate any radical change for which no adequate cause is assigned. In this the Institute of Architects in their report also concur, as we do ourselves.

Many of the suggestions made by the district surveyors, we have reason to believe, will be adopted by the advisers of the Board when the committee meet next week. The district surveyors remark, as we have already done, that the large discretionary powers to be given to the Board here and elsewhere are very undesirable, rendering the law uncertain and variable, according to the opinion of the Board from time to time. The provision as to exceptional buildings (Part VIII, Clause 45), introducing absolute certainty as to the law, would, in the interest of the public, be very hazardous. The discretionary powers proposed here and elsewhere to be assumed by the Board, will tend to make them and their officers very unpopular. On the whole the district surveyors are of opinion that the provisions proposed in this Bill will not improve upon the present Building Act of 1855 with that certitude which could be desired; and they respectfully recommend the Metropolitan Board to defer the measure for the present, and to bring before Parliament a short Bill for the appointment of the proposed special directors and assessors to carry out the existing Building Act, which of itself would be not unlikely to enable the Board within one or two years to effect all the improvements they desire in the present regulations, which would then be of public acceptance."

If the Bill is carried on, it is to be hoped that the Board will be supported in their endeavour to strengthen the clauses which relate to sanitary matters. The only objection to them is that they do not go far enough, but the Board, doubtless, fear the opposition which private interests might raise against more stringent provisions. The sixth schedule provides that every new dwelling-house, except where the rooms can be lighted and ventilated directly from a street or public place, or by a skylight, or otherwise from above, shall have an open space belonging to the building, to the extent at least of 150 superficial feet, instead of 100 ft. as now, but the clause is so worded as to admit of the whole area being covered on the one-pair story, and even higher. This should unquestionably be altered. The present Act seems to call for an open area down to the ground, but the rights of property and the exigencies of trade have proved too strong for it, and the covering of the whole area of the ground-story has been allowed. Above this, however, the new measure should certainly enforce the provision of an open area. The wording of another part of the clause also requires alteration to make the meaning clear.

To object that the Bill will harass certain interests is nonsense. It must, of course, do so. Its essential object is to protect the general against the particular; to see that private interests do not prevail against the general good.

Sir William Codrington has given notice that at the meeting of the Board on this Friday, the 8th inst., he will put the following question to the solicitor:—

"Whether, under the Metropolitan Buildings and Management Bill, now being promoted in Parliament by this Board, it is authorised that a thickness of only half a brick, or 2 inches, can separate the chimney flue of one owner or occupier from the ornamental paper or wood panelling of the adjoining owner or occupier, and to whom will the brickwork of separation belong; and to move that the question and the reply of the solicitor be entered on the minutes of the Board."

The solicitor will, of course, answer yes; and will be able to add, if he think fit, that this same arrangement exists in every house in London.

The community at large will endorse all that has been said of the district-surveyors of 1844. By their position, social status, and influence they may fairly be credited with having been the means of averting numberless actions at law, and with having adjusted differences with neighbours at an almost nominal amount; and have in this way saved thousands of pounds which would have been inevitably spent in law proceedings, productive only of trouble and expense to all concerned.

A tribute may, therefore, be paid in a quarter where it is due, and where a change to a very inferior grade of officials is threatened.

CIVIS LONDONIENSIS.

DESTRUCTION OF AN ANCIENT HOUSE, SANDWICH.

SIR,—From time to time you chronicle in your pages the disappearance of one and another ancient building, swept away to give scope to the imperious wants of modern civilization. The task of noting decay or the obliteration of old structures, is at the best a melancholy one, but it is not without a certain usefulness, and if it served no other purpose than to attract attention to the lessening number of such structures in this country it would certainly not be in vain. It is with a view to arouse the sympathy of the few (for the general public do not care for these things), and of averting if possible a similar fate for other buildings, that I call attention to the destruction of a very perfect specimen of the domestic architecture of the middle of the sixteenth century, within the last few days, at Sandwich, in Kent. Visiting this town about three weeks ago I noticed on the west side of the cattle market and immediately in the rear of the town-hall, a very fine sixteenth-century house, quite untouched by repairs or restoration: the woodwork was in remarkable preservation, and the glazing had not been meddled with. In fact, the house was in all respects just as it was three hundred years ago, and showed no symptoms of decay. On paying a second visit to Sandwich on Thursday last, I found that the house had been entirely pulled down and the whole of the materials removed, with the exception of a small portion of the ground-floor and a chestnut beam 14 in. by 10 in. and 20 ft.

long, lying in front of the house in the market place. On inquiry I found that the house had been purchased by the Independents, and that it had been pulled down in order to give better access to a chapel belonging to that body, a hideous barn-like building covered with Portland cement, and erected, as an inscription informs one, in 1709. The old materials were sold by auction on the 24th ult., and immediately afterwards dispersed. The building thus demolished was one of the most ancient as well as one of the most artistic buildings in Sandwich, and it is a matter of deep regret that no steps were taken to preserve it when it was known that its destruction was determined upon. It is perhaps hopeless at the present moment to expect the Government to take any action for the preservation of antiquities after the treatment that Sir John Lubbock's Bill experienced lately in the House of Commons, but the local clergy and archaeological societies may do much to preserve historical monuments by calling attention to the fact that their destruction is contemplated. A short time since considerable outcry was made about the proposed demolition of a house which was once occupied by the poet Cowper: it was not suggested as far as I remember that the house had any merit as a building, the interest attaching to it being purely of a sentimental character, but public attention was however directed to the subject, and considerable enthusiasm was manifested for its preservation. The house at Sandwich just destroyed was a perfect specimen of the architecture of the time in excellent preservation, and yet not a voice was raised in its favour. Its loss from an artistic point of view is irreparable.

In most cities, and even in thriving towns, the substitution of new buildings for old ones is a matter of necessity, and however much we may deplore the changed aspect of some old quarters, it is, no doubt, a sign, as a rule, of progress and prosperity. At Sandwich, however, no such necessity exists. The town is too large for its trade, in spite of the stimulus given to trade by the railway. Empty houses strike one at every turn, the grass grows in the streets, and everywhere one notices signs of decay. The demolition of this interesting house is therefore the more inexcusable. It was in a habitable condition, the care-taker of the chapel having occupied it until within the last few weeks, and it might, with ordinary attention, have lasted at least another century. The money-value of the house and ground could not have been more than 300l.; and I am persuaded that if the need had been made known this sum might have been raised to secure its retention. Is there no archaeological society in the neighbourhood to interest itself in the historical monuments of the county?

J. H.

THE NEW BUILDINGS FOR "THE TIMES."

SIR,—The paragraph in the *Builder* of May 2nd, headed, "The new Buildings for the *Times*," incorrectly states that "the builders are the proprietors of the *Times* themselves." I am instructed by Mr. Walter, as his solicitor, to request you to correct this inaccuracy, which is one of several which appear in the paragraph. The buildings have been erected, not by the proprietors of the *Times*, but by Mr. Walter, who is the sole owner of the site and buildings, as well as of the adjacent property in Printing House-square. I have to request that you will insert this letter in the next number of your paper.

F. L. SOAMES.

THE RATING OF TRAMWAYS.

SIR,—I beg to inform you that the tramway companies denied their liability to be assessed to parish rates, on the ground of their occupation being only an easement. This question was taken before the Court of Queen's Bench, through the parish of St. Mary's, Lambeth, when the Court decided that the tramways are rateable.

The appeal of the company against their assessment, in the parish of St. Mary, Lambeth, came before the Assessment Sessions at Westminster on Friday and Saturday last, Mr. Field, Mr. Poland, and Mr. Besley appearing for the company; Mr. Barrow and Mr. F. Meadows White for the parish; the amount of assessment appealed against being £2,200, gross, and £580, rateable value.

After the company's case had been opened by Mr. Field, Mr. Ryde, surveyor, was placed in the witness-box, and examined by Mr. Poland, when he put in his valuation, showing that the tramways in Lambeth have no rateable value, but, on the contrary, that to induce a tenant to take to them, so that he may have a reasonable profit, the sum of 1,280, must be added to the gross revenue received by the company in the parish, although the gross receipts amounted to 11,000.

On cross-examination by Mr. Barrow, Mr. Ryde maintained that a tenant could not be obtained for the tramways in Lambeth parish, because he could not obtain any

profit, after paying all outgoings, and providing a sinking-fund to renew the tramways, horses, cars, and tenants' fixtures. He also added, that taking all the tramways belonging to this company into consideration, no tenant could be found to rent them, because no reasonable profit could be obtained, and therefore there could not be any rateable value.

Mr. Ryde's valuation, as put in, showed the gross receipts in the parish, during the year ended June 30th, 1873, to be £41,000; the working expenses, £35,657; and rateable value of stations, 1,539; leaving net receipts due to tramway, 5,805; then deduct occupiers' share, interest, trade profits, risks, and casualties, 3,781; leaving a gross estimated rental of 2,024, from which he deducted, for repairs and renewals of tramway, 3,312. (to arrive at the rateable value), which left a deficiency of 1,288.

The gross earnings of all the tramways belonging to this company for the year ending June 30th, 1873, the length being 17½ miles, was 108,872; and yet, according to Mr. Ryde, they have no rateable value. The company paid 7½ per cent. dividend each year.

The court adjourned until the 29th and 30th inst.

C. L.

WHAT IS A HOUSE?

Sir,—In reference to your article headed "What is a House?" and inserted in your impression of the 19th of April last, we beg you will insert the following, in justice to us, as you have entirely misled the public. The facts are these:—Mr. Lane applied to us for bricks to build a house for Mr. Nash; we refused to supply, unless Mr. Nash became guarantee. He accordingly did, and wrote the guarantee as stated, at the same time arranging with us that the quantity to be supplied should be 50,000, which was entered in our order-book, but not on the guarantee, as we thought we could take Mr. Nash's word. These bricks were supplied, less 2,900; and it appears about 16,000 of these, which were supplied under this guarantee, and to Mr. Nash's knowledge, as such were used in building the garden-wall, unknown to us, and without the slightest intimation from either party that this was an extra, until after the builder had thrown up his contract. Then Mr. Nash wrote us to say that 16,000 were used in building the garden-wall, which was a separate contract, but which contract was not forthcoming at the court (not, as you say, the guarantee withdrawn, and notice given before this contract (if any) entered into), the guarantee has not been withdrawn to this day. We have laid the case before several of our friends, and they all say it is impossible to understand the judge's ruling in this case. It may possibly be law, but it certainly is not equity.

EDW. DAVIS,
Wm. TUDOR NICHOLS.

PRIVATE ROADS.

THE case of "Clifford v. Hoare," decided in the Common Pleas on the 30th ult., should be a warning to all purchasers of building property abutting on a private road. On public roads the local authorities interfere to prevent the erection of projections to the detriment of other houses, but Col. Clifford, having purchased for the large sum of 15,000l. from Mr. Mitchell Henry (Mr. Hoare being merely the mortgagee) a portion of the Kent House estate, thought to have secured an approach of 40 ft. wide; but three Judges in *habeas* have decided that on a private road projections may be erected, as long as a passage is left.

OPENING OF THE COVENTRY SEWAGE WORKS.

THE works recently constructed at Whitby by the General Sewage Manure Company for the purification of the sewage of Coventry, have been opened. The directors present included Lord Elibank, Sir John Murray, and Messrs. J. Wilkinson, J. F. V. Fitzgerald, J. Irving (ex-Mayor of Carlisle), &c. There were also present Mr. H. Soden (Mayor of Coventry), a large number of the members of the City Council, and several surveyors from other towns. The works have been in course of erection for the past twelve months, and are designed to deal with about 2,000,000 gallons of sewage per day. The site of the works is that recently occupied by the old filtering-beds, constructed by the Corporation, and from whence the sewage water had been for years poured, black and filthy, into the river Sherbourne. The new works consist of two large blocks of buildings, and four large precipitating tanks. The sewage first of all comes in contact with revolving extractors, the effect being that all solid substances are arrested. These are constructed upon the plan invented by Mr. Baldwin Latham. The sewage is then mixed with chemicals by an agitator. It now passes to another block of buildings, where lime is added to the sewage, and the final chemical treatment applied, the sewage passes thence into the precipitating tanks outside. Adjacent is the apparatus for drying the precipitate, which is the marketable product. The water flowed from the large tank in a very clear state. Fish, placed in the water, had lived therein for some twelve days. The precipitate at the bottom of the tanks is drawn through valves into an underground chamber, to be thence drawn up by

revolving buckets and poured into the drying boxes. The drying machines are Messrs. Milburn & Co.'s patent. The process employed is that known as the "Anderson process," invented and patented by Dr. M. F. Anderson, of Coventry. The works have been designed and carried out by Mr. J. C. Melliss, C.E., and were built by Mr. James Marriott; the machinery, excepting the extractors, having been put in by Messrs. Milburn & Co., of London. The extractors were supplied by Messrs. Gwother & Co., of Southwark.

PROPOSED NEW WATER-SUPPLY FOR LIVERPOOL.

MR. JOSEPH JACKSON, C.E., Bolton, in obedience to instructions given him by the Liverpool Water Committee in December last, has reported upon the proposed new schemes for the future supply of water to Liverpool. He alludes to Ulswater Lake, Hameswater Lake, the head waters of the Lune, the River Hodder district in Yorkshire, Windermere Lake, the Bala Lake district, and the river Wyre district. To the last of these projects he gives the preference, its advantages being the comparatively short distance of the district from Liverpool, and, consequently, its cheapness; the ample supply it would yield for many years, and the facilities afforded by the formation of the district for impounding the water for the supply of Liverpool in one reservoir; there being a site for such a reservoir in Bleasdale, upon the valley of the river Brook, which would, with an embankment of about 110 ft. high, form a reservoir of about 550 acres, containing 3,750 million gallons, or nearly as much as all the Rivington reservoirs together. The Bleasdale moors are 1,500 to 1,700 ft. above the sea level. The waters yielded by the Wyre district would be similar in quality to the water of Rivington.

PROPOSED EXPENDITURE ON STREETS AT BIRMINGHAM.

THE local public works committee ask for the authority of the town council "to expend the sum of 35,000l. per annum in paving the carriage-ways, and 5,000l. in the construction of foot pavements within the borough"; on which Mr. Stone will move that the committee be instructed to report on the wood pavement in Moor-street; and on the cost of paving New-street, High-street, Bull-street, and Dale-end, with wood. The public works committee will also ask leave "to borrow 40,000l. for payment for the grants required in the construction of the four tramway routes sanctioned by the council." The committee, we may here add, also asks leave to recommend three assistant surveyors, at 175l. per annum each—making a total salary of 515l.; and to "negotiate terms" for the purchase of the waterworks.

THORN v. THE LORD MAYOR AND CORPORATION OF LONDON.

THIS was made a special case for the opinion of the full Court of Exchequer, in pursuance of an order made by Mr. Baron Bramwell. It was originally an action commenced towards the close of last year, but there was a controversy involved which had been previously before an arbitrator. The plaintiffs, Messrs. Thorn Brothers, were the contractors for the building of the present Blackfriars Bridge, the whole cost of same, according to the original estimate, being 269,000l. It was alleged in the plaintiffs' declaration that they had a warranty or guarantee that the bridge in question should be constructed according to certain plans and specifications; that the work had been carried on to a certain extent according to such plans and specifications of the engineer of the corporation, Mr. Joseph Cubitt, of George-street, Westminster; that then it was found impossible to proceed according to those plans and specifications, and that the work had to be continued upon a totally different plan, and in a manner involving a much larger expenditure of money than was at first anticipated. The result was that the plaintiffs were out of pocket the sum of 150,000l. On the part of the defendants it was denied that any such warranty or guarantee as alleged arose out of those plans and specifications upon which the Messrs. Thorn contracted. The arguments were opened on the 27th of April, and concluded on Monday. The Lord Chief Baron pronounced an elaborate judgment,

reviewing all the facts of the case, and concluding with the expression of opinion that no contract, either written or implied, had been entered into whereby a guarantee or warranty was given by the defendants rendering them liable for the increased cost of the works now claimed by the plaintiffs. Barons Pigott and Amphlett concurred.

THE NEW CONVICT PRISON AT ROCHESTER.

CONSIDERABLE progress has been made during the past few weeks in the works connected with the new convict prison at Borsal, and already the walls of the new prison are some distance above the ground. The prison is intended to accommodate 500 convicts, together with the necessary quarters for the prison officials, warders, &c. The extent of land acquired by Government for the purposes of the prison is between 30 and 40 acres, but only a portion of the site of the intended buildings is at present fenced in, a high boundary wall being ultimately intended to enclose the whole of the Government land. A large number of convicts belonging to the Chatham convict establishment are now employed in the erection of one of the wings of the prison, it being intended to have the whole of the work performed by convicts, under the direction of practical foremen. Temporary buildings have been erected at the works, in which the prisoners take their meals. It is expected that the erection of the new prison will occupy nearly two years, and then the convicts will be employed in the erection of the new forts at Borsal, for the protection of Chatham and Rochester on the land side.

STREET IMPROVEMENT SCHEME AT SHEFFIELD.

THE Hon. Lieut.-Colonel Ponsonby Cox, one of the inspectors of the Local Government Board, opened an inquiry at the Sheffield Town Hall respecting a scheme for the improvement of the streets proposed to be carried out by the corporation, and involving an expenditure of 1,500,000l. The corporation were represented by Mr. Lumley (barrister), and a number of counsel and solicitors appeared on behalf of the objectors and collectors appeared on behalf of the corporation. The corporation asked for a provisional order to enable them to obtain by agreement or purchase, 89,000 square yards of property; but it was contended on the part of the objectors that although they admitted the necessity of street improvements, only 18,000 square yards of land were required for the proposed improvements; yet the corporation sought to get the additional land in order to sell it at an increased cost, so as to defray the expenses of the improvements. It was contended that the whole thing was one of the greatest land jobbing speculations of the present day.

THE "ZETLAND" WORKING MEN'S HALL AT RICHMOND.

THE corner-stone of a Working Men's Hall, Institute has been laid at Richmond, in Yorkshire, by the Countess of Zetland. The Earl of Zetland gave the site, a very eligible one, and defrayed the cost of the building. The erection of the hall is to be carried out by Messrs. Thwaites & Son, of Richmond; the other workmen engaged being Mr. W. Naylor, joiner's work, Mr. Barker, plumber; Mr. Barnes, slater, Ripon. The building is expected to be completed and opened in the autumn.

The dimensions of the hall are 52 ft. long, 24 ft., and about 30 ft. high. There will be 20 rooms upstairs and one down, the latter being 49 ft. by 20 ft. In this, the principal room, concerts, readings, lectures, discussions, and so on, meetings, will be held; the others being of the nature of class-rooms.

The architect is Mr. M. Davidson, of Darlington; and the clerk of the works, Mr. Cross. The hall is built of stone, obtained from the Zetland estate; and the building, which will without any special pretensions to ornamentation, will be fitted up at the Earl's expense. The site selected is at the corner of Newbigg and Bargate, opposite the Free School. It is another memorial of the liberality of the Zetland family, the late Earl having defrayed the cost.

Grantham.—The designs of Mr. R. Adolph Came, of London, for New Hospital, have been selected in limited competition.

Miscellaneous.

The New Law Courts.—Some particulars as to the actual commencement of the works are given in the *Daily Chronicle*. The contract of Messrs. Joseph Bull & Sons has been commenced by the laying of the first brick, at the north-eastern angle of the building, by Mr. Henry Bull, the senior partner of the firm, the presence of about a dozen persons, besides the out-lookers from the windows of the Law Institution. Mrs. H. Bull laid the second brick, and the others present each followed suite with a brick and trowel full of mortar. The new work that is to show will be laid in red bricks of a new shape, specially designed for the work, and made by Messrs. Bull & Sons, at Litherthorpe, near Southampton. These red bricks are 10 in. by 5 in., by 2½ in., and five courses will equal four of the ordinary-shaped bricks. There will also be a considerable introduction of these bricks moulded into fancy patterns at one end or on one side.

Her Majesty's Theatre for Sale.—Messrs. Chinnock, Galsworthy, & Chinnock have received instructions from the trustees of Mr. H. B. Lowry, to sell by auction, at the auction mart, City, on the 20th of May, this property, including a present net improved ground-rent of £1,171. 14s., until Michaelmas, 1891, when the lease now held by the Earl of Dudley, as assignee of Mr. Benjamin Lumley, expires, and the purchaser will be entitled to possession for the remainder of a term expiring in 1912, when the lease falls to the Crown. The same trustees have also given orders to Messrs. Chinnock to sell the Opera Arcade, Haymarket, producing £151. per annum, extending from Pall-mall to Charles-street, and leasehold, to be sold, free from ground-rent and land-tax, for a term of not thirty-eight years unexpired, when the property may be renewed from the Crown.

Margate: the Borough Surveyorship.—Twenty gentlemen having been selected from the forty-two applicants for this office, the matter was then referred to the council in committee to select the surveyor from these twenty. They met for this purpose on Tuesday last. The five gentlemen selected were Mr. W. Warren (of Walworth, salary, 11. 10s. weekly); Mr. H. S. Copland (salary, 2001.); Mr. Robson (West Ham, salary, 2001.); Mr. G. Stead (Bradford, salary, 2001.); Mr. H. Latham (Croydon, salary, 2001.). When the final vote came, we believe the matter rested between Messrs. Robson & Latham, and when these names were put to the vote, six hands were put up in favour of Mr. Robson and five for Mr. Latham. The recommendation of the former gentleman will probably be confirmed by the council.

fall of a House at Walsall.—The fall of a large part of a three-story house, in Stafford-street, Walsall, has taken place. The owner had recently been making some alterations and improvements in the property, which is old, and four workmen were engaged in digging the soil under one half of the house, to make a cellar. While thus occupied they were alarmed by loud crackings of the walls and windows, and withdrew from the excavation. Six members of the family were sleeping on the premises. Some of these had already been aroused by the noise of the cracking of the walls and windows, and in their night-clothes, were got out into the street. Almost at the same moment half of the roof of the dwelling and the greater part of one of the side walls fell into the street. The other half of the building were subsequently shored under the direction of the borough surveyor.

New Railway Station for Leicester.—We learn that at a meeting held recently in London of the Midland, London and North-western, and Great Northern Railway Companies, it was decided to erect a joint railway station at Leicester on an extensive scale, to accommodate the traffic of the three railway companies. The site will comprise about 15 acres, and we understand that a large firm is applying extensive premises in the vicinity of the present passenger station are prepared to let the site occupied by them on reasonable and advantageous terms, and which cannot fail to contribute at all events to a considerable improvement of the façade of the new building.

Institution of Surveyors.—At the next meeting, to be held on Monday evening, 11th, a paper will be read by Mr. E. J. B. entitled "Agricultural Geology."

Bolton-le-Moors.—A new Wesleyan Methodist Chapel is about to be erected at Toppings, Tipton, near Bolton, from drawings prepared by Mr. Thos. Ormrod, architect, of Nelson-square, Bolton. The building will have stone foundations, and above plinth brick walls, faced front and sides, with patent pressed bricks, relieved with stone and blue brick dressings. The design is Gothic in character, and arranged on plan to accommodate 260 persons on the ground floor, a scholars' gallery over vestibules to the front for seventy scholars, and an orchestra (behind the pulpit) over minister's vestry for sixteen; total, 346. The estimate of Mr. Wm. Townsend, builder, of Bolton (1,3301.), has been accepted.

Royal Institution of Great Britain.—The annual meeting of the members of this institution has been held; Mr. Warren De la Rue, D.C.L., F.R.S., vice-president, in the chair. The annual report of the Committee of Visitors for the year 1873 was read and adopted. It testified to the increasing prosperity and efficiency of the institution, and congratulated the members on the fact that the new laboratories had been constructed and fitted up by means of funds contributed by themselves; and that this heavy charge is not larger than the surplus income of a few years will probably be able to reimburse.

Berkshire Archaeological and Architectural Society.—A meeting of this society was held at the Athenaeum, Reading, last week, Mr. Fred. W. Albury, vice-president, in the chair. Amongst the members present were, Messrs. Joseph Morris, Wm. J. Martin, Corder, Keats, Walker, J. J. Cooper, &c. The subject under discussion was, "The planning and construction of school buildings," and the discussion was very materially assisted by plans of schools now built, or in course of erection, in Reading and the neighbourhood, which were submitted to the meeting by some of the local architects. Thirty-four new members of the society were nominated for election at the ensuing meeting.

St. Saviour's Church, Faddington.—At the conclusion of the business of the election of churchwardens in the vestry in this parish, a motion was made to take steps for the completion of this church, by the erection of the tower, as originally proposed by the late Mr. Little, the architect. A public meeting has since been held in the boys' school-room, and resolutions were passed expressing the necessity of erecting the tower, soliciting subscriptions, and entrusting the carrying out the object to the committee. Subscriptions up to this time amount to between 4001. and 5001. The amount required is estimated at 1,5001.

Library for Glasgow.—The *Glasgow Herald* understands that the late Mr. Stephen Mitchell, tobacco manufacturer in the city, has bequeathed to the corporation of Glasgow the sum of 70,0001., to be applied in founding a public library, which shall be furnished with all books not of an immoral tendency. The donor stipulates that, in the event of the Glasgow Corporation being unable to accept this trust, it shall be offered to the Edinburgh authorities; and failing their acceptance of it, the money shall be divided for bursary purposes between the universities of the two cities.

The Salt Statue.—A medal in commemoration of the completion of this statue has just been issued by Messrs. R. Eagle & Co., engravers, Bradford. The obverse contains a likeness of Sir Titus Salt. On the reverse there is a representation of the statue. The inscription on the reverse is, "Erected in honour to Sir Titus Salt, Bart.—Bradford, 1874;" and on the obverse the words "Sir Titus Salt, Bart." are engraved. A copy of the medal has been produced in silver for Sir Titus. The ordinary medal is engraved upon bright metal, and in size is a trifle larger than a crown-piece.

Road-making in London.—Piccadilly is being laid in part with a new kind of pavement. This consists of small blocks of granite, placed, so far as arrangement is concerned, in the usual way, but on a thick bed of tan. This, in its turn, lies on a stratum of creosoted deals placed close together, while these are supported on stout beams running across the street. It is expected that the granite treated in this way will at once form a durable pavement, and greatly modify the jolting which is the ground of the principal objection to that material.

Eastbourne Cemetery.—The local Burial Board have offered 101. 10s. for the best design for the laying out of ground for this cemetery.

Appointment of Leicestershire County Surveyor.—A new surveyor for the county of Leicestershire, has been appointed in the place of Mr. M. J. Dain, resigned from ill health, after serving for many years as county surveyor. There were three candidates nominated, Mr. James B. Smith, who had performed the duties of the office while Mr. Dain was ill; Mr. Colin A. Macaulay, and Mr. Cecil J. Norman. Mr. Smith was elected to the office, by a majority of 23, to 21 for Mr. Macaulay, and 5 for Mr. Norman.

The Yorkshire College of Science, Leeds.—At a meeting of the donors of the Yorkshire College of Science, under the presidency of Lord Frederick Cavendish, M.P., the constitution of the college (towards which the sum of 25,0001. has been promised) was considered and agreed upon, and a Board of Governors elected. The name of the association is to be the "Yorkshire College of Science," and it is to meet at Leeds and elsewhere.

Proposed Reopening of Glass Works.—The glass manufactory at Hartlepool, which has been lying idle for some years, has been purchased by a number of gentlemen belonging to Sunderland, who intend to form a limited liability company to work the concern. Mr. John Dees, formerly engineer with Messrs. James Hartley & Co., of Sunderland, will be entrusted with the management of the works.

New Institution Building for Astley Bridge.—It is stated that the late Mr. Eden, of the firm of Messrs. Eden & Thwaites, bleachers, Bolton, has left 10,0001. for the erection and 40,0001. for the endowment of an institution for the aged at Astley Bridge.

The Bristol New Fish Market.—The new fish-market in Nicholas-street, Bristol, has been opened. It is a suitable and spacious building. The place is easy of access and airy. The local *Times* suggests the erection of a fish tavern in the neighbourhood.

Indian Civil Engineering College.—It is announced that the Competitive Examination will commence on June 16th, and not in July, as the earlier advertisements stated.

TENDERS

For alterations and additions at No. 8, Hinde-street, Manchester-square, for the vestry of St. Marylebone. Mr. C. Eale, architect:—

Findfield	£1,297 0 0
Waterson	1,280 0 0
Greenwood & Sons	1,279 0 0
Scott	1,217 0 0
Kelly, Brox.	1,217 0 0
Botting	1,203 0 0
Charlton & Martin	1,161 0 0
Elbbs & Son	1,120 0 0
Porter	1,050 0 0
Brown (accepted)	1,050 0 0
Seed	905 0 0

For deepening the river Kennet, &c., Reading, for the Reading Sanitary Authority (contract No. 1.) Messrs. Lawson & Mansergh, engineers:—

Wurt & Lewis	£33,130 13 0
Vickers	29,344 17 6
Dickinson	24,174 17 0
Neave & Sons	22,025 10 8
Munday (accepted)	19,473 15 0

For flashings to Alorton Park Mansion, Sudbury, Middlesex, for Mr. Henry J. Hall. Mr. J. M. Dear, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Grimwood & Son (accepted)	£1,863 0 0
---------------------------------	------------

For repairing High-street, Dumbarton:—

Brand & Sons	£3,376 0 0
HAY	3,125 0 0
W. & D. Neilson	2,895 0 0
A. & J. Fall (accepted)	2,833 0 0
Kirkwood	2,437 0 0

For pier, Dumbarton:—

<i>If Wood.</i>	
W. & J. York	£6,204 11 11
Miller & Brown	5,874 19 6
J. & D. Maxwell	5,802 6 4
Lawson	5,611 10 0
A. & K. McDonald	5,508 17 5
Coghill & Co. (accepted)	4,781 3 2
<i>If Iron.</i>	
Stewart & Sons	8,299 0 0
A. & K. McDonald	7,850 0 0

For new Wesleyan Methodist chapel, at Toppings, Tipton, near Bolton. Mr. Thomas Ormrod, architect. Quantities supplied by the architect:—

<i>Extra for pitch pine fittings.</i>	
Bryce	£1,478 10 0
J. & J. Leach	1,529 10 0
Thompson	1,468 0 0
Martin	1,390 0 0
Skinner & Young	1,375 0 0
Townson	1,364 5 0

* Since revised, and reduced to 1,3301., which has been accepted.

For alterations and additions to West Bradenham Vicarage, Norfolk. Mr. R. M. Phipson, architect:—

Goss	£758 0 0
Farrow (accepted)	745 0 0

For restoring the roof of the nave of Halvergate church,
Norfolk. Mr. R. M. Phasop, architect
Cornish £520 0 0
Dorant 400 0 0
Hawes (accepted) 390 0 0

For alterations and repairs to "The Grange" public-
house, No. 7, Fore-street, City, for Mr. Wm. Ball, Mr.
Edmund Woodhouse, architect. Quantities supplied by
Messrs. Welch & Atkinson:—
Outhwaite & Son £1,283 0 0
Turner & Sons 1,263 0 0
Perry, Brothers 1,238 0 0
Pritchard 1,187 0 0
Newman & Mann 1,123 0 0
Larke (accepted) 1,069 0 0

For the erection of houses and shops, Newington-
causeway, for Messrs. Fletcher, Latimer, & Spurgeon.
Messrs. Henry Jarvis & Son, architects:—
Thomas £4,235 0 0
Bush 3,470 0 0

For the erection of houses and shops, Newington-
causeway, for Messrs. Barling, Best, Gates, Jones, Pearce,
Smith, and Dr. Tanner. Messrs. Henry Jarvis & Son,
architects:—
Perry & Co. £19,500 0 0
Downs & Co. 19,245 0 0
Marland 19,187 0 0
Tarrant 18,998 0 0
Hill, Higgs, & Hill 18,935 0 0
Thompson 18,400 0 0
Colls & Son 18,380 0 0
Lawrance 18,172 0 0
Langmead & Way 18,044 0 0
Rider 17,868 0 0
Scrivenner & White 17,707 0 0
Shepherd 17,525 0 0

For mansion at Bures Leigh, Surrey, for Mr. E. Char-
ington, Messrs. Snodgrass & Stock, architects. Quantities
by Mr. Jas. Marland, and Messrs. Withnell & Trollope:—
Dove, Bros. £15,495 0 0
Brown 14,980 0 0
Caruthers 14,975 0 0
Newman & Mann 14,788 0 0
Adamson & Son 14,639 0 0
Brass 14,730 0 0
Perry & Co. 13,650 0 0
Coleman 13,575 0 0
Rider & Son 13,468 0 0
Avis & Co. 13,340 0 0

For rebuilding No. 3, Pantion-street, for Mr. Percival.
Mr. Ashdown, architect:—
Holland & Hansen £1,966 0 0
Jackson & Shaw 1,647 0 0
Macey 1,615 0 0
McLachlan 1,587 0 0

For new granary, Wapping, for Mr. Huxley. Mr.
Dunoh, architect. Quantities by Mr. Raggett:—
Moreland & Nixon £7,950 0 0
Kilby 7,768 0 0
Crockett 7,700 0 0
Jackson & Shaw 7,650 0 0
Newman & Mann 7,436 0 0
Gammann & Sons 7,383 0 0
Watts 7,084 0 0
Ennor 6,932 0 0

For five studios at Haverstock-hill. Messrs. Batterbury
& Huxley, architects:—
Chamberlain, Bros. £3,591 0 0
Nightingale 3,290 0 0
Axford 3,263 0 0
Newman & Mann 3,241 0 0
Manley & Rogers 3,118 0 0
Kelly, Bros. 3,118 0 0
Linsell & Son 2,908 0 0

For painting the exterior of the Leytonstone Industrial
Schools, for the guardians of St. Matthew, Bethnal-green.
Mr. W. Mumby, architect:—
Hovart £264 0 0
Draper & Preece 250 0 0
Berry & Moss 245 0 0
Edwards 223 10 0
Blackmore & Morley 215 0 0
Arber 195 0 0
Charlton & Martin 169 0 0
Mansell 165 0 0
Riches 115 0 0
Jenkes (accepted) 108 0 0

For stables, coach-house, &c., at the Sycamores, Lee,
Kent, for Mr. W. C. Harvey. Mr. J. E. Saunders,
architect:—
Hammer £700 0 0
Sabey 669 0 0
Jerrard 668 0 0

For supplying and laying water mains, sluices, and
hydrants, &c., for the Guildford Sanitary Authority. Mr.
Henry Peak, surveyor:—
Mains as laid at
per yard.
5 in. 4 in.
s. d. s. d.

Neave & Sons £1,600 0 0 13 4 11 7
Jones & Sons 1,694 10 0 10 0 8 6
Coker 1,626 0 0 10 0 8 6
Marshall 1,445 0 0 10 0 7 8
Crooks 1,331 13 11 8 4 7 3
Painter 1,250 0 0 8 5 6 11
Miller 1,249 0 0 8 6 6 2
Turner 1,239 9 6 8 0 6 8
Chandler & Son 1,182 16 9 7 10 1/2 6 8 1/2
Hassell & Co. 1,120 0 0 8 0 7 6
Gill & Carling (acc.) 1,120 0 0 8 0 7 6
Batch 1,069 0 0 7 9 6 8
Downs 1,060 0 0 7 4 6 0

For cottage residence at Wisborough Green, Sussex.
Mr. Henry Peak, architect:—
Mason £1,067 0 0
J. & D. Wade (accepted) 988 0 0

For new schools, Walnut Tree-walk, Lambeth division
for the London School Board. Quantities supplied.
Mr. E. R. Robson, architect:—

Brass £6,818 0 0
Manley & Rogers 6,800 0 0
Downs & Co. 6,680 0 0
Clarke & Bracey 6,642 0 0
Perry & Co. 6,600 0 0
Kelly, Bros. 6,600 0 0
Tyerman 6,440 0 0
McLachlan 6,416 0 0
Scrivenner & White 6,274 0 0
Crockett 6,238 0 0
Howard 6,195 0 0
Hill, Higgs, & Hill 6,184 0 0
Jerrard 6,049 0 0

For studio, Haverstock-hill. Messrs. Batterbury &
Huxley, architects. Quantities supplied:—
Chamberlain, Bros. £221 15 0
Nightingale 680 0 0
Axford 678 0 0
Newman & Mann 670 0 0
Manley & Rogers 554 15 0
Linsell & Son 491 15 0

For three studios, at Haverstock-hill, for Messrs. M. &
D. W. Stretch. Messrs. Batterbury & Huxley, architects.
Quantities supplied:—
Chamberlain, Bros. £1,907 5 0
Nightingale 1,770 0 0
Axford 1,746 0 0
Newman & Mann 1,740 0 0
Manley & Rogers 1,711 5 0
Linsell & Son 1,609 0 0

For studio and chambers, at Haverstock-hill, for Mr.
H. R. Robertson. Messrs. Batterbury & Huxley, archi-
tects. Quantities supplied:—
Chamberlain, Bros. £1,032 0 0
Axford 946 0 0
Nightingale 940 0 0
Newman & Mann 931 0 0
Manley & Rogers 852 0 0
Linsell & Son 805 0 0

For three houses and shops, Weymouth-street, Port-
land-place, for Mr. Cradock. Mr. W. A. Baker,
architect. Quantities supplied by Mr. A. E. Hughes:—
Perkins £3,493 0 0
Watson, Bros. 3,546 0 0
Cullum 3,147 0 0
Mitchell 4,950 0 0
Butler 4,123 0 0
Batty 3,900 0 0
Accepted subject to amendment.

For additions to a house at Enfield. Mr. T. J. Hill
architect:—
Bentley £248 0 0
Farhead 398 0 0
Farnham, Bros. 370 0 0

For warehouses in Farringdon-road, for Messrs. Orrin
& Geer. Mr. W. S. Witherington, architect. Quantities
supplied by Messrs. Lundell & Giffard:—
Mortier £4,649 0 0
Robins 3,995 0 0
Grover 3,975 0 0
Lucas, Bros. 3,840 0 0
Williams & Son 3,940 0 0
Bird 3,835 0 0
Stainer & Son 3,884 0 0
Perry & Co. 3,880 0 0
Rider 3,830 0 0
Waldran & Co. 3,851 0 0
Bange 3,100 0 0
Elkington 3,780 0 0

For alterations to "Fountain" Tavern, Amwell-street,
for Mrs. Robinson. Mr. J. W. Frier Geo. architect:—
Norriss & Ashby £258 0 0
Martin 632 0 0

For staircase and bath, at the Convent, Richmond,
Surrey:—
Dove, Bros. £2,500 0 0
Longmore & Burge 2,400 0 0
Turner & Sons 2,199 0 0
Macey 2,197 0 0

For new factory, for Mr. McGlashan, Smart's-buildings,
Holborn. Mr. Treloar, architect:—
Patman & Fotheringham £2,418 0 0
Simpson 2,238 0 0
Adamson 2,295 0 0
Colls & Sons 2,247 0 0
Macey 2,119 0 0

For premises, New Inn-yard, Lincoln's-inn-fields, for
Mr. Hanson. Mr. Fiechear, architect:—
Simpson £2,736 0 0
Adamson 3,060 0 0
Patman & Fotheringham 3,683 0 0
Macey 3,646 0 0
Colls & Sons (accepted) 3,523 0 0

For stabling, &c., in Coburg-row, Westminster, for
T. Cane, Mr. Joshi, architect. Quantities not supplied:
Smith & Co. £3,500 0 0
Hayles & Son 1,759 0 0
Long 1,758 0 0
Langmead & Way 1,639 0 0
Smith 1,473 0 0
Downs 1,350 0 0
Nason & Bristolow 1,219 0 0
Heath 1,140 0 0
Aitchison & Walker 1,075 0 0

TO CORRESPONDENTS.

R. A. C. T. W. C. G. B. A. T. J. D. W. F. O. C. J. F.
A. E. H. E. W. J. G. M. G. L. J. W. R. W. C. B. A. C.
W. W. J. E. C. H. A. B. T. E. K. J. N. G. H. M. B.
H. & H. C. & Sons. W. & Co. F. R. (it depends on circumstances)
L. M. (if there be any exceptional difference in the way as to
and sections of the ground, the architect ought to be paid extra,
taking them)—C. C. (there is nothing to be done as, and d.
"inexpensive and without trouble")—R. V. (should have reached
earlier)—Mr. D. (next week)—H. E. F. (next week)—Mr. T.
week)—J. G. (article, if sent, shall have attention)
We are compelled to decline pointing out books and g.
address.

All statements of facts, lists of tenders, &c. must be accompa-
nyed by the name and address of the sender, not necessarily
published.
N.B.—The responsibility of signed articles, and papers re-
quies, mistakes, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

Situations. Valued. Situa-
tion. Valued. Situa-
tion. Valued.
Six lines (about fifty words) or under. 5s. 6d. 4s. 6d. 3s. 6d.
Each additional line (about ten words). 6d. 4d. 3d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to read-
ers in any part of the United Kingdom at the rate of 12s. per
annum in advance.
Half-yearly stamps accepted for amounts under 5s. Any larger
sums should be remitted by Money Order, payable at the Bank
of England, or by Cash, to the Editor, 69, Ludgate Hill, London.
King-street, Covent-garden, W.C. to DOL (L.A.S. FOURDENT)

Advertisements cannot be received for the cur-
rent week's issue later than THREE O'CLOCK
on THURSDAY.

Bath Stone of best quality.

RANDELL, SAUNDERS, & CO. (Limited).
Quarriesmen and Stone Merchants.
List of Prices at the Quarries and Depo-
also cost of transit to any part of the Kingdom
application to
Bath Stone Office, Corsham, Wilts. [Adv.]

STONE BROTHERS,

Bath Stone Merchants,
supply direct from their own Quarries:—
Box Ground, CORSHAM DOWN,
FARLEIGH DOWN, COMBE DOWN,
AND STONE GROUND.
Prices on application at Bath-stone Office, E.
London Depot, G.W.R. Mileage Station, Paddington.
Stone Dressings prepared ready for fixing. [Adv.]

Whitland Abbey Green Slates.—T
Quarries are now fully opened out,
and producing Slates in all sizes, and in any
quantity: sound, and of choice green tint. On-
can be executed without a day's delay. For
samples and further particulars, apply to
MANAGER, at the Quarries, Narberth.
R.S.O. [Adv.]

Asphalte.

Seyssel, Patent Metallic Lava and
White Asphaltes.
M. S. T. O. D. A. R. T. & C. O.
Office:
No. 117, Cannon-street, E.C.—[Adv.]

Bills of Quantities, Specifications, &c.
Lithographed by ROBT. J. COOK & HAMMO
29, Charing-cross, S.W., with accuracy
punctuality. Plans and Drawings Cop-
Traced, or Lithographed.—[Adv.]

T. TRELOAR & SONS,

SUPERIOR

COCOA-NUT

Manufacturers and Warehousemen,

FIBRE

MATTING

69, LUDGATE HILL, E.C.

AND

MATS.

GOOD

FLOOR

CLOTH

KAMPTULIC

CORR

CARPET

The Builder.

VOL. XXXII.—No. 1632.

Proposed Decoration of St. Paul's.

E have already noticed that the model executed under Mr. Burges's direction, and exhibiting his scheme for the decoration of St. Paul's Cathedral, is placed in the architectural room at the Royal Academy; and, in conjunction with the description published by E. Stanford (Charing-cross), it gives a better opportunity than the public have yet had for estimating the scope and probable result of the scheme. The models (for there are, strictly speaking, two) represent a half-bay of the nave and a bay of the aisle, in one group; the other portion representing a bay of the choir and of the north choir aisle, the ante-apse with aisle, and the apse.

The description commences by stating the main object aimed at by Mr. Burges, the necessity of giving "greater light and brightness" to the interior of the cathedral, which is the prelude to the argument in favour of the project, upon which we have before remarked, of veneering the whole interior, except where mosaic is used, with marble. The more we think of this, the more we feel unable to comprehend how such a scheme can be considered consistent with architectural feeling, or even with common sense, or how it possibly came to be put forward by so determined an opponent of "shams" as Mr. Burges is in general understood to be. If it were merely introducing marble into the panels in the pilasters, this would be a different thing; but the proposition is to case the whole of the solid masonry (after, we presume, sinking the face of it to the necessary depth) with a veneer of marble, the angles of the piers being finished with L-shaped pieces, to avoid a joint near the eave. This would show the thickness of the masonry. If a building were originally constructed in this way, it would be a questionable proceeding, and would be very much open to criticism from an architect's point of view; but to apply such a covering to an immense building already constructed in stone is simply an absurdity, whether it be regarded from an æsthetic or a practical point of view. We hope the public will have their eyes opened as to the real meaning of this part of the scheme; and are assured that whenever this is the case, there will be a general feeling of disapproval, and a refusal to advance public or private money for such wholesale disintegration of the interior of the building.

In further considering the scheme of decoration here illustrated, it must be remembered that the sequence of colours increasing in richness towards the roof, is based upon the understanding that the white marble is to form the main part of the ground story, and would prob-

ably require modification if this were abandoned,—a contingency about which we feel no doubt. In the scheme as it at present stands, there is no colour below the cornice of the main arcade, except what is supplied in marble, and in the little angels with wreaths in the frieze, which are to be in red and green bronze, and will form "a link to connect the colour of the pilasters with that of the attic and ribs above." This colour in the pilasters is to be supplied by the introduction of coloured marble filling in the flutes, the lower third black, the upper two-thirds red. As to the other decoration of the ground story, we may quote from the pamphlet:—

"The panels of the piers and walls are decorated with *opus sectile*, in geometrical figures, or with marble tarsiæ work on a black ground, according to their position. The panels in the deep jambs of the aisle windows are filled in with such tarsiæ work, having in the centre white marble bas-reliefs on gold ground, representing subjects in continuation of those depicted in the windows between them. On these panels space is left for inscriptions."

The idea of the subjects on panels in continuation of those in the windows has this drawback, that the scale is very much smaller than in the windows, and any continuous series of figure designs on two different scales certainly seems rather anomalous. But the whole arrangement of the figure decorations for the building seems to involve an almost entire ignoring of any certain scale. A remarkable absence of uniformity prevails in this respect, and has evidently been accepted as a matter of no great consequence,—a judgment in which we should find it hard to concur. The general principle of the progressive distribution of the enrichment is further set forth as follows:—

"Colour is used sparingly in the attic, above which it increases in richness, which culminates in the dome, though even there it is not intended that it shall attain the richness and depth of the decoration of the choir. Following the English custom, the choir is made very rich. Colour is here used below the main cornice, but with broad spaces of white, and the white decreases, and is replaced by gold and colour as the height rises, there being a minimum in the dome."

The treatment of the attic is that of a frieze with figure subjects, in panels, forming each a kind of *predella* to the subject of the window over it; in such a treatment, where the panel represents scenes in the life of the personage represented in the stained-glass design over it, the difference of scale comes naturally, and is quite different from the case of a panel between the windows, and continuing their subjects horizontally, which we just now alluded to. In these panels "the material to be used is majolica, with the joints following the outlines of the drawing, in order to avoid the disagreeable effect produced by square tiles. The figures are white, lightly shaded with green, on a blue background; these retiring colours being selected to form a transition between the white, gold, and marble below, and the greater richness of colour in the windows and vaulting above."

In the clearstory the spandrels have been treated as what they really are, "a wall-surface cut into and encroached upon" by the lines of the window-arches and of the pendentives of the dome, and are not, therefore, emphasised by any special design to fit the space, but merely lined on a white ground as conventional masonry. This is rightly judged, we think, but the figures on each side of the windows, "intended to be fully coloured, in order to make them stand out as clearly as possible," will, if so treated on this white ground, have too prominent an appearance, and certainly in the model present an obtrusive aspect on the white background, like stray figures escaped out of a picture.

In the vault, "all lines of construction, such as the transverse and longitudinal arches, enclosing lines of panels, are emphasised by the use of white and gold. The filling in of the panels and pendentives is executed in mosaic, enriched with gold. The pendentives are in mosaic; a border of white and gold, with a little green, encloses a full-sized" (full-length?—it must be much more

than life-size) "figure of an angel, mostly white, with wings of gold and colour, on a blue ground, with gold stars."

This is very good as to the general effect, though it may be questioned whether winged angels should be any longer used as a part of decoration: if supposed to appeal to our faith in such beings, they do so in vain now; and otherwise they are no better than pieces of decorative furniture, representing a combination at variance with any possible anatomy. Wings are an easy resource for filling in a space and furnishing long sweeping lines for the designer; but they have had their day. The proposition to enrich the surface of the flat domes by the addition of mouldings executed in plaster seems a very questionable one, in spite of its having been "a very favourite mode of treatment in the best part of the cinque-cento period"; an argument which Mr. Burges, who has openly expressed his contempt for that period, cannot with any consistency use. Surely these spaces can be very well treated with flat ornament in mosaic or inlay, without hanging plaster mouldings to them. Of course, the panels into which the domical spaces would thus be cut up are intended to be coloured and gilt, and are shown so in the model,—a point on which we shall have a remark to add.

In the apse, "the leading lines of construction are still emphasised by the use of white"; and it is rightly observed that archivolts to the window-arches, at present wanting, cannot, under a system of decoration, be dispensed with; they are accordingly added, and treated as lines of construction, along with the other leading lines. It is proposed to insert in the frieze here the words:—

"Holy, Holy, Holy, Lord God of Hosts; Heaven and earth are full of Thy glory." This sentence "interprets in words the scheme of the decoration of the apse dome, and of the vault of the last bay of the choir,—which two would always be seen together at a glance,—viz., the Seraphim, Cherubim, and Angels in adoration of the Saviour. The figure of our Lord in the act of blessing, which occupies the centre compartment of the apse-dome, is of gigantic size, in accordance with the tradition of early Christian art."

The italics are our own. The expressions "cherubim and seraphim" have become ingrained in our liturgy and mingled with the earliest religious impressions of most of us; but we might prefer not to see these shadowy hierarchical terms transformed into visible and permanent figurations. But this is a trifle, compared with the proposition to place at the culminating point of our great modern cathedral what we shall take leave to call the *fetish* of the barbarous ages of Christianity. The very fact that such a representation was common in early Christian art is, to those who have not wilfully shut their eyes to the intellectual history of Christianity, the best proof that it cannot be suitable now, least of all in a building which, more than any other cathedral, embodies the spirit of the Reformation; that is, of modern religious feeling. The naïve childish idea of representing greater sanctity by greater size is worthy only of an infantile age, and will suggest nothing but the ludicrous to those whose senses have not been warped by the prevalent blind devotion to antiquity in matters of church architecture and ritual. And what effect could such a figure have on the scale of the building? We have spoken before of the possible effect in St. Paul's of decorative figures on a scale much larger than life; but this is much worse: this great conventional figure "plainly visible from all parts of the cathedral," would go far to dwarf the whole interior, the more so as it would act in falsifying the scale of all the other figures, and reducing figures twice the size of life to no more than life-size, or even less. We cannot imagine a more fatal mistake than this would be; and we must plainly say that the artist who proposes it is in the dilemma of being neces-

sarily charged either with an entire oblivion of the effect of figures on the scale of a building, or with a weak playing into the hands of a section of unquarrelsome ecclesiologists. In the same spirit is the absurd pavement proposed for the apse, in *opus vermiculatum*, "representing four streams flowing from the altar, with harts drinking flowers, and so forth, the whole being emblematic of Paradise." We should have guessed this to be the description of a child's Sunday puzzle, and a poor amusement even for children.

The scheme of decoration we have been briefly reviewing will not, we think, be carried out; and we most honestly say that we sincerely hope it will not be attempted. Some time since we pointed out that before asking the public for subscriptions on a large scale, a definite scheme should be set before them, from which an adequate judgment could be formed of the work contemplated. The model now produced fulfils this condition, but it is not calculated to encourage the carrying out of the scheme. The cutting up of the building to veneer it with marble is a thing which nineteen educated people out of twenty would thoroughly disapprove of when they understand what it really means. The English architect to a modern building. This is a large domed apartment, with the many-bracketed pendentives peculiar to the East, treated with much massiveness and breadth of manner, a quality carried to excess perhaps in the bare simplicity of the lower portion of the main piers, which are brought down on to the floor as mere blocks of plain masonry, without even a base. The cornice of the gallery at the springing of the dome, octagon on plan, with the circular lines of the dome immediately above and below it, produces a confusion of line of which it is not easy to say whether it is effective or merely disturbing to the eye, but we lean to the latter opinion. Mr. Sang's bird-eye views of schemes for the rearrangement and laying out of Trafalgar-square, and for improvements in Westminster and concentration of the Government offices (1,082 and 1,102: rather too late in the day for the latter scheme) can hardly be judged of without plans, especially as they are hung too high to be intelligently studied; if they were worth hanging, they should have been put where something could be made of them. Of the "proposed building for the Royal Academy of Music," by Mr. Porter (1,105), we are not able to speak very warmly. The central school of music should be housed in a building the outer beauty of which may be architecturally in some sort worthy of the beautiful art for the study of which it is erected. Mr. Hawes's very clever and picturesque "Accepted Design for the Leicester Municipal Buildings" (1,135) we noticed favourably at the time the drawings were exhibited in Leicester, and see no reason to alter our opinion on a second inspection; the effective drawing of the interior of the council-chamber is also hung (1,118). Mr. J. O. Scott's "Examination Schools for the University of Oxford" (1,151) show a correct treatment of geometric Gothic, but seem to want character and originality. Mr. Adams, in his "Proposed Municipal Offices for Bradford" (1,152), has evidently aimed at making what the newspaper correspondents call a "picturesque pile," but it is overdone and somewhat uncouth in outline. The combination of picturesque effect with simplicity is about the last thing accomplished by the practised architect, and sometimes it appears to be also one of the last aimed at. Mr. Hawksley's "New Waterworks Offices" for Nottingham (1,162) looks very like a waterworks office; and if its architect considers that a compliment, he is welcome to it. Mr. H. L. Florence's "Design for a Club-house" is a carefully tinted elevation of two bays, large size, of a design unfortunately too much in the conventional club-house style, with engaged columns carrying statues, broken pediments over the windows, &c. We commend the designer for introducing this kind of detail elevation, which is a sort of drawing we want more of in our architectural exhibitions; but it is a pity to spend so much trouble in reproducing the traits of a defective and corrupt style. Mr. 23's "New Warehouses" in Southwark-street (1,180) look good and in character with their object. Mr. Haffer shows four small water-colour drawings, well executed, for the "Proposed Aquarium" at Hastings (1,186: plans should have been appended). We are sorry to hear that the selected competitor will probably not be employed. Mr. Gibb's competitive design for "Conservative Club," Manchester

(1,202), is praiseworthy, though not equal to some others we have seen for the same competition. Mr. E. M. Barry sends his design for the "New Roof and Additional Story to the Bristol Corn Exchange" (1,200), showing a large glass-roofed apartment with the roof-ribs springing from terminal caryatides; a model of one bay at half-scale (1,208) is also shown, and a small but sufficient plan and section showing how the old and new work is combined. If this thorough illustration of the constructive basis of a design were carried out by all exhibitors, value and interest of the exhibition would be immensely increased.

Among the designs for domestic architecture which are numerous, we notice, first, the very original and picturesque mansion, "Rousdon Devon" (1,073), now erecting from the designs of Messrs. George & Vaughan. Allowing for to great a tendency towards an imitation of old building, which is going far to reduce some of our mansions to a mere farmhouse aspect, we must regard this as a highly successful specimen of the picturesque in domestic architecture, with its long, low main building, lighted by aqueducted windows, and its very effective square tower, with angle stair-turret; the look of domestic homeliness about the whole is very pleasing in sentiment, but we should wish to see more attempts made to combine this kind of picturesque composition with a little more of the finish of detail and dignity of expression which (even in these leveling days) we may reasonably expect to see in the gentleman's house of the present day. This objection is perhaps less apparent in the other view of the same building (1,117), where, among other things, the projecting solid stone balcony, with the open arch behind, is a very pleasing feature; but still the design suggests a little too much of the farmhouse on a large scale. In spite of all, however, designs like this are a great relief in contrast to the uninteresting regulation features of what is commonly called a "handsome" house. It may be observed, however, in regard to the pen drawings of the class to which these belong, that they shrink a difficulty by not showing colour, or distinctly indicating material, consideration which would much influence the effect of the design, for good or bad. Mr. Cockrell's "House at Sherborne, Surrey" (1,075), we are glad to meet a specimen of pencil-drawing, a medium which has been too much overlooked of late in architectural drawings; the style, however, in this case, is rather too smooth and finished, and with too little effect and point in execution; the design is a quiet and pleasing one, in Late Gothic of a domestic character. Mr. Cockrell's forte, we think, lies rather in the direction of the Classic type of design, as by inheritance it certainly should. The "Star and Garter Hotel, Richmond" (1,079), by Mr. Phipps, is very much a hotel. The tendency of hotels at present is just the opposite of that which we noticed in dwelling-houses; while the latter are getting too homely the former need very much to have more of the homely elements infused into them. They are becoming larger and formal, and it seems to be scarcely sufficiently remembered that a hotel is a place where something like a substitute, at least, for home comfort and repose may be looked for. The design, however, has its merits, and our readers shall have an opportunity to judge of it for themselves before long. Passing over some very respectable names, we may notice Messrs. Goldie & Child's "Upsal Castle, Yorkshire" (1,085), as a pleasing red-tiled house already known to our readers, with a rather good tower effectively placed, though we confess to not being able to discern much of the "castle" about it. "Bombay Markets," by Mr. Emerson (1,096), should not by rights be spoken of in this context, but that it really presents so much of what we should call in this country domestic character. It is a very pleasing water-colour drawing, showing a corner building (rounded), with an open arcade in the upper story, and a lower tower appearing above the roof, and the lower part of which is seen through the open story. The spaces over the ground-floor arcades, under relieving arches, are occupied by bas-reliefs in white marble. The whole is good in effect and suitable to the climate; but the lower pokes up through the roof in too accidental a manner, and might have been better contrived at this point. Mr. Waterhouse's "Court Chambers, Lincoln's Inn" (1,095), is in that style of what may be termed Italianised Gothic which its architect has leaned towards of late years,

ARCHITECTURE AT THE ROYAL ACADEMY.

CONTINUING our notice, the designs which may be classed under the head of municipal or public buildings are less noticeable than on some occasions, as there has been of late a lull in the demand for large Town-halls. Following the order of hanging, we notice the elevation of Mr. Seddon's "Orphanage" at the Isle of Thanet (1,076), a pleasingly-treated Gothic building, with variety of colour, obtained by brick and grey stone, probably a granite, as this brick and granite building is a local peculiarity of some of the old houses in the Isle of Thanet. The balustrade over the cornice is not

and has employed in other buildings of somewhat the same class and object. The angle-porion, with heavy round arch on the ground-story, is very effectively treated. The "Residence of Henry Huth, Esq." (1,099), is one of Professor E. M. Barry's best contributions, and is an effective home in the style to which it belongs. The plan is well varied and broken up by alternate circular bays and square projections. The red-tiled roofs assist in giving character. Perhaps the whole is rather in want of a leading and dominant feature, or a heavier cornice, to give it unity, and furnish something decisive for the eye to rest on. "The Howletts, near Canterbury" (1,119), by Mr. C. Barry (an alteration), shows some original features, especially in the form of the small square turrets with pavilion terminations above the cornice. Mr. Shaw's usual fine drawing is shown in two houses,—"Hopedene, Surrey," and "Beldre Grange, Hants" (1,120-21),—of which the former will be generally considered the best design; the treatment and placing of the bay-window, especially, is in the architect's happiest manner; both, however, are instances of the tendency to outdo the picturesque with the architectural, and the endeavour deliberately to construct the former element, an endeavour which, when so made, is only too likely to defeat itself, and which imparts to such designs as these, regarded as nineteenth-century residences, an element of reality which will be more felt with the lapse of time, and when the buildings are judged apart from their author's effective drawings. The same architect's "Birdseye View of Lowther Lodge" (1,137) is one of those bold and striking pieces of perspective from an unusual point of view, which he knows so well how to manage, and whereby it is possible to impart an interest and effect which might not belong to the building when seen from a more normal point of view. The style might be described as "Queen Anne" with the edge taken off,—blunted a little into Gothicism; we should scarcely call the result satisfactory. Mr. Shaw's plans, which are wisely given with some of his houses, go far to power to vindicate his reputation as a common-sense architect, for they are as simple and straightforward in arrangement as anything could be; and he cannot be charged with seeking architectural effect at the expense of convenience or utility. "Chelsea House, Cadogan Place," by Mr. W. Young (1,134), is a "Piccollo" type of house, rather above the usual mark in that style of design. Mr. Christian's "Inverhouse, The Highlands, Gloucestershire" (1,136), is shown in a very neatly-executed water-colour drawing; the general design is rather deficient in character, except what it acquires on being entirely finished in "post and pan" construction. We should scarcely wish to see an essentially rustic style of building encouraged for large houses, at least as the sole instruction; it must always have, on a large scale, a sort of touch of the wigwag about it, and looks better when applied on a basis of brick masonry construction. Another view of the same house is also exhibited (1,197). If timber construction is to vindicate itself again as a resource for the modern architect, it must at least be treated with great breadth and solidity. Mr. Ward's "Poultry-chambers, Queen Victoria Street" (1,139), is a pleasing specimen of street architecture in itself, but the flat arch over the ground story must of course be supplemented by an iron beam in the rear, and is to the eye rather painfully inadequate to furnish a secure support for the superstructure. At sight of Mr. Burgess's "New Staircase in Cardiff Castle" (1,146), the spectator is like the Queen of Sheba, when she saw Solomon's glory, and there was no spirit left in her. This is a very fine drawing of a wonderfully elaborate piece of work of barbaric splendour, and only a little too much of the barbaric in character. The mass of gilded balustrade, and the rather awkward-looking pedestal crouching up at the stair angle, and carrying a Gothic man on a Gothic horse, together produce a combined effect of such nature that we are not surprised that the nightman should have thought it necessary to array the figures in Medieval costume, for in modern dress, any more than modern habits of culture, would harmonise with this startling specimen of interior decoration. It is less out of character at Cardiff Castle than it would be in any place, and we fully admit the skill exhibited; but it may be questioned whether the same amount of labour and expense might not have produced something of more permanent artistic value. "Holmwood House, Hants" (1,148), by Mr. W. Young, does well enough; when we compare this with the author's other design, "Cadogan House," before mentioned, we can at all events compliment the author on his freedom from prejudice as to style, but scarcely in either case on his originality. "Business Premises, High Holborn" (1,159), by Mr. J. S. Clarke, is a very good design in the main, with solid piers carried up through all the stories, and the arches and blank arcading at the top effective; the wall-ties, in the shape of the figures "1, 8, 7, 4," are rather obtrusive, and besides, from their position, might just as well be read "1, 7, 8, 4."

Mr. Waterhouse's plans showing the new buildings at Eaton Hall, Cheshire, for the Duke of Westminster, illustrate the most extensive scheme of domestic (if we ought not to call it rather palatial) architecture exhibited here. The scheme was originally one of addition and restoration; but, as shown on the plans here exhibited, so small a portion of the old work has been retained, and of that most has been refaced, that the mansion may be considered as a new one practically,—a kind of natural development in schemes of this kind which, if we remember right, the noble owner rather pathetically referred to on some public occasion not long since, as an instance of the way in which building operations grew upon you, when once commenced. The plan is given in full, and we can scarcely undertake to enter into a description of it here. The drawing and dining room suite are the principal portions retained of the old part, but with new elevations; the tower attached to the chapel forms the dominant feature, and the frequent use of circular angle bays to the entertaining-rooms, while giving an excellent internal addition to the rooms, is taken advantage of ably for external effect in the form of large circular angle turrets. On the general style of the new building we made some observations on a former occasion, when some coloured perspective views of portions of it were exhibited. Mr. Waterhouse's Gothic style (modified perhaps in this instance by the influence of the existing architecture of Eaton Hall) is certainly his own, and can always be recognised; it is marked by a completely modern feeling, while keeping much nearer to the general character of English Medieval architecture than many modern (so-called) Gothic buildings; in one sense it would seem that the author has effected the union between Medieval and modern feeling in architecture to an extent that has not been achieved elsewhere. Granting this, however, we still feel that in this very dignified and solid modification of Medieval Gothic, satisfactory and sensible as it is, there is something wanting to give the highest architectural interest; that there is a level standard of neatness and formal finish which can hardly be found fault with, and yet which impresses us as cold and deficient in feeling, and less interesting than some buildings that are much more open to criticism. Mr. Waterhouse appears, however, to have settled his path in architectural design (a great thing to say for an architect in these days), and we have little doubt that the buildings he will leave in this style will always command approval and commendation, even when they fail to rouse enthusiasm. Mr. Street's design for "House at Holmdale, Surrey" (1,153), exhibits the peculiar picturesque treatment which he has shown in some other domestic designs, with less of studied irregularity. The square mass of masonry rising from the centre of the roofs gives dignity and serves to counteract the effect of what would otherwise be the rather too "rustic" expression of the whole. We should prefer not to see Mr. Street setting the example of such very rough drawing as in the accessories (trees, &c.) in this view. The standard of drawing as well as design should be kept up at the Academy. "St. Stephen's Club, Westminster," by Mr. Whichcord (1,184), which is a sufficient contrast in style to the last-named, has been already placed before our readers. Mr. Nicholl's "Entrance to Messrs. Cox & Sons' Workshops" (1,198), is a picturesque bit of work as regards the entrance gateway, with its timber corbelling and framing; the effect of the sloping line of eaves adjoining is clumsy, not picturesque. The "House at Whitebury, Northamptonshire," by Mr. T. H. Vernon (1,199), is very neat, but somewhat deficient in feeling. The "Rectory-house, Mansfield, Sussex" (1,207), by Mr. J. S. Clarke, is a very picturesque red brick house, with an octagon tower effectively placed; small portions of timber and plaster work are intro-

duced in such a manner as to relieve without weakening the design. Mr. Edis's "House at Twickenham, Sussex," next to this, is also a well-treated, though very quiet design, in which effect is got by simple means; the heads of the openings are segmental arches, but the character is rather Gothic than anything else. In looking at these two and some other drawings of houses here, we cannot but note the advantage of colouring, if the design is really to be judged of from its representation on paper: the style of pen-drawing so prevalent has its advantages, but it leaves us in the dark as to the colour or tone of the materials; and it is curious that this manner of drawing should be largely practised by architects who are given to specially insisting on the importance of colour in architecture.

This is oddly illustrated, again, among the drawings of decorative design, where we find two very elaborate drawings, by Mr. Bailey and Mr. Talbot respectively, of interior fittings,— "Design for Dining-room in the Style of the Sixteenth Century" (1,108), and "Screen and Decoration, &c., for Messrs. Jackson & Graham" (1,111). Here are two designs in which the colour-effect must be a very important part of their value, represented merely by ink lines. Mr. Aitchison's decoration of "The Green Drawing-room," for Mr. F. Lehmann (1,160), shows mainly a door and wall paper; the door-stiles with arabesques, light on a dark ground; the panels, a walnut-toned wood, with small oval green panels, with figure-subjects in the centre; the frieze, representing peacocks *ad libitum*, is perhaps more fanciful than successful. There is good taste and fancy in most of Mr. Aitchison's work of this kind, with a certain want of finish in design and drawing, giving the impression of a little carelessness on the part of the designer, which is regrettable. Mr. W. W. Burgess's design for wall-decoration, called "The Annunciation" (1,097), is, we suppose, a joke. The author must not, by the way, be confounded with Mr. W. Burgess, though the Academy do their best to create the confusion by always mis-spelling the name of the latter. The design for glass mosaic for the "East Wall of St. Peter's, Berkhamstead" (1,098), by Mr. Barrow, is commendable; and we notice also a scheme for the decoration and furniture of a bedroom, prepared by Mr. O. W. Davis (1,133), in a nicely-tinted drawing, which looks well as to general effect; it is desirable that more attention should be given to the decoration of the *penetrals*, as well as the show-parts of a house, on which subject see Leigh Hunt, in his pleasant chapter on "Beds and Bedrooms."

Mr. James Ferguson's "Restoration of the Palace at Mashitah" (1,185; the drawing by R. Groom) is shown in a fine Indian-ink perspective drawing, exhibiting a large gateway with octagon flanking turrets, with open stages at the top, and in the basement of the structure that large zigzag ornament, with rosettes in the alternating spaces, peculiar to this style of Persian architecture, of which our readers have seen engravings. Representations of existing buildings are not numerous; there are two or three drawings by Mr. Spiers, including the entrance-porch to the old chapter-house at Beauvais. The "House of Holconius, Pompeii" (1,149), by Mr. W. J. Ferguson, has the appearance of being finished on the spot, and has an air of great truthfulness in the peculiar yellow tones of the disinterred architecture, the heavy shadows, and the glare of sunlight. Mr. Wilberfoss sends a small pen-sketch of the "House of Jacques Cour, Bourges" (1,210); and Mr. Debon, some of whose drawings in the International we noticed, contributes a very fine pen-drawing of the "Tower of St. Antonin, Pamiers" (1,187), a great octagon tower on an immense square base of plain masonry, almost as massive and permanent-looking as the rock on which it stands.

It is gratifying to see that the standard of work in the architectural room is, on the whole, steadily rising. We should wish, however, to see more of ornamental design, and still more to see the element of large-sized and minute geometrical drawing, accompanied by sections, more largely represented. The working of a design, and the treatment of detail, are of more value in such cases than scenic representations of buildings, which may or may not represent them as they really appear in execution.

Metropolitan District Surveyors.—At a meeting of the Board of Works last week, Mr. Woodward was elected Surveyor of the district of Central Lambeth and part of Battersea.

THE ENGLISH BUILDING TRADES, AND HOW MANY PERSONS ARE EMPLOYED IN THEM.

The result of the inquiry into the occupations of the people of this country having at length appeared, we have looked into the volumes in which it is published with some curiosity. We were more particularly anxious to learn how many persons belong to the various trades, occupations, and professions, connected more or less strictly with building. Unfortunately, from the form in which the subject is treated in the official volumes, this was anything but a simple task. It is true that we find a series of occupations classified under the head of trades connected with "Houses and Buildings." Under this head, of course, are the principal branches of the building trades,—the architects, surveyors, builders, carpenters and joiners, bricklayers, masons, slaters, plasterers, paperhangers, painters and plumbers, and glaziers. But, on the other hand, we do not find all the branches of the building trades under this head. Thus, a "blatcher," though it may be granted that he is a humble member of these trades, yet with them he is certainly connected. He appears, however, in the official publications only as a worker connected with "hay and straw," which we cannot but regard as a very inadequate way of describing him. Again, we find civil engineers classified as *professional* persons; but, on looking for architects and surveyors, we find them, not amongst the professional classes, but amongst the industrial occupations, and, indeed, amongst those connected with houses and buildings. Surely there is some inconsistency, if not what logicians call a "cross-classification," here.

These volumes are generally so excellent,—there is evidence of such scrupulous care and trouble having been spent upon them, that it is disappointing, almost annoying, that they are not a little better,—that that little more care and forethought was not bestowed upon them which is wanting to have made them perfect. Whoever has to deal with statistics or with figures in general knows that they possess little or no value for any practical purpose, without the means are afforded for making comparisons and for arriving at a knowledge whether there is progress or retrogression, increase or decrease, in the fields of study to which they refer. The omission to assign the numbers of persons engaged in the special varieties of occupations in 1861 along with those of 1871 in the grand summaries of these volumes (Tables 99, 101, and 102), is a case in point, the selection given in Table 107 being unsatisfactory because fragmentary. The omission to state the total of both sexes engaged in each special occupation, contained in Tables 101 and 102, is another defect which we should like to see remedied in future. The alphabetical catalogue (Table 99), it is true, contains these numbers; but if the classification of occupations adopted is good for anything at all, it would surely be worth while showing the totals of both sexes following each special occupation in the classified table itself. As to the omission of the numbers for 1861,—that we regard as all the more serious, because some alterations have been made in the mode of classification in the occupations of 1871. It is to be hoped that there are not many cases in which those who have sorted and grouped the occupations have been misled by mere names. One case of the kind we cannot forbear mentioning. If a man were to classify together, as articles of the same kind, the instruments with which arrows are shot and the instruments with which violins are played,—if he were to do this because they both bore the same name, "bows," we should like to ask of what value his classification would be. Yet an error of a precisely similar kind has been committed in the volumes before us. In a table, giving the principal localities in which the chief manufactures are carried on, we are told that the "needle manufacture" is located principally in the districts around Bromsgrove, Alcester, Nottingham, Leicester, Basford, &c. Any one reading this would suppose the common sewing-needle is meant. But no sewing-needles are manufactured in Nottingham, Leicester, or Basford, as any one acquainted with those places is well aware. In Bromsgrove, Redditch, &c., on the other hand, they are made. The so-called needles made in the other places, Nottingham, &c., are a species of knitting-pin, or knitting-needle, not adapted for hand use, but intended to be placed in the stocking-frame, and employed

in the weaving of all kinds of hosiery, &c. The article is entirely different in shape, and use, and purpose from the common sewing-needle. We are, therefore, at a loss to know what useful object the classification of these articles together can possibly serve. We remark, on turning to former reports, that the same thing was done in 1861 and in 1851, in which last-mentioned year the error was carried into an otherwise very useful "map of the occupations" of Great Britain.

Having said thus much in the way of stricture, we hasten to express our unfeigned admiration of these volumes taken as a whole. So complete an analysis of a nation's occupations is, we believe, not to be found in the records of any country besides our own. And in regard to the special branches on which we intend here more particularly to dwell, the work before us enables us, if with some trouble, to arrive at a more complete and satisfactory survey than has ever yet been made.

Before, however, we proceed to this inquiry, we may premise one or two words on the general question of the way in which the population of this country employs itself. All the occupations in which men can be engaged may be classified under one or other of five great divisions. These are the employments known as (1) agricultural, (2) industrial, (3) commercial, (4) professional, and (5) domestic. Of the twenty-two millions and three-quarters of people enumerated in England and Wales in 1871,—the exact number was 22,712,366,—there were more than a million and a half (1,657,138) engaged in agriculture; 5,137,725 were employed in industrial occupations; 815,424 in commercial; 684,102 in professional; and 5,905,171 in domestic occupations. These together amount to 14,199,560, leaving a balance of 8,512,706, most of whom are employed in no useful occupation at all, and who, including, as they do, all the children and scholars, persons of independent property, the sick and infirm, &c., are distinguished as forming a class by themselves under the title of the indolent and non-productive class. Such, then, was the general distribution of the population of England and Wales in the five great divisions of occupations in 1871.

To come now to those belonging to the occupations on which we have here more especially to dwell,—the building trades,—we find that those directly employed in this class of occupations in the year 1871, numbered, in the aggregate, 598,252 persons, of whom 579,326 were males, the remainder 13,926 being females. In 1861, or ten years before, the number similarly engaged was 505,671, of whom 480,092 were men, and 25,579 women. Thus, in 1871 the building trades employed 73,655 more persons than in 1861, being an increase of about 14 per cent.

The special varieties of employment in which the vast host was engaged, we shall now proceed to particularise. The most numerous class of all consists of the carpenters and joiners. They numbered 205,833 in 1871, and 177,969 in 1861, so that they had increased by 27,864 in the ten years. The number of women who called themselves carpenters and joiners, and who are included in the above totals, was 209 in 1871, and 151 in 1861. These would be, not of course workers, but widows and others who had inherited businesses as principals. The next most numerous class consists of the painters, plumbers, and glaziers. In 1861 they numbered 74,619, and in 1871, 103,912. They had, therefore, increased their numbers by 29,293 in the ten years. The number of women in this occupation is given at 530 in 1871, and at 447 in 1861. They also would be proprietors of businesses. Next in order come the bricklayers. There were 99,984 of them in 1871, and 79,458 in 1861, an increase of 20,526 in the ten years. Thirty-nine women in 1871 and 35 in 1861 returned themselves as bricklayers, but in this instance, too, as in almost every case in which women appear as belonging to the building trades, it is not as artisans, but as mistresses of businesses, that they are interested in the several occupations concerned. We find next in order the masons and paviors. They numbered 93,213 in 1871, and 84,434 in 1861, an increase of 10,809 in the ten years. The number of women in this branch was 44 in 1871 and 31 in 1861. The plasterers numbered 24,587 in 1871 and 18,550 in 1861, an increase of 6,037 in the ten years. The women plasterers numbered 12 in 1871 and 18 in 1861. The builders stand next in number. There were 23,360 of them in 1871, and 15,737 in 1861,

which shows an increase of 7,563 in the ten years. This class forms the great bulk of the masters and heads of firms in the building trades; and it is a noteworthy fact that their number has received such an enormous accession during the past ten years. They have increased very nearly 50 per cent. in that interval of time. Few facts are better suited to illustrate the activity of the building trades of late years in England than this, that the masters became half as numerous again in the period of 1871, more than ten years ending in 1871. The women builders were 171 in number at that date. Ten years before they numbered 99. The slaters and tilers rose in number from 5,266 in 1861 to 6,081 in 1871, the number of women being respectively 4 and 2. The architects numbered 3,843 in 1861, and 5,697 in 1871, an increase of nearly 50 per cent. in their number in the ten years. This large accession in the highest branch of the building interest completely corroborates the conclusion we drew from the increase in the number of builders, we mean the immense expansion of the building interest in the seventh decade of the nineteenth century. The same conclusion is pointed out by the increase in the allied profession of surveyors. They numbered 1,843 in 1861 and 3,097 in 1871,—an increase in the interval of nearly 70 per cent. There were no women surveyors at either date; the female architects numbered but 3 in 1861 and 5 in 1871. The paperhangers increased in the ten years from 2,328 to 3,494; the marble masons from 2,068 to 2,973; house-agents from 1,875 to 6,285; blind-makers from 710 to 1,283; drain-makers (in towns) from 63 to 373; hot-house or horticultural builders from 26 to 102; shop-fitting or fixture-makers from 7 to 49; shutter-makers or furniture-makers from 9 to 191; Oven and furnace builders, on the other hand, decreased from 40 to 16; and cornice and moulding makers from 14 to 11. Besides these there were 764 persons in 1861 and 90 in 1871 engaged in a variety of minor occupations connected with the building trades. The total numbers which we gave above as including all the persons connected with houses and buildings, viz.:—605,671 in 1871 and 593,252 in 1861, includes, besides those we have now detailed, the number of house proprietors. In 1861 the number thus included was 36,032, of whom 24,630 were women and 11,402 men; in 1871 the number was 17,086, of whom 12,683 were women and 4,403 men. These numbers do not include the whole of the house proprietors in the country, and the addition of these imperfect figures to those connected with the building trades,—may, their inclusion in the industrial classes at all,—appears to us something more than questionable.

On another occasion we shall proceed with our analysis of the occupations connected with the building interest. We have dealt above with those more peculiarly entitled to be regarded as belonging to the building trades. We shall next speak of those connected less directly with the trades in question. A surprising number and variety of occupations will be found in these residual classes.

AGAIN AT THE ROYAL ACADEMY.

It is often argued that pleasure exists rather in the observer than in the object that brings its experience, and such a supposition may reasonably be accepted for truth, so far as pictures are concerned—when a standard degree of excellence in achievement is common property in the whole number to be seen. Yet it is the good fortune of some artists that appeal so naturally to the broad sense of what must be delightful ever, that the pleasure of recognition becomes common with the excellence in achievement that evokes it.

There is no better name than that of Mr. J. C. Hook, R.A., to lead a notice of some of the best works to be found at a Royal Academy exhibition nowadays, for he paints equally well figures, landscape, the sea and the sea-breezes and the sunshine that gives complexion to the truth of all he paints, whether it be the strong, healthy, busy peasant women, "Kelp Burners: Shetland" (14); or bronzed fishermen unloading their boat "Under the Lee of a Rock" (26), or, intent upon adding to the sum of the labour's pay, such waifs and strays as the ocean may cast up for them in the shape of "Jetties and Flotsam" (375); or mischievous urchin (in sea-urchin this time), a bona poacher, who

instead of "Cow-tending," is fishing the brook; robbing water-birds' nests and giving point to a beautiful inland scene (232). For Mr. Hook is an example to be cited in proof that academic learning is invaluable even to those who would but faithfully depict Nature in its homeliest, most ordinary guise. His notions of woman's winsomeness may not be coincident with what have led to the attractiveness of the very pretty and gracefully idle lady, who, by the help of Mr. C. E. Perugini, makes so much of a "Cup of Tea" (13); nor is the same degree of refinement a necessity for him, that distinguishes Mr. Val. C. Prinsep's fair quarry under proverbial trial. She has a secret, and a lovely Persian cat to elect as "A Safe Confidant" (27); and his seas seldom get angry beyond the limit of such effect familiar breezes were wont to cause occasionally at all homes—older's, sailor's, and civilian's—alike; his waves jump for joy, and with a merry crackle seem to be in play with everything they come near, and if they slap the face of a rock now and then, it is only in fun; they froth in the exuberance of their gaily, but sedate foam in anger. A picture by Mr. Hook would be of far more benefit to an invalid than whole tons of Tickle-ack's sea-salt; far more than a match for it in invigorating qualities. She has a secret, and a lovely Persian cat to elect as "A Safe Confidant" (27); and his seas seldom get angry beyond the limit of such effect familiar breezes were wont to cause occasionally at all homes—older's, sailor's, and civilian's—alike; his waves jump for joy, and with a merry crackle seem to be in play with everything they come near, and if they slap the face of a rock now and then, it is only in fun; they froth in the exuberance of their gaily, but sedate foam in anger. A picture by Mr. Hook would be of far more benefit to an invalid than whole tons of Tickle-ack's sea-salt; far more than a match for it in invigorating qualities. She has a secret, and a lovely Persian cat to elect as "A Safe Confidant" (27); and his seas seldom get angry beyond the limit of such effect familiar breezes were wont to cause occasionally at all homes—older's, sailor's, and civilian's—alike; his waves jump for joy, and with a merry crackle seem to be in play with everything they come near, and if they slap the face of a rock now and then, it is only in fun; they froth in the exuberance of their gaily, but sedate foam in anger. A picture by Mr. Hook would be of far more benefit to an invalid than whole tons of Tickle-ack's sea-salt; far more than a match for it in invigorating qualities.

When the sea does get angry, Mr. P. Grabau may be chosen for its portrait-painter; for, surely, no one can depict it better: when, blind with rage and leaping in wild storm—after repelled attacks—on a staunch, old adversary, it roars and foams like a mad on. If stone walls have ears, may soft, woolly, mosses defend those of "Our Northern Walls" (20), else will they never learn more of that may be in the wind for their advantage; and if a deaf person, with yet a hope to regain the sense of hearing, contemplated this magnificent picture for a while, he would begin to despair: it looks so loud with the noise of tumult. But no floods but those of Acheron and Styx retain one aspect long: the very waters that would typify now the fury of commotion will calmly sleep perhaps to-morrow, and wake again smiling with ripples that give faint indication for a memory of how they could be moved so by anger; then little waves will stir them again; to become breakers of all promise that peace can do more than divide realms of dominion with turbulence in every part of the universe.

By "Tempests and whirlwinds have their use; that vicious, ungrateful man is a blot in the fair page of universal beauty," soliloquised Asem, who longed for the society composed only of such men as were incapable of ingratitude, ingratitude, fraud, violence, and a thousand other times that render society miserable. But Asem was not a Frenchman, and in the abstract proved himself as little competent to judge what was good for him as if he had been, or any other man apt to be cruel and unwise, and very sorry for it afterwards. As surely as the "Reign of Terror" brought death for Marie Antoinette, it secured, as some compensation, an immortality for her in the world's history. Mr. E. M. Ward, R.A., belonging to the more illustrious of her devoted admirers, and the best of history's illustrators, has so often made her the leading figure in beautiful representations of heroic submission to a monstrously cruel fate, that others who lament for the unhappy queen, and admire the happier artist whose renown will survive for what he has done for himself as long as that of the royal sufferer he has assisted to sleep in recollection, will feel sorry if "Marie Antoinette's Last Repose—Prison of the Convent, 1795" (48), is presage of a leaving, in an extra affecting episode. She has been herself, dressed as she was, on her prison bed, weakened by illness, and exhausted by fatigue. The remains of the food she had asked for, fearing that her courage might be lessened by physical failure, are near her, and the severed tresses from her sorrow-bleached head saved as a souvenir for her children, close to the hand at which she wrote her last words for them.

One of Mr. Ward's fixed purposes is evidently to record the noble quality of female heroism. Another instance of it he shows us Lady Rachel Russell imploring a short reprieve for her condemned husband, if but for a few weeks; the King (Charles II.) had ever less sympathy for a woman agonised by grief, and made only for him by tears, than for pet spaniels of other sort, as well as the one of a kind he is now addressing, whilst the daughter of the best and he ever had in his life kneels in humble supplication at his feet, and reads with dry eyes

and stony heart the petition. It is quite unnecessary to revert to the admirable manner in which this artist always revives the spirit, habits, and customs, of the days he illustrates; or to call attention to the veri-similitude of his embodiment with the most probable conception of the selfish sensualist who "never said a foolish thing, and never did a wise one." This is one of Mr. Ward's best pictures. Mrs. E. M. Ward might almost be suspected of sharing the sentiment of woman's mental and other superiority on all points, compared with the weaker stronger sex, were it not so very obvious that it contents her to share her share of them in those that Mr. Ward is most eloquent upon. There never was a braver lady-warrior than she who defended Latham House in the troublous times of Cavalier and Roundhead, and if she did not emulate the coarser and more audacious bravery of Black Agnes of Dunbar, a very early example, the Countess of Derby was actuated by the same indomitable will to maintain her sense of right and justice. In Mrs. Ward's charming and superlatively well-painted representation of a scene during the siege, the effect calm courage has as an inspirer of its habitual witnesses is the chief theme; for the picture shows how the countess and her two young daughters were not much surprised, and not a bit alarmed, when a shell burst into the dining-room during dinner, broke the glass and furniture, but injured no one. "The children were beside their mother at the time, but did not move, and scarcely changed colour" (445); in fact, the only one who seems much disturbed by the event is a fussy old steward or seneschal, who, starting back, half draws his sword, and, in menacing attitude, glares at the horrible intruder's expiry in smoke. Oh! Mrs. Ward, why couldn't you have left a little bit of courage for the poor man? There is enough of it and to spare in the handsome, stately countess; and a morsel from each of the dear little girls so exquisitely dressed and beautifully portrayed, would scarcely have been missed, and would have gone a long way towards redemption for that timorous seneschal.

Sir Garnet Wolseley says that he quite appreciated the wisdom of the King of Dahomey in establishing his army of Amazons—where women do all the work, and all the fighting too; and there is a growing sign that things may become somewhat African for us presently; when clever Miss Elizabeth Thompson's task may be easier than it now promises to be,—to find future proper and varied expression applicable to the thinned ranks of a regiment answering the "Roll-call after an Engagement"; for all expression will have merged into the one of resolution to do or to die. Miss Thompson's picture will afford some talk for the season that will help to future successes, if she, and those nearest and dearest to her, do not spoil it by joining in what may be said of her very clever and most fortunately applied ability; for some of the enthusiasm that greets it is due to the sympathetic character of the matter treated, though more, no doubt, and in greater degree for value to the able method of its treatment. But were ever English soldiers so demonstrative as Miss Thompson represents them to be? Stolid endurance, and a religious regard of drill and discipline, are the principal characteristics of the British army. With English features and uniform, these gesticulative and flurried men are French, who march in loose order and fight like cats and the devil, till,—well never mind. Meissonier was never so strong in horses as men, and it is only circus tuition that can change a horse's walk, notwithstanding Miss Thompson's letter to the *Times*.

"The Picture of Health" (152), is a lovely little Englishwoman, bright pink by atmosphere, and painted by a thoroughly British painter,—Mr. John Everett Millais. "The Picture-gallery" (157), a luminous Franco-Roman specimen of most all that can be taught towards making a great artist, by Mr. L. Alma-Tadema; and most picture-galleries show in *posse* a good deal of that same part of the business, if little of the more than half is presented towards realising the *esse*. "Half-hours with the best Authors" (166) go just so far to teach, as Mr. P. H. Calderon's pretty *démotelles en déshabillé* may learn, half asleep. Painters should give months every year to the best authors, to find fit mould for what they may see, if they have no idea of their own how to use it.

Mr. Millais is exempt from the usually enervating course of prolonged adulation, the why and because of it—for him—are not liable to damage; the foundation being such as in the

steady process of building is calculated to bear any height of erection. It must be granted that his nature must be of rare strong order to admit of the fact that it may be left to time only, to increase and improve. Long ago he was gifted with extraordinary power: an eye like a photographer's lens—ever as busy, and a hand that dropped gum-stick for his next earliest toy—a pencil, with intuition of its usefulness; and he walks nearly alone now in his cultivated knowledge of its use. Early he became a great painter—a great artist in the art of transferring all that he could see, of positive appearances, and of periodical facts, to canvas. Anything paintable Mr. Millais can paint. Months before May the inquisitive may learn what the great painter is painting for exhibition, and his *reputaire* is enlarged now by so much as the functions of present-day landscape-painters are by general consent circumscribed, for none can cope with Mr. Millais in realistic portrait-painting. His two splendid foreground studies of "Scotch Firs" (68), and a gorgeously picturesque wain filled with "Winter Fuel" (75), are triumphs in fact-description, strong enough to cause restless nights, and discontent for what months' labour have brought for result to the less gifted, who must see as he sees, but cannot make known their sight so well. It is easy to understand that fresh air and grand scenery to bring recreation may have been the motive, or one of the motives, to account for these grand manual performances, but why the choice of many designations should have settled on associating the bluff sea-captain and his niece, looking grand-daughter with speculative suppositions, capability, and obligation of performance on the part of England, is a thing to be guessed at once a week for any time.

What matters? It might have to do with Mr. Plimsol or the North Pole, or any other recondite cause; but a shipmaster, or captain, is hearing a text read by a girl (320).—"It might be done, and England should do it." It is a very old text, and has got England into many a scrape, but the text will wear long to come. Still there is too much pain in the grand old head for the subject named, and clearly points to recollected dangers and grief.

There are no two English artists whose names are more frequently associated in conversation, when contemporary art happens to be the topic, than those of Mr. Millais and Mr. F. Leighton, R.A.; yet, judging by their opposite theories, so far as may be seen in their practices, it might be inferred that any great admiration for the one painter would involve but slight recognition of the other's excellence. The aim of Mr. Millais is, obviously, to insist on the sufficiency of every object he represents to depend upon what is innate for whatever attractiveness he asks for it. On the other hand, Mr. Leighton would appear to see nothing that is not capable of being improved. Like the Greeks, he would beautify everything; accepting nature as valuable raw commodity, he would leave it for belief that there was nothing to be done with it until it had been well washed, nicely dressed, or undressed, and elegantly perfumed. But it will be at once said, this is just the difference between ideality from reality; and it is just as great difference, no doubt; just as far from reality. Shakespeare was a poet, and so was Moore. Yet Mr. Leighton paints exquisite pictures, and there is nothing more fascinating to look at out of the whole 1,624 productions that make up the collection of choice things to be seen at Burlington House, than the three Greek-Greuzen-like damsels in the courtyard of an "Old Damascus" house in the "Jews' Quarter" (303), intent on gathering the golden fruit of a lemon-tree (are lemons so scarce at Damascus that such dear pickers should be engaged in their harvest?). The building-up of such a combination of Eastern wonders, not leaving out architectural engagement of turquoise and other precious stones,—varicoloured marbles which, by weather or no stains, are made more lovely still, and seem to suggest an establishment for fact, of what, by early stories taught by wonderful lamp-light, has gone for fiction, betokens Mr. Leighton a magi, a Perseus priest, to uphold nursery faith; and the introduction of a reminiscence of old Chelsea china, to be observed in the draperies of the lovely Greuze-Greeks, is admirably calculated to bring it home to those who think fables images. It is a beautiful work of art, nevertheless, in its amenity of colour.

Was the intention of "La Source," by Ingres, to typify the first mother, the source of Adam's first tears,—barring snakes and apples; or, was

it by intention a warning by title from one who was sure he must lead? The "Antique Juggling Girl" (345) should be very old to be "antique." She is young enough here, by nobility of birth. The artist's academic proficiency, and beyond that his taste or will, have made this nude figure of an ideal but possible model a charming and quite a modest picture. She is admirably drawn, of course, and the skill with which tint and tone have been employed will delight all who know the difficulties that ensue in such attempt from common effort. It will class with the very best studies of its kind. The "Moorish Garden: a Dream of Granada" (181), is a beautiful, but rather heavy vision, though the little Southern girl dragging the peascocks is pretty enough to make a picture of any locality, and though cypress and orange-trees form her background here, her clothes are too big for her not to tell that she would be more at home elsewhere. Whenever Mr. Leighton is less Greuze than Greek it is a loss for him. "Clytemnestra" (981), very cold in moonlight, and very classic in such light as she is shown, is cold and classic, and nothing more. Well drawn,—of course.

MEMORIAL OF THE LATE OWEN JONES.

A MEETING took place on Monday last, at the residence of Mr. Alfred Morrison, Carlton House-terrace, for the purpose of discussing the expediency of perpetuating the memory of the late Mr. Owen Jones. Mr. Morrison presided; and amongst other gentlemen present were Mr. Henry Cole, C.B., Sir Digby Wyatt, Mr. Warren De la Rue, Mr. Coleridge Kennard, Mr. Howard Kennard, Mr. Minton Campbell, Mr. George Atchison, Professor Hayter Lewis, Mr. Joseph Bonomi, Dr. Dresser, Mr. Peter Graham, Mr. Forster Graham, Mr. Thomas Chappell, Mr. Alfred Strong, Mr. Edward Hall, Mr. George Godwin, Mr. Thomas Henry Wyatt, Mr. Henry A. Brasse, M.P., Mr. George Phillips, Mr. Crace, Mr. George Redford, Mr. Edward F. Pigott, Mr. F. O. Ward, Mr. Blashfield, Mr. Wallis.

Mr. Cole explained at some length the object of the meeting, in the course of which he referred in eulogistic terms to the talents of Mr. Owen Jones, and gave it as his opinion that the memory of the man who had done so much for art deserved the recognition of his colleagues and of his country. The statement having been cordially received, Mr. Godwin moved a resolution to the effect,—“That it was desirable to perpetuate the memory of the late Owen Jones by means of such form or forms of memorial as might be hereafter decided upon, and that subscriptions be invited to carry out the object.” Sir Digby Wyatt seconded the motion, which was unanimously assented to. Upon the motion of Mr. Warren De la Rue, seconded by Mr. Peter Graham, a second resolution was adopted,—“That a portrait of Owen Jones in mosaic should be proceeded with at once, and offered to the nation.” It was further agreed, that there should be a public exhibition of the drawings, designs, and executed works of the deceased, and that the possessors of such works be invited to lend them for exhibition. Mr. Edward F. Pigott accepted the duties of honorary secretary, and Mr. Coleridge Kennard agreed to act as treasurer. Most of the gentlemen present then handed in their names as members of the committee, of which the following were elected as the executive:—Mr. Henry Cole, C.B., Mr. Alfred Morrison, Sir Digby Wyatt, Mr. Warren De la Rue, and Mr. Peter Graham.

A gold medal for decorative-art students, and a travelling studentship, are amongst the forms of memorial that will be discussed.

THE GIGANTIC RAILWAY STATION AT YORK.

MESSERS. KESWICK, builders, of York, have accepted the contract to build the gigantic railway station for the North Eastern Railway Company, at York. The length of the station will be 600 ft. and 240 ft. the breadth, the height from the rails to the crown of the roof 50 ft. Whilst somewhat resembling the Newcastle station, it will outdo it in appearance and capabilities, as all the latest improvements will be brought forward, and the directors intend to make it the model railway station. It is to be in the Italian style of architecture, and will be approached by a portico 160 ft. by 55 ft., leading

from which is a large entrance-hall, and on each side booking-offices 42 ft. long, with numerous offices. From the hall there will be a corridor 15 ft. in width, the end of which opens upon the widest part of the main platform, which is about 80 ft. wide. The other portions of the main platform, extending the whole length of the station, will be upwards of 40 ft. wide. The excursion platform will be the same in length as the main platform, but it will be narrower, its width being 30 ft. On one side of the excursion platform will be three lines of rails, and between that platform and the main platform four lines of rails. At each end of the station there will be two sidings, called by the "Tyke" builders docks, each having several lines of rails for local traffic. Subways for crossing the station will be made underneath the rails. The first-class refreshment-room is to be 70 ft. by 30 ft. The second-class refreshment-room 40 ft. 6 in. by 14 ft. 9 in.; the ladies' waiting-room 30 ft. by 20 ft., and the other waiting-rooms of corresponding size. The walls of the station will be of stock-bricks of a buff tint, with stone dressings. They will be panelled, with semicircular heads interspersed with buttresses, and above will be circular openings. The roof will be of wrought-iron, and consist of four semicircular arches, the principal of which will be 81 ft. span, whilst the other three will be 55 ft. respectively.

In connexion with this is to be erected a great hall, facing the river, 272 ft. frontage. Bricklayers and masons being scarce in the North of England, it is difficult to state when the building will be finished.

PAINTING ON POTTERY.

TWENTY designs have been sent in, in reply to the offer of premiums of 35*l.* and 15*l.* by the Art-Union of London, for the ornamentation of a Tazza in ceramic ware, and they will be publicly exhibited before any award is made.

BIRMINGHAM DISTRICT ARCHITECTURAL ASSOCIATION.

THIS Association has been formed for the purpose of providing mutual instruction among the junior members and assistants of the profession, upon the same basis as the London Architectural Association. The inaugural meeting was held in the Town-hall Committee-room, on May 12th. Mr. J. J. Bateman, F.R.I.B.A., in the chair. During the evening an address was delivered by Mr. T. Roger Smith (past president of the London Architectural Association); and an exhibition of architectural drawings and sketches was opened on the same day in the orchestra of the Town-hall.

The first visit of the Association will be made on Saturday, May 16, at three o'clock p.m., to the works of the restoration at St. Martin's Church, by permission and under the personal conductorship of the architect, Mr. J. A. Chatwin.

AN OBELISK AT BROMLEY.

A MEMORIAL has been erected in the churchyard of the parish church of Bromley, Kent, to the memory of the late Mr. Coles Child, lord of the manor of Bromley. The monument, which is erected over the vault, was designed in compliance with the wish of Mrs. Coles Child, in the form of an obelisk, and it is executed entirely of granite, the two lower steps, or plinths, being grey, unpolished, and fine-axed, from the Kenmay quarries; and the superstructure, consisting of an obelisk standing upon a pedestal, the dado of which is diminished, and contains the inscription, with a moulded cap and base, being of polished red, from the Peterhead Company's quarry. The several parts are formed of large and entire blocks, the needle being in one piece 15 ft. in height, 1 ft. 11 in. square at its base, and 1 ft. 3 in. at the top, and being shaped with an entasis of $\frac{1}{8}$ in., and a pyramidal termination. The entire altitude of the monument is about 24 ft. from the level of footpath. The work has been executed by Mr. Whittingham, from the design, and under the supervision, of Mr. W. C. Banks, architect, of Gracechurch-street, who carried out alterations at Mr. Coles Child's residence (late a palace of the bishops of Rochester) during his lifetime.

THE "GAZETTE DES BEAUX ARTS."

THE leading art-journal of France deserves more recognition and reading than it gets in this country; generally for the ability and variety of its writing, and the interest and artistic quality of many of its illustrations; and more particularly in that lately no inconsiderable proportion of its contents has been devoted to subjects particularly connected with English art. Of the last four monthly numbers, the first, for January, opens with an article "Sur l'Orfèvrerie Anglaise," illustrated by woodcuts and the principal illustration of the volume is a beautifully-executed etching, by Rajon, of our National Gallery treasure, the *Chapeau de Paille*. The *Gazette* is somewhat varied in the style of its illustrations, employing very largely that most peculiarly artistic among the multiplying processes of art, etching, which has less of what is mechanical about it than any other form of engraving, and gives a lustre to the lights, and a brilliant and rich effect, which engraving properly so called can rarely emulate. For etching on wood is made use of for the small illustrations, and steel engraving occasionally for the more important; but this latter cannot reach the etching in point of tone and artistic suggestiveness, and it is matter of surprise that the latter process has not come more into use in English art-illustrations. The *Gazette* for February introduces the first of a series of articles under the title of "Grammaire des Arts Décoratifs" by M. Chas. Blanc, who devotes his early chapters to the art of dress, on which his theories are better than his application of them as shown in the cuts. The grammar of decorative art in female costume is, in the first place, simplicity and truthfulness in line and design, qualities with which the large artificial *coiffures* and the bunches of dress tacked on to give, as supposed, "balance" to the figure, have little affinity. A figure which has not balance of own in pose and carriage will hardly be dressed into it. M. Blanc's second article, in the March number, goes into the subject of lace, which there is some information and some good criticism. An article on artistic curiosities of Russia, very carefully and profusely illustrated, may be supposed also, have a little added interest for English readers from our recent agreeable associations and connexion with that country. Accompanying an article on the Belvedere Gallery at Vienna is its contents, is a remarkably effective etching, Hoogstraten's remarkable painting called "Head of an Old Man"; the said head projected from an open pane of a bottle-glass window, the knot and leading of which fill up the rest of the picture in a manner more effective probably in the etching than in the original. In the March number our attention is caught by an article on "Hills, Graveur Anglais," whom a writer states to be totally unknown in France and only known in England to a limited number of artists and collectors. Some interesting studies of Hill's spirited studies of deer, various phases of "deer life" accompany the essay. An article on contemporary landscape painters treats in this number of Daubigny whose works are well known in English exhibition rooms; but in this case the illustrations (slight wood engravings) are not satisfactory; they give only the bare outline and composition of works in which the tone and the lighting are almost everything. It is exactly in such subjects as these that etching would have come well, and conveyed some of the feeling of the original. The April number has an architectural review, the book in hand being M. Rey's work on the "Roman [Romanesque?] Architecture of the South of France"; a third volume work, with (as we gather) copious illustrative elevations and details, some few of which are reproduced in the *Gazette*. In the same number are two articles on English subjects. Mr. Redgrave's Dictionary is very favourably reviewed; the writer, M. Debono, being of opinion that "it would not be possible to fill more brilliantly a gap which every student of the English school has deplored." Amongst critical remarks on the leading names in the Dictionary, the reviewer is enthusiastic of Moreland, "that true painter," as he calls him, and selects for illustration the work representing the "Two Couchmen,"—a happy specimen certainly of that peculiar phase of what may be called good-natured blackguardism, which belongs to so many of this artist's figures, in which, perhaps, his own careless and sensual habits

are unconsciously reproduced. The other article referred to is one on Catmerole, under the head of "Les Aquarielles Anglaises," and would, perhaps, surprise some of the critics of a new school, who regard this artist's reputation as a somewhat old-fashioned one, to find in what seems to be held by their brethren across the channel. M. Colas, the author of the essay, observes at "All the world remembers" what an impression Catmerole's works produced in the Universal Water-colour Exhibition of 1855, and how the English artist received a medal of the first class, with the unanimous approval of all French artists and critics. "No reputation," said M. Émile Gautier (here quoted by our author), "could be more legitimate. These works have a noble and harmonious tone, which shows an intelligent study of Paul Veronese and the Venetian masters." Engravings are given of "Old English Hospitality," the "Arrest of Stratford," the "Hunting Party"; but M. Colas is specially impressed with the drawing of "Sir John with the fiery eyes," seated amongst the ruins of the tower of his ancestors (from La Motte-Fouquet's romance); and is struck, as others have been, with the manner in which a kind of third life is indicated in the empty helmets and hauberts, "which seem to have the movement of expression which they had when the body inhabited them." Perhaps this work may be said to be the one most marked by the artist's peculiar style and abilities; its one drawback, to our thinking, would be expressed in the charge that it partakes of the "melodramatic"; a charge, the meaning of which as thus applied is very easily defined, but which indicates a want of weakness in art, for which there is no other name that we know of. M. Colas concludes the remark that Catmerole is "bien un homme de son temps, et c'est pour cela qu'il ne restera. Il appartient à une génération qui professa pour le moyen âge un culte." This is true; but whether M. Colas uses it as additional praise, or a qualification of his former praise, he does not strive to make very clear. We should say that it causes tend to modify a little the admiration with which Catmerole's works are regarded in England, as compared with the impression made on foreign critics: a want of intensity of expression, a defect which the English, who look so much to good execution, are less account of; and the fact that a good many of the subjects painted by the artist, of ordinary old English life, have to us a somewhat hackneyed air, while to a foreign critic they would appear as novel and interesting illustrations of the social history of the country to which they belong to.

THE FORESTS OF BRITISH GUIANA.

ROYAL COLONIAL INSTITUTE.

At a meeting of the members of the Royal Colonial Institute, held on the 15th ult., under the presidency of the Duke of Manchester, Mr. J. Walker read a paper on the "Forests of British Guiana." The course of his paper he said that the general character of the country was that of a lush and luxuriant vegetation; a constant moisture prevailed, and the fertility of the soil, the humidity of the atmosphere, and the constant temperature produced results which, to be accustomed only to the alterations of the temperate regions, were suggestive of astonishment and admiration. Gigantic trees raised their lofty crowns to a height unknown in the forests of Europe, and exhibited the greatest variety in the forms and appearance of their growth. Viewed from an elevation, their tops formed an almost uniform level surface of miles together. The dense and almost impenetrable forests of the interior offered inexhaustible treasures, not only for architecture in the branches, but likewise for the manufacture of furniture and many other purposes. The uses of the timbers for naval architecture was remarkable, and some kinds were said even to be used for the keel. The Greenheart, the Mora, and the Sonari were of all the woods the best

adapted for shipbuilding purposes and submarine constructions. When the Brown Greenheart was first sent to Liverpool and Greenock, it was pronounced by competent persons, after an experience of ten years, superior to oak for strength and durability, and it commanded a preferential price. Colonel Moody, of the Royal Engineers, recorded that the great Black Greenheart and the Purpleheart were the only woods that stood the test as mortar-beds at the siege of Fort Bourbon, in the Island of Martinique.

According to the report of the late Sir William Holmes, the Commissioner representing the Colony, of the London International Exhibition, 130 varieties of timber were contributed on that occasion; and he added some very sensible remarks upon the subject of the obstacles to be encountered in any attempt to introduce exotic novelties into use amongst the manufacturers and artisans of Europe. He pointed out that no material was so difficult to bring into general use as new varieties of timber, seeing that the stability and durability of the constructions for which it was used were dependent upon the quality employed. Architects, therefore, naturally hesitated to use untried sorts whilst an adequate supply of well-known timber was to be had. Indian teak commanded the market, as it was lighter and more easily worked than the hard woods of Guiana, and, moreover, contained an essential oil, which contributed to the preservation of ironwork. Greenheart, however, ranked next to teak; and in 1861 about a million cubic feet were shipped to the English market. Some interesting experiments were made by the London and North-Western Railway Company, as to the suitability of this wood for railway purposes generally, and these led to some large contracts being entered into for the supply of timber. At Lloyd's, again, Greenheart and Mora were classed amongst the seven or eight only woods from all parts of the world recognised as of little avail in shipbuilding. The collection as a whole was much admired, especially such varieties as appeared suitable for furniture. Here, again, however, tyrant custom asserted its sway, and cabinet-makers were so accustomed to mahogany, rosewood, walnut, birch, and a few others, that they were reluctant to introduce any new variety except under special circumstances.

It might be asserted without reservation that, as regarded timber and furniture woods, the natural productions of Guiana vie with those of any part of the world. Extensive tracts of primitive forests were yet untouched, especially beyond the rapids, and away from the banks of rivers and creeks, where there was increasing difficulty in bringing the timber to the water's side. The demand for the timber had largely increased subsequently to the first Great International Exhibition of 1851, where two prizes were awarded to them; but the greatest expansion of the trade occurred in 1861, when the exports amounted to 825,230 cubic feet.

After specifying various kinds of woods, by stating their particular qualities, Mr. Walker then referred to the law by which the right of utilising the Crown lands and forests was regulated. The prerogative title, he said, to all unsettled lands was of course vested in the Sovereign; and originally the conferring of any beneficial interest in them was settled by the pleasure of the Crown, and the rents or other proceeds constituted a portion of the revenue known as the king's chest; but when an adequate civil list was granted by the combined court, these rights were assigned to the colony, and in 1838 they were regulated by ordinance. They were again the subject of legislation in 1857, owing to changes in the administration of the department; but the arrangements not working satisfactorily, a consolidated ordinance was prepared and passed in 1861, which was in its turn modified in 1869 and 1871, all being swept away by the existing law, Ordinance, No. 9, of 1873. Owing to some cause not clearly understood, the operation of that law had tended altogether to check wood-cutting operations; and he hazarded the supposition that this might be owing to an evasion of the law by taking advantage of the privileges reserved to the Indians, by which speculators obtained supplies of timber through their agency without complying with the conditions required by law. Objection had been taken to the stringency of the provisions regulating the sale or lease of Crown lands, and to the minimum price offered per acre; but when the enormous area of the uninhabited portion of the colony was considered in proportion to its extremely sparse

population, combined with the urgent demand for labour in the cultivation of the staples, it would seem only consistent with sound policy to endeavour to prevent the scattering of a peasantry, living from hand to mouth, and practically beyond the harmonising influences of association with other classes of the community. Moreover, there was a wise discretionary power reserved to the governor, as representing the Crown in regard to the mere occupancy of Crown lands, whilst in a legislature so peculiarly constituted as that of British Guiana, there was practically no difficulty in securing such modifications and relaxations of the terms and conditions as experience might show to be desirable. One important aspect of the question was undoubtedly the encouragement of the commutation by the Asiatic immigrants of their right to a return passage for an equivalent value in land, and several lots of land in the settled districts had recently been acquired by the Legislature with that view. The total number of acres granted in 1871 was:—

In lots above 100, and under 500 acres	2,324
Above 500	3,770
Total acres	6,094

TIMBER AND DEALS.*

From the natural form of a tree, its easy manipulation into beams and girders, the combination and framing of which enable us to raise structures of all kinds quickly, timber enters largely into everyday use. No seasoning by desiccation or other such processes is equal to natural seasoning, by being exposed to the atmosphere, and house fittings of all kinds can only be properly produced by those who keep large stocks in hand, used only three or four years after its conversion. For engineering purposes its decay from the white ant, the teredo worm, and disease and decay generally, is counteracted by saturation with corrosive sublimate, called Kyanizing, or with chloride of zinc, called Burnetizing, or by impregnating it with creosote, called Creosoting. The last process is the most common. When wrought in houses it is usually preserved by painting with oil-paint, and care should always be taken to paint also the joints before putting together. The chief hard woods used are oak, ash, elm, teak, and mahogany; and of the resinous woods, red pine from Norway, Sweden, and Russia; Memel, Dantzig, and Riga fir from Russia and Prussia; yellow pine from Canada, pitch pine and cedar.

HARD WOODS.

Oak is the hardest and most durable of all trees; it is a native only of temperate countries, and grows very slowly. Those kinds chiefly imported into this country are Riga and Stettin oak from Russia, and Quebec oak from America. None of them are equal in strength or durability, however, to the native English oak. Riga wainscot oak is divided into three qualities, viz.—English Crown C, Dutch Crown H, and common or brack quality W.

English Elm wood is very hard, flexible, tough, and difficult to work; it will stand well if kept constantly wet; hence it is largely used for keels of vessels, wet foundations, for piles, pumps, &c. Its toughness makes it useful also for wheel naves and rims, and general wheelwright's work. Wych elm is preferred for bending purposes for coachmakers.

English Ash, again, is superior to any other English timber for toughness and elasticity. Used extensively in wheelwrights' and shipbuilders' work; it is also largely used for walking sticks and spade-handles, when from three to ten years' growth only, and indeed its branches at all stages of the tree's existence, come in for hop-poles, crates, basket-handles, hurdles, &c. It is tough and elastic, and thus becomes serviceable in all implements of husbandry, tools, and the like.

Mahogany has been an import into this country for 150 years. The finest is obtained from Domingo, the next in quality from Cuba, and the next best from Honduras, the latter being better known as Baywood. Its price prohibits its use beyond furniture, and doors for rooms, and in cotton-mill machine frames. The Spanish

* From Wood and its Uses: a Handbook for the Use of Contractors, Builders, Architects, Engineers, Timber Merchants, &c.; with information for drawing up Designs and Estimates, and upwards of two hundred and fifty illustrations. By F. B. Eassie, member of the Institution of Mechanical Engineers, Gloucester: Wm. Eassie & Co. (Limited), 1874.

mahogany runs from 20 in. to 26 in. square, and about 10 ft. in length. Honduras is from 2 ft. to 4 ft. square, and 12 ft. or 14 ft. long.

Teak Wood or *Indian Oak* comes chiefly from Malabar, as well as Java, Ceylon, and other parts of the East Indies. It is largely used in shipbuilding, and as it seldom shrinks it is often used in panels of coaches.

African Teak or *African Oak* comes from Sierra Leone; is used in shipbuilding, from its being very hard, dense, and brittle. It is most difficult to work.

RESINOUS WOODS.

Cedar Wood is extremely durable, and specimens have always been found in temples of the greatest antiquity; it is straight-grained, easily worked, but readily splits; it is a native of Spain, the South of France, and the Levant. The *Bermudian Cedar* is used for internal joiner's work and furniture. The *Red Cedar*, used in pencils, is a native of North America and the West Indian Islands, and is largely used for drawers, wardrobes, church furniture, &c.

Red or Yellow Pine is the same as the *Scotch Fir* or *Wild Pine*; the best coming from the North of Europe, in the shape of logs, deals, and spars. The *Riga* and *Norway* are the best, but *Memel* is little, if any, inferior. The Swedish timber is inferior to all others of this class. The timber trees of Sweden and Norway are felled regardless of size and quality; the finest are selected for deals or hewn into square timbers, the smaller sizes are converted into boards or battens and mining timber; next come the short, square, or round logs for sleepers, which since the disuse (owing to the scarcity) of *Scotch* or *English Larch*, is now a trade of gigantic proportions, especially at Dantzic. Pits and telegraph poles use up the remainder; when below 2½ inches at the top, the poles are sold as "rickers," and still smaller, as spars. That coming from *Memel* is divided into three qualities, viz.:—*crown* 13 × 13 from 28 to 50 ft., *best*, *midding*, and *second midding*, or *brack*.

Dantzic Baulks are from 14 in. to 16 in. square, and 40 ft. long average. *Crown* still larger. *Riga Fir* is 13 in. to 14 in. square, and 40 ft. average; when used as beams it should be sawn longitudinally, and the ends reversed, as the heart is often shaky, which can, by this means, be tested. *Riga* also sends us a considerable number of masts and spars, 18 in. to 25 in. diameter, and 70 ft. to 80 ft. long, those of less than 18 in. being called spars. Planks and deals of this timber, from all ports, are largely sent to this country.

Russian Red Timber is sent us also as lath-wood. Trees from 9 in. to 12 in. diameter are cut into lengths of 6 ft. or 8 ft. and split into segments; the heart-wood is then riven off and left in the forests as firewood. In Southern Russia fir trees will attain a diameter of 2 ft. in fifty years.

White Fir or *Deal* is the produce of the *Norway Spruce*; the 50 ft. to 60 ft. long and 6 in. to 8 in. thick, chiefly used for scaffold-poles, ladders, oars, and small masts. American spruce is inferior in quality, but both are imported in the shape of deals, planks, &c. Young trees from *Christiana* are sent also here as scaffold-poles, some growing so rapidly as to be 50 ft. or 60 ft. long, without a branch.

American White or Yellow Pine is imported in large logs. It is well fitted, when seasoned, for all joiner's work and mouldings. In America it is used largely for shingles to cover houses. It makes excellent masts. The best class of pine is that shipped from *Quebec*, and the best class of spruce that sent from *St. John's*. Rafted or floated deals are shipped from all Canadian ports except *St. John's*, and this creates a value in their favour, as they are thus bright or unwatered. The floating of timber damages the goods. 1st. It discolours them, especially the sappy parts, makes them gritty; and 2nd. They are apt to crack in drying. Bright deals on the other hand, if shipped in good condition, will reach this country as clean as when first sawn. Best Canadian timber in baulk is known as *Waney* and *Board Pine*; an inferior quality being known as *Building timber*.

Pitch Pine is a native of Canada, and large quantities are shipped from *Florida* and *Pensacola*; its elasticity is remarkable. It is much used for deck planking, pumps, and troughs.

As stated before, red and yellow pine, white fir or spruce, and American white or yellow pine and pitch pine are largely imported in planks, deals, battens, &c. They are called planks when over

11 in. wide, battens when 7 in. wide and under, and deals when between 7 in. and 11 in. wide. They vary in thickness from 1 in. to 4 in., and the following are the chief sizes, viz.:—

11 × 4	11 × 3	9 × 2	7 × 1½	7 × 1	7 × 1
9 × 4	9 × 3		9 × 1½	8 × 1	
	7 × 3		8 × 1½		

In American yellow, pitch pine, and spruce, the widths may run as high as 18 in. to 2 ft., though seldom in the two latter kinds.

Planing machinery having been largely introduced in Sweden and the Baltic ports, they often also import flooring 1 in. and 1½ in. thick, ready prepared, and even mouldings.

Deals are often branded with a variety and number of trade marks, chiefly denoting the quality. Strange, a crown has been used from time immemorial over whole continents from which we derive our supplies.

Deals from Russia and Finland are principally of 1st and 2nd qualities only, and usually, however, branded with the blow of a hammer and not stencilled like Swedish goods by red paint. Brands are at all times perplexing, as in some cases, Deals marked 2, 3, 4, 5, and even 6, do not denote quality, but simply the number of yard from which they are taken. Goods from Canada are not usually branded, but the different qualities of pine deals are seen by red marks on the sides thus:—i, ii, iii, denoting first, second and third qualities.

Hewn timbers are generally branded with the hammer at the ends, but the quality of *Memel* timber is given by marks with a scribe in the centre, i, ii, for bests and seconds. *Dantzic* timber is readily told from other kinds by a multiplicity of private marks in the centre.

Log timber of all kinds and deals are now universally converted into scantling and boards by means of machinery, viz., reciprocating frame saws and circular saws. In London, a different system of charging sawing of deals is adopted to that in the provinces, viz., cuts are charged so much per dozen, the price varying with the length; *ripping* being called *flat-cuts* in the same way. We prefer, however, the *country* method, by which all cuts in the deal or log are charged for at per 100 ft. super, and allrips or flat-cuts under 6 in., are charged at per 100 ft. lineal, and we herewith give the usual list of prices for this work, viz.:—

	Per 100 ft. super.	Ripping per 100 ft. run.	X cuts each 4d.
Oak	4s. 0d.	1s. 6d.	4
Mahogany	5 6	1 6	4
Memel	2 6	1 0	2½
Swede and Yellow Pine	2 3	0 10	2½
Pitch Pine	3 9	1 6	3
Deals	1 9	0 9	0½
Planing Deals	1 6		
Chipping do.	1 0		
Matching, Rebating, or Grooving for Hoop Iron, 3d. per 100 ft. super.			

The prices of deals vary according to their qualities, the current rate of freights, and scarcity in the market. Our average present rate, however, would be as follows, viz.:—

Spruce	£9 15 0	per standard
1st quality, red	16 10 0	"
2nd do.	13 10 0	"
3rd do.	11 0 0	"
Best Pine Deals (bright)	23 0 0	"
Do. (floated)	22 0 0	"
2nds Pine	15 0 0	"

NEW MUNICIPAL BUILDINGS AT GLASGOW.

The new portion of the county and municipal buildings, now approaching completion, promises to be an important addition to the many existing architectural features of the city. When finished, the whole block of buildings will extend from Brunswick-street on the east, to Hutcheson-street on the west; and from Ingram-street on the north, to Wilson-street on the south. The additional buildings are a continuation of the Grecian style of architecture, which forms so prominent a feature in the neighbourhood. The length of the new building in Ingram-street is 100 ft., down Hutcheson-street it extends to 130 ft., and down Brunswick-street to about 90 ft.,—to the points where it joins the older portion of the structure. The frontage in Ingram-street is being touched in the Corinthian style, similar to the façade of the old Merchants' House, which now forms part of the County and

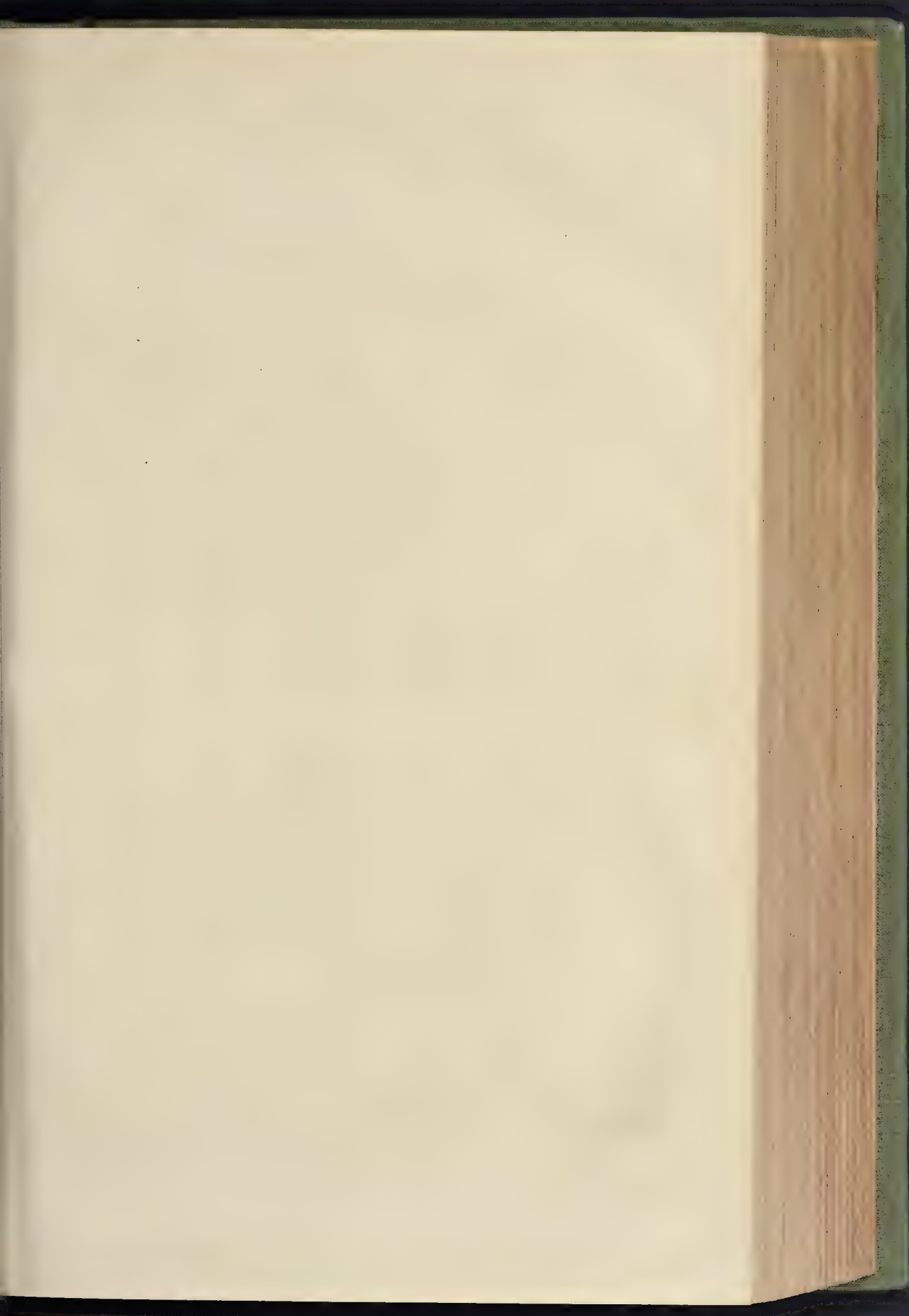
Municipal Buildings. Six large Corinthian pillars adorn the frontage to Ingram-street, and these will be crowned by emblematic figures rather above the full size. The main entrance is in the centre of the façade; and on either side there are niches, which will be filled in with sculptured figures. Above the doorway the arms of the city will be carved. The city arms will be supported on either side by two figures, one representing Commerce, and the other Manufactures. Entering the interior, we find a large and commodious entrance-hall, immediately beyond an inner hall, from which rises the grand staircase. The centre area of the ground-floor is somewhat triangular in form, a ground-floor is somewhat of 50 ft. It will be lighted on this floor, accommodation is being provided for the City Chamberlain, consisting of private apartments, a large public office, waiting and record rooms, &c., while to the right, entrance will be obtained to private apartments of the Town Clerk, and to various committee-rooms. The Town Clerk's public office will be situated in the centre area, and also the sash office, a law record-room, and various other apartments for use of clerks. The council chamber, 45 ft. by 28 ft., will be upon the first floor, and also the Lord Provost's room, and an ante-chamber, committee rooms, waiting-rooms, &c., the whole running along the front and left side of the building. The offices for the Master of Works, Public Fiscal, City Assessor, &c., will be to the right of the corridor. On the second or upper floor, will be the room for the Dean of Guild Court (who has the control of all buildings erected in the city), a house for the chamber-keeper, the apartments for the assistants of the various officials mentioned. The sum of 42,000l. expended in the purchase of ground and the cost of the new buildings, and its cost, including alterations in the existing portion, some improvements in the Court-houses at Glasgow, will be about 30,000l. The Corporation and the Court-house Commissioners will be the cost jointly. The work has been in operation three years, and was expected to be completed twelve months ago, but a strike among the workmen, added to other drawbacks, has caused the delay.

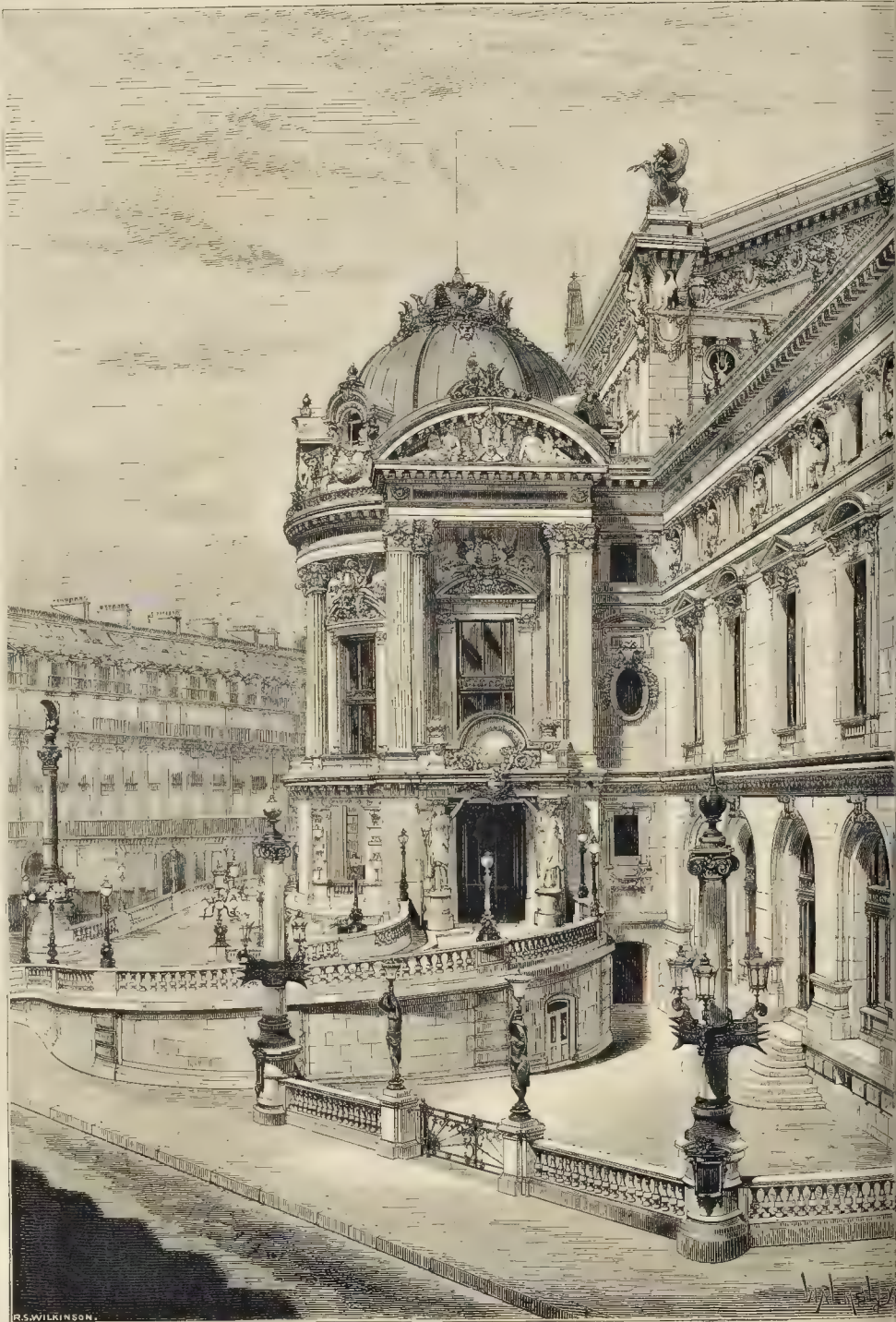
THE NEW OPERA HOUSE, PARIS.

We have at various times given partial illustrations of the new Grand Opera of Paris, fast approaching completion, and we add to them in our present number a view of the entrance, where by means of a winding staircase are enabled to land their occupants higher than can be done in front. The Minister of Public Works and other officials made a formal examination of the new building long ago with M. Garnier, its accomplished architect, and received the assurance that if necessary funds are voted the house will be ready for theatrical representations by the end of the present year. Upon this remarkable building, which more than a million of pounds sterling already been spent, painters, sculptors, n. workers, mosaicists, artists in fact of all kinds have exhausted their skill, and another element is added to Paris to assist in attracting travellers of all nations. The grand staircase or *l'escalier d'honneur*, now freed of its scaffolding and finished, with the exception of some paintings by M. Pils, which will fill four apartments of the vaulted ceiling, has excited admiration from all by its coherent magnificence, and the key-note thus struck is maintained throughout the work. The number of seats provided is but 2,194, but every spectator, in room of space, comfort, elegance, and causes of delight is treated like a prince.

Such works as this, of course within a wide limits, are wise and profitable investments on the part of a country, stimulating and encouraging the progress of art, and affording pleasure to millions.

When a new theatre is required for London two or three houses, surrounded on all sides by others, in the most dangerous propinquity, knocked into one, or, as in the most recent example, it is placed in a cellar 40 ft. below the level of the pavement, where, if the engine should one of these days go to sleep and not have a drama enacted not unlike one that took place some time ago in what is known as the hole of Calcutta. The comparison is not altogether satisfactory.





R.S. WILKINSON.

THE NEW OPERA-HOUSE, PARIS. *Side View, showing the Carriage Entrance, Rue Scribe.*
M. GARNIER, ARCHITECT.



LONDON STREET ARCHITECTURE: WAREHOUSE IN QUEEN VICTORIA STREET, OPPOSITE ST. PETER'S HILL.
MR. EDWARD ELLIS, ARCHITECT.

WAREHOUSE IN QUEEN VICTORIA STREET,

OPPOSITE ST. PETER'S HILL.

THE building, of which we publish a view, has been erected for Messrs. Hayter & Hayter, of Mark-lane. The ground on which it stands is 45 ft. by 60 ft., and is held from the Metropolitan Board of Works at a rental of £200. per annum. The cost of the building was about 7,000l. The cart-entrance is from St. Peter's-hill, in the rear. The materials of the front elevation are brick, Portland-stone, Ransome's patent stone, and terra cotta. The architect is Mr. Edward Ellis, and the contractors are Messrs. J. & F. Coleman. The sculpture in the tympanum was executed by Mr. Forsyth.

ON TIMBER HOUSES.

On the 6th inst., Mr. Frank E. Thicke read a paper at the Society of Arts, giving the results of his inquiries in Norway and Sweden concerning the erection of wooden houses,—their mode of construction,—to test what had been stated as to their durability and cleanliness,—and to study their economy.

The result of his two visits he summed up thus:—"I can bear testimony to the handsome appearance, the cleanliness, the equable temperature, and the durability of these timber houses; but I am not able to state that they can be built at the same reduction of cost as stated to be the case with the house in Devonshire, although I found that they can be built for considerably less money than we have been accustomed to pay in this country for the same class of house. First of all, I found that Mr. Vicary was singularly fortunate in choosing the time he did for giving the order for his house, for immediately afterwards the price of timber rose immensely; and, moreover, his house was built principally by a man who, it is well known in Christiania, cost money by the transaction. It was clearly shown to me, also, that the price of timber was steadily rising to such a height that at least 10 per cent. must be added to the cost in estimating for these houses. Notwithstanding this, my experience shows me that they can be built cheaper by 30 or 40 per cent. than an ordinary house of brick or stone. This is what I intended to convey in my letter to the *Times* of the 12th of February last, although it has been supposed that my object was to state that Norwegian or Swedish houses could not be built any cheaper than our English ones."

After giving various details, he said:—"In conclusion, I would point out that the continued increase of house-rent, as well as of all the necessities of life, presents an ever-accumulating difficulty, and many persons would now be residing in their own houses, instead of paying very high rents for very inferior abodes, if the cost of building was not so inordinately great. Here, then, it seems to me to be a suggestion for them, which if they adopt they can be confident it is a good one, although it may not have been put before them as I for one should have liked. By sending to Norway and Sweden for such a house as they may require, they can be assured that they will obtain one that will be built in half the time of an ordinary house, be ready for occupation immediately, be drier and warmer, and cost very much less money. I have endeavoured to the best of my ability to point out the merits of these timber houses, and although, of course, I could have gone more into the details of their construction, and thus perhaps have gratified the curiosity of many of my professional brethren, I have preferred to give you the result of my experience when in Scandinavia, as to their durability, cleanliness, and comfort. As I said before, my opinion must only be taken for what it is worth, but still, at the same time, if that opinion, humble though it is, is borne out by the statements of able and experienced men than myself, as I venture to think it is, I am confident that on reflection you will have so persistently stated that wooden houses are not durable, are not comfortable, are not dry, are not clean, and are as costly as brick and stone houses, will soon come round to alter that opinion when what are shown to you as facts are proved to be so."

In the discussion which followed, Mr. R. Rawlinson, C.B., said, correctly enough, had come that evening to hear history read backwards, for the paper they had listened to took them into a period of two centuries ago. I would not have ventured to speak on this

question if he had not been through Sweden and Norway. He had been far inland there to the forests where the timber was grown, and he had seen the style of house in the different villages and on the roads. What Mr. Sparkes had said with regard to the vermin was quite true, but whether they were necessary to that style of house he was not ready to say. In the two principal townships of Sweden, Gothenberg and Stockholm, houses were not built of wood, but of brick or stone, the same as in Copenhagen. In the plans which were hung on the walls now before the audience he did not see any of the peculiar characteristics of the Swedish and Norwegian houses, one of which was the ladder outside of almost every house. When he first saw this, he asked what it was for, and was told it was to aid the people in extinguishing fire. That timber houses would be liable to fire where stoves are used, and in a climate where a high temperature was got up inside, and every crack and crevice stopped up to shut out the cold, was only to be expected. That square log-houses might be gutted by fire, and the log-walls be left as in brick houses, he could quite understand. They must not imagine that Sweden was a cold country, by any means. He never suffered so much from heat himself as when he was in the Arctic Circle. The heat during the summer was most intense. As to the economy of erecting wooden houses, no doubt there would be some in a country where wood was plentiful. Trees there of 120 years old could be bought for 5s. each. They were cut on the margins of the rivers, and thence they were sleighed down by reindeer and lodged on the ice. When the ice broke up they floated down, but an immense number of them were destroyed on the passage. It might be easily imagined that in such a country timber houses were economical in construction; but even if they were built cheaply here and found to answer, should there be any demand for them, the prices that had been quoted would not stand six months. They would rise, and the building of wooden houses would soon be stopped by price alone. As to brick and stone houses being uncomfortable, that of course depended entirely on the mode of their construction. He was sure he was speaking to persons who would bear him out in saying that houses as built in England were generally comfortable. Many were uncomfortable, they knew, but he believed that if his audience went to Sweden and Norway and attempted to winter there, they would find many wooden houses there were uncomfortable as well. Whether they should have open fires or stoves, as in Sweden and Norway, depended on taste and constitution. Many English constitutions would not stand what had to be borne in Sweden and Norway in winter. Windows were double-framed; the outer frame was taken out in summer and put in in winter, and so intense was the cold that the space between the two frames was packed in with cotton wool, and every means was taken to shut out the frosty air. The stove then became a necessity, for if there were open flues and chimneys the draught would be of such a character that the fire and smoke would be blown into the room.

Mr. Hale thought wooden houses would do very well in isolated spots, but said innocently it was a little questionable whether houses in streets should be built of wood. In the latter case there would be great danger of fire.

We should think so too.

THE RUINS OF CAMBOJA: INDO-CHINA.

In the course of a paper by H. G. Kennedy, on the "Antiquities of Siam and Cambodia," read on the 1st inst., at the Society of Arts, Mr. Kennedy said, as to the ruins in Cambodia, that there are upwards of twenty distinct groups which have already been examined by Europeans with more or less care. The principal remains are the ruins of the great temple, known as Angkor or Nakhon Wat, and the ruins of the ancient capital, three miles further to the north; but there are other relics of great importance, some within a radius of fifty miles from the ancient capital, some more distant, at Korat, in Laos, or in the southern provinces of Cambodia. These are not temples merely, and simple pagodas, but vast banked-up causeways, running high and dry above the autumn inundations, and doubtless uniting city to city in times long gone by. There are huge square reservoirs, faced with brick or stone, and constructed for the use of a population that must plainly have been a dense one. These reservoirs are found not merely in the

temples and the cities, but at frequent intervals alongside what were anciently the main highways. The rivers were crossed with handsomely balustraded bridges, built on archways and constructed of stone, and the whole character of the ruins, from their grandeur, from the extended area on which they occur, as well as from their number and variety, bears silent but unmistakable witness to the existence of a very great, powerful, and populous empire, which has passed from history, and left, so far as is yet known, not one single written chronicle of its own behind. The materials of which the monuments are built comprise a ferruginous sort of stone, common in many parts of that country; granite; and, less frequently, bricks. In the temple of Angkor Wat alone M. Mouhot took the trouble to count the pillars, and found them to number more than 1,532; they are monoliths, and were dragged from the quarries in rough blocks, and carved after they had been placed in position. Whether any masonic marks are to be found on the columns or other sculptures I do not know. Such marks are discovered, I believe, by the explorers in Palestine, but in Cambodia nobody yet seems to have inquired into this point. The small holes to be seen in the exposed faces of the huge blocks of stone were of use, as I presume, in the mechanical appliances adopted for conveying the blocks from the quarries, and for hoisting them to their ultimate position. An indication of one of the methods employed for this purpose is afforded by the photograph of a bas-relief, which shows us a mighty stone being heaved up by the united efforts of two torturers in the realms below, for the pounding of some poor wretch whom we see awaiting his doom in a sort of mortar.

The quarries from which the stones for Angkor Wat and other temples around it were procured lie about thirty miles from the ancient capital, at the foot of a low range of jungle-clad hills; and there, not only may the marks of the masons' chisels, and the touch of many a vanished hand still be discovered, but blocks half-severed from the parent rock are to be seen, too, just as they were left when the labourers were suddenly interrupted long centuries ago. This, at least, is what the Frenchmen tell us, and I see no reason to doubt their statement. This range of hills where the quarries are to be found, is connected by an ancient causeway with the old capital; and, while various ruins of minor importance are scattered along the route, the temple or palace of Meles, which is one of the principal remains, and perhaps the latest, lies a mile or two farther to the east. We might expect, therefore, that in old time there was a numerous population in that locality. Hence it is interesting to note, and this is a point which, I believe, hitherto escaped remark,—that the group of hills referred to is still known as the Khao Rishi, or the hills of the Rishi; and on those hill-sides, perhaps, in an age of fervid Buddhism, many a Rishi meditated in his hermit cell on the unrealities of human life, on the merits of his Great Master, and on the duties of self-abnegation. Native testimony corroborates this view, and kindled in me, at any rate, when I halted at the foot of those hills, an eager, but impossible, wish to push my researches further. There, so they report, on the hill-tops, and buried in the silence of the forest, are statues of Buddha and other relics of the past. But there would be great difficulty in verifying such statements, because the natives, who alone would guide us to the spots, stand in awe of demons, whom they allege to inhabit the mountain sides.

There are a good many groups of these Cambodian ruins, which, though known to exist in localities much more accessible than those to which I have just referred, have, unfortunately, not yet been examined by Europeans. For example. Two days north of Preakan, in Cambodia proper, are some remains styled Oaker. Near Phimai, in the province of Korat, are some stone temples, which have been photographed by a Siamese artist; and again, at Sourien, in Laos, remains are to be found which the natives allege to be of great importance. I stambled upon some myself on the lonely bank of an unfrequented river; but the jungle was so dense, and my time so short, that I cannot at all tell whether they were of great extent or the reverse. Further careful exploration is much to be desired, more particularly as inscriptions frequently turn up, and these if collected and examined, might throw a flood of light on the history of the race.

From the very incomplete examination which I made of the ancient capital and of the ruins in its vicinity, I gathered the general impression that though, as years roll on, the destruction of these antiquities is being swiftly and surely accomplished, it was not the hand of time that dealt the first and fatal blow. I rather seemed to see the traces of some sudden and complete overthrow, of the capture of the city by an invading army, and of the subsequent ravages of an unsparing conqueror and his host.

THE "ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS" AT WEST HAM.

A MEETING of the Home Counties District was held at West Ham on Friday last, April 24th, for the purpose of inspecting the Abbey Mills Pumping Station, the West Ham Sewage Works, and the phosphate process and irrigation farm at Barking. The meeting was attended by Mr. Lewis Angell, president; Mr. Lemon, borough engineer, Southampton, vice-president; Mr. C. Jones, Basing, general hon. sec.; Mr. Ellice Clark, hon. sec. Home Counties; Mr. Pritchard, borough engineer, Warwick, hon. sec. for Midland Counties; and the representatives of about forty towns, including Bristol, Birkenhead, Croydon, Canterbury, Cambridge, Stoke-on-Trent, Folkestone, Lowestoft, Richmond, Hereford, Maidenhead, Reading, Boston, Hanley, Watford, High Wycombe, Epsom, Maidstone, Acton, Eton, &c. Letters were received from Liverpool, Manchester, Salford, Leeds, Norwich, Birmingham, Portsmouth, and other towns, regretting non-attendance through business arrangements. Mr. (now Sir J.) Bazalgette, C.B., engineer to the Metropolitan Board, and Mr. Haywood, C.E., engineer to the City of London, were elected honorary members of the Association. Having visited Abbey Mills the engineers and surveyors proceeded to the West Ham pumping-station, where Mr. Lewis Angell, who is engineer to the West Ham Local Board, explained that the whole sewage of the district flowed into the River Lea. The conservators of the Lea and the Thames had both given notice to the Local Board, calling upon them to clarify and disinfect the sewage of the district by the best-known practicable means before discharging it into the stream. The Board were simply anxious to know what process to adopt. Originally, and, as they thought, in accordance with the views of the Government, they had secured 750 acres of land, situated between the Lodge Farm, Barking, and the Thames, far away from human habitation. Here they proposed to utilise the sewage by irrigation, and they had so contrived the financial point of the scheme as to reduce the local burdens of the ratepayers, instead of increasing them, and that without any reference to profit from the use of the sewage. But, to their great surprise, after preparing their plans, they were told by the Local Government Board, then newly appointed, with Mr. Stansfeld at its head, that they need not go to so much trouble, and they were advised to adopt the tank system, purifying the sewage as far as they were able. The Government sanction to the irrigation scheme was positively refused, and the Local Board was left in the difficulty of not knowing what to do. They had tried several plans, including General Scott's lime process, producing Portland cement, on which method they had expended 1,400l.

The next visit was to the Lodge Farm, near Barking. Here Mr. Henry J. Morgan explained the operations of the Metropolis Sewage Company. A portion of the sewage of London is conveyed from the contiguous line of the great outfall sewer, and distributed over the farm by means of open carriers. The area of the farm is 212 acres, and a portion of the sewage is previously treated by the Phosphate Sewage Company. The deposit is dried by exposure to the air, and is said to give off no smell during that process. When dried, it is ground, and sold as a portable manure, stated to be valuable, having a large proportion of phosphate for its base. The original precipitating mixture consists of a phosphate of alumina, ground to powder and treated with sulphuric acid.

A dinner took place at the Town-hall in the evening. Among the local gentlemen present were Mr. Meeson, Mr. Tonge, Mr. Norman, Dr. Shipston, &c. Mr. Lewis Angell occupied the chair, and a number of pleasant speeches were made.

BEAUTIFYING TOWNS.*

WHATEVER be the style adopted, our towns should be rendered beautiful. Green trees, the lime, the mountain ash, the acacia, the poplar, the red chestnut, and the crimson thorn, I would have growing in every thoroughfare, pictures or if not pictures, good chromos or oleographs hung in every dwelling, busts and statues, or if not statues, exact copies of the priceless sculptures of the past, recessed in every wall. Outside I would clothe the now dreary surfaces with the gracious outlines of the fig, the ivy, and the vine, the flower with all its loveliness and perfume ascending to heaven; in short, the plant with the life, the beauty, and the grace which it everywhere sheds around. Walking one day last summer with my daughter in Kent, I came upon a perfect sea of the scarlet poppy. Hard by was a field of the *trifolium incarnatum*. The poppies had taken fast possession of the field and half or more of a newly-constructed road. Never in this world was anything more exquisite. It was in truth a house of God, a very gate of heaven. In respect of sculpture and architecture, I very greatly prefer the Italian style myself, with its balustrades, arcades, campaniles, and tiled roofs. But I am free to confess that I have seen Italian structures, or rather those that were so misnamed, excessively ugly, and structures eminently beautiful that were not Italian at all. Why terra cotta, a substance in itself perfectly imperishable, is not more generally resorted to, I cannot well imagine. Let each erection then, be at least good and sufficient, and, if only it may be, beautiful also. Why must houses be facsimiles of each other, interminable rows of unmitigable ugliness? If only I had my will, I would have no two absolutely alike, but each different from the other, different as are the lily and the rose, each perfect and each beautiful. *Viger Dies* should be our motto here, as in everything else, for in God resides all beauty. In short, our cities and our towns are flagrantly deficient. Streets and houses, at once individually and collectively, are bald, dreary, characterless. Houses in former days, in truth, possessed, at least often possessed, an individuality now almost extinct. The only improvement within the last hundred years has been to recess windows somewhat, instead of having them on a staring level with the exterior walls, too often, however, owing to the miserable tenacity of the walls, to project unpleasantly into the interior of the chamber. In Normandy and the Low Countries it is often a perfect treat to walk through the old towns. Once, I remember, I had a ramble by moonlight, through some of the older streets in Rouen. Every deformity was veiled, and the effects were perfectly enchanting.

No single elevation, in fact, should be raised without the aid of a competent constructor, one of real taste, refinement, and skill,—in short, an architect. But houses in thousands, nay, tens of thousands, are run up, to use the patent phrase, by persons who, because they happen to know how to lay a brick, plant a rafter or joist, imagine themselves equal to every artistic requirement. A builder, I freely admit, may be most able, intelligent, and industrious, but he is not, therefore, an architect, is he? Every one ought to stand upon his own calling. We do not ask a gardener to draw up an outline of the vegetable kingdom, require an apothecary to set forth the practice of medicine, or expect a man before the mast to sail ships across the seas. The builder may fitly execute, but it is the master, the architect's part to plan. At the same time, the young architect, while he has his Vignola,—Vignola! to whom modern architecture is so unappealingly indebted,—at his finger-ends, ought, I submit, to be practically conversant with all his materials, and not be led away by the mendacious idea that outlay merely and art are one. The humblest and most inexpensive structure may be made to evince a real taste, the costliest a true economy. One of the most, perhaps the most beautiful of the remaining relics of ancient art in Athens, or indeed the world, to wit the choragic monument of Lysicrates, did not, I am persuaded, cost so much as may oftentimes be seen expended on some staring monstrosity of a white marble chimney-

piece, devoid absolutely of design or taste, with glittering register stove, fender and fire-irons to match. In every case then, we should call for the architect's aid, however simple the design. He alone can fitly realise grace, convenience, safety, and proper economy. Men who are their own exclusive architects, are about as well advised as those who prove their own physicians or their own lawyers. Next indeed to the homes of Heaven, there are not perhaps many things more desirable than is a well-ordered dwelling, beautiful within and seemly without, with garden if it may be, a dwelling exempt alike from stagnant air and grovelling impurity; in fine, a dwelling occupied by self-respecting intelligent people, and supplied with those appliances of literature, science, and art which, thanks to social progress and advancing civilisation, potentially at any rate, are now more or less within the reach of every one. Let the architect, then, for it devolves on him in a large measure to do so, cover the surface in country and town with erections at once pleasant to look upon and delightful to occupy. Architecture, true architecture, is, in fact, poetry in stone; it is an enchanting art. If it be indeed true, and true it is most emphatically, that "a thing of beauty is a joy for ever," a thing of ugliness, houses regarded, is also a disgrace, a horror, and a desolation, so long, at least, as it is permitted to disgrace the soil on which it ought never to have been suffered to find a place.

THE ARBORETUM AT WALSALL.

THE Walsall Arboretum has been formally opened, and in order to give *clarté* to the proceedings, most of the shops and places of business were closed. The movement for the establishment of an Arboretum originated some years ago, and by the 11th March, 1873, the contract of Messrs. Rowley and Lynex for erecting the lodges, boundary wall, &c., was accepted. Their estimate was 2,703l. Mr. Lowe, of Wolverhampton, laid out and planted the grounds. Mr. Lowe's contract was 1,265l. The paid-up capital of the company is 4,000l., in addition to which 625l. were received in donations. The site of the Arboretum is the Old Hall Estate, used as a limestone quarry. The grounds are bounded nearly all the way by a high wall, and at the main entrance, which is at the junction of Denmark-road with Lichfield-street, is a lodge with a square tower. The grounds are well arranged, including a broad gravelled walk bounded on either side by plantations and flower beds. There is a lake for boating; a summer house; a rockery, covered with ferns, plants and flowers; and croquet lawns. The principal promenade is 120 yards long and 25 wide, and forms a walk between the two lakes. On the east of the large lake is the cricket-field, 200 yards long by 150 yards wide. There is also a bowling-green. At the east corner of the lake are refreshment-rooms. There is also an orchestra capable of accommodating thirty performers; and near is a piece of greensward, which will be appropriated for dancing. The archery grounds are upwards of 100 yards long, and there are also a gymnasium and quoit-ground. The large lake is 7½ acres in extent.

WHAT IS A FACTORY?

THE CASE of Redgrave v. Lee, heard in the Court of Queen's Bench, before the Lord Chief Justice, Mr. Justice Blackburn, and Mr. Justice Archibald, raised the question what is a factory within the meaning of the Factory Acts Extension Act of 1867 (30th & 31st Vict., cap. 103). It was an appeal by an inspector of factories against a dismissal of a complaint against the proprietor of a cement manufactory at Halling, in Kent, for not displaying a notice of the name and address of the proprietor of the factory for the district. There are about 200 men employed in the works, in a great many different capacities, and the premises are very extensive. The works occupy 10 acres, and they include mill. The basis of the cement is chalk, which is taken from a space of 3 acres a mile from the works. The chalk is washed, burnt, and ground in mills, and subjected to several different processes to make it into cement. There are many open sheds in the works, most of the processes going on in such open sheds or in the open air. There is no separate building on the premises in which fifty persons are engaged, and there is only one boy under the age of sixteen employed. The magistrate on the authority of a case decided in this court, in which a slate quarry was held not to be a factory, dismissed the information. The inspector appealed. The last Act defines a factory thus:—"Any premises, whether adjoining or separate, in the same occupation, and constituting one trade establishment, in or within the precincts which fifty or more persons are employed in any manufacturing process." The court at once said there was no doubt the making of cement was "a manufacturing process." The court, however, adhered to their former decision. It was difficult to draw the line; but here it appeared to be done almost entirely in the open air. They therefore dismissed the appeal and upheld the decision.

* From a pamphlet by Dr. Henry MacCormac, "Arrangement of Houses, contained in Reference to Sanitary and Artistic Requirements." Belfast: W. H. Green, 1873.

† Il Vignola Illustrato, Roma, 1629. Vignole de Poche, Paris, 1630.

"ST. VEDAST FOSTER AND ST. MICHAËL-LE-QUERNE."

Sir,—I notice in your last issue an account of the works proposed to be executed at the above; with reference to which, allow me to add some particulars.

The Saddlers' Company are desirous of making certain additions to their hall. They are prevented from doing this, owing to the rights of lighting possessed by the Church over their property on the south side, without first obtaining the consent of the rector and churchwardens to closing up these windows. The granting of his consent is now under consideration.

With reference to the alterations proposed to be carried out by the rector from my designs, they are not of so extensive a character as you imagine, and certainly cannot be said to amount to a "re-construction" of the "interior of the church;" on the contrary, they are of a perfectly reasonable character, and amount to a rearrangement of the internal fittings, and such other works as are required by the present condition of the fabric. The contemplated alterations are, in fact, of so reasonable a nature, that when I submitted the drawings to the Bishop of London, his lordship signified his consent, with one exception, which had reference to the emblematical carved figures proposed to be placed upon the existing recesses, and which the rector, in deference to the Bishop's objection, has since withdrawn from the faculty. This was indignantly stated at the Vestry meeting held last month, when I attended with the designs to explain their nature and scope.

I purposely refrain from making any remarks upon the opposition raised by the Vestry to these alterations.

EDWARD POWER.

MACCLESFIELD BOROUGH SURVEYORSHIP.

For the appointment of Borough Surveyor, Mr. C. F. Wike Leicester; Mr. Joseph Dawson, Engineers' Department, Salford; Mr. J. B. Barram, Engineers' Department, Manchester; and Mr. O. C. Robson, Stratford, London, were elected from twenty-five applicants. From these Mr. Dawson was selected by the Committee, and recommended to the Council for the appointment, and now we find the whole proceeding set aside, and another gentleman, not on the above list, elected to the post. Surely there has been great injustice here. Some man of reputation in the town should make it his business to look into it.

THE TRADES MOVEMENT.

Leek.—Six months ago the joiners gave notice to their masters that at the end of that period they should expect to receive an advance in wages of 3s. per week. Their earnings up to the present time have been 25s. per week. The term of notice expired at the beginning of this month, but the employers refused to give the advance, and consequently the men struck work.

Doncaster.—The union bricklayers employed at Doncaster have turned out, to the number of about fifty, for an advance of wages equal to 3s. per week.

Rotherham.—The dispute between the union painters and their employers continues. The masters have refused to submit the question to arbitration; and the men have refused to accept an offer of the employers of an extra penny per hour, their demand being an extra shilling. Some of the men have left the town to obtain work elsewhere, and a notice has been published calling upon other painters to stay away from Rotherham until the settlement of the dispute.

Sheffield.—The masons have given notice of their intention to demand an advance of 2s. per week. The notice will expire at the end of the month.

Tuddersfield.—Three hundred masons' employers have struck for an advance of 6d. per hour on present wages, which are 21s. per week nine months of the year, and 19s. during the winter months.

Woughborough.—A large number of the bricklayers employed in this town have been out on strike for the last few days. They require an advance of 2d. per hour. We understand that some of the men have resumed work at an advance of 1d. per hour.

Nottingham.—The brickmakers' strike has

been brought to a conclusion at a conference between the masters and the men. The masters had throughout maintained that their prices were up to any throughout the country, not even excepting Sheffield. An increase, which is stated not to fall far short of the men's demand, has been conceded on culvert bricks, wedge bricks, the firing of bricks, picking up of bricks, and on the day's wages. A list of Sheffield prices had been shown by the men, but on investigation it was found that Sheffield, which was regarded as the best locality in the trade, gave nearly 2s. a thousand less. The men went to work again, and the arrangement just entered into to continue in force for two years, at the end of which term two months' notice is to be given on either side, should it be deemed necessary to make an alteration.

Edinburgh.—The master painters have agreed to advance the wages of efficient workmen 1d. per hour on and after the 4th inst.

Dunfermline.—A number of the joiners and cabinet-makers who came out on strike have resumed work on their former terms. The greater part of the men are still idle.

Dumfries.—The joiners, who have been on strike for four weeks, have resumed work. The men asked a rise of 1d. per hour, and the recognition of a number of bye-laws; and the masters, while conceding the rise asked for, refused to sanction the bye-laws. An agreement has been come to on the workmen withdrawing the most obnoxious of the bye-laws.

Kilmarnock.—The masons' strike, which commenced a month ago, in consequence of the masters refusing to accede to a reduction of hours from 54 to 51 per week, still continues. On Saturday, the employers offered to make this concession on condition that a few of the men who did not take part in the strike should not be subjected to the fine of 2d. imposed upon them by the unionists, but this offer has been declined, and the masters seem determined to agree to no other terms.

ST. BOTOLPH'S CHURCH, ALDERSGATE STREET.

This church has been refitted and decorated from the plans of Mr. J. Blyth, architect. The alterations consist mainly of new open wainscot benches, with carved paterae and mouldings at ends of same; four cross aisles, formed and paved with alternate slabs of slate and Portland stone, laid diagonally, which paving has been also carried up the centre aisle; and a chancel has been formed by raising the ground at the east end, with Portland stone steps leading to it, the area being covered with tiles; choir-stalls and readers' desks being ranged on either side. The old circular altar-steps have been removed and straight ones substituted, with burnished brass rails, and oak top-rail. The hot-water pipes are carried in trenches on either side of the aisle, instead of as coils as heretofore. The decoration on the ceiling is carried out in turquoise blue and fawns, the capitals of columns being heightened in gold; the walls are of a light salmon tinge, relieved at the east end with gold, the frieze being in maroon dull sage-green and fawn. The stained-glass windows were taken out and restored. Messrs. Hayward & Son were the contractors. Messrs. Stevens & Son provided and fixed the snailshells and other burners; and Messrs. Rayner & Son were the upholsterers.

THE CRYSTAL PALACE.

ACCORDING to the new programme issued May 1st, the twenty-first year of the Crystal Palace, now commencing, promises to be an exceptionally brilliant one in respect of the special art features that have developed, or are being developed, as a settled policy of the institution, particularly in music. The Great Handel Festival, a celebration unique in its character, renews in 1874; and the consistent presentation of music as a fine art will be pursued unflinchingly. The directors promise, we are glad to see, that the permanent illustrations of Fine Art and Science, that form integral features of the Crystal Palace, shall be carefully kept unimpaired, and, whenever opportunity serves, added to.

The company possesses casts of the famous Dioscuri, the Colossi that now stand in front of the Pope's Palace, on the Quirinal at Rome, which hill has from them come to be called the Monte Cavallo; and these grand works, the only

existing reproduction of the originals, will shortly be erected in public view, as part of the Sculpture Collections. The statues generally are being repainted, and will be better seen, in consequence of an improvement that is in progress. The new roofing of the Palace, become necessary after the twenty years during which the building has stood, is being steadily proceeded with. Some important portions are already completed, as over the series of Southern Industrial Courts, the Picture Gallery, the Opera Theatre, and the Concert-room. Over the Fine Arts Courts of the Northern Nave a much-desired alteration is to be made. The excessive light will be modified, and better directed for artistic effect, by excluding the rays altogether from a portion of the roof on either side of a central glazed division, the beneficial result of which measure will be very apparent.

We are glad to hear that during the past season the animals in the Aquarium have thriven, and the mortality among them has been exceedingly small. The Aquarium is now, in fact, what it was designed to become, a satisfactory representative collection of nearly all examples of British marine fauna that can be preserved in an inland Aquarium. We would direct attention to the superb group of living corals that has lately arrived from Naples, and is now an object of great interest in the collection. This will be the first time in Britain that the circulatory system has been applied to fresh water. All the fresh-water fish of the British islands that can be kept in an Aquarium will be here represented. This will be a primary object, but the introduction of foreign examples will be in due time carried out.

Of the operations of the School of Art, Science, and Literature, which, as a primary object, utilises for educational purposes the permanent collections of the Crystal Palace, we have recently spoken. The new buildings for the ladies' division have been completed at the north end of the Palace, and they comprise not only fine studios, but a large chamber for lectures and other purposes, and a complete suite of rooms for class tuition and private lessons.

Musical illustrations will be very full during the coming year. First must be named the Great Handel Festival, which, as a result, will be greatly served by former experience, as well as the suppression of some difficulties by a perfected organization; and it is wonderful how much this has to do with the matter.

On the 16th of May, the day fixed for the visit of His Imperial Majesty the Emperor of Russia, the concert will be given the character of a Festival worthy of the occasion.

In presence of the exceptional incidence of the Handel Festival this year, it has been found most expedient to suspend the National Music Meeting.

We are glad to find that carefully studied representations of the National Drama will occupy an important position in the plan of the season. The encouraging results that attended the performance of "Hamlet" and of "Macbeth" demonstrated not only the possibility but the desirability of prosecuting the course then entered on. It is intended, if possible, to proceed in like manner with "A Midsummer Night's Dream," introducing all the music composed by Mendelssohn for it, and "The Tempest," accompanying it with the music by Arthur Sullivan. But the dramas selected will not be confined to Shakspeare's; other examples of the masterpieces of English poetical drama, as well as of the fine English comedies, will in due course be given.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At a special general meeting held on the 11th of May, the proposal,—That in the opinion of this committee it would be advisable to raise the entrance fees and subscriptions of members of the Royal Institute of British Architects,—was withdrawn by the member who had moved its adoption. It was then resolved,—That a special committee be appointed to consider and report to a special general meeting as to the financial condition of the Institute, and the best mode of increasing its efficiency."

The following office-bearers were elected:—

President.—Sir G. Gilbert Scott, R.A.

Vice-Presidents.—Messrs. H. Currey, John Gibson, and G. Valliamy.

Ordinary Members of Council.—Messrs. J. McVicar Anderson, J. Belcher, C. Brodrick, T. Talbot Bury, T. C. Clarke, C. H. Cooke, John Foster, E. A. Gruning, O. Hansard, E. H. Martineau, Harry Oliver, Wyatt Papworth, E. G. Paley, E. Salomons, and W. M. Teulon.

Hon. Secretary.—Mr. F. P. Cockerell (Foreign Correspondence).

Secretary.—Mr. C. L. Eastlake (Home Duties).

Auditors.—Mr. E. C. Robins, Fellow; and Mr. J. T. Knowles, Associate.

Treasurer.—Sir W. R. Farquhar.

Honorary Solicitor.—Mr. F. Ouvry.

DORKING SANITARY AUTHORITY.

THIS authority does not seem to be in working order as yet, but there are already two parties elected with a majority in favour of sanitary reform and Dorking drainage. This party, Mr. Cliff said, at a recent meeting, had for years been fighting a losing battle, but had now obtained a majority, and were not to be shelved. Dr. Jacob, the medical officer, said parochial committees had been appointed in the district, but were only means for shuffling the whole work. There had been 77 deaths during the quarter, or at the rate of 205 per thousand in Dorking; in Epsom (urban), the rate was only 113; Epsom (rural), 14; Chertsey (rural), 206; Reigate (rural), 119; Reigate (urban), 166. The death-rate in Dorking thus appeared higher than it ought to be. The rate of sickness per thousand in Dorking during the past quarter had been higher than in his other districts.

SIR,—Published reports will show you our sanitary state, and how it affects our health statistics. The consequence likewise is this, we have not a house building in the town, plenty to let of all sorts and sizes, plenty of building plots to be sold, and not a purchaser. Where can we look for help? S.

METROPOLIS BUILDINGS AND MANAGEMENT BILL.

SIR,—Let me make a suggestion,—one possibly that may have occurred to many of your readers; that is, as clearly no question of urgency can be said to arise, to postpone the further consideration of this Bill until the government of the metropolis is definitely arranged for, or pending any change that may be made in the Board of Works with that view. At present it appears somewhat premature. A CITIZEN.

OLD LONDON.

SIR,—The south side of Aldgate is mainly composed of old wooden houses with projecting stories. Some of these are now being pulled down, and the operation reveals their antiquity,—probably of the fifteenth or early sixteenth century. The construction is principally of wood, some of the beams being of large size; the capacious fireplaces which commence on the first floor are formed of brick and are supported on wooden beams and posts; in two of them Tudor-headed stone chimney-pieces existed. The external covering of the fronts next the street was formed of clay and straw: to one part of this was attached a swallow's nest, long unused, with many coats of paint on it; the internal walls were lined with framing in small panels of the period. A photograph of these houses was lately taken and a copy sent to the Guildhall library. W. SIMS HORNER.

PROTECTION OF WESTMINSTER ABBEY FROM FIRE.

It is stated that the Dean and Chapter of the Abbey of Westminster, taking into mind the late fire at the Pantechnicon, have determined as far as possible to prevent any such catastrophe happening to the Abbey. To carry out this plan the cathedral authorities have accepted the tender at a cost of nearly 2,000*l.* of Messrs. Simpson & Co., Grosvenor-road, Piccadilly, and the following are the details:—A pipe from the main (which the Chelsea Water Works Company have enlarged at their own cost to afford greater facilities and pressure) is being carried up the north-west side of the Abbey to the Triforium level, passing to

the south-west tower, thence through the roof up to the south-west tower, to a large tank capable of containing 6,000 gallons (which will always be kept full), fixed at an altitude of 160 ft. from the ground. Pipes will pass from the tank all along the roofs, with hydrants and hose always fixed at various points, so that at the first alarm of fire one man, unaided, will be able to turn on the water to any point of danger. A second pipe will be run from the Triforium along the roof to Henry VII.'s Chapel, at the entrance to which another pipe (a stand-pipe) has been fixed. Both of these pipes have been fitted with double hose and hydrants. It is calculated that the tank, when charged, would suffice for half an hour's full deluge, but in the event of fire-engines not arriving in that time, a powerful hand-pump of about 12-men power, has been attached to the main to keep up a continuous supply to the tank, and thence to the hydrants.

[And then when the fire breaks out all will be found out of order, or the key will be missing, or the man in charge will be out of the way.]

DOWNING-STREET AND THE MILKY WHEY.

SIR,—Against No. 10, Downing-street (the Premier's sanctum) is an open ash-bin, the Cabinet dust-hole. Every morning grimy women and girls may be seen therein scrambling for cinders, &c. The other morning I saw one of her Majesty's subjects in possession inside, waiting for the contents of the ash-baskets; other outsiders were there waiting their turn to go in and scratch. It is not a wholesome sight.

Cows in St. James's Park are well known to juvenile loungers. Here shelter from rain is needed: a light ornamental shelter would not cost much; the seats, also, are primitive and shaky. It would be a boon to perigrinating youngsters and the straggled-down perambulating members of society that Hyde to Cowes.

Here is young St. James's, who lives on the National debt,
And young St. Giles's, who lives on,—what he can get.

R. T.

EXOTIC FERN-HOUSE FOR PEEL PARK, MANCHESTER.

PEEL PARK will, in a short time, become enriched with a special attraction, in the form of a fern-house. This addition to the park features is presented to the Museum and Park Committee by Mr. Wm. Agnew, Mr. William Mather, and Mr. R. Harwood, the mayor of Salford, who have acquired it by purchase from Mr. S. Mendel, in whose grounds of Manley Hall it is at present. A plan has been prepared by which this fern-house will be placed on the land between the museum and the houses in Marlborough-square; and if an addition of new buildings to the museum be carried out, and may now be accomplished from Mr. Langworthy's bequest, the fern-house will be so arranged as to be accessible from the museum by a long glass-roofed corridor. The fern-house will be about 150 ft. long by 30 ft. wide, the centre part being altered so as to provide head room enough for the tall tree-ferns, of which there are many in the collection 20 ft. high. Some of these ferns are very costly, on account of their variety; all are beautiful, and if the re-erection of the house is well carried out, and the transfer of such delicate cryptogams successfully accomplished, Peel Park will possess a choice attraction both for summer and for winter.

THE WARRINGTON ART GALLERY.

ALDERMAN HOUGHBRON, in proposing the confirmation of the museum committee's minutes, said the borough surveyor's plans and drawings of the new Art Gallery had been approved by the committee, and he believed the new buildings would meet all the requirements. The building, as prepared by Mr. Vawser, would consist of an Art or Picture Gallery, on a site presented by Lord Wimmarleigh, adjoining the Museum, and in connexion with it. The floor of the Art Gallery would be on a level with the upper floor of the Museum. The only access to the gallery would be through the entrance from Bold-street, and it would therefore be entirely under the control of the Museum Curator. On the ground floor another large apartment would be provided, which would be used for museum purposes, or as a reading-room, lecture-hall, or for the exhibi-

tion of local products, as circumstances required. The gallery would be 70 ft. by 30 ft. and 20 ft. high, and lighted by skylights. The ground floor would be lighted by windows. All outside walls would be cavity walls. The new building would be warmed by hot-water pipes. The estimated total cost of the work was 2,000*l.* Space was reserved for further extension at some future time.

THE WORKS OF MR. OWEN JONES.

SIR,—I am sure you will forgive me for being proud of the long business associations I have with the distinguished man a sketch of whose life appears in your last issue; and will permit me to state that the late Mr. Owen Jones's great works, "The Grammar of Ornament," "The Victoria Psalter," "1001 Initial Letters," "Welcome to Alexandra," "Scenes from the Winter's Tale," "Paradise and the Peri," "Joseph and his Brethren," and "Chinese Ornament," were entirely produced and published by my firm, at an outlay that must have exceeded 50,000*l.* It may interest your readers to hear that so soon as "The Grammar of Ornament" became known in France it was largely and eagerly bought there, even with the English text; and afterwards, when I had had a translation made of the text into French, under the most critical supervision of Mr. Owen Jones, very large numbers were sold there.

WM. DAY (Day & Son).

"SEA-WATER FOR LONDON."

SIR,—I shall be glad if you will allow me to state reply to Mr. Pearce's letter in your impression of 1 week on the above subject, that I do not lay claim to originality in the idea itself of bringing sea-water to London. It has been suggested by others besides Mr. Pearce and myself, but I am the only individual who has brought the matter before the public in a practical form. I had hoped that the matter would have been taken up and discussed in the scientific journals, and was principally with this object that I published "Sea Water for London."

CHAS. FREDERICK FULLER, C.E.

CHURCH-BUILDING NEWS.

Chesham Hulme.—The small village Church of All Saints, Chesham Hulme, has been consecrated. The church was built in 1863, at a cost of about 1,200*l.* The plan then comprised a south transept, chancel, and north chancel. The building is of stone, with an open-timbered bellcote and spirelet, and was designed to accommodate 300 persons. The population has, however, so much increased since the church was built, and room having now to be found in it for the children from the Workhouse and Old School, the enlargement became imperative. A new north aisle was at first thought of, sketched out; but the idea was abandoned in favour of the more simple scheme of a north transept. This again was abandoned, and a north aisle and choir vestry were finally decided on, and have just been completed. The north aisle is divided from the nave by an arcade, of shafts of red stone and caps and bases of a white stone, this treatment suiting that of the rest of the interior. The new roof is a lean-to one, is covered with red and blue Broseley tiles, patterns to match those on the main roof. A transverse gable in the western bay of this contains a window of two tall pointed lights with a cusped rise above them. The alterations have been carried out by Messrs. Royle & Mellor of Wilmshurst, under the superintendence of architects, Messrs. Medland & Henry Taylor, Penzance. At St. Mary's Church, Penzance, a new serpentine octagonal font, in the perpendicular style, has been uncovered. It is placed at the entrance of the church on the left of the centre aisle. Its height is 3 ft. 4 in., and breadth is 2 ft. 6 in., and it is constructed of variously-coloured serpentine and granite, on a base and super-base, which are bevelled and chamfered, support the centre shaft, which is square, and made of serpentine. Each face of this shaft is flanked by a round polished column of grey Penryn granite, with serpentine capital and bases; the latter resting on small octagons of green serpentine. These five pillars support the bowl of the font, which has been hewn of a solid block of choice red serpentine, which, before it was wrought, weighed a ton and is now 6 cwt. This bowl has been worked out a flaw. Outside, the bowl is 30 in. wide by 15 in. deep. The whole is fixed on a granite

Manchester—The Welsh Methodist Chapel, just now commenced, is in the Early Decorated style. The plan comprises the chapel with the principal entrances facing Moss-lane, with open porches and vestibules. The gables extend to three sides of the chapel, and have separate entrances connected with the vestibule. Two vestries are provided with separate entrances, and adjoining is the chapel-keeper's residence. Contiguous to the chapel is the school-room, 54 ft. by 37 ft., having two external entrances, and a passage, affording access to the chapel, with two class-rooms. Under the class-rooms is the tea-room, fitted with hoist and boiler; also the heating apparatus. The front elevation of the chapel comprises an arched arcade, with two gables traciced windows, and circular window in gable. The tower, forming one of the gallery entrances is at the junction of the two streets, and will be terminated with broach spire. The side elevations are divided into three bays, with transept gables, each pierced with large traciced windows. The roof of the chapel is in one span, with circular ribs. All the timbers will be stained and varnished. Accommodation is provided in the chapel for 800 persons, and in the school-room for 500 persons. The site will be enclosed with a low boundary wall of masonry, similar to the chapel. The total cost will be about 8,000*l.*, and the works are being executed by Mr. Mark Foggett, builder, under the superintendence of Mr. John Lowe, architect.

STAINED GLASS.

Redon Church.—The west windows have been filled with stained glass of a character corresponding with the general style of architecture. This work has been executed at the expense of the relatives of the late Mr. Philip Whiteway, J.P. Messrs. Wallis, Son, & Sterling, stained-glass manufacturers, Newcastle-on-Tyne, were the artists. The windows consist of two large lancet lights and a cusped trefoil at the apex of the gable, the whole of which have been filled with stained glass. The treatment of the glass is that of groups of figures in medallion upon a groundwork of geometric grisaille, each light being surrounded by a border of conventional foliage. In the first light the subjects illustrate the six corporal acts of mercy. Beginning at the sill, there is represented "Giving food to the hungry and drink to the thirsty"; in the next medallion, "Taking in the stranger"; then follows "Clothing the naked"; and lastly, "Visiting the sick in prison." In the companion light the illustrations are drawn from the parable of the Good Samaritan, and are these: 1st, "The wounded traveller lying helpless by the wayside"; 2nd, "The Good Samaritan binding his wounds and assisting him to his beast of burden"; 3rd, "Conveying him to the inn"; and lastly, "Paying the host to tend him till recovery." In the large cusped trefoil there is a representation of our Lord seated in majesty, surrounded by adoring angels.

Christ's Church, Selling.—A stained-glass window has been erected in this church in memory of the late Mr. T. W. Pattinson, a churchwarden of the parish. The window is the gift of Mr. W. W. Pattinson, J.P., of Pelling House, the father of the deceased. It consists of two lancets and a circular light, and is the most easterly window on the north side of the chancel. The two lancets contain full-length figures of St. Peter and St. Paul. The circular light contains the figure of an angel's head, and a scroll with text. The window is from the stained-glass works of Mr. Cottier, London.

Trinity Church, Darlington.—The plain character of this edifice is now relieved by the erection in the chancel of a stained glass window and a reredos. At the east end there are three lancet-shaped windows. The centre light has been filled in with stained glass, the expense of which has been borne by Messrs. Marley, Grieverson, W. Russell, jun., and Charles Fry, the conditions being that the other two lights are to be subscribed for by the congregation. The figures in the window already erected represent St. Paul preaching at Athens, Christ crowned with thorns, and Peter at Rome. The work has cost 130*l.*, and has been executed by Messrs. Cottier & Co., of London; Mr. Gillard erecting the window.

Poltimore Church, near Exeter.—Two windows have just been erected in this church by the Rev. H. J. Fortescue and his sister, to the memory of their mother, and of their father, the late rector of the parish, the Hon. J. Fortescue. The windows are two-light, the one in memory of the mother being "The Annunciation" and of the father, "Christ's Charge to Peter," with ornamented canopies and the tracery opening with lilies. Messrs. O'Connor & Taylor, of London, were the artists engaged.

Biddulph Church, near Congleton.—A memorial window has been placed in this church, under the direction of Mr. Williamson, of Ramsdell Hall, Lawton, Cheshire, being in memory of a child who died recently. The lower part of the window is made to represent "the house of mourning," and the upper light, "the reception by the Saviour of the ascending souls of the just," with attendant angels; the whole interlaced with foliage running through, the vine being especially prominent. The work is from the studio of Messrs. O'Connor & Taylor.

Bearsted Church, near Maidstone.—This church has just been ornamented by a new window, erected under the direction of Mr. Henry Tasker, of Snowfield, who takes an interest in the church. It is the gift of a lady, and represents "The Nativity." The subject running through the two lights, and being treated with full pictorial effect; every incident surrounding the event being fully brought forward. It is by the same firm who executed the east window last year, Messrs. O'Connor & Taylor.

All Saints' Church, Acton.—The six windows over the choir-stalls have been filled with stained glass, painted by Powell Brothers, of Leeds.

VARIORUM.

"OBSERVATIONS on a Public Health Bill for Ireland, prepared for the Irish Poor Law Medical Officers' Association, by the Honorary Secretary, Dr. Toler T. Mannsell, M.B. Dub., M.R.I.A., &c. Dublin: J. Atkinson & Co., Successor Printers, Grafton-street, 1874." Dr. Mannsell here shows how much Ireland is in want of a sanitary organisation, and as to the expense of carrying out the proposals made in this pamphlet it is stated that the total annual cost of the whole sanitary organisation would amount to about 100,000*l.* a year, which would represent a tax of about 1*d.* per acre per annum, or less than 1*d.* in the pound on the present poor-law valuation, or about 3*d.* in the pound on the real valuation of property in Ireland. The author is desirous to prepare all interested for the discussion of the question in Parliament this session if possible.—With that view also Mr. Mannsell, as the honorary secretary, has prepared for the Irish Poor Law Medical Officers' Association, "An Analysis of the Population, Aerage, Expenditure under Sanitary Acts, and Medical Charities Act, in the various Provinces, Counties, Rural and Urban Districts, in Ireland, along with the Average Salaries of Medical Officers, Poor-law Valuation, Total Poundage on Valuation and Poundage on Medical Salaries" (Dublin: Atkinson & Co.); and he urges professional and other co-operation.

"Local Self-Government in the Parish of St. James's, Westminster. By an Ex-Vestryman and Ex-Guardian. London: Longmans & Co. 1874." This is an appeal to the ratepayers on the subject of the election of vestrymen and of guardians of the poor. "Here," as the author remarks, "is a body of forty-eight men dealing with a sum of about 21,000*l.* per annum, and having the charge of the paving, the lighting, and the cleansing of the parish, together with the carrying out of numerous Acts of Parliament, and who are virtually self-elected. . . . Now, what I have to ask is this:—Will some influential ratepayers come forward and co-operate with others for the purpose of improving the character of the vestry and of the board of guardians?"—The *Art Journal* says:—"A French lady of immense wealth, who has just died—Madame Lenoir-Joussan—has bequeathed ten millions of francs (400,000*l.*) for the construction of a vast hospital in the Faubourg of Paris; and to the State she has left a magnificent collection of works of art and artistic curiosity."

Miscellaneous.

Michelangelo.—Sir W. Stirling-Maxwell, in his speech at the Academy dinner, said the 6th of March next year is the fourth centenary of the birth of Michelangelo. Florence and Italy propose to celebrate that anniversary in a manner worthy of the occasion. Happily, there are circumstances that enable Florence to pay honour to that great man in a way it is impossible for any other city to do. The great collection of the Buonarroti correspondence is for the first time to be opened to the world. The seal of secrecy which has perplexed so many writers is to be removed. It contains 700 letters of Michelangelo, and 1,800 addressed to him by his eminent contemporaries. With this large mass of material at hand, Signor Gotti is about to publish a new life of Michelangelo. It is to be published on the same day in French, Italian, and German. He has secured a very competent English translator who is also an artist. That is an enterprise which, I think, will evoke the interest and sympathy of the Royal Academy. I hope there are some in this room who may be able to assist Signor Gotti in enriching literature with such a work. I need not remind you, Sir Francis, that in his last discourse a most distinguished predecessor of yours said he hoped the last words he pronounced from that chair you so worthily fill would be the name of Michelangelo. Excuse me for referring to this subject, and for expressing the hope that that great man who evoked the enthusiasm of your predecessors will not be forgotten in 1875, when the anniversary comes round.

Ryde Sewerage.—The Town Council have decided to carry out the plan for altering the outfall sewers prepared by Mr. G. H. Stayton, the borough engineer, and have applied to the Local Government Board for their sanction to a loan of 4,300*l.* for that purpose.

High Wages and Drunkenness.—During the debate on the malt-tax, Mr. D. Davies, the member for Cardigan Burghs, in the course of a very amusing maiden speech, opposed the proposal to reduce the malt-tax on the ground of the injury that cheaper beer would cause to the working-man by increasing drunkenness. Enlisting the sympathy of the House by the announcement that he had begun life as a working man, though now the principal partner in a colliery employing 2,500 men and boys, he said his experience had satisfied him that three things promoted excessive drinking, namely, high wages, cheap beer, and convenient public-houses. He then proceeded to show that the advance of 50 per cent. in wages which the men had obtained in 1873, had led to a loss of 50,000*l.* from irregular working, which was chargeable with 75 per cent. of the fatal accidents in collieries worked like his on the long wall plan. He estimated that there was a loss of twelve and a half millions sterling per annum absolutely wasted, from this cause in coming alone, and on that ground, as well as the interest of working-men, he felt bound to resist a proposal which would tend to increase one cause of intemperance among that class of the community.

Churchwardens Removing Christmas Church Decorations.—In the Carlisle Consistory Court, the Chancellor of the diocese of Carlisle has given judgment in the case of officers of judges, promoted by the Rev. William Blaker, rector of Wetheral, against George Handley and Isaac Howe, churchwardens of the same parish. The case arose out of the removal by the defendants at Christmas last of certain decorations of evergreens, flowers, vases, and ornamental shields, which Mr. Blake had placed in Wetheral Church. Whether the decorations were in themselves proper and in conformity with the law, the Chancellor said, was not a real question before him; the real question was whether the churchwardens in the circumstances were authorised to act judicially. He remarked incidentally, however, that it was clear from the evidence that there was nothing otherwise than innocent in the decorations. His worship proceeded in detail the general question of the duties of churchwardens, and concluded by deciding that the defendants had acted in violation of the laws ecclesiastical, and must be admonished for this offence, and admonished so to offend again; that they must restore the vases so illegally removed and carried away, and that they be condemned in the costs of the suit. Judgment for the plaintiff, with costs according.

The Haseley Water Scheme, Warwick.—The plans and specifications for this scheme have been completed by the engineer, Mr. E. Pritchard, C.E., and may be placed in the hands of the contractor as soon as negotiations for the purchase of land at Haseley warrant such a step. It is proposed by the town council, under the Act of Parliament, to acquire eleven acres of land for this purpose, on which to erect two reservoirs, three filter-beds, &c. A "deposit" reservoir, of about an acre in extent will be constructed on the west side of the road from Haseley Church to Beaconsale, in the parish of Haseley, and this will be in communication with the brook which is to be tapped, and at the capabilities of which there have been conflicting reports. It is expected that the work will be commenced during the ensuing summer and it is calculated that from twelve to eighteen months will be occupied in their completion. It is impossible, in the disturbed state of the labour market, to correctly estimate the cost, but it is confidently asserted by the engineer that the original estimate of 15,000*l.* is not likely to be greatly exceeded.

Swimming-baths at Charing-cross and Pimlico.—The first of the floating swimming-baths which are being constructed in the Thames, it is believed, will be opened by the end of June. A contract has been made with the Thames Iron and Shipbuilding Company the first bath at Charing-cross, and it is intended that another shall be placed off the Embankment near Pimlico pier. The swimming bath the former will be 135 ft. by 25 ft., and in latter 200 ft. by 40 ft. The Marylebone bath alone cost 28,660*l.*, while both the floating baths will be made for under 30,000*l.* The directors, one of whom is Admiral E. M.P., mean to appoint skilled professional swimming, and to offer annual prizes at swimming matches.

Paints.—We are informed that the tenders of the Liverpool Silicate Paint Company for the supply of paints to the Indian Government, for the Bengal Presidency, have been accepted.

The Late Excavations in the Troad.—In reply to Mr. E. Stanhope, in the Commons, who asked the First Lord of the Treasury whether her Majesty's Government intended to propose a vote for the purpose of the interesting collection of antiquities formed by Dr. Schliemann during his recent excavations in the Troad, Mr. Disraeli said "I have considered the subject, sir, and as at present advised I am not prepared to propose a vote to Parliament on the subject."

Grimsbury.—At the last meeting of the Town Council, the Mayor stated, with reference to the remuneration of the Borough Surveyor for preparing the plans and specifications of the roads in the West Marsh estate, and for superintending the work, the committee recommended that 100*l.* per annum be allowed Mr. Mangham for such services from the 1st of January last; and that he also be allowed 45*l.* for preparing the plans of the estate previously to that date. After discussion the report was unanimously confirmed.

Sewage Congress.—The Association of Municipal and Sanitary Engineers propose to invite discussion upon the sewage question at their annual general meeting at Birmingham, May 28th and 29th. Persons who are not members, desirous of taking part therein, should communicate with the President of the Association, Mr. Lewis Angell.

Royal Architectural Museum.—During the repairs to the front of Wells Cathedral, Mr. Ferrey had several casts of the best specimens of the sculpture taken, and these he has kindly presented to the Architectural Museum, where they may be seen daily.

Reading.—Mr. William Long Franklin has been appointed assistant to the borough surveyor of Reading. Mr. Franklin was a pupil of Mr. Dean, sanitary engineer of Southam, Warwickshire. There were twenty-five applicants.

Bath Cattle-market Plans.—Mr. J. M. Hay, of Bath, architect, has been awarded by the Bridgewater Town Council the sum of 10*l.* offered for the best plan of the proposed new cattle-market in that town.

TENDERS

For the erection of a new Vestry Hall for the parish of St. Clement, Dares, Strand. Messrs. Cadogan & Butler, architects. Quantities by Mr. T. T. Smith:—

Howard	£5,287 0 0
Lathley	6,150 0 0
Macey	4,750 0 0
Thorn	4,900 0 0

For forming new vestry, and alterations to St. Helen's Church, Bishopsgate-street. Mr. E. A. Anson, architect. Quantities supplied by Mr. D. Campbell:—

Adams	£1,011 0 0
Asby & Ilbert	1,337 0 0
Brass	1,021 0 0
Prinard	973 0 0
Hyder	908 0 0
Hayward & Son	590 18 0

For building a church at North Holmwood, Dorking. Mr. Robt. Hawkins, architect. Quantities by Mr. J. J. Livock:—

Colls & Sons	£2,650 0 0
Futhey	2,390 11 0
Hanlin	2,590 0 0
Shearburn	2,655 0 0
Goddard (accepted)	2,369 0 0

For alterations and additions to Rushell's Hotel, Leighton Buzzard. Bedfordshire. Messrs. J. Giles & Gough, architects. Quantities supplied:—

May	£2,900 0 0
Shedfield	2,753 0 0
Nightingale	2,608 0 0
Grover	2,589 0 0
Holstock	2,555 0 0

For altering No. 304, Fulham-road, into a refreshment house, for Mr. Alexander. Mr. W. H. Lamborn, architect, exclusive of gasfitting and plastering:—

Smith & Alder	£270 2 6
Godbolt	118 0 0
Batley (accepted)	114 10 0
Norris	91 0 0

Contract No. 2.

Batley	£98 0 0
--------	---------

For erection of concrete retaining walls, forming roads, and drainage, for the Woolwich Board of Guardians. Messrs. Church & Rickwood, architects:—

Waterson	£2,470 0 0
Bigby	2,305 0 0
Dickinson	2,100 0 0
Kirk & Co.	2,060 0 0
Marshall	2,046 0 0
Wilson & Lansbury	1,845 0 0
Lovergan	1,700 0 0

For alterations and additions to house, Russell-square. Mr. H. H. Collins, architect:—

Poule	£1,295 0 0
Vernall	1,188 0 0
Bird	1,150 0 0

For building new chapel and infirmaries to Paddington Workhouse. Mr. H. H. Collins, architect. Quantities supplied by Messrs. Bairstow & Hunt:—

Oliver (accepted)	£7,000 0 0
-------------------	------------

For the erection of cemetery chapels, vestries, entrance lodge, &c., for the Basford Local Board. Mr. H. Walker, architect:—

Johnson	£2,545 0 0
Jelley	2,761 18 6
Marnott & Co.	2,683 0 0
Bradley & Barker	2,650 0 0
Charvillat	2,610 0 0
Booker	2,609 0 0
Hodson & Facon	2,599 0 0
S. & J. Cargill (accepted)	2,550 0 0

For the erection of a villa residence, &c. in Grove-place, Bedford, for Mr. C. Cooper. Mr. F. T. Mercer, architect. Quantities supplied:—

Conry	£1,177 0 0
Hull	1,085 0 0
Carter	1,080 0 0
Hull	1,019 0 0
Knight & Boston	999 0 0
Haynes	977 12 0
Corby & Son	977 0 0
Taylor	937 0 0

For the erection of residence, &c., at Rushden, for Mr. W. Colson. Mr. F. T. Mercer, architect. Quantities supplied:—

Hilton & Poole	£941 15 6
Potter	900 0 0
Miller	890 0 0
Pelkins	889 0 0
J. Bayes	868 0 0
Underwood	830 13 0
C. Bayes	819 13 6
Foskett	777 0 0
Hall	777 0 0
Green & Hull	755 4 0

For the erection of additions to farm buildings, at Pwllglas, Tregeigwy, Montgomeryshire, for Major-general Woodman. Messrs. Powell & Swanwick, architects:—

Johnson & Breck	£701 4 6
Williams	703 15 0
Taylor	700 0 0
Evans (accepted)	698 0 0

For new offices, and show-rooms, Calvert's buildings, Borough, for Messrs. Wigan & Cosser. Mr. B. C. Pope, architect. Quantities by Mr. G. F. Poland:—

Dove, Brothers	£4,765 0 0
Sharpington & Cole	4,222 0 0
Coleman	4,000 0 0
Sutton	3,908 0 0
Rider & Son	3,894 0 0
Lawrence	3,884 0 0
Newman & Mann (accepted)	3,853 0 0

For mansion at No. 6, Hamilton-place, Piccadilly, for Mr. J. Innes. Mr. R. B. Marsh, architect. Quantities by Mr. D. Cabitt Nichols:—

Newman & Mann	£12,356 0 0
Smith & Co.	12,854 0 0
Patman & Fotheringham	12,732 0 0
Sutton	12,710 0 0
Trollope	12,692 0 0
Longmire & Burge	12,460 0 0
Perry & Co.	12,140 0 0
Sewell & Son	12,100 0 0
Macy	11,997 0 0
Conder	11,997 0 0

For warehouse building No. 10, Gough-square, Fleet-street, for Mr. W. Frounce. Messrs. C. G. Searle & Sons, architects. Quantities supplied:—

Dove, Brothers	£2,935
Axford	2,815
Sewell & Sons	2,815
Brass	2,654
Newman & Mann	2,610
Macey (accepted)	2,545
Nightingale	2,537

For school and residence, &c., at Croyley-green, and for classroom and residence, &c., at West Hyde, in the parish of Hackmansworth. Mr. W. Seager, architect:—

Holland	£793 3 8
Halsey	815 0 0
Waterman	781 0 0
Taylor	772 0 0
Brown	760 10 0

For cottages at Burton. Mr. G. Sennell, architect. Quantities by Messrs. K. L. Curtis & Sons:—

Brown	£3,071 0 0
-------	------------

For new infant schools to High-street, Stoke Newington school, for the London School Board:—

Bilham & Co.	£1,331 0 0
Hook & Oldrey	1,085 0 0
Parsons, Brothers	888 0 0
Emor	885 0 0
Boye	881 0 0

Guildford Pipe Laying.—Sir: Be good enough to make it known that our firm is not referred to in the tenders for the Guildford pipe-laying, under a name similar to our own. —THOMAS DOWNS & SON, Pond-road.

TO CORRESPONDENTS.

F. H.—W. L.—G. O. S.—W. R.—N. W. E.—J. S. W.—W. H. E. H., Buenos Ayres.—E. R.—J. E.—F. S. W. S.—P. A. S. G. H.—W. H. P.—A. F.—A. R.—O. A. T. (Mr. A. R. Turner's name miswritten). W. G. T. (not been already inserted on—) H. B. (next week).—W. E. (next week).—W. C. T. (in type).

We are compelled to decline pointing out books and addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily publication.

Note: The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

Six lines (about fifty words) or under. Each additional line about ten words.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to readers in any part of the United Kingdom at the rate of 1*s.* per annum in advance.

Halfpenny stamps accepted for payment of the subscription. Any larger sum should be remitted by Money Order, payable at the time of the subscription, to the Office, 1, DOLLS LANE, FINSBURY, LONDON.

Advertisements cannot be received for the current week's issue later than THREE o'clock on THURSDAY.

Bath Stone of best quality.

RANDELL, SAUNDERS, & CO. (Limited). Quarrymen and Stone Merchants.

List of Prices at the Quarries and Depots, also cost of transit to any part of the Kingdom on application.

Bath Stone Office, Corsham, Wilts. [A]

STONE BROTHERS,

Bath Stone Merchants, supply direct from their own Quarries:—

Box Ground, CORSHAM DOWN, FARLEIGH DOWN, COMBE DOWN, AND STOKES GROUND.

Prices on application at Bath-stone Office, London Depot, G.W.R. Mileage Station, Farringdon Street Dressings prepared ready for fixing. [A]

Whitland Abbey Green Slates.—Quarries are now fully opened out, and producing Slates in all sizes, and in any tint: sound, and of choice green tint. can be executed without a day's delay.

samples and further particulars, apply to the MANAGER, at the Quarries, Narberth, R.S.O. [A]

Asphalte.

Seyssel, Patent Metallic Lava and White Asphaltes.

M. STODART & CO. Office: No. 117, Cannon-street, E.C.—[Adv.]

Bills of Quantities, Specifications. Lithographed by ROBT. J. COOK & HAMILTON, 29, Charing-cross, S.W., with accurate punctuality. Plans and Drawings Traced, or Lithographed.—[Adv.]

PERFECT DAYLIGHT.

WHY BURN GAS?

CHAPPUIS' REFLECTOR

IMPROVE NATURAL DAYLIGHT AND SUPERSEDE GAS

P. E. CHAPPUIS,

PATENTEE AND MANUFACTURER

No. 69, FLEET STREET, LONDON.

The Builder.

VOL. XXXII.—No. 1633.

'The Labourers' and the Farmers' Difficulty.

NOTWITHSTANDING some good symptoms, the uneasy state of the relations between the English farmer and the English labourer is a question that knocks rather loudly at the door of every one of us. While it has not assumed the magnitude, or displayed the same amount of embittered feeling, that we have before this had occasion to deplore in similar contests, where mining and mechanical industries were involved, yet there are circumstances peculiar to the occupation of the tillers of the soil which give to any hostile measures in this department of production unusual importance. In all countries,—although less apparently in temperate climates than in those in which either extreme of temperature is more severe,—the season of the year has a primary influence on the conditions of labour. But the ingathering of the fruits of the earth, and the operations which precede that ingathering, this difference of season becomes vital. Two or three weeks lost, at either of these times of the year, means a season lost. The revolution of the whole series of fifty-two weeks is regulated by these two crucial times; if they be occupied by debate and dispute, the farmer may be the first to suffer, but he need not be the last. Producers and consumers will alike have to pay for the loss of this critical time.

The subject is, indeed, one on which the feelings of the parties actually interested is so keen, that it well becomes the public writer to avoid numbering it with platitudes, or affronting it with advice which may be well meant, but will assuredly little needed. The service which the press may render, in such cases, is not to echo the counsels of the pulpit, or the declamations of the lecture-table. At the same time, in all class contests of the kind, it usually is the case that certain important elements are left out of sight. The combatants are, too often, so blinded by the dust and confused by the din of their own struggles, as rather to look for what may be the most available weapon for the moment, than to investigate calmly all the positions of the case. Such, indeed, may be said to be the fact in almost all warfare; certainly in all that bloodless warfare which is waged within the area of the same kingdom or nation. For each party to know accurately, and to state plainly, what are the points that it considers to be essential, is the first step towards the settlement of a dispute. To this disputants must ultimately come; and very often in time, cost, wrath, and suffering will be paid if they do so in the first instance, rather than in the last.

There is one consideration as to which we would urge those of our readers who are not engaged, in the first instance, to assent to it, to careful reflection. It is this,—How far has the doctrine of the self-regulation of interests, which are mutually dependent led to retrograde

political and industrial action? We think that the condition of the farm labourers has been directly affected by reliance on this theory. Principles may be thoroughly true in the abstract, and yet, if applied in the raw to the regulation of human conduct, may prove either ineffective, or absolutely mischievous. Such is the case with the doctrine of the relation between demand and supply. That there is such a relation, is a truism. That such a relation must, in due time, have a controlling influence, is unquestionable. Thus, when the farmer tells the labourers that the rate of wages must depend, not on the organisation of unions, but on the balance between the amount of labour in the market,—that is to say, the number of men able and willing to work—and the demand for labour, he tells him what is, no doubt true; but yet what may be no more appropriate to the matter in hand than the question of the density of the atmosphere in the moon. For although true, it is not the whole truth. It is like arguing from statistical averages. It may be perfectly true, for example, that the amount of bread, meat, money, or any other object of desire, in a given district, may be such as to allow an average distribution of a very respectable quantity to every soul within that district. But if you meet a hungry man, who asks you for a loaf of bread, it is no answer to tell him that the bakeries of the district have turned out seven loaves per head for every month. He wants his loaf, for his own month. The statistical value of his month is perhaps 1-100,000th in your calculations. To him it is unity, or all per cent. Your averages may be perfectly true; but—all the same—there is a present vacuum in the poor man's belly which they by no means fill.

We may illustrate what we mean by the action of water. This is well understood, not only by the engineer, but, to a certain extent, by everybody. We all know that water runs down hill. But does it follow that human skill and energy can do nothing, and that the rain which falls on our fields must be left, under the influence of this great law of hydraulic movement, to make its own way to the sea? Such, no doubt, is the case in uninhabited countries; and the mighty torrents of the Nile or La Plata have poured down for thousands of years, owing nothing of their grandeur to the hand of man. But it by no means follows that man can do nothing in face of this great law. In actual fact he can do much. He can make the law work for him, instead of looking on as the helpless sport of its operation. He finds acres of swamp and marsh, inaccessible to any foot save that of the wading bird, and productive only of rank vegetation and the humbler forms of molluscs or of insect life. Is he to argue that marsh is marsh, and that there is no room for man where his foot cannot rest? On the contrary, he knows how to drain. He may, with some intelligence and some labour, convert the fen into a rich cornfield, as in Lincolnshire; or, with even less change from its original state, into fertile ricefields, as in Tuscany. The foaming torrent, turned by human labour, grinds the corn when ripe, or drives the saw-mills which furnish the materials for another department of industry.

It is precisely the same with regard to labour. The law of supply and demand cannot be more inflexible than the law of gravity. In fact, there is no just comparison to be drawn between the certitude of the two. The latter is an unsleeping force, on the constant action of which, whether in our favour or against us, we have to reckon. The former is one of those relations which are only to be grasped in the abstract, and the force of which diminishes the more it is pursued into detail,—not because it is not existent, but because it is only one amongst many active forces, moral as well as material. Therefore for a man to stand aside, and refuse to put his own shoulders to the wheel of the public

good,—to say that disputes must settle themselves, and that wise counsel and wise laws are of no avail, because of the unfailing action of the law of supply and demand,—is much the same wisdom as that of the man who would leave his land undrained, or take no steps to prevent the destructive overflow of a river, on the excuse that, do what he might, water would find its own level.

It can hardly be questioned that, for the last third of a century, the mutual relations of the different classes in this country have been more and more left to regulate themselves. The idea of self-regulation as being not only ultimately certain, as a matter of average, but intermediately satisfactory, and that to such an extent as to destroy all other modes of regulation, has been accepted as if it were a well-understood and perfectly satisfactory doctrine. It has influenced our legislation to an extraordinary extent. Under the influence of this idea, while we have been destroying everything that could be represented as a restriction on personal freedom and independence, we have been actually sweeping away an ancient and time-tried organisation, without taking any steps to replace it. All those provisions which regulated apprenticeship, journeymanhood, the hierarchy of craftsmanship, and the fixed relations between employer and employed, or between the individual members of any craft and the body of the craft itself, we have been for some time past steadily and ruthlessly destroying.

We are not about to urge that the old institutions were compatible with modern ideas of progress. We shall not enter into that question. Let it be taken for granted that they had gradually grown out of date; but it does not follow that, however cumbrous, they were not better than nothing. It remains to be shown how far it is the path of true wisdom to destroy an organisation, however imperfect, except by the conservative process of replacing it by a more efficient and well-considered organisation.

That we have erred in this respect seems to us to be proved by the fact that while the Legislature, and the politically active class, have busied themselves in the removal of restrictions, and in the destruction of organisation, the very people in whose interest these changes were supposed to be made, have commenced action in the opposite direction; an action that has attained great force, as well as produced, repeatedly, very disastrous consequences. No sooner do we free the workman from ancient restrictions, imposed, whether wisely or not, with the view to the benefit, not of one class, but of all, than he begins to replace them by other restrictions of his own imposing, many of which are, apparently and certainly, prejudicial to the industrious, and beneficial in the long run to none. No sooner do we tell the mechanic or agricultural labourer that he must govern himself, than he submits to the newly-constituted government of the union. To avoid the tyranny of the farmer, the squire, and may be the parson, the rustic takes refuge under the tyranny of the delegate. In so doing, he abandons the guidance of those who, whatever their defects, have a certain hereditary stake in the welfare of the country, for that of those who have no stake, status, or guarantee whatever. He abandons the lead of men who, with all their defects and faults, have the advantage of the best education that the country affords, and, above all, of the education of society, and, in most cases, of public schools and universities; for that of those whose education is not only of the narrowest character, as regards actual learning and science, but whose position in life precludes them from obtaining the advantages of that more important education, given in the friction of society, which does not commence until a man has left his college, and entered on real life.

We are not in any way blaming the mechanic

or the agricultural labourer for so doing. What blame is due in the matter rests at the door of those who have not only left, but driven him into this corner. If legislation is destructive, who shall blame the workman for the best attempt at reconstruction that we have left within his grasp? This is what is done when law is made to abdicate its true functions. We have recently come, in a manner that would have been inconceivable to our ancestors, and will probably be inconceivable to our descendants, to substitute legislation for law. We tell Englishmen that they are to live, not under the laws which their ancestors patiently and thoroughly elaborated, but under those which are made, brand-new, by every self-constituted reformer. We make laws, of which the number is legion; of which the meaning and force can only be ascertained by means of costly suits in courts of justice; and of which the experience of each year sends us to the legal tinkers to produce a crop of amendments for the next session of the ever busy law-making body.

The most hopeful effort to escape from this bewildering maze, where the absence of normal regulations is replaced by continual new legislation as to details, is offered by those projects of arbitration, which we now see brought forward, sometimes with and sometimes without success, on each new occasion of class conflict. It is unfortunate that an expedient, which is so obvious as a pacific instrument, should be left to casual instigation. In the Continental countries arbitration is a primary element in all cases of mercantile contention. Courts of primary instance exist, proceedings before which assume, in many cases, the form of conciliatory measures rather than of legal conflict. Again, matters of dispute between partners, in some Continental countries, are invariably remitted to arbitration; the only action of the ordinary tribunals, with regard to them, being to facilitate the appointment of these substitutes for professional judges. Thus it is not only to the voice of common sense that we are called to listen in this matter. It is not to our brief experience, and to the balance between success and failure in attempted arbitrations, that we have to refer. The keen-witted and subtle nation to which we owe so small portion of our jurisprudence, has here set us an example which we might well follow with no faltering pace.

We are not entering into these matters without practical aim. The destruction of the old organisation must be taken as an accomplished fact. This sense of the void thus caused is evinced by the attempts at self-organisation, which, as proceeding from and embracing only one part of the class interested, are necessarily imperfect, or even mischievous. Is it not the proper inference that this imperative duty should no longer be allowed to discharge itself? Is it not the part of those who on one hand are deeply interested in our agricultural welfare, and on the other hand are fitted by birth, education, and position, to take the lead, to come forward with some scheme of re-organisation, that may bind together in a firm bundle these sticks which are now being broken one by one?

One primary maxim underlies success in any such attempt. It is a maxim which we have before this formulated, but which we do not hesitate to repeat. It can scarcely be too often repeated. We would have it written, if not in letters of gold, yet in a text so legible, and affixed to stations so public, that men should perforce remember it. Success, in matters industrial and political, follows that action which pulls with human motion, not that which pulls against it. Human nature is on the winning side. We may try to screw it down, by rule or by formality, but it is irresistible. It will be settled with; why not enlist it in the great struggle for public welfare?

We think, then, in the first instance, the employers of agricultural labour should make an effort to show to those whom they employ that a union, to deserve the name, must be the union of a great interest; and not a division of its members into two hostile camps. Let the farmers, and the great landowners (to whom the question will come home if left unsettled) lay aside any irritation that they feel at the visits of stranger delegates, who come to fill the void caused by the craving of the labourer for guidance and organisation; and let them at least make the effort to fill that void themselves. Let them seize or make opportunities for meeting the working men, and for resuming

their natural and traditional position of leaders, counsellors, and friends. Let them propose rules for a true union, with which all may be content. If certain occasions were taken on which the more intelligent and respectable of the labourers were called into conference with the farmers and landowners, there are very many subjects on which information could be exchanged, with the utmost advantage to both sides; and by which ill will would be thoroughly averted. The rate of wages is one, and only one, of these questions. We will suggest a mode by which this, instead of being, as now, the bone of contention, might be made the very connecting link that should bind together master and man. But how much more is there that forms the proper province for discussion in such agricultural unions as we propose? The state of the labourer's dwelling, so much improved in some few places, so much needing improvement in many others. The sanitary rules which are rather of domestic than of municipal application. The diffusion of sound knowledge on this subject is a matter of crying need. Then arises the education question. The poor man finds the penny a week to press hard on him, and the absence of the odd who might earn somewhat doubles the pressure. This might be met by a general effort to spread through the rural districts that special knowledge, the teaching of which at South Kensington is becoming so extraordinarily popular,—we mean the science of cooking. If the State has undertaken what we may call the literary education of the children of the poor, who regards the far more important charge of the practical education,—of their being made fit to make the best of the life before them? Trade education, properly so-called, was understood by the old guilds, but is now almost, if not altogether, extinct. This is a subject which can only be efficiently taken up by some such method as we propose. The girls should be taught to sew, to knit, to plait, to use their fingers in all deft women's work. They should be taught to cook, to bake, to wash, to understand the duties of a housewife. These things do not come by nature. Poverty is bad enough; but poverty in this country is rendered far more pinching than it would otherwise be by that sheer waste which results from the total want of education in domestic duty. Nor should such teaching be confined to the girls. Why should the boys not be taught those things in which man can aid himself or his fellow,—taught them with definite plan, and the wisdom of practical experience, and not left to pick them up, anyhow, or not to pick them up at all? A lad does not know by nature how to groom a horse; how to tend a cow; how to feed and manage domestic animals of every kind; how to till the corner of the field; or to make the garden a source of profit, of health, and of delight.

Again, there is the question of sickness,—not the parish doctor alone, but that tendance which our grandmothers were wont to give to the people around their gates; the good counsel, or the strengthening food, or the timely remedy, that shall rather avert disease than leave it till it becomes so formidable that it demands the doctor. In sickness, most eminently, a stitch in time is the saving of nine. This is another subject for a real agricultural union to take up.

If the employers of agricultural labour will organise and head unions (call them by what name you will) of the great agriculturist class that shall thus anticipate the real wants of the labourer, and aid him in that which he now dimly desires, the raising of his position, the wind will be taken entirely out of the sails of those whose first and last word is, "Strike for higher wages."

Lastly, as to wages. It is our firm and well-considered opinion that there is a natural rate of wages proper to each occupation. If the labourer receive less, not only is he a sufferer, but his work, and therefore his employer, is a sufferer. On the other hand, if, by any artificial means, the rate of wages, in any particular industry, is forced above that which is its proportionate value, disturbance and troubles will result. It is not to the interest of the farmer to screw down the labourer. It is not to the interest of the labourer to make the farmer pay more than his work is worth. Both parties, then, have, in truth, a common interest. That interest is first to discover, and then to pay and receive, the true normal rate of wages.

As to that rate, it has not varied so much in the course of history, as a cursory perusal of history might lead any one to think. The con-

tinued diminution of weight in the coinage, according to which a silver penny of to-day is only the third part of the weight of a silver penny of the time of the Norman kings, is one of the circumstances that obscure this subject. The greater comparative abundance of silver, as compared with gold, is another. When the Roman civilisation was planted on our shores a golden penny worth twenty-five silver pennies. A gold penny if such a coin were now struck, would be worth thirty-two silver pennies. But, under all these changes, the quantity of nourishment that the labourer required to keep him in health has been unchanged. Thus it has happened that the number of bushels of corn that his year's work has earned has not very greatly varied.

Here is a point of union. We may take the high average wage of an agricultural labourer to-day, at a quarter of barley for a month, four weeks. If it were a quarter of wheat, we feel convinced that it would be better for master as well as for man. But, be it one or the other, if the corn rate of wages were once adopted as a national rule, how much contention would be avoided? More than this, if the rate paid were not the imperial average, but the average of the farm,—if the wages paid by each farmer were balanced at the end of the year, according to the price per bushel at which he sold the corn grown on his farm,—the great principle of operation would be at once introduced, and only master and men, but men, women, and children throughout the parish would all be members of one great co-partnership of agricultural welfare.

One solemn word more. If the amount rent paid for land be the hindrance in the way of life-sustaining and life-advancing as to the tillers of it, landowners had better begin to look to it.

THE HISTORY OF MODERN ARCHITECTURE.

In bringing out, with some modifications, the second edition of the treatise * on "The Modern Styles of Architecture," which was before published as the third volume of his "Handbook of Architecture," Mr. Fergusson indicates in a preface the form which the position is finally taken, and the position of this portion in relation to the whole. The "History of Modern Architecture" is now to be regarded as the fourth volume of the "Handbook," the first two volumes of which will be re-issued nearly in their original form, with such additions and corrections as may be requisite to bring them up to the knowledge of the present day, but with the omission of section on Indian architecture. This last, which in the existing edition occupies about 100 pages, with 200 woodcuts, will be increased twice its original extent, with a good many illustrations, and in this form will constitute the third volume of the "Handbook." It is presumed that the author has well considered the matter before coming to this decision; we cannot help feeling that such a division must impair the uniformity and balance of the work, as a general treatise on architecture, by placing in undue prominence a subject which is a speciality of its author's, a work which is intended to be of permanent value this is a mistake. Indian architecture has not, *per se*, any claim to have a whole volume to itself in such a general history. What interest may belong to it is temporary, and arises from the fact that it has been almost entirely neglected, and that Mr. Fergusson has special facilities for studying it. This would be a very good reason for publishing a separate work on the subject in detail, but is no reason for overweighting it by a separate volume of work professing to give an account of all its impartially. We must regret this decision, because if the work obtains, as we have good reason to expect, a permanent place in architectural literature, this disproportion in form is one which will become more apparent in process of time than it is now, and will tend to rob the book that universal and cosmopolitan character which it professedly aims at.

Apart from this consideration, those who take an enlightened interest in the history of architecture, in all its phases, not be unwilling to have their attention again directed to that period of the which Mr. Fergusson, more decisively than

* History of the Modern Styles of Architecture, James Fergusson, D.C.L., F.R.S., &c. Second Edition, forming the fourth volume of the new edition of "History of Architecture." London: John Murray

her writer, is marked off as essentially distinct, in its basis and principles, from whatever preceded the sixteenth century; and to which, while handing it as a period of emphatically its art, he has devoted what on his own showing ought to be considered a completely disproportionate degree of attention and illustration. But in other instances besides this it has appeared that the instincts of the oratio are fiercer and more catholic than his principles. It would be difficult to contradict Mr. Ferguson's opinion (and our own position before Mr. Ferguson wrote) that architecture since the *cinquecento* period has for the most part been practised on a totally different footing from that which occupied in pre-Renaissance times. The ideal distinction between the Medieval architecture, almost to borrow an expression from Milton),—

the piecing-together of the Renaissance from bones of extinct classic styles, is incontrovertible; nor can the major part of the modern revival be otherwise regarded. But let us be forgotten, even by Mr. Fergusson (in theory, though his practice fully nits it), that this very tendency to an architecture of reproduction is of itself a natural inevitable characteristic of a certain epoch in human history, and that therefore the interest which to it is as genuine, though not so use, as that awakened by the study of what a author, in one sense justly, distinguishes as *true* styles of architecture. And we may go further and say that in building in a style patterned from existing materials there is as much to be distinguished between good and bad architectural design as in any other case.

certain confusion of ideas in relation to the use of architectural design pervades, we venture to think, the introductory chapter, which to readers will be the most interesting of the book. We note remarks which hit the truth clearly and briefly; as to the want, for instance, of the "touch of higher art" in our buildings, owing to the neglect of mural painting; or the definition of the position of architectural carving, as art required to link together those of painting and sculpture. But the author is carried away by the idea of the necessarily spontaneous character of architectural design, as distinguished from the direct individual expression of sculpture and painting. Reverting to his established theory of "the principles of unity in Art," the diagnosis of which will only bear the test of criticism, he exonerates the utilitarian and scientific element in architecture; he regards architecture (the "true styles") as the engineering of the past; engineering as the architecture of the present; and to make the common fit, it is insisted that in both cases individuality of the architect or engineer was wanting, the work and the best manner of execution, depending on the knowledge of the materials, everything else, we regard to old buildings, Egyptian or Greek temples, Medieval cathedrals, the fact that we do not know the names of any directing architect or designer in connexion with them (with a few doubtful exceptions), simply proves that our information is limited, and nothing more; it can at most only lead to a conjectural opinion. Mr. Ferguson closes as the parallel modern instance, that of the Builders Bridge:—

In the late competition for the new Blackfriars Bridge, the council who was the engineer to be appointed. Of those who competed some suggested a three-arched bridge, some a seven-arched bridge. Some were for wrought-iron, some for cast iron; some preferred stone, or granite, or oak. But that is all. The Common Council,—like a naval chapter,—had to decide on the number of arches. The experienced architect had done, there were a hundred men, any one of whom could build a bridge as well as the remaining ninety-nine. All the council cared to know was, that whoever was employed, it only would be a better bridge of its class than any had been built before. Exactly as it was with architecture in the Middle Ages, so it is now with engineering, and so it always must be when an art is cultivated on true principles."

is a specious way of putting it, no doubt; high Blackfriars Bridge is in one respect regularly unhappy instance to select, as it is in outward aspect a structure springing solely from the requirements of the problem, includes, in its unfortunately designed piers, a great specimen of that very sin of borrowed (mis-) applied "architectural" features, which Fergusson has so strongly and properly decried; and this unfortunate attempt at design is evidently the work of an individual that one only regret that the public or the authorities

cared so little in what hands this kind of work was left. Had the bridge really been carried out on that purely utilitarian footing which is here implied, it might not have been a beautiful structure, but it would at least have escaped being in one respect a ridiculous one. But the whole passage is, we must be allowed to say, logical fallacy; the fallacy consisting in the ambiguous sense of the word "better." It may be quite true that, in regard to the modern bridge, all that was wanted was that it should be "better" than any previous one; and it might be equally true to say that the great ambition of the Medieval masons in building a cathedral was to make it "better" than any other in the country; but it must be obvious that in the one case "better" means simply more useful, fitter for its purpose, and in the other case it might mean this, but it meant also grander, more beautiful, more impressive. The same meaning might equally be applied in regard to a bridge, than which no class of structure offers finer opportunities for picturesque and beautiful treatment. But it is obvious that it is not so applied here, and that if it were, the statement would be at variance with fact. The public to not care about a bridge in any but the utilitarian point of view. But though the distinction between the æsthetic "better," and the utilitarian "better" must be easily defined in words, it is soon enough recognised in thought; and if any critic seriously maintains that in saying that the front of Wells is better than that of Salisbury, he intends the same kind of praise as in pronouncing the lattice girder a better form than the tubular one, he fails to distinguish between two diverse modes of excellence, and confounds a difference in degree with a difference in kind.

Our thoughtful and studious historian of architecture suffers, however, from no such essential incapacity of perception. The contrariness of his book arise in the main from the fact that he has committed himself to a theory which, with certain basis of truth, is irreconcilable and untenable as a whole, and into which he is endeavouring to squeeze phenomena which the theory cannot be made to cover. His own perceptions on the subject go much beyond his theory; and in his appreciative and often eloquent praise of some of the best achievements of modern architecture at Venice, Florence, and elsewhere, his feeling and sentiment furnish the happiest contradiction to the dry view of the subject which his logic goes to impose on himself and his readers. While, therefore, the less concerned at the promulgation of a fallacy to which the author of it supplies his own antidote, we may regret that in the exposition and illustration of his theory Mr. Fergusson more than once falls into a little exaggeration. The rhapsody on the interest of the ground plan of the cathedral (p. 24) is over-coloured, and at various other sentiments expressed elsewhere. So also the observations on the "purity of style and correctness of composition" (p. 32) of St. George's Hall, Liverpool, which in the real originality of some parts of the structure is ignored; while the observations in a following paragraph as to the supreme importance attached by architects and architectural critics to hairbreadth correctness of proportion in "Classic" detail, &c., might have been true enough twenty or thirty years ago, but are out of date in 1874. The architectural interest, again, of certain modern buildings (the cathedral at Boulogne, the church at Moustá, &c.), erected under that wholesale *laissez faire* system which Mr. Fergusson regards as the secret of the excellence and spirit of Mediæval architecture, appears to us to be quite overdone, so far as to ignore entirely the value of refined detail,—an excellence depending more on the eye and the general culture of the architect, than on his possession of unimpeachable precedents from old buildings. In regard to one point of difference, however, between modern and ancient architectural practices, appearances are certainly in favour of Mr. Fergusson's view. Whether or not there were really a person distinctly responsible for the "architect" of the Karnak temple or the Parthenon, of Salisbury or Amiens, there can be no doubt that in modern architecture the personality of the architect, and the individuality of his work, are far more pronounced than in any of the erolutions of the pre-Renaissance period, when a unity of style pervaded a whole nation; and let us ask, why not? One thing is pretty certain, that under the conditions of modern life it is utterly impossible to extinguish this personality, or to level it down (or up) to an

standard, we cannot restore the naïveté and singleness of aim of the Medieval masons. To so empty it would be to attempt to create one more "sham"; but is it even desirable? Certainly, this is a different system of practising architecture from the former one; but (so long as we can get clear of mere copyism) is it necessarily bad on that account? In the face of the extreme tendency of the social system of the present day to annihilate the individual, it is one of the benefits of art that it gives scope for original conception and work. To have added another art to those which furnish this outlet for individuality may, in some lights, be found to be a most unquestionable gain.

Leaving the philosophy of the subject, we may say that modern architecture has been one of the most interesting volumes treated of in this interesting volume. But that we may have the space which the book deserves, we will postpone it until our next.

ANOTHER LOOK IN AT THE ROYAL
ACADEMY.

VERY much depends upon a name for a picture, no doubt, though there may not be much in it; but why the classic, clever Mr. E. Poynter, A., should call his meek and proper nymph re-dressing herself, after such ablution as purifies naked truth, "Rhodope" (172), must be left to the learned to find out. It is hard to feel satisfied now with so small a contribution to a Royal Academy exhibition as this nicely designed and well-studied mythic miss is, from the restorer of belief in dragons and other monstrous machinery for terrorism; assailing and battering, "Serena, found of Salvages" (173), could be no one else, and scarcely needed the announcement that her re-appearance was due to Mr. W. E. Frost, R.A. Mr. H. S. Marks, A., has turned his labour to capital account, to show that a grievous question between "Capital and Labour" is at least as old as the Tudors (179), and it may be taken for granted that it will remain a grievance as long as there is a man left who has to work for his living. A deputation of workmen have met the noble proprietor of the mansion they are erecting for him, as he is inspecting the progress of the works, accompanied by that never very enviable and always very responsible individual who is supposed to direct the builders to urge an increase of their pay. The knowledge that they have my lord rather to their advantage accounts in some measure, perhaps, for their extremely respectful bearing in representing their claims upon his consideration; for 50 ft. or so above hard gravel go no way towards heightening consciousness of sure footing on scaffolding, if you do not happen to be used to it; and there is a slight suggestion even of seasickness in the twirling of the gold collar, though it does not must interfere with the dignified attention he lends to the men's request, indicating a very probable grant of it. This is one of the most complete and thoroughly satisfactory pictures of the collection, showing remarkable apprehension of character and first-rate technical qualities: in another and less important use of them, wherein a scholar is enjoying a solitary walk, and "A Page of Rabelais" (388), these recommendations are intensified.

the intensely quiet and Friar Lawrence (132), nor "State Secret" (223), is a fair example of Mr. J. Pettibone R. E. Elms, beyond the brilliant colour and dashing method of applying it to mark the second—a cardinal—binding parchments or papers. Mr. T. Feed, R.A., appeals, in 227, most impressively to the sympathy of his very pathetic rendering of a very old story, though, from frequent recurrence of its chief incident, it can never remain old. A daughter has married in disobedience to parental advice, and matters have turned out as the father and mother had foreboded. Treated fairly enough as a while, until "the black sun floated," the poor lassie returns to her home, sure of being "Forgiven," as only fathers and mothers can forgive. The girl hides her face; grief and shame make her disregardful of her mother attempt to console her. The father "never said a word, but took up his hat and gaid away out." "Ye mind he was whiler rather harsh w' her. She has suffered sairly for her disobedience, poor lassie; but she's hame now,"—with a small proof of this disobedience in the shape of a plump baby, that a pet collie dog is absorbed in contemplating, as if suspicious that his position

in the family would be considerably altered by this intruder. How splendidly this subject has served Mr. Fied with opportunity for employing all his resources as a painter, may be partly guessed by those who know his wonderful command over colour and brush; but the pathos and truthfulness with which the story is related make its narrative quite the first cause of the interest it secures.

Mr. G. Storey's procession of charity-school children, "The Blue Girls of Canterbury" (66), and his still prettier "Grandmother's Christmas Visitors" (521); Mr. E. Friess's "Woodcutter's Dinner" (524); and "Children teasing a Snail" (143); "The Appeal to the Podesta," by Mr. W. P. Yeames, A. (280); and the "English Ladies visiting a Moor's House" (475), by Mr. J. B. Burgess, are amongst the best of many similar instances wherein children are employed as principal actors. Mr. J. Sant, R.A., amongst many memorable pictures of handsome little boys and pretty little girls, must include the little duchess whose cheeks rival the "Peaches" she has just gathered (168) with those he would wish to insure the longest general recollection for; he has painted her with as much loving care, taste, and skill as if she were his own. It is a charming picture; and we were not surprised to hear that it was sold as soon as seen.

There have been very few English painters who could boast of more followers or imitators than Mr. W. P. Frith, R.A., in his earlier days, when imitation might have been thought possible. What a recommendation it was for a picture—not his—to be described as being "something in his style!" Even then he was imitable, though it was just as well to leave it for belief that others might arrive at similar distinction by acquiring some of the excellence that distinguished him in addition to what might come from other sources for them. But, now, it must be judged as quite settled that no one else can paint like him on his own ground—"Ramsgate Sands," "Railway Stations," and "Derby Days," or some of such scenes from abroad as may form appendix to these—for the crowd's recognition of what may be seen and learnt in crowds; and so nobody else tries. It is quite a relief, after a long feast of wonder at splendid achievement of nothing but what must go for assertion of great capability for doing something, to come to such meaning use of means as Mr. Frith displays in his treatment of a very difficult subject for general appreciation. He was quite right to rely on the "one touch of nature," that "makes the whole world kin," in depicting "The Great Annual Procession of"—their—"Lady of Boulogne," right to make "Blessing the Little Children," right to make the most earnest Protestant, the most trivial Ritualist, and stanchest Roman Catholic alike. It is a pretty sight, —this triumphant progress of "Our Lady of Boulogne,"—and quite a looked-for incident in the Franco-Anglo attractions of the semi-demi fashionable watering-place—Boulogne. But it is really sad to think how show, if it be met by no question of its worth, may come for faith, presently, this side of the Channel; if with no help from this picture, that should be rather accepted as one of the illustrations of its painter's knowledge of what is going on around him during his experience, than as intended to elevate for the world's direction any special matters of creed or custom in fashion. In fact, it must be as clear that satire is as much the spirit that pervades this investment of rare ability and assiduous devotion to observation and study, as that the motive for undertaking so laborious a task was confined to the determination of recording, in all its reality, a periodical occurrence as regular at Boulogne as the Derby day is at Epsom. However, there is no room to doubt the sincerity of the good Bishop, gorgeous as his ecclesiastical trappings may be, who strokes the heads of pretty children; or the eagerness of their handsome mothers to secure any sort of blessing for them; or the crippled boy's hope that holy intercession will regain for him the use of his limbs; nor is there need to question that of the chanters in praise of what is profit for them. But the whole ceremony is so perfectly well brought to sight and mind by the realistic force of Mr. Frith's pencil, that, without intending it, he may be performing a ritualistic service.

Mr. Frith is unusually strong in exhibition this season, for he supplements the triumphant depiction of the triumphant procession with three or four life-sized idealised female portraits, that are very attractive personally, and are made

the more so by masterly treatment and inimitable style of workmanship.

If opinions and tastes differ with regard to many things painted and paintable, it is always a safe thing for the artist who can paint a pretty face and make a pretty figure out of nearly anything which would suggest some new arrangement of the lay-figure for him to go on *ad infinitum*, so long as ingenious nominal excuse can be found for christening that which can never really become stale, with novelty. Who would care to see any exhibition of pictures that did not contain some such delightful visions as Mr. G. D. Leslie, A., succeeds in year after year heading a list of? On no former occasions have his nice innocent-looking softly sweetly-fair damsels of the last-gone century been seen to better advantage than now; occupied in the important home manufacture of delicious perfume "Pot-pourri" (129), in times unblest by Rimmel, or Piesse & Lubin. They seem born for no harder labour than this, of pounding rose-leaves and lavender with cunningly selected spices, destined to help winter pass away, and to keep them just alive until summer sunshine returns, with the only atmosphere that would seem to fit them; for their world is a garden, their home a greenhouse, and their only care is for some beautiful old china that helps very much in giving variety to the agreeable colorings lent by the artist's treatment of ordinary but extraordinarily pleasant facts. "The Nut-brown Maid" (197), with a very small head, and eyes that are too near, does not honour quite so much her cleverly represented and tastefully selected background and belongings. Mr. Leslie's preference is obviously for tall young ladies, whilst Mr. P. H. Calderon, R.A., might be fairly suspected of a leaning the other way, judging by his "Queen of the Tournament" (335), and the very noble beauties who attend her. But, then, these handsome specimens of nature's crowning grace, and of valour's crowning glory, would have no patience with such goody, quiet things as figure in Mr. Leslie's conservatory, so it is as well to keep them separate and as widely apart as possible, more than by all the difference between satin and brocade from homespun and white muslin. The clash of arms, the din of combat, the shouts of victory, and groans of the vanquished, were music to gentle ladies' ears thus listened to from balconies of a non-chivalric period would shudder and shirk at the bare thought of any such cruel enjoyment.

Mr. A. Elmore, R.A., has painted a type of womanhood that stands between these opposed personifications of opposite affections: "Alice Bridgenorth" (327), who was brave enough to be a heroine in the midst of fighting, without being at all fond of it; and patient, wise, and lovingly kind under very difficult trials of patience, wisdom, and loving-kindness. She must have been very like Mr. Elmore's figure of her standing with her lover, Julian Peveril, at a doorway. For exquisite manipulation, and refined sense of colour, there are few to approach Mr. Elmore.

METROPOLITAN BUILDINGS BILL AND THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the Special General Meeting, held on Monday, the 11th inst., "To resume the Discussion, adjourned from the Annual General Meeting, on the Metropolitan Buildings and Management Bill," the following resolutions were discussed *seriatim*, and carried:—

1. That the restrictions imposed upon building operations ought to be strictly limited to the ascertained requirements of the public safety; whereas in this Bill new restrictions are originated which are unnecessary, and calculated to impede the development of the value of property both in building and land.
2. That the essential importance of accurate definitions of terms for the avoidance of litigation has not been duly attended to in drawing the Bill; and that the provisions, respecting party walls especially, fail to secure the equitable adjustment of conflicting interests.
3. That the scheme of fire resisting construction which is set forth in the Bill is insufficient and imperfect; and that the provisions for amendments to be from time to time dictated by the Metropolitan Board, does not afford an adequate guarantee of efficiency.
4. That the very large dispensing and licensing powers proposed to be conferred upon the Metropolitan Board, and the Vestries, without any guarantee for their being properly advised, and their right to attach arbitrary conditions to their official approval, constitutes a most undesirable system of administration, unless subjected to the check of some external judicial authority; and that in any case the law ought to be defined as minutely as possible.

5. That nothing ought to be introduced into the scheme of a Metropolitan Buildings Act, which would reduce the proper status and authority of District Surveyors, who, whilst fully responsible to central control, ought to be experienced professional men in order to give that personal authority which has been found of great benefit in enabling them to secure compliance with the law. And that the Clause for the Examination of Ordinances by the R.I.B.A. ought to be retained.

6. That the proposal to constitute a Special Court for the administration of the Buildings Act, taken separately from other provisions in the Bill, is to be highly commended, and ought to receive the utmost attention in order that the principle of such a court may be affirmed in whatever form may have due regard to other considerations; and that the practice of Arbitration by surveyors with relation to Party Structures, &c., is also worthy of being preserved as in the present Act.

It was further resolved that the Resolution should be printed and forwarded to the chairman and members of the Select Committee, of the House of Commons, as conveying the opinion of this Institute on the Bill, and the Council were authorised to take such steps as might be advisable for the support of these opinions in evidence before the Select Committee.

THE METROPOLITAN BUILDINGS AND MANAGEMENT BILL.

On Tuesday last, the committee met at noon in Committee-room No. 12 of the House of Commons, having Sir Seymour Fitzgerald for the chairman. On behalf of the Bill, as representative of the Metropolitan Board, appeared Mr. Philbrick, Q.C., and Mr. Bazalet; while on the other side the Society of Builders was represented by Mr. A. C. Onslow, the Dock Companies by Mr. Mansfield Jones and Mr. Round, and the Railway Companies by Mr. Littler, Q.C., and Mr. Rodwell.

The whole of the sitting was occupied by Mr. Philbrick, who laid before the committee the scope and provision of the Bill, and argued considerable length on those special clauses against which the public opinion was chiefly directed. The intention of the Bill, the learned counsel contended, was not to destroy or alter, but to preserve. He passed in review the various Building Acts of our legislature, in which there are at present seven more or less force in the metropolis, ranging over a period from 1774 to 1871,—pointed out where especially failed, and how the present Bill was to strengthen the different weak points, and generally consolidate the strong ones. The chief opponents, he said, were the dock companies, the railway companies, the societies of the Temple, the Builders' Society, traders, merchants, manufacturers, and the Corporation of the City. He trusted, however, to be able to show that none of these interests were likely to be at all injured by the Bill, which, indeed, asked for no powers which would unduly interfere with trade, injure commerce, or interfere with the rights and privileges of the city of London.

Some of the officials were examined on the two following days, and the Committee then adjourned till after Whitsuntide.

INSTITUTION OF SURVEYORS.

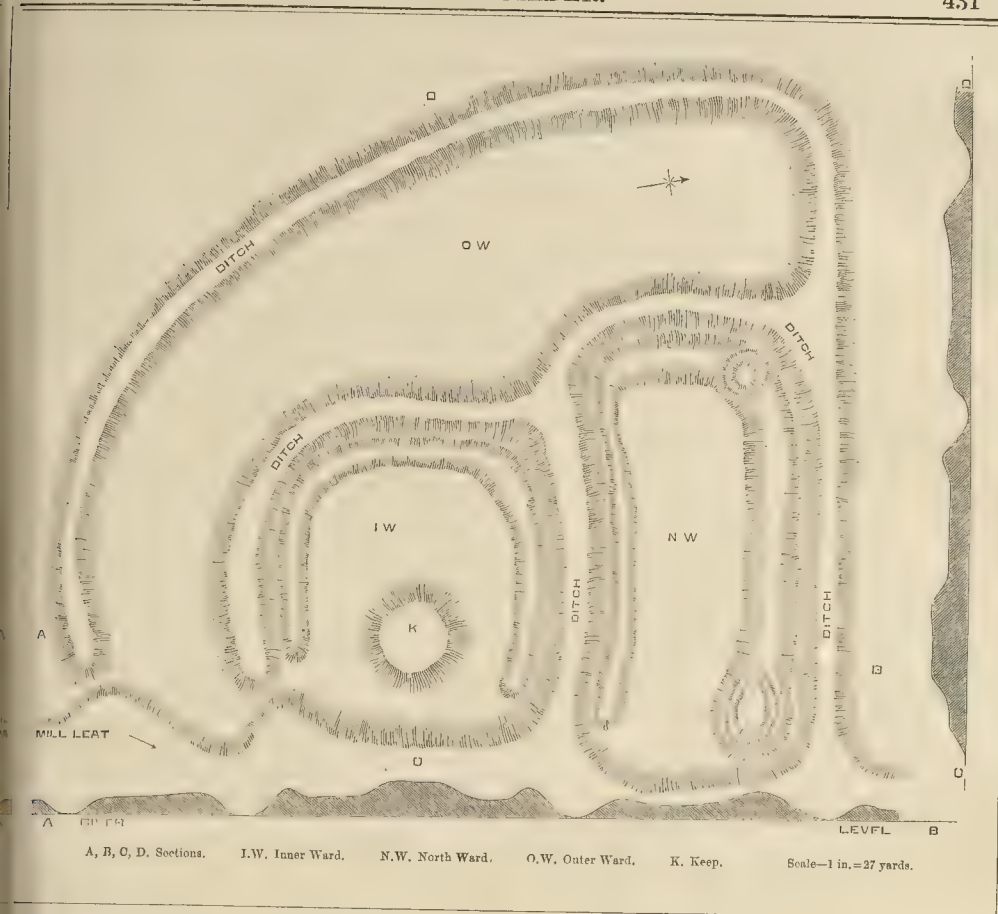
At the ordinary general meeting of the Institution of Surveyors, held May 11th, Mr. Clutton in the chair, a paper by Mr. E. Smith (Vice-President), on Agricultural Geology, was read. At the close of it Mr. Smith said, "I would impress upon the younger members of the Institution that, in the journey which they necessarily take, any acquaintance with the geology or the antiquities, or the flora of the district will add a charm to their professional labour, and not infrequently be of great value to them in their professional career."

After a few remarks from several members, a vote of thanks was passed to Mr. Smith for his paper.

It was announced that in consequence of Whit-Monday falling on the day fixed for annual general meeting, the latter will be held on June the 1st, at 3 p.m., instead of on the 25th, as originally arranged.

The Indestructible Paint Company.

It may be useful to mention that the compositions manufactured by this Company have been applied to the railings and ornamental lamp-posts on the Chelsea Bank. Those who are interested in inquiry as to the durability of such pigments, note the effect which time may have on work in question.



THE CASTLES OF EATON-SOCON AND HUNTINGDON.

Eaton-Socon.—The Ouse, rising in the shires of Northampton and Bucks, and finally falling at King's Lynn into the head of the Wash, flows deep and sluggish past Bedford, St. Neots, and Huntingdon, intersecting broad tracts of low level land, now fertile meadow, but formerly almost impassable swamp, opposing great difficulties to the march of an invading force, especially if advancing from the eastern coast. Eaton-Socon, between Bedford and Huntingdon, and a little above the town of St. Neots, the Ouse impinges upon the rising ground to the west, upon which stand Eaton Church and Village, and which afforded facilities for the construction of a large and lofty earthwork.

This earthwork, known as the Castle Hill, is placed upon the west or left bank of the river, about 30 yards from its present brink, and a prolong or so from the fine parish church. It is possible that when the earthwork was first formed, the course of the stream lay at the foot of the banks. At present there is a large mill upon the river, a few yards above the castle, the site of which is reunited to its parent stream opposite to the south-eastern edge of the fortress.

The appended sketch shows the general plan of the place. It is, roughly speaking, a triangle, the east side, of 160 yards, resting upon the river, and the north side, of 140 yards, projecting from a right angle. The third side, or hypotenuse, is convex and irregular; measured upon the curve, it is in length about 220 yards. The area, complete, is about 3½ acres.

The work is composed of three parts,—an Inner, Northern, and Outer ward. The inner and northern side by side upon the river, separated by a cross ditch. The two are contained within

another ditch, which communicated at each end with the river. Beyond this, covering the south-western front, is the outer ward, and beyond this again the outer ditch, which commences at the south-east corner in the mill leat, covers the south-western front, and at the north-western angle sweeps round to join the ditch already mentioned, and thus, through it, to communicate with the river at the north-east corner of the work.

The Inner Ward is about 45 yards north and south, or along the river front, by 54 yards east and west. Its figure is a rectangle, with the angles so rounded off that its aspect is almost as much that of a circle as of a square. Towards the river is a steep slope of about 20 ft. On the other sides a similar slope falls towards the ditch. On the crest of the slope on these three inland sides is a bank of earth about 8 ft. to 12 ft. high, especially strong at the north-west corner. The entrance was at the south-east corner. The inner area or platform of the ward is about 15 ft. above the level of the exterior soil. On this platform, about 8 yards from the north-east corner, is a low circular mound about 5 ft. high and 40 ft. diameter upon its table-top. It may have been somewhat higher. It has no ditch of its own. The ditch of this ward is from 40 ft. to 60 ft. broad, and still contains water.

North of this is the North Ward, above 35 yards north and south, by 80 yards east and west. This also has a ditch about 40 ft. broad, on the west and north fronts. From the inner ward it is separated by the cross ditch common to the two, and towards the river is a steep slope about 20 ft. high. Besides these defences, the slope on the west and north is crested by a steep bank of earth, and towards the south, or inner ward, is one somewhat slighter.

The Outer Ward is in figure long and curved. Its breadth ranges from 29 yards at the north

end down to 22 yards near the south-east end, beyond which it terminates upon the mill leat in a point. This ward is separated from the other two by a common ditch, which communicates with the cross ditch, and thus at three points, directly or indirectly, with the river. The south-eastern end opens at the junction of the leat with the river. The leat covers this end of the ward, and from the leat springs the outer ditch, from 40 ft. to 60 ft. broad, which covers the outer front of the ward, and at its northern end, sweeping round by a sharp angle, is continued till it joins the north ditch, of which it thus forms a part. The entrance was at the south-east corner, where a modern causeway crosses this outer ditch. The road thence skirts the edge of the outer ward, along the margin of the leat, and thence, by a second causeway, crosses the inner ditch, and, ascending the slope, gains the inner ward. No doubt these causeways represent drawbridges. It does not appear how the inner and northern ward communicated. The bridge between the latter and the outer ward was probably at the south-west corner of the northern. The ditches are in parts reduced in depth, and evidently were originally fed from the river. There is not a trace of masonry, but depressions in the bank of the north ward seem to indicate towers at its north-east and north-west angles. It is convenient to use the term angle, but the lines are more or less curved and irregular, and are largely rounded where they meet. The plan has, in fact, nothing of the squareness of a Roman work, and the rounding of the angles is quite different. It is probable that the tendency to sharpness in its outline is due to the walls and towers of the work in masonry, which, though now gone, is reported to have been at one time present.

Eaton, or Eiton, appears in Domesday, as held

THE two small rooms at No. 168, New Bond street, contain what is, in the relation quality to quantity, the largest exhibition in town one in which every picture has a distinct note and object, and which, taken as a whole, the average staid and old-fashioned collector would have to acknowledge as an exception and artistic feeling, though the subjects may not be always of the interesting kind. The place of honour is assigned this year to Corot, whose large work, "Sebastian" (28), seems to be, in general composition, suggested by Titian's celebrated "Madness of St. Peter," which is at least recalled; the arrangement of the group of figures on the ground, the tall mass of trees over, and the attendant cherubs visible in them. The solemn calm pervades this modern work, though the figures and the grand masses of foliage in strong contrast to the wild tempestuous air of the Venetian master's work. The painter is represented by "The Gathers," in his usual style (43); "A Corner of the Forest of Fontainebleau" (48), and others. Landscapes predominate: of the few figure-subjects, we mention Manet's life-size study of "A Spaniard" (4); Madrazo's clever little figure, "In a Boudoir" (6); Alma Tadema's "Wedding Present" (10), two heads in a lozenge-shaped frame bending together over a picture: more than the eye of the bride is visible beneath the head of her partner, but there is an expression of pleasant humour in the very Ruyblae's "Negress Clinging to her Son" (50) a splendid study of colour and finish of detail. Very few pictures are as good as over, as that which depicts "The Ferry-boat" or "Return from Ploughing" (26, 29); and "Camels Ringing" with a negro in blue and red dress lying on the ground, watercolor, by Hugues (55).

to advantage of novelty as well as excellence. Among the landscapes Daubigny's "St. Paul, on the Sarrey side" (41), and Lambert's "Duck-pond" (24), are highly suggestive; the former is arrayed in a misty atmosphere, which gives the painter opportunity for making the most of his power of dealing with grey tones and uncertain lights. Among the finest things in the landscapes by Marie Cazin, "Wood-thrushers in the Forest of Fontainebleau" and "Harvest-time" (110, 118); the former noteworthy composition of broken rocky and sandy foreground, with a heavy belt of trees shutting out the distance, and heightening its dark shadow the effect of the faint gleam of light in the sky above; the management of the light is equally fine in the other work. To similar class belongs the "Lake Scene," by J. Joseph (116), a perfect little poem, with its dark green grass foreground, the dark wooded banks beyond, and the strip of lake white in the mid. Hugnet's "White Horses at Grass" (102) is a combination of a wide moorland scene, with studies of horses in various attitudes, and a shortening. Sirley's "Street Scenes" (140, 147) are interesting in their individuality of subject and treatment; and Lecœur's "Street of Montigny" (33) is a small but admirable specimen of a similar class of subject. Bellet-Poinet shows us the "Lake of Geneva" under new and, in one sense, prosaic aspect, in his picture (49) of rough and transparent water, with two ferry-boats at a quay, with their sterns to the spectator. But among the more poetic works in landscape here, none will so certainly compel thoughtful admiration as those of the remarkable painter Michel, depicted and almost unknown during his life, whose biography is appended to this year's catalogue. His powerful and original studies of the inner spirit of the landscape which he depicted in such works as "The Slopes of Lutmarre" (130), and "A Lonely Spot" (18). It is seldom that we find so powerful and impressive a work as the latter evolved from an apparently simple and everyday subject. Its loneliness seems almost to oppress us as we look at it. In tone and feeling Michel is not like our own artist Cotman, also a man neglected in his lifetime; though the French painter speaks perhaps a deeper chord with a more powerful hand, whose who find pleasure from the intellectual rather than the mechanical reproduction of nature on canvas, should not miss the exhibition at New Bond-street.

THE CLOISTER.*

"But let my due feet never fail
To walk the studios Cloister's pale,
And love the high embowed roof,
With antique pillars massy proof.
Milton's "Il Penseroso."
A Cathedral is an epic poem * * * What lovelier
Epics than the Cloisters and Virgin Chapel?"
G. Wright's "Palace of Architecture."
Oh, spare the Cloister! (Churchmen, listen!)
To penitence Contemplation door.
Grave eyes there are with tears would glisten
Should spoiler's hand come here.
To be a learn'd retreat for ever
Were spread its grove-like arches, fair;
And wise and simple, dull and clever,
Have felt its witching air.
Here stay the ruthless workman's hand,
For rarer beauties o'er us steal;
Let this small remnant southless stand
From your "restoring" zeal.
Oh! might I the full scale unroll
Misanthrope on earth "Church-Restoration,"
Now spreading o'er St. Hilda's pile
Its barbarous renovation.
And glaring on what best looks down,
O'er street or field, on English people,
Nor Minister's soaring aisle alone,
But bumble village steeple.
On fanes where holiest memories dwell,
With legend fraught, and sacred story;
Shedding high Art's and Nature's spell,
O'er saint's and martyr's glory.
That stood in Albion's springtime, bare,
Sole bacons of the Gospel's light,
Where late there shot the lurid glare
Of Druid's horrid rite.
That kept unquenched Art's precious rays,
And ancient Wisdom's lantern bright;
And temper'd the far-spreading haze
Of Medival night.

The following piece was written, a year or two ago, in
loosest of one of the most beautiful and romantically
of England's usually finely-placed cathedrals,
in process of "restoration." In behalf of that
argument is now needless; but as the poem involves
argument against "restorations" generally, it is here
ed. S. H.

Made the mild law of Christ command,
O'er soaped might and realms unblest'd,
And from the feudal tyrant's hand
Protected the oppressed."

See not ye in each kindling pile
Man's holiest aspirations rise,
Where gables, turret, spire, same while
Seem yearning for the skies?
The hope that heaven and earth inherits,
The love that is Religion's breath,
The faith that bears aloft men's spirits,
Victors o'er Time and Death,
Glow from their pinnacles; and still
They shed fresh glory o'er the earth,
And give to flower, and tree, and rill,
A new and brighter birth.
And Nature loves these fair accessions
To her wide real of breathing things;
And o'er her aisled-and-tower'd possessions,
Her rainbow mantle flings.
Her own wild garlands,—flowers and mosses,—
With Art's symmetric lines combine;
And man's smooth handiwork embosses
With tracery divine.

Now Beauty's self, their faithful keeper,
Sleeps 'neath their blending arches, fair;
And sunlight, when it wakes the sleeper,
Looks lovelier than elsewhere.

Alas! from many a once-loved place,
No more we hear the centuries cry:
Changed is the old familiar face
That bless'd the passer by.

The insulted Muse of History sighs
O'er these her disconcerted pages;
But record dies, so deem the wise,
Of Europe's twilight ages.

And Architecture, vigils keeping,
And marking well each altar'd spot,
I hear, like her in Ramah, weeping
To find her children not.

Then spare the hallow'd Cloister wholly;
Let this secluded haunt alone;
And for some neighbouring work, unholy,
It may in part atone.

The prayer is echo'd,—voice imploring
Comes murmuring with the Atlantic's moan,
From hearts that trust not your "restoring,"
To "Let those aisles alone."

"Let them alone," so oft hath spoken
The pilgrim from Columbia's shore;
Who fain would keep each spell unbroken
Of father-land of yore.

They are not yours, O Dean and Chapter!
But common gifts, heirlooms of Time,
Inherited by all who apt are
To feel their beauty, prime.

What War and Hate left unmolested,—
And storms have pass'd in reverence by,
What years have with new grace invested,
Let not true men destroy.

Think you to wake their pristine beauty?
As soon might vanish'd years come back.
Oh! deem it your most pleasant duty
Their lingering grace to track.

The hands that stamp'd with truest feeling
Each part, so eloquent, all o'er—
The hearts their holiest influence dealing—
Can these your gold restore?

Would the cold masonry inherit
Shrined memories of the Christian's faith,
And many a dedicated spirit
Not to be quenched by death?

Such memories 'neath these arches linger,
And breathe, like music, from each stone;
And Nature's beautifying finger
Has mark'd them for her own.

And years, still ripening, may develop
Fresh bloom and beauty to the day;
While ivy, wallflowers, moss envelope,
Or light and shadow play.

SAMUEL HUGGINS.

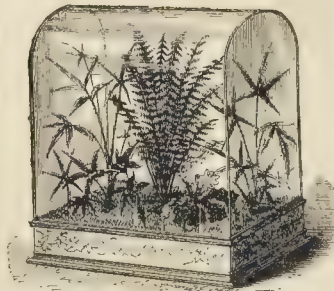
AN EDITORIAL PALACE.

WHATEVER may be thought of the political principles and mode of propaganda of the most famous Parisian representative newspaper, it is impossible to contest the keen, clever foresight, the thorough knowledge of the world possessed by its founder and conductor. For the mass of Parisians,—perhaps of Londoners,—the *Figaro* is the only French newspaper, and M. de Villemessant the supreme French journalist. Of his literary capacity there is little to be said; it is not as a *littérateur* that M. de Villemessant is pre-eminent, but as a practical editor, as an administrator, as a man whose fingers are experienced at the pulse of the age, whose weather-eye is quick, whose eclecticism is so practical that, being a Legitimist himself, he has filled the principal places on his staff with Republican writers. M. de Villemessant has been called the Barnum of journalism: the sobriquet is not unmerited, and its possessor is rather proud of it. He is cunning in the arts of advertisement, of "pushing" a sale, and propagating the *Figaro* before everything. He prints fac-similes of Troppmann's drawings, autograph letters from the Two-headed Nightingale, addresses in Arabic to the Shah of Persia; he interviews the Comte de Chambord; and ascertains that M. Thiers drinks four cups of black coffee every morning, and plays tric-trac with his secretary. His last

exploit of this kind might be called an architectural puff. More than two years ago M. de Villemessant made public announcement of the fact that he was about to furnish the staff, printers, &c., of the *Figaro* with superlatively comfortable quarters. His primitive idea was that the new building should be an ordinary five-storied house, rendered conspicuous by an enormous sign—the brass shaving-bowl of the legendary barber. But the architect chosen, Aimé Saufray, was young and ambitious. He persuaded his employer that the projected hôtel might be made a striking advertisement, and forthwith the present palace of journalism was planned. The Rue Drouot was chosen as the site. The street is narrow, and it was necessary to avoid excessive projections, and to make the most of the limited space at command. To satisfy these exigencies the Renaissance style was adopted, but as *Figaro* was created long after Bonaparte's period, it was the Spanish Renaissance that M. Saufray imitated. As it is he alleges that his edifice is a specimen of pure Sevillian art. However this may be, it is certain that the *Figaro* hôtel which has just been completed is unique in Europe as a newspaper office. A summary description of its chief characteristics may serve to show Fleet-street the estimation in which journalism is held by its chief French professor, M. de Villemessant.

The façade is highly ornamented. The jambs and mantel tree of the principal entrance consist of squares of falcon by M. Jules Lebnitz. The door itself is ornamented with out steel-work and slabs of marble; the salient edges of the pilasters at the basement are protected by bronze corners. The balconies of the first floor are in iron and the lamps in repoussé iron. The edifice is surmounted by an allegorical figure by M. Leon Perrey, representing the presiding Muse of the *Figaro* newspaper, the Genius of Actualité. The most palatial feature of the building is the *loggia*. It forms a saloon open to the streets in which the staff of the *Figaro* will assemble on summer evenings; and on the balcony before them stands the statue of *Figaro*, executed by MM. Boisseau and Amy. This work was the occasion of one of M. de Villemessant's greatest advertising triumphs. It was announced in the spring of 1873 that a competition would be opened for a life-size statue of *Figaro*, and in addition to the model destined to be executed in marble, and ornament the façade of the *Figaro* hôtel, the six best statuette sent in would be purchased for the decoration of the interior. The present statue was selected from fifty-two models, by a committee composed of well-known sculptors and art-critics. It represents *Figaro* in Spanish dress, his guitar slung behind him, gazing curiously, as though at a subject for his satire, and cutting his pen. It bears the epigraph from Beaumarchais's comedy, "Je taille encore ma plume et demande à chacun de quoi il est question."

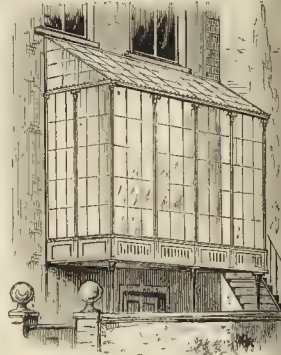
The interior of the editorial palace is ingeniously disposed. A flight of steps leads one under the porch to the vestibule, bordered by two *jardinières* supporting two of the statuettes that obtained second prizes. The first door leads to a large hall elegantly decorated. To the left is the grand staircase, at the foot of which is a lamp-stand formed by the figure of a child in bronze. Opposite the staircase is a species of lodge, where from eight o'clock to midnight a *rédacteur* is stationed to receive confidential communications, the gossip of the clubs and green-rooms, the political and social scandals, and anecdotes of the day. A glass door, with chiselled panels, admits to a second vestibule, bordered by large *jardinières* containing rare tropical plants. Farther on is the large hall occupied by the bureaux, the Spanish *patio*, or covered court, in the centre of which, on a carved wood pedestal, stands the bust of Beaumarchais. On the farther side of the court is the council-chamber, and at the right the staircase descending to the machining-rooms. Overlooking the glass roof of the *patio* are galleries communicating at each end with the compositors and folders' departments. To reach the editorial department, it is necessary to ascend the grand staircase with balustrades ornamented with the letter F in gilded bronze. On the first story are corridors leading to the finance department, the cashiers' and bookkeepers' rooms. At the right a glass door admits to the *loggia*; and on this side are also the private offices of MM. de Villemessant and Magnard, the two editors. At the left is the *rédacteurs'* hall, lighted by a vast bay giving on to the street. At the extremities of this hall



Albert Fern-Case.



Fancy Case outside French Window.



Conservatory built out from House.

are the secretaries' cabinets, near the composers' workrooms. It is in this hall that the *Figaro* is written. Every member of the staff has his table; but for those whom the incessant babel of tongues hinders, there are silent separate studies at the topmost story. At the second story is situated the reporters' hall, the Bureau des Informations, and a suite of apartments for the use of M. de Villemeussant, in order that the guiding spirit of the journal may remain the last at work when any public event of importance takes place. Above these chambers is a characteristic department—the Salle d'Armes, where a fencing-master officiates from morning to night, and pugilists, masters of single-stick and gymnastics are in attendance.

The chief builder of the hôtel is M. Montjoye, one of M. de Haussmann's most valued co-adjutors. The stucco work is furnished by M. Hamon, the marble work by MM. Parfourey and Lemaire. The clock-room and campanile should not be forgotten. The dial measures more than a metre in diameter, and is illuminated at night. Every hour there is a carillon, which plays the first phrase of the air from the "Barbier," "Largo al factotum." This is a worthy crowning of an edifice dedicated to *Figaro*, or rather to his more or less able descendants of the Rue Drouot.

WINDOW GARDENING.

In towns, window gardening has doubtless been practised for centuries, under such difficulties as those alluded to by Cowper:

"There the pitcher stands,
A fragrant, and the spoutless teapot here;
Sad witnesses how close-pent man regrets
The country, with what ardour he contrives
A peep at Nature when he can no more."

But of late years great improvements have been made in this graceful and pleasant mode of adorning the dwellings of various ranks, both high and humble. For many years we have occasionally spared a column or so of our journal in the promotion of so cheering and charming an addition to the attractions of domestic life; and it is, therefore, gratifying to us to note the publication of an elaborate illustrated work, such as that on "Domestic Floriculture, Window Gardening, and Floral Decoration," by Mr. F. W. Burbidge.* The author gives practical directions for the propagation, culture, and arrangement of plants and flowers as domestic ornaments, and points out the various appliances of window gardening, from the simplest and least expensive little brackets (such as those registered by Mr. Bachhoffner, of



Ornamental Plant-Case outside Window.

Wallflower, Thyme, Sweet Violets, and Mignonette, may be named as examples. It is highly probable that in years to come some part of our dwellings will be constructed expressly for the culture of plants and flowers. At present we have a few conservatories and gardens on the roof, and in time no doubt those and other appliances will become universal, especially in towns where space is valuable. There are few houses where a charming little fernery might not be constructed for such plants as will luxuriate in partial shade. If a passage or corridor is terminated by a window from which a gloomy prospect of telegraph-wires or a blackened chimney-pots is obtained, nothing can be more appropriate in such a position than a large glass case filled with Ferns and other moisture-loving plants. The bottom can be readily cemented to prevent damp, and the whole will form a source of pleasurable interest and beauty instead of annoyance. It will always supply plenty of fresh green fronds for spray for grouping with flowers, and require little attendance, except occasional syringing with tepid water. Plants are not the exclusive things some people imagine, but may be grown by every one with more or less success in a manner of out-of-the-way places that will suggest themselves to those who love and are desirous to grow beautiful flowers.

Hatton-garden, of which we lately spoke), to the more elaborate conservatories attached to dwellings.

To the new work just named we are indebted for the few remarks on window gardening which we are about to give.

Apart from the beauty of flowers and the pleasure all of us experience in cultivating them around our homes, there is the question of health to be considered. Many object to plants in rooms or apartments on account of their being presumably unhealthy; but, on the contrary, their influence, as Mr. Burbidge believes, is, in most cases, exerted for our health and benefit. Plants of peculiar or disagreeable odour, however beautiful, should not be grown in rooms; but nearly all the flowers we love for their freshness, sweetness, and beauty may, he thinks, be tolerated. Many persons instinctively dislike certain colours or odours, but these will take care of themselves in the matter. The more we know about that seemingly mysterious product, ozone, the stronger evidence do we obtain that it has much to do with the changes in human health, noticeable in different localities, and at various seasons. Hence the cultivation of many shrubs and plants, besides its economical or æsthetic value, has an agency connected with hygiene; for it has been demonstrated that a great many plants grown in gardens produce much ozone, not only under the influence of the sun's rays, but even after dusk. Lavender,

Most of the pretty little decorative plants brought into the London flower-markets during the summer and autumn months are either seedlings or cuttings grown on in frames or cold pits outside; and these seldom fail to grow well, and are cared for. Of late years, much improvement has taken place in room and balcony gardening, especially in the neighbourhood of London; and one of the best practical lessons as to the plants suitable for this purpose may be obtained by taking a walk in any of the West-end thoroughfares. Piccadilly and Park-lane generally furnish excellent examples; while nearly all the plants grown in the parks during the summer months are also valuable for rooms and balconies. Where balconies do not exist, or their erection is not practicable, the next best thing is a window-box fitted on the sill outside. The boxes are made of various materials, and of various sizes. Those of varnished wood, virgin cork, enamelled tiles, are very pretty, and suited to different styles of architecture. These boxes are well adapted for ordinary bedding plants, hardy climbers, annuals, and hardy and half-hardy bulbs; but if the culture of exotic Ferns is attempted, a neat glass case can be fixed above the simple window-box, and in the many of the hardier kinds will luxuriate during summer in all their delicate freshness and

* Blackwood & Sons, Edinburgh and London.

auty. These cases do not cost much, and may be constructed by any ingenious mechanic or artisan, as an embellishment to his home. It often happens that the window-gardener is in command as much as possible. There are one or two useful little contrivances, such as brackets, for suspending plants on walls, either inside or outside the window. They are simple, and can be used wherever there is a bare inch of wall to spare; and it generally happens that there is abundance of bare bricks and mortar out towns that would be all the more attractive draped with Ivy, Creeping Jenny, Tropaeolum, involucri, or any other foliage or flowering plants.

The Fern brick is for building in walls at intervals for the reception of Ferns and drooping plants.

The illustrations of Mr. Burbidge's work show arrangements for fixing inside the window, and which the look-out is considerably improved. It consists of a simple window-box faced with enamelled tiles, and furnished with a semi-circular wire trellis, over which to train climbers. A box is planted with fresh green trailers and low flowering plants, raised either from bulbs, cuttings, or the case may be. A couple of plants of Ivy, Virginian Creeper, or other useful climbers, are planted at the corners to cover the arch, and a small hanging basket, planted with Creeping Jenny, Sedum Sieboldii, Adescentia, or Saxifraga sarmentosa, completes the group. In Paris there are many other arrangements, but *Ficus elastica* (India-rubber plant), Oleanders, small Palms, Dracenas, or other hard-leaved foliage plants, and Ferns, are generally used to furnish them. These may be made gay with early-flowering plants during the spring months; and a few seeds of annuals, climbers, and foliage plants, together with *Fuchsias*, *Geraniums*, and *Balsams*, will be found to keep them gay during the summer and autumn.

An aquarium and plant-case combined possesses special attractions to many window-gardeners, as, in addition to the fresh-colored plants and foliage, we have the sparkle of the water and the lively motions of its inmates. As aquariums and plant-cases are made in various forms and materials, to suit different tastes. Fixed outside the window, they are very ornamental during the summer months, but must be removed in winter, however, or glass would be broken by severe frosts. Their form consists of a space for plants at one end, and an aquarium in the centre. These very interesting room ornaments, if placed on a stand or table near the window; and they be constructed so as to be readily heated, or by a gas-jet or small spirit-lamp. Aquariums are specially valuable to those who possess a microscope, as they afford a never-ending supply of fresh and beautiful objects for study. We may have many plants and animals well worth looking at in the indoor plant-case or aquarium; and the delicate Mosses and Ferns will grow on pieces of sandstone, just elevated above the water's edge, than elsewhere.

Many of the more tender and beautiful of the spring plants and ferns do not luxuriate in the arid atmosphere of an ordinary sitting-room, but heated throughout the day by a coal-fire, at night by a coal-fire and gas combination, such as fail to grow and give satisfaction, or are above circumstances, glazed, or, as they are more generally termed, Wardian cases, are recommended. These are elegant and pleasing additions to the most tasteful and elaborately-furnished drawing-room, while some of the more rustic forms may serve the purpose for which they are intended equally well in the sitting-room of the city clerk or artisan. They are made in a great variety of designs; being extremely light and graceful, and beautifully finished with delicate enamel glazing. Either light castings of iron or wood may be employed, or they can be constructed of wood, according to taste; but for lightness and lightness the former are preferred. For Ferns, Mosses, Liverworts (*Marsippos*), and many choice and beautiful exotics, Wardian cases are specially adapted—the plants succeeding much better in them than in the arid temperature of an ordinary greenhouse. They should be furnished with a reservoir of zinc or copper beneath to collect the superfluous water, and in some cases an appliance can be made the means of giving a little extra heat to the case during the frosty nights by simply filling it up

with boiling water. Others are constructed so as to be readily heated by a small oil or spirit lamp; but these contrivances are only required in exceptional cases, and can then be ordered or made accordingly.

In addition to the smaller cases for setting on ornamental stands or tables in the sitting-room, it is possible in many cases to construct a little window-conservatory. Low French windows are specially adapted for this kind of thing; and when tastefully filled with ferns, ornamental trailers, or flowering plants, are highly interesting as seen from the apartment. They can either be constructed outside, or within the room itself. If they are constructed outside, it is a matter of choice whether they should be accessible from without only, or if the window should be glazed in the ordinary way. As to this it depends mainly on the situation; for if it is naturally dry, then there can be no serious objection to its opening into the apartment; but if very damp, perhaps the window had better be glazed with thick crown-glass, so as to be damp-proof, and then all necessary operations can be carried on outside, without any dirt or litter within the apartment. Those who would carry closed-case gardening still further afield may adopt a little "case conservatory," built out from the house.

If constructed opposite one of the sitting-room windows the view will be always attractive, and it may also serve as a roof to the area below. Plants grow well in such structures if water be thrown on the floor and stages two or three times a day during hot sunny weather. Canvas blinds on rollers should be provided for shading purposes during summer; and if the culture of tender exotics is proposed, it can in most cases be heated by pipes laid on from the fireplace or kitchen-boiler. In such a little house a beautiful and constantly interesting collection of succulent plants, containing several hundred species could be easily grown by the greatest novice at plant-culture; indeed, if he would throw away his watering-pot in November, and merely protect them from frost during the winter months, he could not kill them. Most other plants require watering carefully and regularly; but succulents delight in a sunny position, with a moderate supply of moisture when growing in the summer, and none whatever during the damp cold months of winter.

The work to which we are indebted for these remarks contains a long and valuable illustrated list of plants suitable for room, window, or balcony culture. There are also portions of it devoted to dinner-table decorations and to decorations of churches; and the whole is illustrated by 200 wood engravings.

THE RUSSIAN AND HIS SPECIAL WAY OF WORK.

It is not a little interesting and instructive occasionally to glance at the position and character of matters artistic and architectural in other and distant countries—in places where the individualities of the people in all things make, in spite of hindrances, them and their arts different from our own. Every now and then, as opportunity offers, we take occasion to remind our readers of what others beside ourselves are doing, and to point to here and there a something out of which some instruction is to be got. Europe is not as yet quite toned down into absolute uniformity, though the course of things tends pretty nearly in all directions to this end, and all the great cities at least are gradually getting to be more and more alike. So different from the past way of work is the present way of it, as to be almost its direct opposite. It is a somewhat strange circumstance, as it seems to us, that this curious state of things has not attracted more of attention than it has, and that some means have not been devised to show to the world, or to us islanders at least, what that momentous change really is which is now going on everywhere, as cities extend their boundaries, and get to be nearer and nearer to each other by railway ties and telegraphic talking. The auspicious visit of the Czar of all the Russias makes that enormous empire, a world in itself, just now not a little interesting, and one naturally inclines to ask what that special Russian empire, among the other empires, and Russian individuality, are doing, whereby it keeps pace with its powerful though lesser neighbours artistically, and in things tending to and guiding matters artistic. What the Russian has already done, what he is now doing, and what he ought to do out of him-

self as an artist and workman. Curious subjects these—worth glancing at.

It has often struck us, what would have been the thoughts of old Marco Polo could he but rise from his grave to glance at the cities which he looked at with such wondering eyes. Would he think them better or worse? And, on the other hand, what would be the thoughts of our professional and artistic tourists could they but see the Continental cities as he saw them, before railways were dreamed of, and before a thought had arisen of any universal system of improvement. To the eyes of old Marco every fresh city he came to was a new surprise—an entirely different thing from the last he saw,—a new artistic thought and creation, with new surroundings, and new modes of life, and costume, and manners; almost, indeed, as if he had suddenly found himself in a new planet. Nowadays all this is in rapid course of change, and the modern traveller must needs be on the lookout for things and signs of things, which remind him of the place he has left. "Improvement," as in the building of St. Petersburg, meant, in the mind of its founder, nearness to that London and Woolwich to which he came for the purpose of learning how to go to work to build a city, or a ship, and to "civilise" a people. A remarkable man indeed was the Czar Peter in very many ways, and it would be a right curious subject of speculation to consider what such a man, with so intensely active a mind and faculty, would have done had he built his new capital city out of materials got from old Muscovy, and from "precedent" to be found in that singular phase of things which gave birth to the Russian individuality. What has been the loss and gain? A gain there has been doubtless, but at how immense a cost!

It may be interesting, therefore, just now, to glance for a moment at the two great Russian cities, wide apart as they are in so many ways, and thoroughly characteristic of the times, past and present, of Russian life and history. Moscow, or Moskva, the old capital, made so famous during the days of the first Napoleon, is a place of note in many ways, more than half oriental; indeed, a strange mixture of European and Asiatic feeling and idea. A tortuous river runs through it; it is surrounded by a high wall,—a walled city; and the multitude of its narrow and irregular streets thoroughly realises to one the old way of town and city-building, and planning, wherein accident is found to have done more than half the work in the production of it,—and of the "picturesque." The celebrated Kremlin, nearly in the very centre of the city, is surrounded by an immense white wall, 60 ft. high, and about a mile round, flanked by towers, forming the nucleus of the city,—a remarkable picture, in the middle of a town, and hardly conceivable by the inhabitants of a modern and ordinary city. This alone is enough to make the Russian Moscow a city of note, with a distinct individuality of its own. But there is more. There is a second quarter, the "Kitai Gorod," or Chinese city, fenced round by another wall, with more towers and battlements,—a city of mark indeed,—full of strange things and oriental thoughts, and full of green trees too, like Damascus; for round the Kremlin, as a centre, two large circles have been drawn, the circumference of each one consisting of wide belts of finely-planted trees,—a delightful thought in a crowded city, and full of refreshing influences. The zone between the Kremlin and the Chinese city, the Kitai Gorod, is named the Beloi Gorod, or White City; the other zone is the "Zemnoi Gorod." The burning of Moscow in 1812 did but little in changing the direction or character of the streets of this strange place; these streets being as uneven and tortuous as ever. Numerous "paltry lanes," as the "Guide" says, open all at once into magnificent squares; and rows of "little yellow wooden houses" about on vast colossal structures. But in spite of our respectable guide, we must content that it is just here that the really picturesque and architecture opens out on us, for it is down these narrow and tortuous ways, opening out into wider spaces, with colossal sights in the far distance, that the real artistic secret and mystery lies. A city cannot be made up wholly of "glittering gold" and "brightened silver," or wholly of grand squares. There must needs be contrast. There is here the old Palace of the Czars, of four stories, each one of them smaller as you ascend, till the top-most of all contains but a single room. It is surrounded with balconies, with stairways to each story, a sort of Tower of Babel in miniature. There is the Cathedral too, in which the Russian

Emperors are crowned, with all the pomp and state and ceremony which one can but barely fancy in the old Gothic days, when Art was in living action. It was founded in 1325, and was certainly built in an age when nobody in the architectural way thought of copying! And then, for we must needs pause somewhere, there is darkness visible in the Church of St. Michael, wherein all that remain of the Russian Cæsars lie entombed, from the Czar Ivan to the Great Czar Peter. An imposing and solemn house of the mighty dead, with memories not of themselves alone, but of the many millions whom they ruled over so despotically and with such absolute sway. On the walls, in fresco, close to his dead body, there is painted his "figure" in a white robe—all that remains of each Czar!

By way of perfect contrast to this quaint and antique city of Moscow, we may now glance, but for a moment, at St. Petersburg, the modern capital, almost water-surrounded, for advantage has been taken in its building of the many branches of the river, the Neva, as they flow into the Gulf of Finland; indeed, the city is built on a series of islands. So low is the site, that but for the domes and spires of the churches, the city cannot be seen till you are close upon it,—indeed, one may say actually in it. Unlike tortuous Moscow, the streets of this modern city are straight as arrows, unbroken by the slightest interruption. The architecture of it, it need hardly be said, is "Renaissance," more or less pure or impure. It is impossible to contemplate such a place as this without a feeling of regret that some kind of indigenous architecture, purely Russian, did not grow up while it was building, and which might have developed itself in the very act of that building and necessary contriving. It was a magnificent opportunity unhappily lost, for the Russian seems to have a certain vague feeling for the large and colossal. St. Petersburg is approached for long miles through an almost savage wilderness, a low swamp, flat, and covered with lakes and swamps, and enormous forests—pathless and gloomy forests; so that out of it might well be supposed to rise, not a Renaissance, or even a Gothic city, but something *sui generis*,—a new architectural and artistic idea,—a something in short purely and entirely Russian! Leave the Russian to his own ways, and thoughts, and materials, and modes of work, and with his despoticisms to command and to guide, what wonders of new giant strength and original forms might he not bring forth?

It would most surely be impossible to over-estimate the vast importance and influence of these visits, such as the Czar is now making to our insulated and island home. It does as much as can be done to bring two different nations together, and so far to make of them one, and to confirm that harmony between them which all most so much desire. But with all this there is no little danger in it. In the very nature of things, this very harmony has a tendency to make them alike, and by mutual borrowing and giving, to make what they do the same. The fine art of England and the fine art of Russia are surely distinct things, and ought to be so. In climate, productions, mental power in the people, and, what is quite as much, in power and kind of hand work, there most surely is, and must be, and ought to be, a difference and wide enough distinction between the two distinct races and countries. Is it desirable to make them alike,—for the Russian to build as the Englishman builds, for them to paint as we paint, and for them to carve and sculpture as we carve and sculpture? The great tendencies of the time are most undoubtedly towards this amalgamation of powers, and this intermingling of processes, and interchange of materials. But this, whatever may be its advantages, must tend powerfully to weaken the resultant acts, and to destroy the individuality of each. We have seen some wood-carving by Russian peasants, of animal forms peculiar to Russia, which most surely could not have been made any the better by the borrowing in any way from foreign sources, so thoroughly characteristic and national were they; so much so, indeed, that we could not imagine any but a native-born Russian doing the work. It took us back in thought to old Muscovy, and to the days of the founders of the great and colossal power which now stretches from sea to sea. We could not help putting it to ourselves, how far and in what way could even an old Greek of the Phidias time improve on this truly characteristic work? Why, refine on it, some may perhaps be inclined to answer. May be so; but then in this very process of

refining would no little of the rude,—nay, savage,—life, so apparent in the carving, be sacrificed, and thus so much of the individualised work made to disappear, and its strict nationality,—its intense "Russianism," if we may use the term,—helplessly lost? We cannot but think that such considerations as these are worth the attention of those who are so eager to borrow, and so willing to lend. It is impossible to have the intense sunlight and the parched sand, and the glacier ice and leaden sky, in the same picture. We must be content to have first one and then the other. In this wonderful world, and of which, after all, we have seen and know so little, there is an infinity of differences, as there needs must be; and it is certain that the colourless poles and the sunlit equator are distinct things, and nothing is to be got by attempts to amalgamate them. North and South Russia, even, are themselves distinct,—the Crimea and Northern Siberia,—and it would seem to be all but impossible to find an art or an architecture common and suitable to both, so wide apart and so different in their surroundings are they. In the nature of things this is so, and the great effort of the future will be to elicit from each separated individuality what it has in it peculiar to itself. No place on earth could profit more by taking this thought to heart than Russia, by its individualised people and by its Czar.

HOMES OF WORKPEOPLE IN EUROPEAN TURKEY.

THE dwelling-houses for example, of the labouring classes, in the valleys of Ram-ili, are built of sun-dried squares of clay, with chopped straw to bind it; wetted clay, with chopped straw, is used as cement. The foundations are composed of stone rubble, and are carried to a height of 12 in. to 18 in. from the surface of the ground. On the stone layer, which is likewise cemented with clay and straw, the sun-dried bricks are laid; at certain prescribed intervals the walls are bound by rough-hewn strips of wood,—oak, beech, or pine, according to circumstances,—which are laid in parallel rows along the outer and inner edges of the rising wall, and held together by means of cross pieces fastened to them by iron nails. The pent roof is almost invariably tiled. In some localities slabs of a kind of cross-grained slate or shale are used for the purpose; these being heavy, the rafters which support them require to be proportionately strong, and consequently this style of roofing is considerably more expensive than the light kiln-baked gutter tiles. The house rarely consists of more than one room, in which the labourer and his family live together. The dimensions of the single room vary between 15 ft. by 15 ft., and 12 ft. by 10 ft. superficial, and the height 8 ft. to 10 ft. from floor to ceiling. There is always an open fireplace nearly level with the floor; it is provided with a flue for carrying off the smoke. The one or two windows are very small, are never glazed, but are closed with a wooden shutter which, when open, lies within the thickness of the walls. In the walls, which are 30 in. to 36 in. thick, are left two or more recesses, fitted with shelves; and all around the inner walls, near the ceiling, there is a narrow wooden shelf. Wooden pegs, stuck into the walls, serve to support a variety of articles. The walls are plastered within with clay, overlaid with coarse rush matting in the places where the inmates sleep in winter time. During the summer they prefer sleeping in the open air, or under a sort of verandah with which some of the houses are provided. The material of which the walls are made, their great thickness, small windows and doors, all contribute to keep the interior warm during the winter. A chip of resinous wood serves as light, although light is not long required, since the habit is to retire very early to rest, and to rise shortly before daylight. The labourer and his family sleep on the floor, either upon the rush mats or else upon goat's-hair sacking. All sleep in the clothes in which they have done their work.

Those who can afford the expense, provide themselves with a copper stew-pan; but for the most part an earthenware pan or pot, costing 2d. or 3d., is their only cooking utensil. The meal of the day labourer and peasant is composed of a dish of stewed beans or lentils, which, with the addition of onions or leeks, salt, pickled cabbage, and green peppers, and garlic and red pepper, as a condiment, are eaten with the half-baked brown bread of mixed grain, maize,

wheat, barley, or oats, in varying proportions, which constitute the staple of their food.

The house described is one of the lowest order. If a labouring man has been at all prosperous, he may have two or more rooms to his house, besides stabling for live stock, and outhouses for fodder. The average cost of a house of sun-dried bricks, is 25*l.* per room. The skilled workmen and artisans, who have their homes in the larger villages and in the towns, are generally provided with more comfortable and better furnished houses. The ground floor, with two or more rooms, and a passage between them, is built of stone rubble, laid in lime and sand mortar; the upper floor is composed of a framework of woodwork, the interstices of which are filled in with sun-burnt bricks, and plastered within and without either with clay whitewashed, or else with lime and sand stucco. The floors and ceilings are planked, and the windows glazed. There are fireplaces only in the lower rooms, which the family live in during the winter. Of this kind of house, with rooms varying from two to twelve, the towns in Turkey are mostly built.

In Koordistan the labouring-classes are very badly housed. Their dwellings, generally speaking, consist of a small cow-house, and two rooms made of mud and rough stones, with walls 3 ft. thick on the ground-floor, all communicating on with another, covered with a heavy earthen roof also 3 ft. thick, laid on large bare pine poles. The walls, as the ceilings, are bare, and pierced with small glazed windows, which in winter are pasted over with oiled paper to exclude the cold. Ventilation there is none, and the previously stifling atmosphere is increased by the only means available to the poorer classes by warming their dwellings. Owing to the want of coal, and the scarcity, and consequently exorbitant demands of wood and charcoal, the fire is maintained by burning cakes called "tezeh." This is made of dried cow and horse dung, collected during summer and winter in trough, which stands at the side of every house, mixed with straw. The cakes are burned deep circular holes sunk in the ground, in which also the greater part of the family food is cooked. Such a contrivance, called a "tandoor," is insufficient in itself to provide the necessary warmth during the penetrating cold of the country; for the tandoor is placed an open framework of wood, covered with a large thick woollen quilt cloth large enough to extend several feet around. The different members of the family when not employed, sit under this quilt during the day, wrapping it about them as well as they can, so as to concentrate the heat of the tandoor as much as possible about their extremities.

In Koordistan there are no divisions in the several branches of work belonging to an occupation; thus, for instance, the carpenter while executing the rudest work, at the same time a kind of cabinet-maker, joiner, ash-framer, worker, and not infrequently a mason as well. The mason is also, as occasion requires, a stone-cutter, a plasterer, or bricklayer. As architects are unknown, he is to who invariably plies the house and provides the estimates of expense which he does remarkably well, considering that he can neither read nor write, and carries on his work simply by rule of thumb. Although attempts are made in building and furnishing the better class of houses, to ornament ceilings, &c., they are universally ill-built, and the carpentering such that windows and doors need not shut properly, and the furniture nothing more than crazy deal benches, whose shabbiness and coarse condition are hidden by gaudy tawdry cloths.

CONSTITUTION OF THE OFFICE OF WORKS.

WE hear that a Commission has been appointed, consisting of Lord John Manners, F.R.S., Commissioner of Public Works in 1868; the Earl of W. Adam, the First Commissioner who succeeded Mr. Ayrton; Mr. W. H. Smith, M.P., Secretary of the Treasury; and Mr. Austin, late Secretary of the office, for the purpose of reporting on the results of the changes in the office and officers, which had been introduced when Lowe was Chancellor of the Exchequer.

One effect of those changes, visible enough to the public, was the delay in proceeding to several public buildings, such as the Law Courts, the South Kensington Museum, the Natural History Museum (which still creeps on at snail pace), the National Gallery, and the British Museum.

HOMES OF DUTCH WORKPEOPLE.

In the Netherlands the workman is even more particular than his British rival about having a house to himself, and this laudable feeling extends to the poorest artisan. Hence, the miniature houses which are to be seen here and there in every old town, and which strike the stranger as so peculiar. There are instances where the width of the whole house barely exceeds that of the street-door, and where a good-sized bed would certainly extend from wall to wall.

In every town one meets with blocks or rows of houses built expressly for the working classes. They are mostly on the same model, the size not allowing of any great variety. The more modern have been built in rows outside the town; the older are to be seen in the more crowded parts. Passing down a street, one notices here and there a narrow passage about 4 ft. wide, which, at first sight, might be taken for a backway to one of the adjoining houses. But entering by this narrow passage one steps out between a double row of neat brick houses, enclosing a garden divided off by low hedges or palings into a number of small plots, three or four paces square, each one belonging to the house opposite to it. There may be a dozen houses on each side all precisely alike, and forming a single property. A common pump usually stands in the centre of the enclosure. The garden-plot of each house, though small, must be accounted valuable, for few of the houses of this class are without something of the kind; they serve as drying-grounds for the clothes of the family, or for the pots and pans which are being continually cleaned, and in which the housewife takes so much pride.

On entering a house, one stands in a room about 15 ft. square, provided with a single window in front; a chimney in one of the side walls is fitted with a small stove, the property of the tenant, which sufficiently answers the purposes of heating and cooking. In another part all are one or two cupboards, the crockery, and pantry of the establishment; while a larger recess, fitted with a bed and concealed by a curtain, forms the sleeping-place of the members of the family. The floor is generally boarded, though not always; the walls, about 7 ft. or 9 ft. high, are plastered and whitewashed, and papered by the tenant. The furniture of the room is generally sufficient for its size, and carefully kept. There is no back-door or yard. A corner of the room is a steep, narrow staircase, leading to the room above, where sleep the younger members of the family. An air of order and propriety pervades the whole establishment, and gives evidence that neatness and cleanliness are regarded as among the first of the household virtues.

For a house such as described the rent is about 2s. or 2s. 6d. per week in a town like the Hague. In the small country towns it is generally less. Such houses are supposed to earn 10 per cent. to their owners, for which no deduction must be made for taxes and repairs.

In the newer portions of most of the large towns, and towards their outskirts, long rows of houses have been built on land, which, having been less in the purchase, has been more liberally distributed. These houses, though about the same size as others, have been arranged with more regard to some of the comforts and necessities of life; a covered place in the middle of the row has been reserved for a common pump and washhouse; the walls of the upper room rise higher before slanting off the roof; the gardens are larger; and instead of the houses being built in back courts, they are arranged in rows, or parallel rows of them placed back to back, and with pretty gardens separating the blocks which abut themselves on some wide street or canal at one end, while the other is bounded by the open fields. Nothing can be much better than such an arrangement, and the rents of such cottages do not exceed that of those in town.

Within the last six or seven years have sprung up a new model lodging-houses for the labouring classes, being built by companies issuing their shares with coupons, paying fixed dividends amounting to 5 per cent. per annum. In some of these cottages a not unsuccessful attempt has been made to attain the advantages of the Continental flat system without doing violence to the prejudices of the tenants in favour of separate houses. They are built in rows like the other cottages, but with double rows looking opposite ways into separate gardens. A front door opens towards a garden. The cottage is inhabited by two

families. One owns the ground floor, consisting of two rooms looking opposite ways, and has the sole enjoyment of the garden-plot on one side. The other family inhabits the upper story to which there is direct access by a staircase leading up from a front door on the opposite side, and has the exclusive use of the other garden as well as an attic in the roof. The idea of this arrangement is that as the houses are built in rows, and as the two families which inhabit any one house have separate doors and separate gardens on the opposite sides of the house, they have even less to do with each other and see less of each other than they do of their next-door neighbours, and have every opportunity therefore of remaining as much strangers to each other as though they were in the next street, which indeed they may be said to be. The economy in cost of construction and in space of this plan over that of two separate houses placed back to back is apparently limited to there being but one staircase instead of two, though even this sounds more than it really is, inasmuch as staircases need merely to mount to the sleeping-apartments need not be either so large or expensive as the one which is the only means of communication for a whole family with the street below. The leading advantage appears to be, the free current of air which may at any moment be obtained by either family by means of windows facing opposite directions. Though built with every convenience and improvement which can be reasonably expected, the rent for the ground-floor at the Hague, for example, is not more than 2s. 1d., and the upper portion which has the advantage of an attic, 2s. 8d., per week.

The Dutch artisan can live comfortably and contentedly on what would ill suffice to satisfy the wants of an English labourer. The usual wages of a skilled artisan, such as a carpenter, joiner, plumber, or smith, may be reckoned in the larger towns of Holland at about 16s. per week; his wife, perhaps, adds 3s. or 4s. by taking in washing; and the man himself, by working out of doors on odd jobs, often adds another shilling or two. A steady family would thus find the united earnings not fall far short of 22s. a week.

The hours of labour in the summer are generally twelve, including intervals for two or three meals. These consist of breakfast at about eight, dinner about midday, and occasionally tea towards the evening. Breakfast consists of a sandwich made of a thin slice of a peculiar high-flavoured, but not unpalatable, black bread with butter, and coffee with milk and sugar. Dinner always begins with potatoes; after which comes a mess of carrots, turnips, or other vegetables, boiled together in a liberal allowance of fat; fish, when in season; and it is followed by a cup of tea. Beer is not drunk at meals, as with us; there is plenty of water, and the gin-shop is occasionally visited. If the workmen frequent the cook-shop, they get their fill of greasy potatoes and other vegetables for twopence. Meat is rarely tasted by the working classes; it forms no part of the bill of fare either for the man or his family; if ever indulged in, it is at the Sunday meal, when the whole household share the delicacy. If prosperous and happy, the Dutch workpeople owe it to their own patient industry, their provident habits, and their natural contented disposition. In Mr. Nicholl's report to her Majesty's Government on the condition of the Dutch workpeople, he observes, "Nothing can exceed the cleanliness, the personal propriety, and the apparent comfort of the people of Holland. I did not see a house or a fence out of repair, or a garden that was not carefully cultivated." The people "appear to be strongly attached to their Government, and few countries possess a population in which the domestic and social duties are discharged with such constancy."

INTERNATIONAL EXHIBITION: THE QUEENSLAND ANNEXE.

A good deal still remains to be done before the Exhibition of the current year can be pronounced complete, but happily steady progress is being made. Numerous objects of the most interesting character, some of them from far distant countries, are being added almost daily to the remarkable and fairly complete,—in some instances very full and rich,—groups, in different departments of the fine arts, in lace, leather-work, sanitary appliances, and machinery in motion that have been exhibited daily since the Exhibition opened.

Recently, the productions of the fertile

colony of Queensland were offered for public inspection. A good many of the cases are still empty, but there is sufficient in the number, variety, and character of the exhibits, and especially in their admirable arrangement, to make the little section well worth a visit. The scientific and methodical arrangement of the objects shown last year, has been retained very wisely; and visitors are enabled to inspect, systematically, specimens of the rocks, soils, and productions of the Alluvial, Cretaceous, Mesozoic, Carbonaceous, Palaeozoic, Devonian, Metamorphic, Granitic, Trappean, and Volcanic districts and formations. The coloured photographs, and other cleverly-executed coloured illustrations, are in themselves an interesting exhibition, and well fitted to give not only an accurate idea of the varied character of the districts represented, but also of their flora and fauna, and of the habits and pursuits of the colonists.

The productions include a profuse variety of the beautiful woods of the colony, in specimens of different species of the acuriaria, the eucalyptus, the acacia, &c. Among other vegetable productions, numerous fine specimens are shown of hemp, cotton, sugar, coffee, tea, maize, wheat, and other cereals, tobacco, bark for tanning, from the desert sandstone, and wines from richer regions. The animal productions include, as might have been expected, numerous specimens of cocoons and silk, of leather and leather goods, and of wool of different kinds and in various conditions as regards washing and dressing. The mineral productions of the colony are rich and varied; one of the most notable exhibits in this department is a splendid block of malachite (part polished), and metallic copper from the Peak Down Mines; there are also numerous large ingots of pure copper and tin, specimens of copper ore, gold nuggets, specular iron from Gilbert River, lode tin, crystals of tin ore, beautifully-veined agates and pebbles, crystals, lustrous opals, marbles, white, grey, red, and variegated, of almost all varieties of colour. In addition to these there are numerous specimens of coal from the valuable, and, in some instances, easily accessible, mines of the colony, with samples of iron ore, fireclay, &c.

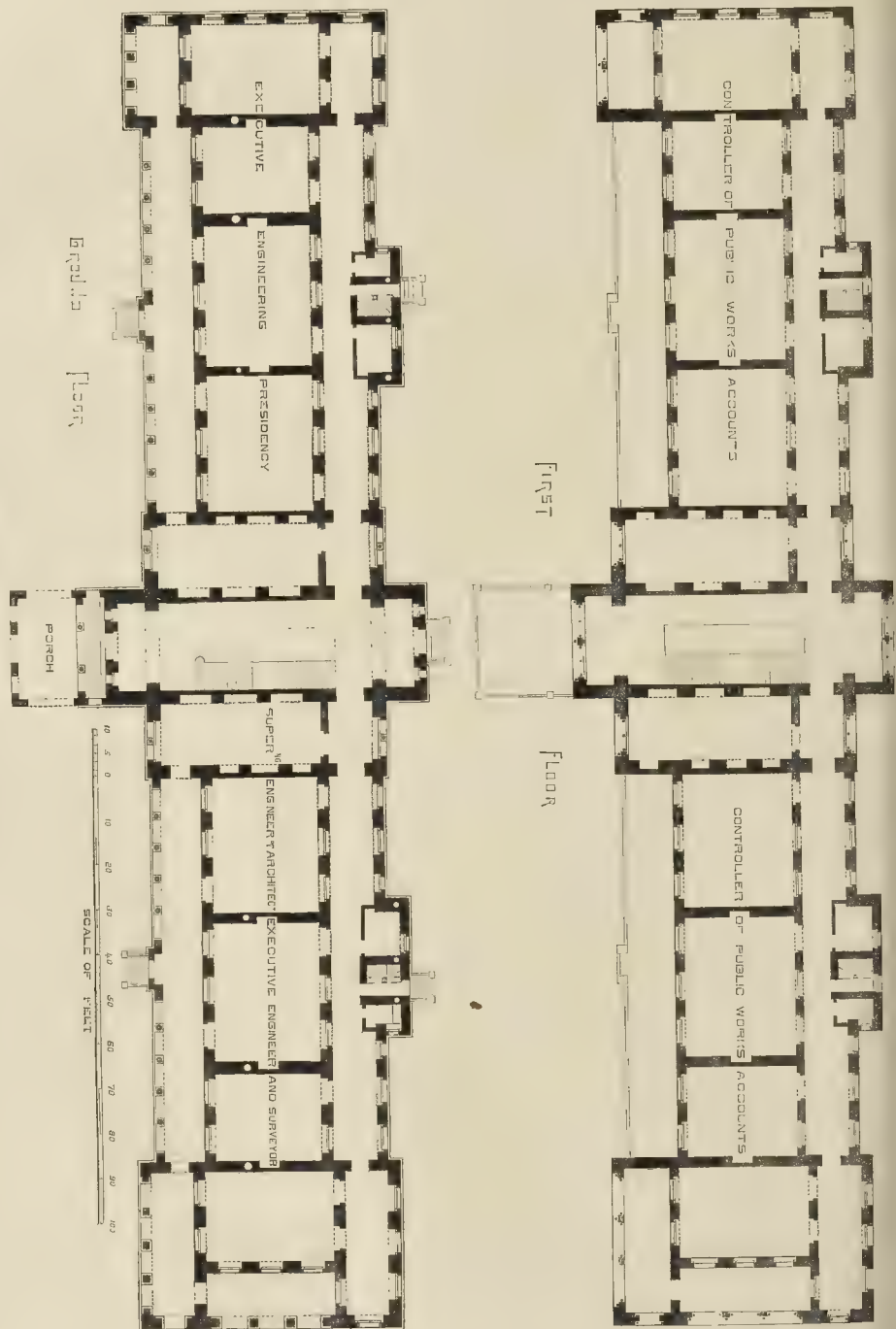
A number of very interesting objects have been placed recently in the annexes, consisting of leather, whips, harness, and saddlery; Belgian furniture (very superb), models of vine farms, and drawings by students in the art-schools and others, many of them of lace, brocades, and other fabrics, excellent in design, and exquisite in delicacy of tracery and execution. A group of Japanese objects in bronze vases, porcelain tablets, screens, &c., are characteristic, and well worth examination and scrutiny.

PUBLIC WORKS OFFICES, BOMBAY.

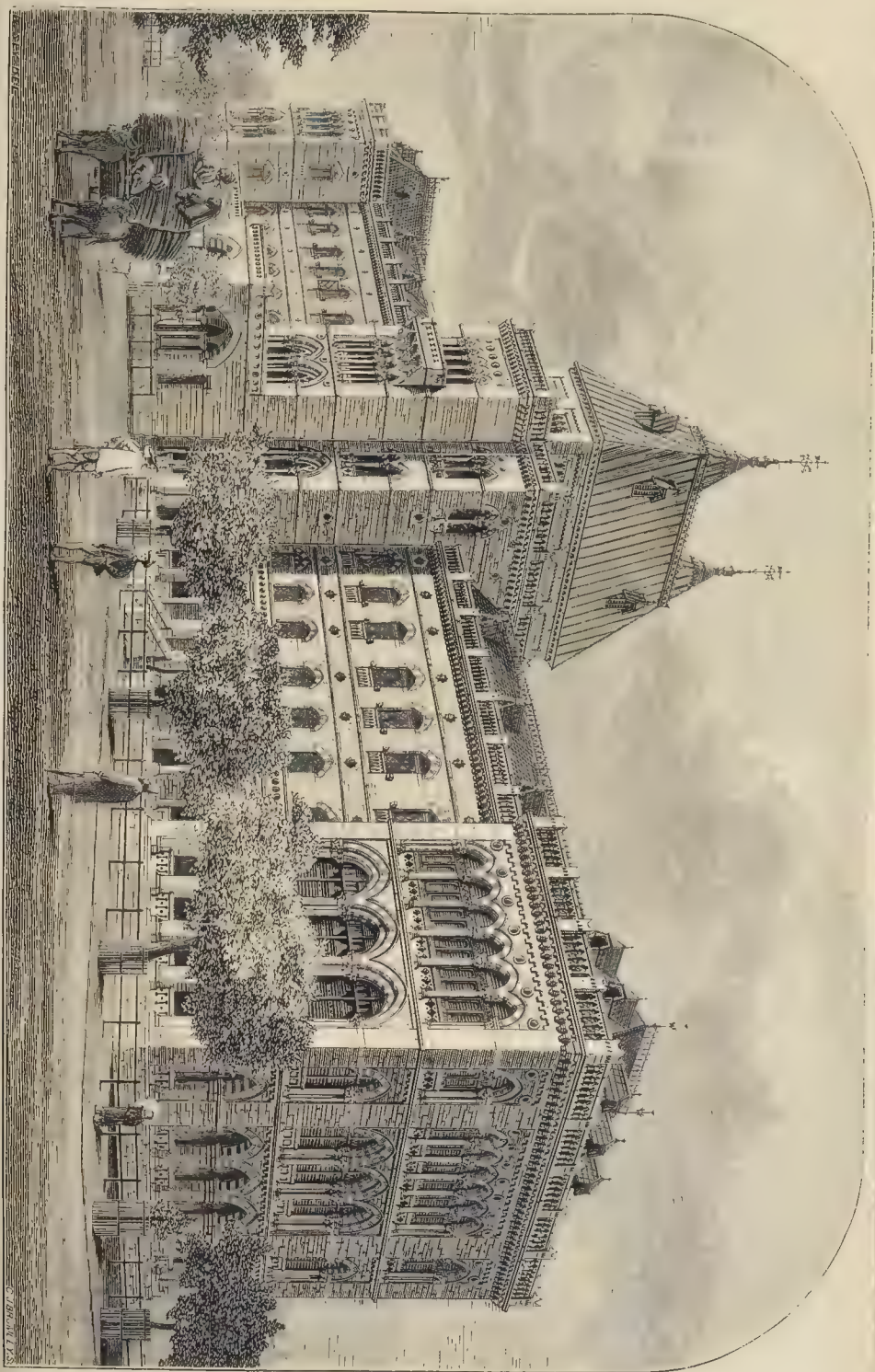
The building for the Public Works Offices is erected on the Esplanade in continuation of Church Gate-street. It was designed by Colonel St. Clair Wilkins, Royal (late Bombay) Engineers, and faces the Post-office. The walls are built of blue basalt rubble masonry, faced with a similar basalt, roughly dressed on the face, in courses of 4 in. to 5 in. in height, no stone being less in length than twice its height. The dressings are in calcareous sandstone, obtained from Porebunder in Kattiawar, and in some instances in Coorla buff basalt. The square piers of the ground-floor are in Coorla stone, and the circular columns, as well as the detached columns, of all windows, &c., throughout the building are in Porebunder stone. The principal staircase is in blue basalt, and the roof covered with the Broomhall Tile and Brick Company's patent red roofing-tile over teak framing. The ground-floor is paved with Minton tiles, and the upper floors are teak boarding over concrete sounding between skew-joists over 3-in. planked ceiling, with the exception of the corridors, which are paved with Minton tiles over concrete and Porebunder stone, 2½-inch slabs, and teak joists.

The contractors were Messrs. Scott, McClelland, & Co., of Bombay, and the building has cost 10½d. per cubic foot (cubical contents above ground being alone taken). Colonel John A. Fuller is the architectural executive engineer and surveyor of the presidency division. The building was erected under the immediate superintendence of Mr. Wassoodew Bappoojee, assistant engineer.

The Coventry Sewage Works.—We are asked to say that these works were planned by Mr. Baldwin Latham, C.E., and carried out by the General Sewage Company's engineer, Mr. Melliss.



PUBLIC WORKS OFFICES, BOMBAY.—Plans.



PUBLIC WORKS OFFICES, BOMBAY.—COL. ST. CLAIR WILKINS, R.E., ARCHITECT.

IMPROVEMENT OF LONDON POOR-CLASS DWELLINGS.

The recent debate in the Commons gives great scope of decided measures being soon taken by the Government for carrying out some such improvement of metropolitan poor-class dwellings is already being carried out, to a certain extent, at Glasgow, Edinburgh, and Liverpool. There was in earnestness and practical expression in the language of the various speakers in the debate, which show how strong a hold the subject has taken on public opinion; and to a sanitary pioneer like the *Builder* this is highly satisfactory, and shows us clearly that our labours, and those of others, in the cause, for the last quarter of a century and more, shall now soon be rewarded by practical and general results. We cannot report the debate, but must record an extract of the speech of Mr. Kay-Shuttleworth, who originated it, and of Mr. Cross, the Home Secretary, who responded heartily to the call upon the attention and upon that of the Government. Mr. Waterlow, Mr. McCullagh Torrens, and other able and influential Members of Parliament, took part in the debate.

Mr. Kay-Shuttleworth said he desired to call special attention to the urgent importance of the problems connected with the present condition and future improvement of the dwellings of working people in London. The right hon. gentleman now at the head of the Government, laying down his programme at Manchester, adopted, as his motto, "*Sanitas, Sanitatem, inquit, Sanitas.*" In order to show the special need for improvement in the dwellings of the working classes in London, the hon. member related his own experience of the last few weeks, during which he had made it his business to visit the different parts of the metropolis, with a view of ascertaining the real state of things in connexion with this subject. Among other places, he had been through certain courts in the neighbourhood of Holborn, through the whole parish of St. Giles, and through a place, in the neighbourhood of that House, called Bedfordbury. Through hon. members who made short cuts in a neighbourhood of Lincoln's-inn might see many places which they would not like to live in; they could have no idea of the wretchedness of the houses which were situated in the immediate neighbourhood of Parliament itself. Among the places he saw there were a great many very narrow courts, approached by tunnels under houses, in which there could not be the slightest ventilation. In many instances houses were built back to back, or else with a small space between their backs, which was filled with the most disgusting matters, contaminating the air. The fronts of other houses looked upon the backs of their neighbours' dwellings, and upon the sanitary arrangements which were situated there. He had seen in Bedfordbury members of houses which were built entirely of mud, and in Drury-lane numbers built simply of lath and plaster, and consequently liable to be rapidly consumed by fire. Such houses were of great antiquity, and were erected long before the Building Act had been passed or sanitary arrangements were thought of. The reports of the medical officers of the local government in 1865, and of the medical inspectors of Whitechapel in 1874, showed that many of the dwellings of the poor in London were wretched and abominable in the extreme, and were unfit for human habitation. What he had been describing were large areas available as sites for the building of improved dwellings for the working classes. In all those great spaces which were covered with those bad houses could be made use of if they were cleared, and if Parliament said distinctly that they should be made use of for proper habitations for the poor.

But there was another class of sites which existed in London. If any hon. member would walk through Farringdon-street, he would see large spaces lying waste, which was not only an injury to the corporation who might own the property, but also to the surrounding occupiers of shops, and to the working classes who were living in the neighbouring overcrowded parts of London. There were unsold sites in Westminster, in the neighbourhood of Goswell-street, in Paddington, and elsewhere, which did not get purchased without compulsory powers. There existed in London a plentiful supply of sites, and there was a large demand for them. The question was how to bring the land to touch the supply.

What had been done in Glasgow might at least be pointed to as a hopeful precedent when they

proposed to deal with the evils that existed in London. In some respects London was better off than Glasgow. If the Metropolitan Board of Works were invested with the necessary powers they would be enabled, by the issue of a 3 per cent. stock, to obtain money much more cheaply than the Glasgow authorities had been able to do. No doubt they had not in the City of London a great reforming municipal corporation, like that of Glasgow, with powers extending over the whole metropolis, but we ought not to delay improvements till that reform occurred. If compulsory powers, similar to those granted to the Glasgow Corporation, were given to the Metropolitan Board of Works, and if they failed to use them, the powers would be ready for their successors.

What he proposed was that eligible sites should be acquired by the Metropolitan Board of Works, under powers similar to those conferred upon the Corporation of Glasgow, and that the land should be again sold by them, although it might be desirable, as in the case of Edinburgh, to give them power to rebuild to a certain extent.

Not a session passed in which compulsory powers were not granted to railway companies and for street improvements, and why should they be withheld when a measure of much greater national importance—the improvement of the condition of the working-classes,—was in question? It would be necessary also to meet the case of improvable dwellings which were not so bad as to need to be taken down, but which required repairs. He would, in conclusion, express a hope that the Home Secretary would not confine himself to replying to his observations and arguments, but would state what he proposed to do. The time for merely saying that something ought to be done was past. The hon. member then moved, "That, in the opinion of this House, a necessity exists for some measure that will provide for the improvement of the poorest classes of dwellings in London, and that this question demands the early attention of her Majesty's Government."

Colonel Hogg said that the Metropolitan Board were anxious to do everything they could to benefit the metropolis, and nothing more beneficial could be done than improving the dwellings of the poor. He had himself gone through some places so horrible that he did not know how human beings could dwell in them. His hon. friend who had made this motion, wanted to bring sites to those who had a demand for them. There would, he should think, be no great difficulty in that. The powers, however, which the hon. gentleman would confer, would require to be used with the greatest possible caution, because, while one man might think a house ought to be pulled down, the owner might be of a very different opinion. If, however, Parliament should think fit to invest the Board with these new powers, the Board would exercise them to the best of their ability.

Mr. Cross, the Home Secretary, said his hon. friend the member for Hastings need have made no apology either to the House or to the Government, for having brought the subject under discussion before them that evening. Speaking for himself, he would say that no one question out of the whole range of those which were likely to come before the House was nearer or dearer to his own heart. The most effectual way to put down drunkenness, for example, was to improve the homes of the poor, to make those homes happy, and to induce men to come to them as their greatest recreation, instead of permitting them to live, as they were now compelled to do, in wretched dwellings, to which it was no wonder they had no great desire to return after a hard day's work, and from which they absented themselves as much as possible, leaving their wives and children in misery and poverty.

As to the body to be invested with the requisite authority, the Corporation of London and the Metropolitan Board had been named, and other plans had been submitted to him which deserved consideration, but he wished to reserve any opinion on that point. As to the apprehended increase of the rates, there might be a small rate imposed for erecting these buildings, but a much larger amount might be saved in the case of gaols, lunatic asylums, and hospitals, for any large operation of this kind would so materially improve the condition of the people that, in the long run,—he did not say immediately,—the rates ought to be reduced rather than increased. In speaking of rates, moreover, the sick and death-rate of the metropolis must be remembered, and these must have great weight with any Government which considered the question. It had been stated that the average

death-rate per 1,000 was 21.5, whereas in the improved dwellings it was only 15.8. A very striking fact; and the sick-rate being always about double the death-rate, the comparison between the improved dwellings and the present houses became still more striking.

The hon. member for Pembroke (Mr. Scourfield) had objected to any vague proposal; but he could assure him, that if the Government took up the question they would produce an intelligible measure which could be easily carried out, and would not produce uneasiness in the quarters where it had hitherto existed, while it would avoid the objections which had been pointed out in the course of the debate.

The Government had given two pledges of its disposition to act in the matter without further delay than necessarily attended the treatment of such a question, for it had frustrated the attempt of the Midland Railway to escape the Lords' Standing Order, and it had determined to consider what Standing Order should be submitted to the House to prevent a recurrence of such attempts. He hoped, therefore, the House would be satisfied that it was the earnest desire of the Government, the moment they could settle, not only the principles, but the details, of the measure, to carry out the spirit of the motion. The subject was engaging their serious attention, and the moment they could do so they would introduce a measure with the full intention of carrying it, with a view of securing to the people of the metropolis dwellings equal to those in other parts of the country, in which they could grow up, not slaves, but really men and women, in the enjoyment of happiness and comfort.

The motion, which was a formal one on going into supply, was then withdrawn.

Since this debate, we may here remark, Mr. Whitwell's Bill, as to working men's dwellings, has been before the House.

Mr. Whitwell, in moving the second reading of this Bill, explained the object of it to be to enable municipal authorities to acquire sites for the erection of dwelling-houses for the working classes, and to sell the land in small allotments.

Mr. Cross said he did not rise to oppose the second reading of the Bill. Indeed, it was a step to a larger measure which he contemplated bringing on next session for the metropolis. In assenting to the second reading he reserved to himself the liberty of urging any objections either on going into committee or in committee.

The Bill was then read a second time.

DUMBARTON.

THE town council of this flourishing old burgh have their hands pretty nearly full with improvements and new works. Having taken over the gasworks, and obtained an Order in Council to enable them to recauseway the High-street, they have, before doing so, taken the wise precaution of relaying the streets with larger-sized gas-pipes and new water-mains on both sides, so as not to disturb the causeway in making future connexions. They also intend to widen the footpaths on each side of the street to 9 ft. It is said that some of the small feuars and petty lairds are in strong opposition to this part of the scheme, but it is hoped the council will be able to enforce this in spite of all selfish opposition.

The other works in progress are the pier on the Clyde, the first pile of which was driven on Saturday last; it is to run out from the base of the Castle Rock to a distance of 765 ft., and will be a great boon to those people who like to travel by water, as well as a check on the railway company, by keeping fares in moderation. The council have also erected an epidemic hospital, which was opened for patients last week.

Fire Escapes.—Mr. Alfred Thomas, writing from 2, Adelaide-place, London Bridge, E.C., says,—"Allow me a short space to rescue from oblivion the name of the inventor of the ladder fire-escape adopted by the Fire Brigade, as also of the rope-and-sack escape intended for domestic use, both dating more than thirty years back. The patentee was a Mr. Wyvell, an artist, who, like many benefactors, from want of public appreciation in his day, died in poverty. Mr. Sampson Low, for many years secretary of the Royal Society for Protection of Life from Fire, can bear out my statements, and thus render honour to whom honour is due."

ON THE IMPORTANCE OF A SPECIAL ORGANISATION FOR THE DIFFUSION OF SANITARY KNOWLEDGE.

THIS was the title of a paper read recently by Major-Gen. Syngé, at the Society of Arts. The lecturer said,—A self-evident proposition is admitted to be difficult of proof. An axiom may be stated, but is supposed to be incapable of demonstration, and the attempt even to reason on the difficulty of substantiating logically that which commands instinctive assent leads at once into the region of metaphysics. I should venture on yet more subtle ground were I to hazard entering upon the inquiry why self-evident propositions or truisms stand pre-eminent among the things universally neglected in practice. Yet my subject, namely, "The Importance of a Special Organisation for the Diffusion of Sanitary Knowledge," places me in this difficulty, and takes me into this region. For when I have stated it, shall I not have enunciated a self-evident proposition? Who is there that will dispute the value of knowledge, provided only it be real? Or who will deny the value of health? Who will question that the one bears upon the other? Health cannot be maintained without knowledge, whether that knowledge be instructive, intuitive, or acquired. And who is there to be found bold enough to affirm that our existing habits in matters relating to the maintenance of health are satisfactory? If there be such a one, I should select him as the strongest and most conclusive embodied evidence it were possible to procure, or to adduce, of the necessity which exists for the diffusion of knowledge leading to a better condition of mind. If, on the other hand, there be none such, my proposition is in great part admitted, and, in so far, my object attained. If the habits of a great proportion of our population be in many respects not conducive to, but subversive of, the due maintenance of health, who will gainsay the propriety of, if there exist not the absolute necessity for, a special organisation to spread sound knowledge on sanitary subjects; but an organisation armed with that authority which is derived from conviction brought to bear rather than with that comparatively unreal and unstable force which may indeed be procured by the instrumentality of legal enactments, but which is never willingly submitted to when enacted contrary to conviction, and which never carries, and never can carry, the same inherent power as stands inseparably connected with settled conviction founded upon the knowledge of the true; and this is, to my mind, the sound definition of science: science is true knowledge of the true. In accordance with these views, I seek, in bringing this subject under your consideration, to arouse the energy of action, so that it may be applied directly to the performance of this task, and this Society be moved to form a distinct branch, which I hope will cover the land, and which shall base its action on somewhat of the following principles and outline of suggestion. First, on patient and continuous investigation of what is true in that class of subjects pertaining to health which is usually ranged under the term "Sanitary"; next, on clear and concise compilation of the evidence on which each step in such investigations shall rest, and which shall proceed to diffuse or spread such knowledge, but which shall leave entirely free and unfettered by any recommendation of legal enactments the adoption or the non-adoption of the results which may seem to flow from the establishment on such evidence of the premises in question. I would propose that the Society of Arts request the Council of the Annual International Exhibition to give permanence, and prominence together with that permanence, to that sanitary, architectural, and engineering department which forms so instructive, timely, and valuable a feature this year. Also that it should invite the Council of that Exhibition to cause lectures to be delivered by the exhibitors or others, bringing forward, with all the advantage to be derived from the examples at hand for inspection, their own views in explanation of the works they have produced.

I have jealously guarded against the intrusion of compulsion by means of legal enactment, although it is the pet abomination of the hour; but I would also guard against being supposed to be content to begin and end with the mere machinery of exhibitions or lectures either there or here. I have a very different aim in proposing the formation of this important branch of the Society of Arts. I believe that with very rare, if with any, exceptions our scientific insti-

tutions fall short of exercising the influence and carrying the weight they might and should, if they followed more invariably the rule of bringing to a practical conclusion and pronouncing a definite judgment on the questions brought before them, and formed sub-committees charged to see approved conclusions carried into practice by science; that is to say, by sufficiently diffusing sound knowledge on the particular subject. And this is what I propose we should do.

At the conclusion of his address the lecturer suggested the following programme:—

1. The Society of Arts, impressed with the importance of the subject, forms a section for the special purpose of the promotion of sanitary science.
2. It invites, through the lords-lieutenant of counties, the formation of sanitary associations in every county and shire of the United Kingdom for the same object.
3. It proposes that these be incorporated with the society.
4. It recommends the formation of societies for the same purpose in all the several parts of the empire.
5. It will communicate with the objects of the Secretary of State for the Colonies, with a view of bringing the efforts of this Society before the several parts of the empire, through such channels as in the several cases the governors for the time being of her Majesty's possessions may recommend.
6. It will make known its action in these respects to her Majesty's Secretary of State for Foreign Affairs, and will request suitable opportunities for inviting, through the channel of her Majesty's embassies, legations, and consulates, the co-operation of such bodies as may be formed in foreign countries for similar purposes.
7. The primary object of the section shall be to promote the improvement of all arrangements affecting the health of populations in respect of the vitiations of the atmosphere, of water-supply, and of soil, which are incident to human and industrial existence.
8. The Section, in strict subjection to the Society, is purely honorary, and will not in any way connect itself with any commercial undertaking which may arise out of its action or otherwise.
9. It will, however, investigate proposals for attaining any of the objects for which it is constituted, whether or not they be brought forward commercially, and the Society will, upon the recommendation of the Section, approve by the Council, grant gold and silver medals and diplomas of merit, signifying distinct approval, and these shall be accompanied by letters, specifying the grounds on which such recommendations and approval are made and given.
10. The Council of the Society will apply to her Majesty's Commissioners for the Annual International Exhibition to make permanent the display of engineering and architectural appliances which form a feature of this year's Exhibition.
11. They will also suggest to her Majesty's Commissioners for the Annual International Exhibition that arrangements be made at once to enable exhibitors of such appliances this year to deliver such explanations of the several objects they exhibit as can be illustrated with the advantage of the examples upon the ground.
12. They will suggest that this arrangement also be made permanent in so far as they may relate to any novelty hereafter introduced, or of such features as it may be deemed desirable should be continuously made known.

In the course of the discussion which followed—Mr. Ford thought there seemed a kind of reaction setting in in sanitary matters, there being a proposal for repealing the Smoke Nuisance Act as regarded bakers, and the Act for abolishing slaughter-houses, &c., in the metropolis. The question of road materials had also been referred to, and it seemed to him that the public were content to adopt anything, for some materials were used which absorbed everything which fell upon the road, until the effluvia of ammonia arising therefrom became offensive. In some cases coal tar had to be sprinkled at night to conceal the noxious emanations that were given off. All these matters required to be watched, and he thought the council would be conferring a great benefit on the public by taking the matter up.

Major-general Scott, C.B., said he would confine himself to one or two facts, showing the great ignorance prevalent with reference to sanitary matters. Some few years ago he was in a garrison town when the Crimean soldiers were sent home, sick and wounded; a larger amount of ventilation was required than existed in the barracks, and to secure this large openings were made in the wall, over the beds of the patients, the results being that a great number of them were killed from the draughts, and then the doctors found out that they had not applied the ventilation properly. In reference to this point he might mention that he had seen in Manchester, a short time ago, a very admirable apparatus for ventilating a crowded room. It was applied to a room where prisoners were being tried, and consisted of a number of tubes brought up through the desks in front, and similar tubes at the back, just to the height of the people who sat there; and although his impression at first was that the draught would be too great, this was not so, because the air was shot up with such force that it became mixed with the general air of the room; in fact, he had never been in a better ventilated room. This appeared to be a plan admirably

adapted for giving that comfort and health so much required in public rooms, though it might not be suited for dwelling-houses. The sewerage question was a subject upon which the country required a good deal of enlightenment. Many towns had been infatuated with the idea of disposing of their sewage at an enormous profit, but this notion was now being dispelled, and the companies, instead of offering fortunes for it, required payment for taking it. If this had been the case some years ago, he thought they would have been considerably in advance of the position in which they now were.

The Chairman (Mr. Thos. Webster, Q.C.) said the paper referred to what might be done by the International Exhibition, but as they understood the International Exhibitions would not be continued in their present form, he thought it a subject well worthy the consideration of the Society whether there might not be a perpetual collection of sanitary apparatuses, and means of affording instruction by lectures.

Mr. Hale thought General Syngé had spoken too strongly about Acts of Parliament. Mr. Ford had referred to the question of slaughter-houses in the metropolis as a nuisance. He thought the number of slaughter-houses in the vicinity of butchers' shops was less than formerly.

The Chairman said what he understood General Syngé to contend for was that an Act of Parliament ought not to admit of a limited standard of purity, but ought to prescribe that there should be no impurity at all, and that he considered a very vital question.

Major-general Syngé, in reply, said there seemed to be no diversity of opinion as to the benefit which would be derived by the country, as large if the Society of Arts would organise a direct agency for the diffusion of sound sanitary knowledge; but a little misapprehension appeared to exist as to why he did not propose to resort to legal enactments. It was not so much on account of any inherent legal defect in any particular enactment as from the general effect of over-legislation. We were forced to use water in a particular manner within a definite area, and then another authority stepped in and decreed that the result of that action should not go into the river beds, the natural receivers of water; and still another body, the Thames Conservancy, joined in the same prohibition, and there was nowhere to turn for information and assistance. For years before he left the service to take up this subject, he tried every public department he could hear of, going from one to another, until he found that all he had ever heard of "how not to do it" gave him a very faint idea of the reality. He thought it high time, therefore, that a voluntary association should be formed which should disseminate information. The evil was daily increasing, the water supply getting less, and the population getting thicker and thicker. There was a limit to the water supply, but there was none, he hoped, impending to the increase of the population. Why introduce an artificial one? Why bring about a pestilence to sweep off thousands of lives? And why limit the force and spread of knowledge, by calling for forced action in any shape or form? The points which had impressed him in connexion with this subject were, first, its importance; and next, how to give it effect, and almost every one to whom he spoke said immediately, "Oh! you must get an Act of Parliament." For his own part, much as he valued sanitary reform, he considered independence of character of yet higher importance.

PROPOSED PUBLIC BATHS, AQUARIUM AND CONCERT HALL AT DOVER.

A COMPANY is in course of formation for the erection of a public building at Dover, which shall contain, under one and the same roof, the triple features of public baths, an aquarium with commodious refreshment and ante-room, and also a concert-hall and assembly-room. The baths department is to contain ladies' and gentlemen's swimming-baths, private hot and cold sea and fresh-water baths, with separate entrance, and conveniences, together with shower, vapour, and douche baths, attached to which will be convenient waiting and attendants' rooms, the whole arrangements involving the establishment of baths of a varied character, on a scale of unusual completeness. The aquarium intended to be one of the most extensive and varied of the kind which has yet been constructed, and will resemble that at Brighton, being equi-

to it in its dimensions and every other particular; the promenade and spacious news-room immediately adjoining serving also the purposes of a lounge, with ample arrangements for the performances of an instrumental band. The concert-hall will be large and spacious, and suited to every class of musical entertainment, whilst the assembly-room will accommodate a company, on the occasions of balls or other similar gatherings, of about 800 in number. The building is to be in the French-Italian style of architecture, and the designs have been furnished by Mr. Edward Clark, of the firm of Pain & Clark, London.—Mr. Clark, as a native of Dover, taking great interest in the undertaking. The site selected is favourably situated on the East Cliff, in an elevated and commanding position. The capital of the company has been fixed at 40,000*l.*, which it is estimated will be the cost of the building and fittings. The inhabitants of Dover are, in the first instance, to have the preference in taking shares, and what shares may not be taken up by them will subsequently be offered in London; but the promoters are sanguine that most of the shares will be taken up by the residents in Dover.

LEICESTER-SQUARE, —PICCADILLY, — KENSINGTON.

This central western route, unequalled in London or any other city, presents a line exceeding a mile and a half of park border within its range; which would seem to terminate in Leicester-square, where it bifurcates in Long-acre, towards Lincoln's-inn-fields; and in Gark-street, towards Covent Garden.

(Seeing the vast improvements now in progress, through the princely munificence of Mr. Albert Grant's free gift to the community, surely this great boulevard ought not to terminate here, within only 200 paces of the National Gallery, being that St. Martin's Church opens the way, the intended thoroughfare by Northumberland House.

The square, dressed in hortulan taste, decorated with fountains, statuary, and ornate railings, furnished with seats and promenades, being the very heart's core of the central metropolis, being born not only in utter waste, but in a degraded and obscene part of London,—has been transformed into a thing of beauty, and a place to the whole community, and should therefore be opened out, so as to give continuation to the Piccadilly line, and connexion with the Embankment.

Ornamental buildings have been recently erected along the line: Burlington House, the exterior, besides the old standard, St. James's Church, the Egyptian Hall, Geological Society, Grosvenor House, &c.; after these the line of the arch and Hyde Park gates bring us again to the park border, where the route is of fair average width and character, until at the end of the terrace six or eight mean shops and public-houses extend to the unsightly barracks of Knightsbridge, which obtrude 20 ft. upon the width of the road, defiling the park drive within, degrading the finest portion of the otherwise valuable suburb of Knightsbridge.

Further on, the handsome ranges of Prince's Palace do credit to the park borders, until we come to the Exhibition-road, where stood the most pleasing house and grounds called Lowther Lodge; here a new and curious pile has been erected, unlike anything in town or country,—a duplication of lofty tiled barn-roofs, gables, hips, and dormers, and this in close proximity to, and contrast with, the splendid and effective dome of St. Paul.

The line commences at Leicester-square, the erection of Mr. Albert Grant, so it may be said to terminate exactly opposite a noble mansion now in progress of completion for that gentleman, designed by Mr. Knowles, and built by Mr. Chappell, of Westminster. This is of Portland stone. The front to Kensington Palace (then) Garden is very handsome, but the overhanging effectively laid-out grounds, adds so much ornament that it might lead a casual observer to infer that, instead of Portland stone, the construction was carried out in a cheap material.

Opposite the frontage of this mansion (which occupies the site of the old Kensington Mad-house) stands an antique gardener's house; the garden wall whereof bounds the roadside for a mile, and curtains off the view of the old park and gardens, defiling the road to Kensington. The park-railing extends over a mile to Hyde Park Corner to this point. Surely it

ought to be continued to the ancient palace gateway, for uniformity's sake, if not to adorn the royal borough of Kensington, or to open out to the palace the fine and effective architectural elevation herein referred to.

As to the continuation of the Piccadilly-line to St. Martin's Church, and its junction with the Thames Embankment, the value of such an easement cannot be over-estimated, the distance being so small, through low and squalid lanes and alleys, from Leicester-square, by the Baths and Washhouses, to the Poor-house (now condemned). A portion at least of the Poor-house might be spared for the new street, and the value of new building sites, on so important a central position, would help to recoup the outlay of purchase, but more especially of such lanes as Orange-street, Hemming-row, St. Martin's-court, and its alleys.

QUONDAM.

MANCHESTER SCHOOL OF ART.

THE sub-committee of the Manchester School of Art committee, appointed to consider whether anything can be done in the school to further promote a knowledge of decorative design, either by a modification of any part of the present course, or by additional classes, have given in a report on the subject. The sub-committee say:—In considering whether the school of art effects all that can be reasonably expected of such an institution with relation to the art of designing patterns for the textile fabrics of the district, and other kinds of ornamental work, two questions presented themselves:—First. Could it be deemed a part of the legitimate purpose of the school to teach in detail any branch of industrial art? Second. Is the constitution of the school such as to afford to students about to engage in technical designing such preliminary instruction in accurate drawing and in the broad principles of ornamentation as may be applied in practice by the use of common intelligence. On the first of these points,—direct technical instruction,—the committee are unanimously of opinion that its introduction into the school system is not practicable. It could not be carried into effect without teaching much of the collateral art of the workshop, often governed as much by commercial, chemical, and mechanical conditions as by the canons of taste.

The next question to which the committee addressed themselves was this,—Does the school offer all the facilities to be desired for giving instruction to those who join expressly to obtain the elementary training in drawing, and the use of colour, required for rudimentary pattern drawing? Judging from experience, the school has hitherto answered such demands as have been made upon it by pupils. Upon an examination of the occupations of those in attendance at the school during the past year, it appears that thirty-four per cent. are engaged in various branches of decorative art; and, as no complaint has reached the committee from this group of students, it is fair to presume that they appreciate the value of the instruction they receive. But it has been represented to the committee that it might lead to an increase of the students connected with decorative art,—pattern designing and the cognate arts,—if classes were formed expressly for their instruction, always presuming that, while learning to draw, such students would take the usual school course, which is really based on decorative forms. The committee recommend that every facility which the accommodation of the school and its staff of teachers can provide should be given for the formation of such classes. It has been suggested that employers, in those trades where many youths are occupied with the rudimentary details of designing, would probably encourage or even insist on attendance at a class in the school of art. Any overture with this view would, of course, receive the best attention of the committee, and be met with a very earnest desire to promote the object of the gentlemen from whom it emanated.

The general conclusions of the committee are that, relatively to its means and accommodation, the school is imparting sound instruction, and largely, to those engaged in the decorative arts. They recommend that every facility be offered for extending the practical work of the school. They cannot, however, hope to effect any very important expansion of the institution in the limited space it now occupies. A commodious building, or a portion of one, expressly constituted for the purpose, would greatly promote the useful development of the work of the school. The institution should be rent free; it now stands at a rental of 200*l.* a year,—a sum

which, if otherwise at the disposal of the committee, might be applied to the increase of the collection of examples and many other useful purposes. A museum of applied art, supplemented by an art library, and both on a scale commensurate with the wealth and enterprise of Manchester, are objects of the first importance in relation to the exercise of the art of design. Manchester ought to possess such a museum and library, and in any effort to provide them, the committee of the School of Art would heartily co-operate, as well as in the periodical delivery of courses of lectures, which would supply the intellectual, in addition to the manipulative, art-training desirable for every student.

EAST AND WEST: PAST AND FUTURE.

CIVILISED man has hitherto turned to the East for inspiration. Are there not signs that the attraction is not now thitherward, but in the opposite direction? Is not our reverence for the past losing strength, and our hope in the future growing? Ever and anon there has appeared to be a backward tendency; but it has only proved to be a step or two retraced, in order to give greater impulse to the bound necessary to overcome an obstacle.

The sun rises in the east; then man goeth forth to labour; the eastern sky may glow with splendour, but it attracts him not: his mind is burdened with the cares of the day, his thoughts are directed to sublimary things.

"It is at evening,
When shadows lengthen from each westward thing,
When imminence of change makes sense more fine,
And light seems holier in its grand decline."

Then it is that, with lightsome heart, he turns homeward, the attraction being towards the setting sun. Yes, the attraction is ever westward! Religion, poetry, art, science, have each and all proceeded from the east towards the west, and have each expanded and developed as they progressed on their way. Humanity instinctively follows the sun. Man, when he seeks a new home, turns westward; cities expand in that direction; the tide of emigration flows thitherward. The east wind is cold and blighting, the west wind mild and genial. The westernmost peaks of the mountains reach nearest to the heavens.

In the West the slave has been liberated; in the East he still lingers in captivity; his only hope of freedom is from the influence of the West. Christianity itself is purer and more spiritual as it faces the west. When the prophets prophesy falsely, and fulminate dogmatic creeds, they turn to the east. The glory of the future they care not to face; it might shame them into meekness and reverence of heart, and looking upon the golden glory of the west, they would surely bless when they came to cross. Our churches and cathedrals are made to stand east and west. Beneath their stone-vaulted ceilings we find every effort has been directed to attract attention to the east. But pass we under the dome of heaven, and we find that there the noblest façade presents itself to the setting sun.

Symbolism is Oriental in its origin; the symbol has taken the place of the thing symbolised; its original significance is now matter of conjecture. "We have been repeating the old symbols without caring about any significance they may have had. Now the beginning of a new era is evident."

Art flourishes only in the West now; in the East it languishes; in the West it is free,—full of health, spirit, and vigour. It does not delight in sombre representations of agony, cruelty, and human degradation. Its works are not intended to be used as idols,—no miraculous powers are vested in them; they are objects for admiration, not adoration,—things of beauty intended to add to the happiness of mankind, and to raise the moral standard of the people.

We have given up erecting imitations of heathen temples; we restore with reverent care the churches designed by our ancestors, and build new ones after the same manner.

May it not be the mission of the West to restore the edifice of Christianity, to strip from its walls the whitewash, plaster, and incongruous detail which obscure the original beauty and simplicity of its outline?

We must not press the architectural simile too far, else we may be accused of passing beyond our proper bounds.

Cras credemus, hodie nihil.

* See p. 355, ante.

NEW PRESBYTERIAN CHURCH, BELFAST.

The new church in Fitzroy-avenue, Belfast, has been opened for divine service. The church occupies a good site on the south side of Fitzroy-avenue, where it intersects Caledonia-road. It consists of a nave, east and west transepts at the south end, vestibule at the north end, minister's room, and detached tower and spire at the north-east angle. The extreme length inside is 86 ft., width 43 ft., and across transepts 67 ft. The ground floor has a slight fall from the vestibule for about half its length, and affords accommodation for 576 persons. A gallery at the north end, extending over the vestibule, will give sittings for 144 additional,—720 in all. The main entrances are from Fitzroy-avenue, through double portals. In each of these portals is a recessed and moulded doorway in four orders, having polished shafts of Connemara serpentine and Donegal granite, supporting carved caps, from which spring archivolts with mouldings and foliage of Scipian plants. The church is lighted by traceried windows of two lights in side walls of each bay of nave, and by triple windows in the main gable over the vestibule, the centre one being 24 ft. in height of four lights, having the head filled with geometric tracery, and the others of two lights with plate tracery. The transepts, in addition to having windows in the side walls similar to those in the nave, have at a high level in their gables lofty triple lights with trefoiled heads, above which is a geometric wheel-window. All the lights will be filled with leaded quarries of cathedral glass, of slightly varied tints, with narrow border of blue glass, except a large wheel-window in the south gable, which is filled with stained glass, geometrically arranged. The tower stands a little distance from the north-east angle of the church, but is connected with it by a covered arcade, in which one of the staircases to the gallery is carried over, and the passage under this is groined in stone, the ribs springing from carved heads. The tower is 20 ft. square above the base, and rises to a height of 80 ft., whence the octagonal spire starts, and attains the total height of 162 ft. at top of the vane. The roofs, which are of high pitch, are supported on Memel trusses, of which the curved braces are borne on cut stone responds, having carved caps and bases. The ceiling, which is plastered, is approximately semicircular in section, and is formed into panels by large wood mouldings. A platform or tribune for the minister is elevated some feet above the floor, and is placed a little in advance of the south gable, where a recess is formed in the wall, finished with Bath-stone responds, and moulded arch. All the pewing is formed of selected pitch pine, with the bench ends moulded and capped with black walnut, French polished. The general contractor for the work was Mr. William McCammond; the gas-fitting has been executed by Mr. R. Stewart; Mr. Stevens has done all the carving; Mr. George Coulter the varnishing and painting; and Messrs. R. Henderson and the heating, all of Belfast. The architects are Messrs. Young & Mackenzie, of Belfast. The cost of the church when completed will be about 5,000. A lecture-room and sexton's house are in course of erection at the rear of the church, which will cost 1,600l. additional.

A U. P. CHURCH FOR LOCKERBIE.

The ceremony of laying the foundation-stone of a United Presbyterian Church at Lockerbie took place on Tuesday, the 21st ult., in presence of a large gathering.

The building occupies the site of the old U.P. Church, now pulled down. It stands upon an elevated plot of land at the north-west corner of the Dumfries-road, where it joins the main road between Carlisle and Edinburgh,—the principal street in Lockerbie. The church is oblong in form, stands north and south, with the entrance from the south-east angle, and a session-house and vestry running east and west at the north end of the church. The entire structure measures 92 ft. in extreme length from north to south, and 54 ft. from east to west. The style of the building is Early English Gothic, pretty freely treated. The internal dimensions are 58 ft. by 36 ft.; the height, from floor to ridge of roof, 52 ft. The session-house for prayer and public meetings is 36 ft. 6 in. by 18 ft. In connexion with the church and session-house is the vestry, with wardrobe, closet, lavatory, and other conveniences.

The main entrance to the building is at the south end of the church facing the Dumfries-road, where there are two doorways with deep-cut masonry and moulded arches, supported by circular columns of polished Dalbeattie granite, having carved caps and bases. The tower has a square base of 17 ft., flanked at the angles with weathered buttresses. The extreme base is 25 ft., and the height to springing of spire 64 ft. The tower is surmounted by an octagonal spire and vane, rising to a height of 140 ft. The walls of the building will be executed in coursed work, with dressed dressings, in red stone from Cornockle Quarry. Over every door and window opening will be arches turned in blue whinstone from Moffat Craig; between each pair of side-lights are buttresses with weather-lablings in two heights.

The roof will be covered with slate, crowned by an ornamental ridge cresting of Staffordshire tiles. Ventilation is secured by upright dormer ventilators on the roof, and by patent openings in the windows. In the basement of the tower provision has been made for the introduction of the "Alambicon Air-warming and Ventilating Apparatus," by which the temperature of the building can be regulated to any degree. The roof is in one span, open to the ridge. The whole of the internal woodwork will be stained and varnished. The church will have 550 sittings. There will be a gallery only at the south end. In the centre of its length is a clock-case, decorated, and supported by a pair of cantilevers. On either side are ten panels, alternately filled in with gnatfoils and arched piercings of leadlike pattern.

The church will be lighted by a large circular window, filled in with plate tracery, over the entrance in the south gable; a similar window of smaller size in the north gable; ten pairs of grouped two-light windows, surmounted by circular lights in the side-walls, and single lights to the south-west angle. The windows will be fitted with lead quarry-lights, filled in with cathedral tinted glass. It is also proposed, should sufficient funds be forthcoming, to glaze the large circular window in the south gable with stained glass. The architect has made provision for a public clock on four sides of the tower.

The artificial lighting of the church will be by gas sunlights from the roof, by brass lacquered standards to the pulpit and choir, and by stained glass lantern lights in the vestibule. The site will be surrounded by a stone wall and ornamental rail, with Gothic piers and gateways.

The cost of the building will be under 2,500l. The architect, from whose designs and under whose direct supervision the building is being erected, is Mr. Ford Mackenzie, of Wigan and Manchester,—a gentleman already well known by his works in this district. The villa in St. Bryde's-terrace, Lockerbie, recently erected from his designs for Mr. William Wright, solicitor, is of modern Gothic architecture.

The contractors for the church are: Messrs. Lawson & Son, Lockerbie, for the mason, slater, &c. works; T. Irving, Lockerbie, for the carpenter and joiner works; James Beattie, Lockerbie, for the plumber work; J. Scott, glass-stainer, Manchester, for the glazier work; the ornamental iron-work is by Messrs. Macfarlane & Co., Glasgow; the wood stains by H. Stephens, of London; and the painting and decorating by Thos. Jardine, Lockerbie.

THE SEWAGE PROBLEM: A NEW FUEL.

An endeavour is being made to solve the sewage problem by converting sewage into a new fuel and burning it up in steam and other furnaces. At the mills of Messrs. Danks & Co., Cecil street, Birmingham, some experiments with the new fuel, known under the name of Burgess's patent fuel, and in this case of the worst kind, so far as it was manufactured solely of compressed nightsoil, treated with chemicals to render it inodorous, and mixed with a small quantity of gas-tar. The nightsoil was transformed by the process into a substance having the appearance of coal, and smelling somewhat like gas-tar. The proprietor of the patent professes to have discovered a novel and valuable method of utilising the sewage of our large towns; and the trial was witnessed by Alderman Avey (chairman of the Local Watch Committee) and other gentlemen interested in the subject. The properties of the fuel were tested in a manner that was pronounced satisfactory by those present. Two and a half cwt. of the fuel were thrown into a furnace under a large steam

boiler, and it generated steam in fifty-four minutes, with a pressure of 14 lb. on the square inch. Subsequently a similar quantity of engine-slack was placed in the furnace, and in eighty-one minutes it produced a pressure of 12 lb. on the square inch. The fuel burnt brightly, and gave forth a good heat. There was scarcely any waste or ash, and it was stated that even this could be again utilised as fuel. We understand it is in contemplation to form a limited company to bring the patent prominently before the world. The patentee is Mr. Edwin Lowe, of Birmingham.

THE PROPOSED MORTUARY IN CLERKENWELL.

The Clerkenwell vestry appear to be in difficulty as to obtaining a site for a mortuary, which they have decided to provide as soon as possible, as it is admitted to be urgently necessary. At their meeting last week, it transpired that the visiting justices had refused their application for a piece of ground near the House of Detention, and also that all the owners of other sites which had been selected had likewise objected to allow the vestry to have them. The consequence is, that the committee, to whom the matter had been entrusted by the vestry, recommended a site in the burial-ground of St. James's, Pentonville, as the most suitable that could be obtained. They stated that it was surrounded with trees, and at a great distance from the houses in the neighbourhood. In the discussion which took place on the subject, a vault under the parish church was suggested as more suitable for a mortuary than the burial-ground of St. James's, Pentonville; and it was urged in its favour that it was ready-made, and that a post-mortem room could be had by excavating some 12 ft., and running a shaft up the side of the church. Against this proposal it was objected that, although the vault was unused, was not desirable to put bodies in a decomposed state, or persons dying from a contagious disease, under the seats of the church; and ultimately an amendment in favour of constructing the mortuary in the vault, rather than the burial-ground at Pentonville, was carried, and the matter was referred back to the committee. The use of any part of the church for the purpose seems to us very undesirable.

THE NEW INFIRMARY FOR LAMBETH.

At their meeting last week, the Lambeth guardians finally agreed to build a new infirmary after having several times discussed the question at their meetings during the last two or three months. The resolution proposed by Mr. Tay and eventually carried unanimously, was to effect that, after due consideration, the Board was of opinion that it is advisable to build a new infirmary on the vacant freehold land adjoining the new workhouse, of one acre and a half in extent, belonging to the guardians, in preference to creating the old workhouse in Princess-street into an infirmary, inasmuch as it would involve an outlay of 25,000l. to adapt it, and also because the old premises might be sold for a large sum. It was shown in the course of the discussion that by having the new infirmary close to the workhouse the cost of water-supply, amounting to 250l. per annum, would be saved, as the supply in the new workhouse would be equal to supply in both establishments. The estimated cost of new building is 35,000l., but it is expected that the actual outlay will be much less than this sum, as it is understood that an offer has been made to give 15,000l. for the old workhouse. It was agreed that instructions be given to the architect to draw out plans, and furnish an estimate of the cost of the building.

THE WANDSWORTH BOARD OF WORKS AND THE THAMES FRONTAGES.

The great damage sustained on the south side of the Thames by the inundation a short time ago appears to have made a lasting impression on the different local authorities from London to west, extending from Rotherhithe to Wandsworth, all of whom are now taking steps for securing greater protection than at present exists on the south bank of the river, in case there should again be an overflow. We have already noted the fact of the Rotherhithe, Lambeth, and other parishes having taken action on the matter, and to these we have now to

Wandsworth Board of Works. At the meeting of that body, held last week, it was resolved to issue notices to owners of property adjoining the river, calling upon them to raise the walls to the height of 5 ft. above the level of Trinity high-water mark, in order to prevent recurrence of the serious and fatal disasters which happened in March last, when the river overflowed its banks.

THE POSITION OF THE ROYAL INSTITUTE OF ARCHITECTS.

SIR.—In connexion with "E's" letter on the R. I. B. A., in your paper, may I be allowed to mention a few facts that seem to me pertinent to the subject.

The comparison with the Inst.C.E. is very apt to the point. The professions are sisters: each, many persons consider that at least so far as building is concerned, an architect should be a C.E. The meetings in Great George-street are crowded to excess in a room certainly one or four times the size of that in which the lately attended meetings of the R. I. B. A. are held, and this notwithstanding the fact that according to the Post Office Directory, and speaking roughly, the members of the Architectural Association in London outnumber their Civil Engineering brethren by something like two to one.

It is true that the Inst.C.E. is a far more comprehensive body than the R. I. B. A. (though this is no valid reason why it should be so), yet it is very exclusive, requiring in all its members a considerable amount of professional or other distinguished qualification; therefore it is esteemed an honour, both by the public and the profession, to gain admission to the Inst.C.E.

The subjects of the R.I.B.A. meetings are not the rule of much professional moment, nor of a nature calculated to attract more than a few attendant men, who are delighted with the opportunity of airing their notions, praising everybody else, and having sweet things said of them in return.

The R.I.B.A. is ever to be truly the representative Society of the profession, it will not be as at present constituted. Some radical change must take place, which will, as one of its objects, at least have a less self-satisfied turn of looking upon its affairs and its future than it has yet attained. The discussion of this subject would be one of the most instructive and interesting that could be brought before the body of the approaching conference.

The policy of the R.I.B.A. has over and over been expressed in its sentiment, "That it is to examine, but it will not educate"; and in any matter however trivial it seems to seat itself on its dignity, in a manner reminding of children "playing at being kings and queens."

The leading idea of the Architectural Association is always put forward and worked up to help and educate one another"; and if two London Societies are ever to be combined in one, as suggested by your correspondent, it is the senior body that will have to undergo the greatest amount of reconstruction.

R. E. P.

THE NEW STYLE OF ARCHITECTURE.

SIR.—The enthusiasm of your correspondent, "C. T.," for current abasement of architecture, at the foot of antiquarianism, prevents him, even within the same paragraph, any inconsistency in stating that "the *onus probandi* of possibility of a new style lies with its advocates," while his own bare assertion of its being "mere speculation, and that a not feasible speculation," remains without attempt at proof. Sir, it is historical that promoters and creators of magnificent inventions or discoveries, of noble efforts to shake off trammels of authority, and further free inquiry or great success for the benefit of humanity, have been rebuffed by the carking croakings and even persecutions of the "W. C. T." type of "philosophers," just as these would have laughed at first requirements or conceptions of gunpowder, printing, the compass, steam-engine, telegraph, as "not feasible speculations," and discounted the notion of wanting to have, do, know something, before having, doing, or using it. So Socrates and he who first said "we were antipodes" were put to death; as Pythagoras, Galileo, Bacon, Descartes, Locke,

even Newton, were taxed with irreligion for their doctrines or discoveries; so Columbus was ridiculed as a wild dreamer, and Harvey was traduced as an impudent quack; and so the list may be lengthened of the sort of encouragement to his most generous benefactors often meted out by narrowly and foolishly conservative men. "But, God be thanked," Sir William Temple says sarcastically of man, "his pride is greater than his ignorance, and what he wants in knowledge he supplies by sufficiency. When he has looked about him, as far as he can, he concludes there is no more to be seen; when he is at the end of his line, he is at the bottom of the ocean; when he has shot his best, he is sure none ever did, or ever can, shoot better or beyond it."

Just touching on the new style, its advocates have, at least, the plain plea that promotion of speculative change precedes and comaromously induces substantial change. So also, although it is impossible to teach invention or discovery, as the theory is explicable, they may usefully analyse past and present procedures, and warn men with origination powers from pursuing such a course as will assuredly neutralise the gift. If existing chaos of copyism of all effete styles, or idiotic imitation or passable persistence in one ancient style, is to continue, then history and laws of development and advancement must be reversed in the sole and singular case of architecture, which, as a fine art, will thus always remain the one conspicuous calling, that not merely does not make progress, but prides itself on going backwards. "That in which the new style is to consist" (the questioner being apparently unacquainted with Ferguson and modern art literature), is reflection and portrayal of the civilisation of this age, and not of that of past ages. To be true, it must indicate our people's or age's collective type of character, and to be good or great, it must indicate what is good or great in them. An architect, to be worthy of the name with its grand traditions should, like our foremost *literati* and scientists, think for himself. If he really thinks then, being part and parcel, and a result of the age, or what it has made him, he cannot help reflecting the age; and, like his Greek, Moorish, and Mediaeval predecessors, he would scorn trying to repeat archaic forms and symbols in the vacuous, hopeless, helpless manner in which men, incapable of artistic thoughts, now lose themselves in low copyistic retrogression, either in the Gothic or Classic diathesis of disease, depicting neither the past nor the present. E. L. T.

ROYAL ACADEMY.

SIR.—In the model exhibited in the Architectural Room we have the intentions of the architect and committee, in reference to the decoration of St. Paul's, which, intentions, for the sake of the cathedral and of English taste, I trust will not be permitted to be carried out. We may say of it, as a critic, the best authority in England on such subjects said, within our hearing, "It is decorators' decoration,—more frippery," which would be not only out of place, but injurious to the grandeur of the cathedral. We should recollect that this is a case in which it behoves all those who are informed on the subject to speak out, and the committee and architect who have the charge and conduct of this undertaking should recollect that if they succeed in carrying out mere whimsies, instead of the right thing, they will have the anathemas of posterity, and expose English taste to ridicule for ages to come.

Since the decadence and severance of the arts of painting, sculpture, and architecture, "decoration" has come to mean something inferior to and apart from the highest vocation of art; but this distinction between the "decorator" and the true artist is an entirely modern one, growing out of a more limited notion of the painter's vocation. The greatest painters were, in the great era, the greatest decorators. It was they who were able to clothe the architectural bones and breathe into the proportioned carcass the breath of life. Now, however, we are doomed to hear the title of *decorative artist* applied to an inferior workman, to a mere ornamentist, and *decorative painting* to something pretty and apart from the high province of art, a kind of art wherewith to overlay architecture, not to ennoble it. Hence decoration has come to be considered a speciality, and the overlaying of buildings the province of the decorator.

This is all wrong. Such a misconception would be impossible anywhere else in Europe.

For those who are at all conversant with the history of art know, not only that the greatest Italian painters were the greatest decorators, but that the greatest part of their lives was devoted to mural decoration, and not as our modern artists to finicking over easel pictures. The Italians well knew that the painter who was supreme in mastery over the human form, was the Master of Art, of its three branches—painting, sculpture, and architecture. Thus it was that St. Peter's, the Sistine Chapel, &c., were endowed with souls, with immortality. The pre-eminence of the master art is acknowledged, tacitly acknowledged, to this day, for the creations of Michelangelo, Raffaele, and others, are the prime objects of interest to every traveller in Italy. It is entirely absurd to suppose that the elements of grandeur in St. Paul's, as the architect left them, can be enhanced by mere coloured marbles, or the picking-in of mouldings with gold, in house-decorator's fashion, and the introduction here and there of archaic figures in imitation of Byzantine, or early and puerile Italian art. There is but one way to add to and complete St. Paul's, and that is by portraying humanity under the inspiration of divine revelation; by making this the primary and all-important consideration. This is the work of the true painter, not of the decorator-architect; and if we have not painters equal to the undertaking, we had better wait till we have, instead of substituting such poor substitutes as marbling, gilding, and Giotteque grotesques. W. C. T.

GODALMING, SURREY.

SIR.—The Government sanitary inspector has made remarks upon the state of the borough of Godalming, which have given great offence to the municipal authorities.

Be it known, the population of this important borough numbered 2,321 persons last census.

The inhabitants fancy the town of Godalming is perfection itself in the matter of drainage and water supply. How far their opinion can be verified I will leave you to guess, when there are some privies not 6 ft. distant from the well. They think because the water from the wells is clear that it is faultless in quality.

The death-rate of the locality may be low, but I am always suspicious of returns made by interested persons. But if the death-rate is low, I guess the sick-rate must be high; otherwise how is it that four medical men reside in the borough, and two of them employ assistants, and occasionally the medical men from Guildford come across, and many poor persons avail themselves of medical assistance at the Guildford hospital.

My impression may be erroneous, but I think it an unhealthy locality for a country place.

Perhaps the miserable hovels the labouring class crowd into may be partly the cause; for there are crowded courts and miserable old houses in this little old county town, that human beings in a civilised country ought not to be allowed to live in. In one place there is a row of cottages with their backs to the road, the road being some 2 ft. above the bedroom-floor. But what tradesman or working-man dares make an offensive remark against any person of interest in a county town or locality? If he did so he would be crushed; his only escape would be to emigrate.

Civilisation has conferred but few substantial benefits upon the rural labouring population of this side of old England, and I expect this to be one of the causes of the exodus now going on.

AN INHABITANT.

P.S.—They have built a new bridge at Unstead over the river Wey, perhaps influenced by the remarks you made upon it some two years ago. But there is another at Coutehall, over the river, in a very bad state; it hardly looks safe at present, and there is a deal of traffic over it to Messrs. Spicer's paper-mills.

A REREDOS FOR ST. CUTHBERT'S, DARLINGTON.

MR. DOBBIN has offered the parish a mosaic reredos for this church, which has been accepted after considerable discussion. It has been made somewhat too large for the position, and a correspondent terms it "a tawdry piece of gimcrackery" quite unsuitable to the church. On the other hand, we observe that Mr. Pritchett, who restored the chancel, inclines to it, and shows how it can be made to suit the space.

RUDE STONE MONUMENTS IN KENT AND OXFORDSHIRE.

At the meeting of the London Anthropological Society, Dr. Charnock, F.S.A., President, in the chair, Mr. A. L. Lewis described a monument of some importance, which seems to have escaped the notice of previous explorers. The monument in question is situated at Coldeham Lodge, near Snodland, Kent, on the summit of a steep bank, where several stones of a large size appear to have formed an oval ring, on the north-east side of which are some outlying stones, as is the case with so many of our British circles. The diameters of the oval would seem to have been from 40 ft. to 50 ft., but there are—so closely adjoining it as to suggest the possibility of their having been constructed with the stones of the oval—the remains of a large sepulchral chamber; and several stones, which no doubt formed part of one or other of these monuments, are scattered at the foot of the bank. Mr. Lewis also descended on the better-known monuments at Addington Park, and Kit's Coty House; and in another paper, on the Roll Rich and other monuments in Oxfordshire. He adheres to the Celtic origin and probable sacrificial use of the Roll Rich and other circles, which is in complete opposition to the views recently promulgated by Mr. J. S. Fergusson; but Mr. Lewis has already contested those views at considerable length in a paper read before the society in January last.

LIABILITY OF BUILDERS FOR ACCIDENTS TO THEIR JOURNEYMEN.

VINER v. COLLINSON & LOCK.

There was an action in the Court of Common Pleas, before Mr. Justice Keating, to recover compensation in damages, under features of more than usual interest to builders and journeymen.

The trial lasted some hours, but the following embraces the facts and evidence adduced:

Mr. Viner, the plaintiff, is a house-painter and decorator, and in February last he was employed by Messrs. Collinson & Lock to decorate a ceiling at a mansion in Addison-road, Kensington. Whilst at work on a scaffold resting on trestles, a plank gave way, and Viner, with two of his mates, fell to the floor.

The plaintiff had two ribs fractured, and his mates were also badly shaken. Mr. Viner's back was so hurt that he had not been able to work since the accident, and it was the opinion of the surgeon that it would take three or four months to get the man right for work.

The plea urged for damages was that the mishap arose from the scaffold being used in a defective manner, and that the board was too short, and the planks too weak and thin, and to carry the end of the short plank a cross-piece had been placed partially sawn through, and it was by a man stepping on this cross-piece that the scaffold broke down. It was not disputed that the facts were as stated by the plaintiff and his witnesses, but the answer to the case was that personally the defendants had nothing to do with the building of the scaffold, nor had they any knowledge of the matter; that the wood was proper for the purpose, and the planks were selected by Mr. Masters, their foreman, who superintended the erection of the scaffold, and it was made, as he thought, perfectly secure. That there was no plank actually too short, and that the cross-piece was placed there by the workmen for their own convenience. That the cross-piece did not come from the defendant's yard, but was a piece of the old conservatory which had been pulled down.

The law point urged was, that even if the masters had been negligent, the defendant would not be liable for the act, because the plaintiff would have been injured through the negligence of a fellow-servant.

The jury were absent a considerable time, and were eventually discharged without giving a verdict. Each party will have to pay their own costs.

NEW POLICE COURTS, NEWCASTLE.

The new courts for the administration of local justice and police, are situated on the east side of Pilgrim-street, opposite Shakespeare-street, the rear being contiguous to the borough gaol in Carliol-square. An incidental advantage of the selection is the opening out of a street that was much needed, running to the south of the police courts, and opening out to the line north of the gaol. On the north side the Court-house is built close up against the adjoining property, and is of course hid from public view. In shape the site is an irregular parallelogram 210 ft. in length, 80 ft. in width at the front of Pilgrim-street end, and 65 ft. in width at the other end.

The general style of the building is French-Italian, but the treatment of details, while ornate in character, has been so free that traces are observable of other orders of architecture. The front elevation of the new building has been treated in an elaborate style, and is adorned with a profusion of stonework, the most prominent examples being the colossal figures of Truth, Peace, Justice, and Mercy, and a set of heads of historical characters placed above the doorway, and above the arched and mullioned windows. The head above the main entrance is

intended to represent Queen Victoria. There are also heads of Queen Elizabeth and of Oliver Cromwell. The height of the front elevation from the pavement to the pediment is 64 ft., and the vase-shaped final which surmounts it carries it two feet higher. In a line with the centre of the building, and at a distance of 20 or 30 ft. from the front, an octagonal tower rises above the lower roof. To the cornice of this tower the height is 81 ft., to the top of the pyramidal roof is 22 ft. higher, and a diadem-shaped summit of iron work terminating in a vane makes the height from the ground to the topmost point of the building 126 ft. The side elevation is not so ornate in style as the front. There are two projections with pavilion roofs—one at the corner, the other some distance down the new street. Lower still is a large tower, under which is the public entrance to the new Police Court. Between this tower and the middle pavilion is what may be termed the waist of the structure, which is not carried up to the same height as the other parts of the building, and which contains the cells for the prisoners and the court-room. The front entrance is flanked by polished granite slabs, and leads immediately to the grand staircase. The well of the staircase is the octagonal tower. On the ground-floor of the front portion of the building are the offices of the chief constables, clerks, inspectors of police, &c. Further on are a few steps down, which lead into what is to be the charge room, and beyond it is the reserve police room, a lofty, spacious apartment. Beyond this again are the cells, in two tiers, the increased height between the first-floor and the ground caused by the descent of the steps, affording room for the Mezzanine or intermediate floor. There are twenty-nine cells, each measuring 11 ft. by 8 ft. 9 in. Every cell is fitted up in approved fashion, and warmed in winter by hot-air pipes. Outside of the cells, and at each side of the building, is an open courtyard, in which the prisoners may take their exercise. Underneath the cells is the furnace for heating the cells and the court room above, and also arrangements for the ventilation of the building by means of flues running up and along the walls of the court to a ventilating shaft, where an open furnace carries off the foul air. On the first-floor at the front are the rooms of the magistrates' clerk and his assistants, retiring rooms for the magistrates, consulting-rooms for solicitors and their clients, waiting-rooms for witnesses, &c. The court-room is on this floor, and measures 50 ft. by 37 ft., and 25 ft. in height, with a ribbed and panelled cove-shaped ceiling, lighted from the roof by a large skylight, and from the sides by circular windows with swing sashes. This form of roof has been adopted on acoustic grounds. The bench does not take up any space of the room, as the magistrates will be seated a few feet above the level of the floor, underneath an elliptical arch thrown back from the west end of the room. The internal fittings are not yet complete. On the upper floors of the higher blocks are dwelling rooms for officials, and kitchens, and dormitories for the police. As to the sanitary arrangements, every floor has its own water-closets, urinals, lavatories, bath-rooms, &c. Hydrants are also placed at every point of vantage for the suppression of fire, should it break out. Provision has been made in the south-west corner of the building for the offices of the Whittle Dean Water Company. It is also intended to establish an underground connexion between the police cells and the gaol. The work of the architect was to use the site marked out for him to the best advantage, and in this respect the property surveyor of the town has been successful. The completion of the new courts has been much delayed by the strike of the joiners employed by the contractors, and no one can tell when the work will be finished. The estimated cost of the building is nearly 17,000l. Mr. Walter Scott is the principal contractor, and different departments of the work have been sub-let by him to Messrs. Lowry, joiners; Mr. Gibson, painter; and Mr. Ralph Dodds, plasterer. The whole of the work has been carried on under the supervision of Mr. Lamb, whose inspector and clerk of the works is Mr. Peter Bain.

China-Clay.—A very fine discovery of this valuable commodity, now in such request (the demand being much in excess of production), has been made near Bodmin, by the representative of a company of gentlemen in London, and under his superintendence works are being rapidly pushed forward at Temple.

FROM SCOTLAND.

Edinburgh.—A public meeting, convened by the Lord Provost in compliance with a requisition from the Provisional Committee for promoting the extension and improvement of the Edinburgh University buildings, of which we have already given some account, has been held in Queen-street Hall, when a series of appropriate resolutions in favour of the movement passed. There was a large attendance, the assemblage comprising a considerable proportion of ladies. The Lord Provost occupied the chair.—A marble monument is in course of erection in Grange Cemetery, to the memory of Dr. Guthrie. A bas-relief head of the deceased gentleman adorns the centre of the monument, and a brief inscription records the days on which he was born and died.

Linlithgow.—The foundation stone of a new Free Church has been laid at Linlithgow. The old church, which had been hurriedly built at the time of the Disruption, was an ungainly-looking edifice, and not fitted up with much regard to the comfort of either minister or congregation. It is now being converted into a school. Mr. Chalmers granted a site for a nominal sum at the west end of the town, and also purchased the old church at a mutual valuation, and contributed 500l. towards the erection of the new church. The building, which is now pretty well advanced, is in the Gothic style of architecture, with ornamental buttresses supporting the side walls. A spire is in course of erection to something like 100 ft. in height. The interior of the church will be fitted to contain 350 sittings, and the Presbytery Hall adjoining will be commodious and airy.

Dunfermline.—Mr. Joseph Paton, father of Sir J. Noel Paton, B.S.A., has died at his residence, Wooster's Alley Cottage, Dunfermline, his native town, in the seventy-fourth year of his age. Mr. Paton was a man of remarkable character. In his profession of damask-pattern painter, he attained celebrity, having received several important Government prizes for his designs, which were original, and greatly promoted the staple trade of Dunfermline. He was a great antiquary, and possessed one of the largest and best private museums in Scotland. He presented to George IV., shortly after his Majesty's first visit to Scotland, a number of historic relics of great interest, the receipt of which was specially acknowledged. In his religious principles he was a follower of Swedenborg, and during the last thirty years he was not the part of preacher to a small congregation in Dunfermline. The members of his family now alive, are Sir Noel and Walter Paton, B.S., and Mrs. Roxburgh, and Mrs. D. O. Hill, a well-known sculptor, and widow of a well-known painter, Mr. D. O. Hill.

Dundee.—The foundation stone of Victoria street United Presbyterian Church, Dundee, has been laid by Provost Cox, in presence of a large assemblage of spectators. The building occupies a site at the west end of the street, and in the centre of a populous locality. It is in the Italian Renaissance style of architecture, and its chief feature is a tower terminating in an open crown, and possessing clock and bell accommodation will be afforded for 850 persons. The whole cost of erection will be about 5,000l.

GLANTON SCHOOL BOARD.

This is the first and only School Board established in North Northumberland. The Board requiring designs for a mixed school for 110 children, with a teacher's residence, offered a premium of five guineas to Mr. F. R. Wilson of Alnwick, and another. The designs were finally considered by the Board at their meeting on the 18th inst., when those of Mr. Wilson were selected, and he was appointed architect to the Board. The site is upon a brae-side, near village of Glanton, situated in a very hilly picturesque district.

OLD LONDON AS VISIBLE IN MAPS.

Sir,—Can any of your correspondents inform me through the medium of your columns, how far the Map of London contained in Bro. "Civitates Orbis Terrarum" (printed at Cologne in 1572) is a faithful copy of the Elizabethan map in the City Library? To judge by your interesting article of the 25th ult., it corresponds in many of its details.

G. J. C.
* Mr. Wilson has been re-elected sanitary inspector of the Alnwick Rural Sanitary Authority on the same terms as last year, viz., 180l. per annum, half to be paid by Government.

CRYSTAL GLASS FOUNTAIN.

MESSRS. F. & C. OSLEY, of Oxford-street, have on show for a few days a colossal crystal glass fountain, recently manufactured by them, and purchased by his Highness the Maharajah of Oudh, which exceeds in size and richness the fountain exhibited by them in the centre of the Great Exhibition of 1851. It is 25 ft. in height, and has been nearly two years in hand. Some large balls introduced are marvels of glass cutting, and other difficult pieces of work are shown, which will most please those who know what to look out about them. By ornamental cuttings on the inner side of the pieces with which the columns are made up, a peculiar and rich effect is obtained. A little less ornament and more on surfaces of glass would nevertheless have eased us more.

The spacious apartment in which the fountain stands is one of the cleverest of the iron works of the late Mr. Owen Jones. The object was to obtain a large amount of generally distributed light, without glare; this is effected by open panels all over the vaulting, framed by intersecting ribs, and which are filled with coloured glass. The remarkable assortment of glass which the firm have here is accordingly seen to the greatest possible advantage.

THE CZAR IN THE CITY.

To invite, receive, and grandly entertain the Emperor of Russia, the Royal Family of England, and 2,600 other guests, is no trifling feat; and when this is done without a visible hitch anywhere, or a single accident, those who understand the difficulties of such an undertaking will know that good managers were at work. It was certainly the case in the City on Monday last, and we offer our praises to the City architect, Mr. Horace Jones; Mr. Fredk. Ponton, who appears, as of old time, to have assisted in the arrangement of the decorations; the chairman of the Reception Committee, Mr. E. Hart; and the committee itself, which included at the time one architect, Mr. James Edmeston. The scene, though merely a *pièce de circonstance*, is a tasteful and handsome structure, and the general effect of the crowded hall was very fine. The ease and rapidity with which the enormous mass of people congregated there, all in the temporary pavilion attached to it, and their way to the luncheon provided for every one of them in the various courts and apartments contiguous, was marvellous, and afforded evidence of as much precision as precision.

THE TOWER OF ST. JOHN'S, HAMPSHIRE.

MR. G. G. SCOTT, M.A., has published a letter, addressed to the Vicar of Hampstead, in which he makes a vigorous and praiseworthy attempt to prevent the threatened destruction of the tower of the parish church. It appears that the tower, erected with the church about a century and a quarter ago, and is not only of very good proportions, but is remarkably well built. There is not a symptom of failure in it from top to bottom. Careful and repeated examinations have convinced him that it is as sound as well throughout, and that at the present time, in every respect, in as good condition as when it was first completed. Any person who wishes the trouble to examine the building may do so for himself that the cracks, which appear in the eastern part of the church, are not in the tower itself, but only in the walls that abut upon it. They are simply the result of the greater weight of the tower, which has caused it to subside to a certain extent, and so to crack the walls of the church, and of the staircases, which being very heavy, have undergone no settlement. The tower has settled, but it has done so in one place. No better proof could be given of the excellent workmanship and capital condition of the tower than the fact, that its subsidence has caused no fracture whatever in the fabric of the tower itself. The settlement is due to an exceptional cause—the decay of the planking on which its foundations are laid; but every tower in the country has undergone a similar movement from analogous causes. Instances of this kind come to an end after a certain time, the foundations take a solid ing, and no further movement from this can then arise. The great tower of St. Nicholas church in Hamburg, Mr. Scott says, was the erection of which his father has been engaged for twenty years, though it is not yet

completed, and though it stands upon one of the finest masses of concrete ever put in, has already subsided more than 6 in. Our Hampshire tower has gone down something less than 3 in. I need scarcely say that it is not proposed to pull down the tower of St. Nicholas on account of its 6 in. subsidence. Why then should our Hampshire church be condemned?

The tower has gone over a little, because the planking on which it is built has decayed on one side. They have only to wait until it has decayed on the other side also, a period, Mr. Scott calculates, of six years, and the tower will resume its perpendicular position.

There seems to be no excuse whatever for destroying the tower, and we hope it will not be done.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

THE annual general meeting of this Association was held on Wednesday, May 13th, Mr. J. R. Planché (Somersey Herald), vice-president, in the chair. The balance-sheet having been presented and approved, the officers and council for the year were elected, including Mr. Kirkman D. Hodgson, M.P., as president of the approaching congress, and Mr. Thos. Morgan as treasurer, vice Mr. Gordon Hills resigned.

In the evening a small party of the officers and members dined together, Mr. Edward Roberts, F.S.A., in the chair, and celebrated the thirty-first anniversary of the foundation of the Association.

The loss of Mr. Gordon Hills, on the eve, too, of the Bristol Congress, is much to be lamented; and in the interest of the Association we should be glad to hear that the committee had induced him again to give his aid, if only for the current year.

SALE OF HER MAJESTY'S THEATRE AND THE OPERA ARCADE.

VALUE OF LEASEHOLD PROPERTY AT THE WEST-END.

A LARGE attendance was attracted to the Mart, Tokenhouse-yard, on Wednesday, by the announcement that Messrs. Chinnock, Galsworthy, & Chinnock, would offer a quantity of property at the West End for sale, including her Majesty's Theatre, four houses and shops in Pall-mall, the whole of the Opera Arcade, comprising fifteen shops, together with the United Hotel and Clergy Club, comprising Nos. 19, 20, 21, 22, 23, and 24, Charles-street, and Nos. 70 and 71, Haymarket; producing altogether a present income of 5,406*l.* 14*s.* per annum. The whole of the property is held from the Crown for an unexpired term of thirty-eight years, ending in 1912, and was offered for sale by direction of the trustees of Mr. H. E. Holloway. Altogether the property contained twenty lots.

Her Majesty's Theatre was the first lot offered. The printed particulars gave a long description of the architectural, and external and internal features of the building, all which is known to our readers. Included with the theatre were the house and business premises, No. 1, Pall Mall, comprising the two shops under the colonnade. It was stated that the theatre was at present let on a lease granted to Mr. Lumley, but now held by the Earl of Dudley, at a rent of 1,934*l.* 14*s.*, the lease expiring in September, 1891. The rent of the house in Pall Mall is 230*l.* per annum, making together a rental of 2,164*l.* 14*s.* After paying ground-rent, the present net rental was 1,401*l.* 14*s.* up to 1891, when the Earl of Dudley's lease expires, the reversion at that period being estimated at 8,000*l.* per annum.

Mr. Chinnock, in submitting the property, enlarged upon the well-known character of the theatre, remarking that it was difficult to understand why an establishment of such an undoubted value should have been so long closed, more especially as he was in a position to state that responsible parties were ready to become its tenants at a rental of 5,000*l.* a year, and expend 20,000*l.* on the building.

The first bid made was 15,000*l.*, when an advance to 20,000*l.* followed, and after several biddings of 1,000*l.* and 500*l.* each, Mr. Last, solicitor, was declared the purchaser at 31,000*l.* It was stated in the room that the theatre has been purchased for a principal who is interested in having it again opened for lyrical performances.

The Opera Arcade property, comprising four houses and shops in Pall Mall, producing 980*l.* per annum; and thirteen shops in the Opera

Arcade, producing 870*l.* per annum, were next offered in seventeen lots. All the houses and shops in Pall Mall were sold for an aggregate sum of 17,000*l.*; and eight of the shops in the Opera Arcade for 8,680*l.*, five of the shops being withdrawn.

The concluding lot was the United Hotel and Clergy Club, in Charles-street and Haymarket, producing a rental of 1,905*l.* per annum. 10,000*l.* was the first offer made for this lot, which was immediately followed by an offer of 20,000*l.*; and, after several advances, the hammer ultimately fell at 27,000*l.*, the purchaser being Mr. Cooper.

The total amount produced by the sale was 33,680*l.*

Immediately after this sale the auctioneers submitted the leasehold property in King-street, St. James's, known as the "Palace New Chambers," held on sub-lease from the Crown for an unexpired term of 41 years from Michaelmas, 1873, at a ground-rent of 800*l.* per annum, and producing a rental of 3,000*l.* per annum. There being no offers for this property, it was withdrawn.

BUILDERS' BENEVOLENT INSTITUTION.

THE forty-first election of pensioners in connexion with this charity was held yesterday (Thursday), at Willis's-rooms, King-street, St. James's, Mr. Thomas Robinson (Cubitt & Co.), in the chair. There were seven candidates, of whom, however, there were only vacancies for two,—one man and one woman. The candidates were:—Richard Grove, aged 69, builder (third application); Evan Jones, 64, plasterer (first application); Robert Noyes, 75, plumber (first application); Mrs. Eliza Lambert, 72 (seventh application); Mrs. Sarah E. Bear, 67 (sixth application); Mrs. Jane Rumens, 61 (third application); and Mrs. A. N. Williams, 61 (third application). The poll opened at noon, and closed at three p.m., and a few minutes later Messrs. T. Stirling and Matthew Hall, the scrutineers, announced the result of the voting to be as follows:—Grove, 953; Jones, 100; Noyes, 164; Bear, 1,774; Lambert, 4,346; Rumens, 3,246; Williams, 3,084. The Chairman accordingly declared the successful candidates to be Richard Grove and Eliza Lambert, expressing the hope that at the election in November next the whole of the remaining candidates might be elected on to the funds of the Institution.

Mr. James Simpson, on behalf of Mrs. Lambert, thanked the subscribers for electing her, and Mr. Grove spoke for himself. Mr. R. Richardson moved, and Mr. James Waldrum seconded, a vote of thanks to the scrutineers for their services. Mr. Stirling replied, and the meeting was brought to a close by a vote of thanks to the chairman, which was moved by Mr. Walter Watson (Watson Brothers). Mr. James Simpson, in seconding the motion, expressed his deep sense of the services which the chairman, and the firm of which he was a member, had conferred upon the Institution. Including the two pensioners elected yesterday, there are now 45 annuitants on the funds of the Institution, the men receiving 25*l.*, and the women 20*l.* annually.

THE DECORATION OF ST. PAUL'S.

SIR,—Permit me to suggest that before anything is decided upon with respect to the decoration of the interior of the metropolitan cathedral, the public may be permitted to see how it looks after a good wash. Methinks a bountiful application of soap and water would put as new a face upon the stonework as a veneer of white marble.

How rapidly we are working round to the old toleration of shams. In Ely Cathedral may be seen some Gothic panelling painted on a flat stone surface, which I suppose was not done without the sanction of Sir G. G. Scott; and now we have another distinguished architect proposing to make St. Paul's look as if the inner face of its walls consisted of solid blocks of white marble. Why, we do not carry the sham so far as this in our dining-room tables.

To return to the washing, would not an ablation of the exterior with water containing potash-lye neutralise some of the sulphuric acid, and set free a good deal of that coating of soot which, to foreigners and countrymen, seems to be too readily acquiesced in by Londoners as unavoidable?

C. J. G.

The City Temple.—The new place of public worship known as the City Temple, situate at the southern side of the Holborn Viaduct, has been opened for Divine service. It belongs to the Congregationalist body, and is intended for the accommodation of Dr. Parker's followers, who formerly met at the old chapel in the Poultry. The new temple is built in a light Italian style of architecture, and will afford seats for about 2,500 persons. Underneath the area of the chapel are school-rooms.

Tissington Well-dressing at Ashbourne. On Ascension Day, according to immemorial custom, the village of Tissington celebrated its annual festival. The usual divine services took place at the Five Wells, which were decorated with inscriptions, arches, crosses, and interlaced triangles, in daisies, as usual in these curious observances. The inscription on the Coffin Well was "Spring up, O well"; that on Goodwin's Well, "Carried up on high"; and that on the Town Well, "A cloud received him."

Metropolitan Playgrounds for Children. In the House of Commons, Sir F. Perkins asked the Home Secretary whether he would have any objection, in the Bill he had promised to introduce for giving greater facilities for the acquisition of sites for industrial dwellings in the metropolis, to include provisions for enabling the municipal authorities to provide public playgrounds for children. Mr. Secretary Cross said he should have no objection to consider the question raised.

Increase of Wesleyan Chapels.—Another of the fifty new Wesleyan chapels, towards the erection of which Sir F. Lyett has given 50,000L, has been opened for divine worship in Green-lanes, Stoke Newington-green, by the Rev. G. T. Perks, the president of the Wesleyan Conference. It will provide sitting accommodation for 1,200 worshippers, and has been erected at a total cost of 6,700L, exclusive of the site, which has been given by Sir F. Lyett.

Free Library for Bristol.—The citizens of Bristol have resolved to adopt the provisions of the Public Libraries Act, 1855, and the new building will be commenced at once. The cost is estimated at 10,000L, and of this amount upwards of 2,000L have been voluntarily subscribed. Alderman Proctor's gift has produced a stir of mind which will probably benefit Bristol in many directions.

Bursting of Reservoirs in the United States.—Telegrams from New York state, that an inundation has been caused by the bursting of three reservoirs at Groton, Massachusetts. A hundred and fifty lives have been lost. The damage to property is estimated at a million and a half of dollars.

Middleton Church.—Mr. Wood has had a "cedilla" in Portland stone erected in Middleton Church, three miles from King's Lynn. It has three handsome heads to it, and the back is carved and inlaid, and there are also a piscina alongside of it, two tablets, and a reredos.

TENDERS

For the erection of a bonded store and warehouse with stabling, &c., for Mr. W. Sanderson, Canterbury. Mr. J. G. Hall, architect:—

Coxes	23,190 0 0
Naylor	3,168 0 0
Garkin & Godden (accepted)	3,120 0 0

For a villa residence at Stony Hill, Bromsgrove, Worcester-shire, for Mr. W. Holyake. Mr. J. Cotton, architect. Quantities supplied:—

Fisher	21,239 0 0
Mathews & Son	2,274 0 0
Hardwick & Son	2,152 0 0
Nelson	2,135 0 0
Cook & Harris	1,957 0 0
Walters	1,825 0 0
Brasier & Weaver (accepted)	1,850 0 0

For the restoration and reseating of St. Michael's Church, Budbrooke, near Warwick. Mr. J. Cotton, architect. Quantities supplied (revised tenders):—

Nelson	2,971 0 0
Robbins	2,218 0 0
Mason (accepted)	2,173 0 0

For pulling down and rebuilding 16, Duke-street, Brighton, and altering shop front, 36, West-street, for Mr. C. Feldwick. Mr. B. H. Nunn, architect:—

Cheesman & Co.	2,750 0 0
Parsons	750 0 0
Patching & Webber	710 0 0
Lockyer	650 0 0
Newman	610 0 0
Garrett	570 0 0

For Increased Accommodation at High Wycombe Board Schools. Mr. A. Vernon, architect:—

Looseley (accepted)	£2,610 11 8
---------------------	-------------

For Board-rooms and Offices, Rushey-green, for the Lewisham District Board of Works. Mr. G. Elkington, architect. Quantities by Mr. Gwyther:—

Holland & Hansen	21,923 0 0
Tongue	11,400 0 0
Dove Brothers	10,885 0 0
Pritchard	10,843 0 0
Elkington	10,833 0 0
Downs & Co.	10,290 0 0
Rider & Son	10,290 0 0
Hill, Higgin, & Hill (accepted)	9,785 0 0

For Newtown Schools, for the Reading and Early School Boards. Mr. J. Morris, architect. Tenders were invited for the whole work or for separate trades.

For the whole:—	
Gibson Brothers	25,000 0 0
Martin & Wells	5,399 8 2
Woodroffe	5,012 0 0
Woodbridge	5,575 0 0
Follett	5,650 0 0
Niblett & Son	5,420 0 0
Fulwood	5,238 0 0

Accepted for the separate trades:—

Higgs	25,400 0 0
Mason and Plasterer	339 8 0
Slater	115 0 0
Warmsley & Co.	115 0 0
Carpenter and Joiner	1,336 0 0
Sheppard	1,336 0 0
Smith	369 9 0
Plumbing, Paving, and Glazing	307 0 0
Summer	307 0 0

For schools and teacher's residence at Tyrford, Berks. Mr. J. Morris, architect:—

Barnicot	2,980 0 0
Lewis	973 17 0
Goodchild	973 16 4
Lawrence	939 0 0
Dodd (accepted)	879 0 0

For new premises Minster-street, Reading, for Messrs. Bowers & Son. Mr. J. Morris, architect:—

Woodroffe	23,022 0 0
Barnicot	2,861 0 0
Sheppard	2,973 0 0
Mathews	2,965 0 0
Higgs	2,924 0 0

* Accepted, subject to revision.

For New Church at Atherstone-on-Stour, Stratford-on-Avon. Mr. J. Cotton, architect. Quantities supplied:—

Nelson	21,658 0 0
Mills	1,680 0 0
Collins & Collis	1,630 0 0
Clark & Smallwood	1,630 0 0
Shenasy	1,430 0 0

For the erection of two shops in the London-road, Kingston Hill, according to plans and specification furnished by the owner, Mr. J. Hill:—

Oldridge	21,292 0 0
Mason	1,354 0 0
Wright	110 0 0
Todd & Sanders	823 0 0

For billiard-room and other additions to the Radnor Club, Flockstone. Mr. S. Slingby Stalwood, architect:—

Newman	2,965 0 0
Dowley	749 0 0
Prebble	723 0 0
Brooks & Slade	688 0 0
Unwin (too late)	680 0 0
Dunn (accepted)	658 0 0
Webster (too late)	647 0 0

For workshops for the Crippled Boys' Home, Kensington. Mr. E. C. Robins, architect. Quantities supplied:—

Lucas	21,496 0 0
Heath	1,334 0 0
Newman & Mann	1,318 0 0
Pritchard	1,313 0 0
Conder	1,309 0 0
Nightingale	1,293 0 0
Crickett	1,275 0 0

For the erection of a bridge over the Derly Canal, for the Derby Sanitary Authority. Mr. John Hume, surveyor:—

Iron Work	4,330 0 0
Stacey, Davis, & Co.	395 0 0
Eastwood & Co. (accepted)	381 16 0
Builder's Work	
Walkerline	395 0 0
Tomlinson (accepted)	368 10 0

For underpinning the separation wards at Islington Workhouse, Upper Holloway:—

Sawyer	2,270 0 0
Gribble	270 0 0
Beckett	264 0 0
Brickell	213 0 0
Niblett & Son	240 0 0
Seed (accepted)	233 0 0
Chivers & Co.	233 0 0

For works required in fittings to shop, &c., Great College-street, Camden Town, for Mr. J. Major. Mr. R. H. Horne, architect:—

Bridgeman	2,347 0 0
Whaler	275 0 0
Steed	250 0 0
Wicks	250 0 0
Lewis	246 0 0

TO CORRESPONDENTS.

C. F. R.—P. G. C.—G. R. N.—Q. G. D.—C. W. Y. H. & Co. C. J. O.—R. P. C.—B. A. H.—J. W.—W. R. W.—E. A. R. G. W. O.—C. R. C.—H. H.—J. O.—A. R.—F. W. R. S. W. & Co. R. D.—W. H. F.—J. C. H.—N. W.—A. R.—T. E. K.—J. J. C. L. E.—C. C.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

Note.—The responsibility of signed articles and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

	Situations	Situations
	Vertical	Horizontal
Six lines (about fifty words) or under	2s. 6d.	4s. 6d.
Each additional line (about ten words)	9s. 6d.	9s. 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied direct from the Office to readers in any part of the United Kingdom at the rate of 12s. per annum payable in advance.

Half-yearly stamps accepted from agents under 5s. Any larger sum will be receipted by Messrs. Gifford, publishers at the Post Office King-street, Covent-garden, W. to DOUGLAS FOURBRIER.

Advertisements cannot be received for the current week's issue later than THREE o'clock p.m. on THURSDAY.

Bath Stone of best quality.

RANDELL, SAUNDERS, & CO. (Limited)

Quarriesmen and Stone Merchants.

List of Prices at the Quarries and Depôts

also cost of transit to any part of the Kingdom, on application to

Bath Stone Office, Corsham, Wilts. [Adv.]

STONE BROTHERS,

Bath Stone Merchants,

supply direct from their own Quarries:—

Box Ground, Corsham Down,

Farleigh Down, Corsham Down,

AND STOKE GROUND.

Prices on application at Bath-stone Office, Bath

London Depot, G.W.R. Mileage Station, Paddington

Stone Dressings prepared ready for fixing. [Adv.]

Whitland Abbey Green Slates.—

The Quarries are now fully opened out, and

producing Slates in all sizes, and in any quantity: sound, and of choice green tint. Orders

can be executed without a day's delay.—

For samples and further particulars, apply to the

MANAGER, at the Quarries, Narberth-road

R.S.O. [Adv.]

Asphalte.

Seyssel, Patent Metallic Lava and

White Asphaltes.

M. S T O D A R T & C O.

Office:

No. 117, Cannon-street, E.C.—[Adv.]

Bills of Quantities, Specifications, and

Lithographed by ROBT. J. COOK & HAMMOND

29, Charing-cross, S.W., with accuracy and

punctuality. Plans and Drawings Copied

Traced, or Lithographed.—[Adv.]

T. TRELOAR & SONS,

SUPERIOR

GOOD

COCOA-NUT

Manufacturers and Warehousemen,

FLOOR

FIBRE

CLOTH.

MATTING

69, LUDGATE HILL, E.C.

KAMPTULICO

AND

CORK

MATS.

CARPET.

The Builder.

VOL. XXXII.—No. 1634.

School Architecture.*

RECENT acts of our Legislature may be said to have created a new literature, or to have caused a new branch to spring out of the ancient tree of letters. To meet the demands for sanitary information quite an array of volumes has been produced within the last few years, relating to matters comparatively new to the bookshelf. In the days of three-cornered hats, powder, and pig-tails, there were people, indeed, who wrote of "the waters," as did the Irish patriot, Charles Lucas, in 1756; or on "Health," as did the corpulent Cheyne before this; or, earlier still, who disguised polished satire in poems with medicinal-sounding titles, as did Sir Samuel Garth, in his "Dispensary," or in witty treatises upon ailments and air, as did Arbuthnot, in the days of Queen Anne; or further back, in the days of road-leaved beaver and feathers and jewels, who mixed medicine with astrology, as did Nicholas Culpeper, in his "School of Physiok," published in the seventeenth century; but it has been reserved for our times to see bulky and handy volumes written on constructional matters affecting the public health. In the old times, if possible, the learned in such affairs may have made researches for the aid of their own private judgments, but, it is certain, they did not impart the knowledge they acquired to the public. Comparatively modern writers on education, such as Miss Edgeworth or Miss Hannah Moore, do not touch upon the subject. But, in our days, no sooner does a special inquiry elicit discoveries of benefits arising from particular treatment of constructional aids towards the preservation and maintenance of the public health, than straightway the public is put in possession of the facts;—though it may make but small use of them. The recent legislation concerning compulsory education is now bearing fruits in a literary light, and among the first is a volume before us, setting forth the result of the inquiries, researches, and experience of the architect to the School Board for London, Mr. E. R. Robson, as to the best methods of planning school-houses, so as to secure the greatest amount of health and comfort for the pupils, and the convenience and general aid to the maintenance of discipline for the teachers. There is, however, either a slight reservation, or an inadvertent blemish in this work, of which we would complain at the outset, as it places its variance with this rule of complete disclosure of new truths, or fresh facts. We are told that elementary education has reached the highest excellence in Holland and Switzerland; yet there is but the barest information given concerning the school-houses of these countries, this is the more to be regretted, because the English system of using the services of pupil-teachers is stated to have points of resemblance to the Dutch and Swiss systems, while it is

diametrically opposed to the German plan. Curiously, more details are given of the German system, and of German school-houses, than of any others, yet the Germans have not the recommendation of having advanced education beyond the point attained by the Swiss and Dutch, nor the special claim of having developed a system similar to our own to a degree nearer perfection than we have done. We suggest, therefore, that further particulars of the school-houses in use by those who have made the greatest progress should be given in any future edition.

This blemish, after all, is probably but the result of the difficulties of accumulating in a given time data scattered over a continent. A great deal of information has been gathered which must have appeared of the highest value till more important facts were found, and which, till we are certain of better things, will be of great use to us. Hitherto, the principal guide at the service of those about to build elementary schools in this kingdom has been the sheet of printed instructions issued by the Education Department of the Privy Council. It is not to be supposed that these recommendations were drawn up without examination of the plans in use in other countries; of those proposed for infant schools by Mr. Wilderspin, or suggested by other enthusiastic educators; but, though capable of extension and contraction, they are not always applicable. From the instructions of our own Government, he passes on to the opinions of the authorities in other countries. American, Irish, Scotch, French, German, and Austrian schools are depicted and described by him. And, further, he gives full particulars of new schools erected by the London School Board, in which every worthy adaptation is presumed to be present, with every other condition calculated to insure the nearest approach to perfection attainable under the given circumstances.

By way of giving the recommendation due to Mr. Robson's work, we will inform our readers of what has been done in the planning of these schools. But before doing so, to understand the intricacies of the task better, we will glance at some of the fields in which he called his information, in which different systems are at work, all described by him, and from which it is open to all to adopt arrangements found to be useful and healthful. It will be sufficient for this purpose to mention regulations and plans in use in America, Germany, and Austria.

The Americans favour the system of mixing the sexes in their primary schools. They prefer single desks and seats, or dual desks and seats. They do not object to several stories for their buildings. Some rise to five and six stories, the lowest being devoted to the youngest children; and the rest, one after another, to those of successive ages. With them a school-room is generally one vast level chamber, with a teacher's seat raised on a platform in the centre of one side of it. Occasionally, this area is convertible into several class-rooms by means of sliding partitions, as in the Newton Primary School, Tasker School, and Hollingsworth School, Philadelphia, and in Melon-street School, Pennsylvania. Sometimes the girls sit on one side of the school-room, and the boys on the other, when it is not uncommon to transfer a guilty individual of either sex from his or her own seat to one on the other side of the room, by way of punishment. There are "coloured schools" for the descendants of the enslaved Africans. Women are frequently employed as teachers.

The Germans do not mix the sexes. They have no large schoolroom. A series of class-rooms, with an adult schoolmaster in each, branches off from a central corridor. Schools on the best scale have, in addition, an *aula*, or large hall for the conduct of the periodical public examinations, which are part of the educational system; but it is not used for the purpose of

simultaneous instruction. The school-houses are often three stories high, the lowest, as in America, being devoted to the youngest children. It is considered a matter of the greatest importance that the light should be admitted on the left side of a pupil, so that his hand should not cast a shadow on his book or slate. No windows are admitted that infringe this rule. An eastern aspect is advocated, and a northern one only valued for drawing-classes. Pupils commence their compulsory education at six, and complete it at fourteen years of age. Sixty children are considered as many as one master can instruct. There are no female teachers; nor any pupil teachers. The authorities of Wurtemberg appear to have given special attention to minute details. They have recently published a decree to the effect that the sexes are not to be mixed; that no schoolroom may be longer than 12 metres, nor lower than 3 to 4 metres; that no paint containing poisonous matter is to be used on the walls or furniture; that earthenware stoves are to be preferred to iron; that the temperature is not allowed to get below 62 degrees, and that the pupils are not to attend in the afternoon when it has risen to above 77 degrees in the forenoon; that there must be good light and ventilation, a wash-bowl, towel, and cloak-room; that the premises are to be swept daily, and scoured quarterly; and that any corporal punishment is to be inflicted with a thin switch half a metre in length. The inspection of the German school-houses, 6,000 in number, is placed in different hands from that of the progress of the pupils. No public school, we understand, is considered complete without its Turnhalle, or hall fitted with apparatus for gymnastic exercises. The König Wilhelm Gymnasium, Berlin (of which we are enabled to repeat the view given in the book, see p. 457), must be looked upon as a model establishment, and here there are 20 class-rooms provided for 900 pupils.

In Austria the newest and best school-houses consist of sets of class-rooms arranged round a central quadrangular court. Each class-room is intended to receive 40 or 60 pupils, though in a recent instance one has been made to hold 100 children. As in America and Germany, no value is attached to the use of one-storied buildings only. Nor in the primary schools is the large hall an indispensable matter; and, as in the case of the lower schools in Germany, it is much more frequently absent than present. The staircases, wisely, are seldom more than 5 ft. wide, and an entrance-lobby, 6 ft. 6 in. wide, is considered to be planned upon a liberal scale. There are several new elementary schools in Vienna, built on the central court plan. One, designed by Herr Hansen, will serve as a sample. The court is 30 ft. square. It is open to the full height of the building, where it is then covered in with a glass roof. The ground-floor is used as a playground. It is surrounded by a corridor, on each of the three stories, on its four sides. From these corridors open the various class-rooms, and in each of them are to be found latrines and drinking-fountains. The Imperial Gymnasium at Vienna is also framed on this plan, but the central quadrangle is not covered in. The *aula* is used as a chapel.*

When the reader bears in mind that our English system employs pupil teachers, who teach classes under the eye of the master, he will see that neither the German nor Austrian arrangement of buildings offers models for imitation. The vast chamber of the American schools is but the large room advocated in our own country by Dr. Lancaster as sufficient accommodation for a thousand pupils taught on his method. The sliding partitions are novelties, but whether they are advantages is open to grave doubt. It has to be seen that they can be easily worked, not easily put out of order, and that they exclude the sound of what is passing around sufficiently,

* See p. 460.

* "School Architecture: being Practical Remarks on the Planning, Designing, Building, and Furnishing of School-houses." By Edward Robert Robson, F.R.I.B.A. With more than 300 illustrations. London: John Murray, Albemarle-street, 1874.

before they are generally adopted. It is necessary, then, in Mr. Robson's words, to "build on our own foundations."

This is a rough-and-ready outline of the way he recommends school builders to set to work. First, decide the number of departments, the number of children in each department, and determine the number of class-rooms. Calculate that the code of the Education Department requires a certificated teacher and a pupil teacher for sixty children, and a second pupil teacher for every additional forty children, and either another certificated teacher or two pupil teachers for every additional eighty children. Calculate not less than 80 cubic feet of space for every child attending the school, to determine the size of the large schoolroom. Then consider whether the building shall be of one, two, or three stories; whether the infant-school shall be placed under the others, or apart; where the entrances and staircases shall be, so that the infants and girls be not in the boisterous way of the boys; how to secure side lighting, or as much of it as possible; whether to warm and ventilate by open fires or otherwise; where the latrines shall be, so as to be near enough and yet not too near; where the playground is to be, so as to secure sunshine in it; and whether a master's house is to form part of the scheme. Before proceeding to plan the school-house, decide, too, the kind of school-desk to be used. If the desk question had been first settled in every instance, many a school-house would have been more commodiously planned with reference to size, doors, windows, and fireplaces. He recommends not the long desks hitherto advised by the Education Department, but the dual desks. The use of these desks is one of the steps made in advance in Holland. The Dutch desks are fixed to frames, and placed six and seven rows deep; and they are so constructed that the front of one forms the back of another before it. He would improve upon this arrangement by not placing them more than five deep, on the teacher's account; by making each desk independent of another so as to avoid the liability to be shaken that their continuity involves; and by an alteration in the form productive of greater ease to the pupils. He delineates, with every detail, this form, which is that adopted by the School Board for London.

We will now turn to Mr. Robson's account of some of the new schools built by his Board. At the close of the year 1873, there were 86 new schools, either completed or under weigh. It was found that very large schools covered a district so large as to involve long distances for many of the pupils to walk. This, in the case of very young children was a disadvantage too serious to be overlooked. A medium size, or accommodation for about 800 children, was therefore preferred, except in a few instances, where it was resolved to try the working of a close approximation to the foreign method, as in the Jonson-street Schools, Stepney, and the New North-street Schools, Shoreditch. For a style of architecture, Mr. Robson recommends the "good and thoughtful brickwork" of the days of the Stuarts and early Georges. The buildings of those times, he contends, approach nearer to the tone of the present day, and they also set the example of truth in construction and honesty in workmanship. Four new schoolhouses have been built in accordance with this feeling; one in Wornington-road in the north-west; another in Aldenham-street, near St. Pancras Railway Station; a third in Orange-street, Southwark; and a fourth in West-street, Hackney.* Although all built in the same style of architecture, and with the intention of providing for the same method of teaching by the aid of pupil teachers, and of using every available experience gained from the consideration of Continental schools, the sites have so commanded the arrangements that they all differ. In the first, the Infant Schools, which are of one story, are placed back to back, nearest to the road of approach. This is to admit of elder girls leaving their younger brothers and sisters on the way to the more advanced departments. The infants have a covered playground under the upper schools. The boys have an entrance in a lane on the opposite or south-east side of the site, as well as a playground. Part of the ground-floor being used, as stated, for a covered playground for the infants, and the rest for the teacher's residence, the boys occupy the first-floor, and the girls the second. The girls are placed above

the boys to secure the space on the mezzanine floor for their clothing. Rarely does an elementary schoolboy possess an overcoat, consequently the accommodation required in the boys' cloak-rooms is less than that wanted by the girls. Here no space is wasted in corridors, there are double exits, as many class-rooms as classes, all counted as "points" in a model school, but, unfortunately, no side-lights. In the Aldenham-street school there is a corridor, but it is utilised for caps and cloaks, but there is the extra "point" of side-lighting for the schoolrooms. The Orange-street schools are set so far back that the covered approaches are long enough to serve as playgrounds. Here there is a sliding wooden partition used to shut off the gallery in the infant schoolroom, though permanent divisions are preferred for the class-rooms of the boys' and girls' schools above it. In the Hackney schools covered playgrounds had to be had recourse to, in possibilities, and it was not found possible, to prevent the mixture of galleries and desks, to prevent the scholars in the infant school from facing each other. As a rule, it has come, now, to be looked upon as the right thing to raise the boys' and girls', or graded, schools upon piers, so as to provide a covered playground below them, and to keep the infant school on the ground floor.*

A school at Haverstock-hill has been built of only one story in height, in which the girls' and boys' schools, with their class-rooms, surround a spacious inner court, which is covered in and intended to be used both for a girls' playground and for a hall of assembly for lectures, distribution of prizes, &c., and in which the infant school and master's house form separate blocks adjacent. The lighting here is not uniformly on the left of the pupils. Thus, it is seen that it seldom happens that every advantage can be obtained in one set of schools, and the School Board must not think itself ineffective, or unfortunate, if it can do no more than distribute over the aggregate of buildings the numerous contrivances and arrangements that constitute perfection; giving to each as many as practicable. If we add that some of the new schools, externally, are wonderfully ugly, it is not with the view of finding fault with work done under great pressure, but to prevent the assumption that nothing better is desired.

An important chapter on school furniture and apparatus has been written for the work by Mr. Moss, clerk to the Sheffield Board of Health, who accompanied Mr. Robson on a tour of school inspection through Belgium, Germany, Austria, Switzerland, and France, in the spring of last year. In this the desk question is again discussed, and the opinions of physicians, architects, and school professors mentioned; and the palm is given to those intended to seat scholars in pairs, to which it appears the Germans are now likewise tending, as they are adopted in the new Victoria school for girls in Berlin. Among minor details, Mr. Moss mentions that the blue linen of which workmen's blouses are made in France is the approved material for blinde in the London School Board.

In Sweden, gardening forms a part of the educational system. Upwards of 2,000 schools have gardens for planting attached to them, and the teachers of elementary schools are obliged to learn gardening. There is a garden attached to the Higher Burger School at Utrecht, in which botanical specimens are planted, arranged, and classified by the pupils. To some extent, gardens have been apportioned to schoolboys in this country, but rather as a means of recreation than of study. The Duke of Northumberland's School, Alnwick, affords an instance in point. But it is worthy of much wider adoption in country districts.

We have but faintly indicated the general bearing of this useful work. There are topics in it we have not touched upon, or have scarcely alluded to: such as the rise and progress of physical education in Germany, with its Turnbells and their fittings, or the condition and purposes of industrial schools. We have simply sought to acquaint our readers interested in scholastic matters generally, and school architecture specially, that they will find a fund of new matter presented to their consideration quite worthy of it, the exact measure and manner of which we must leave them to determine for themselves. If we are to accept the statement that the Swiss and Dutch lead the van in educational matters, it might be well to institute further inquiries, officially, and to revise

the present rules for planning and fitting schools issued by the Education Department to bring them into harmony with the most advanced views thus ascertained.

WOOD-WORKING MACHINERY AT THE INTERNATIONAL EXHIBITION.

CONVERSIONE OF THE INSTITUTION OF CIVIL ENGINEERS.

The *conversazione* given on the 19th inst. by Mr. Harrison, as president of the Institution of Civil Engineers, and Mrs. Harrison, in the galleries of the London International Exhibition, was numerous attended, and admirably well managed. Mr. and Mrs. Harrison received the guests as they arrived, during some hours; refreshments were provided on the most liberal scale, and we shall not be wrong if we say that some thousands of persons participated in the entertainment. The expense of such a gathering must be very considerable, probably not far short of a thousand pounds, and it will one day probably become a question whether or not it is desirable to entail such an expenditure on the acceptance of the office of president of the Institution.

On the evening of which we are speaking, the machinery galleries, with the motive power in full swing, were open to the visitors.

Prominent on this occasion were the wood-working machines, exhibited there by three well-known manufacturers, and we will take the opportunity to give of some of these a few particulars. We have no desire or intention to institute comparisons, or to bring one into prominence before another, but to direct our readers' attention to what may be seen at South Kensington, so that they may examine and judge for themselves.

Messrs. Allen Ransome & Co. (King's-road, Chelsea), taking the names alphabetically, show Ransome's "Patent Complete Joiner," Improved Plain Band Saw Machines, Improved Planing, and Tying-up Machines, with endless feed arrangements, Panel Board Planing Machine, Patent Combined Planing and Moulding Machines, Combined Planing, Shaping, Chamfering, Mortising and Boring-Machine, Richard's Patent Mortising Machine, Improved Hand Mortising Machine, Shute's Patent Mitering Machine, Patent Cleaning-off and Sand-Purifying Machine, Improved Saw-Sharpening Machine. To go a little into particulars, Ransome's "Patent Complete Joiner," has been designed to meet the objections which are urged with more or less justice against the class of machines known as "General or Universal Joiners," and it is guaranteed to be capable of performing the whole of the following operations:—It will work saws up to 24 in. in diameter, and will deep 9-in. deals; it will cross-cut stuff of any length up to 4 in. thick; it will plane, groove, tongue, edge thickness, and bead, at one operation, boards up to 9 in. wide; it will stick single or double mouldings of any pattern, worked on all four sides, up to 9 in. wide; it will cut circular mouldings of any pattern up to 3 in. wide; it will cut grooves from $\frac{1}{4}$ in. to $1\frac{1}{2}$ in. wide; it will cut single or double tenons, and scribe shoulders at one operation; it will make mortises, from $\frac{1}{4}$ in. to $1\frac{1}{2}$ in. wide, of any length, in any kind of wood; and it will bore holes from $\frac{1}{4}$ in. to 2 in. in diameter—a formidable list of undertakings. The Saw Spindle is distinct from those which carry the planing and moulding cutters, and hence the operations of sawing and planing or moulding can be carried on simultaneously or separately as at two distinct machines. The Saw Table rises and falls for grooving and rebating; and the Planing and Moulding Apparatus is permanent, and is thus always ready for work. Tenons are formed by cutters, which finish them much more accurately than in the case where saws are employed for this purpose. The Universal Moulding, Shaping, and Recessing Machine is capable of application to a variety of purposes, such as cutting circular or twisted mouldings of any form; sticking circular and straight sash-bars; moulding, rebating, and grooving straight or circular sash-frames; cutting a moulding round raised door-panels; moulding chamfering, or edging flat ornamental balustrade trades, &c., to a pattern; forming the housing in string-boards for stairs, and sinking recesses of any form to a pattern. The Combined Planing, Shaping, Chamfering, Mortising, and Boring Machine is suited for planing, shaping, chamfering, and mortising the framing of wagons, cuts, and machines constructed of timber, and

* See p. 457.

* Plane, &c., illustrating the various arrangements will be found in previous numbers of the Builder.

it will work either straight or curved pieces of any kind of timber with equal facility. Richard's Patent Mortising Machine can make in soft wood three perfect mortises in a minute without boring, and the chisel drawing the chips as they are produced obviates the necessity for driving the core out after the mortise is formed. The machine will take in stuff as deep as 11 in., and the stroke of the chisel is $\frac{1}{4}$ in. The Patent Cleaning-off and Sand-papering Machine will clean off doors, shutters, and other joiners' work after being put together, producing a perfectly flat and smooth surface, at the same time sand-papering it ready for painting. The work turned out by the machine is equal to any that can be produced by hand, and the manufacturer asserts that, with one man to work it, it will do at least as much as ten skilled joiners. The work to be cleaned off is laid upon a light cast-iron travelling table, which is fitted with a self-acting forward and return motion, readily reversed by a lever handle placed in front of the machine, in a convenient position for the operator. The table passes under a cast-iron disk, which revolves at about 600 revolutions per minute, and which can be readily raised or lowered to suit any thickness of stuff from $\frac{1}{2}$ in. to 1 in. thick.

Messrs. F. W. Reynolds & Co., of Southwark-street, restrict themselves to hand-power working machines, such as improved patent mortising machines, mortar-mixing mills, paint mills, cor cramps, bench cramps, lifting jacks, hoisting bars, and pulley blocks. Their Imperial Hand-power and Self-feeding Circular Saw Bench, to cut in stuff, with a rising and falling spindle for rabbeting, extra saw, and rollers and bearings for long length stuff, will save a good deal of money. This machine is so constructed that it will cut either upwards or downwards. A groove is cut in the bench table for the purpose of guiding a cross-cutting and mitring fence, with which this kind of work may be done with greater accuracy and expedition. In "The Royal" Improved Patent Mortising Machine (nearly three thousand of which have been made), the lever is directly connected, and gives motion to a wrought-iron crank, which, working in a slide attached to the spindle, alternately raises and lowers the cutting tool, instead of the cast-metal rack and pinion wheel hitherto in use, the teeth or cogs of which are liable to cause the chisel to vibrate and make the mortise irregular. It also possesses advantage in the facility given for raising and lowering the spindle for different depths of material; and in the improved means for reversing the wheel. The machine for mitring, known as Worssam's Patent, is a very valuable invention. Its edges perfectly true up to an angle of $5\frac{1}{2}$ in. It is stated that the first year's royalties to the working man by whom it was invented amounted to 470*l.* In the London Hand-power Mortar-Mixing Mill, the hopper being filled with materials, the spindle in the centre of the mill, having 14 blades, is set in motion by a wheel and pinion and handle, the mortar being ready for use when discharged from the machine. The use of this machine, one man and a boy supply a large number of masons, and the mortar is made much better than in the ordinary way. Their Improved Patent Floor Cramps are some largely into use.

It is surprising to us that these hand-power machines are not used even more largely than they already are. Builders who can avail themselves of steam of course will not employ them, except at special jobs where steam cannot be applied, but there are hundreds, probably thousands, of small builders throughout the country who might adopt them with great advantage and economy.

Passing on, we arrive at the location of Messrs. Worssam & Co., King's-road, Chelsea. This exhibitor shows Worssam's Patent General Joiner; Improved Trying-up Machine; the Four-cutter Rabbeting Machine; Band-saw Machine; Saw-vening Machine; Parquet Surfacing Machine; the Mitring Machine. Worssam's Patent General Joiner claims to be capable of performing almost all the varieties of work usually done by manual labour in the joiner's shop, of which may instance sawing (with and across the grain), mitring, chamfering, wedge-cutting, planing, (single or double), planing, moulding (straight or curved), beading, rebating, grooving, tongueing, and squaring-up; also mortising, and curved and irregular work, and innumerable others; all the movements being independent of one another, they may be worked separately or in conjunction, so that the workman passes from one operation to another without

having to make any change in the disposition of his appliances. Thus, he can in a moment pass from tenoning to moulding, moulding to sawing, or mortising, or he may, with the aid of two lads, perform all the diverse actions simultaneously. Tenons are completed at one operation. Mouldings are struck at an independent table, and by self-acting feed. Stuff, up to 9 in. by 3 in., is planed in the same way. Irregular work and curved mouldings are formed to almost any pattern. The Plain Band-saw Machine is for sawing carvilinear work of almost any character. It must be useful to builders and contractors for cutting out twisted handrails, and all kinds of church furniture; to railway carriage builders for sawing buffer heads, brake blocks, and stays for curved carriage roofs; to cabinetmakers, for preparing chair backs and legs. The principle of the machine consists in an endless serrated steel band, or ribbon, passing over two rapidly-revolving pulleys. The material to be operated upon is laid on a table, and manipulated in various directions around the saw, according to the required configuration. Suitable guides, to prevent the saw from buckling, are provided, as well as means to preserve the saw taut, and at the same time allow for contraction and expansion. The Surfacing and Trying-up Machine is an extension of the principle of the ordinary trying-up machine, differing only in the mode of cutting and the arrangement of the cutting tools. For planing large surfaces, such as tops for shop-counters, tables, dressers, pianofortes, also for panels and cleaning off doors after being framed and wedged, it would seem to be indispensable. The cutters are so arranged that stuff can be worked lengthwise or across the grain, without in the least degree injuring or breaking away the edges, and they are easy of adjustment for cutting hard or soft wood. The Four-cutter Moulding and Planing Machine is adapted to plane, groove, tongue, edge, thickness, and bead match-boarding or flooring, cut single or double mouldings, of any pattern, in hard or soft wood, at rates varying from 12 ft. to 40 ft. per minute. The under cutter block is situated in advance of the upper one, giving the stuff under operation a smooth face to work on whilst travelling beneath the cutters. A pressing apparatus is provided to retain the stuff on its seat whilst under the influence of rolls and cutters, and the whole of the intermediate shafts are at one end of the machine, thus presenting a clear front to the operator. The Universal Moulding, Shaping, and Recessing Machine is applicable to a number of purposes, amongst which may be mentioned cutting carvilinear mouldings; sticking circular and straight sash bars; moulding, rebating, and grooving square or circular sash frames; forming mouldings round raised door panels; moulding, chamfering, or edging flat ornamental balustrades to patterns; forming the housings in string-boards for stairs, and sinking recesses of any design. We must now, however, close our present notice. We fully agree with one of the manufacturers in bidding purchasers to remember that the lowest priced machines are not the cheapest. With all wood-working machines it is a great advantage to drive them at as high a speed as possible, not only on account of the extra amount of work which the additional speed enables them to turn out, but because the greater the velocity of the cutting edge of the tools, the more perfect is the work produced. To construct machines so as to work at very high speeds without requiring frequent repairs, demands the very best materials and workmanship, and is necessarily inconsistent with very low prices. The amount of advantage derived from employing wood-working machines depends greatly upon their selection, and the buyer should, if possible, see them in operation before purchasing, in order to satisfy himself that he gets what will best answer his purpose. Machinery, to pay, should be kept pretty constantly at work; and we hear on good authority that a set of the most improved wood-working machines, if judiciously selected for the work they have to do, and kept fully employed, will cover their first cost in the first twelve months. We again advise such of our readers as are concerned to go to the International Exhibition and look into the matter for themselves.

Guildhall, London.—Mr. Deputy Harris has offered to place a stained-glass window in the Guildhall. The subject is referred to the City Lands Committee to make the necessary arrangements. There will then be only one plain window in the Guildhall.

"CASUALS" AT THE ACADEMY.

THE ever-recurring and painfully difficult question of "How best to ameliorate the sad condition of our poor and poorest," has been discussed in many of its phases so frequently in our columns that a sense of particular obligation entails special thanks to all who help to set forth the urgency of this great matter that interests us so much. It is very brave and independent on the part of a rising artist to undertake the exposition in picture form of the squalid misery, the dire abjectness of the usual "Applicants for Admission to a Casual Ward," for a night of relief from homelessness and starvation, such as the London poor-houses afford (504). Mr. S. L. Fildes paints so finely, so strongly, that his picture must attract attention, however the subject of it may repel; and it is not improbable that his brush may have more potent influences than all the many pens that have done their utmost to describe appalling scenes from the lowest stage of metropolitan existence,—if it can be called existence. The force of the painter's appeal is in his moderation, his direct truthfulness,—thorough reliance on simple but admirably methodical statement, that may be corroborated by enough proof, alas! on any such miserable winter evening, when the snow and the rain, after competing for supremacy all day, compromise their difference in a drizzle of sleet that wets the "dumb, silent horrors" ranged "against that dead wall" to the skin, and chills them to their bones. But only some of them are to be likened to "Sphinxes," for Mr. Fildes has left it an easy riddle to guess that the once respectable have in a measure caused their own "overthrow," and that man can change appearance with some hideous fungus in a wine-vault; and it is easy to see that ignorance, sloth, dishonesty, and profane contempt for the moral, "*Aide-toi, et le Ciel t'aidera*," are so many answers for others being there; and that sickness and misfortune bring to the same dismal plight the more pitiable with the more culpable alike, and which is grievous indeed.

The drunkard, with the out-of-work labourer; the experienced cadger, out-of-luck thief, costermonger, liberated convict; the beggared *émigré*, the street-boy—with nine lives, like a cat, "and doesn't know where he got one on 'em"—with bewildered, despairing wretches who only know they would gladly resign the lives of no value to them, are grouped like so many wandering shades that Charon had refused to ferry; because, poor souls, they had swallowed their last coin, the *obolus* they should have held in their mouths to pay the old boatman's fee. Forlorn women—relics and derelicts,—famished and shivering children, and some that have lost all likeness to woman, make up the numerous applicants that the police are issuing tickets for, and directing to the ward, for bare shelter, and a modicum of the wherewithal to keep body and soul together.

Ah! ye who never know what hunger is, and think ten minutes' want of punctuality a crime in cook, and sleep on hair mattress or feather bed,—if your supper agrees to allow you,—think of the thousands who, eating but little to-day, see no prospect of eating anything to-morrow; and whose ideas of prandial appointments are so vague that they cannot remember when last they ate a dinner! Think of the hundreds who, invited by hyenas and wild vultures to eat with them, could hardly say them no!

Mr. Fildes's great picture will be outside the present view of the province of art, indeed, if it should work some beneficial change in so sorrowful a state of affairs as that he points to.

It is scarcely credible that the young and lately-bereaved widow, with her babes, should have no better sanctuary offered her than she may share in common with the lowest grade of her sex. There is no system that needs more reform than that of ours on which relief to the poor is administered,—no more hateful and distressing part of it than what applies to the regulations connected with the admission of casuals. But, what better system to adopt, remains one of the most perplexing considerations of the day. It will be at once said that charity never was so bounteous as it is now,—never so well and carefully dispensed. This may be very true; but between charity and parochial help exists little or no analogy. Objection is made to constituting a workhouse too happy a home, on the plea that it would induce those whom circumstances forced to become inmates to remain very willing ones,

and too well satisfied to exert themselves ever to regain independence of it; but it might have quite a contrary effect, in stimulating them to justify the care and kind attention shown them, and to think better for themselves, encouraged by the good opinion of others. It is perfectly wrong to judge all human nature alike, but quite probable that by misjudgment it may become so. Though there are few things in this world immutable, to hope that wealth should cease to bring with it its inverse of poverty, is as reasonable as could be the expectation that victory may be obtained without vanquish; to account health of no more worth than disease; wisdom no better than folly, and strength no power; or to deny that the lame and the blind, the deaf and the dumb, labour under disadvantages. The great friend and the great foe, known to those who know her as Fortune, and to others on whom she never smiles, by the more distant and so respectful appellation *Mis-fortune*, is far more frequently partial than fickle; and though her kindly offices are apt to be denied by the benefited, the want of them is no imaginary grievance if they happen to fall. It is so easy to trace Brown's failure to be but the result of his faults: so difficult to understand how Smith could be so successful without attributing it to luck, mere luck. But Jones—he is a puzzle; there can be no doubt as to his being a very worthy, industrious, and capable fellow, but, somehow—oh! there must be something wanting!

Oddly enough, it is often the strong, the clever, and the fortunate in the world who most loudly complain that its division of advantages and disadvantages should be so unjust: the weak and silly, and they who never know prosperity, belong to its disadvantages; so no one fights for these, nor they for themselves quite so well as they might, perhaps; else would they be less weak, less silly, and not always quite so unlucky, sometimes, and run less chance of joining the ranks of the most pitiable of the poor,—starving in good clothes until they wear out, or till death, the universal relieving-officer, comes to the assistance of this class of "casual" without need for them to become applicants for *parochial* relief.

What a pretty picture Mr. Fildes exhibited last year, of a dainty pair of lovers, who, departing on the river, have their little boat's course, down a quiet stream, checked by the rushes and water-lilies that in great assembly for consideration are asserting their natural right to share in the many charms that a bright day in summer-time brings for the river. Who can forget that grave and sagacious pig-dog on the stern-seat, from which with judicial eye he is watching in reproof those frivolous witnesses against the plaintive in the trial of life they have been called to appear in? How the "simpletons" laugh at this impediment in their way: it is of no use his rowing, and so she drops the tiller-strings, resigned to adverse circumstances!—to the unkind, perverse opposition of reeds and lilies! The sky becomes none the less clear for them, and the lake sings just as blithely for them, and the winged insects still seem to attune their murmur to the bird's song to please them; and little silvery dace, leaping to take a look at them, dip into the nature of what is about them, and jocularly making signs of wedding-rings, move the quiet, silent river to show smiles on its face again and again.

And you call these simpletons, Mr. Fildes? Was wisdom ever better exemplified than in grateful recognition of a blessed exemption from all knowledge of care; the need to labour, or to think with any more depth than may afford a fresh turn of fair compliment to the fair, and now thanks for being quite happy with everything *in situ* and *prospectu* that would tend towards a perfect felicity? No; they are not simpletons, but aviary birds, never intended to pick up a living like sparrows and pigeons and hawks and carrion-crows; never bred or reared or taught to be anything but delighted with all that is delightful: fairly denizens in whatever parish—owning them or not,—casuals of the rarest kind.

Oh, ye happy ones! it comes of consequence that ye should be very selfish to become so sleek and lovely; for

"Sorrow breaks reasons, and reposing hours,
Makes the night morning, and the noon-tide night."

You would be nowhere if you did not sleep well; and somewhere else if you ran no risk of indigestion.

It seemed from the first Mr. Fildes would become a very popular and delightful painter—

one whose business would be to decorate pleasant facts by adding more colour to them, to please the many who yearn to derive more pleasure from what best pleases them already. But now he stands a chance of being best appreciated a hundred years hence or so, when the living body of society will be benefited by his deviation from the rule that would promise for him present prosperity more certainly; and when some miraculous remedy has come for such crying social evils as sicken the heart of the philanthropist, now in utter hopelessness of their cure. His pencil, then, will be considered as having resembled scalpel in the hand of skilful surgeon, that lays bare nerves, veins, and arteries in search of the cause of morbid appearances; that from his knowledge of what has been may come the warning of what may happen again. It will take all that time, though, before his demonstration is at all likely to effect prevention of what it treats of; though, accepting him for physician at present, as surgeon for by-and-by, he may possibly suggest some mild alternative in poor-law pathology to mitigate the sufferings of sufferers from inscurable disorder.

Whatever betides, his picture of the "Casuals"—not the very happy ones—must ever be regarded as a great honour to the English school of painting, and a noble performance of duty; for it was nearly time, again, to show that the possession of rare artistic power brought with it some strong confirmation of grateful acknowledgment in making very good use of very great means.

NEW POLICE STATIONS IN THE CITY.

The Corporation are at present engaged in the erection of two new police stations in the City. One of these buildings, which is considerably advanced towards completion, is being erected on a plot of ground in Snow-hill, forming a part of the Holborn Valley Improvement land, and covers an area of 5,570 superficial feet. The building, in addition to the usual offices, muster-room, instruction and recreation room, together with seven cells, has also several residential rooms for the officers, with dormitories for sixty single men. The contractors for the building are Messrs. Hill & Sons, and the estimated cost is 11,940*l*. They are expected to be ready for occupation in September next.

The other building is on a site in Tudor-street, forming a part of the Bridewell Estate, and is intended in lieu of the present station in Fleet-street. The plans have just been prepared, and the building is at once to be proceeded with. It will not be quite so large as the building in progress on Snow-hill. In addition to the general business offices it will contain four cells, together with rooms for the inspector and sergeant, and their families, and it will also contain dormitories for thirty single men. The estimated cost is 9,500*l*.

The City architect has designed both buildings.

THE CORPORATION'S METROPOLITAN AND FOREIGN CATTLE MARKETS.

A STATEMENT presented last week at a meeting of the City corporation, reveals the serious and unwelcome fact that the Metropolitan Cattle Market and the Foreign Cattle Market at Deptford are both attended with an enormous annual loss. The statement as to the Foreign Cattle Market, at Deptford, is something startling; the building being pronounced a huge failure. Mr. Fricker, who gave a financial statement of the two establishments, said that the excess of expenditure over revenue on the Metropolitan Cattle Market, during the past year, had amounted to 3,437*l*.; but he added that there were 144 acres of land at Islington, which the committee was prepared to let on building leases, and he therefore thought that all anxiety as to the financial prospects of this market might be set at rest. His communication respecting the Deptford market was, however, of a much more gloomy character. He said that, last year, the loss was between 11,000*l*. and 12,000*l*., and that under present arrangements this ruinous condition of things was not likely to be altered. He also made the somewhat remarkable and not less alarming statement, that the only way in which the market could be made successful was by disease breaking out among foreign cattle! In confirmation he explained that, as they were by charter the lords

of the markets, the building of the Deptford market had been imposed upon them by the advice of the Privy Council. He stated that they were now in negotiation with the Government as to obtaining greater privileges with regard to the arrival and slaughtering of cattle at Deptford, instead of their being sent to other wharfs, or driven through the streets. If the privileges were granted to them, they might avoid a great portion of the present loss; but if not, what would the Corporation do in the matter in order to shift from themselves the loss? He undertook to say, on behalf of the Corporation that they did not intend to submit to a loss of 10,000*l*. or 12,000*l*. a year.

A discussion of a somewhat unusual and remarkable character in reference to the building of the market followed the above statement. Mr. Bedford remarked that they took the matter in hand with all the responsibilities attached to it. They built the market, knowing that in all probability it would be a financial failure. They were told by the Government that it was to be a market to meet special emergencies when they occurred, and they came to this particular fact as to this market. It ought to be a great source of satisfaction to them that it was a failure, and its success a matter of the deepest regret. If they knew when they spent the money that financially the market would be a failure, it was one of the grandest things that had ever embarked in! Mr. Rudkin said that from the very commencement he protested against the construction of the Foreign Cattle Market. Now what was to be done with the market in future? The committee were doing the best they could to get some concessions from the Government. If that were not made it seemed to him that they might appeal to Parliament to do what was right. The Corporation should not suffer a loss of 12,000*l*. a year on the market for the public good. Several suggestions were made in the course of the discussion, which was continued for some time. Mr. W. S. Gover stating that a special financial committee should be appointed to lay down policy to decrease the annual loss by sea means. There was the practical suggestion of raising the tolls and utilising the lands, if something should be done. Ultimately a report and statement were simply received, and further action deferred to a future meeting.

THE LATE SIR EDWIN LANDSEER'S MANSION AT ST. JOHN'S WOOD.

FOLLOWING upon the sale of the late Sir Edwin Landseer's pictures, the residence of the distinguished artist, in St. John's-wood-road, was so purchased at the Mart, Tokenhouse-yard, on Wednesday, together with the grounds, which covered an area of two acres. Amongst the companies present there were several leading artists, as well as land agents, surveyors, and others interested in buildings and property. The mansion is situated in St. John's-wood-road, on the south side, between Grove-road and Cunningham-place, having a frontage to St. John's-wood-road of 232 ft., the grounds extending depth northwards to the extent of 500 ft., and bounded on the north side by the town path of the Regent's Canal. The house is in the Italian style of architecture, principal two stories in height, and was specially reconstructed and enlarged by the deceased artist with the view of adapting it to his requirements. The first floor contains studio, 26 ft. 6 in. by 17 ft., and 12 ft. 6 in. by 17 ft., well lighted by large windows. On the ground floor is the painting saloon, or studio, 40 ft. 24 ft., and 15 ft. 6 in. high, opening on to terraces and gardens, with asphalted floor, with ante-room adjoining, 12 ft. 6 in. by 8 ft. 6 in., a 15 ft. 6 in. high; also a sketch-room, 17 ft. 6 in. by 10 ft. 9 in., and 15 ft. 6 in. high. The outbuildings include carriage-house and stables, enriched externally by friezes from the Elgin marbles. It was stated that the site on which the house and outbuildings stand, together with about an acre of the grounds, is freehold, the remaining portion of the grounds leasehold for a long term, rent free.

The auctioneer, in submitting the proper suggested that the three frontages to St. John's-wood-road, Cunningham-place, and Grove-road respectively, rendered it a valuable site for the erection of good houses, should the purchaser so disposed to appropriate it. The first of made was 3,000*l*., the property, by a very spirit competition, being rapidly run up to 5,500*l*.

as the balance of their contract. As we have already stated, the committee allege they were led into incurring extra expense by the requirements of the Government authorities; whenever the responsibility lies, it would be a most ungracious act to cause the committee to bear the whole burden. It is not a very heavy one, after all, and we trust the matter will be adjusted in a satisfactory manner.

Mr. Stephen Mitchell, tobacco manufacturer, Glasgow, has bequeathed to the corporation of that city a sum of 70,000*l.*, to be applied in founding a public library; failing acceptance by the Glasgow authorities, it is to be offered to those of Edinburgh; and if not accepted by either for the purpose indicated, the money is to be applied for bursaries equally between the Universities of each city.

The good people of Glasgow are not likely to let this plum slip through their fingers.

A TRIBUTE TO DAVID LIVINGSTONE.

Sir, I find that the Scotch have determined to erect a monument in the capital of the nation to the memory of David Livingstone, to his memory, viz., in Edinburgh. Allow me to suggest that Scotland be not permitted to stand alone in this respect, but that England also should raise a statue to commemorate the deeds of one of the greatest, if not the greatest, explorer and traveller that has ever been known in the world. His undaunted courage also, coupled with his acts of daring, ought to be remembered by all. I simply write these few lines to express my own ideas on this point, but am fully convinced that there are many others who will share them with me. I think a subscription might be started in England towards this object. The site which appears to me to be the most suitable for placing the Livingstone Memorial is the open space in Waterloo-place, on the side nearest St. James's Park. A EUROPEAN TRAVELLER.

ENLARGEMENT OF ST. PETER'S CHURCH, BRIGHTON.

A PUBLIC vestry meeting of the inhabitants of the parish of Brighton has been held in the Town Hall, to receive a report from the architect and churchwardens as to the present condition of St. Peter's Church and contemplated alterations and improvements therein.

Mr. Somers Clarke read the report, which first treated of the present state of this early specimen of Sir Charles Barry's Gothic edifices; which is quite sound in its fabric, except where pinnacles and carvings have suffered by the perishing of the stone during the time which has passed since its erection in 1823. This was one of the earliest modern churches of importance built in the Gothic style, then being revived in this country. From its extreme shortness, the proposed enlargement will chiefly consist in the lengthening of it in its leading lines, but the accommodation will be so far diminished by the removal of a gallery. The report in explaining the proposed scheme, said:—

"It is proposed to remove the large gallery at the south end of the church and the organ over it, and throw the whole of the space underneath (the greater part of which is now wasted in useless lobbies) into the church, providing an independent staircase for each of the side galleries, which are not proposed to be taken down, but only to be re-seated. To remove the north end of the church, and to rebuild it with its three fine windows as the termination to the proposed chancel."

To compensate for the removal of the south gallery by adding one bay to the length of the nave, making it six bays long instead of five, as at present, and to build a spacious chancel with the aisle continued on either side; that on the east being appropriated for the vestry and organ.

The architectural proportions of the church lend themselves very readily to such an enlargement; indeed, the nave could easily be made even one bay longer than I have suggested, and the church would not then be at all in excess of many of our old parish churches in large towns." These and other alterations are estimated to cost from 15,000*l.* to 20,000*l.*

The meeting unanimously resolved:—

"That St. Peter's Church, being now the parish church of Brighton, it is necessary that it should be altered and enlarged so as to fit it for the parish church of this large and populous town in the centre of the county in a ward since with the report and plans now submitted to the vestry, the same being carried out by voluntary contributions."

A building committee was also appointed to obtain funds by voluntary contribution, and carry out the purpose of the meeting.

The vicar and the church fund together will contribute 1,000*l.*, and Mr. Somers Clarke, 1,000*l.*

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At an ordinary general meeting of the members held on Monday evening, the 18th inst., Mr. Henry Currey, vice-president, in the chair, the following gentlemen were elected associates:—Mr. Cole A. Adams, Mr. Thomas Browne, and Mr. W. Galsworthy Davis.

The Secretary (Mr. Charles L. Eastlake) announced that the sum of 113*l.* had been expended in the purchase of books for the library, the list of which was laid upon the table.

Mr. T. Roger Smith then read a paper on "Town and Country Schools."

In the discussion which followed, Mr. P. Anson said, in proposing a vote of thanks to the reader of the paper, which was full of information, that as the school which was being built for the Merchant Tailors' Company had been alluded to, he ventured to add a few words in reference to it. It was a school where it was intended that a liberal education should be given to the middle classes. As a remarkable feature in the arrangement of the school, almost all the teaching would be conducted in class-rooms. There would also be in connexion with this school one large lecture-room, capable of holding half the total number of scholars attending the school; and in addition to this, there was one large room which, on special days, would be used for the general assemblage of the whole of the scholars. He believed that it was intended to meet there once a day in this large, and what he hoped, would be a very noble hall. Then this school was intended entirely as a day-school for children residing in the neighbourhood; and once admitted in the morning, they would not be allowed to depart during the day, so that it had been necessary to provide suitable accommodation for dining. This he believed had been kept quite apart from the school building. As many of those present were, doubtless, aware, the building was being erected on the site of the old Charter-house; and he hoped that it would in a great measure enjoy the prestige of the Charter-house. The heating apparatus would be conducted upon one systematic plan—the plan which had been adopted with considerable success at the Albert Hall. The air would be forced into the building by a fan working at a great velocity over tubes throughout the building, and it would be heated by air passing over pipes, heated by low-pressure steam.

Mr. Robins, in seconding the vote of thanks, said he was glad to see that Mr. Roger Smith recognised in his paper that the fundamental function of a school was for teaching purposes; and he (the speaker) rejoiced to find that the London School Board had taken that view. If any one endeavoured to subvert two or three different purposes, it would sure to be to his detriment. Speaking of the arrangements of different schools, he thought that the older children required to be put into smaller class-rooms than the younger ones; and he knew that this was the case in the North London Collegiate Schools. For middle-class girls, the rule was that in the lower grades they had 50 children pupils each; and in the classes where there were no upper grades, they had only 30 pupils each. It was also desirable to have a withdrawing-room for about 20 out of that number. As regarded the right quantity of space to be provided for every child in a class-room, it was about 10 square feet.

Mr. T. Chatfield Clarke was of opinion that the difficulty under which the School Board laboured had been not only difficulty of classification, but difficulty of money. Of course it had been felt by those who were interested in this work of education that it was the duty of the Board to provide the best possible available buildings in which to carry on the work of education; but at the same time they felt bound to study the ratepayers, and therefore could not go so fully into class education as many had desired. It was felt by many of those who had taken a deep interest in this question that the school in Jonson-street, Stepney, which had been erected from the designs of Mr. Roger Smith, was the best elementary school they had seen. He (the speaker) was one of those who had urged from the beginning that the London School Board should take upon itself this satisfactory system of classification. He had always considered that the best education they might

give was the cheapest. He had seen the primary schools at Edinburgh, which were worked upon the very same system as that employed in Jonson-street. In one of their largest schools, where there was no hall, they taught 1,200 children in common classes of 54. In conclusion, he strongly maintained the necessity for instruction in separate class-rooms, and his experience of the London School Board more and more confirmed that view.

ON TOWN AND COUNTRY SCHOOLS.*

THE infant schools of the present differ but little from those of past years; but when we come to schools for boys or girls above the age of infants (now often called "graded" schools, because the children are separable into six "grades," or degrees of proficiency), we find, if we inquire into what has been done since the passing of the Education Act, that considerable variations have been introduced. In Leeds, I am informed that schoolrooms of great width, approaching an old Lancasterian school, have been erected, thus of course preparing for more or less of a return to the simultaneous system of teaching, or at least relying upon the master's power of influencing large numbers. Details of arrangement in these schools are not, however, in my possession, and it will be better to proceed at once to some of the work of the London School Board, and the variations introduced in these schools. Their general principle has been to isolate a larger number of classes than before, but not to render it impossible to bring together all the classes of one graded school into a general room. The usual arrangement of one department of one of their graded schools may be said to be that a schoolroom and two class-rooms are furnished,—often one class has a class-room to itself, two others being taught in a large class-room divisible by a sliding partition into two halves, so that when separate teaching is going on there may be a tolerable separation of one class from the other. In many instances, however, both the class-rooms are so subdivided. The remaining pupils, forming one half of the number in the department, are then taught in the schoolroom, and when a lesson is to be given to the whole department the children are brought in from the class-rooms and crowded together into the schoolroom.

We are thus landed exactly half-way on the road towards the system of a separate class-room for each class, and for the time being I thought we have gone far enough. Perhaps the experience of a few years may show that another step in the same direction is not so impossible as it is now believed to be.

The increased separation of the classes is, however, the only modification introduced in the old scheme. If you visited any good school under Government inspection and, indeed, in many that are so inspected the same arrangement occurs—you found desks and seats placed four deep, and even five deep, instead of three deep, and ten to one the teachers tell you that they would sooner have the children massed in front of them, so as to be well under the eye, than spread out to right and left, till they cannot all be taken in by the eye at one moment. It was early decided to provide for teaching in London Elementary Schools a greater number of rows of children than three, and school-rooms were accordingly built 22 ft. wide, or from 20 to 20 ft., the class-rooms being 20 ft. to 18 ft. wide.

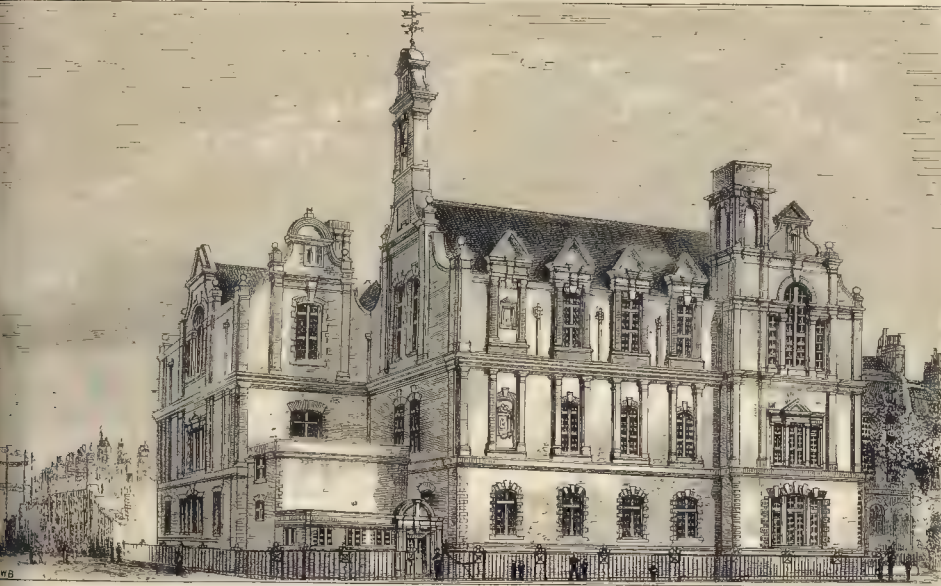
Confusion, crowding, and inconvenience were to be detected in a school with benches as much as 12 ft. in length, and sometimes occupied by many as eight children in a row, if you watched the working of a class even only three deep, where (as in a writing or a ciphering lesson) the teacher required to go near to each individual child, especially if it be a child in the middle of the middle bench. Much more serious did this become when the class was arranged four deep or five deep. This difficulty is, of course, not felt in Swedish and other schools, where each child has a separate seat and separate desk. But there loss of room is occasioned thereby, and the fittings become expensive. Eventually, therefore, it was decided to seat schools with short benches and desks, each long enough to hold two scholars. By leaving narrow gangways between each line of desks the master can go to any boy or call any boy without disturbing the class. The whole class

* From a paper by Mr. T. Roger Smith, already referred to.



KÖNIG WILHELM GYMNASIUM, BERLIN.

[See p. 451, ante.]



WEST STREET SCHOOL, LONDON FIELDS.

[See p. 452, ante.]

also leave or enter their desks at one time with great ease. A very judicious economy of space, combined with great improvement in the arrangement of the desks, has also been effected by curtailing the distance from front to back allotted to a desk and adhering to the old rules of the Committee of Council, causing the edge of the desk to be vertically over the front edge of the bench when the pupils are seated, and providing the desks each with a flap to turn up when they are to stand. Every portion of this contrivance will be found to have received careful attention, the result being, I think, a fitting not likely to be much improved. In these desks, then, the distance from back to front is from 23½ in. to 26½ in., the width being 25 in., so that five rows of children can be seated on a bench 10 ft. 5 in. The desk and bench for pupils are 40 in. long, and the intervening aisles are 16 in. wide. The floor-space allotted to each child is not less than 9 ft. in graded schools and 8 ft. in infant schools; it is clear for graded schools and something

more for infant schools may be taken as a proper height.

The desks and benches being designed, and the space they will occupy settled, the next question which presents itself is, how are they to be lighted? This is a question of more importance, and I may add more complication, than has been often believed. The Germans, whose thoroughness is proverbial, design each room with exclusive reference to the light that is to fall on the desks, and modify the design of the whole building, if necessary, to a large extent, so as to secure the aspect they require for the windows. In a German school the light always falls from the side of the pupils, and always from their left hand as they sit to write; and it falls from nowhere else. No cross lights are allowed, and if there is a difficulty in reconciling a convenient arrangement of seats with lighting from the left, then the convenient arrangement of seats must give way in order not to infringe this cardinal rule. The reason why lighting from the

left is good will be obvious when you reflect that in writing and ciphering this is the only side-light which prevents the shadow of the hand from interfering with the work. The advantage of side-light over light from behind the children is, that the teacher is not dazzled, and the children's faces are not lost to the teacher, and the children do not sit in their own light. The advantage side-light possesses over light from behind the teacher is, that the children are not dazzled, and, as I already have observed with regard to infant schools, that their teacher and his diagrams and maps are easily seen by it.

The rule of lighting from the left cannot practically be carried out except when the teaching is in class-rooms; for if in a schoolroom where several classes are taught you attempted to place the children with their seats at right angles to the wall, you would be landed in a series of inconveniences so grave that they could not be tolerated. Nor can the rule of lighting only from one side be easily made consistent

with that passion for thorough ventilation by means of a direct current of wind from window to window, which has so strong a hold upon those experienced in school management, as well as hospital management, in England. Accordingly the practice with regard to schoolrooms has been at the best a compromise. As much side-light as is obtainable has been, in some of the recent London schools, procured from the ends of the general schoolroom, but for the majority of the classes there taught windows both back and front are commonly supplied.

The position of windows should be high, their tops at near the level of the ceiling as possible, and their sills at least 4 ft. from the floor. If higher, so much the better. The dimensions of the windows, if centrally placed in the room, should suffice to furnish one superficial foot of opening to every 80 cubic feet within the room. A less proportion of glass suffices for a skylight.

The aspect of school and class rooms has been much discussed. If on a town site there is an aspect where quiet can be better secured than elsewhere, or where a greater volume of light is obtainable, that aspect it will, generally speaking, be wise to occupy with windows; but if there be free choice, it is right to secure the best light,—namely, the northern and eastern light for work, and the sunny or southerly aspect for warmth and cheerfulness. It is not healthy for the sun never to reach a room; it is not comfortable for the glare of such summer sunshine as we occasionally enjoy to stream in at all the windows of a school or class room. The principal light for the pupils is therefore best obtained from the north and east, with other windows to the south and west. The glazing should always be with clear glass; the panes not extremely large. The greater portion, if not the whole, of every window should open, and if any part be fixed it should be the lower part. The worst mode of opening school windows is the ordinary sash, as it lets in a direct draught, and the common casement is open to pretty much the same objection. The best mode by far, is the casement hinged at the bottom, and made to fall inward at the top, often called hospital windows. This will give a large amount of air with the minimum of draught, as the air entering the room is directed upwards. The casements of one window can be connected together by an iron rod, and all shut and opened simultaneously with ease. Cords and pulleys are not desirable for use in schools. In very bad neighbourhoods a protection of wire netting is sometimes added outside the window, to prevent injury from stone-throwing. It should not be adopted when it can be avoided. In contriving windows a place where a blind can hang should not be forgotten. In planning them the light should be pretty evenly distributed over the school or class room; and both on this account, and to give more perfect control over ventilation, several windows of moderate size are generally preferable to one large one.

The actual size of the majority of the schools, embracing all three departments, recently built by the School Board for London, has been usually either for 1,040 children or 780. In the former case the numbers are 400 infants, 320 boys, and 320 girls; in the latter, 300 infants, 240 boys, and 240 girls. The buildings have commonly been three stories in height, the infants having the ground floor, and the boys and girls each one of the upper stories. But very frequently a part of the ground floor has been devoted to those most desirable adjuncts, covered playgrounds. Indeed, in many cases, the infant-school is a separate building, and the graded schools are two stories in height,—one for boys and one for girls, with covered playgrounds under the whole space they occupy. These playgrounds cannot be too sunny. They should not be draughty if it can be prevented. There is some difficulty in apportioning the numbers in theory, into the classes corresponding to the six grades of the Education Department, owing to the fact that the number of children in the higher grades is always smaller than the lower ones; but in this, as in other things, theory always differs from practice, and with 240 children six classes of forty would be prepared for—half the number to be taught in class-rooms, half in school-rooms. Originally the class-rooms were required to open out of the school-rooms, the doors having glass in them; and when there were double class-rooms with a sliding partition to connect them together, it was desired that both halves of the double class-room should open out of the school-room. It is to be observed, however, that in recent schools,

such as some of those figured in Mr. Robson's book, the class-rooms have an independent communication with the staircase, and indeed in the school which he selects as a model they do not open out of the school-room at all, a significant advance in the direction of more complete isolation.

The best position for the class-rooms is across the two ends of the school-room, leaving the wall facing the children in the school-room free for cross ventilation; and if it be not considered essential for them to open out of the school-room direct, there will usually be no difficulty in so placing them as to permit side-lighting for a portion of the classes in the school-room itself. Even, however, where this has been possible, it has been taken as a fundamental principle to start by placing the school-room so that the windows at the backs of the classes shall admit north light.

There ought to be no corridors. As in older plans, the whole of the openings and breaks for doors and fireplaces in the school-room should be in one wall, so as to have the opposite wall free from end to end for seats; but the old L-shape and T-shape are not to be found in the school-rooms of these recent schools, but a shorter and wider room, of plain rectangular plan, takes their place.

It is desirable, where the schools are large, that there should be two staircases to each department. The place for the staircase is at the angle between class-room and school-room; and in a school of the most perfect arrangement, such, for example, as the one at Angler's Gardens, figured as "a model arrangement for a school of the kind," in Mr. Robson's book the points attained are tabulated by him as follows:—

1. No space wasted in corridors.
2. Double exits, so that one part can be cleared without disturbance to the remainder.
3. The same number of class-rooms as classes in the school-room.
4. Side lighting in every case.
5. Class-rooms arranged in pairs, for working by a certified master and pupil-teacher in each case.

Class-rooms arranged in pairs imply some means of throwing them together and separating them at pleasure. Movable partitions of various sorts have been tried for this purpose, sometimes sliding up like sash-windows, sometimes running forward on rollers upon grooves in the floor, sometimes hung at the top. Mr. Stones has patented a sliding partition, which seems as fairly successful as any; but my own impression is that none of them answer well, or ever will answer. Where they must be employed the best arrangement is to have two parallel to one another, with a space between. Even this will not keep out sound. I believe it will be impossible altogether to prevent injuries to children arising from their use, and I cordially echo the observations in Mr. Robson's book, "That there is no known movable partition which is at once simple, easily moved by a child, and perfectly sound-proof. Whether for this reason, or because of the additional expense, movable partitions should never be adopted, unless the working causes of the school should render them absolutely necessary"; and further on, "The fewer specimens in use in any school, the better will probably be the condition of the school."

In the Orange-street and Mansfield-place schools, for example, pairs of class-rooms will, it is true, be found; but the separation between them is by a wall, with a door of communication, to enable the teacher to pass from one to the other, as occasion requires, and this arrangement seems, on the whole, an advance upon the sliding partition arrangement. It is fair, however to observe, that in the famous American schools sliding partitions are constantly made use of, and that to such an extent as to permit several adjacent rooms to be thrown together.

We now come to the staircases. They require to be so placed that boys and girls can go separately to their different departments of the school, and can enter at distinct entrances; but in many places these objects can be well accomplished without two distinct staircases, by the use of one of those arrangements where each other between the same four walls. Staircases to be used by children should have no winders (though I do not think all the Board Schools have adhered to this rule), they should not have more than 6 in. rise. It is not found necessary to make them wider than from 3 ft. 6 in. to 4 ft., though sometimes wider stairs with a handrail fixed up the centre of each flight, as

well as up the sides, are found to answer well. The flights should be short—the landings wide, and if possible there should be no open well-hole. The best sort of staircases for a school is that one where a wall takes the place of a well-hole, and with the aid of this central wall two staircases can be obtained perfectly separate from each other in two different ways, the flights either cross one another or follow one another.

A staircase once almost universally used in schools is one where three short flights run down three of the sides of a square tower, with a landing on the fourth. It is now very much abandoned, and I think wisely, for it has led to fatal accidents, owing to its open well-hole; as at the Cowper-street Middle-Class Schools, where such staircases are in use, they are caged in with iron-like prison bars—an arrangement which even in lunatic asylums is now disused as possible.

The reason just given for avoiding an open well-hole is one which ought never to be absent from a school architect's mind. Children will injure themselves if they possibly can, and will do so from pure heedlessness or from mischief if anything else they can get at. Everything, therefore, which might do them harm, or which they might do harm, must if possible be dispensed with.

The other adjuncts within the building ought to be a lavatory, and a cloak-room for each department. These need not be high, and as the height of school-rooms is considerable, a zinc-lined cloak-room may often be introduced with advantage. It is desirable for the cloak-rooms to have two doors, and a sufficient number of strong wrought-iron pegs. The lavatory should have it considered, two to three basins to every hundred children, each basin to have a separate cock. Outside the building the children's conveniences should be placed; these ought to be arranged in a straight line, and are best furnished with a trough of slate or iron, or a pair of drain tiles in which water stands constant, and from which it can be drawn off with a two or three times a day. The number of latrines should be, according to Mr. Robson, for the first hundred, and one in addition for every succeeding fifty: this is certainly a minimum number. Of course, they are to be perfectly distinct for boys, girls, and infants, and separate accommodation is to be provided for teachers and for care-takers.

We have named covered playgrounds as procurable in many cases below the school-building. Where this is not done, a play-shed open to the south should be provided for each department, or at least two, one for boys and the other for girls and infants, are required. Drawing playground fittings are so seldom required that I need hardly detain you about them, but it is often the architect's duty to advise as to how to cover a playground. The question is not as The London School Board have decided it, in favour of tar pavement, which is cheap, it answers fairly well, if well done; but it is not durable as the better sorts of asphaltum.

A teacher's room is a necessary appendage to each department, and a set of rooms for care-takers who reside on the premises, is usually provided in a convenient part of the school building. It remains to consider for a moment the heating and ventilating of these schools. The lighting having been already disposed of, as it is of primary consideration in determining the position of the building.

For schools of moderate size, that is to say up to 500 children in all, the London School Board has preferred open fires. For their larger buildings they have adopted systems of heating from central apparatus. The original cost of the apparatus is of course considerably greater than that of open fireplaces, even including the grates and the brickwork of chimneys or chimney-breasts, but it is a far more economical mode of heating, and more economical of fuel, and as experience is gained in the construction of such apparatus, it is not impossible that it may be extended to smaller schools.

Of the stove-grates capable of being employed in schools where open fires are used, Mr. Robson enumerates those known as the Galton, Manchester, Boyd, Pearce, and Longdon grates. These I am more familiar with than the one invented by that very ingenious engineer, Mr. Boyd, than the others, and it appears most admirable contrived to obtain the largest amount of heat possible from the fuel consumed, and to throw a large quantity of warmed fresh air into the room.

In two schools which I have erected for

London School Board, a warm-air apparatus has been adopted upon my advice. In the arger of the two, that at Stepney, the most careful investigation was made of the proposals submitted by six engineers, and it resulted in the adoption of those of Messrs. Price & Co. Fresh air is admitted to a chamber on the basement, where it is warmed by passing between flat vessels in which hot water is circulating at low pressure. The air so heated is conducted along flues carefully built for the purpose to every room in the building, and discharged through inlets near the floor. A class-room, 20 ft. by 27 ft., and 13 ft. high, has for example two of these inlets, and practically a current of sweet and warm air is constantly pouring into the room through each of them. Near the ceiling of each room is an opening leading to an extracting flue. All the extracting flues are led into air trunks running along the roofs, and meeting in a central chamber, where a nest of vessels similar to those applied to warm the air is fixed. This acts as a radiator to stimulate the outgoing current, and a steady stream of air is found in actual practice to be constantly flowing out of each room along these extracting channels.

The other school was warmed by Mr. Boyd on the same general principle, but with various differences in detail, the principal ones being that he heated the air by coils of pipe instead of flat vessels, that his inlet flues were very different dimensions to those designed by Mr. Lea, who presents Price & Co., and that no extracting apparatus was attempted beyond the provision of outlet flues with suitably protected exits. In this building, as well as in the other, a constant stream of pure warm air issues from every opening when the apparatus is going, and before there can be little doubt that the inlets work efficiently without the stimulus which in this instance the disposition of the building forbade my attempting. Here we have automatic warming combined with ventilation of the weather when the windows will not be opened, and I have little, if any doubt, that this is the best possible system to adopt in schools of this size; though of course the arrangement of different buildings may occasion modifications of details. For summer weather of course ventilation by means of open windows and windows on more sides of each room than one is indispensable.

It has been sometimes customary to warm schools by taking the pipes into the rooms. This is hardly say is a very imperfect mode of ventilating, though it is a powerful mode of heating, and may fairly be employed as an auxiliary to the warm-air system I have described. The first cost is decidedly less, but the results would be less healthy. If, however, economy drives the architect to such an apparatus, he should beware of any high-pressure system. The high temperature to which hot-water pipes can be raised on the high-pressure system, renders their effect on the air of a school injurious to health and comfort. The sort of heat which is suitable for desiccating timber is not favourable to young children or their teachers.

Elementary schools, such as the ones I have described, are considered by those who have the best opportunities of judging, the most appropriate to the wants of a large and crowded metropolis like London, and to the requirements of our present system of teaching, and they ought to prove good models for town schools throughout England. For country schools they will in many cases be found too lofty and too elaborate. The ground is plentiful and cheap there are great advantages in the erection of one-story buildings. From the plans of such schools of course the staircase disappears, some of the other arrangements become simplified, and the construction becomes altogether simpler. Country schools are, however, so familiar a subject to me, that I believe I may more profitably employ the remaining time if I turn from them to a newer subject, one bearing upon the elementary schools of the future, and the middle-class, and the higher schools of the present. I allude to the class-room system, or, as it is often termed, the Prussian system.

If this is a departure from the programme of my paper, I trust it will be pardoned me on the ground that the application of this system to elementary schools is a subject with which I am somewhat extensively identified. Members reading papers here have generally, I believe, striven to select those parts of their subject (where a large field is open) upon which their own special

studies or personal experience enable them to communicate information, which may at least have the value of not being readily accessible from other sources, and it is in conformity to this principle that I invite you to consider for a moment the models to which almost all large schools above the level of elementary schools are now conforming, and upon which I believe the elementary schools of the future may in all probability be shaped.

The schools of Prussia are perhaps the most complete to be found on the Continent of Europe, but those of many countries are formed on the same model. Collective teaching is exchanged in these countries for completely separate instruction; though means of assembling a considerable proportion of the children together are generally though by no means always retained. So many classes, so many class-rooms is the rule, and an infants' department is not found in these schools. The maximum number recommended in a room is 60, 70 being considered an exceptional number. The class-rooms are oblong; it is indifferent whether they be lighted from the end or the side, but they must be lighted from one side only, and the children must have the light on their left hand. There seems no limit to the depth from front to back of a block of seats, but the length of each bench is so limited as to allow the master to inspect every child's work from the end of the bench. For the purpose of facilitating this inspection, a gangway is preserved all round the block of children, narrow at the back and at the side nearest the windows, but made wide enough next the wall facing the windows to be convenient for the ingress and egress of the children; and the block of seats is broken up into at least two masses by an additional narrow gangway from front to back. No child ought to be more than 30 ft. from the easel where diagrams, &c., are shown, and it is recommended that, as far as possible, the seat most remote from the window be not further from the wall than one and a half times the height of the top of the window from the floor.

The master's desk, on a slightly raised platform, faces the block of children; an easel for the display of diagrams, &c., a book-closet, and the stove or fireplace, occupy the space on either side of him.

These class-rooms are ordinarily put together so as to form a compact oblong block of buildings several stories in height, three stories being usually met with, and are frequently divided on plan into three portions by two staircases extending from front to rear: one of these is for boys and the other for girls. These staircases, however, often occupy the end of the block, and sometimes a corridor connects them together; but this is sometimes omitted.

On an upper floor, and between the two staircases, is placed the aula, or general room, calculated to seat about half the number of children provided for in the class-rooms. This room generally receives some amount of architectural decoration; it is not customary for it to be divided by movable partitions or other means when not in use for collective teaching. Private rooms for the teachers, and sometimes one or more consultation-rooms, complete the essential parts of the building, which is heated and ventilated on a general system.

It is recommended that, as far as possible, the class-rooms shall have a sunny aspect, and also, to secure greater freedom from noise, that as many as possible of them shall face the playgrounds rather than a main road.

For the filling up of this outline I must refer you to Mr. Robson's book. In it he describes and illustrates many of the best examples of such schools as they are found in Germany, Austria, and Switzerland, and points out in what respect the system of teaching which has given use to them, is essentially different from ours. One of these class-rooms incloses within its four walls a little school in itself, and the teacher of it must be prepared to manage the children, and fit to instruct them without much support from without. A class in an English schoolroom, on the other hand, is constantly intrusted to a young boy or girl, who could not go alone for two hours together.

The school in Jonson-street, Stepney, built for the London School Board, from my designs, conforms very closely to the programme of one of these German schools, and is the only one of that model which they have erected. It accommodates the large number of 1,675 children—of whom 575 are infants, occupying two infant schools on the ground-floor; 560 are boys, in

nine classes, taught in eight class-rooms on the first-floor, one class being taught in the large hall; and 540 girls, in nine classes, occupying eight class-rooms on the second floor, and a gallery at the end of the hall.

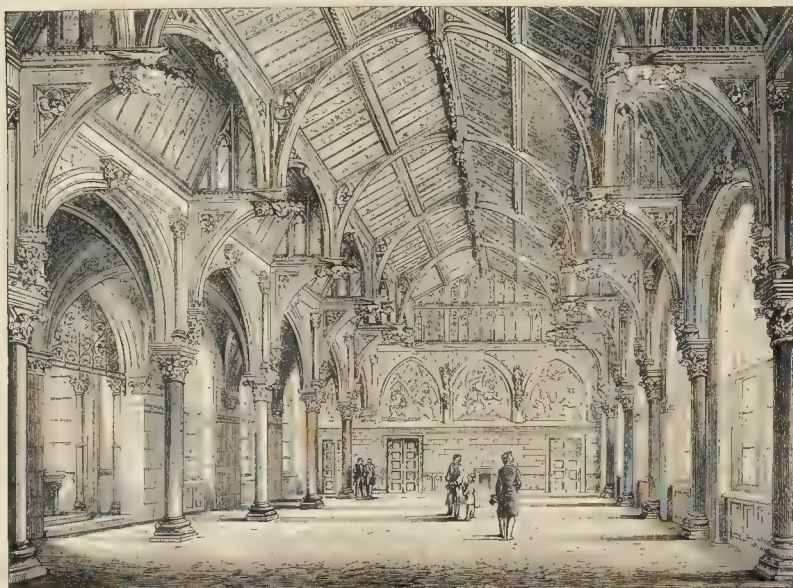
The class-rooms were intended for sixty each, and measure 20 ft. by 27 ft., and are so arranged as to form three sides of a hollow square, which is in fact the hall; this measures 75 ft. by 40 ft. These class-rooms, which are not entered off the landings at the head of the staircases, are entered from the hall direct (a side gallery being provided for this purpose on the upper floor). There is, therefore, no corridor; an arrangement made partly for economy, partly to simplify supervision, and partly to secure a freer transmission of fresh air right across the building, than could have taken place otherwise. There are two staircases, one at either end of the building, and each staircase is double. The heating of this building I have already described to you, and having visited it repeatedly when in use in the winter, I find that the ventilating arrangements suffice to keep the class-rooms sweet.

I have pointed out that the progress of school-building, in the case of elementary schools, has been in the direction of isolating a larger number of classes or class-rooms than before, and no doubt better results will be obtained. It is believed by the advocates of the Prussian system, that if this be pushed further, and every class be taught on its own room, a still higher result will be reached, that is to say, the children will get on faster, and a larger proportion of them will pass the examinations of the different grades with success. This is extremely probable, but the difficulty in applying the system to elementary schools is, that it requires a more efficient staff than our present system calls for, and that such staff is consequently more expensive. The teacher of a large class of children shut up with him in a room must be fully equal to their discipline in all emergencies. In a schoolroom a pupil-teacher is considered equal to much of the work of teaching because if his class begins to get into disorder, the head teacher is within call and can come and restore discipline; but it is fair to observe that the instruction he gives is not always likely to be of the most mature description. The pupil-teachers' system may possibly not always be maintained in England. The Germans, and I believe the Americans, do not possess it, and even if we never see reason to discard it, there appears a probability of the proportion between the number of pupil-teachers and of trained teachers being altered. Even as it is, if a so-called Prussian school were so built as to allow the classes to be worked in pairs, the present allowance of teaching power would I think, enable class-rooms, say for 50 each, to be provided with a certificated teacher between the two, aided by a sufficient number of pupil-teachers to keep the two rooms going satisfactorily.

If the annual expense can be so arranged as not to be greater than in the present schools, or if the results can be shown to be so much better as to justify such an expense as is unavoidable, a second objection which has been raised to the system remains to be dealt with. This is the supposed increased coarseness of the buildings unless they are planned for such large numbers as few neighbourhoods can supply. There is room to doubt the correctness of this objection. The Stepney School cost 71. 9s. 11d. per head, or if the architect's commission be taken into account, 77. 16s. 7d. per head. The average cost of London Board Schools has been stated at 81. 10s. (whether with or without architect's commission, I am not aware). This building therefore (which is very substantial), is sufficiently below this average to allow for some increase in expense, consequent upon building for smaller numbers, and still to leave it an average building. At Stepney, the infant's department is disproportionately small, but that defect is one admitting of easy adjustment. A more serious objection to the introduction of the system, than either the question of cost of teaching, or cost of building, is to be found in the doubt, whether the collective influence which the principal teacher now exercises over the whole department would be kept up. This, however, is a matter for which provision is made in the existence of the hall, which in English practice might well be made use of for all that collective teaching, and singing, which in an ordinary school takes place in the general school-room, as well as for public examinations, mustering, drilling, or inspecting the children.



THE IMPERIAL GYMNASIUM, VIENNA.



IMPERIAL GYMNASIUM, VIENNA: THE AULA, OR EXAMINATION HALL.

[See p. 431, ante.]

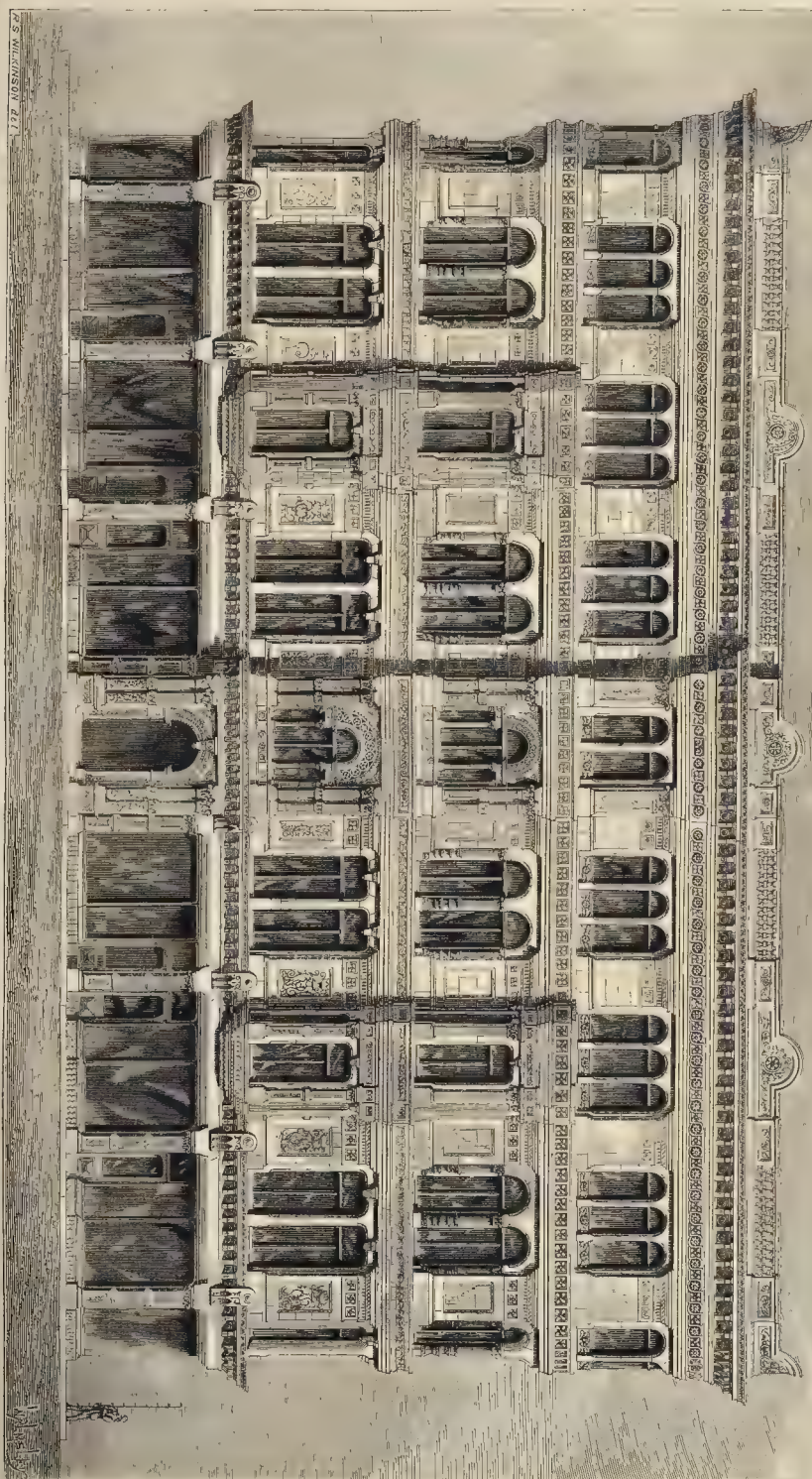
IMPERIAL BUILDINGS, LONDON.

THIS is an isolated block of buildings, having a frontage to Queen Victoria-street of about 120 ft., bounded on the north side by Pancras-lane, and on the west by Size-lane. The style adopted is a modern version of the Italian Renaissance. The buildings are four stories in height, the ground-floor being devoted to shops and the entrance-hall to the offices. The first, second, and third floors are offices, the first two floors being each 15 ft. high. The double basement is of unusual depth, the foundation having

to be carried down to the extent of 35 ft., in consequence of the depth of treacherous ground in the bed of the old Walbrook, which runs diagonally across the site, and while excavating this several antiquities were brought to light,—among them some Pictish and Roman pots and coins. It is proposed to place these in a glass case, to be fixed in the hall of the building when finished.

The first basement, which is 13 ft. high, is intended for a first-class restaurant, and is entirely separate from the main entrance and offices, and will include the whole area of the site.

It will be supplied from the kitchen on the roof by means of a concealed staircase and a double dinner-lift. There will be a steam passenger lift, in addition to the ordinary staircase, for those who choose to avail themselves of it. The staircase will be lighted from the roof by means of a large lantern cutting through the kitchen with the walls decorated. The whole of the exterior and interior woodwork, including doors and casings, will be of mahogany. The building is being executed from the designs, and under the superintendence of Mr. F. J. Ward, of the Albert-buildings.



IMPERIAL BUILDINGS, QUEEN VICTORIA STREET, LONDON.—MR. F. J. WARD, ARCHTCT.

SUB-CONTRACTS AND PIECEWORK.

THE very interesting and valuable address on Co-operative Production, read by Mr. Thomas Brassey, M.P., at Halifax, has been published* and may be studied advantageously by all concerned with either capital or labour. The writer very properly urges that without first-rate ability at the head of an undertaking, whether co-operative or otherwise, failure must follow, and that individual ability cannot be had unless it is well paid for.

After mentioning some of the failures which have followed attempts to found co-operative establishments, Mr. Brassey points to a direction in which he thinks the principle might be, as it has been, usefully employed; and in doing so gives some particulars as to sub-contracting, which will interest many of our readers:—

"While the efforts to establish co-operative production in this country have not thus far been attended with a large measure of success; the importance of the principle at stake is so great, that I should deprecate most earnestly the abandonment of further attempts in the same direction. The wiser course will be to avoid, as it has been already suggested, commencing undertakings on a large scale. When the business is of a kind that cannot be carried out advantageously on a moderate footing, the co-operative principle should be applied to the execution of sub-contracts for portions of the work, to the supply of a part of a large order, or to the execution of a single process in a complicated manufacture.

When a railway contract has been taken, the principal contractor usually subdivides the works, and lets them out to sub-contractors. On a long line of railway every cutting, bridge, tunnel, embankment, and station, is executed by one or more separate contractors; and thus the co-operative system may readily be applied to the construction of every section of the largest undertaking, after it has been sufficiently subdivided. The same remarks apply to ship-building and many other branches of industry. With the details of which I am less familiar, but here I am equally confident that the subdivision of the work will give ample scope for the application of the co-operative system, when, from the nature of the case, superior administrative skill and large resources at the fountain head are indispensable.

It may be interesting to men, who are engaged in a great effort to organise a new and better system for the application of capital and labour to production, to hear some details of the methods adopted by the English contractors, who have been engaged in the execution of great railway contracts both at home and abroad. In the conduct of these works the main object in view has been to give to the workmen a personal interest in the performance of an adequate quantity of work in return for the wages received. In the case of the contractor it was especially important to attain this object by making it the interest of the labourer to do his share of work, rather than by placing reliance on a close personal inspection of his conduct. With the development of railway enterprise, the practice was adopted of inviting English contractors with competent resources to undertake railway and other works, not only in their own country, but in every quarter of the globe. The difficulties of supervision of necessity increased with the enlarged area of their operations; and it was essential to devise some plan by which it should, if possible, be made an advantage to every individual concerned to perform his share of the common task to the best of his ability.

Thus the system of sub-contract and piece-work, originally adopted by the pioneers of railway construction, was extended to every operation where it was possible to apply it. The general character of the arrangements may perhaps be best explained by the selection of an example taken from actual practice. On the contract for part of the London and South Western Railway, between Basingstoke and Winchester, there was an unusual proportion of excavation to make, amounting to some 34 millions of cubic yards on a length of eighteen miles. Not only were the works of a heavy and bulky nature, but the time allowed for the completion was so short as to render the utmost diligence and energy necessary. The operations were carried on day and night, and 1,100 workmen were employed.

There was one particular cutting near Winchester, which, in the deepest part, was from 90 ft. to 100 ft. in depth. Here, in spite of severe and unfavourable weather, the works were pushed on with the utmost diligence and determination. This was done even at a considerable pecuniary sacrifice; because the contractor was anxious, above all things, to maintain and increase the good reputation he had already begun to establish, and of which he was wisely jealous as the surest guarantee for his future success. At Micheldever there was one immense embankment, about 85 ft. in height; and at Popham Beacons there was a short cutting, not more than 10 chains in length, intervening between two tunnels, of such a depth that 100,000 cubic yards were excavated in order to make the cutting.

The whole of these works were executed by sub-contract. The amount of work let to a particular sub-contractor was determined by the appreciation formed by the principal contractor or his agent of the ability of the individual to carry out the work. A man of superior qualifications was allowed to take a sub-contract for an amount of work, increasing in magnitude in proportion to the confidence entertained in his ability. Some of the sub-contractors would take contracts for work costing in the total 15,000l. to 20,000l., and employing from 150 to 200 men.

Frequently the sub-contractor would again let his work to the navvies at so much a yard. They worked in what were called butty gangs, or parties of from six to twelve men. The navvies would take a contract under a sub-contractor for excavating so many yards of earth at so much per yard; and they would divide the earnings equally amongst each other. Disputes would frequently arise between the butty gangs and the sub-contractors upon the question of measurement, and in such cases the resident agent or representative of the principal contractor was required to arbitrate.

When the work was organised in the manner I have described, the function of the principal contractor was rather that of a practical engineer, superintending the execution of the works by a number of smaller contractors. The principal contractor, being responsible to the engineer for the faithful performance of the contract, had to watch very closely the work done by the sub-contractors, and to see that it was executed in such a manner as to satisfy the requirements of the engineer; but he was not directly the employer of the workmen or the navvies.

The policy was to avoid, as far as possible, engaging a large number of workmen by the day, and to pay every man concerned in proportion to results.

'If little labour, little are our gains:
Man's fortunes are according to his pains.'

The system of sub-contract was carried so far, that I have been informed by the same experienced person from whom I have derived the facts already quoted, that the very scaffolding, raised for the purpose of putting together the iron-works of the bridges of the Severn Valley Railway, was mostly erected by sub-contractors. A carpenter would take a sub-contract for the erection of such scaffolding, fixing his price by the cubic foot.

It is always satisfactory to build our general principles, especially those which guide our action in the graver affairs of life, on as broad a foundation as possible.*

THE REVISED DUBLIN MAIN DRAINAGE SCHEME.

In their fresh report Messrs. Bazalgette and Neville make many alterations. Admitting that the engineers were compelled to revise their scheme to afford Dublin the chance of having a main drainage at all, this revised scheme throws a curious reflex upon the original one. The Borough Engineer of Dublin must have at least known that the first scheme, as a matter of cost, was beyond the capacity of Dublin, taxed as she was and is, to accomplish. Even the revised scheme can only be performed by instalments, and may be expected to drag its slow length along for a number of years, the city suffering in the meantime seriously as regards her public health. The following paragraph from the engineers' report is amusing if not instructive:—"We have effected a very large saving upon all the contracts by substituting what may be called the natural building material

of the country, viz. rubble masonry, for brick work. The materials for forming rubble masonry are to be found—almost picked up—in all parts of Ireland, and every country labourer who has ever handled a trowel can build a rubble wall; so that it is much less costly than brickwork, and the work, though rougher, is as strong and enduring as brickwork."

Happy Dublin, your agricultural labourers are in for a long job. There is little need for skilled labourers in the execution of your main drainage work. On the principle that every country labourer who can handle a trowel can construct a sewer, why not utilise every handy builder's labourer for the leading men and foremen? It would be a great saving, and would no doubt considerably reduce the cost of construction and supervision, whatever might be the ultimate consequence. Messrs. Nowell & Robson are the lowest for No. 1 contract, at 205,494l., and Messrs. Smith, Finlayson, & Co. for contracts Nos. 2 and 3, at 118,000l.

The engineers, in their report, say that it should be a condition of the acceptance of any tender, that the contractor should submit a priced schedule of his tender, and the corporation should not bind themselves to proceed with the entire works, but with certain portions of them, named. This provision is intended to protect the corporation from any obligation to provide money to pay for the construction of additional work which might be found necessary if the contractors were allowed to proceed with any amount of work involving a cost greater than what is provided by the borrowing powers of the municipal body.

THE VICTORIAN INSTITUTE OF ARCHITECTS, MELBOURNE.

At the last annual dinner of the Victorian Institute of Architects, his Honour Sir Redmond Barry, the president of the Institute, presided, the vice-chair being taken by Mr. Lloyd Taylor, the vice-president.

The President, in returning thanks for the manner in which the toast of his health had been proposed and responded to, said there were many great objects before the Institute. It should be their aim to lift their profession from the level of a mere trade. Architecture was the language of the intellect indelibly impressed upon the surface of the earth by great minds, and those present should be proud to belong to a profession which had stamped its excellence throughout the world amongst all nations. There was a noble task before them in this new country. They should not content themselves with being the imitators only of those who had preceded them, but should turn their whole heart's desire to become originators. Each age had generated some new idea; and were architects alone, amongst all the followers of the fine arts, to be the servile imitators of the past? In the ages that had passed, all the great works of architecture were almost exclusively associated with religion; but although the present age was more secular, there was no reason why the same earnestness should not be exhibited in the promotion of equally elevated ideas. The earnestness of the architect should be impressed upon his work, and a strict regard should be paid to the principles of his art, unity of design and fidelity of execution. He should disregard the spurious feeling of the moment for momentary decoration. In the city of Melbourne types of all kinds and conditions of architecture might be observed. To the eye of some future historian it might seem as if the place had been overrun and devastated by successive races, each of which had left behind traces of its existence in the relics of the different styles of architecture that prevailed among them. He thought the architects ought to aspire to some original conceptions. There was one other matter to which he desired to refer. He believed that justice ought to be done to the profession, and he considered that by the present mode adopted with regard to great public works, but scant justice was done to the architect. Instead of some trifling reward of 200l. or 300l. being given as a prize for the first plans of a building, the successful architect should be allowed to carry out and complete his own design.

Mr. A. E. Johnson proposed the toast of the "Public Works Department," and expressed his belief that under its present head it was one of the best managed departments of the service.

Mr. W. W. Wardell, in replying, remarked that

* London: Longmans & Co. 1874.

he department had had a good many "roughs," if he might use the term; but, as his friend Mr. Higginbotham had observed, they were not very much the worse for them. He attributed the success of the department to the excellent officers by whom he was surrounded, amongst whom he had formerly been able to count his friend, Mr. Johnson. With respect to the remarks of the president, he might mention that the practice he recommended had already been followed in two of the large public buildings which had recently been completed for. He hoped the gentlemen who were to carry out their designs would receive not hundreds, but thousands.

VALUATION OF PROPERTY BILL.

THE Bill introduced by the President of the Local Government Board has been issued. It provides that from the passing of the Act the poor-rates shall extend to land used for a plantation or a wood, or for the growth of saleable underwood; also to rights of fowling, of shooting, of taking or killing game and rabbits, and of fishing, when severed from the occupation of the land; also to mines of every kind not mentioned in the Act of the 43rd of Elizabeth. The gross and rateable value of any land used for a plantation or a wood, or for the growth of saleable underwood, is to be estimated as follows:—If the land is used only for a plantation or a wood, the value shall be estimated as if the land, instead of being a plantation or wood, were let and occupied in its natural and unimproved state. If the land is used only for the growth of saleable underwood, the value shall be estimated as if the land were let for that purpose. If the land is used both for a plantation or wood and for the growth of saleable underwood, the value shall be estimated either as if the land were used only for a plantation or wood, or as if the land were used only for the growth of the saleable underwood growing thereon, as the assessment committee may determine.

PROPOSED NEW PUBLIC HALL AND MECHANICS' INSTITUTE FOR BARNSELEY.

FOR some time past, the want of a public building, suitable to meet the wants of a prosperous town like Barnsley, has been felt. Although numerous schemes have been set on foot to secure the desired object, it was not until the close of last week that a decision was come to for securing this much-desired boon. At the present time, the largest building in the town is what is known as the Mechanics' Hall, which was erected many years ago, and used as a theatre. That erection will only accommodate a few hundred persons in any but a satisfactory manner; and often, when important meetings or lectures are being held or given, the place is crowded to such an extent as to render it uncomfortable to those who are fortunate enough to secure a place. The contemplated building is to be erected by a company known as The Barnsley Mechanics' Institute and Public Hall Company (Limited), with a capital of 16,000*l.* in 3,200 shares of 5*l.* each, of which 1,600 are ordinary shares, and 1,600 are preference shares. The directors are eight in number, and comprise the mayor, ex-mayor, and a number of very influential persons. The company propose to secure a very advantageous and central site in Eldon-street, near the two railway stations, and in one of the best thoroughfares in the town, at a cost of 3,150*l.* On this site they propose to erect a public hall, capable of seating at least 1,500 persons, and costing from 12,000*l.* to 13,000*l.* The site is at present occupied by a portable circus, belonging to Mr. Charles Adams. The building is to provide accommodation for the Mechanics' Institute, who are to have set apart to its wants a spacious reading-room, news-room, a library, and class-rooms, together with suitable apartments for a resident librarian, with lavatory and other necessary accommodation. As it is thought the site is too large for the purpose named, it is suggested that shops, offices, or other buildings may be erected, so as to utilise the site. It is intended to award to the Institute the right of using the large hall twenty-five nights in the year, for lectures and other purposes, at a maximum rent of 50*l.* per annum. 8,000*l.* of the capital will be raised in ordinary shares, and 8,000*l.* in preference shares; the former to receive no dividend in any year until the 5*l.* per cent. be paid on the preference shares. It is generally believed that the capital will be provided, and the building at once proceeded with.

ST. MICHAEL AND ALL ANGELS, ENFIELD.

THIS church has just been consecrated, but there remain yet three bays of the nave, and the tower and spire to be built. At present the chancel, with its aisles, and three bays of the nave and aisles, and the north transept, have been erected. The nave is lofty, and has circular traceried clearstory windows: the ridge line is carried through to the chancel, which has two bays, and a five-sided apse. The nave roof is open, that of the chancel is panelled, but instead of wooden trusses, the roof is carried on the chancel arch, the sanctuary arch, and an intermediate stone arch, between the clearstory windows, which rests on a slender shaft carried down in front of the central column of the chancel arcade. The apse is vaulted with brick, with stone ribs, and in each side is a two-light window, the eills of which are kept up above the clearstory string. The material is Kentish rag and Bath stone for the outside, and red brick and stone inside; the nave, however, has plastered walls. The church has been built from the designs of Mr. R. Herbert Carpenter, and under the superintendence of himself and Mr. T. J. Hill, of Enfield, by Mr. Bentley, of Waltham Abbey.

DEATH IN EXCAVATING A WELL.

JOSEPH SALLIS, a well-sinker, has met with his death while sinking a well at No. 1, Naunton Park-villas, Cheltenham. It appeared at the inquest that he had for many years worked for Mr. Barnett, well-sinker, and was working with others for him at the time of the accident. Where they first began to do this they came upon a drain or sewer, and the deceased thereupon commenced sinking in another place, without consultation with his employer. He had got down nearly 15 ft. through the light sandy soil, when he called out that the earth had given way. Catching hold of the rope, an attempt was made to pull him out, but he was too firmly embedded in the sand, and called to a fellow workman to come and dig him out. Horlick jumped down into the hole to do so, when immediately a second fall of soil occurred, windlass and all falling in, and Horlick was covered up to his neck, and was then, of course, quite dead. Mr. Barnett stated that the deceased had had great experience in well-sinking, having worked at it for many years, and himself had the direction of the work. In reply to the jury he said that he had sunk a well only a few yards from this spot to the depth of 15 ft. without "steining" or building up the sides, and without accident, and he attributed the accident partly to the fact that the well was being sunk, without the deceased being aware of it, too close to the spot where a trial shaft had been sunk, and the space between the two being insufficient, the sides of the new sinking had fallen in. The jury returned a verdict of "Accidental Death," but were of opinion that a well should not be sunk more than 7 ft. in a sandy soil without bricking up the sides.

THE DWELLINGS OF THE POOR.

MR. JOHN ELLIS, of Seacombe, has patented some improvements in the construction of dwelling-houses. The proposed plan is to construct buildings with only one central chimney or shaft containing flues, by which would be avoided a necessity for numerous and expensive chimney-stacks, lead flashings, &c. He claims that the fire-places being arranged in immediate connexion with the main shaft the result would be a continuous current, carrying off the vitiated air, making smoky rooms an impossibility, and by the centralisation of heat diffuse the calorific at an even temperature through the various departments, and by a simple arrangement in supplying the air necessary for combustion, prevent draughts. Hot-water cisterns being fixed in connexion with the shaft, would economise fuel. Among other advantages mentioned are greater facilities for the admission of air and light from the outer shell of the building, owing to the centralised position of the heat-producing apparatus; lessening danger of fire by the improved construction of buildings; by the non-necessity of joists being placed in juxtaposition with fire-places. It is proposed to place all drains outside buildings, thus preventing the

pervasion of noxious effluvia, and offering greater facilities for any repairs required, without the risks so often incurred. Mr. Ellis has constructed elaborate models to illustrate his invention.

Could not heat be further economised and distributed by some mode of arranging fire-places in the middle of a room, so that to sit "round the fire" would be possible?

In the Commons, Mr. Kay-Shuttleworth has asked the Home Secretary when he would be able to lay before the House, or to give notice of, any amendment of the standing order with reference to powers given to railways companies to take possession of property and eject the tenants. In reply, Mr. Cross said the standing order was already drawn up in draft and would be laid before the House. Although not proceeded with before the recess, it would be immediately afterwards.

THE RICHMOND WATER SUPPLY.

THE plans of Messrs. Russ & Minns, civil engineers, London, have been accepted for the improved water supply of Richmond by means of an artesian well, and a reservoir which the Government Board of Works has consented shall be in the best position, Richmond Park, where it can be made wholly underground, and the surface be made quite flat; this arrangement by consent is considered a great boon. The well and pumping-station will be at the old brewery. The engines, pumps, and boilers will be capable of raising thirty gallons per head per day for 16,000 persons in twelve hours; the engines will be 40-horse power nominal and in duplicate. The well will be from 10 ft. to 5 ft. 3 in. diameter, and lined with iron cylinders, as far as the chalk, which is at a depth of about 257 ft. If required, a boring of about 150 ft. in depth will be made in the chalk. Following is a section of the different strata through which the well will be sunk:—Surface soil, gravel, &c., 15 ft.; London clay, 157 ft.; morticed clay, 38 ft.; sand, 47 ft.—total 257 ft., at which depth the chalk will be reached. The estimate of the cost is 23,862*l.*, but judging from some remarks made by Mr. Hawkley, who was examined before the Government Commissioners as to the feasibility of the scheme, it is probable that this will be slightly exceeded, in which case the Vestry will have to make a second application to the Local Government Board for permission to borrow a further sum. The annual working expenses are estimated at 724*l.* Hydrants will be available for street watering, and the water cost 2d. to 2½d. per 1,000 gallons, where by the present system it costs two shillings. Mr. Russ was the author of one of the premiated drainage schemes for Winchester, and his firm is now engaged in carrying out works connected with the water supply of the new docks at Portishead, near Bristol.

THE RIVER APPROACHES AT LIVERPOOL.

THE new river approaches are now not far off completion. Another addition to the new work has been made by a portion of the connexion between the George's and Prince's landing stages being brought across from Birkenhead and placed between the stages where it was to be permanently fixed. The connexion is over 500 ft. long, by 123 ft. wide at the broadest portion, and 83 ft. at other parts, with an embayment for facilitating the transshipment of goods. It has been constructed at the works of Messrs. Brassey & Co., and was brought across the river by five steam-tugs. The work was necessarily one involving considerable risk and difficulty; but the huge raft was successfully piloted over without any accident. Tackling ropes were fixed to the pier walls, and, by means of windlasses on the stage itself, the stage was gradually pulled towards the wall until it had reached the desired distance. Meanwhile, a new bridge and a "boom," which was intended to steady the stage, had been got ready. The end of these were supported on what may be called large floating rafts, the tops of which were much higher out of the water than the level of the stage. As the tide receded, these were so arranged that the end of the bridge in the result was left resting on the stage, when the jointing with the stage was as quickly as possible then made. The connexion between the two stages was then, therefore, nearly complete, but a number of pontoons had yet to be put in. The dock engineer, Mr. Lyster, was present during the greater part of the time.

HINTS TOWARDS A CLEAN HOUSE.

ARCHITECTURAL ASSOCIATION.

At an ordinary general meeting of the members, held on Friday evening, the 15th inst., the President (Mr. C. J. Tarver) in the chair, the following gentlemen were elected members:—Mr. W. C. Sandys and Mr. W. J. Millard.

The Secretary (Mr. Bowes A. Paice) proposed votes of thanks to Sir Gilbert Scott for his kindness in allowing the members of the Association to visit for the third time the New Home and Colonial Offices, Westminster; and to Mr. Ashfield, clerk of the works, for explaining the various features of interest in the building.

Mr. Thomas Blashill then read a paper on "Hints towards a Clean House." He commenced by stating that it was the air within a dwelling-house which was of the greatest importance to them, and that, however it might be warmed, dried, or filtered, it could never reach the purity of the air out of doors. Its condition depended largely upon the cleanliness of the house, and the facilities for removing from all dirt and all refuse before they showed any signs of decay. The great mischief of dirt was in its unpleasant smell, but in the poisonous gases which it exhaled, and the germs of disease which were harboured and developed by it at a later period when it had perished ceased to be very obnoxious to the sense of smell. During the period during which the worst kind of disease might be kept before any great change of air was about four-and-twenty hours, and perhaps two days might be taken at the extreme limit of time during which arrangements should be made for getting it clear away from the house. With other kind of refuse the matter was less pressing, but it seemed a safe and convenient rule to ensure the daily cleansing of the house from all the grosser forms of dirt. The modern system of drainage aimed at doing this by processes which was self-acting and continuous, and when efficiently carried out and properly managed, it was cleanly, convenient, and free from all material objection. House refuse was of four kinds—1, dry refuse, such as dust and the ashes of fuel; 2, refuse arising from the operations of the kitchen; 3, water that had been made foul by house-cleaning; and 4, chamber-slops and night-soil. A house should be surrounded by a garden space and approached by clean paths, none of which should require much labour in cleaning. Wherever floor-coverings of the oil-cloth or composition class could be used they favour cleanliness, but the boards must be thoroughly rubbed or they would decay. The wall should have a chair-rail rather than a classical dado moulding, and the projection the same as that of skirting, and the space below it finished in some way that would admit of its being washed. The rest of the wall might be finished more delicately in a light paint or some paper not glazed, but like the French papers in surface. Floor-papers should be removed the dust, they even added to it, but a carpeted floor had much of the warm effect and was also clean. There were washable papers of bright colours and dead surfaces more suitable for passages and for dados than varnished marble floors, which attracted the damp. Damp was a source of dirt which aggravated its other forms. In addition to the usual precautions against it, always put 6 in. of concrete over the whole of a house. A wall built of very hard concrete bricks, or hard stone laid in hard setting mortar, and finished inside with a smooth surface, would extract all the moisture out of the air within the house, and at the change from cold to warm weather, the water would run down and stand in pools on the floor. The careful drying of a house assisted by fires, in damp as well as in cold weather, was most necessary. A house was a modern source of damp; it produced enormous quantities of water, which would condense on walls and in all unventilated attics, wardrobes, and cool places. In a house of good size, built from his design, he had calculated from the gas-bill that over 200 gallons of water per night was so produced during the winter months. The great source of dust in houses consisted of particles coming from furniture and clothing, the ash of stoves and coals, and dirt from roads. Professor Huxley says that dirt was a most important source of evil by harbouring and carrying about the germs of disease. They knew that houses were generally so constructed that it was impossible to keep them even tolerably free from dust. Mere dry dusting was but the removal of dust from one place that it may settle in another. Dark unventilated cupboards,

handy places managed under stairs and sinks, and between rooms, require ventilation and light. Tall cupboards should reach to the ceiling; drawers should be few, and only for special purposes. Mouldings harboured dust, as did all little ledges, while shelves not above the level of the eye get cleaned. In fireplaces, the flue should be made to fit well to the opening of the register, and should be free from bends and large open spaces; there would then be less deposit of soot. The ordinary kitchen range wasted coal, and covered all the vessels used in cooking with bituminous soot. A few white marble shelves, a little marble wall-lining, or at least slate, in a perfectly well-lighted and ventilated larder, would soon repay their cost in the prevention of waste, and the air of the house would be relieved of the smell of meat which hung on hand. He would recommend a common meat-safe nailed against a back wall rather than a miserable pantry with a borrowed light, and all the damp and dirt which that entailed. Dust should be kept in a galvanised pail, and collected three times a week at a given hour. In a country-house the dust proper and the waste kitchen stuff should have two neat pails, with covers, provided and placed upon a small hand-truck near the scullery door, so that they could be taken away and returned clean early every morning. The sink should be outside the house, in the pavement of the yard, with a tap over it for drawing water for outdoor use. The pipe from the ordinary domestic sink should go through the wall, and dip into the water of the yard-sink. A good ordinary stoneware trap set in a mass of concrete, with two or three courses of brickwork in cement forming a 9 in. square cesspool over it, would form a good yard-sink. It should be covered with a stone having a 9 in. hinged grating, the waste-pipe being brought through the brickwork just below it. This trap could be cleared out easily, and if the sewer air forced itself past the "dip" it would escape into the yard and not into the house. All foul water in large quantities should be poured into the yard-sink, and a good flush of water should be put down the house-sink every night when the sink was cleaned. A housemaid's closet should be fitted with a housemaid's sink, which was made like a hopper-pan having a trap formed at the outlet.

With regard to water used for cooking and drinking, it should be kept in a cool light room, easily accessible and free from dust. Separate taps should be provided for drinking water from those fixed at sinks. With regard to bath-rooms, the chamber and the lavatory, where the liquid refuse was very largely diluted, the precautions required for getting it out of the house are the same as in the case of sinks. All the waste-pipes should be kept clear from closet soil-pipes. From some source or other there should be a regular flow of water into all traps. There should be a good lavatory for gentlemen in any house of fair size. One or two closets might lead out of the lavatory and a separately lighted and ventilated urinal, its basins discharging into the closet drain, be placed there. As regards the old-fashioned pan-closet, he believed that it kept in work for a longer time than the valve-closet without disarrangement. But at the best it was a harbourer of dirt, the water traps formed in and below it being liable to be rendered useless; and it was upon the whole much inferior to the class of valve-closets, of which three and four kinds were well known. The soil-pipe should run down close to an outer wall and be properly connected with 6 in. stoneware bend turning through the wall and running thence to the sewer, cesspool, or other termination of the house drainage. The air in a good sewer, though unpleasant when they smelt it in the streets, was purer than the air could be in a house-drain or soil-pipe, and might be the least of two evils.

In a country-house the question arose as to the disposal of the sewage. Practically all the liquid from sinks, baths, and lavatories would give little trouble. In most cases it could be received in a tank and used in the garden or turned at night over fields. The closet-drainage was the difficulty. Closets might be so constructed, and all the means of draining them so carried out, that no perceptible nuisance would arise from them. Wherever the earth-closet could be employed under proper arrangements they could ensure perfect cleanliness; and if they would but take the trouble they would be quite free of cesspools and sewers. The earth-closet might be put on the ground-floor story, and indeed in any story where convenient access for the attendant could be

secured. It should have its ventilated lobby; and the filling of the hopper and removal of the pail should be effected, if possible, from a small chamber external to the closet. Special lifts were contrived for raising dry earth and for lowering the soil through two or more stories and pipes or shafts had been made that would discharge the contents from an upstairs closet down into a small chamber in basement. Great care should be exercised in keeping the shaft perfectly clean. Such shafts (and pails as well) should be white enamelled inside. For perfect action of the apparatus the pail was better than the tank. No large accumulation should be suffered within the house, and the closets should be cleaned every day. The earth must not be spread on the surface of a garden nor near the house, but must be dug into the ground or used out in the open fields. For cottages the apparatus was generally considered to be too complicated unless where a whole village was systematically worked on this system. A perfectly dry receptacle might be made into which earth might be put by hand; but as the apparatus was now much used for schools its application to cottages was only a question of time. With respect to the general application of this system to towns the obstacles were very serious. To his mind they were mainly within the house. As to the difficulties and cost of collection, it was not unreasonable to set that up as a serious obstacle. When the majority of townspeople feel that the nuisance of the daily visit of a scavenger to the house was less than that arising from old-fashioned closets and drains, and when the majority could compel the minority the thing would be done, if ever; and there was no doubt that the public authorities could manage the out-door arrangements.

THE CITY FRUIT AND VEGETABLE MARKET COMPETITION.

At the last meeting of the Common Council, Mr. Thomas Rudkin brought up a report from the Markets Committee upon the reference to obtain designs for a new fruit and vegetable market, and recommending that the premiums should be awarded as follows, viz.:—300*l.* for the design sent in under the motto "Estelle"; 200*l.* for the design sent in under the motto "Wholesale and Retail"; 100*l.* for the design sent in under the motto "Anchor"; and also recommending that the sum of 50*l.* should be paid to each of the authors of the designs sent in under the mottoes "Plan," "Well Studied," "B," and "Westminster," upon condition that the designs become the property of the Corporation.

The report was ordered to be printed, and the consideration of it was adjourned.

SIR.—When the designs for the Law Courts were exhibited, some enterprising photographer, whether under authority or not, photographed and published them in a large proportion of the members of the architectural profession being purchasers. As six designs are to be premiated for the new Fruit Market, will you allow me, through the medium of your journal, to suggest a similar course. The sums received in shape of premium may be all very well in their way, but the successful men, I think, would be advantaged by having their designs made public.

ONE OF THE PUBLIC.

ARCHITECTS' ACTIONS.

KINGSTON COUNTY COURT.

Walker and Elsom v. Metropolitan Board of Works.—Mr. Sherrard appeared for plaintiffs, who are surveyors, carrying on business at Hampton Wick; and Mr. Napier Walker for the Metropolitan Board of Works.—Mr. Sherrard said the action was to recover 6*l.* 17*s.* 8*d.*, of which six guineas were for attendance at Westminster Police Court on three several days; the balance was for travelling expenses. One of the plaintiffs (Mr. Elsom) was served with a *subpoena* to appear before the magistrates on Jan. 20 to produce plans, sections, and drawings prepared and used by them connected with certain works being constructed for Col. Augustus Clifford. He (Mr. Sherrard) instructed counsel on behalf of Col. Clifford; and the case was on for three days.

Mr. Elsom attended, and though not called, he was present the whole time. It might be said that the *subpoena* only directed him to appear on one day; but in answer to that he might say his plans were there. The Board had given Mr. Elsom 5*s.*, which was supposed to cover his expenses for three days. It might be said that the scale of fees in the police court would not allow of more than 5*s.* being paid; but he was pleased to say there was no scale of fees by which only 5*s.* could be paid; but it was left to the magistrate's discretion. The *subpoena* was issued out of the Queen's Bench on the Crown side; and the scale of fees fixed for professional men was from one to two guineas per day, and a mileage of 1*s.* per mile. The charge of 1*s.* per mile had not been made, but only the railway and cab fares, amounting to 15*s.* 6*d.* Mr. Elsom having given evidence, the Judge asked why he attended the court after he produced the documents.

Mr. Sherrard was afraid that if he had not attended

the counsel for the Board would have made a great point of that.

Mr. Elsom stated that at the end of the first day he asked Mr. Philbrick, who appeared for the Board, whether he would be required to attend the second day, and Mr. Philbrick said he did not know.

Mr. Walker was about to cross-examine the witness, when the Judge asked him whether he was a solicitor. He replied that he was not, upon which the Judge said he could not allow him to examine the witness, or make an address.

Mr. Walker said that he was instructed by the Board that the case was important, because it was a matter of principle.

The Judge.—The Board ought to have been represented by counsel. I cannot allow things to be done in this way. I find for the plaintiff.

THE COVENTRY SEWAGE WORKS.

FR.—I feel sure that you will kindly, in the interest of justice, afford me space to give an unqualified contradiction to the note you were called on to insert in your last issue, stating that the Coventry sewage works were planned by Mr. Baldwin Latham, C.E. The truth is, the works were designed by me, and I have also acted as executive engineer in carrying them out, an arrangement which has, in a great measure, contributed to their success. I would have preferred, in justice to others, say that at the time of planning the works, General Charles Scott, R.E., and Mr. Baldwin Latham, C.E., both then directors of the General Sewage Company, and Dr. Anderson, the inventor of the process employed, as well as others, afforded me several valuable suggestions.

JOHN CHARLES MELLIS, A.I.C.E., F.G.S., F.L.S.

CASES UNDER THE BUILDING ACT: WOODEN BUILDINGS.

MR. MELLIS erected an out-building on premises in his occupation, and was summoned by the District Surveyor of Hammersmith for not giving notice. Mr. Claydon, solicitor, defended; and Mr. H. W. Napier, of the Metropolitan Board of Works, attended in support of the summons on behalf of the District Surveyor.

The out-building in question was inclosed with wooden boarding fixed to posts of wood which were driven into the ground, and to other woodwork secured to a brick wall (abutting on a public way) by means of iron bolts. This being denied on the part of the defendant, in addition to an objection to it being deemed "a building," the Magistrate granted an adjournment to enable the District Surveyor to bring further evidence. At the adjourned hearing this was forthcoming, and the magistrate consented to visit the spot with the parties, when it was found that in the meantime the woodwork had been cut asunder and the building detached from the wall; the defendant now alleging that as he used the building for keeping fowls he had thus rendered it a "bird-cage," capable of being removed to any part of the premises.

The Magistrate remarked that as its removal appeared so easy he should order defendant to remove it to a distance of 9 ft. from the public way; then he thought the requirements of the Act would be sufficiently met. He was fully aware of the difficulty the District Surveyor found in dealing with such erections, and added that in his opinion he (the District Surveyor) had acted perfectly right in bringing this case before him.

The summons was then withdrawn, costs being applied for by defendant and refused.

A SATISFACTORY CONTRACT.

A REPORT has been received by the Holborn Board of Guardians from the building committee, stating that they had viewed the new administrative block of buildings at the City-road Workhouse, and unanimously resolved, on the motion of Mr. Moreland, seconded by Mr. Emms, "That this committee desire to express their great satisfaction at the admirable manner in which Mr. G. Wall, the contractor, has carried out his contract, in building this new block of administrative works, under the able direction and superintendence of the architect, Mr. S. Snell, and the clerk of the works, Mr. Manair." Mr. Abrahams, chairman of the building committee, moved that the report be approved. Mr. Southey, chairman of the Board, was glad to hear such a report, for he had always looked upon Mr. Wall as an honest, straightforward man, and one who did his work well. The resolution, for approving of the report, was then carried unanimously, and a copy was ordered to be forwarded to the gentlemen named in the report of the committee.

THEATRE ROYAL, HAYMARKET.

THE three scenes which have been painted and built up for the new "picturesque comedy" written by Messrs. Henry & Athol Mayhew are of themselves sufficient to justify the recommendation of a visit to the Haymarket. These represent the Garden and Courtyard of the Hotel at Chamouni, executed by Mr. G. Morris; the Grands Mulets on the Alps, Alpine sunset, changing to moonlight, by Messrs. O'Connor; and the Market-place of Chamouni, by the same artists.

In the first we have the *salle à manger* at the back, with the *table d'hôte* going on, built-out balconies, flower-beds, practicable pump, guests

arriving, and all the life and bustle of the real place. In the scene on the Alps, the well-known hut, with its smoking chimney-pipe, the surrounding peaks, the characteristic guides, give a similar effect of reality; and this is equally preserved in the bright picture of Chamouni at the back of the market-place, with the syndics' chalet, the street-front of the hotel, and a flowing fountain in the centre of the stage. If anything, the scenery, supernumeraries, and accessories are too much for the story of the comedy, which is but slight. Still, carried out as this is by Mr. Buckstone, Mr. Kendal, Mr. Howe, Mr. Rogers, Mrs. Chippendale, and Miss Amy Roselle, the play runs merrily on; and Messrs. Mayhew and all concerned may be safely congratulated on a very successful result.

HUGHENDEN.

A MONUMENT has just been erected in the parish churchyard of Hughenden, to the memory of the late Viscountess Beaconsfield, wife of the Prime Minister. In character the monument is semi-mural, being attached to the church walls beneath the east window of the Simon de Montfort Chapel. In the centre is a trefoil arch, and on either side are lancet arches displaying the three recessed slabs of polished red Scottish granite on which are cut the inscriptions. Small marble shafts with carved caps support crocketed canopies over these openings, and in the cornice is a band of carving, representing in stone various roses, lilies, passion-flowers, foliage, &c. The following is the inscription upon the centre tablet:—

"In Memory of
MARY ANNE DISRAELI,
VISCOUNTESS BEAconsfield.

In her own right,

For thirty-three years the wife of the
RIGHT HONOURABLE BENJAMIN DISRAELI,
Lord of the Manor,
Ob. December 15, 1872."

On the right-hand tablet is written:—

"In Memory of
JAMES DISRAELI, Esq.,
Of Bradenham, in this County,
One of Her Majesty's Commissioners of the Exchequer,
and third son of
ISAAC DISRAELI, Esq.,
Of Bradenham, in this County,
Author of the "Curiosities of Literature,"
Ob. Dec. 23, 1868."

And on the left-hand panel is the inscription:—

"In Memory of
SARAH BRYDGES-WILLIAMS,
Relict of James Brydges-Williams, Esq., of Caranfont,
in the County of Cornwall, and Colonel of the
Royal Cornish Militia.
She died at Torquay, 11th Nov. 1863, and was buried
at her desire in this vault."

The materials are of polished marbles and granite and brown Portland stone. The work has been carried out by Mr. S. Sansom, of London, from the designs of Mr. Arthur Vernon, architect, High Wycombe.

ACCIDENTS.

Fire in Leather-lane.—With regard to the destructive fire in Leather-lane, Holborn, Capt. Shaw, of the Metropolitan Fire Brigade, officially reports that it broke out in a building in Nag's-head-yard, Leather-lane, in occupation as workshops of fourteen different persons, whose names he gives, including veneer, ivory, fret, glass, and diamond cutters; brush-makers, metal polishers, box-makers and wood-turners; that two-thirds of the building, with the roof, were destroyed, and the rest very severely damaged; that the first and second floors, and the roof of an opposite building, occupied by a box-maker, were destroyed; that the back windows of the Nag's Head Tavern, and of the house, No. 38, Leather-lane, were burnt out, and the back rooms much damaged; and that the fronts of four other houses in Leather-lane and two in Hatton-garden were scorched. The origin of the fire is, he says, unknown. The majority of the occupiers, who are the principal sufferers, are uninsured. A large number of men will be thrown out of work by the disaster. Fourteen steam and manual fire engines attended the fire.

Explosion of Gas in a Church.—An explosion of gas took place in St. John's Church, Chelmsford, which is undergoing alterations. The seats along the aisle were blown to pieces, and the painted windows were forced out; but the men who were at work fortunately escaped serious injury.

Gas Poisoning in Manchester.—Mr. John Kelsall, market gardener, of Timperley, who has for a great number of years attended Smithfield

market with produce, retired to rest, accompanied by Mrs. Kelsall, at their temporary lodgings, the Higher Turk's Head, Shudehill. They were discovered in an unconscious state in the morning. It appeared that through being unaccustomed to gas, they had blown out the flame without shutting off the tap, and in consequence had been breathing the gas all night.

Sad Death of a Carpenter.—A carpenter, the employ of Mr. Hinton, of New Swindon, a small splinter from a plank into the inside of his left thumb, near the joint. Little notice was taken of the matter for some days, when symptoms of mortification set in, and a poultice was applied. The splinter came out, but the inflammation extended with such rapidity that the poor fellow died. He leaves a wife (who singularly enough, has been suffering for the last two years from an injury to her hand, caused by a fall) and a family of small children.

STAND ACCIDENT AT LINCOLN RACES.

MR. WM. CULLINGWORTH, Turk's Head Inn, Sheffield, who was injured by the fall of a stand in the "ring" at the late Lincoln Spring Meeting, has died at Lincoln, and an inquest was held on the body of the deceased at the White Hart Hotel, by Dr. G. M. Lowe, deputy-coroner.

In course of the proceedings Mr. Wm. Huddleston, the builder who erected the stand, being examined by the coroner, deposed: looked at the stand, which fell on the 24th of March, the evening previously; and on the following morning, before the first race was run, walked round it. For anything I could observe the stand was put together in the same way as it had been done from ten to twenty previous occasions. The man who put the stand up in March assisted to do so for five or six times previously. I saw the stand after it fell, and struck me that some iron bolts were missing, which should have been in. Two or three of the bolts missing would be bolted to a longitudinal piece of timber, placed across the middle part of the principals. The bolts which were missing would be placed in the centre part of the stand.

The Coroner: Do you consider that the absence of these bolts would cause the stand to cant over in the way it did?

Witness: Quite sufficient, and I understand from the parties who were upon the stand that the absence of the bolts was the sole cause of its falling.

The Foreman: You remember, Mr. Huddleston, being called, just before the race, to see the plank that had tilted up?

Witness: I went to get a man to put it right, but before I got back the stand had fallen. I could not say at what time the bolts were removed, as I did not take notice of them when I visited the stand. I trusted to the man who I employed to see that the stand was properly erected.

The jury, after consulting for about an hour returned the following verdict:—

"That the said William Cullingworth died from injury sustained by the fall of a certain stand at Carlisle, the city of Lincoln, upon the 24th of March, 1874, and not otherwise."

To this verdict was appended the following:—"There is not sufficient evidence to convince that the bolts stated to be missing had ever been put in their places on the occasion in question, and that the Committee should not allow any stand to be used at Carlisle in future until it has been carefully examined by a competent person, and certified to be perfect and safe."

The Coroner said that he would convey the recommendation to the Race Committee.

SCHOOL BOARD SCHOOLS.

London.—The Works Committee of the Board invited tenders for the erection of a school, accommodate 745 children, on the Penno street, Walworth, site, the amounts being as follows:—

Gannon & Sons	£9,137 0 0
Killy	8,890 0 0
Thompson	8,380 0 0
Tarrant	8,237 0 0
Shelfield	8,125 0 0
Jerrard	8,073 0 0
Culiam	7,640 0 0
Cooper	7,541 0 0

The committee recommended the acceptance of the lowest tender—that of Mr. J. Cooper, of 2 Camberwell-road, S.E., amounting to 7,541. It was added that the above tender includes provision of 400l. for extra foundations which

now been ascertained will be necessary; and a provision of 650*l.* for tarpaving and bouny walls. [Cost of site, so far as purchased, 57*l.* 1*s.* Cost of building, per head, 10*l.* 1*s.* 8*d.*] The committee also invited tenders for the erection of a school to provide accommodation for 780 children, on the site in Walnut-tree-k, Lambeth, the following being the respective amounts:—

Brace	£6,815 0 0
Manly & Rogers	6,630 0 0
Downs & Co.	6,580 0 0
Clarke & Brucey	6,542 0 0
Terry & Co.	6,500 0 0
Kelly, Brothers	6,500 0 0
Tyerman	6,440 0 0
McLauchlan	6,416 0 0
Serveney & White	6,374 0 0
Crockett	6,258 0 0
Howard	6,185 0 0
Full, Higgs, & Hill	6,164 0 0
Jerrard	6,049 0 0

The committee recommended the acceptance of the lowest tender, that of Mr. S. J. Jerrard, Homedale, Lewisham, amounting to 6,049*l.* 0*s.* 0*d.* at site, 6,073*l.* 13*s.* 6*d.* Cost of building per head, 7*l.* 13*s.* 4*d.* On the motion Mr. Currie that the tender be accepted Mr. J. Cooper, for the Penrose street (worth School, Mr. Gover remarked upon exceptionally high cost per head. Mr. Currie said the cost per head was increasing and would increase. A pressure was being put upon Board by new members for covered ways, more convenient accommodation for teachers to live at a distance from the school, &c. In there was an increase of 20 per cent. on building. Canon Cromwell mentioned a recent offer of a voluntary school well and substantially, which cost only 5*l.* per head. Mr. Freeman remarked that opinions differed as to what school buildings ought to be. Some gentlemen seemed to think that a place would do for a school which was hardly fit for pigs. He would think that the School Board buildings must not necessarily be more expensive than ordinary voluntary schools. Rightly or wrongly, the Board put up buildings of a better appearance, school buildings that would be a credit to the London School Board. The Board gave 1*l.* 10*s.* per room per head than other schools, and considerably increased the expense. The school buildings were more massive and durable; they were built to stand for ever. Mr. Murphy said that at Leeds he had recently seen a school which cost 11*l.* per head. Mr. Currie stated that up to the present buildings provided by the Board for 50,000 children, and the gross cost, including building furniture was 12*l.* per head; the building furniture, cost 8*l.* 10*s.* per head. But he did not hold out a hope that in the future the Board would be able to keep within that limit. Motion was agreed to. — At the last meeting of the Board Mr. Currie brought a report of the Works Committee, which was read. — On the 13th of November, 1872, the Board accepted the tender of Mr. T. Ennor, amounting to 1,375*l.* for the adaptation of the mills in Berner-street, Whitechapel, to the use of a school, seven years' lease of the premises having previously been acquired. The Board have since resolved to purchase the freehold of the premises, and have scheduled additional land, in order to increase the very limited area of the site. The committee have accordingly invited a tender from Mr. Ennor for carrying out the necessary alterations and improvements to the school, in order to make it fit for permanent occupation. These alterations include the addition of the houses scheduled, the erection of a screen-wall along the front of the site; the provision of a stone staircase, as required by the local surveyor, instead of the wooden one at present in existence; the insertion of new windows in the front wall; and the paving of the internal ground. The committee recommended the acceptance of the tender of Mr. Ennor, amounting to 1,375*l.* The committee have invited tenders for the erection of an infants' school for the High-street, Stoke Newington. School, to provide accommodation for 100 children. The following are the respective amounts:—

Belham & Co.	£1,334 19 2
Hook & Oldrey	1,085 0 0
Farnon, Brothers	988 0 0
Ennor	985 0 0
Boyce	984 0 0

The committee recommended the acceptance of the lowest tender, that of Mr. Boyce, of London. Mr. Hackney, E., amounting to 984*l.* On the motion of Mr. Currie, the recommendations of the committee were agreed to.

Liverpool.—The schools erected by the Liverpool School Board in Queen's-road have been opened, and upwards of 200 boys, girls, and infants placed on the school register. Dr. Cross, Mr. Onlon, and Mr. Hance (clerk to the School Board) were present. There was no public opening or ceremonial.

South Bersted.—At the last Board meeting, the Rev. A. Conder in the chair, the School Management Committee were instructed to issue notices that the new Central Schools in Lyon-street will be duly opened on June 1st, 1874. The clerk was instructed to inform the Education Department that the Board is about providing accommodation at Shripney, which will include the parish of Aldingbourne.

Stoke-upon-Trent.—The Bagnall School has been formally opened. The chairman remarked that at the two extremes of their district it had been found necessary to erect schools, and at Clayton, nine miles distant, a mixed school for fifty children had been opened in January. At Bagnall the Board was compelled to go to much greater expense in providing school accommodation, since a house for the teacher had also to be built, and the village was not easy of access. The school had been built of stone from the quarry adjoining, and was constructed to accommodate 105 children. He pointed out that the cost was under 10*l.* per head per scholar, the house itself costing 500*l.* for erection.

Norwich.—The Board have adopted a recommendation of their works committee to erect schools at Catton, ordering the plans to be forthwith prepared. The schools are to accommodate 300 boys, 250 girls, and 250 infants, such schools to be each 22 ft. in width, and arranged for four rows of desks, and to be so planned as to admit of future extension sufficient to accommodate (inclusive of the above number) 1,000 children altogether.

OPENING OF THE MANCHESTER AQUARIUM.

This new establishment, of which we gave a view and plan, with full particulars, in the *Builder* of 28th February last, was formally opened in time for the Whitsuntide holiday-folk. It is an important addition to the few places of resort enjoyed within easy distance by the inhabitants of Manchester. The new aquarium is well stocked with marine and fresh-water fish. The building, we may repeat, is Italian Gothic in its frontage, with rows of clearstory windows, and roofs at the sides. It stands in front of the large lawn in Alexandra Park, a well-frequented suburb of Manchester. The centre saloon or hall is 150 ft. in length, 40 ft. in width, and from the floor to the ridge of the open-span panelled roof, 54 ft. in height. This saloon forms a promenade. The walls are lined with cases stocked with anemones, and in the centre space there are large glass tanks filled with river and lacustrine fishes. This collection was enriched on the opening day by a score of artificially-hatched "baby" salmon, which Mr. Frank Buckland, who opened the aquarium, had brought down as his contribution towards the undertaking. The corridors on the north and south sides of the building are lined with tanks filled with marine fish and crustaceans, and these large spaces constitute the main scientific feature of the exhibition. By mechanical means the conditions of these tanks are rendered suitable for the different classes of fishes, and the directors claim to have the deep-sea or coralline, the laminarian, and the littoral zones that gird our sea-shores, truly represented in their aquaria,—the ocean current, the tidal wave, ebb and flow, &c. The exhibition tanks present to the spectators a transparent frontage of nearly 750 ft. in length (being more than double that of any aquarium yet constructed). The sea-water is brought by train in barrels from Blackpool, a distance of about forty miles, and a constant supply is maintained.

Fleetwood Dock Works.—Great progress is now being made with these extensive works, and both excavation and building work are carried on with vigour, limited only by a rather short supply of hands. Men in search of a job do not readily find their way here. It is said there is certain employment for nearly three years for 150 more men than are at present on the works, and that lodgings and provisions are both plentiful and cheap. The new dock will be 340 yards long by 134 yards wide.

CHURCH-BUILDING NEWS.

Garston (Liverpool).—An appeal is now being made to the public for funds for the erection of a new parish church for Garston. The building committee state that "the existing parish church provides accommodation for only 250, out of a resident population of 6,000, which is constantly increasing, and which is, moreover, exclusive of a floating population in the dock of about 300." The cost of the building is estimated at 5,000*l.*, of which about 2,000*l.* have been received. It may be stated that although the adjoining districts of Mossley Hill and Speke are being provided with church accommodation through the liberality of private persons, these churches will be too far from Garston to afford it any relief.

Elsham.—The parish church of All Saints, Elsham, near Brigg, has been re-opened by the Bishop of Lincoln, after undergoing a restoration. The fabric is of a very composite character, originally intended for a conventual church. This small church contains in itself all the styles prevalent from the Late Norman to the debased Gothic immediately preceding the Reformation. The restoration has been carried out entirely through the exertion of the owner of the estate upon which the church is situated, Sir John Dagdale Astley, Bart., M.P., and consists of a reredos of Caen stone, with insertions of alabaster and coloured marbles, and a font of the same description, an oak communion-table, covered with an embroidered frontal, chancel stalls of oak, an encaustic tile floor in the chancel, an organ by Bevington, with a decorated exterior, and a division made between chancel and nave by means of a low screen, surmounted by a traceried arch in wood. The seats in the nave are of pitch pine, with ornamental piercings in the bench ends. The east window has been filled with stained glass, by Mr. Tarleton Cleobury, of London, the subject of the centre compartment being "The Reception of the Little Children by Christ"; in the side-lights "The Resurrection and Ascension." This was erected by Sir John and Lady Astley, as a memorial to a departed child. The reredos, pulpit, and font were the work of Mr. Earp, of London; the brass-work by Messrs. Jones & Willis; the altar-cloth by Mr. Beangwyn, of London; all from the designs of the architect. The builder was Mr. Wallis, of Market Rasen; and the whole of the works have been carried out from the designs and under the superintendence of the architect, Mr. William Scott Champion, of London.

Louisa.—At a vestry held in Kirkley church, the plans prepared by Mr. J. L. Clemence, for the enlargement of this edifice, were submitted. The architect explained that the enlarged building when completed would seat about 600 persons, the present church seating but 200. The estimated cost of the proposed alterations and improvements were stated at a rough guess at 2,000*l.* The plans having been adopted, a committee was formed, with power to add to their number, for carrying out the plans for the proposed rebuilding and enlargement. We understand that the promised subscriptions to the rebuilding fund amount to over 860*l.*, and that the patron of the living has promised to erect the chancel.

Knutton.—A new church at Knutton, the foundation stone of which was laid by Mrs. Snayd, of Keele Hall, in August, 1872, has been consecrated. Silverdale village now comprises a population of nearly, if not quite, 7,000, and at the end of the township of Knutton, furthest removed from Silverdale church, is springing up another village known as New Knutton. The new church is designed for the inhabitants of this latter place. The church, which is of the Early Decorated period of architecture, of plain character, consists of nave, 64 ft. by 25 ft., north aisle, chancel, 30 ft. by 20 ft., organ chamber, vestry, and south porch, and will accommodate 383 persons. It is so constructed that a south aisle may be added at some future time, should the requirements of the place necessitate enlargement. There is a bell turret with one bell on the west gable of the nave. The walling generally is of Alton stone. The roofs are open-timbered, and are covered with Staffordshire tiles. The seats are open benches of pitch pine; the floors are laid with Minton's tiles. The church is heated by hot water, by Mr. Walker, of Manchester. The cost of the church (about 4,000*l.*), together with the new schools and master's house, has been defrayed chiefly by private subscription. The church has been erected from the designs and under the superintendence of Messrs. T. Lewis & Son, of New-

castle, by Mr. N. Bennett, of Burslem, Mr. R. Twemlow being the clerk of the works.

Bilston.—Holy Trinity Church, Ettingshall, having been rebuilt, has been re-opened for Divine service by the Bishop of Lichfield. The building is in the plain Early English style, and consists of nave, north aisle, chancel, and transepts, with an organ-chamber; and a vestry on the north side of the chancel. The material is Gornal stone, with Bath stone dressings; the roof open timbered. The total length of the building is 90 ft.; the nave 25 ft. wide; the chancel and transepts each 20 ft. There is accommodation for 500 persons, including 147 children. The spire has yet to be added when the funds are forthcoming. The total cost at present incurred is 2,750*l*. Mr. Griffin is the architect, and Mr. Horsman the builder, both of Wolverhampton.

Woodgreen (London).—The church of St. Michael and All Angels, Bowes, Woodgreen, has been consecrated by the Bishop of London. The church is a plain building, in the Gothic style, with chancel, nave, and two aisles. It is about 110 ft. long and 60 ft. wide, and will accommodate 650 persons. Its cost was about 6,000*l*. There is a stained-glass window in the chancel, given by Mr. Samuel Page, of Chitt's-hill, Woodgreen. Alderman Thomas Sidney, whose mansion, Bowes Manor, is very near, gave the site, and a large sum of money—in fact, nearly the whole—towards its erection, and a piece of ground adjoining it has been assigned and consecrated as a site for a tomb or manseum for the alderman and his family. The architect of the church is Sir Gilbert Scott, and the builder is Mr. Foster, of Whitefriars; Mr. J. S. Lee, of Woodgreen, being the surveyor.

VARIORUM.

In addition to *Debrett's Peerage* and *Debrett's Baronetage* for the year already noticed, we now have *Debrett's House of Commons* and *The Judicial Bench* for 1874. It appears to have been most carefully compiled and edited by Dr. R. H. Mair, and changes up to the end of March are noted. Giving the history of the new Parliament, it contains a very large amount of new and interesting matter, and must have involved a great deal of labour.—The new number of the *Leisure Hour* says, as to the Portsmouth Soldiers' Institute:—"The old 'Fountain' Hotel at Portsmouth, for nearly 300 years the great resort of naval officers, the scene of 'Peter Simple's' adventures, has now been purchased for a 'Soldiers' Institute' through the exertions of Miss Robinson, who will personally superintend it. Of late years the 'Fountain' has been a den of iniquity, only equalled perhaps by the 'Blue Posts,' burnt down a short time since. Our troops are tempted by more than a thousand gin-shops and public-houses, with dancing-saloons and other worse haunts in this garrison, and have no respectable place of resort. The purchase and transformation of the 'Fountain' will cost 6,000*l*, of which 4,500*l* are already subscribed. It will not be difficult to complete this sum, and we only hope that enough in addition will be at the disposal of the trustees and committee to enable the new club to be made comfortable and attractive."

Miscellaneous.

Ancient British Remains at Ilkley.—Some sepulchral remains have been found at Ilkley. Messrs. Robinson & Sons commenced excavating for a new block of buildings east of their cabinet works in Cowpasture-road, near to the Midland Railway Station. The workmen, in digging out for the foundation, discovered, about 3 ft. deep, several circular walls of rough stones, covered over with slabs of stone about 9 in. across. The hollows contained urns filled with spent charcoal and calcined bones. The excavators also came upon a rude vault lying east and west, and of a rectangular form, covered with a thin stone slab. The sides were built of rough sandstone, without mortar,—depth, about 1 ft. On removing the top covering, there appeared the ancient outline of a human form, as if embedded in ordinary brick clay. In the earth thrown out various jet ornaments were found. A portion of grey stone of a much harder texture than any found around Ilkley, was also turned up, which appeared to be part of some rude statue.

Cookery for the Million.—A public meeting of the supporters of the National Training School of Cookery has been held in the great room of the Society of Arts, the Duke of Westminster in the chair. The report of the executive committee stated that they had undertaken to prepare a scheme for a permanent training-school. They had made additions to their number, and now consisted of the following:—The Hon. E. F. Leveson-Gower, M.P., chairman; Viscount Barrington, M.P., Sir Daniel Cooper, Bart., Mr. F. B. Alston, Mr. James Bateman, F.R.S., Mr. Henry Cole, C.B., Lieutenant-Colonel E. F. Du Cane, C.B., R.E., Captain Hans Bux, LL.D., and Mr. J. McGregor, M.A. The Duke of Westminster said the scheme of the committee had been very successful so far as it had gone. The school was now self-supporting. The waste of food was as great relatively in small houses as in large ones. It was said that the French refugees had repaid us for hospitality by teaching us the use of ox-tails, and he hoped some other "ox-tails" would be found out. He thought the committee had had good luck in meeting with Lady Barker. Earl Granville moved:—"That an appeal be made to all corporations, benevolent, and educational institutions, and the public generally interested in promoting the preparation of food among all classes in the best and most economical manner to place on a permanent foundation a National Training School of Cookery." The resolution was carried unanimously. The Right Hon. Cowper-Temple moved that the following be the vice-presidents for the year, with power to add to their number:—The Archbishop of York, the Duke of Sutherland, the Duke of Beaufort, the Marquis of Lorne, the Earl of Derby, Earl Granville, Earl Cowper, Earl Brownlow, the Earl of Dartmouth, Lord Carington, Lord Wharfedale, Viscount Barrington, Hon. E. F. Leveson-Gower, Sir Daniel Cooper, Mr. R. C. Browne Clayton, Mr. C. J. Fiske, Earl Spencer, and Mr. T. Brassey, M.P. He said England was pre-eminent in the production of good food, but was totally behind other countries in the mode of preparing the food. He thought the time was coming when there would be a general feeling of thankfulness for the initiation of this movement. The motion was supported by several other speakers and passed.

Typhoid Fever and its Prevention.—At the last meeting of the Association of Medical Officers of Health, Professor Corfield, M.D., medical officer for St. George's, Hanover-square, gave an address on "The Prevention of Typhoid Fever." Enteric or typhoid fever, the lecturer said, was a disease of the same class as scarlet fever, smallpox, and the like diseases. They were all contagious, directly and indirectly; and if enteric fever was only occasionally propagated in this way, the reason is because the poison is in great part swamped in a mass of liquid, the discharge from the bowels, and is not, to a great extent at any rate, given out into the air from the skin, lungs, &c. We are told that the discharges in question do not contain the poison when they are fresh; but that it may be developed during their decomposition. Dr. Corfield held that this was an error, and a mischievous one, as it discouraged persons from attempting to destroy the poison by disinfecting the discharges from the patients. The waste-pipes of drinking-water cisterns should end in the open air, and not in drains, as they so frequently do; this he considered, from many facts which had come before him, to be the chief cause of the spread of typhoid fever in London, for the sewer-air, which sometimes contained the poison, came up the waste-pipe and contaminated the drinking-water. In the discussion which followed there was a general consensus of opinion, that the disinfection of the discharges from the patients were most important to prevent the spread of the disease.

A "Steeple Jack" in Edinburgh.—Some one under this new generic title has been engaged on the top of the tall column in the works of the Edinburgh Gas Company, examining the state of the structure with a view to its immediate repair. It seems that part of the stalk near the top has been split in several places by lightning, and it will be necessary to make good the damage by encircling the brickwork with iron hoops. The "Steeple Jack," in order to reach the summit, had recourse to the usual method of flying a kite over the column, which is upwards of 320 ft. in height, and then drawing himself up by a rope, the free end of which a couple of 56 lb. weights were attached.

Manures Natural and Artificial.—This was the subject of a lengthy paper read before the members of the Farnbridge Wells Farmer Club, by Mr. W. F. Catcliffe, F.C.S., Mr. T. H. Lansell, the President of the Club, occupied the chair, and there was a numerous company of farmers in attendance. In treating of the natural manure of the farm, Mr. Catcliffe said he would suggest that a farm-yard should be built on a plan resembling a very flat funnel. The yard should slope very gently in all directions, where a tank or well should be built large enough to store a good amount of liquid. This must be fitted with a pump, and the liquid pumped over the yard in dry weather, thereby adding to the strength of the manure in the middle of the yard, and also of the liquid. Where the cattle feed he would have good slates, roofs properly spouted. The rain-water he would conduct to tubs, as it was always useful the excess or overflow going down a drain. He then treated of artificial manures, and concluded with an earnest appeal to farmers to become more acquainted with the nature of soils and manures. A long discussion ensued.

"The Biggest Thing on Earth."—New York has had a real sensation in the world amusement. The Great Roman Hippodrome, which Barnum announced some time ago, and completed, opened, and described in the local papers. Everybody who had started with amusement at the enormous structure so rapidly spreading itself over the entire block between Madison and Fourth Avenues on Twenty-sixth street desired to get into it when it was opened. A private rehearsal was attended only by about 6,000 people, but at least 50,000 desired to be admitted. The hippodrome or circus seats 12,000. It encloses a space inside the track that is 840 ft. broad and 270 ft. long, and the track itself, laid out in an ellipse, is one-fifth of a mile in length. Rising nearly 20 ft. all round it are the seats for the spectators, divided by grades of upholstery into gallery, dress circle, parquette, &c. Full as it was by an assemblage of 10,000 or 12,000 persons, and brilliantly lighted by hundreds of gas-jets, the scene was one of great interest.

Soot and Sugar in Corrosion of Iron.—At a meeting of the Manchester Literary & Philosophical Society, Mr. E. W. Binney exhibited some portions of the roof of the railway station at Salford, which, after being in place four years, was so much corroded that it had to be taken down. The sulphuric acid, a soot, from the combustion of the coal used in the locomotives, were named as the probable causes of this. About the sulphuric acid he can be no doubt, but as to the soot it is not clear; carbon is used in crucibles to prevent corrosion or oxidation of metals. An iron shank, however, recently sank at sea, "through the action of sugar it is said," upon her iron plate producing rapid decomposition. The iron cannot be thus or in any way decomposed; it is the carbon of the sugar, or the soot, which combine with the iron and destroy it as good iron, reducing it to something like pig, or dross, grating it altogether.

Birmingham Builders.—The dispute between the builders of Birmingham and the labourers has been settled by Mr. Rupert Kettle, who accepted the invitation given by both parties to arbitrate in the matter. The labourers ask for an advance from 4½d. to 5½d. per hour, after full discussion and a hearing the arbitrator made the following award:—

"Upon the distinct understanding that all on the list in trade between the employers and the labourers shall be taken into consideration, and that the men now at work be interfered with, and that on the other hand the men at a strike be taken into employment as usual, a regular without regard to conduct during the strike, and that the rules which shall for the future be the rules settled on May 1, 1872, except that notice for a change given on the 1st November instead of on the 1st December in any year, and that changes made in the 1st April instead of on the 1st May, the other times a notice being altered to suit these dates, I award that wages of the labourers in the building trade in Birmingham be raised from today to the rate of 5½d. per hour."

At the close of the proceedings a vote of thanks to Mr. Kettle was unanimously passed.

The Caterham Lime and Chalk Quarries.—The Caterham Lime and Chalk Quarries are about to pass into the hands of a company, which is now in course of formation. The quarries, which are conveniently situated, situate both the London and Brighton and South Eastern Railways, and about thirteen miles from London, are said to produce fine and chalk of excellent quality, for building and other purposes. The capital of the company is 20,000*l* in 5*l* shares.

Fighting in the Ashantee Forest.—The content with having given numerous excellent illustrations of the late Ashantee war during progress, the spirited proprietors of the *Illustrated News* commissioned Mr. Louis Desanges, immediately on the close of it, to paint a large scene, 14 ft. by 10 ft., conveying features of most striking characteristic of the war,—fighting in the bush. The "Black Watch" play prominent part; Sir Garnet Wolseley and officers have given Mr. Desanges sittings; and, further, aided by the sketches of the artist who went out for the sketches of the late Lord Prior, and the result is a most interesting and of national interest and importance. Various scenes and Ashantee relics aid in rendering the exhibition of Mr. Desanges' picture at Willis's as attractive; and all we have to regret is want of sufficient light to show the picture to advantage.

the Maidstone Surveyorship.—At the meeting of the Town Council, the Mayor said that while he rejoiced in the appointment of Livingstone, their surveyor, to a situation lucrative than the one he held here, he did not help acknowledging the services he rendered, and regretted exceedingly losing him. He said this in his capacity as Mayor. The Mayor, after thanking the Mayor for the compliment he had paid him, respectfully tendered his resignation. The reason of his resigning his office was because he had received an appointment in London, having been appointed the Surveyor of the parish of St. George's, over-square. There had been eighty candidates for the office. Twelve of their number had been selected to appear before the committee, this number had eventually been reduced to ten, and he had been appointed by 55 votes out of 100.

the Steam Thrasher.—At the Flemish Court of her Majesty, at Windsor, is a steam thrashing-machine, worked by a supply of waste steam to the furnace through a self-acting valve, which is the joint invention of Mr. Head and of Mr. Schemiott, a Russian engineer. The engine is worked to its full power by an average consumption of straw equal to five times the usual weight of coal. This is considered to be a highly important invention for all prairie countries as those of Russia and America, where, in wide districts, neither coal nor wood can be had. The Emperor of Russia has given to the farm by her Majesty, on the day of his arrival, to see the machine, and the Duke Alexis carefully examined it, and it has been highly approved of it; as, however, the most competent agricultural authorities are said already to have done. It was exhibited at Vienna.

Birmingham and District Architectural Association.—Last week the members of this association visited the works of the restoration of Martin's Church, under the conductorship of the architect, Mr. J. A. Chatwin. The architect described, by means of drawings, the church as it was originally, and at the time it was cased with brickwork in the days of Charles II., and finally as it was, before the work of restoration now in progress was commenced. He afterwards exhibited and described drawings illustrating the present restoration, and conducted the members over the works. Having passed a vote of thanks to the architect, the members dispersed themselves to the building under the care of Mr. Green (clerk of the works), to study it at their leisure, and to examine the various relics of the old edifice.

Restoration of Nether Hall, Fakenham.—For some months past, works of an unusual character have been in progress at Nether Hall. The architect was Mr. P. Webb, of Ipswich. The plans were submitted to the builders in Bury, the result being that the work was placed in the hands of Mr. A. Webb, who has thus far carried out the work. The work having now made considerable progress, the proprietor, Mr. Greene, gave an entertainment to all Mr. Andrews's men, as a mark of appreciation of their skill, energy, and conduct; and the entertainment took place in the spacious carpenter's shop, where a party numbering upwards of 150 sat down to a substantial repast. Mr. W. Peed occupied the chair, and was faced by Mr. George Sparkes, chairman. Among the guests were Mr. Peedy, clerk of the works, and Mr. O. G. Goodman & Vinal, architects, London.

Bere Regis Church, Dorset.—The church of Bere Regis is in an extremely dilapidated condition, and a committee has been formed for the purpose of carrying out the restoration of the nave and north aisle. Mrs. Lloyd Eglington, the chief proprietor of the parish, has undertaken to restore the chancel and south aisle at her sole cost. A portion of the church belongs to the Transitional Norman period, but is assigned by tradition to King John, who is said to have frequently visited the Royal Forest and Palace which stood, until recent times, in close proximity to the church. The nave roof is bold and striking, and has an historical interest, as being connected with the memory of Cardinal Morion, one of the patrons of architecture during the fifteenth century. The cost of the required works is estimated at 3,870*l*.

New Hospital and Infirmary for Warrington.—The building committee to whom have been entrusted the carrying out of the arrangements connected with the erection of a new hospital and infirmary in the park, met at the dispensary, as reported in the local *Guardian*, in consequence of the medical committee having advised that the proposed site was unsuitable. The medical committee had prepared a report setting forth their views, but as the plans and specifications were completed, and the committee were on the eve of inviting tenders for the erection of the hospital, they decided not to receive the report, but to convene a meeting of the general committee and directors of the dispensary, so as to enable the medical committee to make any statement they wished in regard to the site.

The Indestructible Paint Company.—For the Preservative Solution which this Company sell, they claim, 1, that it is colourless and invisible; 2, in no way does it alter the appearance of the surface; 3, it prevents the growth of vegetation; 4, it renders stone, &c., impervious to moisture; and 5, that it resists the action of the atmosphere and changes of weather, not only preventing but also arresting decay. If they can establish these assertions, their fortune is made, and a great desideratum supplied. The fact that this composition is extensively used in the restoration and renovation of St. Paul's Cathedral, under the superintendence of Mr. F. C. Penrose, says a good deal in favour of it, and moreover affords an opportunity to those who desire to watch the effect of time upon it.

"Down with the Dust."—According to the *Scientific American*, Mr. C. F. Loiseau has disposed of his right to manufacture artificial fuel from coal-dust in Great Britain, under his English patents, for the sum of \$80,000 gold, and a royalty of 25 cents. per ton, when coal sells at from 15s. to 25s. per ton in London, the royalty varying with the price above or below these figures. The purchasers agree to manufacture a minimum amount of 100,000 tons the first year, and after that to keep the market supplied, on failure of which the inventor can manufacture for himself. This at the beginning, supposing coal to sell at the above figures, would give the inventor the neat income of \$25,000 for the English market alone. Mr. Loiseau is organising a company for the manufacture of the fuel in the United States.

A New Danger to Wine Drinkers.—The ordinary processes of adulteration, remarks the *Globe*, are not the only source of danger to which wine-drinkers are exposed. It appears that a poison lurks in the bottles as well as in the wine. At a recent meeting of the Académie des Sciences, M. Fardos denounced the mode in which bottles are cleaned, by rinsing them out with small shot. He has discovered that by this process a carbonate of lead is formed, and this attaches itself so firmly to the inside of the glass that it can only be removed by the action of acids. Thus it happens that acid wines, which are by no means uncommon, dissolve the lead, and the wine-drinkers take the baneful mixture. Instead of lead, M. Fardos proposes that iron should be used.

Hospitals and Ventilation.—Amongst the subjects to form the exhibition arranged by the British Medical Association, at their approaching meeting in Norwich, are "Drawings, Diagrams, or Models illustrating the Ventilation of Hospitals and Private Dwellings." We are asked to invite the contribution of models and diagrams of this kind. Communications may be addressed to Mr. C. Firth, St. Giles-street, Norwich, the Secretary for the Museum Department.

The Opening of Parliament-street.—In reply to Lord Redesdale on this subject, the Duke of Richmond said it was one of the first which occupied the attention of his noble friend at the head of the Department of Public Works. There was no ground for the suggestion that the delay in the completion of the present undertaking was due to any dread on the part of the department that they might be called upon to go farther and pull down more houses in order to complete the improvement. There had been no cessation of the works. Sewers had to be made, and gas and water mains laid before the roadway could be made. These were now in progress, and he hoped that in no long time the work would be completed.

Lichfield Industrial and Loan Exhibition.—An exhibition of works of art and industry has been opened at St. James's Hall, Lichfield, with appropriate ceremonial. The exhibition had its origin in a desire to assist the art class formed in Lichfield in connexion with the Department of Science and Art, and the primary ideas on the subject have undergone considerable expansion. The local gentry took up the subject in a friendly spirit, placing their collections at the disposal of the committee, and the consequence is, says our authority, the *Staffordshire Advertiser*, that the exhibition is one to be warmly commended to the patronage of all who, in these days of cheap travelling, live within (say) fifty miles of Lichfield.

A Hindoo Workman.—A famous Hindoo artisan, named Bhawoo Ballhjee, has died in Bombay. He constructed numerous model locomotive engines, and made an important improvement in the native mode of manipulating gold and silver thread. Formerly the thread was beaten flat with a hammer and then stretched. Bhawoo, however, invented a machine in which the thread passed between two steel rollers, and thus turned out "all of a sort." He also succeeded in making iron water-cocks, having a coating of brass, thereby reducing their cost from 29*rs.* to 9*rs.* His savings amounted to 30,000*rs.*, a third of which was unfortunately lost during the cotton mania.—*Friend of India.*

Proposed Memorial of Archdeacon Paley.—Another effort is being made—and this time with a good prospect of success—to erect in Carlisle Cathedral some worthy memorial of Archdeacon Paley. It is suggested that as all the larger windows of the cathedral are already filled with stained glass, "a handsome stone pulpit, with a suitable tablet, would perhaps form the most fitting memorial of Paley's great service to the cause of religion, and of his connexion with the cathedral and the diocese of Carlisle." The Rev. Canon Prescott is the treasurer of the fund, and it is hoped 500*l.* may be raised. More than half has been subscribed.

Death of Mr. T. Bell, C.E.—Mr. T. Bell, the local engineer of the Bristol Water Works since the foundation of that concern, is dead. Mr. Bell was originally in the office of the late Mr. Simpson, hydraulic engineer. When the latter came to Bristol to project water-works, Mr. Bell was selected by him, on account of his intelligence and energy, to carry the plans into execution. Since then he has been local engineer to the company, and has carried out all the extensions and alterations. Previously to his coming to Bristol, he was engaged on water works at Nottingham. The cause of his death was disease of the heart.

Builders' Liabilities.—Edmund Parsons, builder, was summoned at the instance of the Wandsworth Board of Works. Mr. Corbellis, clerk to the Board, supported the summons. Mr. Arthur Southam, assistant surveyor for Clapham, said the defendant had been building at the rear of Roundell-street, Clapham, and his carts had cut up the footpath, doing damage to the amount of about 8*l.* Defendant's foreman now promised that the footpath should be made good, and Mr. Ingham ordered an adjournment. A similar complaint was made against Messrs. Taylor & Partridge, who were dealt with in a similar manner.

Proposed New Workhouse for Sheffield.—Mr. Basil Cane, Government Inspector, met the House Committee of the Sheffield Union on the subject of a new workhouse. The inspector referred to the over-crowded, badly-ventilated state of the present building, and urged that the time had come when more commodious premises should be obtained.

PERFECT DAYLIGHT.
WHY BURN GAS?
CHAPPUIS' REFLECTOR
IMPROVE NATURAL DAYLIGHT AND SUPERSEDE GAS
P. E. CHAPPUIS,
PATENTEE AND MANUFACTURER
No. 69, FLEET STREET, LONDON.

The Builder.

VOL. XXXII.—No. 1635.

Tattersall's.

ON Wednesday last, the annual Carnival of England took place at the usually quiet little red-bricked town of Epsom. This is a movable feast, although it is not in the Church Calendar, and hundreds and thousands make it a holiday, although it is not recognised by authority. Epsom was long famous as an inland watering-place, and J. Macky describes the life there at the beginning of the eighteenth century in his "Journey through England." "In the morning gentlemen saunter about in their gowns, at the wells, as at Tunbridge, or play at bowls. After dinner we ride out on the Downs, which are very fine indeed, or take a coach to the ring, where the good company of the neighbourhood, in fair weather, and at night a party at raffling in the long rooms, or a bottle at tavern finishes your evening." On the day all classes seem to be beside themselves, and take a violent interest in it, at other times they are heedless of it; games of horses are on every tongue, which horses the day before few had ever seen.

This is the outer view of horse-racing, there is an inner side, which is represented by the headquarters of the racing world, viz., Tattersall's, of world-wide fame as "the Corner," called also the "high-change of horseflesh." Tattersall, the founder of this establishment, was born in 1728, and commenced life as a clerk to the last Duke of Kingston, brother of Mary Wortley Montagu and husband of the famous Miss Chudleigh. The Duke died in 1761, and Tattersall appears soon afterwards to set up for himself as an auctioneer at Hyde Corner, for he sold off the stud of the Duke, on December 14th, 1774, an injunction was obtained to prevent payment of the proceeds to the Duchess, who was then under indictment for adultery. In 1776, Tattersall's establishment was frequently advertised in the public newspapers, and in 1779 he bought the celebrated "Highflyer" of Lord Bolingbroke for £10,000. This purchase is said to have been the turning-point of his fortune, and he was not content with the animal, for he requested the artist who painted his portrait to introduce into the picture a small label inscribed, "Highflyer, not to be sold." He also named the house he built for himself in the Isle of Epsom, "Highflyer Hall." Tattersall now commenced a stud-farm, and opened a subscription for the accommodation of his customers, regulations of which are dated 1780. This was an important one in the annals of the race, for it was then that the first Derby was run. Tattersall's soon obtained the fame that it has never lost, and in "The Belle's Stratagem," performed in 1782, Flatter says, "Oh, yes! I have seen at Tattersall's, as I came by, and there I met Lord James Jessamy, Sir William Wyndham, and Mr. —. But, now I think of it,

you shan't know a syllable of the matter; for I have been informed you never believe above one-half of what I say." The old auctioneer, with all its surroundings, has been swept away, and a new home has been found at Knightsbridge, on what is still called by courtesy the Green, near Albert Gate. The original place was situated by the side of St. George's Hospital, and entered from Grosvenor-place. At the bottom of a rapid descent was a tavern, bearing the appropriate sign of "The Turf." Opposite to this was a gateway, leading into a garden-like enclosure, with a solitary tree, where the horses were tried and examined. The subscription-room was designed by the late Mr. George Tattersall, author of "Sporting Architecture." In the court-yard was a domed structure, containing a pump and the figure of a fox, and surmounted by a bust of George IV. in his eighteenth year. This familiar object has not been destroyed, but was moved to the new buildings, which were opened by Messrs. Tattersall in 1864. The ground occupied at Knightsbridge is nearly two acres in extent, and was laid out by the late Mr. Charles Freeman, the architect, with due attention to comfort and convenience. The frequenters of Tattersall's are drawn from all classes of the community; and although the lower order of "horsey men," the blacklegs and their victims, sometimes make themselves disagreeably conspicuous, it is also the resort of high-minded English gentlemen. Besides the lovers of the turf, all those who buy or sell horses find themselves at some time within the sound of the Tattersall hammer. Mr. Richard Tattersall, the founder of the family, died in 1795, aged seventy-two, and those who knew him praised him for his good qualities. It was said that he died as he lived, tranquil in his mind and benevolent in his disposition; and that from his indefatigable industry, and the justice of his dealings, he acquired a degree of affluence which was exercised for the general good without ostentation. His portrait painted by Thomas Beach was engraved by John Jones, and shows a serious-looking man, dressed like a well-to-do farmer, with his left hand resting on the Stud Book. Richard's son Edmund succeeded his father, to be succeeded on his death, in 1810, by his sons Richard and Edmund. Richard the second turned his attention to the foreign trade in thorough-bred horses, and was the first to form the extensive business of the house abroad. Edmund died on December 11th, 1851. In the next generation, again, Richard was succeeded by his son Richard, who died three years ago, and Edmund Tattersall by his nephew Edmund,—the son of another brother, George,—and now the only survivor of the name, and the head of the firm at Albert Gate.

We ought not to allow the rascality of many of the supporters of the turf to blind us to the fact that a large number of them are men of integrity like Richard Tattersall and John Watson, the training groom, who is described by Holcroft, the author of the "Road to Ruin," and we know that Tattersall's has exercised considerable influence for good over the sporting world ever since it has been opened. Betting has been the curse of horse-racing, and the cause of its chief evils, and, as old moralists, who inveighed against card-playing, dicing, and play-acting, saw good in horse-racing, we may be sure that the sport was then free from much of the evil attending it in the present day. The history of Tattersall's is the history of horse-racing since the end of the last century, but horse-racing in England has a history that can be traced for a long series of years before the foundation of this establishment. The Saxons were fond of their horses, and Hugh Capet was very acute, when, wishing to obtain the hand of Athelstan's sister, he sent that king several running horses, with saddles and bridles, and bits of solid gold. The

favourite season for the races in the middle ages was, as at present, about Whitsuntide, and in the old romance of "Sir Bevis, of Hampton," occurs the following interesting passage:—

"In somer at Whitsontide,
When knygtes must on horschaunce ride;
A cours, let they make on a daye;
Steedes, and palfreys, for to assaye;
Whiche horse that best may run,
Three myles the cours was then;
Who that might ryde him shoulde,
Have forty pounds of redy g'dde."

Several of our early kings were breeders of horses, and in Elizabeth's reign racing was a fashionable amusement; but public races were not established until James I.'s time. Newmarket, York, and other courses gradually grew into celebrity, and Croydon became what Epsom is now—the most popular course near London. More than 200 years ago a meeting of Cavaliers took place near Epsom, according to Clarendon, "under pretence of a horserace." Newmarket early established its reputation as the metropolis of racing, and as it owes its pre-eminence to the variety and excellence of its race-courses it is not likely to be superseded. The ground on the heath has been the property of the Jockey Club since 1753, which was nearly five and twenty years after the formation of the club. Sir Thomas Bunbury, who died in 1821, aged eighty, had been its steward for fifty years. It was early in the Georgian era that the practice was commenced for the Houses of Parliament to adjourn over the Derby-day. It is to this custom that Warton refers in the lines:—

"Is this the hand of civil chiefs design'd
On England's weak to fix the pondering mind,
Who while their country's rights are not to sale
Quit Europe's balance for the jockey's scale?"

Professional jockeys are of late introduction, and it was formerly the practice for gentlemen to ride their own horses. Philip, king of Macedonia, and Hiero, king of Syracuse, may be mentioned among the ancient gentlemen jockeys, and in the reign of James I. private matches between gentlemen were frequent. In later times, "Old Q," the noted Duke of Queensberry, once rode his own horse in a race, and the patriotic jockeys of his day, who,—

"Smelt with the love of the leonine boot,
The cap and wig succinct, the silken suit,"

wished to show their prowess on the course, were numerous. So many different qualities are required to make the perfect jockey that it is not surprising that his class is a small one. He must be small, but strong, intrepid and cool. He must work hard and eat little, and he has the mortification of knowing that when he leaves off wasting, and takes to a natural diet, he will gain daily in weight and spoil his form. However, when the racing season is over, the jockey usually eats to suit his taste, and report tells that Frank Buckle always ate a goose at supper when his labours for the season were ended. John Oakley was a celebrated jockey in his day, and it is said that he was the only man who could ride "Eclipse" well. Buckle won the Derby in 1802 with the Duke of Grafton's "Tyrant" (the betting being seven to one against him), beating "Young Eclipse," which was considered the best horse of his year. Buckle won this race and the Oaks entirely by fine riding, for it was said that Tyrant was one of the worst horses that ever won a Derby. Samuel Chifney was considered the *beau ideal* of a jockey, and John Day acquired the honourable title of "Honest John." Day rode seven stone, but he was the son of a man who weighed twenty. The pay of a jockey is not specially great, but a successful one is sure to obtain large sums from the gratitude of his employers. In 1865 Lord Stamford is said to have engaged Jimmy Grimshaw, a light-weight jockey, at a salary of 1,000*l.* a year. Unfortunately the word "jockey" has obtained an objectionable meaning, and this is, perhaps, partly due to the reprehensible practice adopted by many of betting on the race in which they are engaged.

Chifney, in his "Genius Genuine," admits that he bet against the horse he rode, and George IV. dismissed Robinson, one of the most successful jockeys of his time because he was worth a large sum of money. The names of race-horses are legion, but the fame of only a few becomes a matter of history. If we take the winners of the Derby, which is called "the blue riband of the turf," we find even there but few names which are very familiar to us now. Cromwell took considerable interest in the breeding of running horses, and had for a stud-groom a Mr. Place. His "cotton mare," so called from the circumstance of her being concealed in a vault during the search for Cromwell's effects at the time of the Restoration, was one of the earliest horses known to us by name, and no horse's pedigree can be traced further back than Place's "White Turk." Charles II. imported mares from Barbary, and one of these was the dam of "Dodsworth," which is said to be the earliest racehorse whose pedigree can be properly authenticated. The Godolphin Arabian, who was the founder of some of the best blood among racehorses, was the property of the Earl of Godolphin, who flourished in the reign of George II. "Flying Childers," who was bred in 1715 by the Duke of Devonshire, was considered to be the fleetest of the fleet. He ran four miles in six minutes forty-eight seconds, or at the rate of 35½ miles an hour. "Eclipse" was foaled in 1764, and his reputation was so great that it has been said that English racing may be dated from his time. He was the sire of 160 winners, and a fortune to his possessor, Mr. O'Kelly, one of the foremost racing men of his day. "Herod," like "Eclipse," beat every horse that was brought against him, and also left a numerous and valuable progeny. "Prunella" was the dam of eleven first-rate horses whose names all began with the letter P, and is said to have realised to the Grafton family little short of 100,000*l.* After the death of Charles II. racing had comparatively little support from the Crown or aristocracy. James II., William III., Anne, and George I., were all patrons of the turf, because they supposed it their duty to be so, but it was not until the time of the Duke of Cumberland (the "butcher of Culloden") that royalty took any personal interest in the sport. He was the founder of the Ascot race meeting. Colonel St. Leger founded the Doncaster races, and the Earl of Derby the Derby and Oaks. The Duke of Grafton was one of the most successful of racers, as he won the Oaks eight times, and the Derby four times, viz., with "Tyrant," in 1802; "Pope," in 1809; "Whalebone," in 1810; and "Whisker," in 1815.

The English people, from the highest to the lowest, grow up with a love for the beautiful animal which ministers both to their necessities and their pleasures, and this country has always been recognised by foreigners as the paradise of horses, so that naturally all must take a certain interest in the records of the turf; but unfortunately so many evils have arisen and increased with the growth of horse-racing, that those are happy who are contented to know its history, without wishing to learn too much of its practice.

Tattersall's, as the head-quarters of horse-selling and horse-racing, will always be an important institution, and was never more distinguished by honourable management than it is at the present time. It ought to be generally understood that the firm have nothing to do with betting personally, and that the Subscription-room is managed by a committee of noblemen and gentlemen, and is a club, with the members of which Messrs. Tattersall have no concern in their business, which is entirely confined to the sale of horses by commission.

THE FORTHCOMING CONFERENCE OF ARCHITECTS.

THE presidency of one of the ablest and most successful architects of the day will in itself go a good way to insure success and *débat* to the General Conference of Architects which is to be opened at the rooms of the Institute on the 15th. Many provincial members, and provincial visitors, will feel an interest in hearing the opening address by Sir Gilbert Scott, who has been a name wherever church architecture and church restoration have been carried on in this country, and whose works and reputation are more generally known and recognised, among the professional and non-professional public alike, than is the case perhaps with any other representative of English architectural

practice. It is a fortunate idea also to make the opening meeting the occasion for the annual distribution of the professional honours, the gold medal and the Institute prizes; a ceremony which, bringing with it always a certain interest, a general revival of goodwill and honourable emulation among those concerned in it, will derive additional value in this instance from taking place before a larger and more widely representative audience than usual. It was probably the fact of this ceremony taking place at the opening meeting of the Conference which led to the idea of further illustrating the working of the Institute prize system, by restricting the exhibition of drawings this year to those which had obtained prizes from the Institute, instead of leaving it open for the contribution of working drawings and miscellaneous designs from the profession generally. This decision will result in a display of much more finished drawings than were seen at the former meetings, but the practical interest will be less than on those occasions.

At the same time it will be seen that the tendency of all this is to emphasise very much the position of the Institute of Architects in relation to the country societies, which are invited to join in the Conference, and to give of the whole meeting the look of being an affair of the Institute specially, to which representatives of provincial societies may come if they are so minded. We should scarcely be inclined to say "unreservedly" that this is not in some respects the best way in which the meeting can be worked and regarded; and that the central body, with its long standing, its privileges, and its great advantages, is not fully entitled to take this stand. But as the Conference is supposed to represent the profession generally in this country; and as it is one important object that its decisions and recommendations should be as widely adopted as possible, in order to promote uniformity of professional practice throughout the land, it is right that the attitude and feeling of the provincial branches of the profession should be fully considered also. The part of the programme which we have already alluded to suggests the idea of the whole being framed very much from an Institute point of view; and it is not to be expected that the mass of provincial architects, some of whom of considerable ability and standing, who are not members of the Institute, will look at the matter in exactly the same light. The position of the provincial societies in relation to the central one is, in fact, somewhat vague and anomalous at present, and it would be one of the best works which such a Conference as this could carry out, to do something towards establishing a more definite ground of relation and co-operation between them. The existence of a number of provincial societies, upholding local rules and customs, independently of one another and of the central body, is, of course, prejudicial to anything like joint and corporate action of the profession in the country, or the assent to any leading principles of design or of architectural art. It was on this ground that a contributing correspondent, at (if we remember right) the first Conference, proposed, with great *naïveté*, the annihilation of all the provincial societies as the first step towards accomplishing any permanent good. This is one way of looking at it—a way more downright than practical, and which tends towards giving the metropolitan standard of practice the exclusive predominance; a result at any rate only partially desirable, if it were possible. The other principle of acting, and the only other that would at all tend to bring about the desired end, would be to widen the borders of the Institute a little, to modify the tenour of its rules in some instances, so as to fit them to embrace provincial as well as metropolitan conditions of practice, and to invite the various societies in the provinces to co-operate on a more equal footing with the Institute, and to adopt the part of branches of the latter for carrying on its work more effectively throughout the country. This was the system strongly urged by an eminent French architect not long since, in regard to the similar relation between the profession in Paris and in the French provinces. But in order that such a unity and co-operation may be carried out, if it is, we are inclined to think, necessary both that the metropolitan body should show a disposition to take the conditions of provincial practice further into consideration, and that a greater degree of cordiality should be manifested towards the provincial members of the profession. We should be the last to recommend

that the Central Society should in any way arrogate from its position as the most important and leading body of the profession. But we have complaints, from various quarters, of a want of such cordiality—of a *de haut en bas* style of reception accorded to the provincial brother (much apparent at the ordinary meetings, perhaps, than at the conferences), which, if such complaints are duly founded, argues somewhat amiss in the working or the spirit of the Institute and which at all events cannot serve to further the end of professional union, in the larger sense of the word. Without attempting to pronounce as to how far such complaints are just, we may their existence, as a fact to be considered, any attempt made to remove the obstacles to the unanimity of professional practice.

The last Conference dealt especially with practical subjects; in the ensuing one the artistic element of architecture will be somewhat more represented; for the paper, "Professor Lewis, on the second day, 'Education of Architects,' brings up a subject which cannot but embrace, in the discussion well as in the paper itself, much which bears on the position of architecture as an art; besides this, we have Mr. Stevenson's paper, the fourth day, 'The recent Re-action of the English Architecture,' in which no doubt the question, 'Can these dry bones live?' will be fully applied *à propos* of the Queen Anne school, and its somewhat unlooked for 'resuscitation.' What are the lecturer's special qualifications for the treatment of so difficult and perplexing a subject we do not as yet know; if in the paper or the discussion following it, any ray of light is thrown upon the scene which may serve to give some logical *locus standi* for the modern architect, it will be a notable day for some of those conscientiously-minded students who are too much originally to be satisfied with a business routine of professional life, and are at present obliged to content themselves with doing good things without being able to find any good reason for them. 'The professional responsibilities of architects' will be treated of on the third day by Prof. Kerr, who may at least be expected to deal with the subject *con amore*. This question recently occupied the attention of our maritime professional brethren, and we drew attention to a little while since to a long essay on the subject printed in the 'Revue Générale d'Architecture' (see p. 145, ante). It is only to know and to fix our own position, but we, the public, our employers, to know it when fixed; and as reporters for the press are to be invited to attend, we hope will take due note of a subject which concerns the client as well as the architect.

The mention of the relation of the architect to the public suggests a modification of the conditions of carrying on the Conference, which might not be too late, perhaps, to apply, on the present occasion, and which, at all events, on future occasions might very well be tried, cannot be expected that the general public should be much interested in questions regarding routine of professional practice; and on that account it would be better that these should be discussed at strictly professional meetings. We think it would be worth while to try experiment of advertising, and opening to the public at large, one or two of the meetings, which subjects belonging purely to the outside of the profession are to be discussed and illustrated. It is a standing complaint that the public are ignorant of, and uninterested in, the art of architecture. They are certainly ignorant, for the most part, of its principles and history, but uninterested in it we do not think they are; and it would be worth while to try whether a general audience could not be got to listen to a paper or two by architects eminent for their artistic abilities, illustrating some phase in possible to render papers, and the discussions they would give rise to, interesting or suggestive to the professional portion of the meeting. This would be the same principle which has been found, in one sense, so successful at the Church Congress where ecclesiastics lecture and hold argument on subjects connected with Church and Church polity, for the benefit of audiences of laymen. There is little fear that the discussions on the architectural platform would reach anything like the point and nature of religious hostilities; and so far the mean-

might be duller, certainly, than those at the Architectural Congresses; but we cannot help thinking that something might be done in this manner to popularise architecture and architects, and to render the Architectural Conferences a means of gratifying the profession with the public as well as with each other. It would be necessary to engage a larger room specially for the public meetings, but the increased attendance which a publicity would induce, even on the part of architects, might render it quite worth while to do this. We leave the idea, at all events, for the consideration of those who may be immediately concerned in the working of this or future conferences.

FURNITURE IN THE INTERNATIONAL EXHIBITION.

The display of furniture and decorative art in Series VII. and IX., though less varied and interesting in some ways than on former occasions, exhibits, in regard to the furniture in particular, a decided improvement in really artistic qualities of treatment, a reaction from taste for very angular and ostentatiously carved forms, which was very lately so prevalent. A great part of one side of Room VII. is occupied by a complete scheme for the "decoration of a room," by Messrs. W. B. Simpson & Co., including a wainscot, door, wall-paper, and place. The wainscot consists of a dull reddish wood for the stiles, with panels of a darker wood with a Japanese "key-pattern" diapered on the surface, and longitudinal lines above, filled in with ornamental tiles with a strong yellowish ground. The paper is a conventional representation of leaves and fruit, in tones of grey, green, orange, and red; the effect so far is very rich and harmonious without being in any degree too pronounced. The door, with conventional ornament painted in white and very light grey on a dark ground, though both pleasing and novel in itself, is out of keeping with the rest, and seems to have, in regard to colour, no relation to it. The yellow of the tiles in the wainscot and fire-place is a difficulty in this way, and are not very harmonious with an extended scheme of decoration. In the furniture the prevalent misadventure is gilt process is of course a good representation. A pleasing specimen of this of execution, with inlaid and gilt ornament, is the cabinet and secretaire by N. W. Phipps (3,927), for Messrs. Gillow & Co.; but painted panel figures would have been much better with a merely gilt or decorated background, and not an attempt at landscape. There is a great run on picture panels in the room just now, but it does not do to repeat too much in this way. Near this Messrs. Cox & Sons show a hanging cabinet of Italian detail, with figures and lotus-plants on a ground in the panels, and the "winged" device filling up the cornice, which has a character: a quality which the adjoining work of Messrs. Gregory & Co. (3,936-7-8) are in want of. Mr. Shoolbred's Italian cabinet is a large and ambitious article in solid wood, very well finished and good in detail design and idea, but somewhat weak in the treatment of the panels of the lower part, is the best point. A striking contrast is seen in every way a higher class of thing, Messrs. T. & H. Scott's "walnut and mahogany sideboard" for the Midland Hotel (3,937, Gillow & Co.). This is a noble, massive piece of furniture, in unpolished wood, generally in feeling, but partaking of Jacobean character in detail; the carved ornament is richly wooden in character, and all preserve the appearance of being sunk from the surface and not applied: the inlaid panels have a soft effect; the only error is in the ornament of overhanging ogee of the cornice, which is ragged naturalistic foliage gilt: it would be worth while to alter the decoration of this which is scarcely in keeping with the rest: this is a piece of furniture well worthy of a permanent establishment in which it is to be placed. The Oriental furniture by Mr. School. (3,962-5) is pretty and effective, but rather unity of motif and style; the large cupboard or wardrobe, with its heavy angle shafts mingling of light and dark woods, is a fine piece of work, however. Another piece of furniture for the Midland Hotel, in "ebonised" style, is exhibited (3,940), designed by C. T. Henry: this is not equal to the sideboard before mentioned, but is a good piece of work, and the panels are properly and taste-

fully painted. H. & J. Salour's ebony cabinet inlaid with ivory (3,961) is a beautiful piece of execution in the "architectural" style, with a good "plan," but the ornamental inlay is very poor and commonplace in design; nor can more be said for the inlaid piano placed in the middle of the room (3,942), designed by Mr. T. Jacob, but which really has very little "design" about it. There seems a singular lack of novelty or fancy in the treatment of pianofortes generally, even by firms which turn out very artistic work of other descriptions. The carved chair, "with seat and back of appliqué blue silk on darker blue velvet, worked by the "School of Art-Needlework" (3,969), is an effective thing, with a little too much blue about it, though this goes well with the dark (ebonised?) wood. The sideboard in stained oak by W. S. Morton & Co. (3,954) has a good deal of originality in the treatment and character of the detail; the carved ornament is kept very flat, in panels with ebony margins; there is a distinct style about the whole which is commendable. The brown and silver cabinet, i.e., silver-stencilled ornament on a brown ground, by Messrs. Gillow & Co. (3,935), is a very pretty work, with some novelty in the effect; but it is a style of ornamentation which would almost require to be carried out throughout an apartment, for scarcely anything else would go with it very well. Some specimens of glass-cutting and engraving in one of the centre cases are good; those of Pellatt & Wood being the most showy, those bearing the name of Barnes the most artistic. What the glass articles of Messrs. Phillips & Pearce, in another case, were sent here for, it would be difficult to imagine. A massive stand chessboard with carved "men," by F. Jurschina (Vienna), is a first-rate piece of workmanship, but presents nothing new in fancy, the pieces taking the form of armed men, &c.,—an old enough idea. The specimens from the Worcestershire Porcelain Works, which fill a case, show a very pleasing tone of light drab ware, with coloured figures of birds, insects, &c., in relief, but the whole have the effect of being somewhat tame imitations of Oriental work; the shapes and outlines are mostly good. In Room IX. Messrs. Doulton & Co.'s pottery claims recognition for richness of tone and surface in many of the articles (vases, &c.) exhibited; their tile decoration for a wall has merit, and the figures of "Venice" and "Florence," introduced in large panels, are of a higher class, in design and feeling, than we generally see in this kind of work. There is, of course, no lack of painted tile designs, of which those designed by Mr. Moir Smith (3,711-5-6), small series of subjects, are fanciful and pretty, and suitable for the mode of execution. Messrs. Minton, who send these, also exhibit a case containing what may be regarded as experiments in the artistic treatment of porcelain; a collection of ware showing the first introduction of working in coloured porcelain clays. "The plateau, with a female figure watering flowers, executed by M. Solon, is the first specimen ever made in which all the colours are obtained by staining the porcelain and firing them in the biscuit oven." The articles ornamented by this process would, no doubt, find many admirers among the public; but the artistic result is not worth much, as it is simply an attempt to give to pictures on tiles the realism and freedom of water-colour drawings on paper, which of course cannot be done. There is a style of design, of a conventional nature, which can be carried out with great effect on tiles. The attempt to go beyond this, and to make tile-pictures, is rather a predominant error in works issued from "Minton's Art-pottery Studio"; though it is natural that a house which has so long occupied such a position in the art should be inclined to act on the "nothing like leather" principle, and try to do everything on tiles. Other big panels of tiles, painted over with flowers and animals, are scattered about—things of which no one can see the good. The culmination of pottery-art here, however, is the great chimney-piece and looking-glass frame, with architrave round, in glazed pottery, with large painted tile-subjects in panels, the whole intended for the Holborn Viaduct railway station. The merits of the work seem to be divided between Messrs. Maw & Sons and Messrs. W. B. Simpson & Sons; as to the result perhaps the only thing that can be decisively said about it is that it is very large. We have before pointed out that the blunt edges and cloudy uncertain contours of glazed pottery preclude any success in imitating in this material the effect of architectural carved ornament; it

must have its own style of design, if it is to be used successfully. A rather similar remark may perhaps apply to Mr. Turpin's elaborate specimen of circular parquetry design laid down in this room; the design is too florid and carpet-like, and does not follow forms natural to wood design. The small stained-glass fire-screen by Messrs. Cox & Sons, to be seen here, is as pretty and suitable a piece of furniture for a room as could be seen; it is a repetition of an idea illustrated by the same firm last year, but with improvement in the treatment of the wood framing. The specimens of embroidery from the School of Art-needlework fill two cases, with large pieces of work in very bright and rich materials, the designs partaking chiefly of the character of large floral spray patterns: the whole are stated to be shown "as examples of artistic work," and not of mere manual skill. The artistic element here, however, is not so prominent as this profession would seem to indicate that it should be; and we should say the handiwork was better than the design. The smaller pieces, borders, &c., show the most taste. As specimens of high-class ornamental design and art-workmanship, it would be difficult to surpass the damascened work of Zaloga, lent by Mr. Morrison. All the qualities which should characterise good ornament are present in this work, in which the symmetry and finish of Renaissance design are combined with a richness and effectiveness of tone and general treatment rather characteristic of Gothic work. The execution is really faultless; and there can be no question that in these specimens of a form of art but little practised at present we have some of the finest modern art-work to be found in any school or country. THE METROPOLITAN BUILDINGS AND MANAGEMENT BILL. SINCE the inquiry was commenced before the Select Committee of the House of Commons, various parties have attended the committee of the Board of Works, and the Board, in consequence, have determined on a variety of amendments, and submitted them, in a printed form, to the select committee. Some opposition will be removed by the alterations which have been made. All the clauses relating to "fire-resisting" buildings are taken out. A clause authorising the Royal Institute of British Architects to examine candidates, and grant certificates to persons competent to perform the duties of surveyors of the Board under the new Act, is inserted; and the clause of the present Act which entitles a district surveyor, if prevented from attending to the duties of his office, to appoint, with the consent of the Board, some other person as his deputy, is brought back. Tuesday last was occupied by the examination of Captain Shaw, of the Metropolitan Fire Brigade, who spoke strongly in favour of the adoption of those clauses in the Bill with reference to the construction of buildings for the purpose of preventing fires. At the close of Captain Shaw's evidence, the Committee adjourned until Thursday, when evidence on behalf of the promoters of the Bill was again taken, and the Committee further adjourned until Monday next, when the investigation will be resumed. FARMSTEADS AND FARMHOUSES. ARCHITECTURAL ASSOCIATION. AT an ordinary general meeting of the members, held last Friday evening, the 29th ultimo, Mr. H. O. Boyes in the chair, Mr. Chapman Field was elected a member. The Secretary (Mr. Bowes A. Paice) announced that Mr. E. J. Tarver, President of the Association, had been nominated to represent them at the forthcoming Conference to be held at the Royal Institute of British Architects; and that during the Conference week there would be a meeting of the Architectural Alliance, the committee being Mr. Phené Spiers, Mr. Roger Smith, Mr. Rickman, and Mr. J. Douglass Mathews. Mr. Colville Browne, M.R.A.C., then read a paper on "Farmsteads and Farmhouses." In the course of his remarks he said that unfortunately architects were seldom called upon to design entirely new sets of buildings, additions being generally carried out to buildings under repair. He would first note the principles in view, and then pass on to the consideration of the manner in which the work should be carried

cut. Farming might be divided into five classes: 1. Pastoral, which comprised breeding and rearing; thus sheep-farms in the Highlands, that of cattle in the Lowlands. Although very extensive generally, these farms needed only the most primitive accommodation, viz. stells, which consisted of double walls, with trees planted inside, shelter being the first consideration; and an enclosure to be used when marking the sheep. 2. Cattle-farming demanded the next simplest forms of buildings, viz., erections wherein to store the grain grown in the rich level of clays between two hills, such as the Carse of Gowrie. 3. Dairy farming, where more expensive buildings were required. 4. Suburban farming, which was entirely different from any of the foregoing, it very frequently being the best policy to sell the straw in town and cart dung back. A new milk-trade was generally allied to this branch, of which one great feature was economy of litter, a point of great importance, necessitating great care in the planning of the various sheds and yards. 5. Lastly, they had mixed husbandry, or ordinary common farming. The two last were the most important and the most common.

An architect should always bear in mind the five important objects of farm-buildings: (1) the comfort and growth of live stock; (2) the accumulation and preservation of manure; (3) the preparation and storage of grain; (4) the storage of cake, artificial manures, and wool, and duplicates of steam-tackle; and (5) economy of labour, also of straw, roots, and water. The site of the buildings depended upon the size of the farm. Thus, if the occupation be very large, the homesteads should be scattered, and field-barns should be used. With regard to the form of the farm, as a rule the buildings were needed in the centre, but certainly in the centre of the arable land. Variations would arise according to the supply of water as food and power; and with respect to the inclination of the ground, a sheltered site was the most preferable. As straw was the most bulky and heaviest item on the farm, as a matter of course it demanded their first attention, the next bulky item being roots. With regard to the rickyard it should be level, and might be surrounded by an ordinary wall, although a sunken fence was better for circulation. Stables need not be provided for any crop but wheat, and as a rule they would provide small round stables in the North, whereas in the South long stacks were the rule. Concerning the covering in a rickyard, this would pay only when the whole of the stacks were brought home, and when the locality was subject in the harvest season to sudden showers. A cost of 1s. 4d. per acre to 1s. 6d. would serve as a basis of calculating the limit of expense in a yard, roofing, &c. The use of the barn was to store grain and prepare it for market, and its size would be regulated by the class of farming; its doors should be wide and high, and the foundations of the building vermin proof. The chaff-house should be partitioned off from the lower barn, over the thrashing-machine.

With respect to the cattle-sheds, byres economised space; and as a caution he would state that too much room in byres enabled the stock to turn round, and so caused inconvenience. Where many young beasts were kept yards should be provided. The turnip-house was convenient for cattle if placed at the end of the boxes, or central to them. As to sties, he would caution them against the very common error of making them too small; but the farrowing pens should be large. The store-sties should be arranged so that a passage should be made into the fold yards, for the convenience of turning the pigs out. The calf-house should be roomy and well ventilated. He concluded by giving a detailed account of the expenses consequent upon what he had urged.

Mr. Phené Spiers, after referring to Mr. Browne's success at the Agricultural College, Cirencester, where he had earned honours, said that there certainly was a great deal to be learned before any of them could attempt to plan a farmstead, as was fully proved by the interesting paper of Mr. Browne.

Mr. S. Flint Clarkson regretted that the question of farmhouses had not been more fully treated of in the paper. It had been stated by Mr. Browne that the cost of the building should be kept as low as possible, and that economy was the main thing to be considered; but, as it was said that certain parts of the building demanded that special cautions should be taken, they could not be treated in a temporary manner.

Mr. Salman, referring to a point in the paper

as to the advantages or disadvantages of covered yards, said that it was a disputed question as to whether covered or uncovered yards were the best. Manure was worth more if the rain was kept from it than otherwise; and it cost less to fatten cattle if they were covered over.

Mr. A. T. Taylor was of opinion that as regarded the decoration and architectural features they could not be introduced into a farmstead. The plainer the building the better, for the farmer would not spend a penny upon ornamental work. With regard to the question of sheds, he thought that it was well to have some covered and some open. In a farmstead a constant supply of water was a matter of great importance; and thorough ventilation in stables was absolutely necessary, this being in a great measure effected by having an opening in each stable above the horses' heads.

The chairman believed that as regarded the question of closed or open yards, it might be arranged to have a large canvas over a yard so as to cover over a portion or the whole of it, as might be required according to the state of the weather. It had been suggested that an architectural feature might be given to buildings of the kind described in the paper; but he had a dread of introducing anything of the kind, for they had suffered enough already by introducing architectural features in buildings intended for such purposes. The more fitted such buildings were for the purposes intended the more picturesque they were.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting, held last Monday evening, the 1st inst., Mr. John Gibson in the chair, the following gentlemen were elected:—Messrs. Robert Anderson and J. G. Turner (Fellows); Messrs. C. G. Maynard and C. W. Richardson (Associates).

The Secretary (Mr. Charles L. Eastlake) read a letter which he had received from Mr. George Godwin relative to the "Owen Jones Memorial," enclosing another letter from the Secretary of the Memorial Committee, requesting the assistance of the Institute in furtherance of the object of the committee.

Mr. Dawson desired to know if the papers which were to be read at the forthcoming Conference of Architects were to be printed before the days of meeting? It was scarcely practicable, he considered, for discussions to take place upon the subjects to be brought forward unless some intimation were given of the nature of the papers to be treated. He alluded especially to the notice called the Report of the Conference Committee.

Mr. Eastlake, in reply, said that the principal papers to be read were entitled, "Professional Education," "Professional Practice," and "Architectural Art." In consequence of their brevity, they would take but little time to read, so that plenty of discussion was fully expected upon them. The question of printing the papers had come before the committee, and they had decided that such printing should be done.

Mr. Gates thought it desirable that the report of the committee should be in the hands of the members before the first day of the meeting of the Conference, and they might have an opportunity of preparing themselves to comment upon it. He believed that it was the intention of the committee to send their report to the council.

Mr. T. H. Eagles (associate) then read his Institute Prize Essay on "Vaulting."

In the discussion which followed, Mr. Phené Spiers said that the ribs in French vaults were almost always domical, the setting of domical curves being an easy matter. Besides the instances given by Mr. Eagles, there were one or two other vaults worthy of mention. At the church of St. Pierre, at Bernard, there were in some elaborate examples to be seen, and in France, generally speaking, there were several fair examples of vaulting. In Westminster Abbey it was found more convenient to cut both the ribs and the web out of the same stone. As to the statement that the first germ of the clustered pier was given in the nave aisles of Peterborough Cathedral, he thought that this was incorrect, as the clustered pier was taken from the union of several orders of architecture.

Mr. Dawson said that with respect to curvatures, it appeared to him that the differences that were met with in them could easily be overcome.

Mr. Morris considered that the subject which

had been treated was of an excellent character, although a difficult one; and he trusted that Mr. Eagles would continue the interesting subject at some other time. He thought that Mr. Eagles had gone further into the question of Roman works, so as to develop their tendency to the rib drawings, and the way in which they applied their centering; it would have been well. He considered that very beautiful work was done by the Romans. Coming to the work of the English, he was hardly aware that the Normans ever really mastered the subject. He did not know that there was any standing example of an English cathedral vaulted during the twelfth century. There were some examples of vault shafts very frequently found in Norman work; but he was not aware that any such cathedral existed. The question then arose as to whether the Norman building really filled in the vault, or whether it was his intention simply to throw a gable of brick or stone. If it was only to throw a gable, it would tally much with the simple arch, whether it was the intention of the Norman builders to satisfy this by throwing the gable, with the rib, perhaps, in two parts, with a sort of double moulding, and so roof the nave of the church in the same way that the nave of the Welsh Castles were covered in. Since Godwin's time to the present, there had been very few prize essays that had been presented to the Institute that were worthy of any commendation at all, and for that reason Mr. Eagles' efforts were very commendable. The subject was one that justified and required more amplification. If there was one point more in another in which the Institute was weak, it was in the preparation of papers; and therefore (Mr. Morris) believed that it would be well to encourage successful essayists like the one that had just listened to, and who had that night such an excellent example.

The chairman remarked that if the subject were pursued further, great good would result therefrom. Speaking for himself, in his early days, he had had a considerable amount of vault-work to do; and had also assisted Sir Charles Barry in the building of the Houses of Parliament, where every stone had to be set geometrically, and he thought that it would be a good thing if some members would go into the question more fully, and give papers on the subject. Whilst on the subject of papers, he would recommend the members to furnish their papers having reference to construction, they were generally given for he believed that very element of their art was to be founded on constructive appliances. He then announced that on Monday, the 15th inst., would be the closing meeting of the session and the opening of the Conference, when the distribution of the Institute prizes and medals would take place.

ST. MARYLEBONE NEW SWIMMING BATH.

This building is now open to the public. It is situated in Seymour-place, New-road, and forms an addition to the already existing bath establishment of St. Marylebone Vestry.

The bath-room is 85 ft. long, 41 ft. wide, 28 ft. in height from the platform round the bath to the apex of the roof. The sides of the bath longitudinally have deeply-recessed arched openings, which contain the dressing-boxes, average 4 ft. 3 in. long and 3 ft. 6 in. wide. All fittings of these boxes are of ebony, and the metal-work is electro-plated. The arched openings continued along the end walls, and the recess in this instance are filled in with ornamental tile-work. The piers of all the arches are three panels, filled in with blue hand-painted tiles, with variously-designed representations of birds, fishes, and water-fowl.

The roof is supported by cast-iron semi-elliptic ribs, ornamented with gilded scroll-work panels. The size of the bath itself is 73 ft. 26 ft. and depth of water 6 ft. shelving up 4 ft. 6 in. The diving-board is 9 ft. above water, and there is another spring diving-board 5 ft. lower. The bottom and sides of the bath are covered with glazed tiling in various designed patterns, and the hand-painted border above the water-line, 21 in. wide, forms a novel feature in the building, representing, it does, the appearance of an aquarium, with fishes and rock-work, all of which have been sketched at the Brighton Aquarium for the work.

The interior of the building is decor-

There is now in hand an available cash balance of 1,900*l*. The amount due from subscribers paying by instalments, at the collection of which has been for a time suspended, is about 500*l*, and the value of fifty copies still remaining unsold is about 100*l*. The total of these three items is 2,400*l*, thus making the fund ultimately available about 2,400*l*. The estimated expenditure, including the additional half-guineas per page, would be about 3,080*l*, showing a certain deficiency of about 680*l*, which might be readily met by a surplus of the cost of the edition.

With this sum in hand, the certainty that no further funds can be raised while the work stands still, and the assurances of Mr. Papworth, that, with the offers of assistance from all quarters, he is encouraged to go hopefully forward, the Committee have no hesitation in recommending the expediency of at once increasing the rate of payment for text to 1*l*, 1*s*, 6*d*. per page, and of requesting

Mr. Papworth to devote himself to hastening the production of the work."

The chairman then moved the following resolutions:—

1. That the report and balance-sheet now read be received and adopted.
2. That the committee be authorised to proceed forthwith with the production of the "Dictionary of Architecture," in accordance with the recommendations of such report.
3. That the moneys now in hand, and those to be hereafter received be appropriated towards forwarding the completion of the "Dictionary of Architecture."
4. That in the event of any deficiency ultimately arising, the required amount be raised by the equal contributions of the subscribers, and those members only who may so contribute to be entitled to receive the portions produced by means of such calculations.
5. That any subscribers under the proposals of 1869 and 1870, who, under the altered circumstances, may desire to withdraw, shall, on returning unimpaired the parts which have been issued to them, receive back the subscriptions they have paid.
6. That from this time the price of the "Dictionary of Architecture," including all which may hereafter be published by means of the present available funds, shall be twenty guineas, ±2l.

In the discussion which ensued, Mr. Sydney Smirke, R.A., Professor Hayter Lewis, Mr. O. Hansard, Mr. C. O. Nelson, Mr. T. H. Wyatt, Mr. T. H. Watson, Mr. Wyatt Papworth, Mr. Arthur Cates, and others, took part, and the resolutions were unanimously adopted. In the course of the proceedings it was suggested that, as had been done on former occasions, a list of words or articles should be issued with the next part, and information invited; and it was urged that each individual subscriber might add to the value of the Dictionary by forwarding to the Committee such special information as he might possess.

The following gentlemen were elected as the committee and officers:—

Honorary Committee.—E. M. Barry, R.A., David Bryce, Decimus Burton, Benjamin Ferrey, George Godwin, A. J. Beresford Hope, M.P., Edward T. Anson, Sir C. Lanyon, T. Gambier Parry, J. A. Pictou, T. H. Wyatt.
Advisory Committee.—G. Atkinson, J. M. Victor Anderson, A. W. Blomfield, F. P. Cookerell, George Corson, T. L. Donaldson, Octavius Hansard, Horace Jones, Professor Robert Kerr, Professor T. H. Lewis, Augustus Pugin, C. O. Nelson, H. R. Newton, Wyatt Papworth, James Salmon, Sydney Smirke, R.A., Alfred Waterhouse, T. H. Watson, J. W. Whiteford, Thomas Worthington.
Auditors.—T. H. Watson, Charles E. Pisk.
Honorary Treasurer.—Sydney Smirke, R.A.
Honorary Secretary.—Arthur Cates.

And after a cordial vote of thanks to the chairman for his able conduct of the business, the meeting separated.

GENERAL CONFERENCE OF ARCHITECTS, 1874.

The opening meeting of the Conference invited by the Council of the Royal Institute of British Architects, will take place at 8 p.m. on Monday, the 15th of June, and will be followed by other meetings on the 16th, 17th, and 18th. The proceedings will terminate on the 19th with a public dinner.

Each Architectural Society in the United Kingdom is invited to send a delegate to represent it officially at the Conference.

During the Conference an exhibition will be held of architectural designs and drawings, for which prizes have been awarded by the Institute. Of the value of this we are doubtful.

The time occupied by the Conference will be allotted as follows:—The first meeting will be devoted to opening remarks by the President; presentation of the Royal Gold Medal, and Institute prizes. On the second day the subject for discussion is "The Education of Architects": paper by Professor Lewis. Third day, "The Professional Responsibilities of Architects": paper by Professor Kerr; report of Conference Committee on "The Employment of Surveyors." And, on the fourth day, "The Recent Reaction of Taste in English Architecture": paper by Mr. J. J. Stevenson.

The following members of the Institute are appointed to act as hon. secretaries to superintend the exhibition of R. I. B. A. Prize Drawings:—T. Talbot Bury, Fellow; J. D. Mathews, Associate. Arrangements for public dinner, O. Hansard, Fellow; C. H. Cooke, Fellow. Arrangements for visits to public buildings, H. Currey, Vice-president; T. Roger Smith, Fellow.

The New Barracks, Guildford.—The War Department being about to commence building the barracks for the Guildford military depot centre at Stoughton Farm, recently advertised for bricklayers and labourers, to begin work on June 1st.

BRITISH ARCHITECTURE AND CLIMATE.

THE difference between the motives of Classic architecture and of that which we term Gothic is so marked, and, we may add, so well known, that it may at first seem trite to dwell upon the subject. Yet there are some considerations on which, even if they are not absolutely novel, it is worth while to reflect. By tracing the connection that exists between very simple matters, fresh value is often given to each; and it seems to us not only that the disputes between what is called Classic and Gothic taste are capable of being narrowed to very close limits, but that a very luminous suggestion as to the direction in which we should seek for the development of an appropriate national style of architecture is to be derived from the study we now propose.

We shall probably carry with us the assent of all our architectural readers in saying that the main difference between the motives of the two styles to which we refer, as exemplified in the most characteristic buildings, such as temples, churches, and palaces, arises from the requirements of climate. In Greece and in Italy, the greatest enjoyment of life is *al fresco*, or in the open air; *sub dio*, as the Romans called it. The order of festivals in all ancient religions that prevailed around the shores of the Mediterranean had reference to this habit of the people. The burlesque Roman saturnalia, in which the world was for a few days turned upside down, was a winter festival. It was, indeed, one proper for the wintry season, and its rude and boisterous mirth is hardly to be recognised under the name of Christmas, by which festivity the Popes at once replaced and commemorated the saturnalia. But the great solemn festivals of the year fell between the months of April and September. In Palestine, the limits were fixed by the important solemnities of Easter and of the Feast of Tabernacles. In Italy, to the present hour, all the local *feste* are held during the same balmy season. And the importance of the moon, as enabling the worshippers to prolong this gathering, or to seek their homes, without being surprised by the darkness of the night, was recognised in the fact that the early division of the year, for all sacred purposes, was into lunar months.

The architecture which, in the temples of Greece, attained a degree of artistic symmetry and delicacy of detail that impresses us with a sense of the sublime, was developed in exact accordance with the habits of a summer-loving people. If we look at one of those rude stone calendars, a representation of which may be found in such writers as Scaliger, under the title, "*Hemerologium Anni Julii*," we shall see the emptiness of the winter months, as to festival days, contrasted with the full consecration of the summer months to that species of worship that was associated with out-of-door festivity. Thus in July, after the three *diei nefasti*, which followed the Kalends, almost every day is marked with the word *Ludi*. September is nearly as full of fête days; each of these two months containing a series of four days of *Ludi circenses*, when the people were entertained in the amphitheatres.

This mode and habit of life found its appropriate expression in the architecture of the country. Temple or theatre, — the public buildings which formed the nuclei of the great summer gatherings were vast, uniform, and simple. For the one purpose of common worship or common enjoyment, a great court or hall was required, separated from the outer world by a barrier that should not exclude the sight of what was going on within, or even surrounded by special accommodation for spectators. Thus we have the *cella* and the *peristyle*, the home for the God, or shelter for the sacred symbols; the altar before the fence; and, for the worshippers, that shelter from the vertical rays of the sun, which is the first necessity for enjoyment, or even for safety, in the rainless summer of Italy.

Under these conditions it is easy to understand the grand simplicity of the Classic style. Buildings required for such purposes as we have mentioned were of a magnitude and a grandeur that ennobled their ruins, and have preserved their types unchanged down to our own time. The great temple at Paestum might even now be used for worship. But the domestic architecture was of a less colossal character; and the ravages of war, earthquake, and decay would have left us with comparatively little knowledge of this part of the ancient art, but for the full

details that the ashes of Vesuvius have preserved within the walls of Pompeii.

The point in which this motive of Classic architecture especially concerns our present inquiry is, that there was nothing to demand anything inconsistent with unity of order. However magnificent a building, there was, in fact, neither need nor room for distinct stories. Even in domestic buildings, where bed-chambers were requisite, the mode in which they are packed away into odd corners so as not to interfere with the fullest possible development being given to the *noble piano*—the reception-rooms in which the Latins lived so much in public,—something extremely different from either the taste, or the sanitary requirements of the actual civilisation of the West. To this hour Italian wealth and rank often content themselves with sleeping apartments which few London servants would for a moment consent to occupy.

With the unsettled climate of this country, of the north of Europe, and of great part of France, the conditions under which the architect works are entirely changed. Winter here bears a much more important relation to summer, and the uncertainty of the seasons is so much more pressing than the regularity, that our houses and public buildings have to meet conditions not present in Italy. If we depended on fair weather for our religious ceremonies, the would be rudely aborn and clipped of their dignity. Even if we were content to restrict our festivals and great assemblages to the summer, we should obtain no certitude by so doing. In fact, July, which we have seen to be the chief festival month of the ancient Roman calendar, is with us the wettest month of the year, according to the testimony of the rain gauges, with the sole exception of February.

Here, again, we have to contend with architectural difficulty unknown in Italy. The northern architect has to contend with snow. We do not mean to say that snow is unknown in Italy. It may be seen resting on the loft summit of Apennine or Alp, even when it is dreamed of in England. But snow, as a force to be provided against by the architect, is unknown, except in those sub-Alpine districts in which the domestic architecture is not of southern, but of a northerly type. Snow weighs on the roof, slowly melting, and trying the resistive power of every joint in the roof, the gutters, the pipes, and the walls—frost riveting the water-channels, and thus providing for plentiful troubles when the temperature rises,—the things are practically unknown on the shores of the Mediterranean. In a long residence in an Italian palazzo, during the course of which we have seen the red hot lava of Vesuvius containing with the snow that covered the cone, we have had, on one or two occasions, to see labourers to clear the roof. But it was to clear it, not of snow, but of the drifted and falling ashes of the volcano, which soon attained a depth of several inches over the last surface of the terraced roof.

It is thus that the architect in England has always had before him a very different case of the general structural problem from that which has been solved by his classical predecessors. The English architect has had to house the people, and he has done so, at all events, in such manner as to endow the English language with a word which will be sought in vain in the French or the Italian tongues. *Châlet*, *chalet*, *la casa* are very imperfect translations of the dear English word, HOME.

The people of this country pass, and to a great degree necessarily pass, a large proportion of their time within doors. In the first place, except the most wofully destitute, sleep within doors. This is far from being the case in Italy for a large portion of the year. With us, as in any time shelter may be suddenly necessary from rain, the domestic architecture must be so ordered that the general occupations of life may be carried on within doors; and this applies to public as well as to private buildings. Our churches and theatres have, of necessity, totally different type impressed upon them from the temples of Classic times. It is for this reason, no doubt, that the basilica came to the form of building selected for Christian assemblies, when Constantine called upon the persecuted creed to put on "her silver slippers." Justice, in Roman antiquity, had a stern sense of duty in her ministry. Justice would not be satisfied by a summer celebration alone. It was, therefore, necessary to provide courts for the administration of justice, which should

times be available for the shelter of the aged and of those interested in their judgments. Thus the basilica took its place; at rather a humble one, by the side of the temple. And thus, when weekly or daily services were openly allowed and encouraged, the basilica, ready to hand, offered a proper home for the ministrations of the new clergy.

As population expanded, as cities became larger, as inhabitants, as that ever-quicken- ing, which we call civilisation, began to be felt the towns and large villages of this country, the requirements of the people and of the state called forth not only the skill, but the taste of the architect. We do not know very much of the form of the halls of our Saxon ancestors, but we know something about them. We have, however, a constant, everywhere present, illustration of a form of building far older, this country, than the first arrival of the Romans. We can compare some of the representations given by the conquering Roman, on the *capitulum* sculptured on the columns reared in their capital, with the annual reproductions of the same unchanged forms throughout our country districts. We allude to the hay-stack, the wheat rick. We find these temporary structures, in every county, in two distinct forms—sometimes one, sometimes the other, generally both side by side. One is an oblong parallelogram, with a gabled roof; the other is a round pile, with a conical roof. There they stand beneath our eyes at this day—in the forms given to our *tuguria* on the *campus* of Trajan. In the hay-stack we have the living tradition of the earliest form of housing in this country.

The great requirement that pressed upon the architect, when population became numerous, was when urban habits became more prevalent, how to obtain as much shelter within as space as possible. This difficulty necessarily led to the development of what we call the *palace*. By superposing different places of abode under one roof, economy, convenience, comfort were promoted. It is not that we have the invention of stories for northern architecture: they existed and exist elsewhere. But there was a call for this construction, and thus development of their arrangement, in the cold, wintry, snowy countries north of the Alps, which did not obtain by the shores of the Mediterranean.

It is here that those great artists who reared churches and cathedrals from the date of the Conquest to that of the Stuart kings, the sense of a motive not felt by the architects of Greece, begat a new architectural feature, that at once for utility and for beauty, under the impulse of genius, Gothic art lent itself to the requirements of the northern climate. The great rule of Classic art was unity of order. Gothic art first showed order might be superposed above order, story above story, without departing from and harmonious unity, in the structure considered as a whole.

There are not about to urge that the Gothic architect went to nature for their model, and that their aisles are direct imitations of the avenues of the forests; or that their clustered shafts, far-spreading ribs are the simulations in stone of saplings bound together for props, branches curved and trained into roof forms. There is enough to show that the rib, that great feature that reappears so often, and of such wonderful beauty, especially in Early English work, has been gradually wrought from the simple structural expedient of joining portions of the plain semicircular arch. But it is one thing to trace how the arch has improved, decade after decade, in technical skill; and another to deny that the old mason-masters of our Gothic times drew much and genuine inspiration from nature herself. We find in the introduction of the rib a proof of this. And it may well be said that the more conventionalised are the forms, the deeper has been the study of nature stamped upon the stone.

Whatever be its origin, whether it grew stone by stone under the chisel,—as Mr. Darwin would believe some ancestral spore grew into the acrostic monkey, and the ancestral monkey into an ancestral man, whom those may claim to be—like or whether it was the child of genius in human art, the Gothic style has this much in common with the structure of the vegetable world, that it admits of subordination of scale, succession of parts; each constructed on a different scale, but all combining into one

harmonious whole. The lofty piers, the even and well-poised arches, the superposed triforium, and finally, the ribbed roof of such a building as Westminster Abbey, have in them very much of the natural shrine of the forest. Between the main outlines of chancel or choir, and the delicate tracery of light or canopy, there is as much difference as between the bole of a beech and the fairy-like net-work of its twigs; as much difference, but also as much unity. When the bar tracery came in to supersede the plate tracery, an element of endless diversity was introduced, which is far from being yet wrought out. Subordination of parts to the whole, of the chamber to the story, up to the topmost crockets of the spire, found its perfect expression in tracery. Order may thus be piled above order, in ever decreasing size, to any extent that need or fancy can dictate, and yet the numerous details are but so many lovely parts of one perfect whole.

We are not recommending a slavish imitation of even the best models. We do not want to see an exact reproduction of Tudor, cinque-cento, or perpendicular forms. But it is quite another thing for the architect to seek the guidance of that sound principle, under the influence of which the greatest triumphs of his predecessors have been won.

So long as the student is taught that "style is a matter of taste," so long as he is recommended to search, with unenlightened assiduity, for Classic, Italian, or Gothic examples, to take from each what suits his fancy, and thus to subside either into the grotesque, or the plain joiner's style, as evinced in our "Crystal Palace"; there is little hope that architecture will resume her true position, as the exponent, and the monumental recorder, of the genius of the time. Or at least, if it be urged that she cannot, under any circumstances, fail in so doing, so much the worse for the genius of today. But if the great structural motives supplied by the method in which they have been wrought out by our greatest builders, age after age, be impressed strongly on the mind of the student, we think there is more hope of the emerging of light from darkness, and order from chaos.

ON THE APPLICATION OF WIRES TO REMEDY ACOUSTIC DEFECTS IN PUBLIC BUILDINGS.*

EVERY ONE here has heard something of this lately novel theory, that the application of a few strands of copper wire would seriously affect and modify the body and currents of sound in a public assembly-room. It had its origin first, I believe, in America. I cannot now lay my hands on the proceedings of the American Institute of Architects, in which I first met with it; but those who may be curious in pursuing this subject, more exhaustively than I have leisure to do, will, no doubt, find the proceedings of the American Institute I refer to among the papers possessed by our Institute.

I confess I was incredulous to some extent when the theory came before me in the guise of a Transatlantic "notion" only, although I hold in deep respect the practical common-sense character of American architects; but when the efficacy of the theory was forced on me by the success of experiments made in St. Andrew's Church, in this city,—a success unanimously attested by clergy, parishioners, and all parties interested,—I felt constrained to be attentively respectful. There is a moral to be pointed from this circumstance, not out of place here, namely, that there is something akin to irreverence in receiving with anything but grave and respectful attention any theory propounded with reference to great economic laws in this wonderful universe.

Of the many phenomena whose occult laws we still strive to master and fix, those connected with sound,—singularly wonderful, as late experiments have demonstrated them to be, have as yet but little been reduced to system; at least, to such system as enables us architects to apply rough-and-ready conclusions to buildings with which we have to do.

I do not profess to have been a deep student in acoustic science, nor do I presume to instruct you in the first elementary phenomena of it, with which I take every one to be acquainted; but I take you to a building at once, to apply remedies

to acoustic defects. I should mention that my attention has been brought to this subject chiefly by the publication of an intelligent and intelligible account of experiments made by the Rev. Robert Samuel Gregg in Mr. Burgess's cathedral at Cork. Mr. Gregg has attempted to draw no conclusions from, or theories on, his experiments; but the phenomena he has recorded appear to me so satisfactorily consistent with what we know of acoustic operations, and with each other, that I feel perfectly convinced of the accuracy, intelligence, and truth of his observations. I fancy, on considering them, I see my way to lay down some general notions as to where to apply wires with some of that reason which, we are told, is required even in "roasting eggs," and not at haphazard, as most of the wire-experimenters appear up to this to have done.

In considering a building acoustically, you must look on it as embracing but two divisions—one where sound is manufactured, and one where it is consumed. The first division of the building is the place which is occupied by the choir or orchestra, the preacher or public speaker, the actor, the instrumental or vocal soloist, or by any instrument or instruments, human or divine, by which sound is manufactured and applied for the delight, edification, or wearing of other divine instruments with the gift of hearing. The second division of the building is that which contains the hearers.

A stream of sound is to be projected from one of these divisions to the other, and it is very important that you should keep this stream of sound clearly in your mind, not as illustrated by the analogy of a simply flowing, gravitating stream, but as one sent forth with a certain initial velocity, such as may be illustrated by a stream from a syringe.

I am obliged to supply names for these two divisions, for brevity in frequent reference, and I propose to call one the *vomitrium*, from which the sound is projected; the other the *auditorium*, where it is to be received. One-half of the building may be occupied by a choir, or it may be it is but the spot where a solitary preacher stands, but this is still the vomitorium for my purposes, and all other space where hearers are placed is the auditorium.

From the vomitorium to the auditorium is, as I have said, to be projected—directed with what initial velocity can be given it towards the auditorium—a stream of sound: 1st, unmarred and unweakened in its impulsive force; 2nd, unimpeded in its course; and, 3rd, unmingled and uncontaminated, as it were, by streams of sound proceeding from, or reflected from, quarters other than the auditorium. This is the whole problem simply put. I use the word stream advisedly as a rough-and-ready, if rather inaccurate, expression for the transmission of sounds.

It is unnecessary for my practical purpose to enter with scientific accuracy into the theory of the transmission of sound-waves, by which term the phenomenon of sound-transit is much more truly expressed. It is simpler for us, I think, to consider the sound with which we have to deal as a volume that is desired to be projected from one place to another, expanding and distributing itself as it goes; and, bearing in mind that while a certain degree of initial strength can be given in one direction more than another by the speaker or singer turning his face in that direction, the tendency of our stream is to expand in all directions from its source, and with a tendency to rise rather than gravitate.

Two agencies are at work to affect the stream from its source to its reflection, and these are Resonance and Reflection. Both, as servants, may be used to assist and reinforce the manufactory of sound at its source; both as masters may mar and pollute the stream. Of building materials, wood is naturally resonant or reinforcing, as is easily understood by the illustration of the body of a fiddle, which does not give the sound itself, but magnifies and reinforces at its birth what the string produces ten thousand-fold (as long as it has no "little rift" "that presently will make the music mute"). So if we can call to our aid the resonance of wood so applied as to add force to sound at its inception, and not to affect it subsequently, we may call our building "right as a fiddle" in that respect. Materials which are not resonant, but reflecting: that is, calculated in surfaces to infect or "echo" waves of sound,—are stone, brick, plaster, metal, glass, &c.; and it is not to be forgotten that wood, with its resonant property, can in surface be a reflective agent too, if

* By Mr. Thomas Drew. Read at meeting of the Architectural Association of Ireland, May 28th, 1874.

somewhat less so than harder or unresonant materials.

First, we have to consider what causes act to weaken the force or mar the sound in the act of being transmitted. It will be simpler for us to suppose the building under consideration one of cathedral character. St. Finbar's, Cork, will serve well to illustrate it; the source of sound a single singer in the centre of the choral of the apse. The case is a typical one, and the principles involved apply to others. The singer endeavouring to project towards his auditory a volume of sound, the issuing sound expands in every direction above and all around, with a certain upward tendency more particularly. All that sound not travelling towards the auditorium is but waste. That which would here be lost, wandering away through the encircling arcade into the ambulatory roofs and up to the choir roof, might, if the singer had a reflecting surface, resonant or otherwise, immediately behind him, be reflected into that forward current toward the auditorium. This space behind and around is an element of *weakness* at the sound "manufactory." As a secondary source of inquiry to the stream of sound, varied reflections from previous streams of sound returning to the singer from the many reflecting surfaces of the ambulatory, may confuse and "blur" the immediately issuing sound; *weakness* in the issue of sound is, however, the distinguishing fact of the circumstances of the case under illustration. Place your singer as before, and give him a solid circular apse wall all around him as a reflecting agent, and you may introduce the element of *confusion* with a vengeance. From a curved surface sufficiently removed from the voice to make the reflection or echo have it perceptibly subsequent to the initial sound, you may expect to find a return of sounds toward the singer converged and reinforced by a principle similar to that which has created the whispering galleries of St. Paul's and Gloucester, which, mingling with the sound arising from his lips, blurs and confuses.

We have considered those agencies which affect the sound at its issue. It is unnecessary for us to dwell on those which directly intercept its transmission, as practically it does not much concern us. These are, for example, such things as the columns or piers within a building which directly intervene between the vomitorium and a part of the auditory. Against such features as these, acoustically considered, much, I think, stupid and unreasoning prejudice is found in some quarters. We pass on to those agencies which affect the current of sound in the course of transmission.

It may be assumed that the initial or direct stream of sound can, theoretically, never reach the auditorium unmingled with reflected waves from preceding currents. The reflected waves from the roof may earliest be considered as affecting the initial current. If the roof is low, and the distance to be traversed by the sound before it is reflected inconsiderable, the reflected sound will be so nearly instantaneous with the initial sound as to be practically identical, and cause no perceptible confusion; but as the roof becomes more distant the interval between the currents becomes more marked,—the sounds in course of transmission, directly, become affected, simply speaking, by the echoes of those which have preceded them; consequently, to a lofty roof we may look as one of the most important agencies in causing acoustic deficiency. The form and material of a roof are also aggravating agencies in confusion of sound. The first will affect the character of the reflected waves, and this detail of the subject time would not permit me to dwell on; the second—material—is of considerable importance. When, in addition to the evil of a lofty roof reflecting sound, you have that roof formed of a resonant material such as wood, strengthening and reinforcing the sound that it reflects, I should consider that as an aggravating element of confusion. In Messrs. Lanyon & Lynn's fine church of St. Andrew, Dublin,—the most acoustically unfortunate church I have ever observed,—the cause of confusion under notice may be observed in a marked form.

The next, and often the most serious, element of confusion arises from those reflected waves of sound which have travelled beyond the auditorium, and are returned to it to mingle with the initial stream. These are, in fact, such echoes or reverberations as return from the unbroken surface of a western wall, an expanse or glass surface in it, or from aisle roofs such as those in St. Finbar's. Of this character is that "rum-

bling" effect sometimes produced by a great organ apparently in the roofs of a cathedral or great church, and which some people think so grand, but which I feel certain no sensitive musician would wish to hear. In the mingling of the reflected waves of musical sounds with the initial stream, meant for our immediate enjoyment, discord more or less pronounced must prevail.

This brings us to the object we have in view—the application of a remedy against the evils of reflected sound. Hitherto we have known but of one device—namely, that of hanging curtains, as being less reflective, against the western wall of a church or other such surface that we suspected of causing reverberation. Now we have arrived at this remarkable fact, that a strand of wire in a state of tension will break and disperse the wave of sound that passed it. To us, unskilled in the deeper researches of musical and acoustic science, this natural and to us mysterious law seems almost incredible, but we must be constrained by the logic of hard facts.

The explanation given is this—I am indebted for it to an accomplished musical friend—that the wire in tension—you will mark that it must be strained—is in a state of perpetual vibration, which has this effect on waves of sound passing it of breaking their current and dispersing them. When this wire is attached to a resonant material such as wood, the vibration, otherwise silent, becomes a tonic one (as before illustrated by a fiddle), and the vibration is sensible to the ear. A familiar example of this is the melancholy mysterious music of the telegraph wires or an Æolian harp. The wooden telegraph posts supply the resonance, that in applying wires as a remedy that they must be attached to non-resonant materials, such as stone.

Thoroughly understanding the tendency of this mysterious agency, it does not appear difficult to point out, in a general way, terms where it should be applied. If you have reason to believe reverberation comes from the aisle roofs of such a church as St. Finbar's, place the wires, say, across the arches at their springing, where they will intercept the initial flow of sound towards the roofs, sufficiently high not to intercept any sound directed to the auditory in the aisles. Remember, all sound which has been the vehicle of an idea to an audience is but waste when it has passed it by, and returning to it is but mischievous and contaminating to the pure initial stream. If, then, the reverberating surfaces are found behind it, where they will disperse the sound-wave after it has served its purpose. You must be careful not to make this mistake of placing such a potent interceptor of sound between the auditorium and the vomitorium, nor must you use your wires in such proximity to the source of sound as will limit its due expansion. From Mr. Gregg's experiments we observe this remarkable fact, that wires strained immediately over his choir as it were strangled the sound at its birth. We observe also that where they were placed in the nave, between the choir and the organist in the western gallery, while they served to allay the confusion, they caused the body of sound to reach the organist with a remarkably weakened force. Disposed so as to break the waves of sound uselessly travelling into transept and aisle roofs, and against the reflecting surface of western walls, the remedy was effectual.

One word on the subject I have used in illustration, and I have done. St. Finbar's, able as its architect is, charming and admirable as it presents itself on paper to you—has, in execution, in its ugly archaism of detail, its mere clumsiness and want of appreciation of scale, sins enough to answer for. If, however, you should be inclined, in admiration of Mr. Burgess's masculine force—which, in the abstract, I share with you,—to imitate his work, do not, because a western organ-gallery is the "correct thing" in an "Early French" church, make the west end the location of the organ. If an organ is desired there for processional effects, provide an additional one there; but do not torture the organist and distract the choir, and separate what should be one instantaneous harmony, by placing such a distance between them, fixing the organ in a position which will be the wrong one for the congregation, until they begin to say their prayers consistently with their faces towards the west, or have their ears turned to the backs of their heads.

CARLTON TOWERS, SELBY, YORKSHIRE.

Our illustration represents the interior of the baronial hall, designed by Mr. Welby Pugh for Lord Beaumont, and which forms part of the work intended to be added to the Towers. The restoration of the Stapleton Tower has alone been completed; and the builders, Messrs. Haigh & Co., of Liverpool, are at present engaged in completing the exterior of the Stapleton apartments.

NEW SCHOOL, RUSSELL AND RILEY STREETS, BERMONDSEY.

The designs for this school, to accommodate 210 boys, 210 girls, and 300 infants, were accepted in a select competition, and were prepared by Mr. Joseph James, architect. The form of the site entailed very great difficulties in the arrangements of the plan.

The whole frontage towards Riley-street is 160 ft., about 35 ft. of which are taken up by two small houses, one of which will be appropriated as a care-taker's residence. The breadth in the widest part is only 40 ft. In consequence of the limited nature of the site it was compulsory to provide an open playground on the ground floor, which forms a pleasing feature amongst the warehouses in the surrounding streets. A portion of this is appropriated to the boys, whilst the remainder, together with some extent of open playground, is devoted to the girls and infants.

An entrance for the boys is provided in Russell-street, and that for the girls and infants in Riley-street.

The height of this story is 8 ft. 6 in., the whole being covered with tar paving.

In the rear of the main building is the principal feature of the plan, a staircase, 24 ft. 7 in. wide, with treads and risers 12 in. by 6 in., and 5 ft. landings; the boys being quite distinct from the girls and infants. In the rear of this is ample accommodation for hat and bonnet rooms, water-closets, lavatories, &c.

On the first floor is the infant school for children, divided into one large school, 66 ft. 9 in. by 21 ft.; a class-room, 22 ft. by 18 ft.; and double class-room, 32 ft. by 21 ft.

On the second-floor and third-floor are the school-rooms, 66 ft. 9 in. by 21 ft., and a double class-room, 32 ft. by 21 ft. The whole is covered with a high-pitched roof. The internal walls of the school-rooms are carried up in finished brickwork, with red brick bands and arches, with Portland cement dado, 4 ft. high. Care has been taken for obtaining proper ventilation, and the building is warmed by Captain Gallie's Patent Stoves.

The height of the covered playground is 8 ft. 6 in.; the first and second story 14 ft. 6 in. clear; the topmost story being 12 ft. 6 in. up to the wall-plate, and 17 ft. to the collar. The total height outside from pavement to main gables is 74 ft., and about 100 ft. to the top of the vane of the bell-turret. The whole building forms a prominent object from the South Eastern Railway. The whole of the works have been carried out by Mr. William Howard, of Chandos-street, superintended by Mr. William Atkinson, of the works. The Board are about to obtain possession of five houses in Melville-place, at the back of the present school, with frontage of about 57 ft., which will afford space for private rooms for the master and mistress and a manager's room over each covered way to the school. The amount of contract is £2,800, but there are additional works in the foundation, and other places, which have yet to be valued.

JUDGE'S CENSURE ON BUILDERS' PETTY ACTIONS.

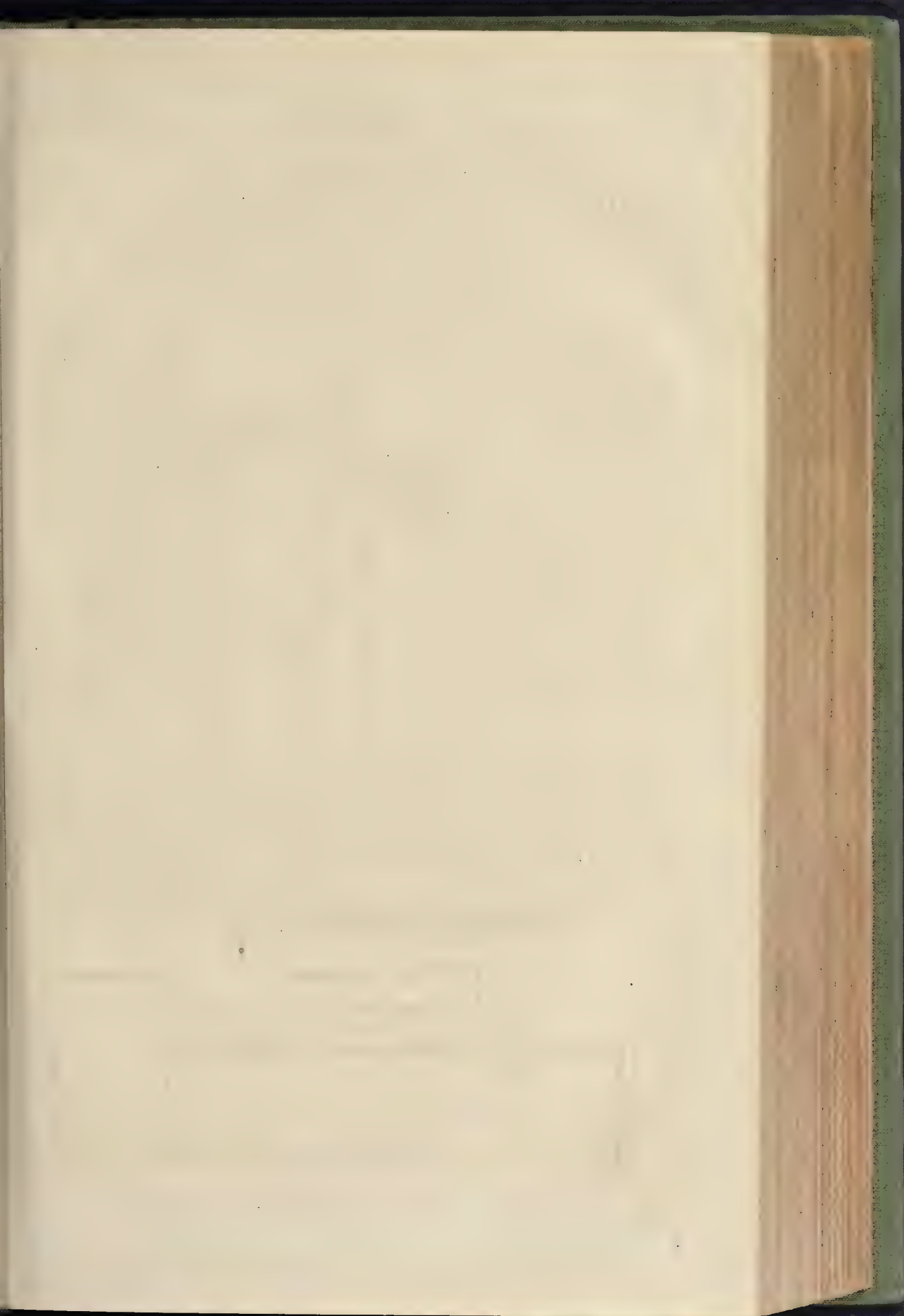
In the case of Lethbridge v. Rogers, the plaintiff carpenter, has been put on a job by Mr. Rogers, plumber, and when accounts were to be squared a dispute arose. For this balance the master of the Court of Queen's Bench—a jury, counsel, solicitor, and witnesses—were put in motion.

Mr. Justice Denham thus expressed his idea of litigation:—"Are we to spend the remainder of the year in trying this case?"

Connel was afraid they must go through the bills. The Judge (out of temper): "Tut, tut! Go on then, quickly, for I will take no notes of the evidence. I really say that it is scandalous that such a case should be tried before a jury, and in a Superior Court."

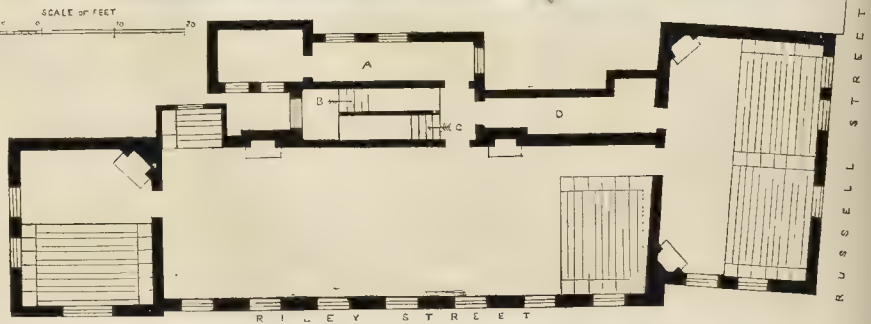
The items now had to be gone through as to farth per hour, and amount of time; and eventually the returned a verdict in favour of the plaintiff for the dispute.

This verdict will make the plumber in costs—11 sides, but when the costs are taxed the carpenter will have a heavy account to "square" with his solicitor.





SCALE OF FEET
0 10 20



A. Hats, Bonnets, and Cloaks. B. Boys, up. C. Girls, up. D. Corridor.

SCHOOL-BOARD SCHOOLS, RILEY STREET, BERMONDSEY.—MR. JOSEPH JAMES, ARCHITECT.



CARLTON TOWERS, SELBY, YORKSHIRE: PROPOSED HALL.—MR. WELBY PUGIN, ARCHITECT.

HUGHES'S PATENT TRAMWAY.

A PUBLIC trial of the overhead tramway, patented by Mr. E. W. Hughes, has taken place at the Midland Railway Company's Depot, Wandsworth-road station. A large number of people witnessed the experiment. The tramway is especially designed for the rapid and economical conveyance of ores, coal, and merchandise generally from outlying mines and hilly districts to the nearest railways, canals, and rivers, or for shipment by sea. It is not meant to be worked on a level, yet no stationary engine or hauling rope is required, except on very steep gradients. Being simple in construction, it requires no skilled labour to erect, excepting the supervision of a competent engineer, and no earthwork, fences, or bridges are requisite. For an ordinary length of three miles, worked by gravitation, for the carriage of five hundred tons of minerals per day, the cost of the tramway will not, it is stated, exceed 2,000l. per mile, and where the conditions are favourable the cost will be less. Besides, it can be moved about from one part of a district to another at comparatively small cost. A platform was erected to represent artificially the gradients of a mountain. The level was 25 ft., and the gradients were 1 in 30 for 20 ft., and 1 in 15 for 80 ft. The engine, which weighs less than four tons, travelled along the graduated platform at the rate of twelve miles an hour, and it is computed that it can maintain that rate of speed up steep gradients with a load of 25 tons each journey. The consumption of fuel is equal to about 8 lb. per horse-power. Lines of tramways on this system, if desired, be erected for mineral owners, they guaranteeing a minimum traffic for a period to be agreed upon. The engine used was designed by Mr. J. W. Dudley, civil engineer, and was manufactured by Messrs. Alexander Wilson & Co., of the Vauxhall Iron Works.

"THE CAUSES OF ART."

ON Thursday evening (May 21st), Mr. John S. Phelps, F.R.S., delivered a lecture to the Society for the Encouragement of the Fine Arts "On the Causes of Art." The subject was introduced in a somewhat novel manner. Commencing with the earliest indication of human production, and ending, as he said, to compare art, all over the globe, in its various stages, a plan which would compel a rapid transition from place to place, in a very ungeographical manner, the lecturer proceeded to illustrate his subject by a plan framed on that of the French International Exhibition of 1867. He represented the stream of progress not by a line, as the course of a river, but by what he thought more properly suited to our *oculus standi* on a sphere, viz., by a coil, intersected by lines radiating from a common centre, which he described as lines of emigration. The coil approximated to the lines of latitude, and he radii to those of longitude, on an ordinary globe; the pole of his sphere for this purpose being somewhat east of Palestine, a spot he selected as the original home or centre of intelligence. He adopted this method as a means of accounting for the similarity of early art, in the most widely-separated localities, and it enabled him, without inconsequence, to refer to remote places for comparison. Starting with the first known human production, the stone cell, he proceeded to show that it soon gave evidence, by its symmetry and finish, of a desire to excel; and the desire to excel was proof of an ethical condition in the producers. Taking next the earliest scratchings on bone and stone, which portrayed deer and other animals, he reasoned that in these were the fundamental points on which subsequently grew, through hieroglyphic writing, our present pictorial representations, and even our literature; while the wavy and angular lines found in the same early productions (wrought, he thought, almost unconsciously by the operators, in intervals of relaxation, as they listened to the monotonous tones of the war-song or the hymn of praise), revealed the first indications of music, by the measured beat of time. Following, from these starting-points, sometimes the sluggish coil of human progress, sometimes making a rapid excursion through the air, or that supposed channel of emigration, he surveyed his audience through Egyptian and Assyrian art, to the sublime consummation of the Grecian; all which he argued was distinctly attributable to the ethical principles pervading it or that people. Where this condition was at the highest there art flourished, where at the west it languished. He had to contend with

the fact, however, that art absolutely died on the introduction of the purest system of ethics, viz., those of Christianity. The difficulty in this case, he pointed out, resulted not so much from any opposition to art, on the part of the Christians as from the fact that all art then known to the world was Pagan, and inadmissible into the new religion. As an evidence it was seen that when art revived, Raffaele, the first imaginative painter, as soon as he passed the bounds of the Christian writing, was obliged to have recourse to the heathen mythology for his ideas, though he made this subservient to Christian supremacy. A rapid glance was then taken of the ruder arts in distant lands. The earthworks of America, and its cities buried in impenetrable forest; the monster sculptures of Easter Island; and the evidence of art, however rude, in spots which must have seemed peculiarly sacred to the nature-worshipper;—all these he attributed to a strong ethical cause, arising from religious feeling, however erroneous. Under Christianity, art, since its revival, altogether differed. In its earlier appearances it was found as closely connected with religion as in any of the preceding instances, but modern art, especially in England, seemed quite free. Upon a close inspection, however, this was not found to be the case; the greater breadth of freedom in religious principle introduced a more extended, a more liberal ethical code, and this again sent out still wider ramifications for its sustenance. He maintained that the simple purity of subjects for which there was a demand in the modern fine-art schools was an evidence of a more widely diffused, but not less intense, ethical feeling than art had ever been subject to, and that the difference arose from a more pure, simple, and comprehensive knowledge of the relationship between man and his Creator, as taught by the introducer of the new system.

THE NORFOLK AND NORWICH ARCHAEOLOGICAL SOCIETY.

Tax annual meeting of the members of this society was held on the 20th ult. in the Guildhall, Norwich, the Very Rev. the Dean of Norwich in the chair. Many interesting objects were placed upon the table for the inspection of the members. Some coloured drawings, descriptive of the relic chamber recently discovered in the Cathedral, were also exhibited, and a large number of panels, painted with representations of saints, found during the recent alterations at the Church of Horsham, St. Faith's.

The Rev. C. R. Manning read the annual report of the Society, and afterwards referred to what had transpired in the Norwich Town Council relative to Thomas à Becket's Chapel, of which we have already spoken, remarking that the proceedings, which showed great indifference on the part of the Corporation, ought not to be passed over without comment by a society whose object was the preservation of such remains.

What was done at the Council meeting was briefly stated by Mr. Fitch, who said that as the building was considered unsafe, the greater part of the beautiful roof was ordered to be pulled down, and the chapel to be filled up with rubbish. Some sheds were now being erected upon the spot for the storage of scavengers' brooms, &c. When the Archaeological Institute was in Norwich in 1857, Becket's chapel was admired for its beauty and grandeur.

It was also stated by Mr. Gunn that half the chapel had been cleared away. Mr. Boardman, the architect, who brought the matter under his notice, gave it as his opinion that the building was so sound that it might have been built over. Canon Venables, of Lincoln, recently visited the chapel, and expressed his gratification at inspecting so interesting a relic. In fact, it was one of the remains which rendered Norwich so interesting. Acting upon the suggestion of several members of the Society, Mr. Gunn moved the following resolution:—

"The Norfolk and Norwich Archaeological Society express their regret that the chapel of St. Thomas à Becket should have been demolished, especially as they have reason to believe that the demolition was unnecessary, as it has been considered a very interesting architectural relic, and has been an object of attraction on the visits of the Archaeological Institute and other learned societies."

This was seconded by Mr. Fitch, and supported by the Rev. A. C. Copeman, who thought the resolution ought to have been more strongly worded, and suggested the insertion of the word "extreme" before "regret."

The suggestion was adopted by Mr. Gunn, who said the resolution needed to be strong, as the Corporation were a pachydermatous set.

The resolution was adopted, and Sir F. Boileau suggested that a copy of it should be "sent to the ruthless Goths."

Dr. Bensly gave an account of the discovery of a very ancient map of Norwich, and called it the "Sanctuary map," as it was sent up to Parliament in the reign of Henry VIII., to show, it was presumed, the bounds of the Sanctuary at Norwich. This map is said to be eighteen years earlier in date than any other.

GAS.

A LARGE and influentialy-attended public meeting of the gas consumers of Kensington and the surrounding districts, convened by the West London Gas Consumers' Association, has been held in the Vestry-hall, High-street, for the purpose of considering the great increase in the price of gas now charged to the public by the Gas-light and Coke Company. Sir Charles Dilke, M.P., occupied the chair. Mr. W. Gordon, M.P., moved the following resolution:—"That in the event of no steps being taken in Parliament to remedy the evils arising from the existing Gas Acts, it is essential that the gas consumers adopt immediate measures for taking the manufacture and supply of gas into their own hands." He thought, in the first instance, a deputation should wait upon the Board of Trade, and if no satisfactory reply could be obtained from that Board, then that the association under whose auspices they were meeting that evening should at once prepare a scheme to carry out the last clause in the resolution. Mr. Curzon seconded the resolution. Mr. James Beal supported it, as did also Mr. R. Freeman, of the Metropolitan Board of Works, and it was adopted unanimously. Other resolutions were also agreed to, in accordance with the object of the meeting, and especially in relation to the formation of a great metropolitan organisation to promote a Bill in Parliament for the repeal or amendment of the existing gas legislation.

A company is in course of formation, under the title of the Patent Gas Economiser Company, for the purpose of acquiring, developing, and working an invention patented by Mr. Ludolph Seegers, whereby a combination between the ordinary coal gas and the vapour naturally given off by light petroleum oil is effected by means of a self-acting apparatus, thereby greatly increasing the illuminating power of the coal gas, and, it is stated, at the same time materially diminishing its consumption. The invention is stated to consist in the peculiar construction of an apparatus containing cylinders partially filled with refined petroleum light oil, and it is claimed by the patentees that the coal gas, after having passed over the surface of this light oil, becomes charged with more than double the illuminating power which it previously possessed. It is also claimed that the gas thus carburated is considerably purer, and does not give off the obnoxious vapours of ordinary coal gas. This system has been already adopted in the illumination of the Royal Polytechnic Institution, as well as in other public places, with, it appears, very satisfactory results. All the capital at present asked from the public is 5,000l., in 100 shares, with a view of testing the financial advantages of the system before bringing it more prominently under notice.

The Lighting Committee of the Acreington Local Board have met in the Court-room of the Peel Institution, to investigate an alleged fraud perpetrated on the Local Board by the gas company, according to the *Liverpool Journal*, which states that the clerk to the Board read copies of letters which he had addressed to Mr. W. Barratt, the gas company's manager, in which he gave particulars of the charges which the Board's lighting inspector had made against him, and which details were intended to show that the meters had been altered so as to represent 80,000 cubic feet of gas which had never gone through the public lamps. The clerk had received a letter from Mr. G. W. Barlow, solicitor, announcing that the gas company will take proceedings "with respect to the serious and unfounded charges made against the company and its manager." Mr. John Boothman, who had made the charge, said he was prepared to prove the charges again, and not only them, but many more. The chairman said he thought the committee should refer the report to the Board, and let them deal with it as they thought proper, which the committee agreed to.

NEW ENGLISH CHURCH AT PATRAS, NEAR CORINTH.

THE English Church of St. Andrew, Patras, near Corinth, Greece, has been dedicated by the Bishop of Gibraltar. The foundation-stone had been laid in February, 1872, in the presence of the Greek Archbishop of Patras, who died before the completion of the church. The edifice, consisting of nave and chancel, was built from the designs of Mr. G. Viallo by Greek workmen, under the direction of the chaplain and Mr. W. Morphy, of Patras. The walls are of a hard black stone from a neighbouring mountain, roughly shaped and pointed with white freestone dressings. The roof is covered with red tiles from Marseilles. The glass windows, the seats, and indeed nearly all the furniture of the church, together with the framework of the roof, were brought from England. The site, which is sufficiently large to admit of a chaplain's house being some day added, was the gift of the Greek Government. The total cost, including the raising and levelling the ground and surrounding the whole with a wall, was somewhat under 2,000*l*. The church is intended for the use of the British residents engaged in business at Patras, and also for sailors from English vessels in the current trade, of which Patras is the principal seat.

PUBLIC MUSEUMS AND GALLERIES.

A MEETING on this subject, to which the mayors of corporations, chairmen of art and science schools, and others interested in museums and art galleries were invited, has been held in the rooms of the Society of Arts for the purpose of appointing a deputation to the Prime Minister to urge upon the Government the importance of bringing all the national museums and galleries under the authority of a Minister of the Crown, with direct responsibility to Parliament. Lord Hampton presided, and there were also present the mayor of Birmingham, Mr. Mundella, M.P., Mr. Rathbone, M.P., and representatives from Nottingham, Leeds, and several other English and Scotch towns.

The Chairman read a letter from the Prime Minister, stating that at present it was impossible for him to name a day to receive a deputation. The primary object for which they had met, therefore, could not be carried out; but that need not preclude the discussion of the subject.

The Mayor of Birmingham then moved:—

"That, in the opinion of this meeting, all museums and galleries supported or subsidised by Parliament should be made conducive to the advancement of education and technical instruction to the fullest possible extent, and that special parliamentary funds should be granted to assist local and provincial museums in the acquisition and loan of objects, and with building grants, and thus extend their usefulness."

Mr. Rathbone, of Liverpool, seconded the resolution, which was supported by Mr. Mundella, M.P., and Dr. Campbell, and unanimously adopted.

It was further resolved,—

"That, in the opinion of the meeting, all national museums and galleries should be placed under the authority of a Minister of the Crown, with direct responsibility to Parliament, thereby rendering unnecessary for the purposes of executive administration all unpaid and irresponsible trustees, except those who are trustees under bequests or deeds, who might continue to have the full powers of their trust, but should not be charged with the expenditure of money voted by Parliament."

It was also resolved that the chairman be requested to submit to the Prime Minister the foregoing resolutions, and press their importance on his attention.

THE NEW HEATING APPARATUS.

A NUMBER of influential gentlemen, at the invitation of Messrs. Trench & Murray, of Trafalgar-square, visited Hatfield, the seat of the Marquis of Salisbury, recently, to inspect the new system, to which we have already alluded, of heating hothouses, vineries, and large ranges of buildings generally, free of expense. The invention has been patented by Mr. J. Cowan, gardener. The system consists of the combination of a limekiln with a hot-water apparatus; the kiln is filled with limestone or chalk and coal, and lighted, and the heat thus generated is utilised for the heating of a boiler placed at the top of the kiln, from which supply-pipes flow to the various houses.

Mr. Cowan claims for this system that all expenses are paid by the lime made, that the entire cost of fuel for hot-water apparatus, one of the most important items in the cost of greenhouses, is thus saved; that the

work is done with more regularity than by the ordinary system, as the kiln does not require charging more than once a day; that it requires no night attendance; that a greater regularity of temperature may be obtained; and that, as there is no smoke from the kiln, the disfigurement on the old system is entirely got rid of. It was stated at Glasgow, where the system has been tried for some time, that the lime was sold at a profit of 4*s*. per ton, all the heating being obtained for nothing. Mr. Bennett, the gardener at Hatfield, speaks highly of the plan, and states that he heats twenty-one houses by it at less cost than nine are heated in another part of the grounds in the old manner. He considers it a decided success. The general opinion expressed was entirely in favour of the new method. A company, it is said, will probably be formed for purchasing and working the patent.

COMPTON WYNATE.

SIR,—The town and vicinity of Banbury, now accessible by railway, are specially interesting to archaeologists and antiquaries, who when in this town, which contains ancient specimens of architecture (see A. Beesley's "History of Banbury," 1841), are within a short distance of Bolbich Stones, the Camps of Madmarston, Tadmaston, library, and Gredenton; the Roman pavements at Great Tew, Beaconsfield Farm, and Wigginton; the fine tall steeple of Bloxham; the Churches of Swalcliffe and Broughton; the noble old abbey at Wroxton; the remains of Hanwell Castle; the beautiful monument in Great Tew Church, where Lord Falkland was buried, and the ancestral Castle of Broughton; the sites of the famous fights of Edge-hill and Cropredy, also the interesting old house of Compton Wynate, one of the strongholds of the Parliament during the civil war, which has been renovated recently. In Nash's "Mansions of England" are two engravings of this mansion, which is described at length in vol. i. of Howitt's "Visits to Remarkable Places." It is also engraved and described in the *Saturday Magazine*, for the year 1842, pp. 178-191, as an interesting specimen of domestic architecture, which is certainly the fact. The bay-window of the hall is described as being "of grand proportion and of a fine and pure design," the interior retaining "the style and features of the feudal age." All the old furniture and ornaments of the house were sold many years since. The ceilings show the interior appearance of this house in the olden time, and the armorial insignia denote the loyalty of the former occupants. This edifice was erected by Sir William Compton, the friend of King Henry VIII., who died in the twentieth year of that reign. This king granted a large amount of land to this person, and permitted him to destroy Fulbrook Castle. It is stated that the chimneys now at Compton Wynate were removed upon scaffolds from Fulbrook, and that the former house was constructed principally of the Fulbrook bricks, &c. In it are the remains of two chapels, or shrines,—one on the ground-floor, and the other in the roof, for secret worship, apparently. The grandson of Sir William married an heiress, by whom he had a son, the Earl of Northampton, a Loyalist, killed at the battle of Hopton Heath. When the rebels seized Compton Wynate they destroyed the costly chapel window erected by Sir William Compton, being, according to Dugdale, of "very curious workmanship," also the monumental sculptures and adjacent church. This curious old secluded mansion remains for the admiration of posterity. Its appearance from the north reminded Mr. Howitt of the stanza in the "Hermist of Warkworth," viz.:—

"Behind yon hill, so steep and high,
Down in the lowly glen,
There stands a castle fair and strong,
Far from the abode of men."

CHR. COOKE.

MANUFACTURE OF FIRE-CLAY GOODS.

SIR,—The writer of the recent article on this subject in your paper might have mentioned, amongst the "noted seams," Buckley Mountain, Flintshire, where the fire-clay has been worked for a great many years, over thirty yards thick in open face. Its analysis is quite as good, if not better, than that given in the article, and its brand is known throughout the world. The clay is not under the coal measures, but cuts them out like a fault, and is really a fire-stone, being as hard as most stone.

J. M. GILSON.

MONUMENTAL.

Corkmouth.—Arrangements are being made for the erection of a statue of the Earl of May in this town, at the end of Station-street.

Monument of the Duke of Brunswick at Geneva.—The *Graphic* says the design for the late Duke Brunswick's monument to be erected by the City of Geneva has been decided on. It will consist of a red granite base, upon which will be ranged six bronze statues of the late duke's relatives half as large as life, and relieved by six lions. The statues will be surmounted by a canopy supported by columns of Carrara marble, and the whole will be crowned by an equestrian statue of the late duke.

The Hans Sachs Monument at Nuremberg.—On June 24th, nearly 300 years after the death of this master-singer, who played an important part also in the Reformation movement, a statue of Hans Sachs will be unveiled at Nuremberg. Luther and Melancthon looked upon him as one of their fellow-workers. After the Thirty Years' War he was forgotten. Goethe, Wieland, and Friedrich von Schlegel exerted themselves to restore his fame; but only now his proper place and value in German literature begins to be more universally understood. A course of three lectures has been given on behalf of the fund by M. Karl Blind, viz., on May 22nd, 29th, and June 5th, at the Cavendish Rooms, Mortimer-street, under the title of "Hans Sachs and the Master-singer Period, with references to the Poetry of the German Troubadours."

Baron de Triqueti, the Sculptor.—The Paris correspondent of the *Times* says:—"The artistic world and many friends in England will learn with regret the death of Baron de Triqueti, the distinguished sculptor. In him the world has lost a true artist, whose whole soul was given to his pursuit. Had he been of a more modest and retiring disposition, he would have been more conspicuous before the public, but he never sought applause. Like the artists of the Renaissance, his genius was many-sided; he was distinguished as a writer, and his charming addresses or lectures to the Paris Protestants will remain as perfect models of their kind. As an artist, his principal works were the bronze doors of the church of the Madeleine, the two crucifixes of the Invalides—one in bronze, the other in marble; the tomb of Duke of Orleans at the St. Ferdinand Chapel, and his beautiful Memorial Chapel at Windsor. He was an exquisite draughtsman, and is understood to have left a large and precious collection of compositions and drawings, as well as many valuable sketches of places and scenery he visited. The Queen heard with much regret the death of Baron Triqueti, whose great work of the marbles and the recumbent statue of Prince Consort in the Wolsey (now Albert) Chapel at Windsor is on the eve of completion, and which, unfortunately, he has not been permitted to witness."

SCHOOL BOARD SCHOOLS.

Llantarnam.—The new schools of St. Dial, Cwmbran, Monmouthshire, built for the Llantarnam School Board on half an acre of ground alongside the canal, and close by the railway station, were formally opened with a treat for the scholars, and a public meeting. The school had been built to supply the rapidly-growing wants of the populous district of Lower Cwmbran. The design of the building is in the Gothic style of architecture of the thirteenth century, and although generally of a plain character, there are some quaint bits of detail introduced, which produce a picturesque effect. The school is divided into boys', girls', and infants' schools, with large well-lighted class-rooms for each master's house, and the public road to Cwmbran has the advantage of overlooking nearly the whole of the school premises. The plan of the school comprises accommodation for 408 scholars, allowing the maximum in each department required by the Committee of Council on Education, and costs 2,540*l*, or a fraction over 6*d*. per head. Separate hat and cloak lobbies are provided to each school, near which are well-lit lavatories. The material used in the walls is stone from Tyny Cwm and Abergavenny, and Bath-stone dressings. The whole of the interior woodwork is stained and varnished; the walls and ceilings are plastered and whitened; the roofs are covered with Bangor slates, and ornamental ridge-and-furrow tile-creases. A cot is placed over the boys' school, and contains a bell of nearly 80 lb. weight. The work-

been carried out by Mr. Henry Parfit, builder, Pontnewydd, from designs and under the supervision of Mr. E. A. Lansdowne, architect, Newport.

Wiltshire.—Mr. Bower, architect, has been requested to prepare a plan of the proposed site for a new school. Mr. Bower also prepared a preliminary sketch block plan of a school which would accommodate rather over 300 children as required by the Education Department. The frontage of the plot was 80 yards by 48 yards. The elevation showed a Gothic design, and at either end space was left for the building of houses for mistress and master, it being left to the Board to decide whether they would have one or both houses, as they might be required for married or single people. The frontage of the school itself would be 148 ft., and that of one house would be 28 ft. Mr. Bower, in answer to a question by the Chairman, at a meeting of the Board, said his charge would be the usual charge of 5 per cent. on the cost of the building; but he would include plans, attendances, in fact everything, that would be less than the usual terms, these things being usually charged extra. If he supplied the quantities, his charge would be 1½ per cent. for that. Mr. James Wood thought that per cent. was the usual charge, and as Mr. Bower had deducted a number of extras which made his charges rather under than over the usual architects' charges, he moved that Mr. Bower be appointed their architect. This was agreed.

Edinburgh.—The Edinburgh School Board have resolved to borrow £70,000. from the Public Works Loan Commissioners for the erection of seven new schools, and awarded the four premiums formerly offered for plans to Messrs. Anderson, Moffatt, Beattie, and Wilson.

OPENING OF PADDINGTON BATHS AND WASHHOUSES.

The new public baths and washhouses in Queen's-road, Paddington, have been formally opened by the Lord Mayor, in state, the borough members, chairman of the Metropolitan Board of Works, and other dignitaries. We gave a full and plan, with full particulars, on the 31st January last (pp. 90-93). The site covers an acre of ground, and occupies an area lying between Queen's-road and Douglas-place, and is full view of the thousands who pass along the shop-road to the West End, Regent-street, Westbourne-grove. The building is in the Italian style of architecture, the material used being white Suffolk bricks, with Portland-stone dressings. It has a frontage of 160 ft., with a maximum depth of 250 ft.

Entering the baths from the front entrance and passing through the ticket-office, the men's first-class swimming-bath is reached. It is the largest and most important of the various apartments into which the establishment is divided. It is 100 ft. long by 54 ft. wide, with water-line of 90 ft. by 40 ft. The bath when filled will hold 100,000 gallons of water. On the north and south sides of the bath are the boxes for the use of bathers; at the east end is a diving board, and at the other extremity an ornamental fountain. Around the platform of the bath, and at the western end of the room, is laid some blue-figured tiling, manufactured expressly for this bath. For the protection of bathers, a life-line runs all round the bath. The bath-room is illuminated from the roof by 18 gas jets.

The men's second and third class swimming baths are at the rear of the first-class bath, and extend and are each 70 ft. long by 30 ft. wide, and are divided with forty boxes for bathers. The first-class swimming-bath is 45 ft. long by 35 ft. wide, and is fitted up with twelve extra large testing-boxes. Each of these swimming-baths is lighted from the roof. The private baths are 12 square compartments, the first-class being 6 ft. long by 6 ft. wide, with enamelled partitions and porcelain baths; the second-class, 6 ft. square, with copper japanned baths.

The laundry department is 75 ft. long by 15 ft. wide, subdivided into groups of compartments, so as to accommodate fifty washers. Immediately adjoining are the ironing-rooms and house laundry. Attached to the washhouse are several patent centrifugal wringing-machines, no mangles, all of which are worked by steam machinery, in addition to which are a number of drying-closets.

The first-floor of the building is set apart as residence for the superintendents, and for Com-

missioners' offices. At the rear of the building is a residence for the engineer, Mr. Wrapsom; whilst a space is left for the erection of a Turkish bath or gymnasium at any future period.

Mr. Lewis H. Isaacs was the architect, and Mr. T. Elkington the builder, represented by Mr. George Rayment. The engineering work was done by Messrs. J. & F. May, and the gas engineering by Mr. J. H. Humphress. Mr. James Abbott was clerk of the works.

HOUSES FOR THE POOREST.

DR. LANKESTER has held an inquest at the King's Arms Tavern, Rawston-street, Clerkenwell, on the body of Joseph C. Lane, aged nine weeks. The evidence showed that the father was a carman, earning a guinea a week, and living with his wife and five children in one room with a less space than 700 cubic feet, at No. 28, Thomas-street, for which he paid 3s. a week rent. The deceased expired from asphyxiation, from want of fresh air; in bed, being the second child the parents had lost from a similar cause. The coroner remarked that it was high time that the urgent claims of the poor for dwelling accommodation were attended to. The model lodging-houses which have been and are being built do not touch persons earning a pound or less per week. Every day the humbler dwellings in London were being pulled down, and no steps taken for providing accommodation in their places; so consequently things got worse daily; and unless the Government took some steps in the matter, the results would tell with disastrous effects upon the future of this great country; for, in consequence of the overcrowding, the next generation of the humble classes would be puny, sickly, and degenerated, a burden on the middle and upper classes, besides which the source of supply for our army and navy would be completely destroyed; also the intermingling of the sexes was productive of immorality. A juror remarked that in some of the blocks of lodging-houses now being built no person earning less than 2l. a week had a chance of obtaining accommodation, the rent in many cases being 6s. and 7s. a week. The Peabody fund, which everybody thought was for the erection and improvement of cheap dwellings for artisans and labourers, was being turned by the representatives of the trustees into a profitable investment, as witness the purchase and disposal of a large plot of land at Brixton. He hoped that, through the medium of this inquiry, the attention of Lord Derby, or other of the trustees of the fund, would be called to the manner in which the noble gifts of the large-hearted American were being dealt with. The coroner remarked that besides the above evil, the expense on the ratepayers and friends was considerable, for he knew that 3,000 such cases occurred in England every year. The jury returned a verdict of accidental death, and the matter was ordered by the coroner to be entered in the complaint-book at the vestry hall, so that the vestry might have the matter brought before them.

DECORATION.

WHEN a king, a queen, or an emperor is to pay a visit to Windsor Castle, the Guildhall, Burleigh House, or to any fine old building, we read that the place is to be "decorated" for the occasion by some West End upholsterer at an enormous expense, which means that all that is good is to be turned out or covered up with detestable muslin and hangings of "gorgeous description" this is, and has been, but I hope will not always continue. It is just the same in a small way when a lady gives a ball: away go all her nice bits of old furniture, china, glass, and objects of "bijoutry and vertu," doors come down and carpets come up; nothing remains but white muslin, pink ribbons, and flowers stuffed into fireplaces and everywhere, where they get knocked to pieces and could not possibly grow.

Fancy, if her Majesty wished to go to the Kensington Museum or to the British, and the authorities were to remove the cases and let her see nothing but drapery and flowers, she would get a very lively remembrance of the interesting objects which other people see, but it would be no worse than the bad taste displayed in "decorating" other places where she goes. Why cannot people let our fine buildings appear to the great ones as they really are? Why

should not an emperor see the Guildhall as it is every day? Why have suites of rooms to have everything good in them removed to make place for a lot of rubbish which is seen everywhere else? I cannot see it; but much better it would be if kings and queens could see places as you and I do. Let some one set an example by *doing nothing*, or if H.R.H. reads this he may refuse to go somewhere unless the good folks leave it alone: he would see a deal more, and save some one a lot of money. I passed Holyrood yesterday: it looked a deal better to me than it would to the Prince if he said he wanted to see it, for they would cover it all up so that he should not. This may do good if you care to print it.

G. T.

OLD LONDON AS VISIBLE IN MAPS.

HAVING compared the map of London shown in "Civitates Orbis Terrarum," printed at Cologne in 1572, preserved in the library at the British Museum, with my fac-simile of "Civitas Londinum," I have no doubt that it is, to a considerable extent, a reduced copy of Agas's survey. There are, however, many dissimilarities between the two,—the size of Agas's map is 6 ft. by 2 ft. 4 in.; the dimensions of the map in "Civitates Orbis Terrarum" are 13 in. by 19 in.; the spelling of the names of streets varies in many cases; and the engraving of Agas is often "improved" by his copyist, who has introduced at the bottom of the map four figures, ladies and gentlemen, dressed in the costume of the period. A further comparison would, I have no doubt, show many other discrepancies.

EDWARD J. FRANCIS.

SPONTANEOUS COMBUSTION FROM THE USE OF OILS.

At the present time the fire offices pay no regard to the description of oil used for lubricating purposes, nor for any purpose whatever, except in the making-up of woollen fabrics. In that case there is a classification of oils, so as to provide for a varying rate of insurance, according to the description of oil used. According to Messrs. C. Price & Co. the classification adopted is erroneous, and instead of diminishing the risk of spontaneous combustion, actually tends to increase it. A letter addressed by this firm to the committee of Northern Fire Offices shows the peril of this state of things, and seems entitled to the attention of the offices. The fact that the rate of insurance in regard to cotton-mills has gone up as much as 100 to 150 per cent. within the last few years, affords some indication of the extent to which fires of a certain kind are found to increase.

The writers say:—
"Considering the imminent danger shown by experiment as arising from the contact of certain oils with cotton waste, it seems remarkable that the Fire Offices pay no regard to the quality of the oil used for lubricating purposes. Oils capable of setting up spontaneous combustion when mixed with textile fabrics, waste materials, sawdust, &c., would seem to be very objectionable as lubricants, despite every care to effect the speedy removal of waste. The superior safety of an oil which, under no circumstances, can set up spontaneous combustion, is undeniable, and would seem to call for distinct recognition on the part of the Fire Offices, whose interest it is to encourage the use of a lubricant which is perfectly safe. On the other hand, where the oil used for lubricating purposes is known to possess dangerous properties, it is but right and politic that the rate of insurance should be proportioned to the obvious risk thereby incurred."

THE TRADES MOVEMENT.

London.—A crowded meeting of builders' labourers has been held to consider the advisability of asking for an increase of wages to 6d. per hour, as requested in the memorial addressed to the Builders' Association in 1872, and to which no reply has been received. Detachments of labourers from the different districts marched to the hall in Bouverie-street with bands and banners, and, after considerable discussion, a resolution was submitted, to the effect that in the opinion of the meeting the small addition to wages given in 1872 by the sub-committee of the Masters' Association was insufficient, looking to the great increase in the prices of clothing, provisions, &c., and that they felt confident the public would endorse their statement that 6d. per hour was not too much to enable a man to feed, clothe, and educate himself and his family. The resolution was adopted unanimously, and a copy was directed to be sent to the Builders' Association, the meeting being adjourned to

June 13, when it is hoped the masters' reply will be ready for consideration.

Preston.—The six months' notice of the journeymen joiners and carpenters, demanding an increase of wages from 28s. to 32s. per week, having expired, there has been a general meeting of the employers, when a resolution agreed to at a previous meeting to give an advance of 2s. per week now, and to withdraw a previous offer of 2s. more next year, or to submit the matter to arbitration, was re-affirmed. At a full meeting of the workmen, it has been unanimously resolved to reject the whole of the masters' propositions, and to insist on an immediate advance of 4s. per week; and at the end of the joiners' week, nearly 400 men were to strike work, including those employed at mills and other places. We are informed that the Executive Committee of the Joiners' and Carpenters' Association have not sanctioned this strike, and that it has been entered into in the face of their refusal. The Preston men will therefore be thrown upon their own funds, and upon such aid as the Preston Trades' Council may be disposed to give them. Three of the employers, having urgent work in hand, have expressed their intention of conceding the demand of the men rather than encounter the inconveniences of a strike. On the other hand, the masters generally say that the present state of trade does not justify them in giving any advance, but they would concede 2s. to prevent a strike and its concomitant ill-feeling.

Darlington.—A meeting of the master builders was held on the 29th of April last to consider a demand made by the bricklayers for an advance of wages of 3s. per week, and to cease work on Saturdays at twelve instead of one o'clock, when it was resolved to grant the 3s. advance providing the men would agree to work until 12.30 on Saturdays, and extend their starting-places for waiting time. A further meeting was held on the 28th, when a reply was read from the bricklayers, "that we still hold to the notice sent, and require from you three months' notice at the proper time before any alteration of our rules be made." A deputation of the masters then waited upon the men to give reasons why the starting-places should be extended, but still they refused to come to terms. It was then offered to give the 3s. advance and allow the walking stations to remain unaltered for two months; also that the hour to cease work on Saturdays be 12.30. To which the men replied, "We will not deviate from our notice one iota." The masters have now withdrawn their offer, as they are of opinion that they have endeavoured to meet the men on fair and reasonable grounds, and only object to the half-hour on Saturdays, and the places from which the men start to walk on account of the irregularity and inconvenience of two sets of men commencing and ceasing work at two different times. A demand has also been made by the plasterers for an advance of 3s. per week, which the masters have declined to grant, because they consider the present wage of 33s. per week sufficient.

RAILWAY MATTERS.

Falling-in of a Cutting at Bankhall.—An accident of a serious character, but fortunately unattended with any fatal results, occurred at the Bankhall cutting, on the Bootle branch line of the London and North-Western Railway. The cutting, which is between 60 and 70 yards long and 85 ft. deep, passes close by the goods yard of the Lancashire and Yorkshire Company, and on the opposite side was a large brick-kiln, adjoining a wall which protected the top of the cutting. Symptoms of cracking had been observed in the ground near the kiln, and the whole length of the ground gave way and fell into the cutting, carrying with it the greater portion of the kiln of burning bricks, and completely blocking up the line; and but for the promptitude of a platelayer named Samuel Brown, the most disastrous consequences might have ensued.

Lincoln.—Progress is being made in alterations and improvements at the G.N.R. Station in this city. Owing to the rapid development of trade, and the great increase of population in Lincoln, business in all departments at this station must of late have been conducted under great difficulties, whilst the accommodation for the public has been totally inadequate to its requirements. The platform on the northern side of the station will now be made of uniform width, the booking-office enlarged by the addition of the present refreshment-room; a new refreshment-room

will be built where the north-east tower now stands, new ladies' waiting-room, new parcels office, and a variety of other alterations and improvements. Messrs. Parnell & Sons, of Rugby, are the contractors. In addition to the water-tank, recently erected on the Holmes, and the extensive alterations in the same locality, a building, capable of holding a large number of locomotives is to be erected there, and it is highly probable that the whole of the "goods" department will before long be transferred to the Holmes also.

AS TO A NEW STYLE.

Sir,—Your correspondent, "E. L. T." denominates my doubts as to the possibility of a new style "carping croakings," and "persecutions." If "E. L. T." will only communicate to the *Builder* the "first requirements or conceptions" of the new style, I promise neither to *croak*, nor *laugh*, nor *persecute*. Some of the things mentioned by "E. L. T." were tangible discoveries, such as gunpowder and the steam-engine. The early printers had definite objects, and the early telegraphists had the phenomena of electricity to go upon. The men who busied themselves about these things knew very well what they were driving at; but the men of the new style can tell us nothing about it, nor the principles on which it is to be based. It is an airy nothing, named before it has a local habitation. The architects have had, for a great many years, all the elements of architecture, which are now, were, and ever will be, the same; yet they and the spirit of the age together have been unable to get up a new style, but doggedly adhere to the old ones. It is, at least, consoling to the writer to learn that the profession numbers its "carping croakers," doubters, and "persecutors." Give us an inkling of in what this new style is to consist. Let us have evidence. If "E. L. T." cannot tell us something about the new style, we must conclude that he knows nothing about it; and in this case I will leave it to others to decide whether his belief in a new style is a reasonable belief. There is no one who would hail a new style of architecture more joyously than myself; but "E. L. T." must persuade me if I am not enthusiastic about it till the profound and gifted architects of the present age give it a local habitation as well as a name. W. C. T.

CASES UNDER METROPOLITAN BUILDING ACT.

WOODEN ADDITIONS.

The District Surveyor of Hammersmith took out a summons at the Hammersmith Police-court against Mr. Matthews for having made certain additions to cow-sheds in Wells-mews without giving notice. His defence was that he was not the proper party to be summoned, having been employed by a Mr. Price, of Oxendon-street, who found materials and advanced money to pay wages.

The magistrate, Mr. Ingham, adjourned the summons for defendant to bring Mr. Price as his witness, but at the adjourned hearing it transpired that he refused to attend. A warrant was then granted, and subsequently Mr. Price, against whom it was granted, attended, and gave evidence which identified him as the master builder.

The District Surveyor then proceeded to state that the additions to the before-mentioned sheds were of wood, secured to posts driven in the ground, and attached to the old walls. The present summons was for not giving notice, after which he intended to proceed for irregularity. The magistrate said that although it was very difficult to draw the line in these cases, still he thought that in the case before him there need be no doubt, Mr. Price having erected certain additions in such a manner as to be clearly in contravention of the Building Act, which provided that buildings should be enclosed with incombustible materials. He must, therefore, inflict a penalty sufficient to cover witness's expenses, viz., 10s., and costs, 4s., allowing Mr. Price one month to make the alterations required.

COTTENHAM SCHOOL-BOARD, CAMBRIDGE.

Sir,—The drawings for these new schools are prepared by a local builder, who tendered at an open competition, and his tender (1,200l.) is accepted. Should not the Government Board look into this matter? Q.

THE ILLUSTRATION OF SCOTTISH ARCHITECTURE.

IN the evening of the day on which the first stone of the new cathedral was laid in Edinburgh, a *conversatione* was held in the Museum of Science and Art, at which Sir G. G. Scott delivered a lecture on the "Architecture of Scotland." The lecture was rather too technical for a general audience, and was cut short. Next day Sir Gilbert sent a letter to the *Scotsman*, in which he stated that he meant to have called attention to the circumstance that no minute delineation of the architecture of Scotland had been published, the work of Mr. Billings being pictorial, and not containing measured drawings and details; he therefore recommended that Mr. Anderson (than whom no one was better qualified), who had already some measured drawings, should be encouraged to complete the work, and that material aid should be supplied to him to enable him to publish it.

PHOTOGRAPHS FROM THE ARCHITECTURAL MUSEUM.

MR. BENFORD LEMERE, of the Strand, has carried out an excellent work—that of photographing exhaustively the collection of casts at the Royal Architectural Museum, Westminster. He therefore deserves well of the profession, and it is to be hoped that his undertaking will meet corresponding support. It should seem to make more widely known the contents of the building. By means of the photographs, with the catalogue of the Museum and one or two descriptive papers, members of the profession, purchasers will be able to make better use of the treasures of the collection than has hitherto been possible. The series consists of sixty photographs, of which thirty plates are foreign and thirty English, examples of sculpture and ornament, forming a sort of illustrated appendix to the catalogue. We must add that the terms upon which the photographs are offered to the public, with reduction to members of the Museum, is liberal, and we trust that this spirited enterprise will not languish for want of adequate support.

THE WIMBLEDON SEWAGE.

WIMBLEDON has made several attempts to provide a sewage scheme to comply with regulations of the Thames Conservators to clear off the sewage of the town from discharge itself into streams connected with the Thames. Some time since, after repeated failures, propositions, the surveyor of Wimbledon (Rowell) proposed a scheme for dealing with sewage by deodorisation and intermittent downward filtration, which it was supposed would cost about 40,000l. An inspector was sent down by the Local Government Board, and held an inquiry. His report, however, was against a portion of the scheme, and he recommended one outfall only; a western and an eastern outfall had been proposed. It was also proposed that the outfall should be removed further up the river Wandale. The Local Government Board of the parish accordingly amended the scheme, the process being essentially the same. A further inquiry was held in Wimbledon, and the inspector of the Local Government Board reported in favour of the scheme as altered. Contracts have been advertised for, for the erection of the necessary works, and one will be chosen at a Board meeting to be held in Wimbledon.

SCHOOL BUILDING NEWS.

Nottingham.—The foundation of the Roman Catholic schools of St. Patrick's, don-road, Nottingham, has been laid. The ground has been purchased from the Corporation for 2,476l., and it is intended to erect on site a new church, a presbytery, and school. Arrangements have not yet been made to undertake the erection of the first two buildings. The erection of the building will be under the superintendence of Messrs. Evans & Jolly, architects. It will contain three stories; a school-room on each floor, of 53 ft. by 22 ft.; and the site is estimated at 1,700l.

Southampton.—The Kell Memorial (Unitarian) Schools have been opened. The building, being erected on a plot of land having a front to Bellevue-road, and is situated at the east end of the Church of the Saviour. The exterior is executed in Swange rubble-stone, with stone dressings specially designed to harmonise with the church adjoining. Internally there is a school-room 35 ft. 6 in. by 25 ft. 6 in., with open timbered, stained roof, supported by laminated arched principals, having an access on the west side, and an appropriate raised platform, approached by two steps at southern end. There are also two classrooms communicating with the school-room, each by 13 ft. respectively, for boys and girls, recess for library, and conveniently arranged cloak-rooms and offices. The girls' entrance is in Bellevue-road, by a porch near the entrance to the church, over which is carved a ribbon the words "Memorial Schools, 1874." The boys' entrance is from the private road on the east side, into a lobby paved with encaustic tiles. A covered communication, giving access, has been formed between the new school and the vestry of the church. The school-rooms are well ventilated; the class-rooms heated by open fireplaces, and the school by hot-water pipes, in addition to an open

place. The whole is well lighted with gas. The schools were erected by the Rev. Edmund Kell, in accordance with the wish of his deceased wife. The work has been executed by Mr. James Dyer, builder, from the designs and under the personal superintendence of Mr. W. H. Mitchell, architect, Southampton.

Hackney.—The opening of St. Michael's new schools, Hackney, has taken place. The cost of the building was about 3,500l., and a sum of 1000l. remains to be cleared off before the necessary certificate can be obtained for the official opening. The schools will accommodate 250 boys and 250 girls on a single floor.

Himbleton.—A new school has been opened here. The plans were prepared by Mr. W. J. Hopkins, of Worcester, architect, and the work was commenced in June, 1873, and completed shortly before Christmas. The building was originally intended to supply accommodation for thirty-three children, but as many of the parents live nearer to the parish school at Oddington, fifteen children are sent to this school, and the number was, consequently, reduced to sixty-eight. At Christmas, shortly after the completion, the schools were opened. The school will be supported by a voluntary rate, unanimously agreed upon, and the rate for the present year was fixed at 3d. in the pound. Sunday school has been commenced, and it is intended to establish a lending library in connexion with the school. The cost of the building has been defrayed almost wholly by voluntary subscriptions. The total cost of the building and fittings will be 680l.

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Kensington.—A new altar, dedicated to the Virgin, has just been erected by Messrs. Farmer & Brindley, in the Carmelite church at Vinegar-place, Kensington. The work is executed in green stone, alabaster, marble, and spars, at a cost of 400l., from the designs of Mr. E. Welby Pugin.

Whitechapel.—The church of St. Boniface (German R. C. church), which fell to the ground some two years back, is about to be rebuilt, from the designs of Mr. E. Welby Pugin. The building will be in the German Gothic style, and capable of holding 700 persons.

Great Prescott-street, Tower-hill.—A new permanent church is to be commenced at once in place of the temporary iron church, which was erected in this locality some ten years ago. The new building is to be in the Decorated period of Gothic architecture, and will contain a double triforium, and the whole will be groined and supported on marble columns. The building is arranged to hold about 1,200 people. A lantern, 80 ft. high, will be placed at the junction between the transept and the nave, and opening out the same, on the same plan as that of St. Lawrence's, at Rouen. Mr. E. Welby Pugin is the architect.

Kings-on-Thames.—St. Raphael's Church has lately undergone an extensive restoration. The gift of Mr. E. Raphael, of Thames Ditton. The whole of the old seating has been replaced by new wainscot oak seats, of elaborate design. A carved oak confessional has also been added in place of the old one. At the east end of the south aisle a carved altar, tabernacle, and credence of statuary marble have been erected, the tabernacle having an engraved and illuminated glass door. A heating-chamber has been built, and the church warmed by hot-water pipes, enclosed in bronzed coil cases, with white marble tops. Messrs. Cox & Sons, of London, have been the contractors for the works; Mr. W. W. Hipson, C.E., being the engineer of the warming arrangements. The floor has been tiled. The church has been lighted by six polished brass coronas, suspended from the centres of the arches dividing the nave from the aisles, and by brackets to match, all of which have been executed by Messrs. Hart, Son, & Peard, of London. Messrs. Meyer & Co., also of London, have supplied the statues, the draperies of which are gilt and engraved, and also the "stations of the cross," which have been painted by an artist in Munich. The works have been carried out from the designs of Mr. C. G. Wray, of London.

The Grocers' Company.—Designs have been received by the Company in competition for a middle-class day-school.

STAINED GLASS.

St. Barnabas Church, Leeds.—Two of the windows in the north aisle of this church have been filled with painted glass, from the studio of Powell Brothers, of Leeds. The subjects are the Crucifixion, Descent from the Cross, Pentecost, and St. John taking the Virgin to his home.

Christ Church, Freemantle, Southampton.—The east chancel window of this church has just been filled with stained and painted glass, the gift of Mr. J. P. Ranwell, of London. The window is composed of five lights, with tracery lights in the Decorated style of architecture. In the centre lower opening is represented the figure of Our Saviour, with the Orb. Immediately under is a group representing the raising of Lazarus, and text, "Whosoever liveth and believeth in me shall never die." On the right of Our Lord, St. Peter is shown holding the keys; the group below is Our Lord and St. Peter, "Feed my sheep." On the left of Our Saviour is St. Paul, resting on the sword; the group under represents his preaching at Athens. The next figure to St. Paul is St. John the Evangelist, with pen and Gospel, under which is St. John writing the Revelations. The other figure is the Evangelist St. Matthew, with pen and Gospel. The group below is Our Lord calling him from the Receipt of Custom, to follow Him. In the centre tracery light, which is large, the subject is the Ascension. The surrounding tracery lights are fitted with Mosaic ornamental glass. The design thus represents the New Testament dispensation. Messrs. Baillie & Mayer, of London, were the artists. There are several other memorial windows in the church, all of which have been from time to time supplied by this firm.

Whitchford Church, Shipston-on-Stour.—Messrs. Holland, Holt, & Holland, of Warwick, have recently placed a stained glass window at the western end of this church. In the centre light is a figure of our Saviour, as the Good Shepherd; in the side lights are representations of the parable of the Sower and Reaper. The window is in memory of the late Mr. Wincott, of Whitchford.

Kilsby Church.—This church has lately undergone additional embellishment, through the introduction of a single-light stained-glass window, containing a painted figure representing St. Faith, and surrounded with a geometric pattern, the whole being the work of Messrs. Cox & Sons.

Baddesley Clinton Church.—The chancel window of this church has recently been restored by Messrs. Camm, Bros., of Smethwick, near Birmingham. It possessed, scattered about, parts of figures, arms, and subjects, which have been re-arranged and completed as follows:—In the centre is the Crucifixion, and on either side, in the uppermost tiers, a St. George and Catherine; underneath three members of the Brome and Ferrers family. The two outer lights contain Sir Edward and Lady Constance Ferrers and sons and daughters, and the various arms of the families intermarried.

Roman Catholic Church, Kidderminster.—The congregation of this church have just filled the east window with stained glass. It is a large five-light window and tracery, containing figures of St. Patrick, Helena, Ambrose, Martha, Thomas of Canterbury in the lights, with the emblems of the Passion, supported by angels, in the tracery. It is executed on grisaille glass in monochrome with gold, no other colour being used, to preserve as much light as possible. The artists were Messrs. Camm, Bros., of Smethwick, near Birmingham.

Books Received.

Economics of Construction in Relation to Framed Structures. By ROBERT H. BOW, C.E., F.R.S.E. London: Spon. 1874.

The two parts of this work now published, first, classification of structures; second, diagrams of forces, are intended to form a useful manual in themselves. In Part I, the illustrations are, in the meantime, confined to roof and bridge trusses, a considerable number of the designs to illustrate the classification being original. Part II, gives the application of the recently expanded method of arriving at the stresses in structures, by drawing diagrams of the forces. As Mr. Bow himself remarks, the importance to which this method has attained is almost altogether due to Professor J. Clerk

Maxwell. It is to the neglect of this branch of engineering science that much of the clumsy and uncalculated-for massiveness of certain ugly structures, and the lavish expenditure of material, labour, and money on them have been due, and the general admiration for such structures is a perversion of the public taste.

The Practical Assayer. By OLIVER NORTH.

London: Chatto & Windus. 1874.

This work contains easy methods for the assay of the principal metals and alloys, and it is principally designed for explorers and those interested in mines. It provides for a want that has long been felt,—a knowledge of practical modes of assaying, without any general or extensive knowledge of analytical chemistry. Assaying is a mere mechanical art, and some of the best and quickest assayers have been mining youths who could hardly write their own names, and were not analytic chemists at all. All hard words and formulas have been left out, and only easy and useful methods, which do not need expensive apparatus, have been given, so as to be useful chiefly to the mining explorer.

VARIORUM.

"A Little Lower than the Angels." By Fanny Aikin-Kortright (Sampson Low & Co.), is prompted by the author's desire to see woman raised to a superior position morally and mentally than she has yet reached, and the title is chosen, says Miss Kortright, not to state what women are, but what they might be. Miss Kortright first gained a reputation by "The Dean" and from that time to this every line she has written has had a good purpose and been calculated to advance that purpose. It is not the question of woman's rights that is discussed in the little book before us; it is no endeavour to persuade the fairer half of creation to try and take the place of men; but a series of suggestive and eloquent chapters pointing out those paths in which woman can be useful, suggesting courses which lead to happiness, and indicating such a life as would leave those who lead it "A Little Lower than the Angels" at the close of it. It is a good and charming little volume, and we heartily wish it (not chiefly for the author's sake), a large and long continuing circulation.

—The *Contemporary Review* (A. Strahan) is again enriched by the pen of Mr. Gladstone, in the shape this time of a minutely critical paper on Homer's Place in History. We take a paragraph from a paper in the same serial by Mr. W. R. Greg, titled "Rocks Ahead." After urging that the basis of our industrial supremacy is cheap coal, and that coal is ceasing to be cheap, the writer continues:—"The second great advantage which has hitherto made us the workshop of the world—the efficiency and conscientiousness of our artisans,—is becoming distinctly impaired by operations the influence of which is notorious, and the cure or counteraction of which is not yet visible. The power and the organisation of our working classes are growing year by year; and that power and organisation are being persistently applied to obtain higher rates of wages, and to enforce shorter hours of labour, while that labour is from the same causes becoming less conscientious and less disciplined. The inevitable result of these combined agencies is, that the cost of production of the commodities for which Great Britain has always been most famous is greatly enhanced both positively and relatively; while the boundless concentration and command of capital, which hitherto have so enormously reduced that relative cost, are no longer exclusively her own." His inference naturally is, the decadence of England.—A new story in *Cassell's Magazine*, "In Honour Bound," by Charles Gibbon, promises well. The author's power of description is of no common order.

Some hints on varnishing are given in the new number of "Cassell's Household Guide."—"Before beginning to varnish it is necessary that the surface to which it is to be applied should be perfectly free from all grease and smoke-stains, for it will be found that if this is not attended to, the varnish will not dry hard. If the varnish is to be applied to old articles, it is necessary to wash them very carefully with soap and water before applying it. When it is wished that the varnish should dry quickly and hard, it is necessary to be careful that the varnish should always be kept as long a time as possible before being used; and also that too high a temperature has

not been used in manufacturing the varnish employed. It is likewise customary, when it can be done, to expose the article to the atmosphere of a heated room. This is called stoving it, and is found to greatly improve the appearance of the work, as well as to cause the varnish to dry quickly. After the surface is varnished, to remove all the marks left by the brush, it is usually carefully polished with finely-powdered pumice-stone and water. Afterwards, to give the surface the greatest polish it is capable of receiving, it is rubbed over with a clean soft rag, on the surface of which a mixture of very finely powdered tripoli and oil has been applied. The surface is afterwards cleaned with a soft rag and powdered starch, and the last polish is given with the palm of the hand. This method is, however, only employed when those varnishes are used which, when dry, become sufficiently hard to admit of it. When it is wished to varnish drawings, engravings, or other paper articles, it is usual to previously paint them over with a clear solution of gelatine. This is usually prepared from parchment cuttings.—"The Popular Educator" affords some instruction as to flat tinting in water-colour painting:—"The first exercise will be to make an even tint; this may be either uniform or graduated. Pin down or strain a piece of paper about the size of a quarter of a sheet of imperial; rub it all over gently with a piece of india-rubber, and place it on a table, having the upper edge raised so as to form an angle of about 25° or 30°. Mix in a saucer a middle tint of sepia, indigo, lake, or any other transparent colour; about a table-spoonful will be sufficient to cover a piece of paper of the above size; the pupil must bear in mind that in all cases of flat tinting, a sufficient quantity of colour must be prepared to last through the process, for if he has to replenish the saucer before the paper is covered, he will find it difficult to match the exact tint again, and unless he does so the surface will be irregular. For a uniform tint, he must commence at the top of the paper, avoiding the pasted edges, and with a full brush pass from left to right in a horizontal direction, fill the brush again, and pass from right to left, taking up the edge of the first layer; repeat this successively, backward and forward, constantly replenishing the brush, and taking especial care that every part is covered as he proceeds, so that there may be no necessity to retouch it, as this would produce out shapes (stains and patches), which spoil the tint. When the whole is covered to the bottom of the paper, if there is a quantity of colour remaining at the edge, exhaust the brush on the blotting-paper, and pass it very carefully, without rubbing, along the overcharged parts; it will take up all that is not wanted, and then the paper may be left (still inclined) to dry. After a trial or two, a tint may be carried from the top to the bottom of a sheet of paper of any size without leaving the least mark or stain; and the more transparent the colour, the more even will be the tint. The great secret in making an even tint lies in using plenty of colour, so that it may flow down after the brush as it descends; great care must be taken that the brush passes horizontally across the paper, and in no other direction. A paper tinted with a light tone of sepia is very useful for effective sepia drawings upon which the high lights may be picked out."—Herbert's "Guide to London" (2, Charterhouse-buildings, Aldersgate), is certainly the gayest of gay directories addressed to visitors to the metropolis. It includes a number of views of the principal buildings.

The Sub-Wealden Exploration.—Mr. H. Willett, F.G.S., secretary to the Sub-Wealden Exploration Fund, reports that a depth of 900 out of the 1,000 ft. contracted for had been reached, and that the existing contract was nearly completed. A meeting of the Central Committee has been held in London to consider "Whether it be desirable to proceed with the work;" and, "If so, how the necessary funds are to be obtained?" It was unanimously resolved that, as such important economic and scientific questions were awaiting the completion of the undertaking, it was most desirable that the work should be continued. It was stated that 500l. were at once needed for lining tubes, and at least 250l. additional for every 100 ft. below 1,000 ft.

Gift to Cambridge University Museum. Lady Burdett Coutts has given a series of Devonian fossils, of great beauty, to the Cambridge University Museum.

Miscellaneous.

Sanitary Condition of East Kent.—A summary of an exhaustive report by Dr. Robinson, the medical officer of health for the districts, relative to the general sanitary arrangements of the various districts in the combination of East Kent Sanitary Authorities appears in the *Kentish Express and Ashford News*. In his prefatory remarks, Dr. Robinson speaks of the shameful abuse of the naturally bright and sparkling streams of the district by the pollutions thrown into them, although they are more or less resorted to throughout their progress by many people who possess only these natural aqueducts as an available water supply. He states that the rural portions of his district are sadly behind the towns in good house accommodation, water supply, and the provision made for sewage disposal, and especially condemning the irregular and improper modes in which sewage and excremental matters from dwellings are disposed of; the soil and the atmosphere being both of them polluted by the off-scouring of the occupants, to say nothing of the penetration of those matters into the sources of drinking water also. It has been very generally the practice for drains from closets to discharge into open ditches, and in one village not far from Ashford a ditch of this kind ran along the village street and emptied itself into a large pond at the end, the water of which was of the colour of strong coffee. An immense number of complaints have been reported by the inspector, but the large majority have been abated. Dr. Robinson suggests the provision of water-tight receptacles, and the use of the ever-present deodoriser earth. To carry out a scheme of this nature satisfactorily, two conditions for its fulfilment, he remarked, would require adoption, viz., the general application of a uniform principle in a locality, and the effective converging of the place. At a meeting of the East Kent Sanitary Combination resolutions in favour of carrying out these suggestions were adopted.

New Courts for Surrey.—Part of the newly-erected Court has been opened for use. The main entrance, as before, is from Newington-causeway, through a vestibule, above which are two towers, surmounted with mansard roofs. In the right of the vestibule is the treasurer's office and housekeeper's room. After passing through the vestibule there is a central hall 50 ft. by 40 ft., on each side of which there are waiting-rooms. At the south-east corner the new Court is approached. It is 45 ft. by 40 ft. The Bench extends the whole of the east side of the Court; underneath there are seats for the clerk of the peace and assistants, and below them a table and ample accommodation for attorneys. On the east side there is a gallery, and underneath a space for the public. The dock is opposite to the Bench, and below that are seats to accommodate a large number of barristers. The jury-box is on the left of the chairman, and adjacent there is accommodation for the jury, and waiting and, at the rear, a retiring room. On the right of the chairman are the reporters' seats, and accommodation for witnesses in attendance. Above the vestibule is the grand jury room. There are several waiting-rooms, and two rooms for barristers adjoining the magistrates' room, giving access to both Courts, when finished. The basement of the new Court contains thirty cells for the prisoners, and adjoining are excellent machinery for ventilating and warming, by Messrs. Haden, of Trowbridge. The exterior of the new building is of white Suffolk brick, with brick mouldings and stone dressing. The builders' contract was 17,340l., and an additional 3,000l. have been expended on warming, lighting, and ventilating. The architect is Mr. Howell, of Lancaster-place; and the builders are Messrs. Perry, Tredegar Works, Bow.

Re-opening of the Nottingham Fine Arts Museum.—This museum has been re-opened to the public, after receiving a new collection of art treasures from South Kensington in exchange for those that have been on view during the past year. The arrangement was made by Mr. George Harry Wallis. In addition to the collection from London there have been several local contributions and donations, including a case containing a collection of Nottingham pottery of all kinds, kitchen utensils, drinking vessels, ornamental vases and tiles, lamps, and a number of objects the uses of which are not understood, some of them, from their shape and size, similar to Roman funeral urns.

Dean Stanley on the Catacombs.—An interesting lecture has been delivered by Dean Stanley on "The Roman Catacombs as illustrating the Belief of the Early Christians." The theatre of the Royal Institution, in which the lecture was delivered, was quite filled on the occasion. The dean pointed out that something might be gathered of belief of the early Christians through the Catacombs, which might be called the Pompeii of early Christianity. They were rather a proof of the toleration which Christians received at the hands of the Roman Empire than of its persecution. The result of a candid investigation of the records was, that the idea of the Good Shepherd was the primitive idea of the early Christians. Without this they would hardly know that the Catacombs were a place of Christian burial at all. "I am the good shepherd"—or, as it should probably be translated, "I am the beautiful shepherd"—was the sign of the early Christian belief; but as this idea wore out, it was replaced by creeds and formulas. The belief impressed by the records of the Catacombs was that of a joyous creed, not that of a desponding melancholy one. It was represented by the spreading vine and the gathering of the grapes, by birds with bright plumage, representing the transition of the human soul, and by such inscriptions as "Vive in Deo, vivas in Deo, vivis in Deo," which would now probably be regarded as maxims of deists, pantheists, or even atheists. In the Christian times the popular conception was that of a strong, joyous youth, of eternal growth, an immortal grace, which was not to repel but to attract, not to destroy but to save.

Why Trees will not Grow in Squares.—At a recent meeting of the Scientific Committee of the Royal Horticultural Society Dr. Voelcker stated the results of his investigation of the soil of a London square in which Messrs. Veitch had twice planted planes, which in each case had died. According to the *Garden Chronicle*, he found, on examining the clay-water solution from treating the soil with distilled water, that the soil contained one-tenth per cent. of common salt, and two-tenths per cent. of nitrates. Whenever the amount of chlorine in soil reached anything like an appreciable quantity, it exercised an injurious influence. Land, for example, which has been undated by the sea, will not grow wheat for next two years, though in the first year cabbage may be grown, and they will withdraw a good deal of the salt from the soil. The quantity of nitrates in the soil sent to him was remarkable. Usually in a soil it did not reach a proportion which could be expressed otherwise than by third place of decimals. He could have doubt that the two saline ingredients he mentioned did the mischief. He did not do that it was owing to the place having been constantly used for committing nuisances that the presence of the salt and nitrates was due. The same way rabbits kill hedges, and it is known that it is years before grass will grow in their runs.

Brickmaking by Machinery.—Mr. Will Stubbs, of Rickerscote, near Wolverhampton, has now in operation a machine of his invention, which he has recently patented, the manufacture of bricks. This machine worked by steam-power. A brief description of the machine may interest many of our readers. To an onlooker is presented a revolving horizontal table, on which are fixed six dies compressing the clay. On one side of the table stands a man who fills each die with clay, and on the other side of the table is another man who removes the clay after it has been compressed. Each die is fitted with a hinged lid cover, and a sliding bottom, and as the table revolves the die passes under a fixed plate which compresses the clay. The clay is delivered into a cut down an incline from the pug-mill, and is cut into blocks of the required size by means of wires by the man who fills the dies. The machine is capable of compressing 1,500 bricks an hour, or 12,000 in a day of eight working hours. By a multiplication of dies, the production would be considerably increased.

Neston and Parkgate Sewerage.—At a special meeting of the Neston and Parkgate local board, it was unanimously decided to adopt the plans for the sewerage of the district prepared by Mr. G. W. Goodison, C.E., of Liverpool, to make the necessary application to Local Government Board for permission to borrow the money to carry out the works.

New Swimming-baths, Kennington Oval.—The Crown Swimming-baths, which are situated in the rear of a number of villas, facing the South London cricket-ground, have been opened. It appears, from the *South London Chronicle*, that during some excavations by Mr. Higgs, the builder, of South Lambeth, the presence of a large quantity of water suggested to that gentleman that there might be found a sufficient supply for the purposes of public baths. An artesian well was successfully sunk, and the work of construction was at once determined upon. The entrance is by an archway into a corridor of about 120 ft. in length, by which the swimming-bath is reached. The bath, including the margin, is 160 ft. long by 60 ft. wide, the water surface being 127 ft. by 37 ft. The roof, open timbered, is ridged, as it were, by a lofty skylight extending the whole length, and, by a sort of clearstory arrangement, ventilation is secured. On either side are forty-six dressing-boxes, 92 in all. The depth of the water graduates regularly from 7 ft. to 3 ft. 3 in., and the gross measurement of the water in the bath is 130,000 gallons. Over the dressing-boxes, supported by iron pillars, is a gallery which runs round the whole of the interior. Three-fourths of its width are occupied by warm baths, the doors to which are reached by means of a stone staircase ascending from the entrance-corridor.

Alexandra Palace Art Union.—At Hanover-square Rooms we saw a collection of works of art about to be distributed by the directors of the Alexandra Palace Company to the present season-ticket holders, under the conditions of a circular recently issued. According to these conditions, the guinea season-ticket entitles the holder to participate in the annual distribution of works of art, consisting of original pictures in oil and water colours, statuary, porcelain, and pottery, bronzes, statuettes, engravings, photographs, and other choice examples of art. He will also be admitted to the park and grounds of the Palace on Sundays. The directors pledge themselves to set aside annually 20 per cent. of the gross amount realised by the sale of season tickets, to be devoted to the purchase of pictures and other high-class works of art exhibited in the Palace, so that for every thousand ticket-holders there will be an annual distribution of the value of 200l. We must confess that we view this part of the directors' programme with little favour. If the Alexandra Palace supply a public want it will not need any such scheme to start it. If it does not supply such a want, or is not well managed, no such scheme will make it a success. It is a mistake altogether.

Bonded Cellars under Lower Market, Exeter.—The corporate property has recently been extended by the enlargement of the cellars under the Lower Market. The town-council leased these cellars to Messrs. Harding & Richards, stipulating for a certain area; but on examination it was found that under the old corporation job had been perpetrated, and that the cellars were then not nearly so capacious as was represented on the plans. The council ordered the work to be completed; and Messrs. Harding & Richards have inaugurated their opening of the cellars, recently converted into bonded stores, by inviting the mayor, the members of the town-council, and some other friends, to inspect them. The area covered may be roughly estimated at about 150 ft. by 100 ft. These extensive cellars are well ventilated, and lighted throughout with gas. After inspecting the ramifications of the cellar, the company were invited to partake of a champagne luncheon, which was served on an improvised dining-table, which extended more than half the length of the cellars.

A New Needle.—A lady in San Francisco, the *Chronicle* of that city says, has invented a new needle, the improvement consisting in making a needle of any size without an eye for the thread, but with, instead, a hole bored longitudinally into the head, or larger end thereof, to the depth of a quarter of an inch or moreabouts, which hole is arranged with a crew thread. The needle, it is claimed, will carry any kind of thread, and can be used for very purpose. It is thought that it will be valuable also, as a surgical needle, as it will penetrate but one thread, the advantage of which will be that a smaller hole will be made in passing the needle through any substance than could have to be made by the partially doubled thread of the ordinary eyed needle.

Wells Cathedral Restoration.—The exterior restoration of this cathedral is now almost completed. The columns and abaci in the west front, of blue lias, which in the course of centuries had almost crumbled away, are now replaced by columns and abaci of Kilkenny marble. The length of the columns referred to cannot be less than 5,000 ft. The canopies above the heads of kings and bishops, and the arcades, had also in many cases crumbled away through exposure, and in one or two instances, having lost the support of the columns, had fallen down bodily. All those which had fallen, wholly or in part, have been replaced by canopies or arcades exactly corresponding in shape, size, and materials to the originals. No attempt in the late restoration has been made to replace any statue. A very few indispensable reparations, with the single view of preservation have been attempted. The number of principal statues exceeds 100; the number of figures of smaller dimensions in the quaterfoils, &c., must exceed 1,000.

Value of Land in Middlesbrough.—Land near this thriving town, like that in most of our northern cities, has wonderfully increased in value, as was instanced at a recent sale by auction. About 160 acres were put up by Messrs. Driver, the auctioneers, of London. One portion, called Ulla Farm, about 90 acres, situate midway between Stockton and Middlesbrough, realised upwards of 6,000l., or over eighty years' purchase upon its present rental. The other portion, Swatwell's Carr, containing about 70 acres, within the borough, and thus possessing building value, was bought by Mr. Joseph Dodds, M.P. for Stockton, for the sum of 56,000l., or more than 800l. an acre. Neither estate is believed to possess any mineral value.

The Sewage Question.—Mr. J. C. Melliss, C.E., referring to a statement that "The chemical processes, some of which are well calculated to be useful, if not profitable, are not making much headway just now," writes to the effect that the Anderson precipitation process is in operation by the General Sewage and Manure Company at Coventry, and that the whole of the sewage of that city, amounting to 2,000,000 gallons a day, is purified, the effluent water passing into the river, and the dried precipitate sold as an agricultural manure at a remunerative price. He merely wishes to make known that a chemical process has, as a fact, in this instance at any rate, solved the sewage difficulty.

Subsidence of a Railway Bridge at Woodley.—A large bridge over the Peak Forest Canal, near Woodley, about 50 yards long, on the new line of railway, has subsided so much that it has been found necessary to draw the water off in the canal for some days, in order to repair it. In the centre of the abutment has been a quicksand, which has caused the subsidence, and hence endangered the safety of the brick and stone work, which has given way in various places. About 200 workmen are engaged by the contractors, Messrs. Benton & Woodiwisse, in taking out the clay from the canal bottom, and laying an archway of brickwork to strengthen the foundations. The cost is estimated at several hundred pounds.

Huddersfield Infirmary.—The new wing which has recently been added to the north side of this institution has been formally opened. The wing consists of an upper and lower ward—the former for women and children, and the latter for males; and it is built upon the pavilion principle. Each ward is estimated to accommodate twenty-eight beds. The wing has been constructed from designs supplied by Messrs. J. Kirk & Sons, architects, Huddersfield and Dewsbury. The cost will be about 4,000l., or 5,000l., but the whole of the improvements which it is proposed to carry out will require a sum of 7,000l.

Epping Drainage.—Mr. Slater-Booth, replying to Dr. Lush, in the House of Commons, said that the amount expended on the works of the Epping Special Drainage districts was 11,500l.; that the drainage and water supply were very imperfect, and that the rate of mortality in the district was very high. He received a deputation only the day before on the completion of the works, and would defer his answer until after the Whitsuntide holidays.

Coventry Sewage Works.—We are asked to state that Latham's patent solid sewage extractors used in these works were erected by Messrs. G. Waller & Co., of Southwark, who are the sole manufacturers of these machines.

New Masonic Hall for Surrey.—The memorial stone of a new masonic hall has been laid close to the Camberwell-road Railway Station, for the use of the members of the ancient craft resident on the south side of the Thames. The hall will belong to the "Surrey Masonic Hall Company." There is to be a large hall capable of accommodating 700 persons, and available to the general public for balls, concerts, entertainments, and other meetings. The design, which will present an elevation to the Camberwell New-road, is the work of Mr. Edward Clark, architect to the company.

The Bursting of Reservoirs in America.—New York journals of the 13th of May bring details of the catastrophe at New Hampshire. Two villages were devastated by the bursting of the Williamsburg reservoir. The *New York World* says:—"One hundred and twenty buildings are destroyed, hundreds of acres covered with stone and mud. No one has attempted to estimate the loss in money. As for human life, to-night ninety bodies in all have been found, and squads of men, here and there through the valley, are looking for some thirty more missing men. Even now that the waters are down, the danger is not reckoned entirely over."

A Temperance-hall for Middlesbrough.—The foundation-stone of a temperance-hall has been laid at Middlesbrough. The hall, when completed, will accommodate 1,500 persons, and there will be rooms suitable for lodge, club, and other meetings. Mr. John Dunning laid the stone, and in the course of his address said, that his subscription (250l.) towards building the hall was part of his debt to the temperance cause, for had he not become a teetotaler, most probably that and other money would have been wasted in dissipation.

Chester Archaeological and Architectural Society.—A meeting of this Society was held last week, in the King's School, by permission of the Very Rev. the Dean, who was voted to the chair. There was a good attendance, and two hours were profitably spent in listening to an ably-written paper by the Precentor, on "Ranulph Higden, the author of the *Polychronicon*, and the recent discovery of his grave in Chester Cathedral," and an interesting description, by the Dean, of the *Miserere*, or stall-seats, of the Cathedral, which are now undergoing repair.

The Restoration of Gloucester Cathedral.—The sum total expended on the restoration of the choir, transepts, aisles, and south porch of Gloucester Cathedral amounts to 16,519l. 8s. 7d. This sum is exclusive of the outlay by the Freemasons, on the reredos; by Mr. Marling, on St. Andrew's Chapel and the great south window; by the late Earl of Ellenborough, on St. Paul's Chapel; by the Codrington Memorial Committee, on St. Philip's Chapel; by Mr. Dent, for the lectern; and by Mr. Nicks, for the window in the south porch.

Museum for Ripon.—A public meeting has been held at the town-hall, Ripon, to take into consideration the advisability of establishing a public museum for the city. The Marquis of Ripon, K.G., presided, and it was resolved,—"That a public museum for the city of Ripon is very desirable, as an important and useful educational institution." Further,—"That a subscription be opened, and the most advantageous and convenient measures be adopted for the purpose of establishing a public museum in the city."

New Vestry Hall for Rushden.—For years past the want of a suitable room in this village for vestry meetings has been much felt. Power being given to the vestry to borrow 300l., repayable within ten years, on the security of the rates, for the purposes of the building, the old room is now in course of demolition, and, as soon as the plans are ready, the new Vestry Hall, on the same site, will be proceeded with.

Birmingham and District Architectural Association.—On Saturday last the members of the Association visited the church now being erected at Park Hill, Moseley, from the plans of Mr. W. Preedy, of London, architect. The members were conducted over the building by Mr. C. Noble, the clerk of the works.

Association of Municipal and Sanitary Engineers and Surveyors.—A successful meeting has been held in Birmingham, running over three days. Various papers were read and discussed. We will give more detailed particulars and some comments in our next.

New Post-Office for Warrington.—The Post-office authorities are negotiating with the solicitors of Lord Wimmerleigh as to the conveyance of a site for a new Post-office, opposite the Town-hall, and arrangements are in progress for the commencement of building operations forthwith. In the present building a staff of forty persons is at work in two rooms, the larger one 48 ft. by 15 ft. and 9½ ft. high; the smaller, 15 ft. by 9 ft. and 7½ ft. high.

Price of Land in London.—The freehold site formerly occupied by the Church of St. Martin Outwich, at the corner of Threadneedle-street, was on Monday purchased by tender from the Ecclesiastical Commissioners by Messrs. Hardwick & Holmes, solicitors, for a client, at the price of 32,050*l*. It contains upwards of 2,200 square feet. The price is equal to about 640,000*l*. an acre.

Another Museum for Birmingham.—In the local *Daily Mail*, of 18th ult., is an article ably advocating the establishment of a Gun-makers' Museum to illustrate the materials, processes, and appliances used in the special trade and manufacture of fire-arms, and their history, with a library of appropriate books and patents, &c.

TENDERS

For the new Church of St. Mary, Newington, Surrey. Mr. James Fowler, architect:—

Pattinson	£21,502 0 0
Sammon & Sons	18,316 0 0
Manley & Rogers	18,250 0 0
Rider & Son	18,070 0 0
Tarrant	18,000 0 0
Lathey, Brothers	17,970 0 0
Downs & Co. (accepted)	17,690 0 0

For alterations and additions to 84, Red Lion-square, Holborn, for the Midnight Meeting Movement. Mr. W. P. Griffith architect:—

Devereux & Son	£396 0 0
W. & J. Latier	372 17 0
Flaxman	368 10 0
Moreland & Nixon	365 0 0

For new Primitive Methodist chapel, White Hart-street, High Wycombe. Mr. Arthur Vernon, architect. Quantities supplied:

Woodbridge	£3,185 0 0
Banghurst	3,030 0 0
Seell	3,004 10 0
Cooper	3,003 0 0
Ward	2,902 0 0
Reavell	2,900 0 0
Hunt	2,830 0 0
Saxton	2,805 0 0
Spicer (accepted)	2,661 0 0

For a sewer in Limerston-street, for the Vestry of the parish of St. Luke, Chelsea. Mr. Josh. Pattison, surveyor:—

Pearson	£290 0 0
Neave & Son	872 0 0
Keble	738 0 0
Feltham, Bros. (accepted)	648 0 0

For repairing and decorating Arundel-square Chapel. Mr. W. Hendgar, architect:—

Woods	£500 0 0
Steed, Bros.	489 0 0
Porter	445 0 0
Cooke	435 0 0
Richards	430 14 0
Coleman	373 0 0
Howard	346 0 0

For alterations to the Brondesbury Arms, Canterbury-road, Kilburn, for Mr. W. Clark. Quantities by Mr. Benjamin Hobbs:—

Coney	£345 0 0
Toms	633 0 0
Hyde	630 0 0
Lamble (accepted)	489 0 0

For erecting warehouse, Fresh Wharf, London Bridge, for Messrs. J. Knill & Co. Messrs. Spooks & Stock, architects. Quantities supplied:—

Brown	£8,975 0 0
Conder	8,892 0 0
Mundy	8,770 0 0
Jackson & Shaw	8,672 0 0
Wood	8,523 0 0
Brown & Robinson	8,465 0 0
Adamson & Sons	8,460 0 0
Coleman	8,364 0 0
Rider	8,360 0 0
Dras	8,193 0 0
Band (accepted)	7,994 0 0
Newman & Mann	7,726 0 0

For wall and railing, Tooting Cemetery:—

Pearson	£2,000 0 0
Dickenson	2,280 0 0
Main & Co.	2,100 0 0
Tyerman	1,984 0 0
Cottam & Co.	1,988 0 0
Stone	1,985 0 0
Riches (accepted)	1,794 0 0

For the restoration of Benniworth Church, Lincolnshire. Mr. James Fowler, architect:—

Barker	£1,372 0 0
Clark & Son	1,260 0 0
Thompson	1,188 0 0
Walter & Hensman (accepted)	1,196 0 0

For building public hall at Carshalton, Surrey, for the Carshalton Public Hall Company (Limited). Mr. J. D. Layton, architect:—

Keel	£1,725 0 0
Clark	1,650 0 0
Spezham	1,600 0 0
Coles (accepted)	1,648 0 0

For alterations to premises, Berry-street, Bootle, for Mr. Wilson. Messrs. Murray & Thomas, architects:—

Blundell (accepted)	£250 0 0
---------------------------	----------

For the Wilberforce Memorial, consisting of new chapel, dining-hall, offices, &c., at Cuddesdon College, Wheatley, Oxon. Mr. G. E. Street, architect:—

Lovett	£6,635 0 0
G. & F. Higham	5,394 0 0
Adamson & Sons	5,980 0 0
Castle & Sons	5,715 0 0
Synn & Co.	5,207 0 0
J. & T. Davis	5,300 0 0
Silver & Co.	5,184 0 0
Franklin & Son	5,010 0 0

For the erection of a detached house and stable buildings at Brackley, near Banbury, Oxon, for Major Fairfax Cartwright, M.P. Messrs. Franklin & Andrews, architects:—

Downs	£10,656 0 0
Macey	10,380 0 0
Treloars	10,740 0 0
T. & S. Orchard	10,211 0 0
Brass	10,176 0 0
Munday	9,530 0 0
J. & T. Davis	9,332 0 0

For alterations and additions to a house at Brackley, near Banbury, Oxon, for the Hon. R. W. Grosvenor. Messrs. Franklin & Andrews, architects:—

Downs	£1,610 0 0
Treloars	1,560 0 0
Macey	1,559 0 0
Orchard	1,399 0 0
Brass	1,307 0 0
Munday	1,375 0 0
J. & T. Davis	1,297 0 0

For additions and alterations to the St. Pancras Vestry-hall. Mr. H. H. Bridgman, architect. Quantities by Mr. W. Barnett and Mr. F. Thomson:—

If Plate Glass and Wainscot Fittings.	
Kelly, Bros.	£1,857 0 0
Manley & Rogers	£5,090 0 0
Crockett	4,411 0 0
Aitchison & Walker	4,185 0 0
Moreland & Nixon	4,153 0 0
Wool, Bros.	4,194 0 0
High	3,988 0 0
Elkington	3,870 0 0
Elkington	3,730 0 0
Grimwood & Sons	3,619 0 0
Nillett & Son	3,630 0 0
Wilson, Bros.	3,465 0 0
* Accepted.	

For alterations to and extension of premises situated Nos. 1, 2, & 3, Little Britain, City, for Mr. George Keeney. Mr. E. P. Anson, architect. Quantities by Messrs. Pain & Clark:—

Yardley	£2,000 10 0
Oliver	2,905 0 0
Kilby	2,973 0 0
Adams	2,780 0 0
Pritchard	2,744 0 0
McLachlan	2,897 0 0
Rider	2,680 0 0

TO CORRESPONDENTS.

H. H.—R. T. S.—A. V.—C. H. B.—Mr. W.—C. P.—E. W. T.—H. & C.—Mr. K.—A. C.—F.—H. B.—J. B.—C. P.—K. C.—G. M.—T. W. C.—H. R.—A. J. W. J. B. T. K. T. M. D. R. A. H. and J. B. will have attention.—J. D. (info)

We are compelled to decline pointing out books and giving all prices.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

Six lines (about fifty words) or under ..	Wanted.	Situation Vacant.
Each additional line (about ten words) ..	5s. 6d.	4s. 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to readers in any part of the United Kingdom at the rate of 1*l*. per annum, payable in advance.

Halfpenny stamps accepted for accounts under 5*l*. Any larger sum should be remitted by Money Order, payable at the Post Office, or by Bank Note, or by Cheque, payable to the Order of the Proprietor.

Advertisements cannot be received for the current week's issue later than **THREE o'clock p.m.** on **THURSDAY**.

Bath Stone of best quality.

RANDELL, SAUNDERS, & CO. (Limited). Quarrymen and Stone Merchants.

List of Prices at the Quarries and Depôts also cost of transit to any part of the Kingdom, on application to—

Bath Stone Office, Corsham, Wilts. [Adv.]

STONE BROTHERS,

Bath Stone Merchants,

supply direct from their own Quarries:—

Box Ground, Corsham Down,

Fableigh Down, Corsham Down,

and Stoke Ground.

Prices on application at Bath-stone Office, Bath.

London Depot, G.W.R. Mileage Station, Paddington.

Stone Depôts prepared ready for fixing. [Adv.]

Whitland Abbey Green Slates. The

Quarries are now fully opened out, and

producing Slates in all sizes, and in any

quantity: sound, and of choice green tint. Or-

der can be executed without a day's delay.

For samples and further particulars, apply to—

MANAGER, at the Quarries, Narberth.

R.S.O. [Adv.]

Asphalte.

Soyssal, Patent Metallic Lava and

White Asphaltes.

M. S T O D A R T & C O

Office:

No. 117, Cannon-street, E.C.—[Adv.]

Bills of Quantities, Specifications, &c.

Lithographed by ROBT. J. COOK & HAMMO

29, Charing-cross, S.W., with accuracy

punctuality. Plans and Drawings Cop-

ied, or Lithographed.—[Adv.]

J. L. BACON & CO

MANUFACTURERS OF

IMPROVED HOT-WATER

APPARATUS,

FOR WARMING AND VENTILATING

Private Houses, Churches, Schools, Hospitals,

Manufactories, Greenhouses, &c.

OFFICES AND SHOW-ROOMS:—

476, NEW OXFORD STREET, LONDON, W.

From FARRINGTON ROAD.

Publishers of a Pamphlet on "Hot-Water Heating."

MICHELMORE & REA

Manufacturers of

CHARLES COLLINGS PATENT

COLLINGS' PATENT HINGE

LEVER, SCREW, & BARREL BOI

and IMPROVED GATE FITTINGS of every Descripti

36A, BOROUGH RO

Decent to Builders.

Illustrated Sheet on application. LONDON, S.S.

T. TRELOAR & SONS,

SUPERIOR

COCOA-NUT

Manufacturers and Warehousemen,

FIBRE

MATTING

69, LUDGATE HILL, E.C.

AND

MATS.

GOOD

FLOOR

CLOTH

KAMPTULIG

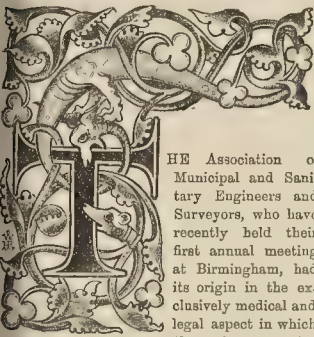
CORK

CARPET

The Builder.

VOL. XXXII.—No. 1636.

Sanitary Engineers and the Government.



THE Association of Municipal and Sanitary Engineers and Surveyors, who have recently held their first annual meeting at Birmingham, had its origin in the exclusively medical and legal aspect in which the sanitary question

was regarded by the Royal Sanitary Commission and by the late Ministry. The Local Government Department might have had excellent information upon which to frame a Public Health Bill in 1872 if they had asked for it, for there were then, as there are now, many civil engineers holding the office of town surveyor, who could have given the practical results of twenty years' experience of the difficulties in the way of carrying out proper sanitary work, difficulties which are not within the cognisance of either the medical or legal profession. Neither the medical nor legal aspect of sanitary work need have been left out of consideration,—indeed, could not have been,—but it is surprising that the Government did not seek such other information as would have enabled them to frame a complete Bill; and even some important provisions of the draft Bill brought in were dropped in order to conciliate the House, and the result was a compromised Public Health Act. There was an evident desire not to alarm the country by the introduction of a measure which should seem to contemplate constructive sanitary works. In explanation of this it was said that the engineer would be forthcoming when wanted, and that in the meantime the smaller sanitary defects should be cleared away and reports made of what works were really necessary to the maintenance of the public health. That seemed to be the policy of the measure, and it did not recognise the position of those who had been able to do something in spite of all the difficulties raised by the numerous and contradictory Acts of Parliament; and when the Act passed without recognition of the position of town surveyors there was a general feeling amongst them that their personal interests had been neglected by the Government.

Mr. Lewis Angell, C.E. and architect, the surveyor to the West Ham Local Board, took the first step in resentment of this exclusion by calling upon other gentlemen holding the same office as he holds, or others equivalent to it, to meet and see whether something could not be done to uphold the interests of the profession as against doctors and lawyers exclusively being considered.

This was a step which only required the right man to come forward in order to command a large number of associates, and Mr. Angell has conducted the business most successfully. He began by calling a private meeting at one of the rooms of the Institution of Civil Engineers, the result of which was the unanimous opinion that something ought to be done.

Let us now go back to the time of the difficulties of the General Board of Health in trying to establish itself in the estimation of the country,—say between the years 1843 and 1858. First of all the Institution of Civil Engineers set its face against Government interference in matters of civil engineering, including sanitary affairs, although the Institution had done nothing to promote them, but had rather despised sanitary engineering when its members were fully employed in commercial works, such as railways and waterworks promoted by joint-stock companies; but when work fell short under those auspices, the members of the Institution could listen to the demands of public bodies, and begin to turn their attention to sanitary work. They had not, however, shown any inclination to investigate the sanitary question in a scientific manner, and by repeated discussion prove what are the proper formulæ of proceedings under given conditions and circumstances, founding such formulæ on the experience already gained. If the Institution could have taken any but a commercial view of engineering practice, the sewage difficulty might have been solved long since; but the apathy of the Institution in presence of the sanitary question has delayed its solution by many years.

The Public Health Act, 1872, was framed wholly in regard of the medical profession. That profession, however, could not move without the assistance of inspectors of nuisances, and so this office was considered in the Bill.

Mr. C. Jones, the secretary of the Association of Municipal and Sanitary Engineers and Surveyors, in his speech at Birmingham, seemed to ridicule the Act of 1872 as having produced nothing but the inspectors of nuisances, whom he described as a person who does what he is told to do by his employers, and receives a salary of something less than 100*l.* a year, out of which he must pay his travelling expenses, which would leave him in a worse position than a workhouse porter, who, besides having almost as much salary, has the advantage of charging for cutting hair, &c. This is a sad state of things, but it does not apply to all cases. Some of the inspectors of nuisances, and especially in rural sanitary districts, receive from 200*l.* to 300*l.* a year. They are not overpaid, neither do they stand in the way of the employment of civil engineers when their services are required.

No new light has been thrown upon the sanitary question by the meeting of this Association at Birmingham, nor is any needed at present; and the chief value of the proceedings of the meeting has been to reiterate truths already well known. In his address the president regretted that the position of local officers is yet unsatisfactory; they still lack that support and protection which he emphatically declared would alone render them efficient officers, superior to local influence and interested or ignorant obstruction and attack. He remarked that the present legislative aspect of the sewage question is very unsatisfactory; that municipal authorities and their official advisers have been placed in a most difficult position by the uncertain action of the Government; that if some of the official energy which has been directed to the prosecution of unfortunate towns were directed to the discovery of the remedy of the sewage difficulty; if there were some declaration or authority of what might be accomplished, and what would be satisfactory under certain given conditions, the Government would render a real service to the country; instead of which, he said, we are without guidance, and are recommended to adopt "the best known practicable process."

If this advice were followed, it would probably have the effect of defeating one at least of the objects of the Association,—self-employment. It is inconsistent with the opposition which civil engineers have always given to Government interference in civil works. It might, and pro-

bably would be, nevertheless, the proper thing to do; but the work would fall into the hands of the Royal Engineers. That body are ever ready to accept civil positions,—some of its members, at least; and probably quite a sufficient number to raise the latent ire of the civil engineers.

It should be remembered that "this is not a paternal Government;" and if it were possible that a minister of the Crown,—late or present,—could entertain a malicious idea, he might be supposed to laugh at the futile attempts of local bodies to deal with their own sewage.

It is possible, indeed probable, that the present Ministry may be equal to the occasion, but to combine all interests and thwart none will be a work of genius. It may safely be said, however, that no satisfactory result will or can be arrived at by the Government until the combined experience of town surveyors and inspectors of nuisances, as well as that of doctors and lawyers, is brought to bear upon the question. It should be remembered that many gentlemen holding the office of town surveyor,—a generic term, which includes the various forms of borough surveyor, city surveyor, surveyor to improvement commissioners, to local boards, &c.—are regularly educated civil engineers, and men of scientific knowledge and experience; and moreover, that perhaps it is not in the largest towns where the best men are to be found, although on the principles of political economy it might be supposed that a man's knowledge is measured by his salary. A varied experience of the requirements of large and small populations, however, is the most valuable of all foundations of knowledge on this subject.

The papers read were on Building and Sanitary Bye-laws, by Mr. Lemon; on Sanitary Legislation and its Practical Exponents, by Mr. C. Jones; on Sewer Ventilation, by Mr. Ellice Clarke; on the Utilisation and Purification of Sewage, by Mr. E. Monson; on the Sewage Question, by the President; and on Street Lighting, by Mr. Skelton.

But little was said about water supply, and that little to the wrong purpose. Mr. Lemon, the vice-president, is reported to have recommended that water for domestic use should be supplied by meter, and paid for by quantity. He anticipated the objection that "such a plan would lead persons to use such small quantities that the sewers would never be properly flushed" by suggesting that the quantity over a given quantity should be charged for only in this way. It was hardly worth while to make the suggestion, seeing that the whole question was not under discussion, but, so far as it went, it was wholly wrong.

If a meter could be found which would register the quantity of water used in a house, and that quantity only paid for, the evil would not be so much that the sewers would not be flushed, as that the quantity used would not be sufficient for cleanliness and sanitary requirements. Then, if the quantity allowed to be used for a fixed payment be a certain number of gallons per head, but no more, the surplus only being paid for by meter, that would be quite impracticable in its working.

It is for the engineer to prevent waste, while giving an ample supply of water for all domestic purposes. We ought not to offer the temptation to the poor to save a few pence by using water by meter. An ample quantity of water is as vitally necessary for them as for others, and one would think a Government might be so paternal, even in England, as to require that it be supplied to them at a fixed charge.

The Mayor of Birmingham spoke very much to the purpose when, in proposing "Success to the Association of Municipal and Sanitary Engineers and Surveyors," he said that corporations everywhere had to deal with increasing difficulties, which were partly the consequence of the enormous aggregation of their constituencies,

and partly the legacy of past generations, through whose ignorance and neglect they had now to suffer.

With these gigantic difficulties they expected sanitary engineers to cope.

Well, sanitary engineers are quite equal to the occasion, we believe, and only wait for one of two things—first, either that an intelligible code of sanitary laws shall be instituted, which shall comprehend the actual requirements of the populations of towns and villages, and which shall be framed upon a knowledge of what is wanted, and how to do it under the various conditions which exist; and that those laws be made compulsory; or else that the constituent members of sanitary authorities shall be other than those whose first consideration is to protect their own individual pockets at all risks, whose knowledge of what is necessary to protect the public health is on a level with their knowledge of any other science, and who, having spent the best part of their life in getting rich, go to the Board to prevent their riches being taxed for sanitary purposes, and who are too old to receive impressions of the importance of those things which go to make up and ensure the public health, of the value of which they have not the faintest conception.

Whilst the majority of a sanitary Board consists of such men the doctor and the engineer may whistle their advice to the winds. And it is not a majority of the whole Board that is necessary to this position; a majority of those members who usually attend is sufficient, practically, although not in theory; and these members are the most persistent in their attendance at meetings.

It is pleasing to know that in some Boards these remarks—dragged as they are from the depths of reluctance—have but little application, but it is certainly true that they are applicable to a great many sanitary authorities; and it is in this direction, and in that of the reconstruction of the Sanitary Acts, with a view to meet the actual requirements of the country, that legislative action ought to lie. Then the united action of the engineer, the doctor, and the inspector of nuisances, will soon conquer all the difficulties of the sanitary question; and the actuary, watching the results, will probably be able to prove that the combined efforts of the Boards and their officers have after all saved the money as well as the health of the people. This has been so in some places, and may be in all.

"THE HISTORY OF MODERN ARCHITECTURE."

WE ended our first notice of the new edition of Mr. Fergusson's book with a promise to speak as to the phases of modern architecture treated of in it. Those illustrated at most length are, as might be expected, the styles of Italy, the cradle of the Renaissance, France, and England, Germany, with its corrupt detail in the Renaissance period, and its cold, unfeeling correctness in the Revival, is not unnaturally dismissed with a comparatively cursory notice. Of the great movement in Italy, which, in the face of all modern Gothic contempt, must be admitted to have proved its value by the extent and almost universality of the influence it has exercised, the ecclesiastical section, indissolubly associated, as it is, with the greatest Christian temple that has been erected, occupies a large share of our author's attention; and his criticism on St. Peter's, severe as the ordinary reader may consider it, represents what is now at least the deliberate conclusion of nearly all architects and architectural critics. The study of the Italian churches of this period is valuable, however, if not in all cases for their architectural excellence, at least as an antidote to that view of a church as exclusively a Gothic edifice, which has been adopted in modern England.

Every detail of Venetian architecture seems so to partake of the charm of poetic association which hangs over that city of the sea, that it is barely possible to give it an unbiased criticism; yet it must be something more than association that gives such a rich yet quiet and unpretentious effect to the Pesaro palace, and such a delicate grace and humour to that of the Vandramini. Such buildings indicate the claim of the Italian Renaissance, in this its Venetian form at least, to be recognised as a distinct and original form of architectural expression, in its combinations if not in its separate details, furnishing an expression supplied by no other style of architecture. Less engaging, but

equally praiseworthy and truthful in expression, are the great Florentine mansions, also passed in review here; buildings which have furnished not unhappily the key-note to so many modern town structures, though their square mass and formally repeated details look sadly out of place when sliced into country mansions and put down among fields and gardens. This is essentially a town architecture, a form of building typifying opulence and security, with the ease and ostentation that come with opulence. Some of the conditions are repeated in more modern towns, but it would be difficult to say where they have been expressed in buildings likely to be so long and generally accepted as models in their kind, as these Italian "palaces" have been. Of some of the less fortunately conceived forms of the same style in other Italian cities, Mr. Fergusson sums up the merit pretty exactly in saying that, elegant and fanciful as many of them are, it is easy to see how they might have been made ten times more so by a more judicious and tasteful employment of the features made use of. But in regard to the finer productions of Italian architecture of the Renaissance period we shall not find much difficulty, either, in endorsing the rather enthusiastic estimate of its value on Italian soil, made in our author's concluding summary:—

"If the Italians remain true to themselves, no nation in Europe has so fine a chance of attaining perfection in architectural art. Though 'the Orders' may not be applicable to all purposes of civil or ecclesiastical buildings, they are at least the native products of the Italian soil; they are suited to the climate, and are hallowed by the associations of the land, but they are not the only elements of the art to which they belong. The misfortune of Italian architecture was that its professors in the sixteenth century studied the remains of the temples,—the domestic and civil buildings had nearly all disappeared, till they became pedants in their art. . . . Italy has only to go back to the inspirations which characterise the end of the fifteenth and dawn of the sixteenth century, to base upon them a style which will be as beautiful as it would be appropriate to her wants and her climate. If she will only attempt to revive the traditions of the great age which is hallowed by the memories of Leonardo da Vinci and Michaelangelo, of Bramante, Sangalli, and even of Michelangelo, she cannot go wrong. These men erred only from inexperience, and because the system as to render successful impossible; but their aspirations were right, and there was an impress of nobleness on their works which has not since been surpassed. . . . In the present century, Italian architecture has been, if anything, French. But now that the country is again a nation and has a future before it, it remains to be seen what her art will become. If the Italians are capable of freedom, and of national greatness, their architecture cannot fail to be a reflex of whatever is great or good in their character or institutions" (pp. 141-5).

These are stirring words, and we would that they could be felt and applied by the modern builders of Italy. But the passage can hardly be read without suggesting the reflection how far the same reasoning applies to our own country, and its modern architecture. The Renaissance reached us chiefly in the somewhat corrupt form of the sixteenth century, against which Mr. Fergusson preaches; but, apart from this, it is not indigenous to the soil. The argument applied to our country in the same manner as to Italy, would lead necessarily to the re-adoption of our indigenous Gothic architecture, which has now been going on for some time, but has not produced many satisfactory results. Looking at the matter in this point of view, however, it is curious to turn to our author's summing-up chapter on English architecture, and read, in place of an exhortation to adopt the style of our great age of architecture, the determined onslaught which is there made upon the modern Gothic revival, in regard to most at least of its developments. Is this logical? To some extent we think it is; at least more so than at first sight would appear. Style and feeling in architecture must be largely influenced by, and related to, education and culture. The rise of what is known as the "Italian" style was coincident with the revival of letters and learning, a revival which spread throughout Europe. But the English Gothic style was prior to this, and had fallen into disrepute before the intellectual revival commenced. It does not, therefore, stand on the same footing in regard to this country as the Italian architecture to Italy; and, at all events, in the crude and rough form which its revival has taken with some of our architects, it is in direct contradiction to the real spirit of the day. Climate, however, is an influence not to be passed over, and perhaps the conjunction of something of the stateliness and uniformity of the Italian style, with the vigour of detail by which Gothic architecture is characterised, may, in combination, result in that *tertium quid*, which Mr. Fergusson desires, but which is, we fear, not a little visionary. In the mean time, it is not to be denied that both the Renaissance and the

Gothic revival in England have produced buildings of which we may well be proud. Of one the most noteworthy of these, the Houses of Parliament, Mr. Fergusson's criticism is full and very just, though by no means altogether favorable. We do not know that the merit of its external treatment of the dome over the central lobby has been quite done justice to in general. Mr. Fergusson observes,—

"Nothing is more truly and essentially Gothic in modern design than the way in which the stonework carried up 180 feet above the dome. It is what was done at Chartres, and was intended at Florence, and what Sir Christopher Wren did rather clumsily at St. Paul, but is here done more truthfully and more elegantly in any of these, and only misses perfection in so far as its dimensions are necessarily small; and its arch could not combine the full rounded lines of the Classic or Byzantine dome with the straight lines to which Gothic is unfortunately confined."

Of the productions of the English Renaissance School, it is, as Mr. Fergusson remarks, difficult to speak, in consequence of the irregular and wavering course which style pursued in this country. Here, more than anywhere else, we see that assertion of the individuality of the architect which we have spoken of before as so specially characteristic of the modern school; and it is significant of that in our author's division of the subject, the long chapter, in two parts, is devoted to "Mr. Jones" and "Wren," and headed with their respective names, instead of any more general nomenclature of style or century. Of the leading architects and their works since Wren, it is a comprehensive summary, accompanied by illustrations, suggestive enough when viewed in relation to each other, and to some of the most valient building names of the present day. The defects of these works of the second period of the English Renaissance are obvious enough; the horse in Punch, "their faults are all on one surface," but we cannot estimate their qualities so readily, from a modern point of view. We may complain of, even laugh at, the determination of Vanbrugh to be sublime, his use of little orders and big orders; but all, can any one deny the real dignity and grandeur of such a composition as the front of Castle Howard? Such a piece of symmetrical pomp certainly is only suitable to a mansion every sense of great pretensions; but is it to say the least, an open question, whether or the modern picturesque style with which names of Mr. Shaw and others are associated is the most expressive and suitable for the mansion of an English nobleman or gentleman of large means? The picturesque home is more interesting to an artist, just as the *naïveté* of middle-class life will be more interesting to the novelist than the more measured and formal life of a higher rank; but here the picturesque, either in life or in building, the highest attribute—whether to fulfil the subject-matter for the artist with pen or pencil is the best end of life—is a consideration (we should suppose) obvious reply to which art is to be unfairly evaded in the present. As to the future of English architecture, Fergusson is a prophet of evil, and holds out no hope of our emergence from shams and compromises; but we trust his view of the matter, darker than is warranted by the actual facts. The history both of the Renaissance and revival in France suggests to us how great a power of habit and association, and that indelible fluctuating feeling called *taste*, in influence on our approval or disapproval. From the point of view of the present day, it is difficult to conceive how educated eyes in any age could take pleasure in the forms which French Gothic architecture and decoration took at some period; yet that these were largely admired, and considered for the time the best that a architect's art could produce, there can be no doubt. It may be well to consider whether the reflections which may not ultimately be made concerning ourselves, and whether some of those marked styles of building getting popular at present may cause a similar bewilderment in future generations. For the rest, there can be no manner of doubt that the interest of English architecture since the Renaissance centres in the châteaux. The earlier buildings of this period of this class have a peculiar mingling of aristocratic refinement and splendour, a picturesque quality of style and outline, as well as equalled in the higher class of dwelling-house. The combination of these two elements has been thus shown to be possible, it is not strange that so little in this way has been attempted by modern architects in this country, and that we so often find the element of dis-

as the picturesque, or vice versa. In regard to Louis Quatorze style, however (to return for a moment), we cannot but endorse Mr. Fergusson's opinion of it, with all its faults and virtues, as being more emphatically a style than the other developments of modern Classicism, possessing a unity of feeling and treatment, in mass, and in detail and ornamentation, which give it a certain claim to respect, lively, though it must be considered as anything but a desirable style for revival or imitation. The modern French style (the "style of the Empire" it has been called) has some of its important examples nothing more to recommend it than the Louis Quatorze, in point of style, and is inferior in unity of treatment; but, again, the French have shown themselves more in Domestic architecture more than in the other branch; and Mr. Fergusson does justice to the grace, refinement, and fitness of design he found in some of the French town and country mansions, along, &c., of recent date; and it must be said that these qualities are as common universally present. Some of the things of this kind that have been produced in France are very recent, and we should say that at present architectural taste and ability in the Channel are rising in the scale. The Opera House, of which we recently published a view, forms the vignette to this volume, designed by our own Westminster Palace as a piece. The extraordinary building in Paris, with its wealth of ornament almost erring on the side of extravagance, its able treatment in detail in many points, and its unmistakable expression of outward show and assertion, certainly stands as, in many respects, only too true a type of the extraordinary period of Parisian life and architecture under which it has mainly arisen. If and the Westminster Palace are taken as typical representatives of modern architecture in the two countries to which they belong, contrast is a startling one. They can hardly be taken so, however, *sans phrase*, but no doubt are the two buildings on which most cost has been lavished in each country, and which have excited the greatest amount of public interest. Aesthetically considered, it might be difficult to say which is the most valuable; but there is not so much doubt that the French building affords a detail more intellectual and more in tune to the tastes of the age. In regard to general design, the palm would almost certainly be given to our own building; and as regards the sentiment of the two, the national feeling to which they give expression, there can scarcely be comparison. But it is fair to remember that the new Opera House is the expression of Parisian life rather than of national taste; Parisian, too, are an epoch of peculiar tendencies and peculiar aspirations. There is still room for modern architecture to have its great building expressive of nothing better than more love of pleasure and power.

Seldom think of the Classic revival in relation to any part of the world except Western Europe. Mr. Fergusson's short chapters on the forms which architecture has taken in Russia and Turkey, as well as in Asia and America, have, however, considerable interest, and suggest the possibility of new combinations on new soils. America, indeed, has been so little enough in this way; such novelty as is to be seen in her "Classic" architecture resulting only from the fact that we see old materials used with so much less refinement or architectural feeling than we have been accustomed to in the best specimens of European architecture. Some of the specimens of modified Classicism in India are, however, peculiarly interesting, even when not very successful, as being the Oriental method of reading the language of European architecture. One building, figured by Mr. Fergusson (p. 480), not the least, indeed, of a native Indian, but of an Anglo-Indian officer working entirely under the influence of Oriental life and habits—the "Jardinero" at Lucknow,—contains, as Mr. Fergusson truly remarks, "the germ of a very original design"; so much so, indeed, that it would be quite worth while for a competent and educated architect to work out the same design with better balance and refinement of detail.

Our author's opinions as to the present condition of architecture, and the chances of its development into a new style, are summed up in his "conclusion," and are too well known to those who have any interest in the subject to need recapitulation here. But we think Mr. Fergusson, in pressing for a return to the old style, is ignoring the immense obstacles there

are in the way of any such result, in the totally altered conditions of modern life. Even he, probably, does not dream of a European style, but of a style for each country, suited to its own needs, and aiming at one consistent end. But the multiplicity of modern life and modern ideas seems to render this impossible. The Gothic in the Middle Ages was really a European style, with comparatively unimportant local variations. The Renaissance bid fair to be a European style at starting, but the era of individuality had already commenced, and the names of single architects had begun to be recognised for their peculiar method of design and treatment. And now that the knowledge of all styles that ever existed is becoming so diffused, we can hardly expect to put a check on this individuality; we cannot expect to revive the mechanical working out of one style carried on by men whose minds had no immediate access to any other type of architecture. Mr. Fergusson says, in conclusion: "We have more wealth, more mechanical skill, more refinement [?] than any nation, except, perhaps, the Greeks; and taste (even if not innate) may result from the immense extent of our knowledge." This latter remark may be true, but it is just that very extent of knowledge which disturbs, and is likely to disturb, all our efforts at unity of aim and of style. Whether such unity would really be in every respect, or in most respects, a gain, is a question we will not here attempt to answer, contenting ourselves with pointing out that it is a matter of question. There is, perhaps, as much intellectual interest in the modern collection of lyrics as in the ancient national epic, only it is of a different order.

SELECT COMMITTEE ON THE METROPOLITAN BUILDINGS BILL.

AMONGST the witnesses examined on behalf of the promoters of the Bill, Mr. John Brookes Johnson, secretary in London of the Royal Insurance Company, said that he had had extensive experience in inspecting buildings, and ascertaining their mode of construction, that in his opinion the present limit of 216,000 cubic feet in warehouses was ample, and that an extension would involve danger not merely from the particular risk, but also from surrounding risks. For all the more modern buildings of the warehouse class 216,000 cubic feet was practically observed, and it was the limit that the insurance offices adopted. With respect to horizontal divisions in warehouses, as opposed to vertical divisions, limiting the space, he considered the former to be futile except there were brick arches on brick supports. The fires at Messrs. Taplin's in Gresham-street, Messrs. Waterlow's in Finsbury, and the City Flour-mills, were cases in point. With regard to Mansard roofs in warehouses he considered that they greatly increased the risk of fire. If there was more than one story in a roof, it was practically a timber building over a massive structure.

Mr. Edward Middleton Barry, architect, professor of architecture at the Royal Academy, said it was desirable in his judgment to consolidate and amend the existing law in several respects. He had endeavoured to form an opinion on the Bill laid before him, and without answering for every detail of it, it seemed to him to have been conceived in the public interest, and therefore he spoke in its favour so far. He thought the provision retained in the Bill by which the Institute of British Architects had the privilege of examining candidates for the office of district surveyor was a wise one. The Institute would have had a grievance in any proposal to omit that clause. He agreed with the provisions in the Bill with regard to the necessity of the separation of buildings in order to prevent the spread of fires. The limitation of the cubical contents of buildings was a question of public safety to be determined by those who were responsible for that particular duty. It was scarcely an architectural question. Building being a variable and changing, and possibly an improving science, if a limit of any kind was desirable in the interests of the public, he thought it was necessary that there should be a power of dispensing with that limit in exceptional cases. He considered that a power of giving elasticity to the rules was absolutely necessary. As far as Western London was concerned, he thought that such power should be vested in the Metropolitan Board of Works. In his judgment horizontal divisions in buildings,

in lieu of vertical divisions, were insufficient. So far as roofs were built of wood, they must always constitute a vulnerable part of a building. With respect to the height of buildings, it seemed to him that there must be a limit of some kind. It could not be tolerated, for example, that everybody should build his house of the height of the Victoria Tower; therefore a limit of some kind must be imposed. Of course it was always difficult to name any particular limit. The Bill proscribed 65 ft., and it was difficult to say why it should not be 64 ft. or 66 ft. All he could say was that 65 ft. appeared to be a reasonable limit, looking to the ordinary requirements of houses likely to be built under that rule. He perfectly understood that the rule only applied to buildings to be erected in streets that were new. It was not to interfere with the raising of buildings where the street was an existing street. He was quite aware that by the existing law, except a church or a school, a building could not be erected in a new street which was less than 50 ft. wide, of a greater height than the width of the street; and to that extent he understood that the rule now proposed was a relaxation of existing restrictions. As he thought it might assist the committee, he had obtained some particulars as to the heights of houses in different parts of London. The witness then handed in sheets showing private houses of less than 65 ft. in height, and also houses that were more than 65 ft. high. Of the houses less than 65 ft. high, one was in Eaton-place; another in Westbourne-terrace; another Lord Ellesmere's house, in St. James's, Bridgewater House, which was 63 ft. 6 in.; another was the centre house of Oxford-square; another in Eaton-square; another was one of the largest houses at Lancaster-gate, in which Mr. Lucas, the contractor, resided. Mr. Cubitt's houses, Palace-gate, were under 60 ft. Then he had shown 8, 9, and 10, Grosvenor-place, not the centre nor the pavilions; Belgrave Mansions, Piccadilly, and the new houses in Grosvenor-crescent. All these were under 65 ft., measured as the Bill stated. Of these there was a story above that. They measured to the eave of the roof, and consequently they allowed a story in the roof. He had measured it, as he believed the Bill had measured it, and he had the sections.

In answer to Mr. Goldsmid as to whether the extra story in the roof was to be included in the 65 ft., the witness stated that that was not, as he understood it.

Mr. Goldsmid.—That is as the Bill is drawn. Mr. Philbrick.—It may be so, but we do not intend that. The height of the wall is to be measured up to the eaves.

The witness then described the houses in his list that were above 65 ft. The first were the large houses at Albert-gate; then the large houses in Grosvenor-place, which were 70 ft. 6 in.; Sefton House, in Belgrave-square, 69 ft. 6 in. There were also houses in Lowndes-square, Grosvenor-place, and Grosvenor-gardens, all of which were more than 65 ft. He had also another class, showing what he called exceptional buildings, some of very great height. There was the Charing-cross Hotel, of which he was architect. The front portion of that was 70 ft. 3 in., and other parts were higher. Cannon-street Hotel was 77 ft. The Houses of Parliament were 62 ft. 6 in., with the exception of the wings, and the centre portion of the river front; Westminster-chambers, Victoria-street, were 64 ft. 5 in.; and the Reform Club, 67 ft. 9 in.

The Chairman.—Where is the provision that it is to be 65 ft. irrespective of any story in the roof?

Mr. Philbrick.—In clause 70, which says, "Shall not exceed 60 ft. measured from the lowest level of the adjoining footway, or pavement, or ground, to the eaves of the roof." Then in the next section it provides that where the street is 40 ft. wide, the height may be not exceeding 65 ft.

The Chairman.—Will you exactly explain what is meant by the eaves of the roof, because in the case of a Mansard story the eaves of the roof would be about the level of the Mansard windows?

Mr. Barry.—Not quite; that would be the parapet. Of course where there are projecting eaves you measure immediately up to the gutter. Where there is a parapet, I should still measure to the gutter, assuming the intention to be to measure to the bottom of the parapet.

The Chairman.—When there is a Mansard roof over the parapet?

Mr. Barry.—Where there is a parapet, the Mansard roof is not over it, but behind it. The Chairman.—But higher?

Mr. Barry.—A roof is supposed to be allowed in addition to the dimensions.

Mr. Philbrick.—These are exclusives of the roof?

Mr. Barry.—Yes.

Mr. Goldsmid.—So that the Charing-cross Hotel, which is really over 100 ft. high, is only 70 ft.?

Mr. Barry.—That is an excepted building altogether under the present Act, and would be excepted under the new Act as a railway building.

Mr. Samuda.—If we are to take this to guide us as to what we are legislating in comparison with, we must ascertain what would be the result of taking those as our examples. We shall deceive ourselves altogether if we do not get quite clear upon this question.

Mr. Philbrick.—At present these heights which are shown under 55 ft. would all be permitted under the present Bill, and one story above them?

Mr. Barry.—That is as I understand.

Mr. Samuda.—And as I understand, too, Mr. Barry, dwelling-houses, without the special leave of the Board?

Mr. Barry.—Without the special leave of the Board.

The witness, in continuation, said he had one other table, showing the height of some houses in Paris. Mention was made of the houses in Paris; so he referred to a book which he purchased in 1871, showing some of the most remarkable houses in Paris, built by different architects, and as he thought it might be interesting to the committee, he had reduced it to a sheet and tabular form. He should state that it was almost universal in Paris to have two stories in the roof. There is a house in the Boulevard Sebastopol 58 ft., and another 57 ft.; another in the rue de la Chaussée d'Antin, 58 ft. 4 in.; one in the rue Sainte Placide, 53 ft. 8 in.; the Hôtel Le Carrière, rue de Vendôme, 62 ft.; Place du Prince Eugène, 52 ft. and 55 ft. 9 in.; and another in the Avenue des Champs Elysées, 54 ft. up to the parapet.

The Committee here adjourned.

The Committee resumed their sittings on Tuesday, when the evidence of Mr. Barry was continued. He said that in addition to the houses which he instanced at the last meeting as being less than 65 ft., by permission of Sir James Hogg he had added his house to the list. It was a new house in Grosvenor-gardens, and the height of it was 60 ft. 3 in. After showing that there were comparatively few houses in the metropolis more than 65 ft. in height, he said that as first-class houses were now built, the great majority of them would, if they were in new streets, fall within the regulation, and not require exemption; and assuming a limit to be imposed, 65 ft. appeared to be a reasonable limit. He did not think that the restriction in the new streets proposed as to the height of buildings would be prejudicial in an architectural point of view, whilst he was of opinion that it would be desirable in a sanitary point of view. The witness was next examined as to the railways and the construction of premises underneath railway arches. He said he thought that the general question of the exemption of railways was a very important one, and he had a very strong opinion that the exemptions ought to be strictly limited. As a general rule of policy, exemptions from an Act passed in the public interest ought to be very jealously regarded, and very strictly construed, and he thought that the circumstances at the present moment were different in many ways from those which were foreseen when the exemptions were granted to railway companies. The wooden Custom-house, for instance, at Charing-cross Station, was a building exempted from the existing law. It was burnt down, setting fire to the station, and causing great alarm at the time. At the present moment it had not been rebuilt. The circumstances under which the Legislature granted exemptions to railways in respect of their buildings have entirely changed. So long as railways kept out of towns, the question of building was not an important one. But now they were all coming into the very heart of London, and they were erecting buildings of enormous size, and of great importance, and the question of the rules applicable to them, therefore, became a very different thing. They were also acquiring property of various kinds, and were becoming landlords,—the thousands of railway arches, for example. The

rules that were applicable to buildings had been laid down by the Legislature, not for the advantage of any individual, or any special interest, but in the public interest. Either they were necessary or they were unnecessary in that respect. If they were necessary, why should the railway companies not observe them? If they were unnecessary, why should other landlords be compelled to observe them? The Bill, as he took it, would exempt railway buildings not used for the purposes of their traffic, and his argument would go still further than the Bill, because the public had a very great interest in the station buildings themselves being such as they ought to be. After referring to the fire which broke out at the Charing-cross Station, in the wooden building already referred to, on the 18th of February, 1868, and which at one time threatened the destruction of the station, he said that where a structure of wood in a railway building was for any purpose of a quasi permanent character, and not specially for the working of the railway, he thought it ought to be brought within certain rules for the public safety. Where railway arches were enclosed and let out, he thought that they should be of brick or some fire-resisting non-conducting material. This he deemed very important. He was in a railway arch the other day, and saw there three kilns used for pottery purposes, and he was told that the daily consumption of fuel was about a ton. There were certain dangers, as they all knew, inseparable from railway travelling; but he did not see why a railway company should be allowed to create other dangers, such as the building of combustible stations. The Victoria Station, for example, was one mass of combustible materials, and it positively touched the great hotel at the side. The witness was next examined on structures which came within the class of public buildings, and stated that in his judgment it was desirable that there should be some power to secure proper means of exit and access in case of fire. The question of the access staircases, and more particularly of the exits from public buildings, was one of the very greatest importance. He thought it desirable that public buildings should be controlled in the sense in which they would be controlled by the clause in the Bill. [This clause refers to the width, strength, and security of lobbies, corridors, passages, staircases, and other partitions of public buildings.] The next point upon which the witness was examined was the clause in the Bill with reference to piers for the purpose of supporting the superstructure of a building in cases where a building enclosed with walls is constructed so as to leave, on the ground story, and on stories above it, an extent of opening greater than one-half of the whole extent of the vertical face or elevation of the wall or walls in which the opening is left. He agreed with the clause. It appeared to him that it did not seem to limit the area of the opening half the width of the wall, but a provision to extend it under certain circumstances.

There was considerable discussion on this point, several members of the Committee, including Mr. Samuda and Sir James C. Lawrence, contending that these piers were unnecessary.

Sir James Lawrence said he observed from Mr. Barry's answer that in case the weight above required something to support the iron girder, that support should not, as it had hitherto been, be an iron column or an iron stanchion, but that a brick pier should be prescribed by the Act, thereby narrowing the shop-front, and dividing it in two, and preventing in future any shop-fronts at all.

Mr. Barry.—If I may refer to your allusion to my answer, it does not say that the pier is to be of brickwork, but it says, "other fire-resisting material."

Sir James Lawrence.—What other piers can you have except brick or stone?

Mr. Barry.—The 48th page will give you several fire-resisting materials, including "iron being protected by plastering in cement, or any other incombustible or non-conducting external coating"; iron is there specified. What may have been the intention of the clause I do not know, but I read it as I have said.

Sir James Lawrence.—It could not be read by the legal mind in any form that a column could be called a pier.

Mr. Philbrick.—It is intended to get rid of structures supported by iron columns, simply because of the danger, but it is not intended necessarily that the pier should be put anywhere except where it will carry the superstructure.

In answer to further questions, the witness stated that the present limit of 40 ft. for car traffic, and 20 ft. for foot traffic should be retained. In answer to a question as to the contents of buildings not of the private dwelling-house class, the witness said that the limits of the size of buildings, apart from the question of height, as to which other sanitary might be mentioned, appeared to him to be a question of public safety, with reference to and that upon that point he should individually defer very much to the opinions of those who were responsible for the protection of the public against fire. Mr. Barry's evidence in chief concluded after his having stated that he agreed with those clauses in the Bill under which the bricks from those now used in building in the metropolis would be guaranteed; Mr. Philbrick, on the part of the promoters of the Bill, that there were many places in the metropolis where buildings were erected with "M" which you may stick your finger or the point of your umbrella into."

The witness was cross-examined at considerable length by Mr. Little, on the part of the railway companies, and by Mr. Webster, Mellor, Mr. Oselow, and Mr. Mackrell, on the part of the several petitioners against the Bill.

Mr. George Vulliamy, superintending architect of the Metropolitan Board of Works, was examined. Mr. Vulliamy's evidence, which was given in minute detail, and at considerable length, was confined to the history and working of the existing Acts, and to the difficulties which the Metropolitan Board have to contend with in not having larger powers. In the course of his evidence, he cited numerous instances in which the Board were powerless, and required additional legislative authority. His own office in chief had not closed when the Committee re-assembled on Wednesday.

The Committee re-assembled on Wednesday when Mr. Vulliamy's evidence was continued and lasted almost throughout the day.

SANITARY CLAUSES IN THE PROPOSED BUILDINGS BILL.

A MEETING of the Health Committee of the Social Science Association was held on Tuesday last, Mr. Godwin in the chair, to consider the desirability of endeavouring to obtain the sanction of clauses in the Metropolitan Building Bill to ensure ventilation of houses and other sanitary arrangements.

After some discussion, in which the Bill was expressed to be to the effect that the Bill go far enough in a sanitary direction, it was resolved that a memorial should be addressed to the Board of Works, and a petition to the House of Commons, calling for the introduction of clauses alluded to above; Mr. Thos. W. Q.C., Dr. Hardwicke, and Dr. Shrimpton, deputed to draw them up. Mr. Liddell, Clode, Dr. Ryall, Mr. Sneade Brown, and, besides those named, also took part in the proceedings.

PAINTING ON POTTERY.

THE Council of the Art-Union of London have awarded the premium of 35*l.* offered for the design for the ornamentation of a tazza, work found to be by Mr. R. J. Abraham, Art-Training School, South Kensington. The design the interior of the tazza and the foot are each divided into eight compartments ranged round a circular centre, having grounds of red and blue alternately, with Renaissance ornament; the bands of the panels being black, and enriched with gold and gilt scroll-work.

The premium of 15*l.* was awarded to a representing Pandora in the act of opening a vase, from which "she scatters ill in air" was found to be by Mr. J. Eyre, 102, A. terrace, West Brompton.

Statue of Lord Brougham.—The proposal of a memorial in commemoration of the services of the late Lord Brougham has been for some time under the consideration of a committee of the Social Science Association and the Amendment Society. At a meeting, presided over by the Lord Chief Baron Kelly, it was agreed to adopt, as the most fitting memorial, the proposal to erect a statue in Westminster Abbey, or some other suitable place, and a committee has been appointed to make the necessary inquiries.

LACE.

Among the old arts which have excited of late a revived interest, that of lace is one of the latest in the field of popular favour; but the progress and spread of this particular "taste" has been rapid, and it bids fair to have as many and as enthusiastic devotees as have paid their worship at the shrines of old china or illuminated manuscripts. The notice attracted to some of the old styles of lace has given, to a certain extent, a fresh impulse and energy (though not always in a right direction) to an art which had never fallen through in this country; while the ambition to procure fine specimens of "old point" is becoming a sort of rivalry among fair collectors, almost to the extent of justifying again Dr. Johnson's comparison in regard to a branch of learning—"Greek, sir, is like lace; every one gets as much of it as he can." The commissioners of the International Exhibition, at least, have, on this principle, got as much as they can, and the result is a large and interesting collection of examples of lace, antique and modern, which serve to illustrate very fully the capabilities of this fascinating branch of decorative art, and the various methods, of greater or less excellence of result, in which it may be manipulated.

Lace has been not inaptly described as "movable embroidery," ornamental work, which can be removed from one dress to another, and on which, therefore, it is worth while to spend more time, skill, and design than it would do to spend on that which could only be used on one garment, and by one wearer; and it is only on this condition of removability, so to speak, that lace could have become an art product and a valuable property to the extent which it is. It is not our purpose here to speak of the history of lace, or to give a list of the different styles which have succeeded each other, somewhat like the styles of Medieval architecture; such categorical information can be found elsewhere, and would be scarcely in place here. But the subject is quite worth a few words of criticism, from the artist's and ornamentist's point of view.

The most important varieties of lace, speaking broadly, are those which are classed as *point* lace and *pillow* lace respectively. To the uninitiated the first phrase sometimes occasions a confusion of ideas from its being used as if it were the English word "point," instead of the French point ("stitch"). The word simply means lace entirely worked with the needle, as distinguished from that which is worked on a pillow by the aid of the fingers and "bobbins," and now in great measure by machinery. The style of design may be, and often is, very similar in these two branches of the art, the difference in that case being mainly in the manner of execution,—a difference which at a little distance is hardly to be detected; but in their most typical forms the two methods produce a widely different character in their results. The most distinguishing character of the best point lace, in regard to manner of execution, is in the raised edges to the solid part of the design, which give a relief and substance to it quite distinct from the most characteristic and finest forms of pillow lace, which is marked, on the contrary, by its flat, thin, delicate texture, and absence of relief. The raised edges in the "point" consist of two or more threads placed together and sewed round with fine thread, the degree of relief depending of course on the number and thickness of the threads forming the basis; in some of the old Spanish examples to be seen at the International these raised edges are worked to an extraordinary degree of relief compared with what we are used to in modern specimens. But a much more important aesthetic distinction is that between lace which worked on a ground (*fond*) of uniform net-work (or so connected by a ground as to appear if worked on it), and that in which the main features of the pattern are connected by regularly-placed lines (*brides*), leaving the spaces comparatively open. All the finest work of the best periods belongs to this latter number, the typical *point* lace having its main lines of construction laid down first, filled in, and connected in the manner alluded to. And scarcely out of place, one may observe, to something of an architectural phraseology, the lace design reminds the architect forcibly of the growth of Gothic tracery, and follows a very similar sequence. The first lace is what could be now called "embroidery," merely consisting of a pattern perforated in linen or other

stuff, and the edges of the perforations worked round with a raised margin; this being manifestly the "plate-tracery" period. Then a somewhat rude attempt at a more free manner of working shows itself in the *reticella* lace, in which the design is formed by threads laid down in groups of two or three, for the main lines of the design, upon which the principal features are produced by thickening out with successive layers of thread, using the first lines as a core. This *reticella* may be recognised at once by its formality of general design, accompanied by a lumpy irregular execution in detail, the whole having a considerable resemblance to certain kinds of seaweed. About the middle of the sixteenth century, the introduction at Venice of the point lace system at once gave opportunity for freedom, and finish at the same time, and introduced the most elaborate style of "tracery." But it is obvious that lace design worked on a uniform ground, belongs to a very different type of work to any of these; a point which we notice, the rather because M. C. Blanc, in his article on lace, in a recent number of the *Gazette des Beaux Arts*, seems to ignore this very important distinction, speaks of lace as if it were entirely the art of working on a ground, and is eloquent, with more zeal than knowledge, on the vast importance of the *fond* in determining the character and effect of the whole. The fact is that, though very beautiful and delicate lace of this type is produced in England and at Brussels, it belongs essentially to the tamer and less effective style of the art, and is the mode employed in the flimsy stuff called *Talenciennes*, in which the art is degraded to the mere spotting of net muslin with unmeaning sprigs and flowers.

The question as to the kind of objects which may be represented in lace, and the nature of the design which is suitable to it, is closely connected with the success of the result. There can be no manner of doubt that imitation of any objects which suggest the idea of weight and solidity is completely out of place in a fabric part of the charm of which lies in its transparent lightness of texture and appearance: though this has been done, and there are curious old examples in which figures, ships, animals, vases, &c., play a part in the design with somewhat ludicrous effect, especially when seen distorted by the folds into which the material falls when worn. And it is equally certain that anything like shading or relief is out of place in such a material. Putting aside such things, however, there are two ways of treating lace, for each of which something may be said, and which may be called the natural and the artificial manner. The natural, which has always been much followed in English manufacture, and is also largely illustrated in modern Brussels work, consists in designs generally based on imitations of more or less close of sprays of leaves and flowers, worked with no attention to symmetry or design in the usual sense of the word; the object being to avoid any definite arrangement, and rather to produce that kind of light indefinite effect which is held by many makers and critics to be peculiarly proper to lace design. What we call the artificial method is illustrated in a good deal of the old Venetian and Spanish *point*, and consists in the elaboration of patterns having no direct reference to any natural objects, and seeming at first sight to be very irregular, though in fact arranged on a fixed plan and with a recurring symmetry. The artificial method may, however, be carried further than this, and is so especially in the Brazilian and Russian designs, of which latter there are in the International some admirable specimens and photographs lent by the Duchess of Edinburgh. The question whether such symmetrical designs are really suitable for lace depends a great deal more on certain details of execution than on the general design. No doubt a perfectly hard and formal line is out of keeping with the character of the material; but this can always be avoided and its harshness removed by the slight irregularities and points which can be added, sometimes on a very small scale, to the defining or connecting threads of the design: by these little minutiae all stiffness is avoided, and we obtain that variety and doubtfulness of line which gives the requisite freedom and richness to the general effect, without foregoing the unquestionable advantage of a regularly constructed design. Interesting and beautiful, however, as these geometrical designs from the far East and West are, we shall probably come to the conclusion that the right medium was hit by the makers of the old Italian and Spanish

point, who enchained the eye by patterns which seemingly irregular, yet really formed on a regular plan, have in them more of the spirit of Saracenic ornament than anything else which has been produced in Europe.

Our remarks may be best illustrated by reference to some of the examples contributed to the International Exhibition, a reference which would be more readily and intelligibly made, however, if the numbering of the specimens were more systematically carried out. The numbers are not in regular sequence, and the same number is found occasionally on two or three cases, and none at all on others. Commencing at the south end of Gallery XV., we find the cases next the door on each side occupied by the valuable and varied collection of specimens (chiefly) of old lace, lent by Mrs. Hailstone, and which form the most interesting item in the Exhibition. The case to the right on entering contains mostly small pieces (borders and "insertions") of old Italian lace, among which some strips of *point*, worked with tape and with braid, are perfect in style, and precisely illustrate the nature and degree of symmetry which, as we observed, can be successfully carried out in lace design. The Brussels cushion lace, in the same case, is a very good specimen, very characteristic in style, and an interesting contrast to the Italian work. The case to the left of the doorway contains some specimens of Italian and of the Greek knotted lace, remarkably geometrical in character, and which assimilate somewhat in style to the bits of Brazil work in the same case. It is a pity that Brazilian lace is not much represented anywhere here, for it is most individual and artistic in character. The Mexican lace, in the same case, also belongs to the same school, and suggests geometrical patterns. Compared with these, the bits of Mechlin and old English *point* look very frivolous, though interesting as contrasts. Just above this case, against the west wall, is a sampler, with small bits of lace of various patterns arranged in a kind of panel fashion, and evidently originally done as specimens of various kinds of work. This is dated 1618, and is a most beautiful and rare little bit of work, in regard to texture and artistic effect. The lady who exhibits all these specimens evidently knows what is really and artistically valuable in lace design. Going up the west side of the room, we find in case 5,024 (which contains also a wax model of a baby, placed there for no evident reason) a splendid specimen of Spanish *point*, with a bold and free conventional leaf pattern, with very wide openings and large strong *brides*. In a case next to this is an antique Brussels coverlet, in somewhat the same style of design, but less bold, and with smaller openings. The Spanish is the boldest and grandest type of lace to be found here; and when we look at these broad surfaces of rich, flowing patterns, with their thick, heavy, raised margins, we cannot but connect such work with the character (in the sixteenth and seventeenth centuries) of the people who made and wore it. Only a people of such pride of pedigree, such a love of pomp and splendour, as the old Spanish grandees and their families, could have adequately looked the part when habited in dresses decorated with these heavy and ambitious trimmings. In an adjoining case, higher up, we find the splendid piece of Venetian *point* lent by Mrs. Morrison, a design of flowing flower-patterns interrupted by spaces of more conventional ornament, symmetrical in design, but not symmetrically placed. Less striking in one sense than the Spanish, this is more refined and more artistic work, the Spanish *point* being to some extent a corruption of the Venetian style. Some of the Flanders lace, with its large straggling patterns and great openings, in a very bold style, seems again very like a further corruption of the Spanish manner, which fancy may connect fairly enough with the Spanish dominion or interference in the Low Countries. In the case of things lent by Mrs. Bolckow (1,520) is a Venetian point priest's robe, notable for its beautiful workmanship, and the contrast between the plain linen in the upper parts of the sleeves and body, and the intricate open work below. The designs in the photographs of Russian lace, in the centre case near here, should be looked at, as most suggestive in regard to their treatment of geometric design, regular and yet not formal. The long centre case next to this, of "real Bruxelles lace," with a portrait of the Queen of Belgium in the middle, contains a great quantity of most

delicate workmanship, with an artistic value in almost inverse ratio; it is the kind of thing which seems only meant to say, for those who wear it, "See how wealthy I am, and what expensive work I can afford to wear." The same reflection is suggested by the lay figure, in the centre case above this, decked with a scarf and founces of Honiton lace, of which we are told that several hundreds of the best hands were employed for some months in working it. This may be so, but where is the labour's worth? All we see is a profusion of very fragile-looking flowers and sprigs, put together with no meaning, and looking as if at the slightest movement the wearer must run the risk of tearing it somewhere. Behind this we may notice two cases, by *Ikle frères* (of St. Gall, Switzerland), of very nice work of its kind; not lace in the proper sense of the word, but a kind of revival of the "plate-tracery" lace of the earliest period; small geometrical diaper patterns formed by pierced openings worked round; the effect is exceedingly good. The Irish laces in case 5,178 are rather ragged and struggling in effect, and do not present much for admiration. Messrs. Hayward's cases of ancient and modern lace (5,080) show among the latter a very elaborate specimen of *appliqué* work, point and flat mixed, which, however, is very "bride-cakey" in effect: they condemn themselves out of their own mouth by exhibiting the old work along with the new; the old is far less sprinkled in character, more massed in lines, less "pretty" perhaps, but much more artist like; a fringe of "old guipure," in a kind of strap-work, is particularly good.

Returning down the east side of the room, the cases by Desmarés, of Brussels, show a very good style of design in founces and collars, careful and true in line, and yet quite light and lace-like; leaf forms are very well introduced. The Greek lace, in some small cases in the windows on this side, should be noticed; its knotted manufacture gives a peculiar rich texture to it, and the style of design, geometrical but with no very pronounced leading lines, is peculiar and very pleasing: it is the fashion, we understand, among lace-connoisseurs to depreciate this Greek lace as something coarse and of little value; but in artistic value it must rank high. The Venice point lent by Mrs. Cleland (case 5,039), lower down on the east side, is exceedingly fine, and there are other admirable specimens which we have not time to notice in detail; but must bestow a word on the coverlet once belonging to Louis XIV., which has a case to itself lower down; a splendid specimen of bold and free interminable scroll pattern with large openings. Below this, and the last we shall notice in this room, is a coverlet in something the same style, "bone point," recalling in its heavy border and large manner the Spanish work; a noticeable feature in this is that the centre, though in exactly the same character of flowing design as the outer portion, is a distinct design, and is separated by no border or line from the outer portion, the two designs merely touching on an imaginary straight line: the effect is very good and piquant.

The lace in the smaller room (XIV.) consists chiefly of specimens of borders, some in coloured silk, which are very imbecile in appearance. Some of the modern Italian point borders, in white, are better, and the Maltese better still, and very artistic in design. The Valenciennes borders, of weak-looking sprig designs, look absurd after some of the other kinds of lace we have been describing. The Mechlin and Flemish borders are better; naturalistic, but with good clear design and pleasing lines. One border along the front of case 5,123 is admirable. The borders of Russian point, in one of the cases at the top of the room, are admirable, in the same geometric style we noticed in the other Russian work.

To come from small specimens to large, we must describe the large lace curtains, or whatever they are, hung up along the west wall of Gallery XV., opposite the windows, as mostly simply worthless in point of art: large expanses of "ground" covered with commonplace bunches of flowers. There may be those who like such things, and perhaps their taste ought to be supplied, but they certainly were not worth exhibiting.

There is, however, much for interest and admiration in this collection; and, though we do not sympathise with that extravagant enthusiasm for ornamental art current just now, and for which the appreciation and study of the

higher intellectual arts seem, with many persons, to be quite lost sight of, we can give all recognition to the manner in which the art of dress is heightened in beauty and interest by such charming additions and decorations as the old style of lace afforded, and wish the modern were more like it.

THE ANCIENT SYRIAN POTTERY.

THE subject of the ancient pottery found in different parts of Syria is attaining considerable importance. For some time we were alone, in the English press, in deploring the want of sagacity evinced by the contemptuous manner in which these relics were treated in this country. Since we mentioned (p. 282, ante), the results of the expedition of the Rev. L. H. Weser, the Rev. S. Neil, the Rev. W. Hall, and Capt. Stevens, R.N., into Moab, two of our contemporaries have published letters on the subject. The *Academy* prints a translation of a long communication from Professor Schlottmann, of Halle, to the *Nor. I. Deutsche Allgemeine Zeitung* of April 12, under the title "Chauvinism in Archaeology." The *Athenæum* prints a letter from Pastor Weser himself. Nothing can be more precise than Mr. Weser's statement. He says that he dug himself into Medeba, in a spot to which he was not conducted by Selim, and found twelve pieces of pottery, some plaster with inscriptions, and some broken pieces of figures. Again, "in a cave, near Karn, 4 ft. under the firm ground, which el-Kebboch, 4 ft. under the firm ground, which did not show the least sign of having been recently disturbed." Mr. Weser says, "I found seven vases, five complete, two broken, all with inscriptions." Evidence of this precise nature can only be met by denying the reliability of the witness, a course which will hardly be ventured on in this instance.

Both Professor Schlottmann and Mr. Weser point out that the assertions as to forgery are only supported by the statement of the boy Hassan Ibn-el-Bitar, which he subsequently contradicted, and asserted that he made it under fear of the *Kurbatch*. At all events, his second story is as good as his first, so that as a witness he is out of court. Thus there is not even verbal testimony to oppose to the material evidence collected by Mr. Weser. Professor Schlottmann mentions a fact which has not, so far as we are aware, been previously known in this country. He says that on some of the urns, now in the Berlin Museum, are raised letters, executed in different styles, the characters having undoubtedly been formed by the application of stamps or types, presenting the earliest evidence of that mode of multiplying writing which was subsequently developed into the art of printing. It is needless to comment on the extraordinary value of specimens of this nature.

Mr. Weser takes the same view that we have ourselves expressed as to the unusual amount of archaeological knowledge that would have been displayed by a forger of these objects. Professor Schlottmann pays a similar tribute as to the technical skill. He adds that an attempt which, as we were aware has been made, at considerable expense, to copy some of these figures, in Jerusalem, had proved an utter failure.

The question has some interest, even as bearing on the subject of masons' marks. We are not aware of any relics of the Glyptic art (with the possible exception of hieroglyphics), which so defy the attempt of the archaeologist to assign dates, from their shape alone, as the Phœnician and early Hebrew letters. From B.C. 850, and B.C. 600, down to A.D. 140, the letter "Shin" occurs in two separate forms,—one resembling an English W, and one a Greek omega. For an equal lapse of time,—that is to say, for a thousand years,—the letter "Ain," or "Omicron," occurs in the shape of an English O, sometimes round, sometimes elliptical, and either upright or laid on its side. Incised characters of a similar kind have been found on the very foundation course of the great fortress wall of the temple of Jerusalem; and not only so, but some letters are actually formed by a red pigment, which so easily brushes off that it seems unquestionable that they are the very quarry marks of the Phœnician builders of King Solomon. Thus the value of the Syrian antiquities, if genuine, is manifold, epigraphic, artistic, religious (as relating to comparative forms of worship), and architectural.

Since the above was in the hands of the printer a fresh letter from M. Ganneau has been published by the *Athenæum*. As it was written

in ignorance of the publication of the statement of Pastor Weser, it throws no new light on the subject; being chiefly an effort to show that certain Selim el Gari is both rogue enough and clever enough to be a forger. This, of course, is beside the mark. But this letter contains a copy of three lines of the Moabite stone; together with a statement which shows with how much reserve *ex parte* statements must be received. M. Ganneau says that this inscription contains "an arbitrary form of the letter Mem," "essentially peculiar to Selim." The letter question occurs six times in the copy: four times in the form with which squeezes of the Moabite stone have made us familiar; once in a form employed on Hebrew coins, and figured by Madden in his "History of Jewish Coinage," and once in what appears to be a variation of this form by a slip of the pencil. As we remarked before, all this has nothing to do with the positive evidence which we now possess on the subject; but it shows the loose way in which statements have been made.

One point has to be borne in mind as to a question that has more than one aspect. A evidence, on the showing of all parties, is only unreliable, but self-contradicting. Must look to facts and material evidence alone. From this point of view it may be remarked first, that there are in the Berlin Museum, in the collection now in Jerusalem, some 1,000 of these curious objects, which are unlike anything known to exist elsewhere. Secondly, we have respectable English and German evidence as to the discovery of some of them in unbroken. This evidence must be shown to be valueless before any one has a right to pronounce the objects forged. Thirdly, these archaeologists have seen and studied the objects consider them to be genuine antiquities; and of the two gentlemen who condemn them as forged, one has seen a single specimen, and the other has seen the specimens as to which the material evidence controversy has arisen. These material evidence must be set aside before a question can be decided only by palæographical analogies, which are, more or less, matter of disputed opinion.

ON VAULTING.*

THE influence (all important and all unavailing) which the persistent and unwearied attempts of twelfth-century builders to cover their buildings a substantial and permanent covering of stone, had on the architecture of subsequent times, is now well known to all. It has given any attention to the subject. It probably be now admitted by every one that was the working out of this problem which the birth to almost all the distinctive characteristics of Gothic architecture, and the fancifully ingeniously supported theory that the "clumsy and banded stalks of the lofty pillars, the outlines of the capitals and cornices, the hanging arches of the fretted vaults" of the Middle Ages, are attempts to reproduce in stone "the awful gloom of the forests of the north, the aspiring height of slender pine, the spreading arms of the oak" must now be given up by all except poetic "Quarterly Reviewer," who has the pretence to maintain that these glorious and these perfect wholes, were the result of a number of uneducated workmen each doing that which was right in his own eyes without consultation or superintendence.

It was, I believe, Ware, in his "Traces of Gothic Architecture," who first showed the *bi-furcal* cause of Gothic architecture, but since time the question has been more thoroughly worked out, notably by V. le Duc, who in his recent Dictionary, in the article "Construction," says:—"The vault being from this time forward" (end of twelfth century) "the general of all parts of a vaulted building, fixing the position, form, and arrangement of the supports, masses, is the first thing we ought scrupulously to study. By one who thoroughly understood the structure of the Gothic vault and knew infinite resources its construction presented, view, all the other parts of the masonry thence be naturally deduced."

Dr. Whewell, too, the late master of Trinity College, Cambridge, in his "Archæologia Medii Ævi," considers "the adoption of the pointed arch in vaulted structures from the requirements of vaulting from the necessity of having arches of

* From an Essay by Mr. T. H. Eagles, to which was awarded by the Royal Institute of British Architects.

sights with different widths," and further that from its original situation in the vaulting, this form of arch was gradually diffused into every part of the building." This view is, indeed, disputed by Professor Willis (whose admirable paper on the vaults of the Middle Ages renders the volume of the Institute Proceedings in which it appears one of the most valuable of the entire series), for in the preface to his "Remarks on Architecture," he observes, "There is a fascinating simplicity about that theory" (of the origin of the pointed arch) which would derive it from the requirements of vaulting that makes one wish to find it true; but I am sorry to say that, notwithstanding the favourable prepossessions with which I set out, have been compelled to dissent from this ingenious hypothesis. I have shown that so far from the pointed arch being necessary to enable a parallelogram to be vaulted, it appears that architecture was already in possession of several methods of performing this, which were not even superseded by the introduction of that form, but continued in use to the latest period of the Middle Ages." These methods are, of course, those which prevailed among the Romans, and which are now known as Roman vaulting, but which I shall refer more particularly directly, to the inert mass of the supporting piers, the use of which is very large, and which, thanks to the splendid quality of the mortar used, so as to have become proverbial, are practically homogeneous throughout, the cohesion being perfect. This was, indeed, the principle of Roman buildings. The Romans secured stability by the sheer weight of the resisting portions of their buildings; if, for instance, they feared that an arch would rise at the haunches unless an enormous load was placed there, instead of seeking a more scientific form of arch they simply added on the required load, and so for the rest. Now, it was not only possible, but easy, for a Roman, a powerful people, possessed of abundant means and appliances, with armies of sappers, with any quantity of materials, and, on all, with a great love of show and display, of their wealth and power,—to build in this manner. Economy was to them no object, but when we come to the twelfth century,—to people just emerging from the barbarism, and ignorance, and consequent poverty of the centuries following the downfall of the Roman power,—the case was altogether different. At first, indeed, they seem to have attempted to imitate the structures which the barbarian incursions had laid (for I should notice that it is to the Continent we must go for the earliest Mediaeval examples), but they speedily found the impossibility of continuing this method. With them the most rigid economy had to be practised, the most possible effect had to be produced with the materials used, nothing could be laid to waste; and therefore instead of relying on mass and mere weight, the thinking faculty had to be exercised, and so attempts which were gradually, though doubtless only after repeated trials and occasional failures, crowned with success, were made to balance opposing forces, to diminish thrusts and pressures, and to make the direction of these as vertical as possible, thereby simultaneously enabling the area of the piers to be largely reduced.

These circumstances, I think, acting on the present desire in the twelfth century for new vaults, led directly to the results proposed, and furnish a reason why the previously existing Roman solution of the problem could not be accepted, and an answer to Professor Willis's objection to the theory in question. The question why stone vaults were so much sought after in spite of all the difficulties attending their construction, and why the builders of the twelfth century were not satisfied with wooden roofs, is a difficult one to answer. Probably the danger which there always was, in those unsettled and turbulent times, of the malicious or accidental destruction of any important building by fire, and something to do with the matter. Certain it is that such an event was by no means uncommon, and the use of the more durable and permanent material was thus, perhaps, in a sense forced upon the designers; for there can be no doubt whatever that a brick or stone shell (or a building, whether the same be the actual proof or not, renders it to a very great extent proof. Even where (as is almost universally the case) the vault is only a sort of inside lining, and is protected from the weather by a timber-framed roof above, a careless plumber

can do very much less damage than where in place of the vault there is only a wooden or plaster ceiling, for by cutting off air from below the fire is checked and more easily mastered, as was strikingly exemplified at Canterbury at the time of the fire there in November, 1872, for though nearly two hours elapsed between the breaking out of the fire and any water being brought to bear on it, still it was confined to the eastern limb of the cathedral (where it commenced), and since the burnt and charred timbers fell in on the upper surface of the vault, and so were prevented from dropping into the choir below, scarcely any damage was done to the interior of the building. It is not too much to say, then, that the existence to-day of this precious national monument is mainly due to its "stone ceiling," a very good reason for recommending similar construction where a durable building is required. On the other hand, York Minster, which is covered with a wooden ceiling of sham groining, has twice within the present century suffered most severely from the ravages of fire. In 1829, the roof, the whole of the richly-carved tabernacle work of the stalls, and, in fact, all the woodwork of the choir were utterly destroyed, and it would be easy to multiply instances.

Every one knows, however, that in England it was by no means the universal custom to ceil a building with stone; but if we compare the circumstances of our own country and those of our Continental neighbours, I think we may find reason for the greater prevalence of vaults there than at home, and which is, of course, another cause why the difficulties of vault construction were so persistently struggled against, and the system so pertinaciously adhered to. Our noble open-timbered roofs are legacies of which we may well be proud, which have no rivals abroad, and which we owe in no small degree to the magnificent forests of oak-trees for which England was formerly famous. The Romans seem to have drawn heavily on the forests of Gaul, after those of Italy were exhausted, for timber for their immense naval and engineering works; and hence, even as early as the middle of the twelfth century, the provinces where the first glimmerings of returning civilisation had appeared, and where consequently the architectural art was most advanced, appear to have been almost entirely cleared, and, as a natural consequence, wood became a comparatively scarce and proportionately valuable material.

Whether this be the explanation or no, we have abundant evidence to show that vaulting had advanced a considerable way towards perfection on the Continent at a time when it was very little, if at all, practised in England; that it was then imported, as it were, complete as it stood; and that it thrived so well after being transplanted as soon to surpass its parent stock both in beauty of design and careful execution. No Continental examples, indeed, can compare with the richness and skill displayed in some of our late ones, though it may be doubted, after all, whether these last may not be adduced as instances of the "vaulting ambition which o'erleaps itself."

I do not propose to enter into any discussion as to the antiquity or invention of the arch. Many of the so-called examples of its early use would be very much to the point if it were not for the unfortunate circumstance that they in no way exhibit its principle, but consist only of a series of corbelled-out courses, with horizontal beds, a method impossible of application to the covering in of extended areas. It is enough to go back to the days when Rome became a mighty nation, and was enabled to indulge in those tastes to which I have already referred. The occasion of the rebuilding of the city, after the burning by Nero, seems to have been taken advantage of for covering in many buildings with vaults, which, until then, had only wooden roofs, and none of the great vaults with which we are acquainted seem to be of earlier date than this.

Until comparatively recently a totally erroneous notion appears to have prevailed, at all events in this country, as to the Roman method of construction. The general idea was, I think, that their vaults were either of solid masonry, accurately cut and worked, or were composed entirely of *béton* heaped over centering, heavy and substantial enough to resist the enormous weight necessarily lying on it, until the closing in at the crown, and "setting" of the concrete rendered the mass self-supporting. Recent investigations by M. Viollet-le-Duc and M. Choisy have, however, thrown fresh light on the subject,

and shown that the real mode of procedure was very different. M. Viollet-le-Duc tells us that we find with difficulty even one or two examples of groined vaults of wrought masonry in ancient Rome. From motives of economy they avoided the interpenetrations, groin-ribs, wrought pendentives, &c., of modern "architects"; and M. Choisy ("Encyclopédie de l'Architecture") says, "As to *béton*, the ancients certainly knew the use of it, since Vitruvius describes it as being proper for sea-walls or other marine works; but from an examination of ruined buildings remaining, it is evident that its use was by no means so general as is usually supposed." Both these gentlemen have proved that the active principle in Roman vaulting is economy in the wooden centering used during the construction, but of no permanent use in the building. This centering is always a most important item in the cost of a vault; and though the Romans lavished immense sums on the decoration of their buildings, their love of display would lead them to view with disfavour any system requiring that a considerable portion of the cost of a building should be as it were hidden from view, sunk in mere temporary scaffolding, or wasted on complicated stone cutting unnecessary for producing the effect required. Instead, then, of solid masonry or *béton*, we find in most cases that their vaults really consist of ribs of brick-work thrown across, at intervals, at right angles to axis of vault (exactly similar to the transverse ribs or arches of the subsequent Gothic ones); that these are connected at intervals by courses of the well-known large flat Roman bricks or tiles, the edges being horizontal, but the sides lying in planes passing through the axis of vault; and that the spaces between the various members of this skeleton framework (a series of squares or rectangles) are then filled in with light concrete, the weight of which, even before it finally solidifies, is not thrown entirely on the wooden centering, but is carried to a very great extent by the skeleton of framework of ribs. The economy which this system introduces into the centering is obvious; instead of a solid platform being required, along the whole length of which the weight and pressure would be everywhere equal, necessitating equal strength everywhere, and consequently rigidly framed trusses in close succession, covered with enormously thick planking, all that was necessary was a framed truss under each of the transverse ribs, and comparatively thin planking for the immediate fillings in, which were of relatively light construction. Viollet-le-Duc, in a series of instructive sketches, exhibits this construction; and shows how here and there, as the transverse arches were turned, pairs of bricks were made to project sideways beyond the general outline of the rib, between which a plank might be dropped edgewise for the temporary support of the connecting horizontal courses. It would further appear that in order to still further lighten the necessary centering, the first step in the construction of the vault was frequently the laying of a thin shell, as it were, of tiles flat over its entire area, which in fact, became a permanent centre on which the vault could be completed. This shell, of course, would not be self-supporting in the sense of remaining stable if its centering were struck, yet it would certainly take off from this last a very great deal of the subsequent superincumbent weight, more especially of that of the upper half of the vault, since its stability would be immensely increased by the filling in over its haunches. The importance of this can scarcely be over-rated, since it is precisely this portion which bears most heavily on the centering, *i.e.*, until the keystones are driven, necessitating, of course, large scantling for the timbers used, and very judicious trussing in the supporting frames. It is hardly too much to say that for a vault constructed as above described, the centering need hardly be stronger than is necessary for the support of the workmen employed—excepting, of course, as regards the trussed centres for the transverse arches, and the risk of deformation of the centering and all its attendant evils is reduced to a minimum, or rendered of very slight importance.

There are one or two examples of Roman vaulting consisting of a series of parallel transverse arches within a short distance of each other, on the backs of which thin slabs of stone are laid, connecting them together in pairs and completing the covering. This system too obviously favoured economy in the centering required, as continuous planking might be dispensed with altogether; but it was quite ex-

ceptional, the transverse arches being generally hidden in the thickness of vault. There is obviously in many points a striking analogy between it and the rib and panel vaults of a subsequent period.

The foregoing remarks refer strictly only to what is known as a continuous barrel vault. This is what the majority of Roman vaults were; semicircular, of course, in section; in fact, in appearance exactly like the upper half of most of our railway tunnels. Interpenetrations seem to have been avoided, at all events, until the later days of the Empire, and if from the necessities of planning, an art in which the Romans seem to have been great adepts, a vault had to abut end on to the direction of another, they frequently got over the difficulty by making one (the smaller of the two) at a lower level than the other, so that the springing of the larger one would be above the crown of the other—the minor vault would finish as a semi-arch in the vertical abutment wall of the superior. We know, however, from existing remains, that the Romans did not entirely shirk interpenetrations of curved surfaces, and this really brings us to the difficulty of the subject—groined vaults. If we have to cover in an exact square, there is obviously no reason why we should choose one pair of sides for direction of axis of our barrel vault, than the other; at least, if we are not hampered by any consideration of convenience in securing the necessary abutment; in fact, we might suppose a complete barrel vault to be turned across in each direction, and, supposing that the two could co-exist, the space below would obviously have a double covering. Now, if we imagine the part of each vault which is above the upper surface of the other out away, we should have remaining a sort of square dome, which would form a single covering over the entire space; while if we cut away the part of each vault which is covered by any part of the other, i.e., which is below its under-surface, we should have a roof with salient edges or groins over the diagonals of the compartment, and which no longer abuts continuously along its sides, but the entire thrust of which is transferred to four other angles, and which might be carried on piers there placed. Both these methods were used. The first is known by French architects as a vault "*en arc de cloître*," the second is the ordinary "*groined Roman vault*."

Thus far all is plain sailing; the compartment to be vaulted being square, the diameters of the arches on each pair of sides (the generators of the respective vaulting surfaces) are equal to each other, the crowns in the centre of the compartment and the groins are plain curves. Each being only an oblique section of a right circular cylinder, its outline would be a semi-ellipse, and by constructing wooden centres to this outline arches could be thrown across from angle to angle of the space to be vaulted, and the entire vault could be completed exactly as before described; the only requisite to be observed being that the centre should be so much larger than the actual finished groin as the breadth of the tiles used required, in order that their angles should not project beyond the finished vaulting surface.

As soon, however, as we attempt to cover in a parallelogram with a groined vault difficulties beset us, which are the greater the more the parallelogram departs from a square. The sides being unequal, if we use barrel vaults, semicircular in section for the generating surfaces of our groined roof, we cannot at the same time have the springing line and crown of the smaller level respectively with the springing line and crown of the larger; but if we make both spring at the same level, the crown of the one is below the crown of the other, while if we make their crowns level the springing line of the smaller is more or less above that of the larger. In both these cases the groins are no longer plain curves. Notwithstanding these groins of double curvature, notably over the great hall in the baths of Diocletian, now the church of S. M. degli Angeli, but the compartments do not differ greatly from a square on plan, the sides as 4 to 5, the span 67 ft.; yet, even here the effect of the twist in the groin is, by universal testimony, exceedingly disagreeable to the eye, and causes a painful sense of insecurity. In the great hall of the baths of Caracalla the mere springing of the vault remains, yet there are clear indications of the twist; the proportions of the sides of the compartments here are as 9 to 11, or a trifle more nearly square than the preceding. In consequence of these difficulties and objections, Professor Willis, in his "Remarks on the Archi-

teature of the Middle Ages," observes, "It is no wonder that a new expedient was soon found to supersede it" (the twisting groin), "which appears to be the domical or inclined form of the vaulting cells." (The vaulting surfaces filled in between the supporting arches or a skeleton framework.) "The whole difficulty of vaulting a parallelogram with quadripartite vaulting, resides in the assumed necessity of preserving the apex of the vaulting cells horizontal, and making their surfaces cylindrical throughout. If we free ourselves from these conditions it is easy to show that we can, not only vault any parallelogram or trapezium, but that we may make both arches and groin of any figure we choose."

WORKMEN'S LIBRARIES: MESSRS. BROADWOOD & SONS.

"The place where we are to get knowledge, even theoretic knowledge, is the books themselves. It depends on what we read, after all manner of professors have done their best for us. The true University of these days is a collection of books."—THOMAS CARLYLE.

If the importance of self-culture, the beneficent power of books, and the value to individuals and the community of well-furnished libraries, easy of access to all classes, have been frequently or fully discussed at public meetings of working men, they must have been very imperfectly reported; in any case we cannot think that such subjects have received the degree of attention from working men or their professed representatives that their intrinsic importance demands.

The evidence given before Mr. Ewart's Select Committee of the House of Commons in 1849 "on the best means of extending the establishment of libraries, freely open to the public, especially in large towns in Great Britain and Ireland," was as startling as it was humiliating. From that evidence it appeared France had 107 public libraries; Austria, 48; Prussian States, 44; Bavaria, 17; Belgium, 14; Tuscany, 9; Saxony, 8; Denmark, 5; and England, 1. As regards open public libraries in the principal cities of Europe, it appeared that there were 7 in Paris; 6 in Florence; 4 in Dresden; 3 in Copenhagen; 2 each in Brussels, Berlin, Vienna, Milan, and Munich; and in London not one!

As regards England, the state of affairs is not now so bad as it was then, noble results having accrued in many English towns from Mr. Ewart's Public Libraries and Museums Act of 1850, and the Acts passed subsequently to extend and amend the same. Very little progress, however, has been made during the quarter of a century that has elapsed since Mr. Ewart's committee took evidence to remove the stigma that attaches to London, sometimes boasted of as the centre of enlightenment and civilisation, the capital of the world. It is true that the splendid collection of books in the British Museum is not difficult of access, in so far as admission is concerned; and the excellent new library connected with the corporation of the city of London, is even more easily accessible; but neither of these is in the category of absolutely free public libraries. The small but useful library and newsroom for St. Margaret's and St. John's, Westminster (far from the richest district in London), which was established in 1856, continues to be to this day the only public free library in London under the operation of the Acts. An attempt was made, a few years since, we believe, to establish a free library in Marylebone; but the attempt failed, through false thrift probably, and because interference with ignorance means expense.

It is quite true that it is much more difficult to arouse the inhabitants of even the districts into which the "province of houses" may be divided, or to unite them with a view to practical action for the promotion of local objects, other, perhaps, than such an excite direct personal interest,—any repeal of the income-tax,—than it is in smaller communities, to whom appeal is more readily responded to; among whom there is an *esprit de corps* that cannot be generated in London. Hence, probably, the readiness with which the Free Libraries Acts have been adopted in Manchester, Liverpool, Birmingham, Salford, Bolton, Oxford, Cambridge, Birkenhead, Leamington, Norwich, Cardiff, and numerous other towns, and the enlightenment, vigour, and success with which the libraries established in such towns are conducted. Making every allowance for the diffi-

culty of "moving London," however, it must be admitted to be a contrast to the discredit of the metropolis that Manchester, with about a tenth part of its population, has six affiliated public free libraries, and puts into the hands of readers about 2,500 volumes per day; whereas the free public library of which London can boast issues about 200 volumes per day.

In reading and intellectual exercise, as in other things, it would seem that the apparatus "grows with what it feeds upon." It is something curious that ten years before the public library for St. Margaret's and St. John's was established, the nucleus of a very excellent workmen's library was formed, in connexion with the extensive works of Messrs. Broadwood & Sons, the eminent pianoforte manufacturers, that are situated in the same district. We believe that a number of the subscribers to the library at the manufactory in Horseferry-road are also among the most regular readers at the Free Public Library.

The annual meeting of the members of the library at Messrs. Broadwood & Sons has been held, and affords occasion for a statement as to its origin, history, character, and working. Intrinsically it is well worth notice, but is especially as an example, practical, and well worthy of imitation. It is true that there are comparatively few manufacturing towns that possess the advantages for co-operation in such an object as Messrs. Broadwood's in number of workmen brought together,—about 750,—and of as high a class, generally character and culture; but there are, doubtless, many manufactories, and works of various kinds in and near London, and elsewhere, where formation of a workmen's library would be perfectly practicable, and would be followed with the best results.

The library was established in 1847, its number being 80 volumes granted by a philanthropic society, that had for its principal objects the introduction of libraries into manufactories, and the social and moral improvement of working men. In granting books the Society imposed one condition—that no work of a sectarian or demoralising tendency should be afterwards added to the books presented. Lord Brough and the Earls of Shaftesbury and Roden, active members of the Society referred to, the library took root vigorously, and numerous standard works were added continuously. In 1856, when a disastrous fire occurred at the works, and the whole of the books were destroyed, to reconstitute the library during the rebuilding of the works was impracticable, and any proposal to have done so would have been quite of joint. In 1859, however, when the new works were in full operation, it was felt that time had arrived to re-establish the library, which was done; Mr. F. Rose, a member of the firm, rendering valuable counsel and assistance, personally. Messrs. Broadwood & Sons also manifested the most liberal and generous interest in the effort, and many other advantages conferred upon the members have fitted up a room for the care of the books, have provided the members with reading-room, supply them with fire and every other convenience needed for comfort of the members.

From the balance-sheet for the year we find that each shop or department throughout the works has its collector of library subscriptions (fourpence per month), that are handed over to Mr. Trail, the treasurer, a valuable and zealous friend of the library. The annual income of subscriptions, and a few other sources, is a round sum, about 55l. The working expenses amount to 10l. 10s. The balance is mainly voted to the purchase of additional books, and binding and repairs. The additions are made with due caution and sound judgment; such books as are either known to some of the committee, or as have made their reputation being admitted. The library contains upwards of 3,500 volumes, and the weekly issue is about 100 volumes. There are about 300 subscribers. The library is managed entirely by a committee of workmen, elected annually by subscribers, Mr. Jacob Freeman discharging duties of librarian with most satisfactory efficiency. The firm have a power of veto on books admitted, and other questions of management,—a power they have never occasionally exercised. The rules applicable to detention of books, return of books for stock-taking, &c., are sufficiently stringent, but perfectly reasonable. During the last year a new edition of copies of the catalogue has been printed.

mpiler has very wisely refrained from any attempt at classification of subjects, excepting only that works of fiction are given in one group, alphabetically arranged according to their titles, and with the article properly transposed, as, for instance, "Gipsy, The, James." We would suggest, with due deference, that it would have been a better "finding" catalogue if the transposition had been uniform throughout. "Traditions of Edinburgh, The, Robert Chambers," and "Testimony of the Rocks, The, Hugh Miller," are fair entries, not likely to give much trouble to the searcher; but the same can scarcely be said of "The Town, &c. Leigh Hunt"; "The Works of Elihu Burritt"; or "The Ocean, H. Gosse." An index of authors' names would have been a valuable addition, but would have added to the bulk and cost of the catalogue, which, we have little doubt, serves its purpose very well.

In glancing over the catalogue we notice that works throughout are of such an unexceptionable character as would command the opinion of the most severe censor. Many of them are of high character and considerable value, and certainly highly creditable to successive committees that have brought them together. They belong in fair proportions to the classes of history, biography, science, manufactures, voyages, travels, adventures, poetry. An interesting and rather unusual feature in the catalogue consists of a very good selection of pieces of music, vocal and instrumental, with a goodly quantity of musical nature. It may here be mentioned that there is a prosperous wind-instrument band of about twenty members connected with Messrs. Broad & Sons' works. They also had their annual meeting on the same evening, when a satisfactory balance-sheet was presented, referring to the self-supporting, self-managed Literary Institute at Messrs. Broadwood & Sons', would respectfully suggest to large employers and their workpeople that they might do more than "go and do likewise."

ENLARGEMENT OF THE SOUTH WESTERN COMPANY'S STATION AT CLAPHAM JUNCTION.

A short time ago we noticed in the *Builder* extension and reconstruction of the London and Brighton Company's Station at Clapham Junction, stating at the same time that the London and South Western Company was also about to rebuild and materially enlarge their station of the station. The works in connexion with this enlargement were commenced about a month ago, and are now actively progressing, a large number of artisans being employed on the undertaking. The enlargement applies to the main line and local traffic carried on at Clapham Junction, the existing accommodation in both being in every sense inadequate and inconvenient. The extensions are being carried out on the north-west side of the station, which is apart from the Windsor and Richmond, and Clapham and Kensington traffic, and also, on a line of considerable magnitude, at that portion which is exclusively connected with the main line. Hitherto the Windsor traffic, which arrives at and departs from the Clapham Junction, which causes much over-crowding and inconvenience. In order to obviate this, the station is here being widened westward to an extent of 64 ft., admitting of the laying out of an additional double line of rails, the construction of new platforms, and the erection of new station buildings approached from the Clapham side. The building will contain book-offices, waiting-rooms, refreshment-rooms, and other apartments for the special use of the main line, West-end, and Ludgate traffic, altogether distinct from that belonging to the main line. The lines of rails for the Kensington, Clapham, and Ludgate traffic will be on the same west side of the station, whilst those for Windsor traffic will be between the last-mentioned lines and the main line, there being thus two sets of double lines of rails, in addition to the main and sidings, within that portion of the Clapham Junction Station area belonging to the London and South Western Company alone, besides those immediately belonging to the London Brighton Company.

The extended accommodation for the main line traffic is being carried forward simultaneously with the works already described. The carriage approach to the station, between

the London and Brighton and South-Western portions of the station area, has been absorbed into the station itself, and the line is also intended to be diverted westward, in order to give increased accommodation at the central platform used jointly by the two companies. On the additional space which has thus been added to the station area, large new station buildings are now in course of erection. The length of the buildings, which have two frontages architecturally uniform, is 214 ft. The central portion of the elevation is 64 ft. in length, and contains one story, carried to a height of 25 ft., whilst at each end the building contains two stories, 40 ft. high, and surmounted by a handsome pavilion-roof covered with green and blue slates. The style of architecture partakes of the Gothic. The main face of the elevation is of white Suffolk and stock brick, with patent red brick window-heads and dressings. The interior of the central portion of the elevation has a circular timber roof, open throughout, which gives it a light and striking appearance. The building contains a complete set of offices and other apartments for conducting the business of the station. These include spacious new booking-offices, 40 ft. by 25 ft.; gentlemen's waiting-room, 25 ft. by 22 ft.; ladies' waiting-room, 22 ft. square, with lavatories and retiring-rooms; also a refreshment room, 40 ft. by 22 ft., with kitchens attached; in addition to station-master's office, inspector's office, telegraphic office, ticket collector's office, and other requirements appertaining to a first-class station. The south-east frontage of the new station faces the line of railway, alongside which a covered platform, 20 ft. in width, runs the full length of the station buildings. On the north-west side of the station there will be a wide new carriage and footway approach, the footway being covered over with a light roof, supported by ornamental iron columns and spandrels. The whole of the works have been designed by Mr. Jacob, the company's engineer; and the contractors for the extensions and buildings on the main-line portion of the station are Messrs. Jackson & Shaw, the company themselves executing the works in progress at the Windsor and West-end section, Mr. Bishop being the clerk of works in charge of the whole.

THE NEW CLYDESDALE BANK IN GLASGOW.

THE new building erected for the Clydesdale Banking Company, in St. Vincent-place, Glasgow, even in its present partially completed state, forms one of the most notable architectural features of the City. Italian in style, the building stretches along the street for 135 ft., and the frontage rises to a height of three stories from the ground floor. The eastern portion of the edifice, which has a frontage of 38 ft., will be occupied by the bank, and the remainder is intended for offices or warehouses. The bank entrance is in the centre of the facade of the eastern part of the building. It is flanked on either side by granite columns, and is surmounted by a piece of facial sculpture, emblematical of a river god. Above this, the arms of the city are worked out in stone, and figures representing Industry and Commerce are placed on either side the grand staircase window on the first floor. Over this again two beautiful shields have been cut out with the arms of the trades and merchants' houses of the city, and on the summit of the building there is a semi-circular shield in the centre of a beautiful floral device. A number of small circular ornamental shields have also been placed between each window on the ground-floor, and these contain the arms of the various towns in which chief offices of the Banking Company are situated. Along the upper stories there is in classic design a group of Ionic and Corinthian pillars, and at the west corner a tower is erected, which is crowned with a balustrade. The works in the interior are also progressing.

The entrance will have a portico, which will rise to a height of two stories, and will slightly project over the area. The hall or vestibule, from which will rise the grand staircase leading to the upper floors in the front part of the building, will be 26 ft. square. The manager's rooms, waiting-rooms, &c., will be on the left, and the assistant-manager's and other apartments on the right, of the portico. The telling-room will occupy a space of 60 ft. by 56 ft., between the columns of an arcade, or a series of stalls. In these latter the chief clerks and heads of departments are to be accommodated.

If the space to be taken up by these stalls, which will be open all round, is added to the telling-room, the department will have a width of 84 ft., and a length of 87 ft. The apartments fronting St. George's-lane will include rooms for the inspector and his clerks, and there will also be two staircases leading to the upper floors. The board-room, ante-room, committee-rooms, &c., will be on the first floor, facing St. Vincent-place. Over the arcade or stalls there will be on the right lavatories for the directors, managers, &c.; and on the left, the proprietors' gallery, which will be 60 ft. long and 16 ft. wide. The stationery and note-printing rooms will be towards St. George's-lane. The whole of the first flat is to have double flooring. The money and cheque safes will be upon the ground-floor, and the entire space in the basement flat will be divided into a book-safe, or stone plate-rooms, note-burning room, and coal-cellars. The main ceiling will be of semicircular shape, and will be surmounted by a large dome, filled in with painted glass. The height of the ceiling in the dome will be 10 ft.; in the street floor, 18 ft.; in the first floor, 18 ft.; in the second, 13 ft.; in the third, 10 ft.; in the telling-room, 40 ft.; and to the apex of the roof from the last-mentioned place, 54 ft.

With a view to possible future extension, the floors of the bank and warehouse buildings correspond throughout in regard to level. All the floors will be made fireproof, and the surface of the entrance-hall and the public space in the telling-room will be laid with encaustic tiles, whilst the other parts of the bank flooring will be of teak. Although the whole of the apartments will have fireplaces, the general means of heating the premises will be by the hot-water process.

It is expected the new bank will be ready for occupation in the course of the summer.

ELY CATHEDRAL RESTORATIONS.

VERY extensive works are still in progress at Ely Cathedral, in connexion with the completion of the lantern and octagon; and it is almost the last work that is required to make this grand structure complete. The present work has long been deferred on account of its costliness, and because other parts of the building needed previous attention. At the St. Etheldreda Festival, in October last, commemorating the anniversary of this establishment, much notice was taken of the lamentable condition of the lantern, and the groined roof of the octagon. The Duke of Bedford made a donation of 1,000*l.* towards its restoration, and Mr. Dunn Gardner also gave 200*l.* With this, as a foundation, the Dean and Chapter have opened a new restoration fund, and have resolved at once to commence the present work. Their architect, Sir Gilbert Scott, having approved of the scheme, the work of repair has been assigned to their surveyor and architect, Mr. R. R. Rowe, C.E., of Cambridge, who has completed the gigantic scaffolding necessary for the purpose. This important work of ornamentation has been placed in the hands of Mr. T. Gambier Parry. In this work, as the local *Chronicle* reminds us, there is next to nothing of ancient painting left by which to be guided, except a few panels of the groining, covered with a kind of sham Gothic tracery, in green and buff, more like huge rabbit-wire than anything else, much on the principle of the roof of the Cathedral at Milan, and of which all who have to do with it are rightly ashamed. Of any work of Mediaeval painting in the lantern there is absolutely nothing. It is therefore inevitable to make the scheme of its treatment, both in the octagon and lantern, new throughout. The design of Mr. Parry is, we understand, to draw the four roofs, which concentrate upon the octagon and lantern, altogether by a work, in their midst, which will unite them thoroughly, and thus withdraw attention from their great differences. There will be very rich colouring upwards in the ornamental ceilings, and mellow colouring below, where it will melt away almost imperceptibly among the uncoloured stone-work. The scheme of the figures, of which there will be many, is founded on the grand idea of the 105th Psalm: "Praise God in His Holiness. Praise Him in the Firmament of His power." There are yet a few things more to be done within the octagon and lantern, which are necessary to a proper completion of the whole. The thin and cold glass which now fills the windows of the lantern was doubtless the best of its kind when put in, but it will be doubly wretched by the side of the internal colouring which is now

being executed. It needs to be replaced by good rich glass. Another very necessary work is the pavement of the octagon. Mr. Parry's two principal assistants, as decorative painters, are Mr. Henry Davies and Mr. Alfred Clay, who worked excellently for many years in completing the nave of the cathedral, under the late Mr. Le Strange and Mr. Parry.

THE INSTITUTION OF SURVEYORS.

METROPOLITAN BUILDINGS BILL.

THE annual meeting of the members of the Institution of Surveyors was held on Monday, the 1st inst., at their Rooms, Great George-street, Westminster, to receive the report of the Council and to elect the officers.

In the absence of the president (Mr. E. Norton Clifton), the chair was taken by Mr. Hall, who, in opening the proceedings, stated that unfortunately the president had been confined to his bed for several days from the effects of a fall. During his term of office he had rendered valuable service to the Institution, and much of the success with which they had met was due to his individual exertions. In conclusion, he (the chairman) informed the meeting of the death of Mr. Bidwell, a member of the Council.

Mr. Penfold (hon. sec.) then read the sixth annual report of the Council, which showed that the past year had been one of substantial progress, and they had cause to congratulate the members on the prospects of future prosperity. The old rooms of the Institution having been found to be insufficient for the accommodation of the members, the Council, after mature consideration, had during the past year decided to make an outlay for the enlargement of their premises to such an extent as to avoid any future outlay for some years to come. These improvements had been carried out very satisfactorily; and the step taken was considered the most economical that could have been adopted. The addition to the number of members during the period reviewed by the report was far in excess of that of any previous year, and to the list of honorary members had been now added the Duke of Bedford. With regard to the financial condition of the Institution, this was fortunately in a satisfactory state. To the Duke of Bedford the council were indebted for the donation to the library of a series of most rare and valuable works of a topographical character. As regards the entrance from the street to the Institution, it had been determined by the council to effect some reform in this direction, and consequently the entrance would be widened, and a porch erected. The ordinary meetings of the Society had been better attended than heretofore; but few papers were read, this being due to the fact that, being of a more interesting description, they necessitated protracted and adjourned discussions.

Votes of thanks were passed respectively to the auditors, the president, the vice-president, and to the various members of the Council, &c., for the satisfactory performance of their duties during the past year.

Previously to the declaration of the ballot, which was being taken for the election of officers,

Mr. Garrard expressed a wish to call the attention of the members to the Metropolitan Buildings Management Act, which was now before Parliament, he stating that the Bill sought to put almost unlimited powers into the hands of the Metropolitan Board of Works, although it was true that much of the powers only applied to detail; but the Bill, if carried, would, he considered, affect very injuriously those gentlemen who had the management of estates in and about London. With respect to the laying out of roads, it was proposed to take arbitrary powers by the Board, so that if they chose to direct those who had to lay out the roads to increase their width and alter their direction, &c., it would reduce the value in many cases at least one-third. He contended that, considering all things it would be a very serious thing if the Bill became law; and he would like to see the Institution co-operate with others in opposing the measure. Already there was great opposition, so that the Bill might possibly be thrown out. It would be well if they could keep their powers to make the roads as they did at present. Among other powers, the Board reserved to itself the making of bye-laws uncontrolled; but there certainly should be some kind of supervision by the Home Secretary, or some other person in this respect. The Institute of British Architects were taking up the matter, as were also

the district surveyors and the builders; and he did not think that the Institution of Surveyors should let the matter pass without showing their opposition to it; and he would suggest that some members of the Council should form a committee to consider the best steps to be taken in the matter.

Mr. Driver fully concurred as to the Bill giving the Metropolitan Board of Works most arbitrary powers; and thought that if the measure became law, so-called freehold property would no longer be freehold.

Mr. Clifton considered that if the matter were referred to the Council of the Institution, it was possible that when the Bill reached the House of Lords some good might be done, by way of suggestion, if the President of the Institution could be called up for examination.

Mr. Garrard then proposed that the question should be referred for consideration to the Council.

Mr. Stewart seconded the motion, which was unanimously carried.

Mr. Driver was of opinion that the Rating Bill, too, was an important measure, as it purposed to deal with woods, underwoods, shooting, and mines, and touched the question of severance of shooting.

It was then understood that this question also should come under the consideration of the Council.

It was afterwards announced that Mr. Thomas Huskinson had been elected president; the vice-presidents being Messrs. J. Matthews, J. Oakley, E. James Smith, and W. Stange.

THE WALKER ART GALLERY, LIVERPOOL.

We illustrate in our present number the new Art Gallery for Liverpool, which is about to be erected upon the ground adjoining the Free Public Library, at a cost of 20,000*l.*, the gift of the present mayor of Liverpool, Mr. Alderman Walker.

The order of the building,—which will be in accordance with plans prepared by Mr. Cornelius Sherlock, of James-street, and Mr. H. H. Vale, of Central-chambers, South Castle-street,—is Corinthian. In the centre of the front, facing William Brown-street, there is a portico, consisting of four fluted columns with carved capitals, approached by a flight of twelve steps. Above the portico are a pediment and attic, crowned by a figure representing the Arts. On either side of the portico is a group of statuary, representing, we believe, Science and Literature; and above are panels carved in bas relief. To the right and left the façade extends 70 ft., making, with the central portion, a frontage of 180 ft. to William Brown-street. The wings on the right and left of the portico consist of four large windows on the ground floor, with a continuous frieze and cornice above, the frieze over the windows being ornamented with a fret enrichment. Above these openings are long panels, running almost the entire length of the wings, and containing bas reliefs representing subjects having reference to the purposes of the building. The whole of this portion of the façade is surmounted by modillion cornice and open balustrade, the total height being about 50 ft. The extreme ends of the front of the building are finished with coupled pilasters, having Corinthian capitals and bases, standing upon a moulded plinth, continued up to the portico upon each side.

The main doorway is recessed beneath the central portico, and opens into a vestibule lighted by each side of the doorway, the flooring formed of encaustic tiles. Beyond the vestibule is a spacious hall with panelled ceiling, at the end of which, facing the grand entrance, is the staircase leading to the picture-galleries. The whole of the ground floor of the building is appropriated to sculpture and museum purposes, lighted by windows at the sides, and consists of two large galleries, 70 ft. long by 30 ft. wide, and two galleries, 46 ft. long by 35 ft. wide. Upon this floor retiring-rooms and other suitable apartments will be provided.

The picture-gallery proper occupies the upper portion of the building, and is approached by the staircase, which leads to a large hall lighted by windows in the roof. Out of this hall open two miniature-rooms and six galleries, of the same dimensions as the sculpture-galleries beneath, but more lofty, and having their light entirely from above. The plans have been prepared with a view to further extension; but,

inasmuch as the eight rooms in the upper will have upwards of 1,000 lineal feet of hanging space for pictures, any enlargement will probably not be necessary for some time.

NORTHUMBERLAND HOUSE, STRAN THE GLASS DRAWING-ROOM.

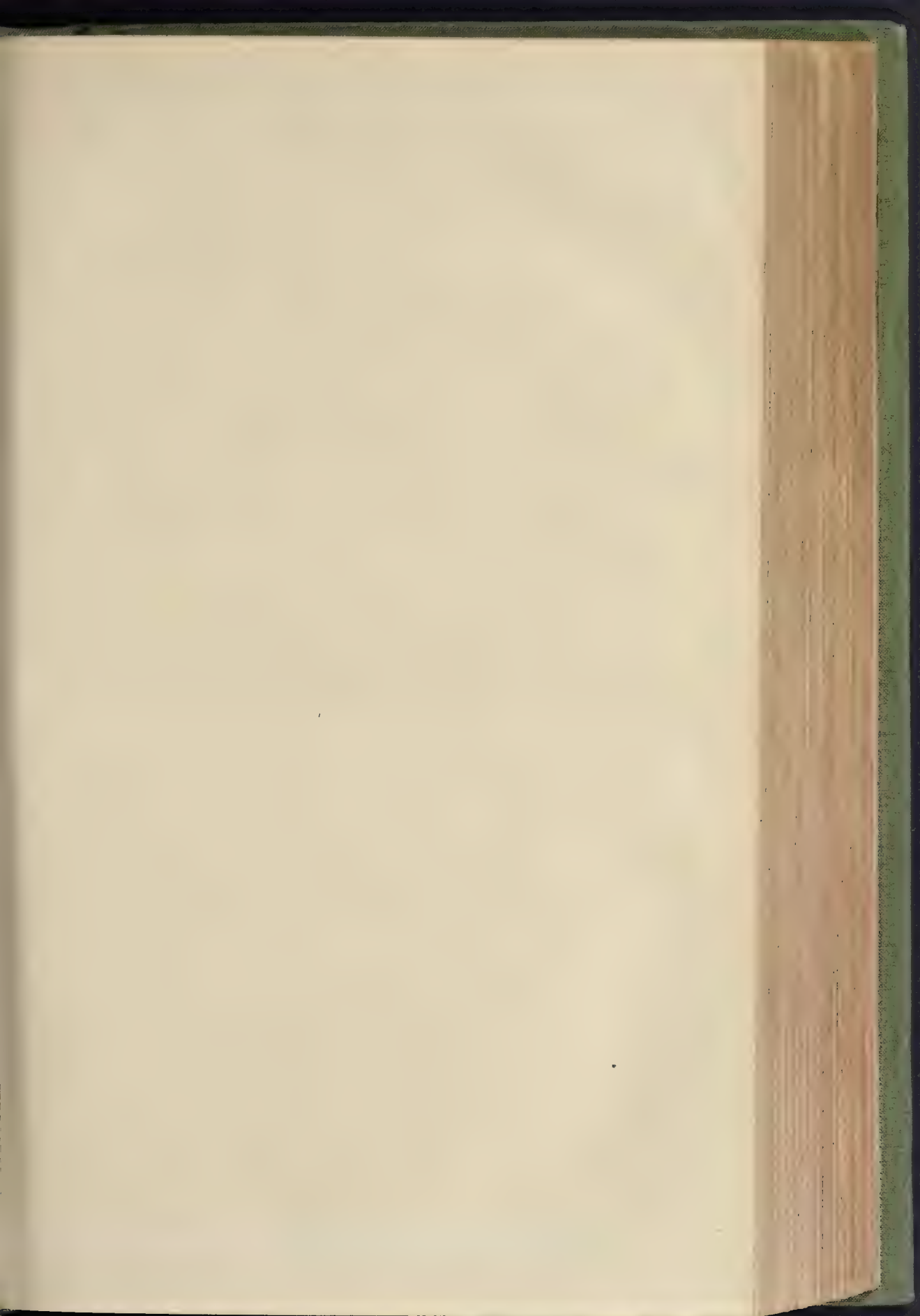
THIS room, of which we give an illustration, is one of the state apartments in the domain at Charing Cross. There is a richness in the style of the decoration of room, yet there is a quietude about it very rare. The walls are covered with glass, some encrusted substance, which is red, from this colour the apartment has been times called the red drawing-room. The pilasters, which divide the walls into panels of dark green, picked out in the caps and enriched with gold; the panels and mouldings are enriched by patterns in ormolu fastened upon glass. The ceiling is coved, the coving, ornamental part being the work of Cipriani, the main panels of the ceiling are from the hands of Angelica Kauffmann. The piece is of marble inlaid with porcelain; the frieze is of silver, as is also the fender.

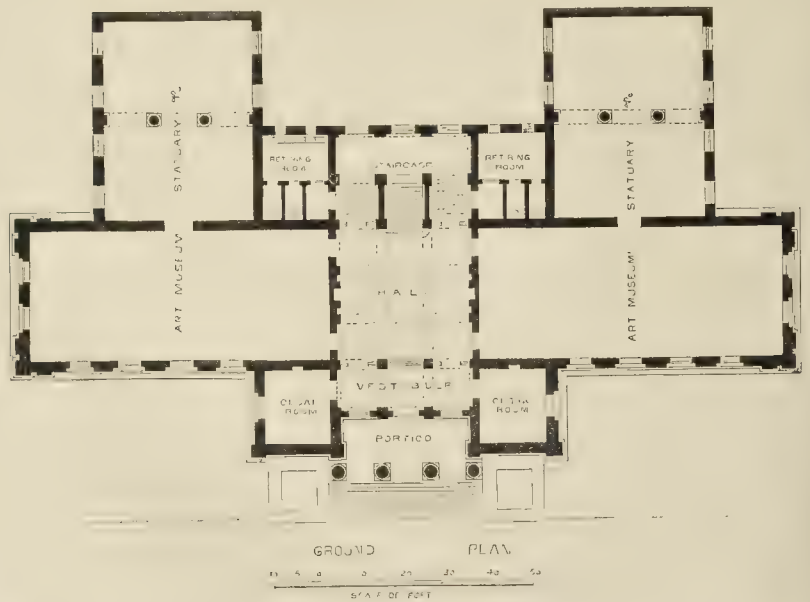
There are two or three tables in this room, which are in mosaic work, particularly one of eper-tables; the furniture being in rich satin, with a dull red pattern upon it, and curtains of dark green satin, gives the whole a very harmonious effect. This room contains some charming specimens of old Dr. Sèvres, and Chelsea china. The chandeliers of ormolu and cut glass, somewhat resembling the fountain. The room was designed by Adam and the Adelphi.

Since this memorandum was written the demolition of the room has been commenced. Upon examining the wall-covering already down there appears a coating of small metallic brightness, not unlike silver-leaf, here and there a piece of gold; this coating on the glass itself by some adhesive material, and then backed with thickish paper; this is stained, and this gives the rich porphyry to the walls; the ormolu work is, of course, screwed on through the glass to the pilasters, which are green, are treated the same way as the wall, the caps only of wood picked out with gold.

THE CONCRETE MODEL BUILDING, HASTINGS.

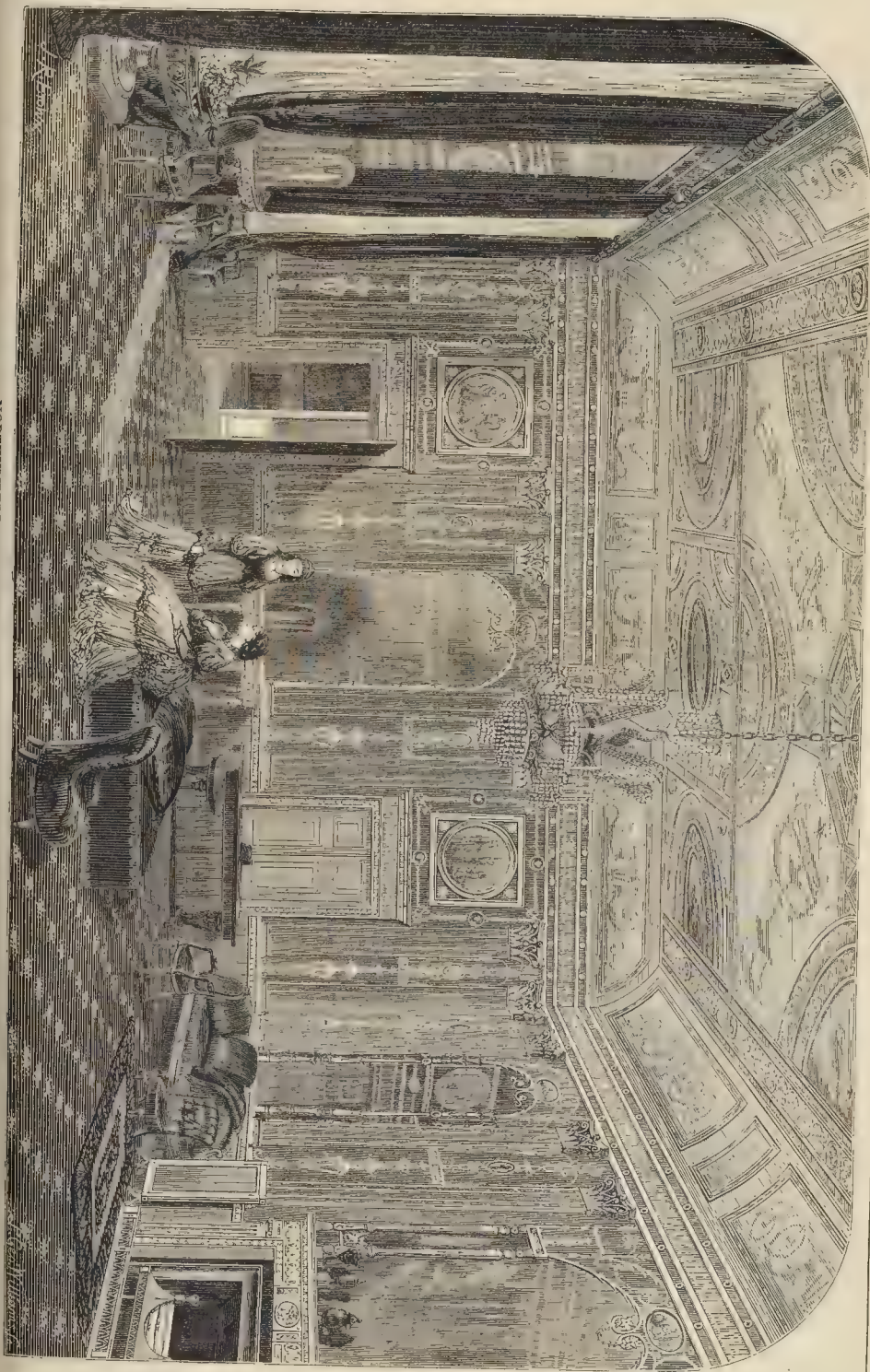
IN the annual report of the Hastings Improvement Society, just issued, it is stated that the model building in Crown-lane, Hastings, opened last autumn,—of which account was given in the *Builder* at the time,—is found to answer fairly. There are three apartments, divided into thirty rooms. The cost of building was 2,963*l.* 10*s.* 6*d.* (including an allowance for unproductive capital during erection), the total outlay about 3,580*l.* The saving effected by using concrete instead of brick, is 406*l.*, or about 15 per cent. The gross rental (273*l.* 13*s.* per annum), amount will increase slightly in future, will yield a net revenue sufficient to pay annual interest on the money used for the building, and afford a clear profit of about 60*l.* per annum. Besides Scriven's-buildings, model buildings are called,—the Society very recently built thirteen houses, or cottages, at Hailton. These each contain two rooms, with water laid on, and other conveniences, and are let at 5*s.* or 6*s.* a week each. The cost is expected to be about 2,500*l.* The Society possesses 207 separate tenements. The capital is now 24,554*l.* 17*s.* 2*d.* 4*d.* gross rent from tenants last year was 2,000*l.* A dividend of 5 per cent. per annum has been constantly paid. To give encouragement to tenants who pay regularly, and keep houses clean and tidy, it is proposed to allow a discount, "not in any case exceeding 5*s.*" for the past half-year. It is also proposed to stimulate the culture of window-plants, offering prizes for the best specimens of growth in window gardens. Dr. Greenhalgh has been appointed honorary secretary to the Society.





THE WALKER ART GALLERY, LIVERPOOL.—MR. SHERLOCK AND MR. H. H. VALE, ARCHITECTS.

NORTHUMBERLAND HOUSE, STRAND : THE GLASS DRAWING-ROOM.



SANITARY AUTHORITIES, INSPECTORS OF NUISANCES, AND MEDICAL OFFICERS.

Sir,—Although I see your paper regularly, my attention has only now been called to the excellent article in a recent number on the duties of an "Inspector of Nuisances," in reference to the question whether the office would be derogatory to an architect. You say, "certainly not. The status of the office requires elevation. Its importance in the social economy of the country is immense, but the ordinary conception of its importance has hitherto been, or until recently was, low." With all this I certainly coincide. But unfortunately very few boards of guardians or sanitary authorities appreciate the services of an engineer or architect, or will pay any adequate salary for a professional man; the very title of "surveyor" in the original Act of 1848 is a mistake, and has led to the appointment of unqualified men, while the higher duties appertaining to the office of a "surveyor" to a local board of health or sanitary authority belong to the profession of a civil engineer. I know an instance of a timekeeper to a local board, when receiving 50s. per week, being appointed "surveyor" to another local board at a salary of 250l. per annum. The man was not of course brought up to the profession, and had no pretensions to be looked upon as a surveyor, much less as an engineer; but I have since seen his name advertised with the addition of "C.E."—an adjunct which, probably, he considered the office he held entitled him to assume. Query! which was most to blame, the man or the Board?

It has become very much the custom for Local Boards to advertise that the officer will be expected to prepare plans, specifications, &c., for waterworks and sewerage, to survey and level, and advise generally on all sanitary improvements which appertain to the profession of a civil engineer, while they offer less pay than the wages, or rather earnings, of many a working collier.

It is to be feared that this want of appreciation of the true status of an engineer or architect has been very much induced by the course pursued by many successive Governments towards the profession; the most recent and notable instance being the offensive course pursued by Mr. Ayrton, as First Commissioner of Works, towards the architect of the Houses of Parliament. But it was only carrying out the same policy, in an offensive manner, which has been attempted more quietly on many other occasions. The result of all this is, that enormous sums are annually squandered away on public works from the blundering and inefficiency of the superintending powers. You rarely see a professional engineer or architect now engaged upon Government works without his hands being virtually tied by the meddling interference of some Government officials, who, if they had occasion to employ the same engineer or architect in their private capacity, would be only too glad to be guided implicitly by his advice. While in their official capacity as guardians or supposed guardians of the public purse, they will cause, by their injudicious interference, a lavish expenditure, with a result which the professional man is too often ashamed to put his name to.

I find I have been led on to touch upon points somewhat foreign to the real object of my present communication. I wish to call attention to one remark I was sorry to see in your otherwise excellent article; and the more so as it appears to militate against your opening statement as to the importance of the office of "Inspector of Nuisances," or what should more properly be termed "Sanitary Inspector." You say that he should not only "recognise the absolute right of the Medical Officer of Health to dictate what shall be done, but to go about his own work in the absence of any specific instructions from that officer." In the latter I entirely agree. But as to the medical officer dictating what the inspector shall do, I must beg leave, with all due deference, to take exception; and I must go further, and say that the office of District Medical Officer, as at present constituted, is worse than useless; for such an officer has now the power, with the sanction of the sanitary authorities, to become positively obstructive to an inspector who really knows his duty. The regulations of the Local Government Board very wisely leave it to the discretion of the sanitary authority whether the medical officer shall have any control over the inspector. This is perhaps the best that could

be done so long as medical officers for large districts are tolerated at all. But this should be subject to the sanction of the Local Government Board to prevent its improper application. It is true there may be some districts where very improper persons are appointed to the office of inspector. I have known an instance where a local board appointed a person who could scarcely write his own name to be inspector at six guineas per week, his only recommendation being that he had a brother in the town council. It is to be hoped that such cases are the exception; but where they do unfortunately occur the best thing the sanitary authority can do is to direct the inspector to act as the "man Friday" to the medical officer: the real object of the board is presumed being accomplished by their protégé getting his salary.

But, as regards the appointment of medical officers, every union has its medical staff; and, as a rule, these appointments are made from merit, the emoluments being too small for them to be made jobs of, as is too frequently the case with the high-paid District Medical officer; and, moreover, very few medical men of ability will give up their practice for an appointment of one year, with the uncertainty of its being renewed. Whereas, the union medical officers, with a suitable addition to their salaries, might be made useful and able advisers of the Sanitary Authorities.

The hackneyed idea that by the employment of union medical men as medical officers to the Sanitary Authority, their private practice might clash with their public duties, is derogatory to any honourable mind. It is the same narrow-minded prejudice which too often prohibits surveyors to Local Boards from taking other practice. The system not only pre-supposes that an educated gentleman, whether a medical man or an engineer, might be deterred by private interest from doing his public duty independently, but also pre-supposes that landlords oppose the removal of nuisances from their premises. As regards the former I can only say, "*Honî soit qui mal y pense*;" and as to the latter, my own experience, as a rule, is quite the reverse. I have generally found landlords only too glad to have advice and suggestions as to the sanitary improvement of their property. But a good deal depends upon its being tendered in a courteous and unobtrusive manner, and not thrust upon them as a costly burthen. Hitherto, many landlords of small properties have not known what to do, and there has been no one to tell them. And if policemen, *à hoc genus omne*, are to be appointed Inspectors of Nuisances, on the principle that they are to act under a medical officer, these evils will still be perpetuated. It is not expected surely that medical men are to be qualified as engineers. Although I know of an instance where a medical officer was appointed at a salary of 500l. per annum, and not being able to find any legitimate work to occupy his time as a medical officer, bought up a number of elementary tracts and pamphlets on sanitary engineering, but soon satisfied those with whom he was connected, if not himself, that "a little knowledge is often a dangerous thing." Another reason why landlords have hitherto refrained from entering upon the sanitary improvement of their property is, that they have, from a mistaken notion of economy, refrained from calling in a professional man, and entrusted the work to some jobbing builder or mason, and the result has been disappointment and vexation; the alterations turning out, as might be expected, worse than useless.

It should, no doubt, form a part of the duty of an "inspector of nuisances" to report all cases of typhoid to the local medical officer, who will be on the spot to deal with them; but where there is a district medical officer, the inspector cannot officially do this, but must report to the district medical officer, and frequently a day must elapse before the latter can attend to it, as the inspector may be at one end of the district, while the medical officer for the district is at the other; unless it is to be assumed that the inspector and medical officer are to go their rounds together, like Crusoe and his man Friday, or the inspector is to become a sort of itinerant bottle-holder to the medical officer.

But this is not the only evil of the present system; and I am speaking from personal experience. When a medical officer is appointed to act for the whole union, he will often come into unpleasant collision with the local medical officers, and also private practitioners. By way of illustration we will suppose an outbreak of

typhoid. In a large district neither the inspector nor the medical officer may have heard of this for several days after the outbreak, while the cases will doubtless have been under treatment by the local medical officers, or by private practitioners. Now, as before stated, it becomes the inspector's duty, under the present regulations, to report this to the district medical officer, thereby implying that he is supposed to have a keener perception of such occurrences than the medical officer. But, as before intimated, it forms no part of the inspector's duty to report it to the local medical officers. But, having reported it in due course, at the end of his day's labours, to the district medical officer, the latter can scarcely be expected in a large district to attend to it before the next day. If the case has been, as it probably has been, attended to by the local medical officer, he will know its precise features, and the stage it has arrived at. But in the midst of this the district medical officer enters upon the scene, and probably comes puffing in two or three days after the outbreak. Of course he makes the necessary inquiries, but the attendants and relations of the sick poor,—I beg pardon, I mean the "operative" classes,—are not always the best informants. The medical officer, judging from what he hears, may probably think that a wrong course of treatment is being pursued; and, if not very discreet, drops a hint to that effect, which, with a nervous patient, will often do more harm than all the medicine or advice of the regular medical attendant will do good. And this I have known to occur.

Under such circumstances the patients, or the attendant friends, will be sure to inform the local medical attendant, on his next visit, that the officer from the Board had been and objected to the mode of treatment. And as the "officer from the Board" is generally paid a large salary, in consideration of his giving up practice, and the local medical officer is too frequently only paid a nominal pittance,—about sufficient for an extra feed for his horse,—the people very naturally think that the officer from the Board is a superior being, whereas he too frequently has had less experience than the medical officer of the union; for the appointment being looked upon as a good piece of patronage, it is most frequently made a local job of. The required sanction of the General Board can scarcely operate as a check upon this; for so long as the officer holds the necessary diplomas, and there is nothing positively known to be objectionable in the selection, it cannot be expected that private motives for the appointment can be too closely inquired into, or become known; and, altogether, he may be a very fit and proper person for the position, if such an officer were really required for carrying out the sanitary improvements of rural districts; but my own experience is decidedly against this.

I fear I have trespassed too far upon your space on the present occasion; but the subject is of great and growing importance; and although I have felt it necessary to allude to special instances of abuse or misdirected patronage, I have endeavoured to avoid any personal allusions which can possibly be identified by any but those immediately concerned; and we have some very high authority for clothing facts and living persons in the garb of fiction.

I have only to add, on looking over the above, that I must entirely disclaim any intention of associating or identifying jobbery in the same quarter from which I have drawn my illustrations of the evils arising from the present system of appointing medical officers for large districts. I have known both evils to exist, and therefore allude to them; but I do not wish or intend that it should in any way be considered that these are derived from the same source, or exist in the same locality.

Nottingham.

S. CASTLE GANT.

ASSOCIATED ART INSTITUTE.

Sir,—In turning out some papers the other day I came upon several numbers of "Papers read before the Members of the Associated Art Institute, Session 69 and 70."

I find on reference that I was that year entrusted with the distribution to the members of the session's papers, and that these now in my possession are the balance remaining after such distribution was made.

As there are many connected with architecture and art who would no doubt be glad of a copy, and as the papers are by well-known names and the Society is now defunct, may I beg your insertion of these few lines stating that a copy can be had upon application addressed as below

STEWART S. PHILLIPS,

No. 10 Baker-street Portman-square.

THE ORNAMENTATION AND MOULDINGS OF BRITISH ARCHITECTURE.

MR. E. SHARPE sends us the second instalment of what promises to be, when completed, an almost exhaustive illustration* of the characteristic features of the period of late Norman-Gothic, which he has named the "Transitional." We have before pointed out the advantage to be derived from the study of this very peculiar and interesting phase in the development of our national architecture, in which the ornament, so essentially architectural and conventional in character, suggests new motives for the modern designer, even by means of specimens which in their original form are crude, and sometimes unsmooth in treatment and proportion, but which might serve as a basis for very refined effects in ornament. The variety given to one type of decoration, the scallop, is in itself instructive, suggesting to us how much may be done in the way of original design upon received types of ornament, without always looking out for something entirely "original,"—a thing which in fact exists much less, either in ancient or in modern architecture, than many people suppose. The method of playing with the "scallop" feature is curiously illustrated in the capitals from Amney St. Mary (pl. 11), which, however, are certainly more curious than beautiful; in the upper capital from Romsey Church (pl. 12), with its curious little triple buds fringing the points of the scallops; and in those from Bibury Church (pl. 13).† These latter are particularly interesting, for we cannot have a doubt that we here see the origin of the little turned back volute so common in the Late Transitional leaf-capital, and its development out of the scallop ornament. These are both from the north arcade of the nave; in one of the subordinate capitals in the right-hand pier the leaf wraps round the lower part of the scallops, the point of it coming up into the angle between the semicircular disks in which they terminate; in the larger capital of the same pier a large bold leaf of the Late Transitional type curls up in a similar manner, with the point rounding into a disk, which evidently represents the front of the scallop with the circle completed. It only requires to reduce this disk a little in size and hollow it out, to have the characteristic little backward curl of the Transitional leaf precisely.

It is remarkable that in some of the details of these Transitional capitals, what we should now call the Gothic spirit of treatment is almost absent, and the capitals present that more thin, regular, formal design of filets and enclosed panels which in feeling assimilates to Classic work. This is observable particularly in some of the caps in the large pier from the nave of Worcester (pl. 8), and in those from St. Cuthbert, Wells, and from Whitechurch, in the next plate. We have seen new ideas for capitals in a modern Bank in Classic style, which very much recalled these.

Among the larger examples are a very fine pier-capital from Jedburgh Abbey, the west doorway (south aisle) of Lincoln, the south doorways of Kirton and Aswarby; the latter a peculiar instance of the passage from Transitional towards what is generally called Early English, with a simple form of the "dog-tooth," or ornament, combined with zigzags. The capitals also present the budding type of Early English foliage in a very simple and naive form.

The drawings leave nothing to be desired in style and execution, and are up to the usual standard of excellence which has characterised the illustrations of English architecture published under Mr. Sharpe's direction.

We have on a previous occasion noticed the earlier numbers of another work‡ in which Mr. Sharpe is illustrating, on the complete and orderly system of arrangement which he has adopted, the whole series of mouldings of the various styles of English architecture. The third number, which has recently appeared, contains sixty plates, and exhibits two complete

progressive series of arched mouldings, from the "Transitional" to the "Rectilinear" period (to adopt the author's nomenclature); the first series consists of the mouldings of pier arches, and the second exhibits door arches. The method of distinguishing the various periods by printing in different colours, which Mr. Sharpe initiated some time since, is consistently retained, and very much facilitates the easy and comprehensive classification of the contents; and the system of dividing the mouldings into sections according to the jointing, and where necessary printing one section under or beside another, enables large mouldings of many orders, such as the singular south doorway from Kirton, to be given without any diminution of scale, and without (except in one instance) the inconvenience of folded plates. This is a very important point, for as every one who has studied and drawn mouldings knows, a large scale is very desirable in their delineation; and in the comparison of different mouldings, uniformity of scale is almost a *sine qua non*. In the present work, the whole of the mouldings are to a uniform scale of one-third the real size, which, when carefully drawn out, is, for purposes of study, almost equal to full-size sections, and much more manageable.

We may have more to say in regard to this publication on a future occasion, but it would be perhaps most fitting to defer any more detailed commentary till the completion of what, if it is carried throughout in the same style, will certainly be the most complete and exhaustive work on the subject which has appeared in this country.

INDIAN ARCHITECTURE, AND THE MANUFACTURES OF GLASS, TERRA-COTTA AND PORCELAIN.*

A GREAT deal of the earliest architecture and ornament of India is, like that of other countries, rude, coarse, and quaint, but with characters that are due chiefly to the climate and natural features of the country, which give a peculiar nationality and individuality which are purely Oriental.

One of the first impressions that are made on the mind by a careful inspection of these early records of Art in India, is that simplicity of form at first pervaded most of the styles, and that there was an inherent love of Nature, and a desire to represent by sculpture scenes or events, and persons who took a part in them, and the circumstances under which they occurred. Marks of gradual improvement are obvious in both the sculptures and figures, until the periods when complexity, elaboration of detail, and profuseness of ornament, took the place of some of the grand simplicity that characterised the works of the early Buddhist sculptors and architects, who took a just and correct view of the relative value of simplicity, beauty of form, and appropriate ornament, united to enhance, but not to encumber or distract attention from the story to be told.

Perhaps the oldest and most quaint rock sculptures of India are the underground vaults and cave temples, with roughly-hewn representations of men and animals, recently brought to light by the late Mr. Breke, Commissioner of the Nellore, and the Rev. Mr. Metz, of the German Lutheran Mission, and by Mr. Longley, Collector of Salem, and the Rev. Mr. Phillips. These are not decidedly cave temples, but they bear some resemblance to them in their structure and arrangements, as some of the rude sculptures are on the solid rock, while others are on separate slabs, of no great size, placed erect, and in straight lines; and others project at right angles, dividing the cave into partitions. In some localities the whole structure is subterranean, as covered by a huge flat mass of rock from 11 ft. to 13 ft. in length by 8 ft. in breadth, and from 8 in. to 10 in. in thickness. These sculptures belong evidently to very early periods when the worship of serpents and of the sun and moon were common. Along with the sculptures have been found antique pottery of very quaint forms, consisting of culinary, domestic, and other vessels, cicatory urns, containing bones and teeth of men, women, and horses; gold ornaments of considerable value, bracelets of cornelian, quartz, and felspar, cut, polished, and occasionally inlaid with a very hard enamel; tools and implements of iron and bronze, and some very delicate and tasteful bronze vessels of elegant shapes and of pure forms.

The pottery of the Nellore is evidently of older date and of a ruder period than that of Salem and of Coimbatore. Some of the latter is very like the pottery of the Greek and Etruscan periods. Large collections of these antiquities have been sent to the Indian Museum, and other museums at Madras and at the Nellore, and steps are being taken by the Madras Government to trace the origin, and to determine, if possible, the dates of these sculptures and antiquities. The quaintness of the head-dresses of the figures, with the hair as a chignon, sometimes on the top, at other times on one side, and occasionally in the form of a horn, point to early periods of history.

We now come to the Buddhist period, when some taste and refinement were introduced, and when snake worship, though still tolerated, was evidently supplanted by a purer form of worship, and by sculpture and architecture of better descriptions. The square, the circle, the pyramid, and the triangle, were the first forms selected for the basis of architecture, and with the Early Buddhists each of these forms had a symbolical meaning; thus, the square, from its solidity, was supposed to be typical of the earth; the circle, of water; the pyramid, of air; and the triangle, of fire. To this the followers of Buddha added a fifth element, namely, the winds, as distinct from air, and the symbol which they selected was a crescent. Much of the early architecture of India consisted of cave temples and sculptures, some of them of a gigantic size, and of hard granite or gneiss, a few of magnesian limestone, and others of sandstone. The latter have in most instances, and outlines have been nearly obliterated, while those in magnesian limestone, potstone, and chlorite, or serpentine rocks, are almost invariably sharp and in good preservation, while the rocks containing magnesia have become harder by exposure, although these rocks are generally soft, tough, and cheery when first quarried. Some of the granites have become corroded on the surface, from the decay of the felspar and mica. Our architects may learn some useful lessons from the examination of the old cave temples and early Buddhist and Jain temples in India, as many of these have withstood the ravages of time and weather for periods varying from 800 to 2,400 years, while some of the sandstones employed in our cathedrals and public buildings have not lasted for more than two or three centuries. The sandstones of the Oolite period, I believe, have proved to be the worst; but some of those of the Trias, or New Red, and of the Old Red sandstone and Devonian formations, have not proved so durable as those of the true Carboniferous periods. And in this respect Edinburgh, Glasgow, and the Lothians are, perhaps, more favoured with good durable building-stones than most other countries.

One reason why the buildings are in better preservation than those of Great Britain is because the climate is drier, and mists and frosts are of rare occurrence. There is a class of rocks, however, that corrodes perhaps more in India than elsewhere, and that is the pure limestone and marbles, which are dissolved slightly on the surface by heavy rains, and become full of pinholes. The Hindoo builders are well aware of this, and of the relative durability of building rocks; this they have learned from an examination of their old buildings and in describing these we must remember that about 2,600 years ago civilisation had made its greatest strides in India, Japan, and China, in Europe, and that even before the times of Phidias and Praxiteles, Callimachus, Scopas, a Callicrates, men had lived, died, and been forgotten in India, but they had left sculptured on the rocks, marks and evidences of thought, to prove that the artists and sculptors were in the habit of studying from nature, and executing with considerable skill and taste, sublime, grand and simple conceptions, that prove the existence of an elevated and refined taste, even in very remote periods of antiquity. Unfortunately, although some of these sculptures are in good preservation, several of them have suffered from the wanton and ruthless hammer of the conquering or succeeding races, who showed their contempt for the religious beliefs of the Buddhists and Jains, and tried to substitute by fire or by sword other forms of religion. Thus in some localities, as Bijanagar, Hampes, which was the great centre of the Hindoo dynasty of Southern India from the thirteenth century, back to the time of Ashoka, 2,400 years ago, and also at Mahavelipoor and Salluvann Coopum, twenty-four to thirty-

* The Ornamentation of the Transitional Period of British Architecture. A.D. 1113-1180. By Edmund Sharpe. M.A. No. II., Part I., 20 plates. London: F. & F. N. Spon.

† We supply these numbers from the index; the plates in the copy sent, as in several works of a similar class lately sent to us, are unnumbered. Probably this omission arises from a desire to put new works in the hands of the press as soon as possible; but we take this opportunity of pointing out that it greatly increases the difficulty of giving references to special plates in reviewing.

‡ The Mouldings of the Six Periods of British Architecture, from the Conquest to the Reformation. No. III., Sixty Plates. London: E. & F. N. Spon.

* From a lecture delivered to the Edinburgh Architectural Association, on the 27th of May, by Alex. Hunter, M.D.

miles south of Madras, we see the remains of ruined cities, cave temples, rock-cut temples, monolithic temples of a considerable size, Buddhist baths and monasteries, Brahminical pagodas, and, lastly, Mahomedan tombs and mosques, built out of the *dolbrs*, and with the very pillars and stones of the old Hindoo temples, but finished off with the domes and minarets of the East conquerors. Amongst the ruins are also to be found inscriptions on rocks and stones in eight different languages, some of which cannot be deciphered,—a strange and startling parody on the mutability of human affairs.

In wandering through some of these old, ruined cities, there is a great deal that reminds us of the times of Solomon, and that carries us back to even earlier dates; for it has been ascertained that both the ground-plan, the measurements, and the arrangements of the buildings correspond with those of Solomon's Temple, there being also a Holy of Holies and an oracle, and that the very idolatries that Joshua warned the Israelites to avoid were introduced and encouraged, as the worship of snakes or serpents, the golden calf, and of images of stone and wood, and of the sun and moon; but the most startling of all is the fact that there are numerous stones set up, and pillars and rocks with inscriptions and edicts of Asoka and of others who propagated the Buddhist religion. Now, it is a strange coincidence about this religion, that it is the nearest approach to Christianity; that there were ten commandments; and that the religion was one of toleration, of peace, and goodwill, that recommended itself so strongly to the nations of the East that for upwards of 2,000 years there have been more followers of this than of any other religion.

I shall draw your attention to the simplicity and grandeur of some of the architectural details which I have alluded to. The base of these early temples was a square, supposed to be typical of the solidity of the earth. This is all seen in the temples at Mahavelipooram and at Humpee, Wurungul, and at Bichokindab, the latter place the square is surmounted by a triangle, typical of fire. This was afterwards raised into a pyramidal form, in which we see it in the gopurams of modern pagodas. The circle was supposed to be typical of the sea or water, and the crescent was supposed to indicate air or the winds.

The sculptures in the cave temples and on the walls of this period are also very grand and imposing, and some of them tell their story with remarkable energy and simplicity; one, for instance, that I show you from the seven gopurams of Mahavelipooram, is supposed to be a representation of the spread of the Buddhist religion, of which I gave a description in a lecture which I delivered in Madras about two years ago, shortly after we had made some excavations and discoveries. In the same lecture is also a very grand sculpture illustrating a scene described in the "Rig Veda," which I have translated and published by Max Müller. It was in hopes that I should have been able to show you a complete set of photographs of several grand Buddhist sculptures, but we took in India, but they have not arrived by this mail. I may mention that they were taken for the Madras Government; but I can show you some of the ornaments of this period of the succeeding Jain periods, which are very rich and tasteful, and it will probably interest you to know that the last two lectures which I delivered in Edinburgh, before the Royal Society of Arts, on wood carving in India, and on works in precious metals, led to my receiving orders for 450. for the purchase of articles similar to those exhibited, and of photographs of antiquities and ornaments. Messrs. W. Marshall & Co., jewellers, 24, Princes Street, were so much pleased with the Indian manufactures in silver, copper, bead-ware, and so on, that they gave me an order for a good collection of them to be procured from Madras; Mr. Cadell, the late collector of the Tanjore district, has offered to procure the articles. Messrs. John Millar & Co., 2, South St. Andrew Street, have been so much interested with the study of the Indian patterns of the Buddhist Jain periods that they have commenced to apply them to the decoration of glass.

WORMS IN THE WOOD.

Can any of your readers inform me of a wash to destroy in American birch, they having got very much the fittings of a chapel?

EXPERIMENTS ON FIREPROOF CONSTRUCTION.

A FURTHER experiment, to test the efficiency of the fireproof construction adopted at the building now in course of erection near the Mansion House, for the National Safe Deposit Company, took place last week at Messrs. Easton & Anderson's works, Erith.

The furnace constructed for the purpose of the test was similar to that used for the first experiment, the length being 14 ft. 9 in., and the width 4 ft. 9 in. internally. The top of the furnace was built to resemble the brick-arched flooring now being carried out at the new building. The girder was also a counterpart of some of those now being used, and it was lined with fire-clay lamps precisely in the manner adopted at the building. A coat of plastering was also applied to the fire-clay to represent that which will form a finished surface to the beams in the actual work.

It was proposed to subject the girder thus protected to the action of a continuous flame one hour and a half, and a smouldering heat for twenty-four hours, this being considered a test equal to the largest fire that could exist in any one spot. The top of the furnace was loaded with five tons of pig-iron, equally distributed, which, with the weight of the arches added, is equivalent to a floor-load of nearly 3 cwt. to the foot superficial. This weight caused a deflection in the girder of $\frac{1}{8}$ of an inch in the centre. The fire was lighted at one o'clock, and the deflection of the girder at the centre was noted at intervals.

At three o'clock the fire was put out, and a stream of water was brought to play upon the beam. At half-past three one-half the upper part of the furnace was removed; further water was applied, and the load taken off. The girder then showed a deflection of three-eighths of an inch. At eleven o'clock the following day the deflection had reduced to $\frac{1}{16}$ of an inch, and the girder has since regained its straight form.

The whole of the fireclay was found upon the girder precisely as when first put on, and it was quite uninjured.

The heat of the furnace was so great that the brickwork forming the side was forced out of its upright position, and caused the girder to tilt slightly on one side, thus placing the beam at a greater disadvantage. It is stated that in the construction of the building such a possibility is provided against by the thrust of the arches being counteracted the one by the other.

The result of the experiment was considered extremely satisfactory, and gave evidence that the building near the Mansion House is constructed upon a system which would fight a good fight with a fire.

CO-OPERATION IN DUBLIN.

SIR,—The system of co-operation—or, as the late John Stuart Mill expresses it in that comprehensive chapter on the "Probable Future of the Working Classes" in his "Principles of Political Economy,"—"the association of the labourers with the capitalist,"—is beginning to make its appearance in one or two large firms in connexion with the building trade of Dublin, and therefore deserves a passing notice, if for no other purpose than to bring it under the consideration of the thoughtful and intelligent artisan.

By quoting from a work published as far back as 1845, which sets forth an instructive account of the success of a Paris employer, who for many years practised the system, Mr. Mill has touched upon a subject which well deserves the attention, even though tardy, of both employers and employed. The writer of this work states, on the authority of the experimentalist himself, "That the increased zeal of the workpeople continued to be a full compensation to him, even in a pecuniary sense, for the share of profit which he renounced in their favour."

One of the greatest causes of complaint,—nay, of continual murmuring, on the part of daily operatives in general, and one of the greatest stimulants to fresh demands for higher wages,—is the rapid accumulation of riches, which, they observe, is the result of their masters' efforts in a few years.

Taking the building trade in Dublin alone into consideration, it is noticeable to the most superficial observer that the workman of to-day who

* Vide "Principles of Political Economy," by J. S. Mill, p. 463.

is fortunate enough to procure as much capital as will enable him to execute one job by contract, seldom fails to advance so far as to become a thriving employer in a comparatively short space of time. It is not because of his good fortune in becoming an employer, or being able to sustain himself in that position, that makes his late fellows in the ranks look on with dissatisfaction, but because of the rapidity with which he is able to make money, and because they are compelled to contribute so much of their industry for the use of the capital which he commands. Now, as all cannot become employers, a change to alleviate the discontent at present so widespread is, at least, something desirable, and the system which admits the workman to a share in the profits of the capitalist seems to be a good plan, and would soon become a popular remedy for the general discontent. By its adoption, too, a direct and effective blow would be struck at the vexatious and pernicious practice of strikes, and the operations of trade unions would be confined to the advancement of the working-man's moral and social condition. If all employers were compelled by law or by custom to renounce some of their profits in favour of their workmen in addition to their wages, it would increase the general content of employers and employed, and confer a lasting benefit upon the country at large; for, at present, to quote the words of Mr. Mill,—"The working classes have taken their interests into their own hands, and are perpetually showing that they think the interests of their employers not identical with their own, but opposite to them." It is a notable fact, as Mr. Mill also remarks, that, at present, the workman is inclined to give the very least amount of work in his power in return for as much as he can possibly obtain in the shape of wages. This practice is caused by the non-existence of encouraging the workman by any substantial recognition of faithful services conscientiously rendered, and the belief on the workman's part, whether erroneous or not, that no matter how little he gives in return for his day's pay, his employer seems to lose nothing in the end, but, on the contrary, increases in prosperity year by year. His labour is not given willingly, but like drops of his blood, so much so, that it is often thought necessary, when one or two men are set to work, that a third must be employed to keep them from idling. The practice of rewarding the operative by presenting him with a bonus, in addition to his wages, of so much per cent. payable out of the yearly profits, has been in existence for some time in Dublin, but to a very limited extent, and would appear to be at present only an experiment, as it is in one instance confined to a portion of the workmen employed in the establishment where it was first introduced, and but imperfectly carried out.

When the master has made his contract with a customer, a certain time is allowed by him for the execution of the job, and if the workman is able to perform his task in less than the allotted period, he is entitled to a bonus, but not equal to the whole value of the time he has gained; but only to a per-centage of that time, if the profits of the establishment have increased beyond what the employer thinks himself entitled to upon his capital.

This system will be seen at the first view as open to objection; for if the time allowed by the master is not thought sufficient for the proper execution of the work, which often occurs, it has the effect of making the operative less careful, and inferior workmanship is the natural consequence. Another cause of complaint amongst the workmen under this system is, that as the books of the establishment are made up only once or twice in the year, the man who contributes to the profits for three months of that year, if he be unemployed through slackness, never receives anything, and his quota goes to enrich the master, or the favoured few who may be kept in employment during the whole twelve months.

This last objection is at present a serious consideration between the representatives of another firm, who are desirous of adopting the practice of allowing a yearly bonus to be paid out of the profits, and the officers of a local trade body. The former, it appears, requested the secretary of the latter to supply them with men at 10 per cent. less than the standard wages, and thus embark a portion of their weekly pay in the business of the concern.

On the part of the workmen I can affirm that the majority think the offer fair enough, if the difficulty of dealing with those who might happen

to be employed for a short time in the establishment could be got over, and that the operatives were allowed to have a voice in choosing a superintendent; for very often, in Dublin, at least, where the capitalist is not a thoroughly practical man, incompetent foremen are chosen, whose management is a continual cause of dissatisfaction to the workers, even in the present state of things. But to get over the difficulty which presents itself with the diminution of the number of workmen at slack periods, the only plan which seems practicable is a general adoption of the system, so that, if a man were employed at three or four different establishments during the year, he could call upon each at the end of that time for his share of the profits to which he contributed for two, four, or six months, as the case might be. The plan certainly is not new, except in Dublin, and as it has been adopted with gratifying success by numerous capitalists elsewhere, those in Dublin who are favourable to its working should receive every encouragement, and no opportunity passed over which would contribute to its general adoption. There may be found some amongst the operatives whose prejudices would be hard to be got over, but as these, most singular to say, would be mostly found in the ranks of the old men, the opposition would not be lasting, since there is a general desire on the part of the young and vigorous to yield to the spirit of the times, and who are often heard to complain against the notions of their fathers, many of whom think that their used-up ideas should be received with general applause. In fact, it is generally admitted by the most intelligent of the young men of the trades of Dublin that the old men of twenty years ago, with opinions of forty years' standing, are so many stumbling-blocks to their advancement, and it needs only a little perseverance upon the part of the former to set them aside and carry the day in favour of reform.

As the example set by others, and the results of their experiments, should be as widely known as possible, I refer the reader who takes an interest in the subject to Mr. Mill's treatise on Political Economy, book iv., cap. vii., page 455, where many sound opinions will be found in favour of such a course as admitting workmen to share in the profits realised.

J. D.

THE FOUL STATE OF RUNCORN.

IN a coroner's inquiry on a fatal case of fever supervening on an accident to a railway employé, a medical man, Mr. F. M'Dougall, gave evidence, in which he said he could not account at first for the fever symptoms, as the house was always kept very clean, and he at length inquired about the condition of the ashpit, and on looking at it found that it was filled up above the wall, and an opening had been made with a fork against the wall which was behind the seat, and in it there was a large quantity of foetid liquid matter from which emanated very offensive smells. He asked the wife of the deceased if she had given any information about the state of the ashpit, and she said she had told Mr. Barker, the nuisance inspector, about it. The deceased died of an attack of typhoid fever of a low type, following an attack of erysipelas supervening on injuries received from a crushed arm. The witness had had large experience in accidents, but never before saw a case like the present one, and was at a loss to account for the symptoms until he became aware of the condition of the ashpit. Persons suffering from accidents and open wounds were liable to take on a typhoid state, and the deceased would not in all probability have suffered from the fever if he had not been in a low state consequent on the injury to his arm. He had no hesitation in saying that but for the attack of fever the deceased would have been going about again in a few days.—By a Juror: The Improvement Commissioners, of whom he was one, had the control of the emptying of the ashpits in the town, but he could not say whether or not they had let the contractor for the night-soil at such a low figure as to disable the man to employ sufficient men, horses, and carts to do the work.

A juror said it was well known in the town that the ashpits in many parts of it were in a fearful condition, and that the work of emptying them was very far from being done as it ought to be. The late contractor asked 700*l.* for doing the work, and the present contractor had taken it for 450*l.*, and this was considered to be such an excellent arrangement, that a certain Com-

missioner had gone about the town planning himself on the supposition that he had been the means of saving 250*l.* of the ratepayers' money!

The jury returned a verdict that the deceased died from "Typhoid fever"; and they also said they were of opinion that the offensive state of the ashpit and the privy was the cause of his being attacked with fever; and understanding that the same state of things existed in other parts of the town, they requested the coroner to call the attention of the Runcorn Improvement Commissioners to the subject.

Exemplary "Improvement Commissioners" these!

THE NEW CORN EXCHANGE, CAMBRIDGE.

THIS building, the foundation-stone of which, as we announced, was laid the other day, is to be constructed of the white bricks of the locality, sparingly relieved with stone terra-cotta and coloured bricks. The style adopted is Venetian Gothic, as being well suited for the materials to be used. The roof will be formed of rolled iron ribs, each forming a semicircular arch in one span; these ribs are being prepared in Belgium, where ironwork can now be had at prices not enhanced by strikes and combinations among workmen in the coal-pits and ironworks. They will be shipped from Antwerp to Wisbech, and then floated to the Great Bridge in lighters. The tie-rods of the roof will be combined with gas-pipes and jets, so that the building may at night-time be illuminated by transverse lines of light upon the principle that has been found effective in the galleries of the South Kensington Museum.

The foundation-stone is a block of Cornish granite, from the Cheesewring quarry.

The site of the new Exchange is in Wheeler-street, and was in the Middle Ages occupied by the Priory of Friars Hermit, and so excavated by them and their predecessors to obtain gravel to form cellars, fishponds, and for other purposes, that it was necessary to dig down through the previously-disturbed ground and rubbish 10 ft. at least in every part before the maiden soil could be met with that was sufficiently solid to bear the weight of the new building.

The whole of the depth excavated has been filled in with concrete made of Cambridge gravel and hydraulic lime from Barrow-upon-Soar, in Leicestershire.

Upon the concrete, the walls have already been raised 4 ft. high all round.

UTILISATION OF SLAG AS BUILDING MATERIAL.

THE value of the blast-furnace slag, so abundantly heaped in the vicinity of all blast furnaces, is being again tested. Experiments in the North of England have shown that it is capable of being turned by suitable machinery into cubes for building. It is now believed that without this preliminary operation blast-furnace slag can be employed in the erection of tenements. Trials that have been made by Mr. A. S. Hill, one of the members for West Staffordshire, have shown that, ground up and mixed with a small proportion of pulverised sandstone and cement, it can be used in a moist concrete state in the making of walls and floors; and that the operations in wall-building, for instance, can be carried on at the rate of about 18 in. in height per day. The interval is sufficient to allow the composition to set and acquire consistency. In this way Mr. Hill is building cottages on his estate at Oxley Manor, Wolverhampton; and acting upon his suggestion, Sir George Elliott, the well-known colliery proprietor, is understood to have in the same manner utilised blast-furnace slag in the erection of some 200 miners' cottages. Earlier investigation by Mr. Hill showed that the mixture, subjected to heat, has to convey the cinders a considerable distance, yet his calculation is, that his materials will cost him just one-third less than would result from the use of bricks. If, however, the erections should be made near to the slag-heaps, then the saving would be much greater. From this it is concluded that all ironmaking districts contain in their refuse cinders a building material of a cheap and durable character, eminently adapted for small dwellings; that floors can be laid without either timber joists or iron girders, and that the erections not only become pre-eminently clean, but likewise fireproof, and the whole

structure impervious to external damp. So lasting are the erections thought likely to become, that the leading objection brought against them, that if alterations should be needed, it will be almost impossible to make them. It is understood that Mr. Hill was led to make his experiments by noting what is being done by the Peabody Commissioners in some of their recent erections.

These views appear to be very promising; but we should like to know if any skilled assaiyat or analytical chemist has been consulted as to the general chemical constitution of the furnace-slaga. This we ourselves know, that in many cases metallic sulphurets form no small ingredient in the composition of metallic ores; and that while the sulphur is extracted from the metal by being attracted to other bases, many sulphurets are liable to react slowly into oxides and sulphuretted hydrogen, the means of mere water or damp, and this would be a serious objection to the use of slag as building material.

POPE AND BLACKSTONE'S GOTHIC COMPARISONS.

THE Shakspearian drama and the laws of England are very dissimilar subjects, yet nearly parallel passages may be found in Pope and Blackstone, in which the poet and the lawyer compare the drama and the law to Gothic architecture. Pope concludes his preface to his edition of Shakspeare with these words:—"I will conclude by saying of Shakspeare, that with all his faults, and with all the irregularity of his drama, one may look upon his works in comparison of those that are more finished as regular, as upon an ancient majestic piece of Gothic architecture, compared with a modern building; the latter is more elegant and glaring, but the former is more strong and solemn. It must be allowed that in one of the parts there are materials enough to make many of the other. It has much the greater variety, much the nobler apartments, though we often conducted to them by dark, odd, and uncouth passages. Nor does the whole fail to strike us with greater reverence, though many of the parts are childish, ill placed, and unequal to its grandeur."

Blackstone, in his "Commentaries," speaks thus:—"Our system of remedial law resembles an old Gothic castle erected in the days of chivalry, but fitted up for a modern inhabitant. The moated ramparts, the embattled towers, the trophied halls, are magnificent and venerable, but useless, and therefore neglected. The inferior apartments, now accommodated to daily use, are cheerful and commodious, though their approaches may be winding and difficult. It may be doubted whether the poet or great lawyer knew much of Gothic architecture, whatever he might know of the drama. Gothic style was in the shade and deeply because ill-understood in the days of Pope and Blackstone, but judging their views in the light of the times in which they lived, their Goths and companions were nowise far-fetched. Had he lived to witness the Tichborne trial and building of the New Courts of Justice, he would have found food for comparisons, might be drawn with dramatic effect on the system of the law's difficult windings and style that fits it to a,—t.

NEW CEMETERY FOR HEADINGLEY, CUM-BURLEY.

PLANS have been selected for burial-ground at Lawns Wood for Headingley and Burley, the chosen design, which is by Mr. G. Cox, architect, Leeds, a formal arrangement has been adopted in the laying out of the ground and the architectural features. A wide carriage-drive leads from the gates and leads up to the chapels, which are placed about yards from the public road. From the chapel a walk is laid out leading to the further extremity of the ground, and into other walks which wind round the burial-ground, leaving a broad belt of trees between them and the boundary-wall. Other walks unite with the main walks in various directions. The centre drive will divide the consecrated ground into two consecrated ground. The chapels and lodges intended to be built of stone, and roofed with lead. The chapels are placed at right angles to each other, and are connected by a colonnade with arches supported on pillars on each

robing-room is attached to each chapel. The piscopal Chapel has an octagonal belfry-turret the angle next the cloister, the lower part being utilised as a tool-house. The chapels are very low, and have projecting eaves, and the walls are buttressed. They are lighted by stained windows on each side, each of two lights, with circle within the containing arch. The Dissenters' Chapel has a window of three lights in each end gable; and the Episcopal chapel has a small apse at the end where the pulpit will stand. The lodge has a gabled roof and multilined windows. The entrance-gates are proposed to be framed of pitch pine, with one pier and wing walls.

OPENING OF SOMERSET BRIDGE, HUDDERSFIELD.

THE new bridge which has been erected over the river Colne, at Huddersfield, has been opened and named by Lady Guendolen Ramsden, amid the general rejoicings. For a long series of years there has only been over the Colne, a narrow footpath from the inner districts of Huddersfield, an old bridge—narrow, with scarcely any footpath, and extremely inconvenient. Mr. J. H. Abbey, the borough surveyor, offered to prepare plans of a new bridge, and to undertake the general superintendence of the work, and his offer was accepted by the Longbridge Committee, and ratified by the General Council. The structure has been erected as early as possible in accordance with the original design.

The new bridge contains only one arch, spanning 70 ft., resting upon the springers of two abutments, each of which contains tons of material—ashlar stones, bedded and jointed; and there are thirteen springers which are so laid back that their whole weight on each side the abutment is brought into play in resisting the pressure of the arch. The stones required for the springers were such as could not be found in any of the quarries in the Huddersfield district, and the contractors had therefore to obtain them from Horsforth quarry, on the line between Leeds and Harrogate. The parapet is between 4 ft. and 5 ft. high, and the coping stones are of Newry granite. The roadway is perfectly level, and the finished surface is about 6 ft. higher than the old bridge, so that steep ascents are avoided. The carriage-way is 30 ft. wide, and it has been laid with 3½ in. Carverton white setts; and on each side of the roadway there is a footpath 9 ft. wide.

Mr. Abbey has performed the part of engineer as well as surveyor; Messrs. Graham were the contractors; and Mr. Redfern was the clerk works.

What the actual cost will be it is impossible to say, but it will be over 12,000l., we are told.

THE PROPOSED NEW TOWN-HALL AT WOOLWICH.

THE Woolwich Local Board have determined to take action with reference to the erection of a new town-hall, which, as has already been stated in the Builder, a private company propose to build. At the meeting of the Board last week, the subject was brought forward by Mr. Hughes, who maintained that it would be much better for the Board to take up the matter than leave it to a private company. Mr. Hughes's proposal was that a town-hall should be erected capable of accommodating 1,000 persons. He observed that in a few years many of the Board's members would expire, and as the local taxation was being reduced by the rating of Government property, the money could easily be borrowed from the Metropolitan Board of Works. The Public Works Commissioners, repayable by a principal and interest, over twenty years. He observed that the site on which the present Board's offices stood was freehold, and a new town-hall might be erected on the site, the present hall being retained for public meetings. They wanted such a hall, and would be a credit to the town and to the Board.

On the course of a discussion on the subject, the members objected to the proposal on the ground that the rates were at present rather low, and the chairman thought the project was premature, as a company of spirited individuals proposed to erect a town-hall without any aid from the ratepayers of Woolwich. Mr. Hughes's proposal was, however, agreed to, and the carrying out of the project was referred to the General Purposes Committee.

SALE OF BUILDING SITES AT BRIGHTON.

THE surplus of the land acquired by the Brighton Corporation for improving the top of North-street at its junction with Queen's-road, known as the "White Lion Corner," has been sold by auction at the sale-rooms of Messrs. Parsons & Son; Mr. Peter Wilkinson, auctioneer, officiating.

For Lot 1, adjoining 131, Queen's-road, having a frontage of 20 ft. and a depth of from 60 ft. to 63 ft., the first offer made was 400l., which was increased (by sixteen biddings) to 650l., and the lot was knocked down at that price to Mr. Fielders.

Lot 2 (a similar plot to Lot 1, and adjoining it on the south) was started at 600l., and was increased (by eleven biddings) to 650l., and the lot was knocked down to Mr. George Lynn for that sum. Similar lots (3 and 4) realised 640l. and 660l.

Lot 5 was the corner plot, having a frontage to North-street and Queen's-road of 87 ft. with a depth of 30 ft. This lot was knocked down for 2,450l. to Mr. Edward Yates, London.

Lot 7 (of similar dimensions to Lot 4) was started at 500l., and the biddings rose by five offers to 660l., the name of the purchaser being given as Mr. Alfred Lucas.

SOCIETY OF ARTS CONVERSAZIONE.

THE annual conversations of the Society will be held on Friday, June 19, at the South Kensington Museum. The issue of tickets is now proceeding.

The arrangements for the evening will include a vocal concert, consisting of glees, by the London Glee and Madrigal Union, and a promenade concert by the band of the Grenadier Guards.

The reception will be held in the South Court by General F. Eardley-Wilmot, R.A., chairman, and other members of the council.

The Society's gold medal, or twenty guineas, is offered for an improved lamp or means of illumination, suitable for railway passenger-carriages, that shall produce a good, clear, steady, durable, and safe light.

The twenty-third annual conference between the council of the Society and the representatives of institutions in union, will take place at the Society's house, on Friday, the 19th of June.

THE DEMOLITION OF THE "MANSION HOUSE" AT HACKNEY.

THIS week will witness the entire demolition of another of the fine old red-brick mansions which distinguished the ancient hamlet of Hackney proper. Each season sees one or another old structure disappear. In the present instance, the building is known as the "Mansion House," as a marble tablet with that name was inserted midway in the front. The old dwelling was an admirable specimen of both plain and ornamental brickwork, and the house probably dated back to the early days of Anne, or the first George. It had front and side hall doors, flanked with fluted pilasters with capitals, jamb framings, and surmounted with circular pediment. At either end of the front ran up projecting pilasters, which broke into the moulded cornice at top. Under each of the windows in front and side there were slightly projecting panels of brickwork. The ornamental brickwork was of finer description than the body of the building, and the moulded portions appear to have been wrought by hand, and rubbed fine, as was common in old workmanship. Nearly every room within was framed wainscoting to the ceiling with a cornice also of wood, with the usual subbase dado as skirting below.

The hall and staircase were wide, and the wainscoting was continued in keeping with the other chief rooms up to the head of the staircase. A moulded handrail with ornamental balusters, and a wide and well-formed scroll and curtain step, distinguished the stairs. The doors, shutters, and fittings had all raised panels. The kitchen and wash-house had marble troughs or sinks, and without going into a detailed description it may be said that the old mansion, in every particular, formerly was a representative one of its class. An immense amount of timber was contained in its roof, floors, and other fittings, and the flooring was doweled or rather keyed at intervals.

The old mansion was a five-story one, counting

its dormer which did not show in front. It has been for some time unoccupied, though for many years previously it was used for the "Elizabeth Fry Refuge," and other charitable institutions. Formerly it had extensive gardens, but the construction of King Edward's-road and the erection of the house-property thereon and adjacent, curtailed to a small limit its grounds. Three houses with shops flanking Mare-street Triangle, are, we understand, to occupy the site of the old "Mansion House" of Hackney.

THE CRYSTAL PALACE AND ITS VICISSITUDES.

SIR,—I am old enough to remember the birth of the Crystal Palace in Hyde Park, and its second advent on Sydenham hills two decades ago. I recollect my first visit to those delightful courts, abounding in alabaster and marble, statuary and pave. Enchanting and real was my impression here. Alas! that the poetry should be dispelled! I recently retraced these gay saloons, and found Old Time had not worked wonders, but dilapidations. My alabaster is visibly plaster, my variegated marble is compe, coloured skin-deep; cracked, broken, and chipped are many things, the work of time or man? I missed some busts of eminents, but found their remains in a lumber hospital near; here are many fallen great ones,—empty pedestals with bygone names that told of the departed; the huge sphinxes have "hopped" it; the antediluvians may be at the bottom of the lake (I did not wait to see them rise again); cascades, courses, formations, and even the seats are cracking up. Sir, the most painful sight was long terraces of masonry, concrete, and brick arches that have fallen down. The debris is left for some reason,—perhaps to point a moral, &c.,—or to inspire awe of modern contracts that fall in early years, and die of youth's decay. The faults are plainly visible when you scanable up the rocks; I hope some of your readers may ponder here, see, mark, and learn to excel. I do not disparage the Crystal Palace,—not I. Collectively, it is replete with instruction and amusement. While protesting against premature decay, I allow that the Crystal Palace and contents have as much right to get old and dilapidated as your correspondent. B. T.

CLEANING WINE BOTTLES WITH SHOT.

SIR,—You quote a paragraph that appeared in the Globe in which lead poisoning is said to result from the practice of cleaning wine-bottles with lead shot, it being stated that carbonate of lead is formed which adheres to the glass, and afterwards combines with the acid of the wine, thereby poisoning the drinkers. It does not appear how a carbonate of lead could be formed in this way, unless pure water, either rain or distilled, was used in the process, and the lead left for some hours in the water, when we know that a carbonate will be formed; but this is not likely to be the case in the simple process of bottle cleaning. I think a circumstance that was brought to light some time ago in one of our law courts will help to explain the cause of lead poisoning from the use of certain liquids called "wines."

A manufacturer of English "champagne" purchased a soda-water machine of a maker for the purposes of his trade, but it was found that the "wine" produced by this machine made the users of it ill, with all the symptoms of lead poisoning, and, by chemical analysis, lead was found in the liquor. Upon further investigation it appeared that the maker of the machine had soldered some parts of it with lead, which had been attacked by the acids used in making the beverage, and become dissolved therein. The "wine" maker brought an action for damages against the machine-maker for having used an improper material in the construction of the article, but the latter replied that the machine was intended for soda-water making, in which there was no acid to attack the lead, and therefore he was quite justified in using it. I think, therefore, that persons need hardly fear being poisoned through drinking wine out of bottles cleaned with lead shot, provided they get a beverage that has not been concocted in a machine in which solder has been used. E. W. T.

* Our correspondent seems here to overlook "the acid of the wine" of which he had just spoken, and from which the lead might get the requisite oxygen and carbon to form the "carbonate of lead" after the cleaning.

ST. JAMES'S CHURCH, PARSONAGE, AND SCHOOLS, COLLYHURST.

ST. JAMES'S church was consecrated on the 20th ult. by the bishop of the diocese. The site of the church and parsonage is at the junction of Richardson-street and Teignmouth-street. The church is in the Early Pointed style of architecture. The principal entrance to the church is from Richardson-street; the plan comprises a nave with side aisles, total length about 93 ft. by 59 ft. wide, and transepts additional. The height to the ridge is 75 ft.

The pointed arches on each side separate the nave from the aisles and transepts; those to the transepts and chancel being of noble proportions.

The nave is terminated by a chancel about 25 ft. by 28 ft., and is approached from the nave by five steps; the nave has a lofty clearstory with coupled windows. The organ-chamber, minister's and choir vestries adjoin the chancel. The tower is at the corner of Richardson-street, and on the ground floor forms one of the principal entrances to the church.

The external walls are faced with Yorkshire parquits and ashlar dressings. The pillars of the nave are of red Mansfield stone, with moulded and carved caps of Bath stone.

The roofs are of high pitch, with open framed and moulded principals, supported by carved corbels, with granite shafts to each; those to the chancel being more elaborate than those of the nave.

The church has accommodation for 806 persons; 384 sittings will be unappropriated. The clock has been provided by Messrs. Gillett & Bland, of Croydon, and is intended to be illuminated. The organ has been built by Messrs. W. Hill & Son, of London.

The parsonage in Teignmouth-street adjoins the church, and is faced externally with masonry similar to the church. It comprises dining and drawing rooms, study, kitchen, and other offices, six bed-rooms, &c. The internal woodwork is of pitch pine; and Messrs. Ellis & Hincliffe were the contractors for the church and parsonage.

The boys' and girls' schools are situated opposite the church and parsonage.

The plan comprises boys' and girls' schools, 48 ft. by 22 ft. and 52 ft. by 22 ft. respectively, with class-rooms, lavatories, &c., to each, adjoining are residences for the master and mistress.

The building is faced externally with white headers, dressed off, pointed and relieved with masonry. Internally the walls are of brick, prepared for painting.

Each of the schools has a separate playground. The site of the infants' school is in Ryder-street, adjoining the parsonage, and comprises one school, 55 ft. by 26 ft.; class-room, 20 ft. by 18 ft., under which is a cellar, fitted with boiler, &c., adapted for tea parties.

Messrs. Crellin & Bailey are the builders of the schools.

The total cost of the church, parsonage, and schools, including the land, will be about 26,500l., and is the gift of Mr. C. P. Stewart, of the Atlas Works, Manchester. Mr. R. L. Corlett acted as clerk of the works throughout, and the whole were executed from the designs of Mr. John Lowe, architect, Manchester.

SANITARY ENGINEERING.

SIR,—MR. BALDWIN LATHAM has recently published a work (principally a compilation) which he has designated "Sanitary Engineering." The first Board of Health reports have been drawn upon, both letterpress and diagrams, as also "The Suggestions as to Plans, Sewers, &c." prepared by Mr. B. Rawlinson, and published by Messrs. Knight & Co., for the Stationery Office. Mr. Latham's book consequently contains some reliable information. Plate No. 1, at p. 88, is a plan of the Dantzic Sanitary Works, which many persons think is the design of Mr. B. Latham, though the name of E. Wiebe, C.E., is upon the plan, with that of Mr. Latham, and Mr. Aird, the contractor. The sewerage of Dantzic is, however, both in plan and in execution, the work of the eminent Prussian engineer, E. Wiebe, who came over to England some fifteen years since and inspected the Metropolitan Works; as also those at Carlisle, Lancaster, West Ham, and other places. The plan of works adopted for Dantzic is that of right lines, with manholes, or lamp-holes, at all changes of line or of gradient. This plan was devised some twenty-two years since, by Mr. H.

McKie, at Alnwick, and has been subsequently matured by Mr. R. Rawlinson and Mr. John Lawson, Messrs. McKie and Lawson having both been resident assistants under Mr. R. Rawlinson, who sewered Berwick-upon-Tweed, Alnwick, Morpeth, Penrith, Carlisle, Lancaster, West Ham, and other places, on this right-line and manhole plan, which is now fully recognised and acted upon. Sewers and drains so designed and executed are under inspection at all times, which is a great advantage, as the Sanitary Engineer is master,—he knows where his sewer is at any intermediate point, from manhole to manhole, and exactly what depth it is below the surface. The manholes and lamp-holes can also be used for inspection, for cleansing, for flushing, and for ventilation.

This question of sewer ventilation is of the utmost importance. Sewers and drains should be ventilated freely, and direct to the external air, by openings (in sewers) not fewer than eighteen to the mile, and all house-drains should be ventilated outside of the houses; if by pipes against the house, then not less than 3 in. diameter. All closet-traps should be ventilated, and all water-closets at the ceiling to the outer air.

AN ENGINEER.

VAULTING AT THE INSTITUTE.

SIR,—I have read with some surprise a considerable portion of the prize essay on "Vaulting," the reading of which formed the main business of the evening at the last Institute meeting, and part of the discussion on which you printed.

It does not quite appear whether the prize was offered with a view of encouraging young architects to work up a subject, or in order to gain a valuable essay from some one who had given the subject special attention. If viewed in the former light, the essay in question deserves all the commendation it has received. But in any other light it seems scarcely suitable that the Institute, numbering among its members most of the ablest architects of the day, should devote a meeting to the reading of an essay which really appears to be only a well-drawn-up abstract of what has already been published in standard works, and seems to contain no new information or experience whatever.

If it is intended as a compliment to the author of the essay that he should be invited to read it, that may seem a very proper thing to do; but it would surely be wise to make it clear on what ground a paper of this class is read. Otherwise, the impression produced outside by a detailed report of the meeting might be, either that the members of the Institute have given very little study to the history of vaulting if they required this information in regard to the essay; or otherwise that the leading body of architects were gathered together to listen formally to a resumé of facts and theories with which every tolerably educated member of the profession is supposed to be well acquainted. Either impression would be unfortunate.

RIDGE-RID.

PICCADILLY AND LEICESTER-SQUARE.

THE continuation and opening out of this great central boulevard was suggested in a recent number of the *Builder*, and now that the adornment of the square is nearly complete, and ready for opening to the public, it may be well to specify that the line of Green-street and Hemming's-row runs nearly direct from the south of the square to King William-street, at the grand piazza of St. Martin's Church, and thence continuous to the mid-Strand, with which it nearly aligns at the junction opposite to Coutts's bank, to which point this line would be 200 yards nearer than that by Regent-street or Haymarket. Green-street has a mean width of only 36 ft., and, although wider near the entrance, would require the removal of one house (19 ft. frontage) at the south-east angle of the square. There are thirteen houses with paltry shops on the south side, which should all come down to increase the width of the thoroughfare to at least 56 ft., and give place to more important shops and offices. At Castle-street, to complete the alinement with Hemming's-row, three old houses should be removed, and a range of five or six more frontages erected, extending to the entrance of the Friends' Meeting-house. At the St. Martin's-lane end of Hemming's-row, where the width is but 27 ft., the demolition of one house (south-east angle) would be indispensable, this being at present used as a "temporary Ord-

nance offices," as is also the old workhouse adjacent as "Ordinance model stores." The workhouse occupies half the south side of Hemming's-row, and without a portion of its frontage (18 ft., next to the corner of St. Martin's-lane) extending to an acute angle towards the barracks yard) no improvement could be effected. Seeing then, that this effete building blocks in and cramps the great National Gallery, surely ought to be removed; and if an extension of Gallery be carried out on the site, the integrity and perfect isolation of the structure should be secured by a wide street or piazza on the north side. The south-east wing is backed by the Guards' barrack-yard, which has an entrance opening to Trafalgar-square; this yard might not be objectionable if bounded by appropriate fence-walls.

When Charing-cross is opened to the Embankment, this site will truly be the noblest in Europe; and now that Mr. Albert Grant's princely gift of Leicester-square (gorgeously embellished to the public, opens the way from Piccadilly, occasion ought not to be lost for so great an advance of much-improved thoroughfare in the heart of the metropolis.

QUONDAM

MEMORIAL OF BALFE.

ENGLAND owes gratitude to Balfé for many sweet melodies, and some of his best works will live to challenge the judgment of future generations. In recognition of this his friends subscribed, and commissioned Mr. L. A. Malem to execute a statue of the composer, which forms part of the Royal Academy exhibition, and deserves, as it seems to us, more attention and praise than it has received. By the introduction of a cloak, thrown round the figure and over his shoulder, and those who have attended rehearsal of an opera know that this is a common condition, some good drapery is obtained, the stiffness of modern costume is obviated, the likeness, moreover, is excellent. The statue is to be placed in the vestibule of Drury Lane Theatre. It deserves a site less subject to personal influences.

CARLISLE AND CUMBERLAND NEW BANK.

THE plans of Mr. Crosby Hetherington, Carlisle, architect, for the new buildings of Carlisle and Cumberland Banking Company, Carlisle, have been passed by the local Meeting Committee.

The site will be that occupied by the present buildings, half the White Hart Hotel, a considerable space behind. The frontages be into English-street and Bank-street, the former being about 70 ft., and the latter 45 ft., the angle of the frontages be rounded off.

The ground-floor will contain a public teller room of 40 ft. by 20 ft. and 15 ft. in height which will be lighted from English-street, Bank-street, and from behind, and which will accommodate seventeen or eighteen clerks; manager's room, overlooking English-street, 24 ft. by 16 ft.; and a safe, 13 ft. by 11 ft. large storage-safe, cellars, and a back-room, 20 ft. by 17 ft. Above is the manager's house, the entrance to which will be from English-street. The first-floor will contain entertaining rooms, kitchens, and other offices; above will be bedrooms.

In addition to the bank buildings, there are erected in Bank-street a shop and some offices over 45 ft. in width, and three stories high. The shop will be 32 ft. by 24 ft., and will be double-fronted, and have a show-room above. Offices are to be on the first floor, and will consist of two suites of three rooms each; on the third floor will be the living-rooms of the keeper of the bank. The cellars will contain large storage-safe and the heating-apparatus of the bank.

With respect to the elevation, it will be of wrought white stone throughout, and shop and offices of white brick, with white ash facings, the levels being lower than those of the bank. The general style of the architecture is Italian Gothic. The chief entrance will be triple arched, each arch being supported by a column, capped and based; and the windows will have semicircular headings, surmounted with moulded hoods, and with a column on each side. The second and third stories will be placed in the attic roof will be placed double windows.

THE PROPOSED METROPOLITAN BUILDINGS AND MANAGEMENT BILL.

The following is part of a communication from "The Builder and Landowner":—

The present Acts of Parliament give the public a statutory right to lay out their estates to suit their own views, so long as they comply with the law as to the width, &c., of streets; and the Board have power to relax these rules if they think fit.

The new Bill makes the landowner's right to lay out his ground for building purposes entirely a matter optional to the Board, who propose to take powers to themselves to reject any plan or scheme however reasonable, and to couple consent with any condition, however absurd or unreasonable, even to a surrender possibly of a portion of the fee-simple for the use of the public, or to limiting the amount of rents to be taken by the freeholder. It is impossible to tell who may be sent to the Board by the Vestries of the Metropolis in the future; and it is quite possible that a landowner proposing to erect on his estate houses of the value, say of 100l. per annum, may be told by the Board that they shall require a small class of property for the use of the working man to be erected in that locality, and that they will refuse permission to build anything else, and also make a condition that the ground-rents shall not exceed what they may please to consider reasonable, which the owner may consider very unreasonable.

The regulations affecting the question of projections beyond the line of front, which are often vexatious and injurious to private rights, will be doubly so if this Bill become law.

In giving a building notice, if the builder does not keep himself well acquainted with the very voluminous and fluctuating code of bye-laws projected by the Bill, he will be in a state of uncertainty; for he will find it enacted in the body of the Bill, clause 50, that he must serve a notice on the Board, whilst in the 1st schedule, part 11, he will find that he must give a notice to the District Surveyor, whilst a reference to schedule 14, rule 6, will still further puzzle him.

It would be a great hardship on persons building at Greenwich or Hampstead to require them to come to Spring-gardens to give notice; and should the Board at any future time, for the purpose of making a profit out of the fees, considerably reduce the number of district surveyors, and pay them by salary, taking the fees for the purposes of the Board, it must be obvious that they would not incur the expense of providing offices in all parts of this great metropolis area, a provision which is now made by the district surveyor under the Statute.

It must be considered as an injustice on the building public that they are to be dealt with as a source of revenue to the Board, and their personal convenience made to suffer by the substitution of "the Board" for a responsible officer in the person of the district surveyor, against whom redress may be obtained, if necessary, in a court of law, subject to the provisions of Section 108 of the present Act. The fact that this section is not re-enacted in the Bill, would lead one to suppose that the future district surveyors, being absolute servants of the Board, will be irresponsible, and any grievance must be redressed by an action against the Board, a matter which would be most formidable, and far from pleasant or beneficial to the public.

Should the builder find it necessary to form a non-combustible floor over a passage leading through his building to premises in the rear, he will not find his convenience consulted by having to prepare drawings and attend the Board for approval, instead of, as at present, calling on the district surveyor, and having the thing settled at once on a rough-and-ready principle by a practical man.

On the other hand, if the builder, or some person who is not a builder, wishes to erect a chimney-shaft, he will be gratified to find that he is spared the present troublesome process of sending a proper drawing for the approval of the Board, a copy of which has hitherto been forwarded to the district surveyor for his guidance; and that he may commence his work having the district surveyor quite in the dark as to whether the shaft is to be 50 ft. in height or 60 ft., quite unable to decide, or advise the Board (if his advice is asked) what spread or job of concrete is requisite, or what should be the thickness of the brickwork.

When the builder looks at Schedule 7, he will be at once struck with the injustice of Part 1, Rules as to Expenses, for he will find that the building owner and adjoining owner must pay the expenses in proportion to the superficial extent of the party structure of which they respectively avail themselves. The building owner may erect a building which demands a wall 2 ft. 2 in. thick. The adjoining owner's building may require a wall 9 in. thick only, but by this rule he would have to pay for the thick wall.

He would also find by 7th Schedule, Part 4, Rules 6, 7, that his neighbour might pull down, for his own convenience, a perfectly sound and sufficient party-wall, and would not be bound to compensate him for loss of business or compulsory removal to a furnished house elsewhere, nor for damage to furniture or stock in trade.

It would appear that should this Bill become law, application may or must be made to the Board for approval or permission, or variations of rule in no less than fifty-nine matters relating to buildings, viz., Clauses 13, 16, 17, 18, 21, 41, 49, 42a, 44, 45, 46, 48, 52, 61, 64, 65, 67, 70, 73, 76, 77, 97; 2nd Schedule, Parts 1, 2, 3, 4; 4th Schedule, Part 1, Rule 11; Part 2, Rule 24; Part 4, Rules 30, 32; 5th Schedule, Rules 1, 5, 10, 15, 20, 31, 34, 35, 36, 40, 42, 73, 76, 82, 84, 85, 87, 92, 93; 6th Schedule, Rule 1; 8th Schedule, Rules 1, 2, 3, 4, 5, 6, 7, 8, 9.

It is impossible to suppose that the framers of this Bill could have calculated the result, for if he had he must have seen how impracticable it is.

It is fair to assume that out of so many subjects requiring the consideration of the Board, there would be at least an average of two to each building or work executed, and it will be found by an examination of the report published by the Board, that 19,000 per annum is a very moderate estimate of the number of works in the year. This would necessitate 38,000 applications, and as the Board only sit 44 weeks in the year, it will be seen that the average number of applications would be 863 per week. Very little reflection is required to observe that it would be simply impossible for the Board to fairly consider one quarter of these, and the natural result would be, that they would delegate the duty to some of the "officers, clerks, and servants" referred to in Clause 81.

But as it is well known that members of the Board have openly said they intend to have a very different class of men from the District Surveyors, the corruption and confusion can be imagined.

The 863 applications per week must be made to the Board, accompanied, as at present, by a fee; 863 communications must be made to the officers as suggested above; 863 reports must be received from them, and 863 replies given to the applicants. But the annoyance to the public would be so great as to be unbearable; for instance, in upwards of 20 out of the 59 subjects on which application must be made, a drawing would be necessary, and it is not unreasonable to assume that one-third of the 863 would come within this category, and as the Board by their present bye-laws require three copies of every drawing, it follows that the public would have to make on the average 863 drawings per week, at a cost which will not bear consideration.

The net result of this examination of the Bill is, that it is a piece of "grandmotherly" legislation only calculated to enhance the importance of the Metropolitan Board; and as the writer of this, although "only a builder," has no desire to have his business interfered with more than is absolutely necessary for the public benefit, he protests against his trade interests being so entirely committed to the absolute control of a body of gentlemen who are either quite devoid of any knowledge of the subject; or, if possessing any professional knowledge, should not be placed in the invidious position of being said to direct and influence their colleagues in matters of such great importance to the general body of the inhabitants of the metropolis, of whom, it must not be forgotten, they are by no means the representatives, being in fact the representatives only of the Vestrymen.

Congress of French Architects.—The congress under the presidency of M. Henri Labrousse, will be opened on the 15th inst., and will run on during the 16th, 17th, 18th, 19th, 20th, and 22nd. The responsibilities of architects will be discussed on the opening day.

OPENING OF THE FAVERSHAM BREWERY NEW BUILDINGS.

At Faversham some extensive additions by Messrs. Shepherd, Neame, & Co. to their already large brewery premises have been opened. Their employees, amounting in number to about eighty, dined on the occasion at the head-quarters of the 2nd Kent Artillery Volunteers in Preston-street. The new buildings, although an important addition to the brewery, yet form but a small portion of the premises. The lower part, used entirely for the storage of ale, is capable of receiving 1,000 barrels, and is connected with the existing ale stores of the brewery by means of a system of inclined tramways, thus enabling the contents of one store to be rapidly removed into another. On the upper floor spacious malt and hop stores have been formed, and in their storing-bins 5,000 quarters of grain may find dry housing, whilst something like 3,000 pockets of hops there await the brewer's wants. The exterior of these new buildings is plain. The foundations are carried down through the soft blue clay to a depth of 15 ft., and care was required in the execution of this work in consequence of the water and nature of the soil. The floors of the malt and hop stores already referred to, are formed of rolled wrought-iron girders and joists calculated to bear a weight of nearly half a ton upon each superficial foot of floor-space. The works have been carried out by Mr. L. Shrubsole, of Faversham, under the immediate direction of Mr. B. Atkins, the architect.

DOUGLAS TOWN IMPROVEMENTS.

A special meeting of the Douglas New Street Board has been held at Douglas, when the estimates and valuations of the Douglas town valuers of the property required to be taken by the new street (to be called Victoria-street), and of Mr. Ellison, for the cost of the construction of the street; and of Mr. Powell, C.E., for the cost of the construction of the Loch Promenade, were laid before the Board. The estimates of the town valuers showed that, after allowing for the resale of the land on the street, and allowing the shore, the net cost of the work would only be 5,897l. They estimated that the sale of the land proposed to be reclaimed in connexion with the marine work would produce 19,578l., and that the entire cost of the work would be about 32,000l., exclusive of the resale of the land so reclaimed. A long discussion took place, and it was generally conceded that the Board had ample means at its disposal to carry out the proposed improvements. It was unanimously resolved to wait upon the Lieutenant-Governor, and apprise him of the determination of the Board, which was to at once proceed with the construction of the sea-wall; and after constructing about 200 ft., then to invite tenders for the construction of the remainder of the sea-wall, as they would thus be enabled to decide whether it would be cheaper to carry out the work by contract or day-work. The Board, therefore, waited upon his Excellency with a verbal report of its proceedings. The Board consists of the Douglas Town Commissioners and the Government Commissioner, Mr. Dalrymple, H.K.

SCHOOL BOARD SCHOOLS.

London.—A new school has been opened at Hatcham by Sir Charles Reed, President of the Board. Mr. Gale was the architect. In opening the proceedings, Sir Charles congratulated those present on the numerous attendance, and said that in the district they were dealing with school accommodation had to be provided for to the extent of 5,000. No less than 3,000 children had already been provided for, and they now only had to obtain school premises for 2,000 more. This was one of the eighty schools, fifty of which were building or built, leaving thirty more yet to be erected. He trusted before that time next year there would be seventy out of the eighty schools provided. The school would be opened upon the broadest basis, and a pleasant feature in connexion with it was that it possessed a large playground. Mr. Currie said that the school, which is situated in Kenderstreet, Hatcham, was capable of accommodating 279 boys, 279 girls, and 271 infants; making a total of 829. The site of the school covered over half an acre of ground, the cost of the building being about eight guineas per head, or, including the value of the site, about ten guineas

THE choir and chancel of this parish church are new portions of the edifice built about twenty-two years ago, and on the north side we closed a large chamber and vestry. At the close of last year, the east window was filled with stained glass containing three divisions, each division three subjects, the whole forming nine subjects of our Saviour's history on earth prior to His ascension. Works of art have lately been added to the east wall, which have been carried out by Powell & Son, of London, in compliance with the directions of Messrs. Clayton Bell, the makers of the windows, completed their design and contract. At the foot of the windows, above the communion-table, is placed a reredos of mosaic, with centre and right and left subjects, the first figure being that of the Angel appearing to Mary, and holding a scroll with the inscription, "Ave Maria Gratia Plena." The centre subject is our Saviour on the cross with Mary His Mother, and the beloved disciple St. John, standing by the inscription being "Behold the Son of God." In the south is the risen Christ appearing to Mary Magdalen, the subject being of the resurrection, the words of the subject being "I am not yet ascended to my Father." Illustrations of the remainder of the verse from which this is taken are contained in the windows above, and are three portions,—"I ascend unto my Father and to my Father,"—"And to my Father,"—"And to my Father." The mullions and frame of the window have been painted in colours, and

capitals and other portions gilded. The whole of the east wall has been painted in various designs. At the north side of the reredos are the figures in the Jewish Church of the offices of Prophet, Priest, and King; and on the south side, of those of the Christian Church of Bishop, Priest, and Deacon. A rich altar-cloth was first used on Easter-day of this year, and is of deep carmine velvet. The choir is surpliced. Some high brass candle-standards have been lately added for the chancel.

FEVER EPIDEMIC IN CARLISLE.

FEVER has of late been prevailing in Carlisle. The disease is spreading most in Annet-square and Annetwell-street. Though originally confined to the Square the fever has now reached both sides of Annetwell-street. The inhabitants of the street, according to the local journal, complain that the authorities do little or nothing towards preventing the spread of the disease. In all, there have been about 30 cases in the square and street. There are 28 fever cases in the Fusehill Workhouse Hospital. There is accommodation in the Workhouse Hospital for 41 more patients should the emergency arise. As a precautionary measure, the wards in the city have been disinfected and disinfected with carbolic acid. In Stanwick two fresh cases of typhoid fever have occurred. Both phoid and typhus fever are prevalent. The persons suffering from fever are mostly young people from 10 to 19 years of age and persons in the prime of life. The medical men find the want of cleanliness the greatest obstacle in coping with the spread of the disease; while overcrowding is another source of evil. Houses of working people are, however, very scarce, and, to make things worse, we understand that less than 119 notices were served in one week to quit houses required by the railway companies in carrying out their extensions.

THE NEW STYLE.

Sir.—The answer to those who deny the possibility of a new style of architecture before us is (beyond what I before explained) that the thing has already been repeatedly done; and while the human mind continues constituted as the future as in the past, nature presents its endless variety, change induces change, and new styles are to be again expected. It is gravely asserted, without even attempt at proof, that this "is not a feasible speculation." But Sir William Hamilton observes that there is no ground for inferring a fact to be impossible, merely from our inability to conceive it. "As to novelty, Harvey's great discovery was not received by any physician who was more than forty years old; and, furthermore, 'as for the possibility,' Lord Bacon once and wittily says, 'They are ill discoverers that think there is no land because they can see nothing but sea.'" E. L. T.

CHURCH-BUILDING NEWS.

Kirklington (near Southwell).—The church has been re-opened. About a year ago some having been prepared by Mr. Christian, of London, the pulling down and rebuilding was commenced, Mr. Clipstone, of Norwell, being the architect. The tower has undergone little or no change, but the north and south walls and the roof have been re-erected and a new roof put on. The interior fittings are all new, as are also the pulpit, reading-desk, &c. Free seats of oak, modern style, have been made, and suitable accommodation provided in the chancel for the vicar. The pulpit is of stone, and there is a screen made of oak, the gift of the vicar. The screen leading to the altar is of encaustic tiles. The cost of restoring the church is estimated by the Ecclesiastical Commissioners, at the restoration of the body of the church is to the liberality of Mrs. Bodman Whetstone, of Kirklington Hall, the vicar, and the donors. Earl Manvers added to the subscription list the sum of 100l., and all in the gift gave according to their means.

Drayton.—The parish church of St. Paul, Drayton, has been reopened for divine service. No church in the county more needed it. The movement towards that object was liberally responded to by the representa-

tives of property in the parish,—the right hon. W. E. Gladstone and Lord de Tabley, trustees under the will of the late Duke of Newcastle, Mr. Hope, the Duke of Portland, and by others less immediately connected with the place. The parishioners gladly gave their time and labour in carting materials, and in other ways. Although occupying no more ground than before, yet by decreasing the depth of the walls, and by a new arrangement of the internal fittings, much additional room has been secured, and accommodation will be found. The old whitewashed ceiling has been supplanted by a high roof, the pews by open benches, the floor has been laid afresh, and, except that the west gable turret, the ancient doorway, and east window have been preserved, the building may be said to be new. The work has been executed by Mr. Sweeting, clerk of the works at Clumber, under the direction of Mr. A. G. Williams. Mr. Brown, painter, of Markham Moor, is said to have done the painting and staining at half the usual price.

Quarndon.—The new church at Quarndon, near Derby, the foundation-stone of which was laid by Lady Scarsdale, November 5th, 1872, has now been consecrated by the Bishop of Lichfield. The necessity for a new church for this increasing suburb of Derby has for some time been manifest. The site was given by Lord Scarsdale, who has been a liberal contributor. The new church is situated near the schools, and from its elevated position will be a prominent object from a wide range of view. It consists of a nave, with north and south side-aisles; a chancel, with organ-chamber, in which the organ has been placed; and a vestry, and a tower and spire at the south-west angle, near the road. The building is 82 ft. long and 50 ft. wide, and the top of the vane on the spire is 80 ft. high. The style is Early Decorated. The roofs of the nave, aisles, and chancel are boarded under the slates, and exposed to view, and the seats are open benches, which provide for 360 persons. The pulpit and reading-desk, of oak, carved by Mr. Edwin Thompson, of Derby, are the result of a subscription. A font placed in the nave is the gift of Messrs. Giles & Brookhouse, the architects, and supplied by Mr. Tinkler, Derby. There is also a carved oak lectern. The work has been done by Mr. Edwin Thompson, contractor, of Derby. The whole cost will be about four thousand pounds, and of this 3,600l. had been contributed or promised before the consecration service.

Bishop's Caudle.—There has been erected in the picturesque churchyard of Bishop's Caudle, which from its elevated position overlooks the country for miles around—a tomb of Portland stone, 11 ft. by 9 ft., weighing nearly three tons, and enclosed with ornamental iron work. On the top of the tomb is a full-length Latin cross, having in its intersecting head a lamb carved in white marble. The inscription is to the memory of Charles Robert Dampier, some time rector of the parish. The tomb, and the ornamental railing which surrounds it, together with the carved work, were designed and executed by Mr. W. Dalwood, of Sherborne.

Books Received.

The House-Owner's Estimate; or, What will it Cost to Build, Alter, or Repair? By JAS. D. SIMON, Architect. Edited and revised by FRAS. T. W. MILLER. Lockwood & Co., London, 1874.

THE ordinary householder who, desiring to add a bay window or to put in a new shop-front, should study an ordinary price-book would not find it easy to arrive at any notion, however general, of the probable cost of it. The main object of the little book before us is to supply such information, in a broad way, to the uninitiated, and it will be found useful by many. The projector and author of the book, Mr. Jas. D. Simon, unfortunately met with an accident, just as the last sheet had been completed, from which he never recovered. Some notes on dilapidations; and those portions of the Metropolitan Buildings Act, and of the regulations of the Board of Works, which more immediately affect the public are added.

Land in Gloucestershire.—The Cowley manor estate was knocked down to Colonel Richardson-Gardner, M.P., for 80,000l., including the timber, valued at 4,000l. The estate comprises a freehold mansion and 1,870 acres.

Miscellaneous.

New Hospital for Stroud.—The memorial stone of a new hospital has been laid at Stroud, by Lord Sherborne, as Grand Master of the Freemasons' Provincial Grand Lodge of Gloucestershire. Recently, Mr. Cowle, the proprietor of the Field Estate, offered an acre of land as a site, and Mrs. Franklin offered 1,000l. towards a new building. With this incentive, the committee made an appeal to the public for funds, and the appeal has been very fairly responded to. The cost of the new building is estimated at about 6,000l., and of this about 4,600l. have been subscribed. The building, now in course of erection on the south side of Trinity Church, is already carried up above the line of the upper floor. It is arranged to accommodate 28 beds. The hospital will consist of three blocks of buildings, connected by wide fireproof corridors. The principal entrance to the hospital will be at the south-west corner of the site. The external face of the walls is of dressed rock-faced Rodborough Common stone, the quoins and window-dressings being in dressed Fainswick stone. The shafts, arches, &c., to the front entrance-door are in Combe-down Bath stone. The roof will be covered with Broseley tiles. The windows of the wards will be filled in with combined sliding and hinged sashes. The proper ventilation and warming of the wards and waiting-room have been provided by means of Galton's ventilating fire-grates. The corridors on the upper floor will be ventilated and warmed by two of Boyd's hygienic grates, and will be used as convalescent day rooms. The work is being carried out from the designs, and under the superintendence, of Messrs. Medland & Son, architects, Gloucester, by Mr. A. Estcourt, builder, Gloucester. Mr. James Smith is the clerk of the works, and Mr. R. Wiggall the contractor's foreman.

Religion and Architecture.—The outside form of every Gothic cathedral must be considered imperfect if it does not culminate in something pyramidal. The especial want of all Greek and Roman buildings with which we are acquainted, is the absence—save in a few and unimportant cases—of the pyramidal form. The Egyptians knew at least the worth of the obelisk; but the Greeks and Romans hardly knew even that—their buildings are flat-topped. Their builders were contented with the earth as it was. There was a great truth involved in that, which I am the last to deny. But religions which, like the Buddhist or the Christian, nurse a noble self-discontent, are sure to adopt sooner or later an upward and aspiring form of building. It is not merely that, fancying heaven to be above earth, they point towards heaven. There is a deeper natural language in the pyramidal form of a growing tree. It symbolises growth, or the desire of growth. The Norman tower does nothing of the kind. It does not aspire to grow. Look—I mention an instance with which I am most familiar—at the Norman tower of Bury St. Edmund's. It is graceful—awful, if you will—but there is no aspiration in it. It is stately, but self-content. Its horizontal courses, circular arches, above all, its flat skyline, seem to have risen enough, and wish to rise no higher. For it has no touch of that unrest of soul which is expressed by the spire, and still more by the compound spire, with its pinnacles, crockets, finials, which are finials only in name, for they do not finish, and are really terminal buds, as it were, longing to open and grow upward even as the crockets and leaves thrown off as the shoot has grown.—C. Kingsley.

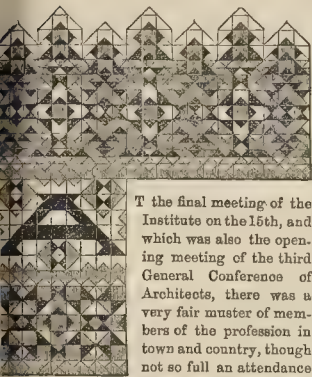
The St. Helen's New Town-hall.—At the monthly meeting of the Council, held on Wednesday, Alderman Marsh presiding, a discussion arose regarding the manner in which the contractor for the new Town-hall is carrying out his contract. It was alleged that the bricks used are of a very inferior quality and unattractive appearance, and that the manner in which they are set is highly objectionable. The Chairman confirmed the complaints from his own observation, and asserted that it was a disgrace to the architect to allow the work to be carried on in such a manner. Mr. Beasley suggested that all the bricks in the front be removed, and "local shoddies" (stones) be substituted, even at an additional cost of 5,000l. or 6,000l. It was then decided to urge upon the committee the immediate consideration of the character of the material and the workmanship.

Moreland. To complete in four months:		
ny	Brown	28,975
ad	Conley	8,770
nd	Monder	8,770
es-	J. L. and S. L.	4,672
ro-	Wood	8,623
ge	Brown and Robinson	8,405
ur-	Almon	8,400
are	C. L. and	7,734
	Rider	8,250
	Brace	8,103
	W. L. and	7,994
	Newman and Mann	7,726
	* To complete in six months.	

The Builder.

VOL. XXXII.—No. 1637.

The Institute and the Architectural Conference.



THE final meeting of the Institute on the 15th, and which was also the opening meeting of the third General Conference of Architects, there was a very fair muster of members of the profession in town and country, though not so full an attendance of the Institute members

as we should have wished to see on the occasion. Whether certain untoward circumstances may have influenced the attendance, or non-attendance, we cannot, of course, undertake to say; but there can be no question that the Conference did open under drawbacks. The President, Sir Albert Scott, was unavoidably absent, nor was his special opening address from his pen forthcoming. The chair was taken by Mr. John Gibson, vice-president, to whose lot it fell to make a very unusual, not to say unpleasant, communication. The Council had recommended the presentation of the Gold Medal this year to Mr. Ruskin, as a distinguished writer on architecture—a recommendation which had been duly sanctioned by her Majesty. Mr. Ruskin is present at present; communication with him was unavoidably slow; and when his reply finally reached the Council, it was in the form of a refusal to accept the medal. The refusal came too late to leave any other course open to the Council, the chairman said, than to withhold the medal for the present; and he announced that the decision of Mr. Ruskin had been communicated to her Majesty, through Sir Thomas Biddulph, and that they were now awaiting his reply. Pending this reply, the Council were of opinion that nothing further should be officially said about the matter. The Council, as it seems to us, should not have placed her Majesty in this position: they should at once have cancelled the award and nominated another recipient. A proposal that Mr. Ruskin's letter should be read raised a tolerably lively discussion, a number of members being of opinion that the reading of this quite unprecedented act should be at once given to the meeting. Eventually a motion "that the letter be read" was put to the meeting, and lost by one vote (fifteen against thirteen of the Fellows present); and we are therefore still in ignorance as to whether the author of the "Stones of Venice" objects to the medal, to her Majesty, or to the Institute, or to all three. Mr. Ruskin's action, on the face of it, appears discourteous, and is certainly quite unprecedented; but his eccentricities of opinion and of temperament are so well known that it seems a pity the Council did not contrive to obtain a formal reply from him before publishing the award. For the credit of a distinguished writer, we may hope

that Mr. Ruskin has some better explanation to offer than mere petulance or wilful eccentricity.

The Chairman then presented to the successful competitors the annual prizes, which were awarded as follows:—Institute silver medal and five guineas, for architectural drawings, to G. Dale Oliver; medal of merit, for ditto, Walter T. Brown; certificate of honourable mention, W. T. Whyte; Institute silver medal for essay on Architecture in London in Sixteenth Century, A. T. Taylor; medal of merit for essay on Vaulting, T. H. Eagles, B.A.; student's prize in books, H. R. Perry; medal of merit, for drawings submitted in competition for Pugin student-ship, W. J. Munt; certificates of honourable mention, for same, W. W. Bethell and W. Wilson.

The Chairman, announcing that they had now concluded the business of the Institute specially, and arrived at

THE CONFERENCE,

proceeded to read a short address to the meeting.

He commenced by stating that in the name of the Institute he bade those friends who had come from a distance a hearty welcome; and he must not forget to mention those other members of the profession in the provinces who had done them the honour of sending their representatives to take part in the discussions upon the subjects which would be brought before them. This would, he maintained, tend not only towards elevating the general tone and unanimity of their profession on conflicting matters; but, at the same time, would secure what was just and beneficial to the public at large. At the first year's Conference, held in 1871, much was attempted, and a great deal was done; and that of 1872 materially assisted in bringing about a certain amount of uniformity of practice, especially with regard to professional charges, mainly founded upon the schedules which had been the guide of the members of the Institute for some years previously, and which were now admitted to be so equitable that they were not only often quoted, but they had considerable influence and weight in the Courts of Law. The general regulations for the conduct of architectural competitions was another good work of the last Conference, emanating as it did from the main body of the members of the profession. It clearly showed that all that was required was fair and honourable treatment; and architects would act wisely in competing only on similar terms, this being the only course to pursue, which would prevent the outrageous injustices of which many of their brethren had often been victims. With regard to the question of the employment of surveyors, which was to engage the attention of the Conference, he stated that if the meeting could arrive at a satisfactory solution of the question at issue, it would be a great gain to the whole profession and the public generally. He feared that, as the question had been so long under consideration, and considering existing circumstances, there were great difficulties in the way of a final settlement. As the object of the Conference was to obtain, if possible, more uniformity on matters of professional practice, it would not be foreign to the subject, he thought, to allude to the total want of it in a variety of local Building Acts and Sanitary Acts in operation throughout the country, which appeared to have been promoted by the authorities without especial reference to any general basis or to the existing Metropolitan Buildings Act, which, he believed, had been found to answer well. As regarded the rights of the public and building owners, in many cases it had been found in practice next to impossible to comply with their requirements, and if questions of light and air could be more clearly defined by an Act to apply generally, it would effect a saving to the country of some thousands a year.

In the absence of any lengthened address from the President of the Institute, the Chairman then called upon Professor Kerr, who, in compliance with his request, had undertaken to contribute a short paper to the meeting. The paper dealt mainly with the consideration of the difficulties of architectural practice arising from the great and varied demands which were now being made on the architect from the side both of science and art, practical building, and accessory decoration. We print it in full on another page.

The contrast between the very simple work, comparatively, which was half a century ago demanded from the architect, coupled with respect and estimation in which he was then held, as compared with the immense demands made upon him now, and the abuse which "leader-writers" in the daily papers think it witty to heap upon him, certainly suggests the inference that those who complain of the profession now are doing so very wantonly and ignorantly, unless they are prepared to show that they are immensely wiser, or that their requirements are far greater, than those of their fathers. But it does not do to push such contrasts too far, for the overdrawn abuse found in some of the journals does not really represent the feelings of any section of society; it will be found, and many members of the profession can testify from their own experience, that society rather likes the architect, when he has given proof of even moderate aptitude in his profession; and the newspaper attacks referred to probably do not represent anything which can be called an opinion on the part even of their writers, but rather a desire to say something smart on a subject which will be at the moment generally interesting; and this is, perhaps, as serious a charge against the journalists as any which those gentlemen can possibly bring against the architects. We do not think, however, that the sort of flippant writing referred to really influences anybody.

A discussion on Prof. Kerr's paper was opened by Sir Digby Wyatt, who, glancing at the objects of the Conference, the meeting, and the comparing notes and ideas by members of the profession, thought that such meetings supplied what might be termed the contact of flint and steel necessary to keep up the fire of genius. Perhaps the fire of genius was attempted to be kept up to too brilliant a blaze just now, and we were liable to fall from attempting too much and too many things. That sectionalising of the profession, referred to in the paper they had heard, he regarded as an absolute necessity, without which the great circle of subjects now included under the general head of architecture could not possibly be adequately dealt with. There were local necessities, too, involving local rules of practice which could not be ignored; and it was very desirable that they should have this opportunity of meeting architects from different parts of the country who would make them acquainted with the working of the profession under various circumstances. Mr. Atkin, representative of the Institute of Ireland, stated that the line between the engineer and architect was no better drawn in Ireland than in England; rather leading, indeed, to the inference that in the sister isle the terms "architect," "engineer," and "surveyor" were all but synonymous and interchangeable. The whole question, as it seems to us, turns a good deal on the matter of names. The word *architect* has come to have a very extended and therefore to many persons vague meaning; and there is no doubt that it does include persons engaged in work of very varying kinds. If a subsidiary division or two in the profession could be specialised by the addition of one or two adjectives to the general term "architect," this might make the matter a little clearer to the public, perhaps, and prevent them from expecting everything in the world from one man. But

Association at the meeting referred to was in favour of compulsory examination, and a diploma before practising.

Mr. Nash thought the whole thing was very simple: an architect was merely required to be a good constructor and a good artist (!) He ought to know as much of construction as an engineer; the word "engineer" did not mean building construction, a knowledge of which ought to be common to both professions. The word "architect" meant really "chief builder."

Mr. E. Hall thought no special training for any profession was possible at school; especially as youths seldom knew, during the earlier period of school life, what their profession was to be. The want of art education in the public and in the daily press was a very serious evil: the press misled the public continually in these matters.

Mr. Roger Smith thought they had better keep strictly to the subject before the meeting, which was the education of the architectural student. He thought a good general education before going into an office very important, but a knowledge of drawing, at least, equally so; and no youth ought to be articled to an architect unless he had shown decided proficiency or talent in drawing beforehand. [Let parents and guardians take note of this.] Mr. Tarver's suggestion as to sending pupils to a young architect rather than into a large office where no one had time to think of them, he highly approved: he would go further than Mr. Tarver, and would say, "Send the youth for four years to the small office, and then let him go for one year to the big one to complete his education." But he thought systematic education beyond the office most necessary, and that there ought to be increased means for giving architectural education in a collegiate form, and for working in classes. Though he scarcely thought a diploma could be made compulsory, he hoped that in time its gradual recognition by the profession would draw a kind of fence round them to keep out incompetent and uneducated men.

Mr. Spiers thought the present preliminary education in schools very insufficient; there should be opportunity for a special preliminary college training for two years before entering an office, and then the pupil should be articled for three years only. It would be a very good thing if the Institute would publish an authorised text-book, indicating the requisite course of study for the profession; parents in general knew very little about it. There was a feeling expressed among the pupils at the Association that they were not thought of enough by their principals. He thought the principals would then be glad to do more for the pupils if they saw the precise way to accomplish it. He could suggest that where the principal had really no time to look after pupils, it might be part of the recognised duty of the chief assistant to look after and instruct them. He thought examination could only be made nominally compulsory, but if the profession generally accepted it, the public would respect it.

Professor Kerr said he had heard many discussions on the present subject, and there was no fault in all of them,—the idea, namely, that some machinery was to be provided by which young pupils were to be taken to the furthest point with the least possible trouble to themselves. [This, we think, is not at all a fair deduction from what has transpired of the feelings of the best of the students.] Now, the only chance for the architect to hold his own in the present day, was for him to be able to show that he could do what no one else could do; he must be able to build and to design much better than any one else could. And to this end students would desire to find out, not how much work there could be saved, but how much they could possibly accomplish. We must not be content with a mere pass-examination, it must be an examination to prove that each man knows all about his profession. An engineer was a non-artistic constructor; his instruction was entirely practical, and he did not accomplish art in the past. An architect was a building constructor applying art to his work. Let them keep hold of that, and at the same time master construction, and they would be doing what no one else was doing at present. There was no reason why architects should not carry out what were sometimes considered purely engineering works; any of the best stone bridges in the country, for instance, had been the work of architects. A member of that Conference (Mr. Hornblower) had invented an admirable fireproof floor, of which they saw a model; why did not architects

turn their attention more to such things, without neglecting art? As to art education, there was quite enough elementary education already; what we wanted was the higher education. Every one who had passed the preliminary examination of the Institute ought to go in for the "proficiency" examination; but, instead of that, there were only five in two years. 25 candidates per year would never do.

Mr. Sharpe thought much more time and harder study were required to be really a good art architect than was generally recognised. He had twenty-five years ago abandoned the active practice of the profession, having before that time built about thirty churches, and supposing himself to have understood Gothic architecture pretty fairly then. And now, after twenty-five years of continuous study of the finest monuments of the art, his feeling was that he wondered how he had ever had the presumption to carry out anything at all in the former state of his experience and knowledge. He thought pupils should be allowed an interval every year, during which they could quit office routine and betake themselves to study of this kind.

Mr. Watson, referring to Mr. Kerr's remarks as to the examinations, said the object of them was to ensure that no one practising as an architect should be below a certain standard in knowledge and education; higher ability would be sure to develop itself afterwards, and much more individuality would be secured than by any attempt to frame a kind of school system for the whole of the profession. Foreign architects thought the development of distinct individual genius which existed in the English profession a very valuable thing. He thought that the present system of apprenticeship required to be altered in form and spirit, and that young architects should be distinctly pupils, and not apprentices.

In answer to a question by Mr. Spiers, as to whether students could in any way make use of the valuable collection of books in the Institute Library, Mr. Eastlake said he was very much surprised to hear the question asked. Over and over again it had been stated that any student bringing a recommendation from a member of the Institute was at liberty to use the library as much as he wished.

After a few words from Mr. Lewis in regard to one or two of the points raised in the discussion, the meeting adjourned.

VISIT TO THE ALEXANDRA PALACE.

At twelve on Wednesday morning a considerable number of gentlemen met at the entrance of the new Palace on Muswell-hill, to go through the work, under the guidance of Mr. Lucas, the contractor. The party walked round the building first, and subsequently through the interior, which, however, is in too unfinished a state at present to be judged of, except in regard to general arrangement. The large concert-room, or festival-hall, will be a fine apartment. Its access acoustically will hardly be insured by the semicircular roof, with a good deal of glass, which is being constructed over it, unless something be adopted in the nature of the velarium with which the Albert Hall has familiarised us; but, in short, it does not appear that any attempt is being made to produce a concert-room based on any distinct principle in regard to sound and effect. The two picture-galleries seem to have a very satisfactory light, simply contrived. Ample area is provided for refreshment-rooms and every other convenience, and the large conservatory, lofty enough for almost any kind of vegetation, will be a fine feature of the building. The architectural style did not impress the visitors much, and criticisms were passed which might possibly have taken a milder tone had they been made after, instead of before, the very liberal and excellent lunch provided by the contractors, and about which there was no difference of opinion whatever. Mr. Currey, who acted as chairman, proposed the health of the contractors, Messrs. Kalk & Lucas, and prosperity to the Alexandra Palace Company, which was very heartily responded to; and Mr. Lucas, in returning thanks, took the opportunity of saying how much they were indebted to Mr. Clements, the working manager at the building, for the admirable way in which the work was carried on. Subsequently Mr. Hornblower proposed the health of Mr. Currey and Mr. Roger Smith, the secretaries for the visits, which was responded to by the latter gentleman, Mr. Currey having been called away earlier by other engagements.

RESPONSIBILITY OF ARCHITECTS.

At the meeting on Wednesday evening, the chair was taken by Mr. Valliamy, vice-president, for the discussion of a promised communication by Professor Kerr, on the above subject. The paper read referred to a case in which the reader of it was lately concerned, and of which, as accounts of it have appeared in our columns as well as in those of the daily press, it is unnecessary to recapitulate the details. The object of the paper was to lay before professional brethren what the reader considered the great injustice to which they were liable by having charges against them of want of skill, &c., judged by a jury who were not acquainted at all, probably, with building operations, directed by a judge and counsel who were equally unacquainted with the subject. The legal mind, he considered, was quite at sea in regard to the nature of an architect's duties and responsibilities, and the reasoning employed in the case he referred to, and sanctioned by the bench, really amounted, in his opinion, to this: that the employment of an architect was considered to be a guarantee against misadventure to the client. Cases of this kind come into court, in fact, singular as it might appear, on exactly the same footing as a case of breach of promise of marriage: the defendant had failed to do something which he had promised to do—he had shown "want of due skill and attention"—and a jury had to decide how much he had been bound to do, and whether he had done it. The verdict of the jury, if given against the architect, might lay upon him responsibilities quite out of proportion to the primary injury complained of, under the theory of "consequential damage" to the client—damage supposed to have indirectly arisen out of the negligence complained of. The practical outcome of the paper was this, that under existing circumstances the architect was liable, at the instance of an exigent or disingenuous client, to receive very hard measures at the hands of the law, owing to the, generally, almost total want of acquaintance with the subject on the part of those who had to advise upon and to find the verdict. The remedy for this danger to the profession was, in the first place, to be cautious whom they worked for, and never, on any account,—even at the instance of a client,—to accept a contractor in whose honesty and efficiency they could not have reasonable confidence. In regard to this point, he deprecated very much the following of the trade of building contractor in London by persons who had not really been bred to that trade, and were not even nominally carrying it on: building contracts for small works were often undertaken by persons who were in reality tradesmen in some special branch,—paper-hangers, painters, and others. But the main proposition of the reader of the paper was that a combination of persons interested in building and construction should be formed to provide for arbitration of disputes among themselves, instead of letting it go into the hands of the lawyers. The Institution of Civil Engineers, the Institute of Architects, the Institution of Surveyors, and the Builders' Society might jointly take the matter up, and form a committee of arbitration, to which matters of this kind might be referred. He also recommended that a committee of the Institute be appointed to inquire into the question of architects' responsibility.

The meeting was, at the request of the reader of the paper, considered as a private one, and we have therefore merely given in a general way the conclusions arrived at; and for the same reason shall only touch upon one or two of the points raised in the rather long discussion which followed (omitting names), especially as no definite resolution was arrived at. It was suggested that the building contract should be framed so as to include client, architect, and builder, in a threefold contract, so that the architect, in any dispute, would have the benefit of the arbitration clause which generally is, and always may be, part of the conditions of a building contract. This, we should say, would be to take the architect utterly out of his proper position, which is that of director of the builder and adviser of the client; he is not to be any party to litigation between the builder and the client, except as an arbitrator, so long as they will accept his arbitration. A good deal was said as to the importance of securing an efficient clerk of works, in order to guard against defective construction or materials being introduced which would give occasion for complaint and litigation,

and which the architect cannot by any possibility personally look after. No doubt this official may have a more important influence, for good or bad, on the work, and an architect cannot be too careful in ascertaining the real merits of a clerk of works, by personal inquiry before engaging him; and we may here allude to the injury done to the profession and to the public by the loose way in which, perhaps, out of a careless good nature, certificates and recommendations are sometimes given to completely incompetent persons for this position. But, after all said, we are of the opinion (which was expressed at the meeting by some of the older members present) that the clerk of works relieves the architect from no responsibility whatever. It was urged by one or two gentlemen that the clerk of works, being paid by the client, was his servant, and responsible to him; but this is not the right view of the matter. The clerk of works is a person under the orders of the architect and of no one else; the architect in effect, says to his client,—"I cannot look after this large work [at some distance perhaps] adequately in person without charging you exorbitantly for my time; your best way is to pay the salary of a clerk of works, who will carry out my orders in my absence." This is the plain English of the matter; and, in fact, as one speaker mentioned, it is very undesirable to allow a clerk of works to act much for himself; and in a case where the speaker had allowed his client to name his own clerk of works, he got into no little difficulty afterwards from the official in question having given his own directions as well as the architect's, and sending his own statement of what was due to the builder, in opposition to that of the architect. As another speaker said very truly, the clerk of works is only a *watcher*, put there by the architect to see that his orders are obeyed. In regard to the builder it is evident that, if the instructions of the architect are clear and unmistakable, the builder is responsible for injuries arising from any alteration which he may make without the architect's permission. In regard to the competency of legal gentlemen to decide on building cases, testimony was given that judges in such cases almost always wished to refer the case to arbitration; and counsel, if consulted previously, generally said at once, "refer it." Unfortunately, it was often referred to a *barrister*, on the judge's recommendation, which scarcely helped matters. There was a general feeling that arbitration by architects should be more provided for, and always resorted to, when possible, in any disputes. At the close of the discussion a motion was made that a committee of the Council of the Institute should be appointed to collect cases and precedents as to the responsibility of architects, and to report upon the matter to the next Conference. It was urged *pro contra* that this would be imposing a very heavy task on the Council for a doubtful result, and that such a report, and the inquiries on which it would be founded, would only tend to raise questions and afford pretexts for dispute which might never be raised otherwise. The meeting in general adopted this view, and the proposition was negatived by a large majority.

We have one word to say in conclusion to our professional brethren who are interested in their own welfare and that of the profession at large—do not attempt to diminish the fair responsibility of the architect. Every one will sympathise (as several specially said at the meeting) with a member of the profession who has been mulcted by the law in a large sum in an apparently arbitrary way. But even if we accept in full what after all (we must be pardoned for saying) is somewhat of an *ex parte* statement, we should be very sorry to see any such cure as the one referred to made an excuse for architects, under fear of being victimised, endeavouring to lessen their responsibility for the work they carry out. Our advice is, let the architect be as careful as possible in the selection of the contractor, of the clerk of works, of every one else who has to work under him—let him absolutely refuse to employ any doubtful man, and let it be clearly understood that he is to have everybody, so to speak, under his thumb: let him see that full and unmistakable directions are given to the builder, and then—let him fully accept the responsibility for the proper carrying out of the whole work, unless he can show that his orders have been absolutely disobeyed. The more confident the architect is in himself, the more he is absolute master of the whole operations and operators; and the more ready he is to

accept his responsibility in full, the more will he be respected by his clients, and the higher will be his place in public estimation.

THE METROPOLITAN BUILDINGS AND MANAGEMENT BILL IN COMMITTEE.

We resume our notice of part of the evidence taken on the Metropolitan Buildings Bill, before the Select Committee of the House of Commons, Sir Seymour Fitzgerald in the chair.

Sir Joseph Bazalgette, engineer to the Metropolitan Board, in his evidence, stated, more particularly with reference to sewers, that the interests of the public were deeply involved in the sanitary clauses of the Bill. He considered that the junctions made between branch sewers and the main sewers should be under the direct supervision and control of the Board. It was within his knowledge that the formation of those junctions being left to private individuals had frequently caused damage to the main sewers of the Board, which had cost an enormous expense to construct. He thought the junctions should be made by the Board's workmen, and paid for by the private individuals. The clause further provided for the ventilation of sewers, and the trapping of inlets to house-drains, which was a very important point. In witness's opinion it was a necessary restriction that no person should build a house so that the level of its drain should be below the crown of the Board's sewer, with which it communicated. The clause in the Bill providing this restriction was a very important clause indeed. The river Thames was the lowest point to which drainage could be obtained. Ordinary low water in the Thames was the lowest level to which drainage could be carried. They might take low water to be about the level of the Ordnance datum. There were many large districts of London, such as Bermondsey, the Isle of Dogs, Pimlico, Battersea, the level of the surface of which was only 8 ft. above Ordnance datum, or low water. Supposing it to be 5 ft. high, it would, at times of heavy rain, be filled with sewage, and therefore the sewage would be running at a level of 5 ft. above low water. If the surface was only 8 ft. above, it was running within 3 ft. of the surface. If a person could dig a hole into the ground, and put his basement 8 ft. deep the basement might get drainage into the bottom of that sewer in dry weather, but the moment there came a fall of rain, which filled up the sewer, the sewage running in was above the level of the basement, and instead of the drain discharging into the sewer, the sewer, without some provision, must discharge the sewage back into the house, and to avoid that a trap was put in, and the drainage was cut off. As long as that state of things existed those houses must be liable to be flooded, and the persons who occupied those houses thought when they were flooded, that they were very badly treated. In point of fact, there was nothing at the present moment to prevent a man's digging a hole into the ground to any depth, and putting his basement in below the level of low water, and then calling upon the Metropolitan Board to give him drainage. This was a state of things which ought not to exist. The principle upon which this was framed was that the level of the river, which fixed the line of the drains, being fixed and immovable, the houses must be built with regard to the level of the drains, as the level of the drains could not be altered with regard to the level of the basement. It was quite true that they got an artificial fall of water by pumping. They pumped 100,000,000 gallons a day, but a rainfall might come in London which would require 3,000 times that quantity, and therefore they must have a discharge by gravitation into the natural outfall of the river Thames.

Mr. Bazalgette (to the witness).—Is it within your knowledge that the Board have recently expended about 2,000l. in the case of flooding which occurred in the Isle of Dogs?

Sir Joseph Bazalgette.—Yes.

Mr. Bazalgette.—I believe, taking the Fleet sewer as a case in point, where the basements of a house had been constructed below the level of the sewer, the Board have spent 63,000l. to avoid flooding this house?

Sir Joseph Bazalgette.—They have; those houses ought never to have been put in to the depth they have been; the flooding has arisen entirely from this cause, and that expenditure has been involved.

In answer to a question as to the exemptions

of railway-arches, the witness stated that he did not think there was anything so exceptional about a railway-arch as to warrant it being placed under the exemptions of the Act. When a railway-arch was let to private individuals for the purpose of a house let to anybody. They could not be compared to the buildings proper of a railway company, which are kept entirely for their own occupation. He thought it necessary that where structures or grounds had become ruinous and dilapidated, and a source of public annoyance, there should be some public authority who might stop in, in the interests of the public, and insist on the owner putting the building or the waste ground into a satisfactory state. All over London they had instances of the necessity of that. Two glaring instances had been mentioned to the committee. The one respecting the houses in Stamford-street, and the other Leicester-square. But in addition to these in the East of London, particularly where railways had been constructed, and where the companies had purchased large quantities of land, there were awkward corners left which could not be utilised until some of the property in the neighbourhood was pulled down and reconstructed; and wherever there were spaces that kind left in London, they became very gross nuisances. He thought that was a crying evil in London. He did not know any places where he had seen those spaces so much abused. The provision that every wall should be constructed of good bricks was, in his opinion, an essential provision. He thought that to speak of materials as being simply stone, brick, or concrete, meant nothing. Stone, for instance, might either be granite, or it might be a soft sandstone. A brick might be a Staffordshire blue brick, or a Malm pavior, or it might be a place brick. There was almost much difference between those as there was between iron and butter; and the same thing applied to concrete: they might have constructed of bad materials, bad lime, with a large quantity of gravel; instead of being clean and sharp, it might have mud in it, and it would tumble to pieces. It would pulverise completely. Concrete might be made in a proper way, so that it should be as hard as good ordinary stone. He had had a great deal of experience in concrete in the course of making the embankments, and works of that kind. He thought the Metropolitan Board of Works had done more for the introduction of concrete within the last ten or fifteen years than, perhaps, had ever been done before, and that had been done by their paying attention first to the quality of the cement, by which they had got the manufacturers of cement very much improved; and then, by having regard to the mixing of that cement, and the materials with which it was mixed. So far had they carried that, that they were now able to construct concrete in many cases at half the cost of brickwork, with the same strength. Again, in the case of the Embankment, they were enabled to construct the Chelsea Embankment entirely of concrete, with a veneered granite at one-third of the cost of the Victoria Embankment. The Victoria Embankment was granite, backed with brickwork. When they began the Victoria Embankment, they began the Chelsea Embankment; and they got to do what they did with concrete was much more used in buildings; it had been. From a sanitary point of view it was advisable, in his opinion, that the walls of dwellings should always have a damping course. It was also desirable that the ground surface of every dwelling-house, where not flagged over, should be covered with good concrete, less than 6 in. in thickness. He thought the provision in the Bill a very wholesome one.

The witness was cross-examined by Mr. Cecil on behalf of the Commissioners of Sewers, the Corporation of London, with the view of eliciting from him an admission that the management of the sewers and buildings was to remain in the hands of the City authorities, but in reply to the questions he stated, that whilst he could not say that the Surveyor for the Commissioner of Sewers was a very excellent and able officer, and perfectly competent to manage that department, individual opinion was that one body could control over all those things was the best. He thought that as a principle, having reference to particular city, there should be one general management, especially with regard to sewers. If there was a necessity for exercising a general

control, he thought it should apply to all parts of London, under the management and superintendence of one body.

The next class of witnesses examined were several gentlemen who hold the office of District surveyor, under the Building Act, in different parts of the metropolis. The first of these witnesses was Mr. Henry Hart, district surveyor for West Kensington. He said he had been eight years district surveyor, and had had about twenty-one years' experience in the Building Acts in the metropolis. With reference to the Bill before the Committee, he said that practically in the carrying out of his duties under the Acts of Parliament he found that there were several matters which he would desire to see improved. He had considered the clauses in the Bill generally, with a view to see whether they would obviate the objections which he found to arise in daily practice; and his opinion generally was that under their operation the district surveyors would have more control over materials than they now had in certain cases, and that they would have a better tribunal for disposing of their difficulties than the ordinary magistrates. He thought those were the two great points. Having considered generally the provisions of the Bill he thought they would effect improvements in the law which were desirable in the public interest. In cases of offence against the Act, it was the duty of the district surveyor to proceed before the magistrate, and he must conduct the proceedings at his own expense, and take the cost and responsibility of the litigation upon himself. He did not think that was a right position to put a body of gentlemen like the district surveyors in, and he was of opinion that, opposing the administration were cast upon the central authority, the district surveyors would more uniformly administer the provisions of the law without the pressure upon them personally at there now was. He thought it would be desirable to take power to include Willissen in the Act. A large town was springing up there, and there being no Building Act in operation, they were pretty much as they liked. There was no reason why Willissen, which was practically a part of London, should not be included. It was much a part of London as his own district was.

Mr. Frederick William Porter, architect, and district surveyor for Holborn and East Strand; Mr. Henry John Hanson, architect, and district surveyor for North Battersea; and Mr. Alexander Hebbles, architect, and district surveyor for North Marylebone, were also called and examined, and they all confirmed the evidence of Mr. Hart that there was a necessity for an amended Building Act, and that it was desirable to alter the position of the district surveyors, both as to the proceedings for offences under the Building Act, and also as to the payment of the surveyors. Mr. Porter was of opinion that they should be paid by salary instead of by fees as at present, and that the fees should be abolished by the Board.

Mr. George Godwin, district surveyor for South Islington, was also called and examined with reference to his experience in building and sanitary subjects generally. In reply to Mr. Philbrick, the witness said he was the editor of *The Builder*, a publication devoted to the architectural and building professions, and to sanitary and social matters. For many years he had given his attention, and devoted a considerable portion of the columns of the *Builder*, to the discussion of matters arising in the profession, and his special reference to sanitary questions. His special attention he had given both with reference to London and the country, and he had himself written much on the subject. In this position he had frequently had to consider and discuss, and take part in the discussion of, the various views that had been presented from all quarters upon the subject, and he had formed his views after having had the benefit of such discussion. He certainly considered it desirable and necessary, in a Building Act for the metropolis, to have better provisions than at present with regard to sanitary matters. He had looked at the Bill generally, and considered it was an advance in the right direction, but it did not go far enough. He thought the provision for a layer of concrete at the bottom of a building was a very desirable provision.

Mr. Philbrick.—Do you think that would be an oppressive matter to require?

Witness.—No, I think it in many cases absolutely necessary. Many houses are simply put

on the ordinary soil, and very often, indeed, the good soil is taken away and bad stuff put in; and, especially in Liverpool, disease has been traced to have proceeded from exhalations from such soil. I think a layer of concrete would be a very good provision.

Mr. Cawley.—You alluded to Liverpool, where you say great mischief has been done by low ground being filled up with all sorts of rubbish; but do you apply your answer to the entire metropolitan district, or is it only in exceptional cases where you would put the concrete?

Witness.—I apply it to the whole of the metropolitan district; throughout the suburbs hundreds of houses are built on the grass.

To Mr. Philbrick.—They are built on low-lying ground which is made by being a shoot for all kinds of rubbish. Builders very often take the sand out from the site of the house for the mortar, and then fill up the hole with even night soil, and anything that can be obtained. I consider that 8 ft. should be the minimum height of a room for human habitation. Basements below such a level that the level for draining it would be below the level of the crown of the sewer with which the drain would be connected, should not be allowed. Provisions for what the Bill calls a damping course are very necessary, but I object to the title; I should rather consider it a drying course. A damp-proof course is the usual term employed. The provision for basement-rooms with a wooden floor having a sufficient space between the ground and the floor surfaces not less than 6 in. to admit of ventilation by means of air bricks or otherwise, unless the ground is concreted over, is very necessary. It is indeed necessary even when the ground is concreted over. Evils have arisen, even in houses of a very good class, from the want of some such precaution. I certainly think it most desirable that there should be a supervision of building materials. We have in practice no power as regards that now. Such a power is required to provide against a certain class of unscrupulous speculative builders who cover the suburbs with small rotten houses. I think it is very undesirable to allow more than one story in a roof both as a matter of sanitary arrangement and as to the spread of fires. Mostly, rooms in roofs lead to disease to an enormous extent in London; they are usually unventilated, and very low; servants and children are put to sleep there, and consumption is the result, I am sure, in hundreds of cases. They are very hot in summer and very cold in winter, with bad air at both times.

Mr. Walter.—You said you thought that this Bill was a step in the right direction, but that it did not go far enough as to sanitary matters?

Mr. Godwin.—I think there are several blots in the Bill. One is as regards the covering in of an area at the back of a house. The Bill provides that there shall be an area of 150 ft.; the old Act says 100 ft. I think that 150 ft. is a very desirable improvement; but by the wording of the new Bill that area may be covered by a building the whole height of the main building, provided it is lighted by a skylight at the top; the result of which would be the creation of a mass of houses altogether unfit for habitation,—back-to-back houses, with no open area whatever. I think if that point were taken into consideration by the promoters they would see at once the necessity of altering it. There might be a building put up of three or four stories, provided there was a skylight at the top of it. The old Act provided that this area of 100 ft. should be left open altogether, but the exigencies of trade have led the Metropolitan Board and the district surveyors to permit the area on the ground story to be covered over, but not higher. The latter part of the same clause of the new Bill to which I have referred requires altering or explanation, because it says this area of 150 ft. is to be measured from the ceiling of the ground story upwards, which is altogether non-understandable. Inasmuch as the area required is, of course, horizontal, it cannot be measured upwards. Then I object to the exemption of water-closets attached to a house; being permitted to be of wood; that would be a most dangerous exemption. So that while a builder would be prevented from putting in a wooden frame within 4 in. of the outside wall, he might put a wooden box 25 ft. in area against his back door. I would suggest also that buildings not exceeding in area 60 ft. ought not to be of wood, as the Bill would permit.

Mr. Walter.—You would not allow water-closets to be exempted?

Witness.—No; they should be subject to control. No one objects to their being made of brick at present.

Mr. Cawley.—Are there any other points in which you think the Bill might be advantageously amended?

Witness.—I would like to see some further provisions with regard to increasing the width of existing streets; and as to the ventilation of houses.

Mr. Cawley.—With regard to new streets, do you think the arrangements are sufficient?

Witness.—Yes.

Sir J. Hogg.—You approve of the width of 40 ft. for streets?

Witness.—Yes; and I think that the height of buildings should be restricted.

In cross-examination by Mr. Howard, the witness stated that the limit proposed in the Bill as regards the size of manufactories and warehouses was most desirable. He thought it was so very desirable to make legislation uniform and certain that he should be unwilling to introduce exceptions for any particular district. 300,000 cubic feet were quite as much as should be permitted. No doubt it would be advisable to introduce a clause providing for a supply of water for the extinction of fires in all large buildings; but with all those provisions he would not have the cabal contents of the building any larger. They could not trust to those provisions entirely; they failed at the last moment. A good party-wall was worth all the fire-engines in London. If the proprietors of large buildings and manufactories undertook to make such provisions against fire, he did not think a clause might be yielded in their favour.

Mr. Robert Lewis Roumieu, architect, of Lancaster-place, Strand, examined, said he had been in practice nearly forty years, and had built warehouses, private houses, and buildings of all kinds, in the metropolis and elsewhere. Each successive Building Act had put more restrictions on buildings, and the result, from his experience, was that with regard to public safety and general sanitary matters the buildings had improved in proportion to the restrictions, because the restrictions were only on those things that were objectionable. He thought that in the metropolis there was a necessity for some alterations and amendments such as were embodied in the Bill. There was a great necessity with regard to low-class houses more particularly. The proposed regulations would not press unduly hard on a builder who desired to lay out his land advantageously. In his opinion they not only did not go beyond the fair requirements of public safety, but he thought they did not go sufficiently far. The extension of the limit to 300,000 cubic feet was undesirable. He would go back to 216,000 cubic feet. He had had considerable acquaintance with the architecture of Paris, and the limit in height there was 66 ft., which had been the limit since the middle of Louis XIV.'s time. He had watched buildings in Paris, and the restrictions had never prevented the development of Paris in any way. He did not think that hitherto the operation of the Building Act, as administered, had been harsh or unfair upon the public. Although these restrictions were imposed the public submitted to them without delay, and it was only scamping builders who found them oppressive upon them.

Mr. Hyman Henry Collins, architect, and local surveyor to the parish of Christ Church, Newgate-street, also gave strong evidence in favour of the Bill, but he thought with Mr. Godwin that, although the provision extending the areas behind houses to 150 ft. was an admirable provision, the clause was not clear in its wording.

Mr. Francis Fowler, architect, and member of the Metropolitan Board of Works representing Lambeth, and also chairman of the Buildings Act Committee, deposed to having been deputed by the Board, along with Mr. Ebenezer Saunders, to confer with the Institute of British Architects and the district surveyors, in order to ascertain their views, and to get their suggestions for a previous Bill. He also spoke to the practical difficulties which there were in working out the present Act, more especially in consequence of the magistrates and others not being able to agree as to what its real meaning was. The necessity for an amendment in the law had been present to the Board for years. It was very seldom that there was a meeting of the Building Act Committee but some subject was brought up, under the Building Act, which they were unable to deal with in consequence of the

inadequacy of the provisions of the Act. The present Bill had been prepared after first of all having the opinions of the officers of the Board, and then consulting delegates from the building trade, and the Institute of British Architects and district surveyors. He did not say that the Board had adopted all the suggestions, but to the best of their ability they had endeavoured to embody those suggestions which they thought were in the interests of the public.

The committee adjourned.

On the re-assembling of the Committee on Tuesday last, Captain Shaw was again called, and handed in a table showing, first the number of fires that have actually occurred in London since 1840, year by year; and secondly, the population of London, the number of houses, the number of people to each house, the people to each fire, and the houses to each fire. This table showed that while the population of London had increased during the last 34 years from 1,907,036 to 3,342,490, or 75 per cent., and the number of houses from 258,425 to 479,320, or 85 per cent., the number of fires had more than doubled, having increased from 681 to 1,548, or 127 per cent. The total number of fires during the 34 years, was 38,241.

Mr. Thomas Dickson Galpin, of the firm of Cassell, Potter, & Galpin, printers, was next examined. His evidence had special reference to the large new premises which his firm are erecting between the Old Bailey and Farringdon-street. He said that in laying out the new building they had not observed the limit with the vertical divisions, but in that part which was confined to the storage of goods they had. The other portion of the witness's evidence had reference to the limit in the Bill as to the cubical contents of large buildings, and as to whether the premises they were erecting came under the head of warehouses, which he denied they did. It would be impossible to conduct such a business as theirs if they were restricted as to the cubical contents. Unless there was a dispensing power in certain cases inserted in the Bill, he should decidedly object to the Bill so far as the limit of cubical contents was concerned. The size of that portion of the building where they had disregarded the restriction as to cubical contents was 1,200,000 ft. They had been before a magistrate to determine whether their building was a warehouse within the meaning of the present Act, and the magistrate decided it was not a warehouse; and, therefore, when they laid out the premises which they were now erecting, which they supposed would be under the old Act, they concluded that they were not under the provision that would restrict them, and their anxiety now was lest they should be brought under the new Act, and under its restrictions, as they considered they were not under the restrictions of the old Act. The question of cubical contents was a question of the existence of their business. They could not carry on their business if limited in cubical contents.

Sir James Hogg, chairman of the Metropolitan Board of Works, was next examined, and stated that from the time when he was made chairman of the Board he had always stated at the meetings of the Building Acts Committee that modifications and alterations were required in the existing Act. That was from representations made by the legal adviser of the Board, and also from his own experience, before the Building Acts Committee, of the working of the Act. From time to time a great deal of care and consideration had been bestowed upon the Bill, which was in preparation even before he was a member of the Board. The witness next stated that it was entirely a mistake to say that the Association of District Surveyors, who appeared through the British Architects' Institute, were not consulted with regard to the Bill. He next said that in the course of the consideration of the Bill every interest was consulted. Deputations from all classes and everybody affected constantly attended before the Parliamentary Committee, and the present Bill had been founded on all that previous communication and consultation. It was the result of it. He considered that every one of those interests had been fully and amply consulted. With regard to all questions of construction, the architects, builders, and district surveyors had been consulted. The Board had not consulted anybody as to the position of district surveyors to be elected in the future. The Board considered that to be a question of policy which they would decide for themselves without asking for advice from anybody.

The Board had thought it advisable that the district surveyors should report directly to the Board, and that the Board should take action with regard to offences against the Building Act. In order to secure uniformity, and to have the law universally administered in one way throughout the metropolis, it was desirable that the Board should have a general control of the district surveyors in that respect.

Dr. Ross, medical officer of health to the St. Giles's Board of Works, gave evidence in favour of the Bill with regard to its sanitary provisions and the height of rooms. His district was a very crowded one, and if they could get 150 superficial feet instead of 100 feet under the old Act, it would be a great improvement. He was strongly in favour of the provision for covering over the surface of the ground occupied by a building with a layer of concrete 6 in. thick. Unless that was done the health of London could not be very much improved. In reference to ventilation, the witness said that he did not quite understand the clause on the 71st page, the 6th schedule, the first rule in which said that "unless in any case the Board otherwise allow, every new building, being in whole or in part a dwelling-house, except where all the rooms therein above the ground story can be lighted and ventilated directly from a street or public place, or from ground adjoining and appropriated to the building, or to it in common with others, or by a skylight or otherwise from above." He did not understand the amount of space that was required there; it might not be larger than that table; it might be surrounded by houses; and if there was as much space as that they did not require the 150 superficial feet at the back or side.

Mr. Philbrick.—It might be a small space covered with a skylight?

Witness.—Yes.

Mr. Philbrick.—That is a defect in the Bill, which was pointed out by Mr. George Godwin, and which we immediately saw and recognised, and that must be altered, so as to secure the 150 ft.; this correction being made would that satisfy you?

Witness.—Yes; there should be a sufficient space in front, then the Bill would be a great improvement in that respect.

Dr. William Hardwicke, medical officer of health for Paddington, gave similar favourable evidence as to the sanitary provisions of the Bill.

This closed the case on behalf of the promoters.

Mr. Rodwell then addressed the Committee on behalf of the railway companies; after which The Chairman stated that the view of the Committee was that it was not desirable that the general provisions of the Bill should apply to railway arches, further than that they should be enclosed by non-inflammable materials, where it was necessary that they should be enclosed; and where there were any railway arches which were used as habitations the same rule should apply to them as would apply to other dwellings.

On Wednesday, Mr. Garth addressed the Committee at considerable length, on behalf of Lincoln's-inn, and the Inner and Middle Temple, being exempted from the operations of the Act.

Mr. Corrie, the City Remembrancer, next made a statement on behalf of the Corporation of London in favour of the City not being included in the Act, and afterwards tendered himself for examination, when, in answer to questions from the Committee, he gave his reasons why he considered the City ought not to be brought under the provisions of the Bill. In cross-examination by Mr. Philbrick, he admitted that many improvements within the City boundaries had been effected by the Metropolitan Board of Works, including the construction of Queen Victoria-street.

Mr. Round next addressed the Committee on behalf of several wholesale traders, and was followed by Mr. Mackerrall on behalf of certain large manufacturers, and also in support of the petition of the district surveyors. His address occupied the remainder of the sitting up to four o'clock, when the Committee further adjourned to Thursday.

A New Mansion is to be erected at Lychett Heath, in the county of Dorset, for the Right Hon. Lord Eustace Cecil, M.P., from the designs of Mr. David Brandon. The tender of Messrs. Simpson & Son, of Baker-street, Portman-square, has been accepted at 9,780l.

THE PROPOSED DECORATION OF ST. PAUL'S.

The objections we were forced most reluctantly to bring forward as against Mr. Burgess's scheme have been endorsed and strengthened on all sides since we wrote; in fact, in the face of the universal condemnation expressed we cannot believe it possible that will be proceeded with. Messrs. G. Cavenor, Bentinck, James Fergusson, Edmund Oldiel and T. Gambier Parry, members of the "Fine Arts Committee," appointed by the Executive Committee, and forming, exclusively of the Dean, two-thirds of that committee, have forwarded a formal protest against accepting the proposed designs. In the course of it they say:—

"Even if we could disregard the memory of Wren as the rules of style, and treat St. Paul's merely as a site for the experiments of the nineteenth century, Mr. Burgess's design would be open to the following general objections:—

(1) That the quantity of colour introduced would necessarily obstruct or absorb light in an interior almost too dark.

(2) That the variety of decorative materials, the crudeness and violence of many of the tints, and the want of subordination to one harmonious tone, would produce an effect at once confused and gaudy.

(3) That the removal of the surface from the blocks of stone of which St. Paul's is built, for the purpose of veneering the whole lower part with marble, and presenting to the eye joints of the veneers in lieu of joints of the stone, is like all false constructions, false also in taste, which the use of the marble, when used in its natural state, will lower its value for all special decorative purposes, and impair the effect of the numerous sculptured monuments and render the carved woodwork of Gibbons quite out of keeping.

(4) That the gentlemen selected by Mr. Burgess to execute his figure-subjects, and named to the Fine Arts Committee, instead of being the most eminent painters and sculptors of the day, or those who have most studied the Italian masters of the sixteenth century, artists comparatively unknown, and chiefly practised Gothic decoration.

(5) That to spend the money economised in the remuneration of artists upon a lavish profusion of marble and solid gilding would be a preference of material of design, which appears to be essentially vulgar; and carried out on so large a scale in so important a building would tend to the debasement of art, the corruption of public taste, and the discredit of the country.

As a practical conclusion, we submit that if, instead of the 400,000l. required for Mr. Burgess's entire scheme (being about ten times the amount now in hand) a question of sum were gradually laid out on a temperate, rational and somewhat grave system of decoration, study specially the expression of harmony between structure and ornament, more respect might be shown to Christopher Wren, more light preserved in the building, and any errors committed in execution would be at once less offensive and less costly to correct."

Professor Donaldson suggests as the only way out of the difficulty an international competition in the shape of the offer of premiums to architects, painters, and sculptors of Europe for the best scheme for the decoration of St. Paul's Cathedral. The Dean and Chapter should ensure the public that the Cathedral is to be veneered.

ARCHITECTURAL ASSOCIATION.

An ordinary general meeting of the members was held last Friday evening, the 12th inst., Mr. E. J. Tait (President) in the chair.

Mr. Bowes A. Pease (secretary) said that a list now been made out of the officers of the Association nominated to serve during the ensuing year, the election of whom would take place at the next meeting.

The President asked if there were any more names to be added than had been received; if so, would they nominate them at the close of the meeting? He regretted much the absence that evening of Mr. E. C. Penrose, who was unavoidably prevented from reading his paper on "The Influence of the Italian Cinque Cento and the Early French Renaissance"; but Mr. Penrose was present at their next meeting, the closing night of the season. Mr. R. Herbert Carpenter, too, was to read a paper, but that gentleman had consented to postpone it till the autumn.

Some short discussion then ensued upon the forthcoming Conference of Architects, the principal purpose being the question of the education of the architect. The President stated that as their representative would pay particular attention to when raised at Conference.

South Kensington Museum.—Lord Sausse, in reply to a question put on behalf of Mr. Mundella, that arrangements had been made for bringing the various departments at the South Kensington Museum more directly under the control of the Education Department at Whitehall. They were now virtually completed. The Secretary of the Education Department at Whitehall would also be secretary and have control at South Kensington, and not Sir F. Sandford there would be an assistant secretary, Mr. M'Leod. Besides these, the directorship of the Museum had been offered and accepted by Mr. Cunliffe Owen, and Mr. Donnelly and Mr. Redgrave had been offered directorships of the Science and Art Department.

PUBLIC LIGHTS, AND THEIR IMPROVEMENT.

It has often enough struck us, as it must have done many others, as a circumstance not a little singular, that little or no effort has as yet, in spite of all our science and art appliances, been made to improve the lighting up of London streets by night. In so uncertain a climate as we have, with such a certain length of wintry dullness and darkness, and with so much of darkness visible, and the consequent necessity of turning half the night into day, nearly or quite all the year round, it does seem a something wonderful that a little has not been done in the way of "lighting up" artistically. We do not here allude to special occasions, as Queen's birth-day illuminations and the like, but at all times, and certainly in all the great public thoroughfares, and public buildings, where opportunities are plenty for any amount of artistic illumination. Hitherto accident has, in all appearance, regulated such matters; a lamp, or a congeries of lights, is placed where it would seem to be most conspicuous, or where a vacant space offered on which to fix it, but that is all. The subject may serve to show how a good thing may come to be neglected, and what ample means there are by and through which to develop art and architecture, and its subsidiary arts, if they be but adequately attended to; and if not attended to, how much is lost.

Our thoughts have been drifting into this subject through the question that has arisen in the House of Commons as to the retention or not of the beacon light in the clock-tower of the House of Parliament; placed there, as most will collect, for the purpose of informing the outside public as to whether the House is or is not sitting. The mode in which this light has been made to show itself evidences, as well as anything can do, how difficult a thing it is to work in an artistic way in these days without "prejudice" of some sort, or a something to go by. The subject comes under the general head of the artificial lighting of a great city, and is worth a few thoughts, and, may be, a hint or two.

The lighting up of the dark and narrow ways of the London of the last century, to go no further back, would surprise the present generation, could they but get a glimpse of it. The sw-and-far-between oil-lamp, with but the smallest of flames, affording but just light enough to render the darkness visible, would awe a modern Londoner out of his sober senses. But it must at times have been a curious sight to see, nevertheless, and must have had its artistic advantages, for it necessitated, every now and then, and here and there, the carrying of "links," with long streamers of flame, and a bundance of smoke; so that what was wanting in steadiness of light was sometimes made up by very intensity of illumination when you did get it. But those times are of the past, not to return, and gas-lighting has put out, perhaps forever, the oil flame. But rude as was the oil-light, and the lamp in which it showed itself; it was probably not more rude in comparison to the present system of gas-lighting, than that is to what will one day be; for nothing can well be more wasteful, and certainly artistic, than the present mode of utilising gas, and burning gas, and nothing, at least as far as the public streets are concerned, more ungainly than the all lamp-posts which support the burners.

We are often told that we are a nation of hop-keepers; and it is certain that our London streets are all but void of attraction without the life and brightness which shops always give; and these shops are never so attractive as when lighted up at night time. It may be looked on as a curious thing, considering how much there is of science and art going on all around us, that no better or artistic way has been as yet devised than that usually seen of lighting up a shop, and making the window show more attractive. It evidences how much there is yet to be done in the way of improving on common things—so be seen everywhere. Sometimes the smart goods are even hidden and quite put out by the very light which ought to illuminate them and add to their attractiveness, and the fault is not that you cannot see the goods for want of light, but that the number of gas-jets is so great as to fairly hide and put out the very objects they are meant to show. All shadow is absent; there is no relief or contrast anywhere to be seen, and the objects exhibited lose in proportion. And what is perhaps as bad, the arrangement, when there is any, of the gas-jets and burners, is so irregular,

and void of taste and design, that the obtrusive lights themselves, and their supports, fail to give the eye pleasure, bright as they are, and brilliantly pure as the gas-flame may be. We may usefully note here, as a pleasing exception to this rule, the mode, visible here and there, of surrounding the ring of gas-jets by a congeries of rings or circles of cut-glass drops, which serve to soften the light, and in themselves form a pretty object. There is one in a shop on the south side of the Strand happily arranged, and worth note.

If there be any who think this subject of lighting the shops and public ways of London a matter but of small moment, they should contrast the appearance of such a thoroughfare as Regent-street, while the highly-lighted shops are open, with the same street when they are closed, and the dull shutters hide their contents, and when the whole length of the street is dependent on the street-lamps for its illumination. The contrast is not a little striking, and exemplifies how night may be turned into day, or the day made to continue. Now, considering that this Regent-street is the best of our great thoroughfares, it does seem strange that a something has not before this been attempted to mend matters. One good idea, the result of accident, may be met with here and there; it is that of closing the glass-fronted shop at night with a light iron grating, instead of close shutters, and by leaving in it a bright light, so that during the night, after the shops are closed, and the street is in darkness, the interiors of these semi-lighted shops are visible, and continue to throw light into the street and on to the pavement. This has been done, as we say, here and there, for protection sake, and for safety of valuable property, and without thought of anything else; but it does more, for it helps to drive away the foggy chilliness of the dimly-lighted, though always fashionable, highway. It seems a pity not to extend this plan of lighting a shop-filled street, useful in so many ways, both as a matter of police and consequent safety, and as a pleasant means of illumination. Indeed, may we not go yet further with this idea, and say that, with but a little judicious contrivance, these always-lighted shops might be made to partly, if not wholly, supersede the ordinary and insufficient parish lamps; and while on the subject of the street illumination by the parish lamps, we may mention that there is one ingenious contrivance, though perhaps a somewhat rough one, which is in use in some of the railway goods stations, coal-ging depôts, &c., which is not a little effective.

It consists, though the details of it differ here and there, mainly of an inverted cone, having a powerful reflecting surface. Under, or at the base of this circle of gas jets, or sometimes a large argand burner, is placed; the whole being, in the better kind of lamp, enclosed in glass, so as to screen the light from the action of the wind, and from currents of air. It affords a very powerful and effective light, and no part of it, as in the common street-lamp, is lost. The light is all of it effective, and is thrown on the ground in a large circle. There are, it is true, one or two details, which, we think, admit of improvement in the working it out for purposes of street illumination, but in the main principle it is thoroughly good, and for the intersection of streets and crossings, it could hardly be better. We need but to mention the ordinary street-lamp; both the light itself, the glass shade in which it flickers away, and the stock-in-trade post of cast iron on which it is mounted, are all bad enough. To improve on them in any way, seems to be all but hopeless, so we must leave them to fate for the present at least, and only suggest this addition to their feeble illuminating power and non-effectiveness. We have made some careful notes on this subject, and feel convinced that the open shop, like the watchmaker's in Regent-street, with a lamp burning in it all night, together with the cone-light, as we will venture to call it, in the middle of the street, not on the pavement, and at the intersection of the crossings, would be an immense improvement over the present system.

We may now usefully come to the lighting up more or less of towers, and clock-faces, like that of the clock-tower of the Houses of Parliament. Nothing, perhaps, does more to brighten the dull length of a London night than the occasional sight of an illuminated clock, or other light above the ordinary level of the house-tops. It may not be quite so good and cheering to the Londoner by night as the lighthouse at sea is to the weather-beaten sailor, but it is hardly less so to very

many London wanderers. It was a good thought of Sir C. Barry to illuminate the large clock-face of his clock-tower, but it does seem a curious mode of doing things, on the part of the powers that be, to cause this clock-face to be lighted up as it is at dusk, winter and summer, all the year round, but always extinguished at midnight! Why should this be? The most conspicuous, and the biggest clock in London, and the one true, as we are assured, to the second, and regulated through electric agency, by the un-failing clock-work of the Greenwich Observatory, might, one would have thought, be always visible, night as well as day, and during the whole of the night, from sunset to sunrise. The additional cost, comparatively slight, should not as we take it be allowed to hinder it, or to limit the public convenience. It is a subject well worth the attention of the public authorities, as now constituted, and who profess so earnestly to care for these things. We may here perhaps usefully remind the said authorities that the present mode of illuminating this great clock-face is exceedingly wasteful, and that with a little more thought and ingenuity in the mode of burning the gas, very much might be saved, probably quite enough to pay for the increased number of hours the gas would burn if continued the night through. We commend it to the attention of Government most earnestly.

Another useful and friendly light we desire to plead for, as it has been threatened with destruction and extinction, if it has not already been condemned. We allude, of course, to the light on the top of this tower, always alight while the House is sitting. It is certainly about the most ungainly and awkward contrivance one could well come across. An ugly and unsightly shelf or bracket cutting across the lantern of the tower, and disfiguring as much as is well possible the architecture of it. On this shelf, in a semi-round glass lantern, the light,—a very good and effective one, by the way,—is placed, and certainly does shine and glisten in all directions in which it can be seen. We say, in all directions in which it can be seen; for, being placed on the west side of the tower, it can be seen only on three sides, and very imperfectly even from the north and south, the tower wholly hiding it on the east. It is most surely objectionable enough as at present arranged, every way; but what more easy than to put it right? By placing the light in the centre of the lantern of the tower it would be visible on all sides alike,—north, south, east, and west,—and would show itself through the tracery window openings of the lantern in a singularly effective way, as we take it. No unsightly external shelf would be visible, and nothing seen of the light-giving apparatus, the light only shining through the openings of the pierced lantern, thus visible on every side. It is at least worth a trial. Anyhow the light should be kept, and it should be arranged to as not to disfigure the tower.

ENGLISH MEDIEVAL FOLIAGE.

MR. J. K. COLLING, who has so successfully made architectural foliage ornament a special study, has published the second, third, and fourth parts, which complete his work on Medieval foliage,* the first portion of which we briefly noticed at the time of its publication. In congratulating the author on the completion of a very useful and well-got-up work, we may take the opportunity of commenting upon it a little more in detail.

The author includes in his work the art-foliage of England from the twelfth to the fifteenth century; his object being to give a complete illustration of the various types of "the flora of English architecture," in whatever form of growth it is to be found,—whether in the shape of capitals, of crockets, of moulding decoration, or of flat-coloured ornament,—and to afford the means of tracing the gradual development of one type from that of the preceding period. The four parts into which the book is divided do not, however, follow each other chronologically, but each starts from the same date and includes the whole of the periods treated of; nor is there any special system of grouping the examples according to their nature and subject. This arrangement renders each "part" of the book of value in itself, independently of the other parts, and this is, we suppose, what was intended; but for those who procure the whole work a consecutive

* Examples of English Medieval Foliage, taken from Buildings of the Twelfth to the Fifteenth Century. By James K. Colling. London: published by the author, 150, Hampstead-road, N. W., and by B. T. Batford.

arrangement would have been more useful, and would have appeared more orderly and symmetrical. The fourth part contains the author's historical and critical analysis of the subject. He points out in the introduction how much of the classic forms of foliage is to be traced in early Mediæval work; indeed, it may be said that the finest specimens of foliage of the "Transitional" period are those which most recall the foliated ornament of the Greeks, frequently in their style and feeling, sometimes even in form and outline. The distinction between the Greek and Roman capital foliage, the "acanthus-leaf," as it has been commonly termed, is adverted to more particularly than by other writers on the subject; Mr. Colling being desirous to emphasise the distinction that the Greeks employed sharp and pointed leaves, and the Romans a leaf with more rounded lobes, and more multiform in composition, and little resembling any natural form of acanthus-leaf. The distinction is very marked in connexion with one or two early examples of Greek foliage referred to by the author, but not so much so in regard to the best known and most developed Corinthian capitals; the sharp zigzag outlines of the early leaf has all but disappeared from these. Still, the distinction between the Greek and Roman leaf is important, in regard to their construction; the Roman leaf being for the most part divided so far down and with such a development of the separate stalk from which each leaflet springs, as to convey the idea of an arbitrary arrangement instead of that spirit and unity, as of an actual growth, which distinguishes Greek as much as early Gothic foliage.

With the successive developments of Gothic foliage every one who has studied the subject at all is in a general way familiar; it is the speciality of the present work that it combines a succinct analysis of these developments with illustrations of the finest specimens of each. In regard to the style generally known as "Early English," Mr. Colling remarks that this should be looked on as the first combination of the Saxon and Norman spirit in art-workmanship; and quotes a significant sentence from the "Historical Essays" of Mr. Freeman (himself an earnest student of English architecture), to the effect that "the silent, gradual fusing of 'Saxon and Norman' is everywhere synchronous, just because it was so silent and gradual. But we see it plainly enough in its results. It was the great work of the twelfth century." And, without refining too much on such relations between history and architecture, we may certainly admit the presence in the ornament of this period of a peculiar union of simple grace with strength and breadth of handling, which it is scarcely going out of the way to recognise as the result of the simpler and homelier spirit of the Saxon tempering the native sternness and massive spirit of the Norman art.

Mr. Colling devotes a paragraph to the defence of the more realistic spirit of foliage ornament which showed itself in the Decorated period; a defence which one may reasonably expect from an author who has studied the application of natural foliage forms to architectural ornament so fully. He says that:—

"Although this is a much closer rendering of natural form than at any other period, yet, at the same time, it will be found to give a conventional rendering of a much more subtle kind than is commonly met with in Mediæval work, and therefore of a higher class of art-workmanship. Even allowing, for the sake of argument, that it is a too literal rendering of nature, still, it forms in that case a much better point of departure for modern study and imitation. Our increased skill and knowledge ought necessarily to cause modern work to go closer to nature, and yet be more truly architectural in fitness and beauty than in any other previous style. However beautiful the conventional foliage of former times may be, it is not enough that we content ourselves by slavishly copying it; but if we desire to advance the cause of higher and truer art, we should determine to evolve a style of work essentially our own, which, I conceive, must be extremely close to nature, and yet be something better, and far higher than a mere imitation of nature on the one hand, or of Mediæval art on the other."

With the last portion of these remarks we entirely concur; but we think the verdict now almost universally passed against the foliage of the Decorated period, as compared with the earlier work, is the right one, and for this reason,—architecture, in drawing from nature, imitates principles rather than forms (which Mr. Colling by implication admits in the above passage), and the carvers of the Decorated period had lost sight of that principle of growth which is the characteristic of all natural foliage,—growth from a main stem; they had taken the accidents of foliage rather than its essence; they had ceased to represent the ornament in the bells of their capitals (for

instance) as something naturally springing from the architectural basis, as a growth essential to the completion of the whole, and had given it the look rather of an applied ornament; not any necessary part of the work, but a stone garland added to give richness to it. They neglected, too, the principle of conventionalism to a great extent, and of adapting the ornament to the situations it was to fill; and in this respect the decoration of the "Perpendicular" period is really better and more truly architectural in principle, adapting, as it does, forms based upon the growth of plants to the square symmetrical spaces which the architectural design provides, and which afford the proper field for the introduction of ornament. The example of "perpendicular" ornament given by Mr. Colling at fig. 60 (from All Saints', Evesham), though a small and simple specimen, represents admirably all the true characteristics of architectural foliated ornament; and, we may add, represents the same principle of working which our author has himself applied to several successfully ornamented buildings.

The chapter on "Coloured Decoration" is carried to some length; the use of foliage in this branch of Gothic ornament has received less attention than has been given to carved ornament; but it must be said that the field is much more restricted. A good deal of the Mediæval coloured ornament has perished, or is yet to be disintegrated from under subsequent paintings and whitewash of the churchwarden era; and what there is known is far inferior in value as artistic work to the Gothic stone carving. This, of course, it would be treason to say to the enthusiastic and unreasoning Mediævalist, who, however, is not so prevalent a nuisance now as a little while since. The suggestion that the Mediæval coloured decoration "progressed and was developed along with the study of heraldry," may be accepted as probable; "indeed, the whole architecture of our country is, without doubt, strongly imbued with the heraldic feeling of the times. It is therefore but natural that we should find the use of colours assimilative with their use in heraldry." In particular, Mr. Colling points out, not only the similarity in the dispositions of colours, to the rules observed respecting "tinctures" and "metals" in heraldry, but also the system so frequently used, of interchanging the two principal colours in a scheme of decoration, recalling what is called *counterchange* in heraldry. We trust we may be pardoned for suggesting that the same influence may also possibly account for the rawness and crudity of the colours, and the conventional and unrefined methods of arranging them, which characterise the coloured decoration of Mediæval architecture so largely. After enumerating a few simple rules which appear to have guided the Mediæval colourist, and one or two of which (for instance, the use of positive colours only in small quantities, and the forming of diapers in different tones of the same colour), pervade every school of coloured decoration that has produced any thing at all tolerable, the author adds,—"These rules, simple as they appear to be, combined with a limited scale of colour, was apparently all that was needed for the decoration of the most elaborate works."

Putting aside the grammar and punctuation of the above sentence, which we hope a second edition may give a speedy opportunity of amending (along with other similar lapses here and there), we may say that unfortunately it was the case that these rules *were* all that was thought necessary in decorating the largest buildings; and a very coarse and barbaric result was obtained from them in too many cases. Indeed, the rule as to not employing primary colour in large quantities was not much observed; and the crudities of red, yellow, and blue, of which remains have been found here and there, have been wickedly made use of by sundry painting restorers, as an excuse for bedizenning the walls of our cathedrals and churches afresh in the same style, as has been recently done, for instance, in what is termed the "restoration" of the beautiful little late mediæval chapel adjoining the south choir aisle of Exeter. Mr. Colling gives his colour specimens in shaded drawings only, each character of shading standing for a colour. We recommend young students to colour these designs according to the notation, and then try a second copy and see if they cannot invent more delicate and harmonious combinations themselves.

It is not necessary to the glory of the English Gothic style, however, to get up any undue praise for its less artistic details, such as those

of colour. Studied in its masonic details, as those which are here illustrated, it may, of course, be longed for beauty and fitness combined with spirit. If there is less of Mr. Ruskin's "wolfish" element here than in French architecture, there is more of grace and refinement, not excluding largeness and breadth of style. The "semi-Norman" capitals in Part II., Canterbury and from Oakham Castle, especially the latter, are beautiful examples of the perfection, to our thinking, of the application of folio types to architectural decoration; large and bold in their outline and composition, finished elegant in their smaller details. We can indicate particular plates very readily, for a copy furnished to us wants the numbers, though we presume it is bound in the right order of plates. The well-known rich Decorated capital of Southwell receives good illustration in Part II.; and in the fine drawing of the imposing chapter-house doorway given in Part II. In the same volume the early capitals of Oxford Cathedral, exhibiting that peculiar form of the "Early English" foliage before it developed into its characteristic freedom, and the stems are still straight and stiff in design, are very suggestive; and we should in attention to the arch decoration from the by Abbot Coates at Tewkesbury, where a six leaf is repeated in alternate positions, an excellent specimen of symmetry and variety combined, on a principle which might be equally well applied to some of the forms of repeated ornament in use in Classic buildings.

In the same volume, the I.H.S. monogram from East Harling, Norfolk, and the exquisite specimens of running ornament from the pedestals in the niches of Henry VII.'s Chapel are details of which it is always pleasant to be reminded. In the fourth volume, are, among others, some beautiful small bits, capitals from Lincoln, spandrels from Bishop Canning's shrine at Hereford, a grand bit of running scroll ornament from the founder's tomb at Tintern, and wall diapers from Lincoln, Winchester, and Beverley. In regard to the execution of the drawings, it is scarcely necessary to say that it is of a high order, fulfils all the purposes of such illustrations. We shall have preferred to see such a system of shading and touching carried out as would have distinguished stone from wood by an obvious difference of texture; as there is not the least difference, in the handling of the drawing, between some of the stone carving represented on one page and similar designs in wood on the next. We are inclined to think the stonework would have been better represented by fewer touches and less surface shading, and this would have rendered the distinction of texture we should have desired for the wood-work. This, however, is a minor matter, and we can cordially wish, and all promise, success to a book which exhibits much work that every student of architecture must admire and value, so well, and at moderate expense.

EGYPTIAN ARTS.

PROFESSOR OWEN, in a recent paper "On the Ethnology of Egypt," said that the subject of his paper did not refer so much to the crania of the early natives of Egypt, but to the sculptural which were either of half natural size or of whole natural size. All of these showed traces of conventionalism, but proved that portrait sculpture in Egypt existed 6,000 years ago, and that surviving relatives were then in the habit of preserving the images of those who had gone before. He described the family sepulchres which had been discovered by Mariette at Memphis, and which comprised in the first place a small temple of which the walls were usually adorned with *freschi*. The coffins of the originally interred dead had disappeared; there was usually a perforation in the wall of these tombs, through which the hand and arm might be passed. This hole was used, as shown by one of the *freschi*, to incense the corpse through, the censer being ignited by a blow pipe. Evidence thus existed of reverence to the dead and of religious ceremonial amongst the ancient Egyptians. Such individuals must have died in the reign of the immediate predecessors of Cheops, who was the first king of the fourth dynasty, about B.C. 4,449. He did not consider that Egypt owed its civilisation to a low race, but to a race equal in development to those of the present day. He described their civilisation and skill in artistic ornamentation. Some

of their sculptures were even carved in the hardest mineral (dionite) found in Egypt. Each city had its patron saint, and the emblem of the Supreme. A winged circle was more beautiful than the anthropomorphised figures of the later Christian art, which often represented the Father as a venerable man with a grey beard. In conclusion, Professor Owen referred to the fact that the fertile agricultural soil of Egypt enabled the human mind to improve itself by the art of war and religion. The arts of the goldsmith and jeweller have not advanced during the 3,571 years which have passed since the Egyptian business left her jewels, which were shown at the Paris Exhibition.

CONCRETE LIGHTHOUSE AT JERSEY.

For many years it has been proposed to erect a lighthouse on the Corbiere Rock, on the south-western part of island of Jersey. Eighteen months ago the States of Jersey decided to erect one, and instructed Sir John Coode, under whom the new harbour works at Jersey are being carried out, to superintend the work. The lighthouse has been successfully completed and erected. It stands on an elevated rock about 30 yards from the mainland, and is surrounded on all sides by vast rocky beds, which extend a considerable distance seaward. The building is entirely of Portland cement concrete blocks, and is the first of the kind which has been so constructed. The top of the rock on which the lighthouse stands is 109 ft. above the mean level of the sea, and the light itself 135 ft. 6 in. The lantern is 10 ft. in diameter, manufactured by Messrs. Chance, Brothers, of Birmingham, the illuminating apparatus being dioptric of the second order, and the light visible at a distance of seventeen miles. A large fog bell is connected with the light.

THE METROPOLITAN INNER CIRCLE COMPLETION RAILWAY BILL.

The Metropolitan Inner Circle Completion and Eastern Extension Railway Bill, which involves the construction of new streets in the City, towards the cost of which the Metropolitan Board of Works and the Corporation have agreed to contribute 500,000, was lately sanctioned by the Committee of the House of Commons, after having been in the hands of the Committee for several days, during which the opposition to it was based chiefly on the ground that the promoters would not be able to raise the large capital required to carry out the undertaking, amounting to 3,000,000.

When the inquiry was resumed before the Committee, Sir James Hogg, the chairman of the Metropolitan Board of Works, gave evidence to the desirability of the scheme in consequence of the relief it would afford the street traffic of the City. He added, however, that though the Metropolitan Board of Works and the Commissioners of Sewers, on behalf of the Corporation, had jointly agreed to contribute 500,000 towards carrying out the street portion of the undertaking, not a farthing of that amount would be paid until the proposed new streets were completed, and handed over to the Corporation.

Sir Edward Watkin, M.P., chairman of the Metropolitan Railway Company, who are also the promoters of the Aldgate and Cannon-street Railway, was the next witness called by Serjeant Stowell, on behalf of the promoters, but he said much surprise and considerable sensation in the Committee-room by stating, in answer to the learned counsel, that there was no ground whatever for the statement that he and his directors had been induced to abandon the street portion of their own Bill, and to become supporters of the one before the Committee. Notwithstanding that the Metropolitan Board of Works were of opinion that the Inner Circle Completion and Eastern Extension Bill then before the Committee was the most likely for completing the Inner Circle, he (Sir Edward Watkin) and his directors still believed that their own Bill was the best, and it would be a great error to suppose that in not opposing they were supporting the Bill then before the Committee.

Evidence was given on behalf of the Great Northern Company, and also the North London Railway Company, against the Bill, to the effect that by the way, tramway, and omnibuses, the eastern route was amply provided for, and that there was no necessity whatever, for the proposed

Eastern Extension line. After consulting, the Committee stated that they were not inclined to sanction the Eastern Extension, and left it to the promoters to decide whether they would proceed with the part of the Bill for the completion of the Inner Circle only, and an adjournment took place.

When the Committee re-assembled, it was stated on behalf of the promoters that they were prepared to withdraw that part of the Bill for the Eastern Extension line, and the Committee then declared the preamble of the Bill proved, so far as the completion of the Inner Circle. The clauses as to the construction of the new streets in the City, and other matters were gone through, and settled.

It is supposed that in consequence of the decision arrived at under which the Eastern Extension project is abandoned, the Metropolitan Board of Works and the Corporation will rescind the resolution to contribute the 500,000 towards the construction of the new streets, and it is not improbable that in that event the Bill will be withdrawn before it reaches the House of Lords. Should this be so, the City improvements forming a part of the undertaking will be imperilled.

NEW PUBLIC HALLS FOR GLASGOW.

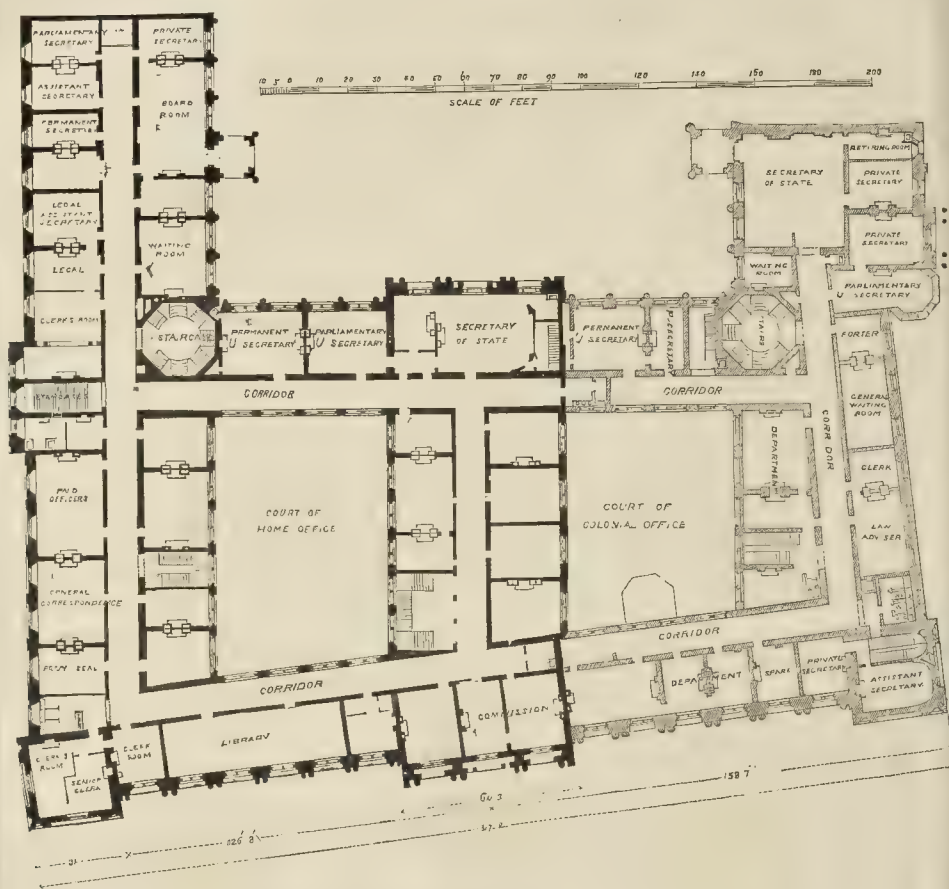
The fact that the existing Glasgow City Hall affords but very limited accommodation for the Glasgow public on important occasions, and that it is situate in a very inconvenient locality, so far as its approaches are concerned, led to the formation of a company for building new public halls. The Dean of Guild Court (the local authority in such matters), approved of the plans of the new undertaking. The principal front to Granville-street is nearly 200 ft. long, whilst to Berkeley-street and Kent-road the length is fully 160 ft. The great hall occupies the east side of the entire block, and will, independently of the north gallery, be 163 ft. long. Its width is 75 ft., and height of ceiling 56 ft., being 22 ft. higher and a quarter wider than the City Hall, with a floor space on the area nearly one-half greater; and its height of ceiling will give upwards of one-third more cubic contents of air to each of the audience than is available in the existing building. This hall has also the great advantage of being *on* the street level, in which respect it will contrast favourably with many of the other public halls in the city. It is entered from Granville-street by a triple door leading through a large octagonal and roof-lighted hall. Whilst the great hall occupies the eastern portion of the site, the front half contains two large halls, 75 ft. by 40 ft., one on each side of the octagonal hall, which are all *en suite* with the great hall. In the front of the ground-floor are various waiting-rooms, with refreshment and service rooms, &c.; and above these a number of smaller rooms, suitable for society meetings. The whole upper portion of the front building consists of two spacious halls, 70 ft. by 54 ft., with a complete suite of retiring and other rooms. The basement is occupied by waiting, refreshment, and retiring rooms for male and female *artistes* at concerts, &c., besides kitchens, hall-keeper's residence, &c. The new structure will be in the Greek style of architecture, the principal front having an Ionic colonnade. It is not intended to lavish massive ornamentation on the exterior of the building, which will be erected with an eye to quiet, harmonious effect. The total cost of the buildings, independent of the site, &c., will be about 56,000. The work of construction will be proceeded with immediately. The contractor for the masonry, &c., is Mr. James Watson, of Glasgow; and for the joinery and carpenter work, Mr. George Gilroy, of Edinburgh. Mr. Campbell Douglas, of Glasgow, is the architect.

The Artists' Rifle Corps.—An address has been circulated by officers of the Artists' Rifle Corps, asking the help of those who are connected with art in its various branches, and who, therefore, it may be hoped, take some interest in the well-doing of the Corps which represents them. Those who are themselves able to join the ranks, are earnestly invited to enrol themselves; and those whom any cause absolutely prevents from joining, are begged to bring the matter before such of their acquaintances as are in a position to do so. The Major commanding is Mr. Fredk. Leighton, R.A. The architects amongst the officers who sign the appeal are Messrs. Edis, Lacy Ridge, J. H. Christian, and Downs Puice.

THE NEW HOME AND COLONIAL OFFICE WHITEHALL.

The new Home and Colonial Offices, now nearly completed, from the design of Sir G. Gilbert Scott, and of which we give a view in this number, continue the quadrangle of which the Foreign Offices formed the western portion. The main front, towards Parliament-street, is entirely symmetrical in treatment, consisting of a slightly advanced centre and two wings, with advanced blocks again at the angles, which were intended to be emphasised as towers, by the carrying up of the roofs in a lantern form. These were countermanded we believe, among other things, on a day when the late First Commissioner of Works made a sudden descent upon the architect and his work, and sheared 100,000 worth from the intended outlay on the building. It is understood that these crowning features are, however, now to be carried out. It is to be hoped so, for the east front as it is looks sadly monotonous and heavy in outline. The general style of the Foreign Offices is continued in the new work (the internal quadrangle showing nearly the same design carried round). The ground-floor design consists in its main features of a series of deeply-recessed round arches with highly-decorated piers, a window filling part of each recess, with segmental head following the curve of the large arch. The first-floor story has an "order" of coupled engaged columns its whole height, with circular-arched windows with solid spandrels between, and a single shaft in the centre of the window. The second-floor design is nearly similar, but with single engaged columns, two shafts in the window, and an "attic" light in the arch above. The design is continued in a very similar manner along the Downing-street front, but with plainer treatment; single columns on the first-floor story, and plain piers in the ground-floor. The treatment of the first-floor story, which is repeated as the best and most picturesque portion of the building, which, in regard to general effect, is only as satisfactory as can be expected in a work carried out by an able architect, in a style which he has always deprecated, and with which he has no sympathy. The south front (to Charles-street) is of much simpler and plainer design than the others; the attached "orders" are omitted, and the effect is obtained by the treatment and decoration of the pedimented windows merely. A little more variation in the spacing and grouping of the windows would have enlivened the building more, though perhaps at the loss of the character for stateliness which probably was chiefly aimed at.

If the general design scarcely excites enthusiasm, the detailed ornament goes far to redeem this, and is good in every way, both as regards design and execution. The broad band of flowing acanthus foliage which divides the ground and first-floors has been carefully designed and studied, and is a very rich and refined piece of work. The panels below the ground-floor windows are fitted with coloured marble, grey centre and red side panels, and *vice versa*, alternately. The figures which were originally intended to crown the balustrade at the top of the principal front have been done away with; the architect, finding that there were not funds at his disposal for figures both above and below, wisely determined to forego the upper one, which could have been but little seen, and to retain those originally proposed in the spandrels of the ground-story arches. These figures, in tolerably high relief, have been executed by Mr. Armistead and Mr. Birnie Philip, who have also divided between them the sculpture on the upper story of the inner quadrangle. The figures to the left of the centre, by Mr. Philip, are allegorical personifications which are not quite as clear in their signification as they might be, though perhaps as much so as such figures generally are. The figure in the centre compartment, which we may interpret, perhaps, as Law or Legislation, is the best, and is very spirited and original in conception and attitude. The figures on the right wing, by Mr. Armistead, represent the *five* quarters of the globe; Europe, a figure launching a ship to sail over the globe (which is represented in a somewhat too material and matter-of-fact manner); Asia, a heavy half-nude figure, seated in a kind of indolent stolidity, and backed by an elephant; Africa, a Hotentot figure further helped out by a hippopotamus; America, indicated by a Choctaw Indian and a bison; and Australia, by a very lively young woman, who looks as if she were about to emulate the leaping powers of the kangaroo.



THE NEW COLONIAL AND HOME OFFICES.—Plan of One Pair Floor.

which keeps her company. Asia and Africa strike us as the most successful of these; the former is a figure of considerable character and power. How long legible to the eye of the passer-by, is one of those questions which architects and sculptors who have to work in London smoke can only try to put out of mind as much as possible.

The plan of the offices forms, as we have already indicated, one-half of the quadrangle commenced by the Foreign Office; the large court has a fine and spacious effect, and the design of the pavement in two tints of paving-stones, occupying the whole of the ground, gives a certain dignity even to the area of the court itself. Between the great court and Parliament-street are two smaller courts for light, occupying the space behind the wings, the centre and side blocks of the principal front being carried across to join the buildings at the east side of the great court. The entrance-hall and main staircase from Parliament-street form an oblong apartment, the first landing and balustrade of the stair being carried along opposite the entrance, with an open loggia above and below; the ceiling is panelled and ornamented with "centre-flowers" in delicate and low relief. The Colonial Offices have a special entrance from the north-east angle of the central court, where a small hall, the ceiling partially carried by grey Devonshire marble columns, leads to a hexagonal staircase, which runs up the whole height of the building from the ground-floor; and which, with a little

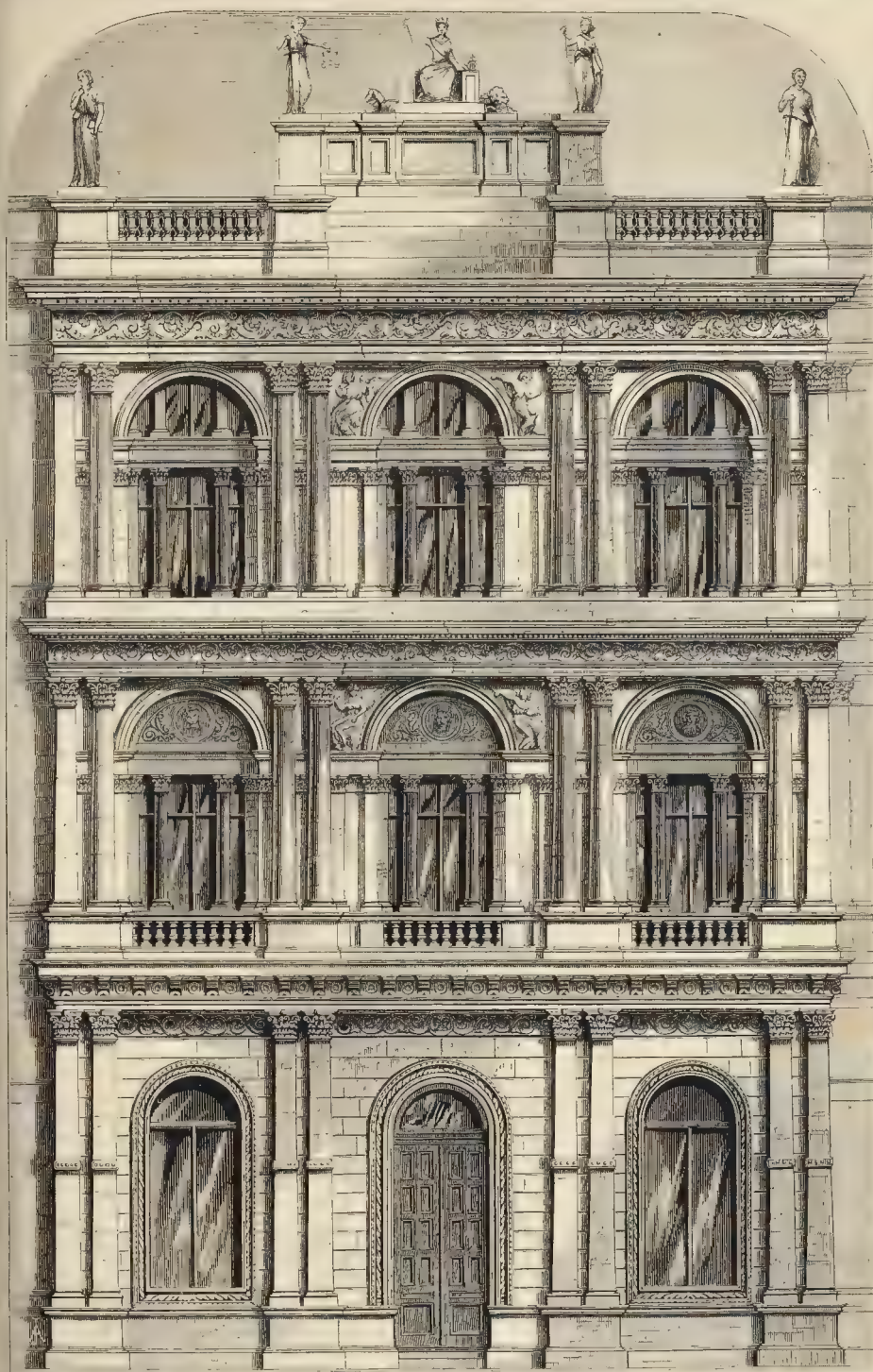
judicious decoration and some very light-tinted stained glass in the lantern at the top, would make a very pleasing staircase, as it is practically a very good piece of work. There is a similar stair near the south-east angle of the court. The Colonial Offices occupy the north-east portion on the ground-floor, and the Home Office the rest; but this arrangement, as indicated at least by the colouring of the plans, is reversed on the first and second floors. The finish of the interior is exceedingly plain, and in the corridors and some of the offices we should have said shabby. We are told this is in consequence of the ex-Commissioner's economies above mentioned; and that the architect, not wishing to spoil the outside of the building, which every one would see, took it out of the inside, which only less numerous official eyes would gaze on. In some of the offices the fireproof arched ceilings are left visible in a very naked kind of way. The wood-work seems very good and solid throughout; the window-frames are of oak, and the doors very satisfactorily and solidly finished; but the floors certainly show no very careful workmanship. Decoration judiciously applied may, no doubt, yet do much to ameliorate the interior, which at present looks cheerless and uninteresting enough.

The whole of the floors are constructed with Dennett's fireproof arch, in some cases under-drawn with a flat ceiling; in others, as we have observed, not so. The floors are all boarded upon the fireproof, except the corridors, which are tiled. The corridors and staircases are

heated with hot water, the rooms are all warmed by fires, the grate bearing Captain Galton's (the Galton stove) being used, which has a warm chamber at the back, through which inlet from the outer air is provided, so as to avoid draughts. No provision for exit ventilation has been made, it being supposed that the height of the rooms, and the absence of anything like crowding in them, would render unnecessary. The roof-framing is of iron throughout.

The contract was taken for the whole work by Messrs. Jackson & Shaw for 250,000l.; the lighting apparatus, and the stoves and grates, additional, the former being supplied by Messrs. Rosser & Russell; the Galton stoves by Messrs. Yates, Haywood, & Co.; and the ordinary grates, where used, by Mr. Longdon, of Sheffield. The ornamental carving is entirely carried out by Messrs. Farmer & Brindley. In referring to the external decoration, we should have mentioned that the blocks left in the rough over the first-floor windows are intended to be carved into portrait heads of eminent statesmen and officials, but this portion of the work is not over till it is finally decided how the various apartments will be appropriated, so that the portraits may find their right place in relation to the portion of the building which they occupy.

The whole of this work has been under immediate superintendence of Mr. Sheffield, has been clerk of works on the site since the Foreign Offices were first commenced.



THE NEW COLONIAL OFFICE, PARLIAMENT STREET: CENTRAL PORTION.
 SIR G. GILBERT SCOTT, R.A., ARCHITECT.

THE WAGNER THEATRE, BAYREUTH.

Some short time ago we gave a few particulars of this theatre, with a diagram of the orchestra, where the musicians are out of sight. A correspondent of the *Daily News* now sends a fuller account. He says:—

If the outside strikes us oddly with its appearance, which may be likened to a happy union of an ornamental barn and a large shot-tower, the interior surprises us with its innovations, and at the same time with its adaptability for theatrical purposes. The stage is of vast dimensions, and can now be seen in its full proportions. It is sunk a depth of 37 ft., and has a height up to the pulley-floor of 176 ft. It is a breadth 95 ft., by 79 ft. in length, and will have ten side scenes. The further stage, back of this, is 40 ft. long, by 49 ft. broad. The width of the proscenium will be 45 ft.,—the widest, I believe, in Germany. The architect is Herr Rimckowiz. On the stage there will be neither footlights nor prompter's box. Wagner intends that his singers shall be firmly seated in the saddle ere they appear before the public. The stage scenery is being painted by the brothers Brückner, in Coburg, from the designs of Hoffmann, in Vienna. The smaller pieces will be finished in Coburg; the larger in Bayreuth, in a large wooden hall erected at the rear of the theatre. The portion of the theatre devoted to the audience is remarkable for its simplicity. The plans were made principally on Wagner's own sketches. There will be no boxes; even the Royal circle at the back will only be elevated a few feet above the level of the rest row of seats. Commencing immediately in front of the orchestral space, the rows of seats rise step by step, as they recede "amphitheatrically," the last row being 20 ft. or higher than the first, but the view of the stage being nowhere obstructed. The form is of exact segment of a circle, the seats growing wider as they recede; so that, while the first row has a width corresponding with the proscenium (about 50 ft.), the last row and the Royal circle or gallery extend to a width of over 100 ft. The great width of the auditory (114 ft.), and the comparatively small depth (79 ft.) from the orchestra to the Royal Gallery, enables each member of the audience to command an almost perfect perspective view of the scenes represented on stage. The ceiling of this part appears low, as, accustomed as we are to high tiers of boxes crowned with the upper gallery. There will be but one gallery, immediately over the Royal gallery, and this is simply made for the accommodation of the citizens (500) of Bayreuth, some of whom Wagner will invite to see performances gratis. The sides of the auditory will be rendered slightly ornamental by boxes. But there will be nothing in the entire plan to divert the attention of the audience from the stage and the scenes thereon represented. In this simply-constructed auditory there will be seats for 1,500 persons, so that the theatre will hold, including the gallery for the gentlemen, about 2,000 persons.

HEALTH AND GOOD DRAINAGE, SHERBORNE.

Sir,—The town of Sherborne, in Dorsetshire, has a population of betwixt five and six thousand. In the early part of last year, there were several cases of typhoid fever, and in consequence complaints were made that the sewerage was defective.

I was called in to advise the local board on the subject, and on making an inspection of the sewer arrangements, I found that the sewers, which were stoneware pipes, had been constructed more than twenty years, and that they were unprovided with means either of inspection, or ventilation. There was consequently an accumulation of foul deposit in the sewers, having bad falls, the gases evolved from the deposit had no means of escape other than into the houses by way of defective connections to rain sewers. Under my advice the board proceeded in the sewers a number of man-holes, inspection, provided at suitable points with covers, by which the deposit could be regularly removed; and in addition simple open ventilators, not charcoal, brought up to the surface of the streets at intervals of 60 or 70 yards. It might naturally have been expected, when so few openings were made into the sewers, that there was emitted was unbearable, and there was a great outcry against them.

The work was however persevered with, and the nuisance gradually diminished as the number of openings was increased, until at the present time it is almost impossible to perceive the slightest smell arising from any of the gratings.

In addition to these improvements in the main sewers, I have recommended the severing of all direct communication betwixt the interior of the houses and the sewers by way of the waste pipes, and the ventilation of all soil-pipes.

That these simple alterations have been remarkably efficacious is proved by a return of the medical officer, which has been forwarded to me by the chairman of the board, and which is as follows:—

Deaths during the Quarter ending the 31st of March, 1874.	
Total number of deaths	15
Corresponding quarter of 1873	40
Average number of deaths for the corresponding quarters of 1870, '71, '72	37
Deaths over 50 years of age in 1874	9
Deaths under 1 year of age do	2
Rate not quite 14 per 1,000 per annum. No death from epidemic or contagious disease.	

(Signed) WILLIAM HENRY WILLIAMS, M.D., L.R.C.P., Medical Officer of Health, Sherborne.

April 15th, 1874.

The deaths in the March quarter of 1874 are thus only 40 per cent. of what they were in the corresponding quarter of 1873, prior to the ventilation of the sewers.

Possibly the whole improvement cannot be credited to this cause, but it is fair to suppose that a very great proportion of it may be.

JAS. MANSEFIELD.

PROPOSED NEW TOWN-HALL FOR MALDENHEAD.

The Town Council have called into requisition the services of Mr. Charles Cooper, architect, whose plans have been submitted to the Urban Sanitary Authority, and so far approved of; and permission given to the Town-hall Committee to obtain specifications as to cost, and devise means for raising the necessary funds. The site will be the one of the present town-hall, and the whole of the premises at the back. Where the market is at present held will be enclosed with grass, and considerably enlarged on the side where the present market-room is, and will be used as a corn exchange, club-room, drill-room, lecture-room, and will receive a considerable amount of additional light from the dome of the grand staircase, which opens into it. On the side where the present house is will be a large business-room for farmers. Behind is a corridor running down the centre of the building; and on the side towards Park-street are in succession a waiting-room, library, newspaper and reading room, lavatory, then a cross corridor from Park-street, entrance leading to a staircase to a platform, organ, &c., above. Further on is a place for fire-engines and fire-escape. On the opposite side of the central corridor, commencing from the farmers' business-room is a living-room and kitchen for preparing dinners, next a large club-room or museum, next armory, police-office, then prison cells. Ascending the grand staircase, we find the present hall divided into a council-chamber and magistrates' room. Behind the council-chamber are the town clerk's office, surveyor's office, and gentlemen's retiring-room. Behind the magistrates' rooms are the magistrates' and ladies' retiring-rooms. Then comes the large hall, 73 ft. by 40 ft., capable of holding 1,000 people, and approached by a wide staircase, covered and lighted by a glass dome. This hall has a gallery at one end, and at the other a raised platform, with staircase from it, for performers, to rooms below, and a recess for an organ. On either side of this platform are gentlemen's and ladies' retiring-rooms. There are two ornamental towers, both containing water in case of fire,—the one in front being arranged for a clock with four faces, and room for a set of chimies, and ornamented with the borough arms, and on each side a balcony for electioneering purposes. It projects some 6 ft. on to the pavement. The other tower is the entrance in Park-street.

New Clock and Bells at Bishops Itchington, Leamington.—A new clock and peal of five bells have recently been erected in the newly-built parish church here. Mr. Smith, Midland Clock Manufactory, Derby, made the clock. The bells include a tenor, about 11 cwt., and are from the foundry of Messrs. Taylor & Co., of Loughborough.

THE CIVIL SURVEYORS EMPLOYED ON THE ORDNANCE SURVEY.

For some time past a rather numerous body of civilians have been employed on the Ordnance Survey, and are designated "assistants," for the reason that the survey is nominally carried out by the Royal Engineers. The work requires a special education and a high degree of skill. Some of the assistants are surveyors, others draughtsmen, and others engravers.

The gentlemen referred to are immeasurably at a disadvantage when compared with the civil servants of any other Government department.

In 1872, according to an official return, fully one-half of the total number had less than 4s. a day, and scarcely a twentieth part of them had as much as 8s.

The civil assistants ask "Is it right or reasonable that we should be employed on the Ordnance Survey and treated differently from all others employed in the civil service of the State, and be so poorly remunerated for our work?" They have now laid their case in the shape of a memorial to the Chief Commissioner of Works, Lord Henry Lennox (to whose department the survey has belonged since the abolition of the Board of Ordnance), for a redress of their grievances, pointing out in a clear and temperate way what the grievances are, and how they might be removed. They should be listened to.

M. DE CAUMONT.

It is proposed to raise a monument to the memory of the distinguished architectural antiquary, De Caumont, in Bayeux, the place of his birth, and M. l'abbé Le Petit, of Tilly-sur-Sulles (Calvados), the secretary of the Société Française d'Archéologie, which was founded by De Caumont, will receive any subscriptions for that purpose that may be sent him. Half a life has passed since the conductor of this journal, walking over Normandy with note-book in pocket and sketch-book in hand, met with M. de Caumont, even then widely known, at home and abroad, by his works on the study of architectural antiquities. From that time to the date of his death he devoted his life to the same object. Like Rickman and Britton in this country, he was the pioneer in France, and, moreover, kept well up with the times. It is right that his name should be held up to honour in his native place, and we sincerely wish success to the endeavour which is being made in that direction.

FROM SCOTLAND.

Dumfries.—An application has been made to the Board of Trade to sanction the erection of a suspension bridge over the Nith at the dock-head of Dumfries. The plans of the bridge have already been adopted by the Town Council, and approved by the Nith Navigation Commissioners, and as the necessary funds (between 1,400l. and 1,500l.) have been subscribed, the erection of the bridge will be proceeded with as soon as the Board of Trade give their sanction. From pier to pier the span will measure 205 ft.; there will be a roadway of 8 ft. wide, the height of the platform above low-water mark being 21 ft.; and the piers will be connected by ornamental arch and cast-iron work, and from the roadway to the final they will rise to a height of 35 ft.

OLD MANSIONS AND NEW SHOPS.

Sir,—How instructive would be two elevations side by side of the "Mansion House" at Hackney and the three parapeted boxes, hung in the air at about a height of 10 ft. from the ground, which are to replace it. The contrast between the fine fluted brick pilasters, jambs, and projecting panels, and the empty spaces garnished with bonnets and laces, chesses and plum-boxes, poultry and lobsters, would help to remind us that we can not only build, and even veneer, cathedrals much better than our be-nighted great-grandfathers, but can also sacrifice the appearance of solidity and comfort in our dwellings to the manifestly greater advantage of being able to exhibit our entire stock-in-trade to the gaze of every passer by.

Such lessons have a melancholy interest for many who, like your obedient servant, are quite resigned to the exigencies of the present, but must indulge in an occasional growl as

LAUDATORES TEMPORIS ACTI.

SCHOOL BUILDING NEWS.

Abbot's Bromley.—St. Anne's School for Girls at Abbot's Bromley has been opened. It is the first of a series of girls' schools which it is in contemplation to found under the direction of the Provost and Fellows of St. John's College, of Lichfield, and in alliance with St. Nicolas College. Provost Lowe proposes to found and secure to the Church of England seven schools, for not more than 100 girls each, at varying charges, and in different localities throughout the Midland counties. While these schools will practically be worked by the ladies who reside in them, the Society of St. John, of Lichfield, will render them its support as a council, regulate the main features of the system of education, and especially guard the institutions as belonging distinctively to the Church of England. The first of these girls' schools, which has been opened, when completed, will accommodate 100 pupils.

Bristol.—To aid the building fund of the Newport, St. Woollos, and Tredegar Wharf Elementary Schools, which have been built to supply the deficiency of school accommodation for this town and district, as required by the Educational Department of the Government, a bazaar has been held. The schools were undertaken, with the sanction and pecuniary assistance of the Government, by a number of gentlemen and tradesmen connected with the port, and are to be supported by voluntary contributions and fees received from children attending. The cost of these buildings, including land, was 6,000*l.*, and there remains a liability of 1,750*l.* upon the building committee. The schools are built with stone.

Crofton.—A school is to be erected at Crofton, near Fareham, Hants, for accommodation of 160 children. Mr. Thos. Goodchild, Adelphi, architect. The tender of Mr. George Barnes, Portsea, 932*l.*, has been accepted.

York.—Tenders have been sought for the construction of new schools in connexion with the Roman Catholic Church of St. Wilfrid, in this city. The site selected for the schools is between Monkgate and Groves-lane, to the latter of which thoroughfare there will be a frontage. The general accommodation of the building will be for 300 children, who, by the architectural character of the structure, will be divided into three sections. One section will be for infants, the Groves front part of the building, which will be on the ground floor, being devoted to a large infant school-room, and smaller class-room. By a division down the centre of the remaining part of the building, school-rooms and class-rooms will be given for upper boys and a mixed school. Outside the schools there will be ample playground accommodation, that for the girls being in the infant-school yard, and that of the other departments in separate yards. The entrance for the infants and girls will be by way of Groves-lane, and that of the boys in the upper and mixed school by separate ways from Monk-gate. The architects for the erection of the building are Messrs. Goldie, of London.

Rainford, Lancashire. The foundation-stone of a new Roman Catholic school, the first the township has had for over a century, has been laid. The land was purchased, and the school is being built by the Rev. Father Powell, of Birchley, who proposes shortly commencing a chapel also. Mr. Edmund Kirby, of Liverpool, is the architect, and Mr. Middlehurst, of Rainford, the builder.

Evesham.—Mr. A. Eapley, architect, has reported that it will be necessary to entirely rebuild the grammar school and master's residence; and the trustees have issued an appeal for subscriptions to carry out the work. About 700*l.* are available from endowments, but as the contemplated works will absorb 1,300*l.*, about 600*l.* more will be required from private subscribers. It is hoped that a good residence attached to the school would induce a first-class master to accept the management, and that thus an efficient middle-class school would be established for the district.

Mepal.—The new National School-room erected by voluntary contributions, from plans prepared by Mr. R. R. Rowe, C.E., of Cambridge, architect, has been opened by the Rev. Canon Hopkins, B.D., Vicar of Littleport, and Rural Dean.

Halifax.—Some months ago the friends connected with Hanover-street New Connexion Chapel, in this town, purchased a plot of ground on which they propose to erect a new Sunday-school. It is proposed that the front houses

shall remain, but the rest of the site is to be covered with the new school buildings. The contracts are already let. There was a good deal of competition, and the tenders of the following were accepted:—Mason, &c., Mr. Michael Firth; joiner, Mr. Anthony Sutcliffe; slaters and plasterers, Messrs. Crowther & Gledhill; plumber and glazier, Mr. John Naylor; painter, Mr. Joseph Dell. The total amount of their contracts is 3,375*l.*, which is inclusive of lighting, heating, and ventilation. The architect is Mr. H. J. Paull, of Manchester and London. The Albion School at Ashton-under-Lyne was designed by this gentleman. He also executed those belonging to the Congregationalists at Great Horton; the Hope School, in Salford, &c. The new building will occupy a prominent position in the town. The end elevation, or principal front, will face Bond-street, where the chief central entrance is to be. Above this entrance a square turret or campanile tower has been contemplated, and is shown upon the architect's drawings to rise about 33 ft. higher than the cornice of the main roof. It would serve as an extraction shaft for ventilation. The style of the structure is a free treatment of North Italian work, adapted to the materials, which are pitch-faced wall-stones and hewn stone dressings. The elevations are simple and without ornamentation. The height to the apex of the gable or pediment in the Bond-street front will be 50 ft., and 32 ft. to the eaves cornice. The site is irregular in form and on the surface, and has necessitated special arrangements and construction to adapt the building to it. The accommodation to be provided is as follows, viz., a large school or assembly room, 72 ft. long and 36 ft. wide, within the walls, exclusive of an organ recess, 16 ft. by 12 ft., and a transept, 23 ft. by 13 ft. The height from floor to wall-plate is 22 ft., and to centre portion of the ceiling 27 ft. At one end (next to Bond-street) will be a gallery five seats deep, having an enclosed library and a class-room underneath it. Windows will be on either side of the room and at the front end, the latter being a "wheel" window. The capacity of the assembly-room for a seated audience of adults, exclusive of the organ or speaker's platform, is for upwards of 650. Communicating with the room are six rooms of various sizes for classes, &c., and underneath, on the ground-floor story are class-rooms, an infants' class-room with rising gallery, to accommodate 100, and a lecture-room, 35 ft. by 24 ft. and 15 ft. high. From the Bond-street entrance a central corridor runs through to the other end, having the class-room doors on either hand.

Eye.—The grammar-school having become dilapidated, and being ill-adapted for its purposes, plans for restoring the house and erecting suitable school-rooms, were prepared by Mr. Colling (the architect, who carried out the restoration of the parish church), and tenders were invited from builders resident in Eye. At a meeting of the trustees these were found to be as follow, viz.:—

	Restoration of House.	School Buildings.
Penning.....	£235 0 0	£800 0 0
Rampling.....	310 0 0	581 0 0
Vine & Day.....	254 0 0	515 0 0

Messrs. Vine & Day's tender of 515*l.* for the erection of the school-buildings was accepted. The trustees did not go into the question of the tenders for the restoration of the house, in consequence of Lady Caroline Kerison having kindly intimated that she would carry out that portion of the intended works at her own cost. To meet the expense of erecting the necessary school-buildings a subscription-list has been opened. The house, when restored, will afford accommodation for receiving boarders.

Wittersham.—The foundation-stone of the new schools for the parish of Wittersham has been laid. The schools will provide accommodation for 120 boys and girls and 53 infants, and the cost, together with the teacher's residence (including the cartage, which, however, has been undertaken by the farmers) amounts to 1,621*l.* The committee has only signed the contract for the schools at the present time, intending, as soon as they have received further subscriptions, to go on with the teacher's residence. The architect is Mr. A. A. G. Colpoys, of St. Leonards-on-Sea, and the builder is Mr. James Holt, of Sga.

Ilkeston.—The Duke of Rutland has given sites for four schools in the parish of Ilkeston, one being on the cricket-ground, another on the common, another at Cotmanhay, and the fourth at Little Hallam. Mr. A. M. Mundy of Shipley

Hall, is to build a school on the Cotmanhay site and Mr. G. Crompton, of Stanton Hall, one on the Little Hallam site, both at their own cost. The cricket-ground and the common schools are to be built by subscription, at a cost exceeding 3,000*l.* The existing boys' school, at the top of the market-place, is to be taken down. T. Duke of Rutland is to give 800*l.* for the girls' school, with the object of converting it into a market-hall.

OPENING OF THE BLACKBURN FREE LIBRARY AND EXHIBITION.

The formal inauguration of the Blackburn Free Library and Exhibition took place on Thursday last week, when the building was declared open by the Mayor of Blackburn. The edifice is in the early style of Decorated Gothic. The principal front abuts on Frances-street, the entrance being a recessed arch, over which are the arms of the borough surmounted by three sculptured panels representing Literature, Science, and Art. Other similar panels will some future time be placed in the wall facing Richmond-terrace. On the ground-floor of the principal frontage are four pointed recessed windows, two being on each side of the central doorway, while above are four recessed mullioned windows with carved heads. The architectural details on the Richmond-terrace side of the building are similar to those mentioned. A cornice extends along the top of the walls, and the roof is relieved by gables. Bradford and Longars are the chief materials of the building, and those portions of the walls that are so treated were procured from Warwick. A vestibule leads to the upper rooms, which are to be devoted to the purposes of a museum and picture-gallery. On the left of the vestibule is the entrance to the Reference, and on the right to that of the Lending department and students' rooms, which there are three. Space will be provided for 60,000 volumes, and 100 persons at a time will have seats. The cost of erection will be about 7,000*l.*, and it is expected that to furnish the building a further amount of 1,000*l.* will be required. The builders were Messrs. Dent, Marshall, of Blackburn; and the sculptured panels, &c., were executed by Mr. Seakings. Additional interest was given to the proceedings by the opening, in the rooms of the library and museum of an exhibition of treasures, antiquities, curiosities, industrial designs and processes, and specimens of natural history.

IMPORTANT DECISION UNDER THE MASTER AND SERVANT ACT.

CAUTION TO ARTIZANS BREAKING CONTRACT.

An ironworker, named Cutler, in 1871, entered a five years' contract with Messrs. Hague & Turner, construction builders, of Sheffield, to work on "Y" works. The contract was duly drawn up, and signed in February, 1873, a general demand arose amongst artizans for an increase of wages, and Mr. Cutler, who was the workman, asked for an advance of 20 per cent. and further sent in a notice, that unless he got extra 4*s.* in the pound he should cease work. Mr. Hague & Turner refused to give the increase, and Cutler's attention to the five years' agreement, and only notice he took of his contract was leaving off at the time his notice stated. Upon this Messrs. Hague & Turner, before the Sheffield Police Court, summoned Cutler before the Sheriff of the County of Yorkshire (stated to be an excellent and valiant hand) refused to return to the job, or make compensation under the Master and Servant Act.

Cutler, on being liberated, still refused to return to employ, not only through his own feelings, but the advice of others, who urged that the imprudent workman to further prosecution, and the contract had been at an end. The employers, to try this novel way of a contract, again cited Cutler to the Police Court, and the Sheriff ordered him to find sureties to complete his contract, failing which, to be imprisoned until he did. Cutler now appealed against the second conviction to the Sheffield magistrates, and Mr. Howwood, M.C., contended that the convictions were a bar to further penalties, and that *de facto* and *de jure* contract was now void.

The Judges, Blackburn, Mellor, and Quain, were mostly of opinion, that though Cutler had been imprisoned three months for nonpayment of compensation, the employer for being absent from work, it did not, as a bar, prevent the employer again summoning him to his contract. That having been carried out, the below were quite right in again convicting, and ordering him to find sureties, and the magistrates power to further imprisonments, but each conviction was not more than three calendar months.

The appeal must, therefore, be dismissed, and the appellant, again go to prison.

Assyrian Remains.—Mr. George Smith, who has returned from his second Assyrian expedition, has brought home a great number of very interesting objects of Assyrian art, including the entire lintel, in sculptured stone, of the ancient palace-gateways.

THE POSITION OF THE ARCHITECTURAL PROFESSION.*

THIS General Conference of Architects, which I hope we may now regard as an established institution of our profession, is based upon a principle so simple and so purely practical that one may almost say there is no reason that need be assigned for our assembling thus, except that we have assembled. Whatever varieties of opinion may happen to appear amongst us upon points of practice, or questions of duty; whatever scholastic prejudices may divide our sympathies in matters of taste; whatever merits, or comparative demerits, may constitute distinctions amongst us in respect of scientific skill or academic knowledge,—of this, at least, there can be no doubt, that we are all of one order in being working architects, and that, whether more learned or less, more artistic or less, more experienced or less, more modern or more antique, more metropolitan or more provincial, if we can be and then be brought together from all quarters as the working architects of the three kingdoms, there cannot fail to be something or other of vital interest to us all, upon which a useful light may be thrown by the easy and delightful process of brotherly communion. Let us, therefore take it that I am addressing a partnership council of practical men of business, and I am content. If many of us are unknown to each other, all, I am sure, are inspired for the occasion by one impulse of mutual loyalty; the petty prejudices of locality are overlooked; the inevitable jealousies of individuality are forgotten; and it is love, after all, that makes the world go round. I cannot help thinking that the position of the architectural profession just now, at least at head-quarters, is somewhat paradoxical. One day we are lauded to the skies for successes; the next we are denounced, and other similar class of men appear to have never been denounced before, for what are declared to be most signal failures. We may at once acknowledge to ourselves that it is chiefly in art that we are supposed to succeed, and in practice that we are supposed to fail. Mr. Stevenson, our promised lecturer, in his previous lecture, may have to tell us about the recent rejection of taste in our style of design I do not know; and what may be the destiny of the new mode—for modes must come and modes must go, while art runs on for ever,—perhaps even he may venture to predict; but if we look back on the last five-and-twenty, or perhaps thirty, years, as impartial observers of the latest artistic endeavour, we can have no hesitation in coming to the conclusion that the career of modern Gothic architecture in England, come to an end when it may, will continue for ages to be regarded as one of the most remarkable episodes in the artistic history of the world. Even those petty prejudices of taste, however, have never permitted them to engage in the work of this vital must acknowledge with patriotic gladness its transcendent merits; and here we have, though, if we had actually nothing more, the right to justify the assertion, that British architecture is in a condition of brilliant success. I have hinted also at what it would be in no judicious for us to ignore,—that in another sense our profession, if not our art, is in a condition of supposed failure. By some process of reasoning, which is not quite so clear to ourselves as to the more facile intelligence of literary reformers and hasty journalists, it has come to be received as a doctrine that the work of the British architect does not consist in the building of glorious churches and grandiose houses, but in the construction of chimneys which never cease to smoke, the laying-in of drains that only breed personal sickness, and the putting up of certain sanitary apparatus which poisons the very princes of the blood. Is there an old cesspool discovered where, according to our more modern lights, no cesspool should be? Then, says a medical journal, "why should we not have it in our power to arrest the architect and have him tried for culpable homicide?" Is some unwelcome odour arise in a terrace of speculatively built houses at the West End? speaks a popular newspaper: "The man who cuts his neighbour's throat runs a good deal of being hanged. The man who murders by secondary causes is neither condemned nor suspected. . . . The ordinary architect is one of these murderers, and we question whether he shall get rid of his bad breed until one of them has been hanged" (!) I am therefore right in stating that, with all our acknow-

ledged merits on the one hand, we are just now in a good many people's bad books on another. One of our coming lectures, as I have already hinted, will no doubt bring the question of our artistic merits under discussion, but whether that of our alleged scientific demerits will also be taken up, I cannot tell. If, however, any one should feel disposed to deal with it, I am sure we shall be glad to hear what he has to say, even if it should be no more than this—that if the average "ordinary architect" of the present meeting could have that control over people's drains in reality which he possesses in the imagination of his critics, he would very soon prove himself to understand, even about the sanitarians and doctors, a great deal more than all the combined combined and clever journalists I may venture to say this, once for all, there may be any amount of diversity of judgment amongst those who understand the work of an architect as to one question and another of his artistic design; but there can be only one opinion as to the utter folly of those reproaches which it is so much the fashion just now to bestow upon him for his supposed ignorance of that common building knowledge which is his alphabet. Nevertheless, it is again a very noticeable circumstance that what I will call the business of the architect is being seriously interfered with as a matter of business, both in art and in science. As regards science, you will at once divine that I refer to the encroachments (if I may use the word without offence) of the profession of engineers. It is not very long ago that the architect of high standing could successfully compete with the engineer of high standing in such works, for example, as the design of important bridges, while the engineer made no attempt whatever to deal with architectural edifices of any description. Nowadays, however, the design of bridges, and of all structures of the kind, lies wholly beyond the architect's province, and, at the same time, not only does the civil engineer take undisguised possession of the design of such an edifice as a railway station in so far as regards the construction of an enormous roof, but he does not scruple to affect occasionally to be the art designer of its facade also, and the plan designer of all the wayside buildings along the line. Nor is this the worst of it, for the time seems to be approaching when such an edifice as a Covent Garden Theatre, or an Albert Hall, or an Exhibition building, or even a picture gallery, will be considered a work of higher scientific ambition than the architect can reach, and will therefore be handed over to the engineer, or perhaps even to the engineering contractor,—the engineer to call in an architectural draughtsman when he wants him, to be dismissed when he has done with him,—or the contractor to employ both engineer and architect as part of his contract, each to do his part as a subordinate in trade. But neither is this all that is being done to the prejudice of architects' scientific pretensions. Even in ordinary dwelling-houses, and much more in public buildings of any exceptional importance, it is coming to be the practice to call in supplementary professors of specific ingenuity, calling themselves by the ambitious title of mechanical engineers, without whose independent guidance it is thought that stoves and smoke-flues, hot-water apparatus, ventilation, drainage, and whatever else may be in question, cannot possibly go right. If iron construction is to be employed, some one else than the architect must be the designer. Concrete must have its own specialist; and, indeed, there are a score or two of the most ordinary contrivances, in both materials and appliances, which it is fully understood can only be adopted with success under the personal superintendence of those who are learned in them. Turning now to art, the encroachments, not only of anxious friends and patrons, but of subsidiary professors, are almost still more numerous to catalogue and more serious to contemplate. It is not merely that the decorative artist must be called in by name for anything beyond common graining and paper-hanging, but in the case of pavements, parquetry, ornamental ironwork, coloured glass, carving, modelling, and various other such superlatives of architectural effect, the design has to be more or less authoritatively advised upon, if not absolutely dictated, by so many specialists in business, many of whom, moreover, having ceased to be good servants, have become very bad masters. The architect, therefore, is at this moment undergoing a process of singular insidious despoliation, and I am sure you will

not pronounce me to be a mere visionary alarmist when I ask a conference of architects to look seriously at the inquiry how far this double invasion is to be allowed to proceed before it is thought desirable to adopt measures for the preservation of a time-honoured profession. For if on the one hand engineering is to absorb more and more of our scientific construction, and on the other the specialists of decorative design are to acquire increasing recognition as independent authorities in art, what, let me ask, is to be left for the architect to do, beyond that which the builder and the builder's clerk can perform just as well without him? But do not by any means suppose that I hold the architects of this country to be becoming deteriorated as regards knowledge. Far from this, I believe it to be the fact that the average skill of an architect of good standing at the present day is very much in advance of that of his predecessor of half a century ago, and this not only in art, but in science. If, however, it is nothing more than the progress of the times that places him at a disadvantage, this of itself is enough. Fifty years ago the student of architecture was satisfied to know the contents of a few grand and learned books which depicted and described the remains of Greek and Roman architecture, and to understand from certain other volumes which are now almost forgotten, or perhaps from nothing but office practice (some gentlemen even went to the workshop to acquire it), the science of such matters, at the utmost, as stone-vaulting and timber-trussing. When a church was to be built, it was a solid Classic temple, with a steeple without and galleries within; and the designer could scarcely go wrong if he would but keep his eye upon the authorities, and use plenty of material. When a country mansion was in question, all that was required was to ransack the "Vitruvius Britannicus," and attempt some novel combination, whether in plan or elevation, of the abundant materials therein supplied to his hand. When a grand row of residences had to be designed, the imposing terraces of the Regent's Park became the *ne plus ultra* of dignified art; and if the internal arrangements of the dwelling, and the appearance of the back elevation, were alike left to chance, it was because such unimportant matters had no precedents in the books. Parker's patent Roman cement, painted in four good oils, and jointed, supplied an admirable equivalent for stone, and the Five Orders were an equally admirable substitute for brains. If an experiment were ventured upon in the use of iron, a cast column of no particular size, or a cast beam of no particular section, was confidently disposed of in no particular way, being "safe to carry anything." If the luxury of a certain little cabinet indoors were indulged in, it was conveniently placed in the midst of the house, and carefully ventilated into the principal staircase by means of an ornamental sash, of oval form, hung on pivots in a conspicuous position. If a chimney smoked it was the will of the elements, and what could not be cured was cheerfully endured. The drains,—Oh, ye gods of sanitation!—what can one say of the drains? And yet in those old times churches were built in peace and consecrated in joy, and pronounced a glory to the country and the age; their spires rivalled those of Sir Christopher Wren, and their galleries afforded from every sitting an uninterrupted view of the pulpit, the reading-desk, and the altar; the voice of the preacher was heard in the remotest corners; the lighting of the interior was all that could be desired, and the substantiality of the structure was only equalled by the comfort of the pews. Costly mansions, also, were built of dressed stone, and streets of town houses were added to streets, with best malm facings and dressings of painted compo; and the eyes that admired the garniture of the front forbore to look at the nakedness of the back, and the plan of the interior was accepted without a murmur, as in the mysterious decrees of fate it might turn out to be; and the chimneys smoked at their pleasure, and the drains smelt at theirs, and the ornamental oval in the grand staircase was politely ignored; and the only wonder is, if the doctrines of this latter day are to be trusted, that the whole of the genteel population of the land had not been driven to desperation by the combined horrors of the architect's art and the architect's science. Nevertheless, it was never proposed in those times to hang an architect. Perhaps it was because architects were so few; for, indeed, there were but a dozen or two of the name in the whole United Kingdom. I say again, therefore, I do not wish it to

* By Professor Kerr: as elsewhere alluded to.

be supposed that I take the condition of architectural skill to be on the decline. Where there was one architect of fair pretensions half a century ago, there are at this moment literally twenty at the very least; and I need scarcely argue that the very few of the twenty would be content to carry on now, I will not say the old system, but I will say anything equivalent to it, and to claim credit for so doing. All over the land the architects of the new school have built beautiful and fascinating churches, and have carried into effect learned and genial restorations; even the meeting-houses of the free communions not unfrequently rival in almost every ecclesiastical grace, so far as their traditions admit, the charming edifices of the Establishment; and parish schools and pleasant parsonages are equally dotted over every county, all bearing the impress of the same untiring efforts of professional design. Mansions that are almost as carefully contrived as a piece of mechanism, and as characteristically designed as modern art can make them, have risen up on a thousand sunny slopes, until the country homes of England and Scotland and Ireland alike have become the envy of all the world. Grand municipal buildings now command the streets and market-places of a hundred wealthy towns, to the admiration of every one who intelligently regards them. All the natural graces of truthful material, of articulated construction, of expressive form, are developed with infinite earnestness, and a thousand experiments in picturesque and elegant effects are elaborated with an enthusiasm and self-denial which have long ignored the considerations of five per cent. The study of lighting, of warming, of ventilation, of sanitation, and of still other points of the kind, has become a group of architectural sciences. The employment of iron construction—the absolute perfection of scientific building—has become matter for the most recondite calculations; and even in the economising of such every-day substances as brick and timber, the formulas of mathematics and the tabulated results of experiments are in constant use. Every appliance within and without the walls is made a subject of special consideration; every shortcoming in whatever respect has been brought under the category of an accident rather than an oversight; every little question of convenience and comfort is studied, and every item of outlay conscientiously weighed; and it is not too much to say that if our professional operations as a whole are second in respect of complication, of design, and of painstaking execution to anything within the entire range of constructive contrivance, it can only be to those organised productions of the mechanician which transcend all other works of ingenuity, because in them nature enables the creative powers of man to aspire to a humble imitation of her own. Once more, then, let me repeat that in such circumstances it is not to be suggested that the architect of the present day is losing ground as compared with his predecessor of the last generation. But this is not enough. Regard for a moment the marvellous advance of the age in every form of science. Remember that, in the rapid progress of such a time, he who fails to increase his pace as others do must appear to be retrograding. The fifty years ago of which I have been speaking seem to be but yesterday in the history of our modern England; and yet this was the old, old time before the railways! I remember meeting, in a Paris hotel, a few years ago, an ancient, broken-down man, who had gone over from London with a memorial to the Emperor. His name, he said, was Cort. Possibly some of you may not recognise the name; I for one knew nothing of it when the old gentleman spoke of it, as he did, boasting. He was the son of Henry Cort, the inventor of rolled iron. And this was the substance of his memorial: he had reckoned up, in due arithmetical form, and in money, the value of his father's invention to the human race. His father had been ruined by it, of course,—had died of it at last, dreaming, perhaps, of the self-same figures in prospect,—millions of millions, by which his son should one day prove, in retrospect, and soberly enough, the infinite material worth of his invention. And it could not be disputed, and it cannot be disputed, that the mere rolling of iron has been very much the sole basis of all that we boast of under the name of the engineering wonders of the nineteenth century. Now let me suggest that it is this selfsame incredible advance of engineering work in rolled iron that has produced of itself the entire change, even in our own professional world, that we are now contemplating. Let any

ordinary architect endeavour to imagine what he would think of himself if he had designed and carried into execution the roof of St. Pancras Station, or the Britannia Bridge, or the *Great Eastern* steamship. How he would look down upon this meeting! Accustomed to the contemplation of such transcendent achievements of physical power as these, how can the engineer be blamed for regarding his cousin the architect as being scientifically but a poor relation? A dainty and accomplished cousin he may be, but one whose mental muscles are not strung like his own; a cousin of ancient and honourable lineage, but of a manifestly inferior kind of vigour; a gentleman of the highest respectability, no doubt, and most estimable character, but, beside the towering Titan himself, unmistakably behind the age. This contrast between the architect and the engineer is not, I beg you to believe, either wire-drawn or fantastic; I have put it before you as I have in order that I may ask you without further circumspection whether it is to be wondered at that the engineer should begin to show signs, not only of dispensing with the architect for himself, but of encouraging the impression which the public are with less reason liable to form, that they may dispense with him too. Thus it is, as I think, that the architectural profession by name is not unlikely to find the engineering profession by name, within the next twenty years, trenching more and more upon the field of building. As regards encroachments upon the architect's province in matters of art, I must plead want of time as my excuse for leaving the case in your hands without going into further particulars. But this question at least I must consider for a moment upon the whole issue—what ought to be done for the credit of the architectural profession? In both art and science, then, the more versatility of such Admirable Crichtons is seldom if ever of any substantial service to the cause; but I see no reason why we should not make it a special point of policy, and indeed, of honour, so to encourage in various individuals their several gifts, that the guild, as a whole, shall be able to claim a supremacy of actual practical power over all possible engineers on the one hand, and all possible decorative artists on the other, and this within the extremest limits of architectural building, from the composition of a painted window, to the construction of the Vienna dome, and from the ventilating of the Houses of Parliament to the devising of a stretch-trap or a register-stove. But, perhaps, I am now going beyond the proper scope of my present undertaking. I have accustomed myself to the idea that our Conference ought scarcely to be an occasion for action so much as for discussion. Its organisation is obviously unequal to the task of government, or even to that of the dictation of specific reforms; its meetings can be made of much more service practically, perhaps, by being led to confine their attention almost to speculation and suggestion, leaving the duties of actual administration for the future action of the several associations at our command. I hope, however, I have at least succeeded thus far in accomplishing that which probably is the most useful of all purposes for the occasion, namely, the assertion of a basis of genial fraternal feeling, and the provocation of an impulse to meet questions of the moment, whatever they may be, in some such manner as may accord with our pretensions, however humble, to be the representatives of an illustrious order of men, whose traditions, whether in art or in science, connect the practical efforts of the present with the practical achievements of the past, through an unbroken history of three thousand years.

THE APPOINTMENT OF ARCHITECT FOR THE NEW INFIRMARY FOR LAMBETH.

We have already stated that the Lambeth Guardians have decided to erect a new infirmary at an outlay of 30,000*l.*, and at the meeting of the Guardians last week a lengthened and animated discussion took place on the question of appointing an architect to furnish designs for the new building. The discussion involved the appointment of a selected architect on the one hand, as against the principle of advertising and competition on the other. Mr. Taylor, in moving the appointment of an architect, whom he subsequently named, said he was opposed to advertising, because it would cause a delay of some months, and also because they might have plans which were really the work of other persons than

those from whom they might be represented emanate. If they advertised they would have to give premiums, and if they went to the expense they must then employ some eminent architect to select from the designs sent in the best for the purpose. But they had the power of doing away with all that by at once appointing an architect. Then came the question as to whom that architect should be. He had not time to say with reference to the two gentlemen named in applications, but the gentleman whose name he would propose to them took the first prize of 150 guineas for an asylum at Hamstead, although his design was not carried out. That was one reason why he proposed Mr. Francis Hayman Fowler, and the next reason was because of the services he had rendered to the parish for a number of years, both in the vest and at the Metropolitan Board of Works. I moved that Mr. F. H. Fowler be requested to furnish a design, upon the understanding that if the guardians did not approve of the design they should not be bound to carry it into execution, but only to pay Mr. Fowler for his services in preparing it. Several guardians supported the proposal. It was, however, opposed by other members as being unfair to outside architects. Mr. Stiff moved as an amendment that architects be selected, including the name of Mr. Fowler. The amendment was ultimately lost by 12 to 7, and Mr. Taylor's motion appointing Mr. Fowler the architect to furnish the design was carried.

A PROPOSED BRISTOL COLLEGE OF SCIENCE AND LITERATURE.

A PUBLIC meeting in aid of this object been held in the Victoria Rooms, Bristol, to understand that the amount required for undertaking will be 25,000*l.* capital, and a guaranteed fund of 3,000*l.* a year for five years for maintenance. The Mayor of Bristol presided over a very large and influential attendance. A committee's statement was read at the meeting by the Dean of Bristol, in which it is said:

"The committee is of opinion that the College requires at the outset some such staff as the following: One professor of mathematics; one professor of chemistry; one professor of engineering, who would be responsible for descriptive geometry and its applications, chemical philosophy and mechanism; one professor of mining, who would be responsible for geology, mineralogy, the art of mining and surveying; one professor of French and Latin language, literature, and history; one professor of English language, literature, and history; and one professor connected with the medical faculty; a registrar or secretary."

In order to establish the college on a permanent basis it is obvious that the sum of money which is asked is in no way excessive.

First of all, it will be necessary to provide suitable buildings and appliances. The meeting was addressed by Professor Wilkinson, President of the British Association; Professor Jowett, the Master of Balliol; Bishop of Exeter; Mr. Hodgson, M.P.; Mr. Morley, M.P.; and other influential gentlemen, and appropriate resolutions were unanimously passed, the chief being,—

"That in order to meet the requirements of the age of England and South Wales, it is desirable to establish in Bristol a college which shall provide, for those who wish to pursue their studies beyond the ordinary range, advanced instruction in the sciences applicable to the industries of the district, and in such other subjects as form the staple of a university education."

SANITARY ENGINEERING.

Sir,—Usually I pay but little attention to communications of anonymous writers, but a journal of standing like the *Builder* induces anonymous communication reflecting upon the honour of a professional man it becomes expedient to take cognizance of it.

Your correspondent "An Engineer," speaking of my recent work "Sanitary Engineering," and of the plan of the drainage of Dantzic, states that "many persons think it is the design of Mr. B. Latham, although the name of E. Wiebe is on the plan with that of Mr. Latham." "The sewerage of Dantzic," however, both in plan and execution the work of the eminent Prussian engineer, E. W. Wiebe, prepared in 1855 by Mr. E. Wiebe, which the basis of the project commenced in 1861, and the project of 1869 is not identical with that of 1855, as may be seen by comparing the plan and details given in "Sanitary Engineering," with the plan and details of the project of 1855, a copy of which is to be found in the library of the Institution of Civil Engineers. In the as carried out, the direction, level, sizes

details of the sewers are altered, while the pumping-station and outfall-works were completely re-designed. Moreover, the suburbs are included in the project as carried out, but they were omitted in the project of 1865. Every plan, section, and detail drawing of the Dantzic works, with the exception of the architectural drawings of the engine-house, chimney-shaft, and residences at the outfall were prepared by myself at my office in Westminster; and every man so prepared bears the joint signatures of Mr. Wiebe and myself. I have always thought and still think that the greatest possible honour is due to Mr. Wiebe for the care and skill exercised by him in the preparation of the original project for the drainage of Dantzic. The following extract, taken from a report to Stadt Magistrate of Dantzic in 1869 then pressed, and still expresses, my views upon that project:—

"You have before you the scheme of sewerage that has been adopted by Geheimer Ober-Baurath E. Wiebe for the drainage of the town of Dantzic, and which scheme has been before you for nearly four years. I have examined very carefully the conditions under which that scheme has been prepared, and looking at it as a scheme I am in all the essential propositions made. I consider the scheme, looking at it as a plan, is very perfect. In the general arrangement it is very good, and looking also at the scheme with the knowledge of what was the local received opinion as to the formation of sewers in England, at the time these plans were prepared, and examining these plans now after the elapse of four years from the time of their preparation, I know full well that, although generally, the scheme as proposed for the drainage of Dantzic, the principles propounded four years ago, though advocated in England at that time, had not come into general operation; but in the time that has elapsed since that report has been prepared the principles there advocated have become the received system of drainage in England. Since the period Geheimer Ober-Baurath E. Wiebe prepared his scheme much more is known with regard to the proposed sewer construction, and the necessity for sewer ventilation; and, therefore, the general principles laid down by the Geheimer Ober-Baurath come to be put in practice, the details of the scheme must be modified to meet the altered state of our knowledge, and the natural contingencies that will arise during the progress of the work."

With regard to the expression that my recent work on sanitary engineering is "principally a compilation" it is scarcely necessary for me to draw attention. I have acknowledged throughout the volume that I have been indebted to the authorities for information, and in no case am I aware that I have quoted or borrowed information without due acknowledgment, so that any person reading my book will be able to form an opinion as to what proportion of the work is due to others and what to myself. I am writing on such a subject as sanitary engineering, that a book which simply expressed the opinion of an individual writer would be useless; and in order to make it valuable, I have made use of the thoughts and opinions of others, and in the next volume, which is in the press, I shall continue the same course. That an anonymous writer should attempt to disturb the amicable understanding between the engineers engaged in the prosecution of the Dantzic works shows a vindictive feeling exercisable only by such characters as shelter themselves under the cloak of anonymous communications.

BALDWIN LATHAM.

* We have also received a letter on the subject from Mr. John Phillips.

OLD ST. PANCRAS CHURCHYARD.

A CROWDED public meeting of the ratepayers of St. Pancras, convened by the Vestry, has taken place at St. Pancras Vestry-hall, for the purpose of protesting against the contemplated removal of the Midland Railway Company to appropriate the ancient church and churchyard of St. Pancras, as well as the adjoining churchyard of St. Giles-in-the-Fields, to railway purposes. The Secretary of State for the Home Department has already had an inquiry instituted into the matter by Mr. Holland, medical inspector attached to the department of the Privy Council, but he has not yet made his report. The chairman explained the clause of the Midland Railway Bill, which was so worded that for the greatest vigilance on the part of the ratepayers no one would have known what was at stake, as the company had never given the ratepayers the right to be heard. The Vestry had, however, on the part of the ratepayers, determined to oppose the scheme by every means in their power.

Mr. James Hoppey moved the first resolution: That this meeting enters its solemn protest against the removal of the Midland Railway Company to obtain the site for the purchase of the burial grounds of St. Pancras and St. Giles, and hereby urges upon the

vicar, churchwardens, and church trustees to oppose the Midland Railway Bill, and not to enter into any negotiations with the Company with a view to the sale of the grounds in question.

The Rev. Father Dolman, in seconding the resolution, pointed to the fact that there was no churchyard in the vicinity of the metropolis which contained so large an assemblage of the illustrious dead, and implored all classes and all religiousists to combine to prevent this shameful desecration.

The Rev. John Lee, formerly incumbent of Holy Trinity, Haverstock-hill, supported the resolution; and other gentlemen having also addressed the meeting, the resolution was carried unanimously amidst great cheering.

Mr. Churchwarden Coleing moved the adoption of a petition against the Bill, to be signed by the chairman on behalf of the meeting, and forwarded to the House of Lords for presentation. This resolution was also carried.

Under the title, "A Plea for St. Pancras Churchyard: being a Remonstrance against the Proposed Desecration by the Midland Railway Company" (Hall & Lovitt, Camden-road), a paper in the *Builder* of September 7th, 1867, has, with our permission, been reprinted, with some additional matter.

BETTER PROSPECTS.

Oh, dear! what can the matter be, speculative builders seem in haste and in fear? See how they are running; the new law is coming; their game is high up, they see clear. Houses are to be built time and clime to withstand, not anywhere, anyhow, with anything nearest to hand. Light, air, and drainage are to be the cardinal improvements. House D.s and M.D.s are summoned to advise on the movement. The Fireman held forth on house-traps that burnt. Science and law are to enforce what in sorrow has been learnt. As a house progresses it is to be carefully scrutinised. Run-on-up "Jerrys" your nefarious doings will be paralysed. Thanks to philanthropists and keen M.P.s—same to honest working bees; for healthy homes found a nation's strength. Hurrah! for wise men's views will prevail at length. R. T.

THE BRIGHTON AQUARIUM.

SIR,—My attention has been drawn to certain statements affecting this institution which appear in your journal of the 6th inst., in connexion with the subject of a proposed aquarium at Brighton, and I shall be obliged by your giving like publicity to the following observations:—

I am not aware who the "competent persons" may be to whom you allude, or the source from which they derive their information; but I can state, as a matter of fact, that the results hitherto attained at Brighton are quite at variance with the assertions hazarded by these individuals.

So far from its being true that the mortality among our fishes is great, the weekly returns of deaths presented by the naturalists to my Board indicate a minimum rate of mortality generally so trifling as to be almost imperceptible among so many thousands of animals.

The assertion that the tanks are often turbid is incorrect; and at no period since the opening of the Aquarium has the water been in a more satisfactory condition as to its clearness and suitability for the inmates of the tanks.

I am pleased to have the opportunity of dispelling the sinister apprehension that a "reconstruction of the establishment" will be required, for our experience fully justifies the soundness of the scientific principle upon which the Aquarium has been constructed. It is quite intelligible that persons who have been accustomed to deal only with mere "toys" of aquaria, any one of which could be contained in a single tank at Brighton, should be incapable of appreciating the magnitude of our operations, and the completeness of the system adopted at Brighton. Upon this topic I cannot, however, do better than refer you to Mr. Birch's letter in the *Times*, of the 24th October, 1872, which has never been answered.

It may be interesting to your readers to learn that the town of Scarborough is about to have its aquarium constructed upon the same scientific principle as ours, and upon the designs of our engineer and architect.

With regard to the circular mentioned in your

article, I may state that some such document was submitted to us, but the queries contained in it were such as not to justify our entertaining them.

A sort of mania for these marine aquaria has sprung up, stimulated no doubt by our success at Brighton; but there is danger that the country will be flooded with paltry establishments, destined to the same fate as the Blackpool Aquarium, which has been closed after a career of only a few months. J. McMILLAN, Director, Brighton Aquarium.

* The statements we gave were, as we said, from the report of a sub-committee of the Birmingham Natural History Society, appointed to inquire into the condition of existing Aquaria.

SUNDERLAND TOWN-HALL PLANS.

REFERRING to the item in the order-book recommending the payment of premiums for designs for council-chambers, offices, &c., the committee report that the author of the design for site No. 1, bearing the motto "Experience," is Mr. John Johnstone, architect, of Newcastle; and that the author of the design for site No. 2, bearing the motto "Hope," is Mr. E. Hope Godwin, architect, London. For the further information of the council, the committee have to state that the following are the authors of the other two designs selected by them for site No. 1, viz.:—"Faith," Mr. E. H. Godwin; "Sirius," Mr. J. King James, architect, Hull; and the authors of the other four designs for site No. 2 are "Faith, Hope, and Charity," Mr. J. P. Pritchard, architect, Darlington; "King Coffee," Mr. E. M. Gibbs, architect, Sheffield; "Knowledge is Power," Messrs. Leeming & Leeming, architects, Halifax; "Roma," Messrs. Herbert Amon & William Kenwood, St. Leonard's, Hastings. As regards the remaining design, referred to on the presentation of the report to the council on the 29th of April, for site No. 1, having the motto "Auspice Deo," the author is Mr. Frank Caws, architect, Sunderland.

Mr. C. H. Reed, at a meeting of the Council, said it was a source of considerable regret to the committee that they were not able to recommend the plan of Mr. Frank Caws. His design, "Auspice Deo," was placed at the head of the list at the first meeting of the committee, and it was afterwards thrown out, owing to an oversight of his own in not stating that 2,000l. was for furniture. If in his specification he had clearly shown that fact he would have been entitled to the premium.

The report was agreed to.

THE TRADES MOVEMENT.

Wolverhampton.—Twenty-nine masons in the employ of Mr. H. Lovatt, contractor, Wolverhampton, who is building the new Grammar schools, have struck work, and so too have the other masons employed in that town by the same firm, simply because their employer has had a Portland stone staircase prepared at Portland, for laying in Wolverhampton. The worked stone to which the men object is prepared not by machines, but by hand labour, at wages higher than the Wolverhampton masons are receiving. It is prepared at the quarry of a master mason, who employs more than 100 operative masons; and much of their work has been used at, amongst many other buildings, the additions to the General Post-office in London, and laid by the masons on the job without complaint. The Portland masonry has been obtained, not because it is cheaper, but because it would expedite the completion of the buildings, which the contractors desire shall be out of their hands in as brief a time as possible. The foreman of the masons, with the bricklayers' foreman, and the foreman of the carpenters, are doing what the masons decline to do. The masons' foreman has been threatened, but it is not known by whom.

Leeds.—At a meeting of master builders it was resolved:—"That we offer the stonemasons of Leeds and district 34s. per week, the time to remain as at present, viz., fifty hours' work per week." The demands of the stonemasons previously to the strike were that they should receive 38s. per week and have one hour and a half less work. The employers offered prior to the strike the full advance of wages asked for, but could not concede the one hour and a half less work. The unpleasantness of a strike has now been carried on for the last six weeks, and the employers desirous of bringing it to an end have made an offer to the men of 1s. per week

more than asked for in lieu of the shortening of the hours, which the employers feel they cannot under any circumstances concede. A copy of the above resolution has been forwarded to the men's secretary.

THE CONCRETE MODEL BUILDINGS AT HASTINGS.

Sir,—In your last week's issue you gave an account of these buildings, but did not mention the fact that the concrete was made with the siliceous cement, which for such kind of work serves the same purpose as Portland cement, at the cost of ordinary mortar.

THE MANAGER OF THE SILICEOUS CEMENT COMPANY.

ENGINEERS versus BOROUGH SURVEYORS.

At a meeting of the Sunderland Town Council last week, the question of superseding surveyors by engineers was gone into, and a Special Committee made the following report:—"That it be reported to the Council, that in the opinion of this Committee, the engineering department of this borough is weak in administrative ability and engineering skill; that in view of the important engineering duties which will devolve upon the Borough Surveyor, the Committee are of opinion that a properly qualified engineer should be forthwith appointed, at a salary of £600 a year, and that advertisements be inserted in the newspapers for an engineer."

The Mayor of Sunderland read a letter of remonstrance from Mr. Younger, the borough surveyor, in which that gentleman demanded permission to appear and answer before the Committee the charges of incompetence made against him.

A member of the Council observed that he was quite sure the Committee would pay every attention to whatever Mr. Younger had to advance, and eventually the report was referred back to the Committee, with Mr. Younger's letter as well.

CHURCH-BUILDING NEWS.

Birmingham.—The work on the rebuilding of St. Martin's Church has made satisfactory progress. The aisles are roofed in, as are also the transepts, while the nave roof has been boarded and felted, preparatory to the tiles being laid on it. The roof woodwork of the interior of the aisles is now complete. No varnish will be laid on the natural grain of the wood. The timbers of the nave roof, being finished, are under the carver's hands. As regards the erection of the chancel, it has unavoidably fallen into arrears, but the work will shortly be pushed on. Persons are coming forward to associate themselves more directly with the rebuilding of the mother church of the town, by undertaking the cost of carving the capitals of the stone pillars of the nave. As this idea can be indulged in at a cost of about a ten-pound note a piece, the whole of the capitals it is thought will be bespoken in a short time, leaving only the carving of the hammer-beams of the roof to be completed for by those who are equally well disposed to aid in the embellishment of the structure.

Alnwick.—A public meeting has been held in the Town Hall, Alnwick—the Ven. Archdeacon Hamilton in the chair—to take into consideration the desirability of raising funds to procure five bells to complete the peal in the tower of St. Paul's, Alnwick. Appropriate resolutions in favour of the idea were passed, and that it would be fitting as a memorial to her Grace the Dowager Duchess Charlotte Florentia of Northumberland. A committee was appointed to carry out the project and canvas for subscriptions. A subscription was opened in the room, when 68l. 18s. were subscribed. Mr. Perry, the vicar of St. Paul's, stated that the Duke and Earl Percy had promised their support, if the people of Alnwick should show themselves earnest in the matter.

Marlborough.—The new chancel recently added to St. Mary's Church has been opened. The chancel was designed by Mr. G. B. Street, R.A., and the builder is Mr. R. N. Hookings, of Hungerford. It is built of flint, with Bath-stone dressing, the internal walls being stuccoed. The floor is paved with Minton tiles, and in the centre is a brass memorial of the Merriman family. The chancel is raised from the level of the nave floor by six steps, and is divided from the body of the church by a dwarf-screen of stone, surmounted by an ornamental iron cresting. The Gothic iron entrance-gates are the gift of Mrs. N. Reed. Over the communion-table, which is of carved oak, and below the stained window in the recess in the wall are placed a cross (the gift of the Rev. E. B. Dugmore), four brass vases containing flowers, two stands for triple lights, and two candlesticks, the gifts of friends. The organ, which formerly stood in the gallery, has been removed to a recess on the left of the chancel; and two rows of carved oak seats for the choir have been erected on either side of the chancel.

Hockley.—St. Saviour's Church, which has just been erected in St. Matthias's parish, has been consecrated by the Bishop of Worcester. The new church stands at the corner of Bridge-street and Villa-street, Hockley, and is an unpretentious structure, in the Geometrical style, and built of brick, with stone columns to the nave arcade, and stone traceried windows. It consists of a nave 85 ft. 5 in. long by 25 ft. wide; north and south aisles, 8 ft. 5 in. wide; chancel, with apsidal termination, 26 ft. 8 in. long by 23 ft. wide. At the west end there is a tower with spire, rising to a height of 120 ft., the spire being constructed of wood and slate; and there are a small organ-chamber and vestries in the north side of the chancel. The nave arcades consist of five arches; each of the pillars supporting them have carved capitals. There are five large windows in each of the aisles, and further light is secured by a row of clerestory windows. The belfry in the tower is open to the nave, so as to admit light from a large west window. The roof is open-timbered, with the wood-work stained and varnished. There is accommodation for 600 adults, in open seats, all of which are free. The church has been built by Mr. W. Partridge, from designs by Mr. J. A. Chatwin, and, including the site, has cost about 5,200l.

VARIORUM.

"PRINCIPLES OF MECHANICS, by T. M. Goodve M.A. (Longmans, Green, & Co.). 1874." This volume contains an outline of one part of the course of lectures on Applied Mechanics, given by the author at the Royal School of Mines, of which he is the lecturer on Applied Mechanics, and, therefore, a very competent authority on a subject such as that of which this text-book of science treats. In a limited space he gives a comprehensive view of the science, and points out the necessity of continually referring to practice and experience, and the careful thought with which the relation of the theory of heat to mechanics should be approached by the student in his earliest inquiries.—"Tyer's Block Telegraph and Electric Locking Signals. Fifth edition (Tyer & Co., Telegraph Engineers and Contractors, Finsbury)." In this book particulars are given of Tyer's patents by the engineers themselves. It is illustrated with diagrams and other engravings.—"The Trade of Liverpool. Second Series: The Timber Trade (Albion Office, Liverpool)." The series of which this is a part, appeared in the *Liverpool Daily Albion*, and has been reprinted, each subject in a separate form.—"Manchester Public Free Libraries: Index Catalogue of the Hulme Leading Branch. Second Edition, revised and augmented (Manchester: Cornish, Piccadilly)." Since the publication of the first edition of this catalogue there have been added to the library nearly 5,000 volumes on almost all subjects of general interest and utility; and the library in its present state numbers upwards of 12,000 volumes, in all departments of literature, art, and science, of which this is the catalogue.—"The Penn Monthly for June has several interesting articles, including one on the Merits of Cremation, and another on Public Baths for Cities.—"Scribner's Monthly for May includes a very fully illustrated article, views, and plans, on the New Homes of New York, which may be usefully studied. The magazine is published in London by F. Warne & Co.—"Marble Arch is somewhat awkward title of a monthly magazine published at the Ladies' Printing Press, Hunter-street. One feature of this new venture is that four pages of music are given with it.—"The paper on the Ventilation of Sewers, by Mr. E. Ellice Clarke, C.E., read before the Association of Sanitary Engineers at Birmingham, has been printed (Waterlow & Sons) in a separate form.

Northamptonshire Architectural Society. This society has had an excursion to Fawsley, Canon's Ashby, &c., one of the most picturesque portions of the county of Northampton opened up by the East and West Junction Railway. It is a district possessing features of archaeological interest of sufficient importance. The party assembled at Byfield Station. The assemblage was courteously welcomed by Sir Henry Dryden, who acted as special *cicerone*. Under his direction, they occupied four two-horse vehicles, and visited Byfield Church, Charwelton, Fawsley Park, Preston Capes, and Canon's Ashby, at which last they were feasted by Sir Henry and Lady Dryden.

Miscellaneous.

Northern Architectural Association.

A meeting of the members of the Northern Architectural Association was held in the Castle, Newcastle-upon-Tyne, on Tuesday, 9th inst.; Mr. Thompson, president, in the chair. Mr. Oliver and Mr. Peachy were appointed delegates to the Architectural Conference to be in London in connexion with the Royal Institute of British Architects; they were also appointed delegates to the Architectural Alliance, meetings are held at the same time. A discussion took place in reference to the circular of the Master Builders' Association of Newcastle, which Mr. G. W. Hodge, honorary solicitor to the Northern Architectural Association; Mr. Thos. son, president; Mr. Oliver, honorary secretary; Mr. Shotton, Mr. W. H. Dunn, and Mr. Conant took part, in regard to the appointment of surveyors for the taking out of quantities; their legal duties and responsibilities. Ultimately the matter was referred to the committee to endeavour to frame a report, and a deputation from the Master Builders' Association.

New Museum for the Torquay National History Society.

The foundation-stone of a new museum has been laid at Torquay, on the Torwood-road, immediately adjoining new edifices just erected by the Wesleyan Wesleyan Church. The site (a piece of ground valued at 600l.) has been presented to the society. The work will, it is estimated, cost 2,300l., but if the ulterior designs of the committee are carried into effect about 4,500l. have to be expended. The contractor for the building is Mr. E. P. Bovey, who will construct it from designs furnished by Mr. Harvey London, architect. Of the 2,300l. required for the erection of the building, upwards of 1l. have already been subscribed. There will be two stories to the building, the front of which will be of an ornamental character, and composed of Bath stone and limestone. The portion of the building will be occupied by the library and the curator's rooms, and the other part by the museum. If extra funds were subsequently raised, the committee propose building a lecture-room, and sleeping apartments for the curator at the back of the building.

Yorkshire Exhibition of Arts and Manufactures.

The committee of the Leeds Mechanics' Institution and Literary Society, Schools of Art and Science have resolved to accede to a generally-expressed wish that should organise a Yorkshire Exhibition of Arts and Manufactures, to be opened in Leeds, on 1st, 1875. Alderman Marsden, the Mayor of Leeds, presided at the first meeting of the committee of management, held in the council-chamber of the directors of the Leeds Mechanics' Institute, last week, when the general principle upon which the Exhibition is to be organised, the rules for its management were agreed. The object of the Exhibition will be to promote the fine arts and art and science as applied manufactures, and the surplus funds will be applied to the liquidation of the debts remaining on the Leeds Mechanics' Institute. In addition to the Exhibition of Arts and Manufactures, a fancy fair will be held in Albert Hall. The general committee of management will raise immediately a guarantee of not less than 10,000l.

Amalgamated Society of Engineers.

The inaugural address of Mr. Newton, the president, on the opening of the proceedings of the fifth delegate meeting of the Amalgamated Society of Engineers, &c., held in Newcastle-upon-Tyne on Whit-Monday, 1874, has been issued in a printed form. It gives a history of the society and refers to some of the most important principles which govern its proceedings. This society has now 40,000 members each earning, probably, 30s. a week, which income of 60,000l. a week, or more, 3,000,000l. a year. Since the amalgamation in 1851 there has been expended by the society 561,827l. inclusive of 43,559l. paid to members locked out in 1852. This is an average of 11. 1s. 4d. per member per annum. The sick benefit paid for the same period was 252,441l., or an average of 8s. 6d. per member per annum.

The Royal Academy.

The President of the Royal Academy has issued invitations for their conversazione, to be held on Thursday, July 11th.

Fatal Fall from a Church Tower.—The Coroner of Derby has held an inquiry respecting the death of Robert Morton, who had been killed by falling from the scaffolding attached to the tower of St. Luke's Church, Derby. From the evidence it appeared that the deceased was a mason. He and two other men were on the scaffolding waiting to land a cornice-cap, which was above a ton in weight. As soon as the deceased and a labourer saw the block of stone they ran to seize it, and they got it through a hole ready for landing. Stayner put a plank under one side of the stone, and deceased took the guide-rope and drew it to the inside of the tower, and was about to fasten it to a pole when the rope broke and the stone fell. The deceased, who had one end of the rope in his hand, was then drawn to the mouth of the hole, and the poor fellow fell to the ground, a distance of about 66 ft., and was killed on the spot. The jury returned a verdict of "Accidental death."

The Bath and West of England Show.—The ninety-seventh annual exhibition of the Bath and West of England Society and Southern Counties' Association commenced at Bristol on Monday in last week, and continued open up to Friday. The site was that situated on the Stoke-road on Durdham-down, the well-known plateau which lies between Clifton and Cook's Wally, on a level with the Suspension Bridge, in a spacious wooden house were specimens of art manufactures. These formed the bazaar of the show. There was also, as usual, a fine-art gallery. A loan collection from South Kensington was this year dispensed with, and the whole of the works exhibited were by local artists. There were between four and five hundred paintings on the walls, and as a whole they were regarded as more than average merit. The collection of paintings and water-colours numbered 460. There was in the building a miscellaneous collection chiefly of jewelry and carving lent for exhibition from the South Kensington Museum.

Oxford Architectural and Historical Society.—The third and last excursion of this society for the present term took place on Saturday before last, the party starting from the Martyrs' Memorial in two conveyances. The weather was propitious, and the party consisted about forty persons. After an exceedingly pleasant drive through Littlemore, Sandford, and Waneham, they alighted at the porch of the old Abbey Church, Dorchester, where the rector, the Rev. Mr. Macfarlane, awaited them. The party made a tour of the church, inside and out, and Mr. J. H. Parker, C.B., pointed out the great mixture of the workmanship. A visit was then taken to the almshouses, and to the old hall, now used as a school. The return journey was then taken. A meeting of the society was held on Tuesday in the Taylor Building (by permission of the curators), when Mr. Parker delivered a very interesting lecture on "Recent Excavations at Exeter in Rome," illustrating his course with several photographs and plans.

Cornish Granite Monument.—Messrs. Freeman, Penryn, have just completed a monument which is to be erected in the grounds of Penvenich Hospital, to the memory of the officers and men of the *Miranda*, *Curaçao*, *Esk*, and *Harrier*, who were killed in New Zealand in 1840 and 1864. The monument, which is 40 ft. high, includes a sub-base and steps to the height of 3 ft., base dia. cap. and needle. The base is bulbed, and around the upper part is a carved rope or cable coiled at the corners. The die is "4 in. square, and the panels, which are finely fluted, bear inscriptions in gilt letters of the names of those who fell, and the ships to which they belonged. The cap is also moulded, and around its upper part is a carved chain cable, the whole being surmounted by a needle, 26 ft. high, in one stone, 3 ft. square at the base. The monument is a fine specimen of the granite from rusew.

The Restoration of Rochester Cathedral.—When the dean and chapter, a few years ago, took in hand the work of restoring Rochester Cathedral, under the skilful guidance of Sir Gilbert Scott, there was a great amount of work to be done. They have accomplished a portion of it, to the great improvement of the building, and have spent upwards of 10,000*l.* in doing so. Mr. Dr. Griffith, formerly a canon, and Mrs. Griffith have provided 3,000*l.* for the restoration of the interior fittings of the choir. Sir G. Scott estimates that the work of restoration still gently needed will cost 17,000*l.*

New Synagogue at Liverpool.—The new Synagogue of the Liverpool Old Congregation, now in course of erection, in Princes-street, is rapidly approaching completion. The ark, according to the *Jewish Chronicle*, will be constructed entirely of costly marbles of different colours, and will form a separate structure, a Temple within a Temple as it were. The ark alone will cost 1,000*l.* Mrs. James Braham, the widow of the gentleman who last year bequeathed the sum of 20,000*l.* to the congregation, is having a marble pulpit, which is to cost 250*l.*, constructed at her sole expense, to be presented to the synagogue. Among other gifts by various persons, Mr. Ranger has given an embroidered curtain for the holidays, which is to cost 250*l.* The day for the consecration of the synagogue has not yet been fixed.

The Pollution of Rivers.—A meeting was held at the rooms of the Society of Arts, John-street, Adelphi, last week, to promote legislation in restraint of the pollution of rivers. Lord Salton presided, and there was a large attendance of gentlemen interested in the question. Appropriate resolutions were passed, to the effect that it is the duty of her Majesty's Government to introduce during the next session of Parliament a measure to put an end to so dire an evil; and that it should be made highly penal to discharge sewage and other refuse into the rivers. Other resolutions, that there should be a law to protect to the utmost practicable extent water as well as air from pollution, and that a deputation should wait upon the Prime Minister to urge on him the necessity of legislative action next session, were carried.

The Skinners' Company.—This ancient company (they bought the site of their hall on Dowgate-hill in 1260, and received a charter in 1327) have always done something for poor scholars, and they are now carrying out the same policy by instituting fresh scholarships. The new master of the company is an architect, Mr. Charles Barry, and he presided at his first dinner on the 11th inst., dispensing elegant hospitality and performing the duties of a host in the walls above the wainscoting which call for pictures.

Margate Drainage.—The mayor (Mr. T. D. Reeve) presided at a meeting of the council, when the subject of the appointment of a competent engineer to advise upon the selection of the drainage plans for premiation was considered, and the following resolution, after a long discussion, carried:—"That we consult an eminent engineer to advise us as to the disposal of the 200*l.* and 100*l.* premiums for drainage plans." It was further decided that the town-clerk should write to Messrs. Bazalgette, Beardmore, and Baldwin Latham, and ascertain whether they would undertake the duties, and at what fee.

Sanitary Science Peripatetically Explained.—The Regius Professor of Medicine, Dr. Acland, recently attended, in the parish of Marsh Gibbon, near Launton, with a number of the members of the university, and demonstrated sanitary conditions, good and bad, at the cottages there situated. Mr. Sendall, a Poor-law inspector, was present. The party at Marsh Gibbon were met by the Rev. Mr. Holmes. In one of the rooms of the parish schools Dr. Acland stated the object of the excursion, and various cottages, old and new, were visited, and remarks made upon their condition and surroundings.

Sale of Sir William Tite's Autographs.—The interesting autograph collection of the late Sir William Tite, M.P., comprising many almost unique specimens of great writers, statesmen, divines, &c., both at home and abroad, together with a long series of letters and signs manual of royal and illustrious personages, many of them connected with the houses of Stuart and Bourbon, have been sold by Messrs. Sotheby, Wilkinson, & Hodge, in Wellington-street, Strand. There were several commissioned purchasers from the Continent and America in the room, and the proceeds of the day's sale amounted to somewhat over 1,200*l.*

Engineering in University College.—Mr. A. B. W. Kennedy, of Edinburgh, consulting engineer, has been appointed to the Professorship of Civil and Mechanical Engineering in University College, London, vacant by the resignation of Professor George Fuller, who has succeeded Professor Thomson at Belfast.

The Duke of Beaufort's Tomb at Windsor Castle.—This ancient specimen of antique statuary, which adjoined the tomb of the King of the Belgians in the south aisle of St. George's Chapel, Windsor, has been removed to the family estate in Gloucestershire. Her Majesty has determined to erect a magnificent chapel and monument in honour of her father, the Duke of Kent. This will also necessitate the removal of the tomb of the King of the Belgians, which will be placed near the organ-loft in the north aisle, beside the monument of Sir John Elley.

Proposed Aquarium at Bridlington Quay.—A project has been set on foot to provide this seaside resort with a marine aquarium. Mr. Fairbank, C.E., has inspected the site (a little beyond the Alexandra Hotel), and from the low dip of the land he guarantees that baths or an aquarium could be supplied with salt water without the aid of pumps. It is expected that the work will cost about 5,000*l.*, towards which several gentlemen have promised to subscribe. The affair is to be worked as a limited liability company.

Sir G. Gilbert Scott.—On Commencement Tuesday at Cambridge, Sir G. Gilbert Scott, R.A., was admitted by the Chancellor to the degree of LL.D. *honoris causa*. The Public Orator, in speaking of Sir Gilbert, observed that that gentleman would hardly, perhaps, like it to be said, "*Nihil tibi quod non erant*," so he would describe him as one who "*Nihil refect quod ad artem non revocavit*." Reference was made to the chief restorations effected under Sir Gilbert Scott's guidance.

Labourers' and Artizans' Dwellings.—On Tuesday a Bill in the Commons was printed to give increased facilities for the erection of labourers' and artizans' dwellings. It is proposed to empower landowners to borrow money of the Public Works Loan Commissioners for the erection of such dwellings. The Bill recites that there is a great deficiency in the supply of suitable dwellings for the moral and physical improvement of the persons mentioned.

Employment of Children in Brick-making.—John Barrow, brickmaker, has been charged, at Leicester townhall, by Mr. H. M. Thornhill, inspector of factories, with employing Arthur Gunby without having a school certificate. Fined 10*s.* 6*d.* including costs. He was also charged with employing in his brickyard William Oakwell, under ten years of age, and admitted the offence. Fined 10*s.* 6*d.* including costs.

Marnhull, Dorset.—An elementary Church of England school, for 160 children, and a residence for school teacher, are about to be built in this parish, upon a site given by the Dowager Marchioness of Westminster. The materials are local rag stone, with Exbury brick dressings for walls, and plain tile for roofs; the style is a simple adaptation of domestic Gothic. The architect is Mr. James Soppiet, of Tout Hill, Shaftesbury.

Industrial and Fine Arts Museum for Dublin.—In answer to Sir A. Guinness, in the House of Commons, Sir M. H. Beach said he would give his attention to the recommendations of the Commission which reported in 1859 on the Science and Art Department in Ireland, in reference to establishing a general industrial and fine arts museum in Dublin, and that he hoped to be able to make some proposal on the subject.

"The Builder" as a Sanitary Pioneer.—We owe warm thanks to the editor of the *Hackney Express* for generous expressions as to the part long played by the *Builder* in discussing and urging sanitary reforms, and as the pioneer of sanitary science and improvement. The rarity of the acknowledgment on the part of contemporaries gives additional value to the observations.

The Mortuary for Clerkenwell.—The Vestry have resolved, after considerable discussion, to adopt a recommendation of their special Mortuary Committee, that the old burial-ground at the back of St. James's Church, Pentonville, be taken as a site for the proposed mortuary.

Leicester Square.—The opening of the square is fixed to take place on the 30th inst. The Prince of Wales will not be able to be present on the occasion. The statue of Shakespeare, which is already in position, is founded on that in Westminster Abbey.

Rhubarb Leaves a Cure for Crickets.—A large bakehouse at Turvey, Beds., was some years ago infested with crickets. As hot weather came on the nuisance became very serious, for crickets were to be found in every possible crevice. The baker was advised to lay some rhubarb leaves about the place. The light of the next morning revealed nibbled leaves and myriads of dead crickets; and this was the last of them in that bakehouse.—*The Garden.*

Society of Biblical Archaeology.—A series of popular and educational lectures on the "History and Philology of Assyria and Egypt," on the plan followed by the Continental professors, will probably soon be originated under the sanction of the Council of this Society.

TENDERS

For painting the exterior of Islington Workhouse, Upper Holloway:—

Ward	£138 0 0
Thorpe	437 10 0
Vick	360 14 0
Britton	320 10 0
Cox	329 0 0
Brown	235 0 0
Flaxman	280 0 0
Thomas	289 0 0
Wright	267 0 0
Green	260 0 0
Jakes	247 0 0
Wortley	235 5 0
Seed	218 0 0
Charlton & Martin	191 0 0
Surridge	176 0 0

For widening and completing road at Burgess-hill, Hendon. Mr. R. B. Grantham, C.E.:—

Wall Bros.	£277 13 8
George	255 0 0
Meston	236 0 0
Messrs. Culverhouse	229 3 0

For two houses and shops, at Stratford, for Mr. M. Cash. Mr. John Hudson, architect:—

Little	£2,164 0 0
Mortar	3,973 0 0
Cheffins	3,970 0 0
Renor	3,900 0 0
Rivett	3,880 0 0
Norton & Son	3,873 0 0

For the erection of a warehouse in Curtain-road, Shorelitch, for Messrs. S. Moss & Sons. Mr. Lewis H. Isaac, architect. Quantities supplied by Mr. L. C. Riddett:—

Brown & Robinson	£260 0 0
Kilby	913 0 0
Nightingale	883 0 0
Scrivener & White	857 0 0
Elkington	860 0 0
Bayes & Ramage (accepted)	798 0 0

For additions to children's home, Bonner-road, Betcham-green. Mr. W. W. Pocock, architect. Quantities supplied:—

Hobson	£2,569 0 0
Emor	2,491 0 0
Niblett & Son	2,455 0 0
Mayle	2,418 11 0
Gregor	2,360 0 0

For additional schools and offices, William-street, Chelsea, for London School Board. Mr. E. R. Robson, architect. Quantities supplied:—

Niblett	£3,995 0 0
Shepherd	3,950 0 0
Williams	3,900 0 0
A. Richardson & Walker	3,786 0 0
Hobson	3,784 0 0
Scrivener & White	3,619 0 0
Hood & Aldry	3,559 0 0

For St. Saviour's Church, Lambert-road, Brixton-hill. Mr. E. C. Robins, architect. Quantities supplied. Contracts Nos. 1 and 2:—

Dore Bros.	£7,695 0 0
Brass	7,730 0 0
Rider	7,632 0 0
Newman & Mann	7,620 0 0
Hill, Higgs, & Hull	7,612 0 0
Kirk	7,600 0 0
Crockett	7,457 0 0
Bangs & Co.	7,355 0 0
Lathey Bros.	7,233 0 0
Hobson	6,996 0 0
Taylor	6,584 0 0

For villa residence at Kingston-hill-place, for Mr. J. L. Edwards. Mr. W. W. Gwyther, architect. Quantities supplied by Mr. S. J. Thacker:—

	House.	Conservatory.
Langmead & Wade	£3,398 0 0	£230 0 0
Astford	3,220 0 0	222 0 0
Thompson & Smith	3,188 0 0	218 0 0
Aitchison & Walker	3,184 0 0	185 0 0
Boyce	3,181 0 0	229 0 0
Rankin	3,180 0 0	250 0 0
Davis	3,170 0 0	253 0 0
Adamson	3,085 0 0	235 0 0
Cook & Green	2,987 0 0	210 0 0

For alterations and additions to Nos. 238 and 260, Mare-street, Hackney, for Messrs. Holland & Brangwin. Mr. Henry Shaw, architect. Quantities by Mr. R. S. Wardle:—

Dabbs	£1,651 0 0
Robins	1,478 0 0
Culver	1,331 0 0
Outwaite & Son	1,241 0 0
Emor	1,230 0 0
Boyce	1,174 0 0
Shurmer	1,172 0 0

For a family and commercial hotel, in Fisherton-street, Salisbury, for Messrs. George Gale & Co., of Hordean, Hants. Mr. Fred. Bath, architect. Quantities by the architect:—

Dawkins	£2,849 0 0
Pomroy	2,667 0 0
Hopkins	2,131 0 0
Tyburn	2,133 0 0
Cooper (accepted)	2,063 0 0

For additions to mansion (billiard-room), at Blackmore-road, Kington, for Mr. R. B. Bazendale. Mr. Geo. R. Gilmour, architect:—

Gilmour	£790 0 0
Kilby	731 0 0
Messrs. Arrowmath, for furnishing	647 18 0

For rebuilding the Cooper's Arms, Flood-street, Chelsea, for Mr. D. Price. Mr. H. R. Cotton, architect. Quantities supplied by Mr. A. T. Gates:—

Mills	£1,840 0 0
Newman & Mann	1,442 0 0
Macchellan	1,379 0 0
Williams	1,247 0 0
Hyde	1,125 0 0
Wagner	1,023 0 0
Toms	1,016 0 0

For erecting new stabling, &c., at Compton Field-place, Godalming, for Mr. John King. Messrs. John Giles & Gough, architects. Quantities supplied:—

King	£1,285 0 0
Sheffield	1,134 0 0
Grover	1,125 0 0
Nye & Son	1,118 0 0
Tom	1,066 0 0
Putney	1,075 0 0
Mitchell	1,062 0 0

For the erection of a shop, &c., at East Hamptree, Somerset, the store being supplied, for Mr. William Wildman Kettlewell. Mr. Edward Thomas Boston, architect:—

Naggs & Adams (accepted)	£1,708 0 0
--------------------------------	------------

For alterations and additions to St. Botolph's Church, Farnborough, Warwickshire. Sir G. G. Scott, architect:—

Cooper	£3,939 17 6
Law & Sons	3,516 0 0
East	3,506 0 0
Franklin & Sons	3,040 0 0
J. & T. Davis	2,977 0 0
Symon & Co.	2,974 0 0

For alterations and repairs to Great Bourn Vicarage, near Banbury, Oxon:—

Claridge	£295 0 0
J. & T. Davis	875 0 0
Symon & Co.	797 0 0
Kimberley	798 0 0

For the erection of a hostel for fifty boys, master's house, and infirmary, for the Governors of Stamford Endowed Schools. Messrs. Hay & Oliver, architects. Quantities by Mr. G. R. Tasker:—

Webster	£5,730 0 0
Ireton	5,719 0 0
Husson	5,613 0 0

For new basement, &c., under Mitre-court, St. Paul's churchyard, for Messrs. Hitchcocks. Messrs. Charles Searle & Sons, architects. Quantities not supplied:—

	Wrought-iron Girders	New Basement.
Axford	£237 0 0	£1,460 0 0
Newman & Mann	360 0 0	1,415 0 0
Sewell & Sons	354 0 0	1,060 0 0

For the erection of manufactory at Huddingshaw-lane, Oldham, for the Carbon Fertilizer Company (Limited). Mr. Alexander Payne, architect:—

Gribble	£5,980 0 0
Daivson	5,748 0 0
Wade Bros.	5,680 0 0
E. Neill & Son (accepted)	5,648 0 0
Tall & Co. (Concrete Building)	5,690 0 0

For erecting male infirm wards, probationary wards, store rooms, and coal cellars, at St. Luke's Workhouse, City-road. Mr. H. Saxon Snell, architect:—

Moreland & Nason	£20,780 0 0
Staines & Son	19,650 0 0
Grinwood & Sons	19,600 0 0
Crockett	19,420 0 0
Martin	18,950 0 0
Roberts	18,448 0 0
Smith	18,337 0 0
Mark	17,988 0 0
Wall	17,330 0 0
Jerrard	17,283 0 0
High	16,380 0 0

TO CORRESPONDENTS.

Unusual pressure on our columns compels us to postpone a number of communications.

W. L. (dash) have our attention)—Z (dash)—A. M.—W. F. R. W.—S. G. R. I.—W. T. J. K. J.—C. T. R. H. S. S.—J. F.—W. H. P.—H. L.—J. & T. D.—F. E. T.—J. M. T. R.—S. J.—W. & N.—C. G. H. (dash).

We are compelled to decline pointing out books and addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the tenderer, and not necessarily publication.

Note.—The responsibility of signed articles, and papers for public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

Six lines (about fifty words) or under .. 5s. 6d.
Each additional line (about ten words) .. 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to read in any part of the United Kingdom at the rate of 1s. per annum, payable in advance.

Halfpenny stamps accepted for amounts under 5s. Any larger should be remitted by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to DUDMAN FOURDRA.

Bath Stone of best quality.

RANDELL, SAUNDERS, & CO. (Limited). Quarries and Stone Merchants.

List of Prices at the Quarries and Depots, also cost of transit to any part of the Kingdom application to

Bath Stone Office, Corsham, Wilts. [Advt.]

STONE BROTHERS,

Bath Stone Merchants, supply direct from their own Quarries:—

Box Ground, Corsham Down, FAREHAM DOWN, COMBE DOWN, AND STOKES GROUND.

Prices on application at Bath-stone Office, London Depot, G.W.R. Mileage Station, Paddington. Stone Dressings prepared ready for fixing. [Advt.]

Whitland Abbey Green Slates.—The Quarries are now fully opened out, and producing Slates in all sizes, and in any quantity: sound, and of choice green tint. O can be executed without a day's delay. Samples and further particulars, apply to

MANAGER, at the Quarries, Narberth, R.S.O. [Advt.]

Asphalte.

Seyssel, Patent Metallic Lava and White Asphaltes.

M. S T O D A R T & C O

Office: No. 117, Cannon-street, E.C.—[Advt.]

Bills of Quantities, Specifications, Lithographed by ROBT. J. COOK & HAMMILL

29, Charing-cross, S.W., with accuracy, punctuality. Plans and Drawings Traced, or Lithographed.—[Advt.]

J. L. BACON & CO

MANUFACTURERS OF

IMPROVED HOT-WATER

APPARATUS,

FOR WARMING AND VENTILATING

Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.

OFFICES AND SHOW-ROOMS:—

476, NEW OXFORD STREET, London, From FARRINGTON ROAD.

Publishers of a Pamphlet on "Hot-Water Heating."

T. TRELOAR & SONS,

SUPERIOR

COCOA-NUT

FIBRE

MATTING

AND

MATS.

Manufacturers and Warehousemen,

69, LUDGATE HILL, E.C.

GOOD

FLOOR

CLOTH

KAMPTULI

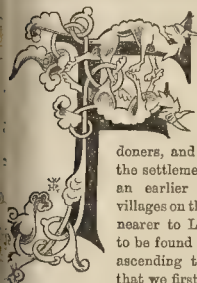
COR

CARPET

The Builder.

VOL. XXXII.—No. 1638.

The "Star and Garter" and Richmond.



OR many centuries, the village of Richmond has been the favourite resort of all classes of Londoners, and the explanation of the settlement of this place at an earlier period than other villages on the Thames, situated nearer to London, is probably to be found in the fact that in ascending the river it is here that we first come upon ground which rises above the level of the Thames. Richmond village may therefore be said to owe its existence to the beauties of Richmond-hill. It was a royal residence as early as the reign of Henry I., and the old name of the place, Sheen, meaning bright or beautiful, shows the estimation in which it was formerly held. The present name of Richmond was given to it by Henry VII., after his own earldom, and in the last century our ancestors, with their love for likening any pretty English spot to some place in Italy, called it the "Frascati of England." The beauties of new places have been so frequently sung and painted as have those of Richmond-hill. Poets and artists have vied with each other in extending its fame, yet some persons have been found to express dissent from the popular opinion. Joanna and Jeanie Deans were of one mind, when the former said that the view "only wanted a page," and the latter remarked to the Duke of Argyll, "Its braw rich feeding for the cows, and they have a fine breed of cattle here; but I like best as well to look at the crags of Arthur's Seat, and the sea coming in ayont them, as at a' these tinkle trees." The speech of the old Duke of Queensberry, when he said, "What is there to make so much of in the Thames? I am quite weary of it; there it goes, flow, flow, flow, always the same," need not be taken into account, as it was only the expression of the sentiments of a worn-out voluptuary.

The name of the "Star and Garter" is now indissolubly associated with that of Richmond, and the chief fame of this celebrated hotel is the growth of the present century. About the year 1825 its attractions were so highly esteemed, that when the late Mr. Ellis made a road down Black Horse-lane (then a mere country lane) at his own expense, the inhabitants strongly objected to the proceeding because they said that visitors would come from London to the Star and Garter, and not go into the town at all. Now this lane, which took its name from the Black Horse Inn at the end, is entirely built upon, and has been recalled the Queen's-road, and visitors still prefer to ascend Richmond Hill, and do not neglect the old town. Of old, visitors were contented with wayside inns, although they flocked to Richmond in great numbers, and the numerous prints published of it in the eighteenth century show the high estimation in which it was then held. The "High Walk" on the Green was the favourite promenade, to which all the fashionables flocked, and many of the aristocracy came down from London once a week to enjoy the pleasures of the place. Horace Pope, writing in 1749, says, "As I passed by the Green I saw Lord Bath, Lord Lons-

dale, and half a dozen more of the White's Club sunbathing at the door of a house they have taken there, and come to every Saturday and Sunday to play at whist. You will naturally ask, why they cannot play at whist in London on those days as well as on the other five. Indeed I cannot tell you, except that it is so established a fashion to go out of town at the end of the week that people do go, although it be only into another town." About the year 1686 wells of purging mineral water were discovered on the ascent of the hill, and soon afterwards buildings were erected near for the convenience of those who were attracted to the place for the purpose of drinking the waters. An advertisement in the *Post Boy* of July 11th, 1696, announces that "At Richmond new Wells, a concert of music, both vocal and instrumental, will be performed, on Monday next at noon, by principal bands and the best voices," and it appears that the Assembly Room soon became a fashionable resort. Macky mentions the place in his valuable "Journey through England" (1724), and writes that in the summer a great deal of good company is drawn to the Wells, "where there is dancing and other public diversions every Monday and Thursday during the season," adding "for a man of no business, whose time hangs heavy on his hands, recommend me to Richmond." As late as 1760 the Wells were much frequented, but soon after this place degenerated, and about 1780 the Richmond Wells ceased to exist. During a portion of the time that these phases of fashionable life were being enacted in the lower part of Richmond, the hill was an open spot with one or two unpretending little inns dotted about it. One of these was the Star and Garter, the history of which we will now attempt to convey. Early in the eighteenth century a piece of the waste of Petersham Common was divided off and leased to Mr. John Christopher by the Earl of Dysart, lord of the manor; and it was on this ground that the original Star and Garter was built in the year 1738. This wayside inn is described in Cries's "Richmond and its Inhabitants":—"There are representations of this house when it was indeed of a very humble character. It had a common wooden penthouse, as it is termed, for the entrance-doorway, and a sign-post, with a large sign attached to it, standing in front of the inn, which sign-post and board were plainly visible from any part of Choldonley Walk by the river side, so perfectly destitute of trees was all that part of Richmond commencing from the present bridge and walk in the direction of the Duke of Buccleuch's to its summit at the entrance of the park; and it is recorded that so limited was the accommodation at the old Star and Garter that at no time could a visitor stay the night there, for the simple reason that not the slightest accommodation in that way was ever attempted by the proprietor." In course of time the house was rebuilt in a substantial manner, and Mr. George Ellis, of Richmond, possesses a drawing of the hotel in 1780. It is there shown as a building of two stories with a porticoed entrance, and next door, on the west side, is a house, which was afterwards taken by the late Mr. Joseph Ellis, who rebuilt and added it to the hotel. Richard Brewer enlarged the Star and Garter into a first-rate hotel, and built the grand ball-room and dining-room, which were so greatly admired; but he was in advance of his age, and ruined himself in his attempt to supply the public with an agreeable resort. In 1803-4 a large piece of ground, on which a part of the hotel was long afterwards built, was leased to Brewer by the Earl of Dysart at a rental of 3l. per annum, on condition that the view from Sir Lionel Dorell's house opposite, or from the lodge at the new Park gate should not be impeded. No legal agreement, however, was

made to this effect, and the condition was therefore afterwards found not to be obligatory. Soon after this piece of land was taken by Brewer, he was forced to close the hotel, and it remained shut up for five years. In Miss Berry's Diary, under date "Sunday, June 12th, 1808," is the following entry:—"The door of the Star and Garter (now shut up as an hotel) being open, we walked in, and a civil quondam servant of the house showed us the rooms. Dismal history from the woman of the foolish man who made these great additions to the former house, ruined himself, and died in prison; his wife, seeing that all was going wrong, became insane and died before him." When the deserted house was at its worst, and there was hardly a whole pane of glass left in any of the windows, Christopher Crean, cook to the Duke of York, took it, and after renewing its appearance, he opened the hotel with some *déclat*, in 1809. After Crean's death his widow continued the business, and although during their time the fame of the place was high, it became unpleasantly noted for the extravagance of their charges. It was a current joke that visitors had to pay half a guinea for the privilege of looking out of the window, and the popular opinion is seen in a little book called the "Epicure's Almanack," published in 1815, where we read, "The Roebuck is a sort of tavern of ease to that stupendous hotel the Star and Garter on Richmond-hill. This house commands one of the most extensive and beautiful prospects in the environs of London. It is remarkable as being a very costly house, so costly, that on the demise of, or secession of its proprietor, no one could be found of sufficient capital to embark in the concern; the company who frequent it, and on whom it must depend for support being rather select than numerous, instead of being numerous and select." In February, 1822, Mr. Joseph Ellis took the house from Mrs. Crean, and at once made alterations and improvements in the management. It was during his occupancy that the Star and Garter obtained its greatest fame, and the improved opinion of it held by the public is seen in Evans's "Richmond and its Vicinity" (1825). "The Star and Garter is more like the mansion of a nobleman than a reception for the public. From the balcony of the assembly-room may be seen seven counties, and in the adjacent grounds Mr. Ellis, its present occupier, has made very considerable improvements." The terrace at the back of the house from which the view was to be seen led to a plantation which opened out upon Petersham Common, and thus an agreeable walk was always within reach of the visitors. Mr. Ellis built largely on the descent of the hill, so that the hotel contained much greater accommodation than appeared at first view. On the death of Mr. Ellis in 1858, his son, Mr. George Ellis, became proprietor of the hotel, and he continued its management until it was bought by a Limited Liability Company, to whom he handed it over on the 1st of January, 1864. The company at once erected a large building from the designs of Mr. E. M. Barry, R.A., by the side of the old hotel, and which still remains. In February, 1870, the whole of the original Star and Garter was destroyed by fire, and now a palace has arisen upon its site. The hotel has been for many years the favourite resort of all classes, and there are few persons but have found themselves at some time under its roof. Pleasant recollections we have of many a merry meeting. Its nearness to London, and the beauty of its situation, has pointed it out as a peculiarly suitable place for wedding-parties, and for the dinners of the Bank of England directors, and of the great City companies. The original Four-in-Hand Club made a practice in the summer of driving down from Town every Sunday, and dining at the Star and Garter. Many celebrated historical characters have had a liking for this hotel: thus the great voyager,

The Castle is of considerable antiquity, and Thomson, the poet, and Quin, the actor, were constant frequenters of this inn. The present hotel obtained its fame from the spirited management of the late Mr. Joseph Ellis, the proprietor of the Star and Garter. Mr. Ellis purchased the house for 11,000*l.* and then remodelled the interior. He built ball and assembly rooms towards the river, formed extensive cellars, and spent in all about 60,000*l.* upon his improvements. When, however, the place was sold it only realised about one-fourth of what Mr. Ellis had spent upon it. A dinner was given here in

We have already referred to the Green, but we must return to it in order to notice the palace and the theatre. Richmond has been patronised by Royalty from a very early period, and we have evidence that about the year 1125 Henry I. possessed a house at Shene. Soon afterwards, however, this house, with the manor, was granted to Michael Belet, and in the possession of the Belet family they remained for many years. At the end of the reign of Edward I. the house and manor had returned to the Royal hands, and for many years afterwards our kings and queens took up their residence there. The house was altered, added to, and improved at different times; but it was not until the whole building was destroyed by fire, in the reign of Henry VII., that the celebrated old palace was built, and not known when this palace was called down, but James I. is supposed to have repaired some parts of it. The gateway still remains which points to the site of the building in which Edward III., Henry VII., and Elizabeth, all died. Richard II. and his first wife, Anne of Bohemia, made the palace of Shene their favourite summer residence, and kept their court in it with great state; but when the Queen died, Richard took a disgust at the place, and defaced what he had before beautified. Henry VIII. amused himself for a time at Richmond with pageants and jousts, until he accepted Wolsey's forced but splendid gift of Hampton Court. When the great Cardinal gave up his own palace at Richmond, Elizabeth was a prisoner here for a short time in the reign of her sister; and when she came to the throne she often visited it as a queen. On one of these occasions she was greatly offended by a sermon preached before her by Andrew Bude, Bishop of St. David's, on that occasion to say "that time had ever furrowed her majesty's face and besprinkled her hair with its meal." The queen remarked afterwards that "the bishop might have kept his arithmetic to himself," and added "that the greatest clerks were not always the wisest coxcombs." Henry, Prince of Wales, the son of James I., lived and died in the palace, to which he added a picture-gallery, designed by Luigi Jones, at a cost of £2661., and his death caused

The fire which destroyed the original Star Garter Hotel at Richmond left untouched a new hotel towards the park, and also the dining-room towards the town, erected a year ago by Mr. E. M. Barry, B.A., already mentioned, and for several years the site has been left a mass of ruins. Since the autumn of 1872, however, all this has been cleared away and an important building sprang up, which is now open to the public, and stands on an area of ground 116 ft. by 70 ft.

orms what may be styled a pavilion between the two structures which before existed.

The centre of the pavilion is occupied by a large hall, 80 ft. by 61 ft., with windows facing the terrace and river on one side, and the main road on the other. This hall or restaurant has space enough to dine 250 persons in parties of four and six each. It is 33 ft. high in the centre, and has a counter-ceiling of ground-glass from which depends a gas-chandelier of 96 lights,* at a height of 16 ft. from the floor an open organ runs round the hall, opening out of which are thirteen rooms for private parties varying in size from 8 ft. by 14 ft. to 22 ft. by 14 ft., all having a charming prospect. There is also an orchestra and a band of fifty performers.

There are two entrances to the new pavilion adjoining the road,—one next the large dining-room, and the other at the extreme end by the hotel. Adjoining each entrance will be found vestibules and dressing-rooms for gentlemen, like similar rooms for ladies are on the first landing of each staircase leading to the first floor. An octagonal vestibule forms the junction with the hotel, and, fitted up with ferns and plants, affords a pleasant lounge between the hotel and the restaurant. The entrance next the large banquetting-hall can be closed off from the restaurant, so that two public dinners or private parties might be held at the same time, without in any way interfering with each other. The new pavilion is Italian Romanesque in its architecture; it has two stories of open loggias toward the road, while toward the gardens which are 16 ft. below the roadway) it has one story; the basement being occupied by central kitchen, 61 ft. by 30 ft., having attached to it sculleries, pastry-rooms, plate-rooms, still-rooms, and wine-cellars, besides a long suite of offices towards the north, and underneath the smoking room, opening out upon a level with the terrace gardens. The ample kitchen and other accommodation will enable as many as 1,000 persons to dine in the several parts of these vast buildings, in separate or large parties, at the same time, without putting any inconvenient strain on the resources of the establishment. It is proposed to utilise the hotel proper for a residential and family business, and the new pavilion and banquetting-hall, with the numerous smaller rooms, for public and private dinners, for which the Star and Garter is famous.

The whole of the Pavilion is warmed throughout by hot water, and with its arrangements for theatres and abundant cloak-rooms is available, and is now in constant use for concerts and balls, to which the dining-hall adjoining serves as an admirable supper-room.

The buildings have been erected and decorated in the designs and under the direction of Mr. J. Phipps, F.S.A., architect, and are furnished in an ornate manner, in character with the decorations, by Messrs. Gillow, of Oxford-street, for the direction of the architect. The following tradesmen have been engaged on the works:—Messrs. Drake's Concrete Company for internal walls up to ground level, excavation and drainage; general builders' work, Messrs. Bowman & Mann; iron girders and joists, Mr. Dayman; engineer's work, and all kitchen apparatus and fittings, Messrs. Jeakes & Co.; sanitary fittings and plumbing, Mr. Geo. Jennings; iron-pier work, Messrs. Jackson & Sons; work, Messrs. Stodge & Co.; decorations and painting, Mr. Edward Bell; zinc roofing, Messrs. Ashby & Co. The clerk of works was Mr. Herbert Herring; and the total costs have been but £24,000. The tower and suite of rooms in the banquetting-hall are not yet done.

BRONZE MONUMENTS IN LONDON.

SOME time ago we directed the attention of Government to the failing health of the lions at the foot of the Nelson Monument in Trafalgar-square, and it has been stated that some remedial measures will be adopted. It is to be hoped that at the same time the four subjects in relief on the pedestal will be looked to. These have some so far encrusted that the workmanship is in parts hidden. We do not know if anything has been done to them from the time they were first put up there. They ought, truth be told, to be looked to once in a year, or two at the farthest. The longer the delay the sicker the encrustation increases on them, and the harder it becomes, so that it can only be removed by the use of strong chemicals.

THE ARCHITECTURAL CONFERENCE.

On the morning of Thursday, the 18th inst., a visit was made by a considerable number of members of the Conference to Northumberland House, to which we need scarcely refer. The place was in the most unfavourable condition possible for being seen; for not only had every rag of furniture and fittings been already removed, but the ceilings and walls had been despoiled of some part of their permanent decorations, and the glass drawing-room, of which we gave a view the other day, was reduced to what may be called a state of skin and bone, so that even the characteristic effect of the peculiar wall decoration could only be imagined.

The meeting at three p.m., at the Institute, may have caused some surprise to old members and country architects who had not managed to move "with the times." Mr. Stevenson's paper on "The Recent Reaction of Taste in English Architecture" proved to be not merely a criticism on or defence of the "Queen Anne" movement, but really a downright assumption that here at last we have found the "missing link" between architectural art and the wants and feelings of the present day.* We print Mr. Stevenson's paper in full elsewhere, as the first direct and unreserved assertion of the claims of this new revival which has been openly made in such a form. We may here call attention, however, to a point which the reader of the paper was desirous to impress on his hearers,—that he did not accept the term "Queen Anne style" as representing fully the style of architecture he was pleading for, but would prefer to use some such term as "Free Classic" style. This, if accepted by others holding Mr. Stevenson's views, indicates, no doubt, something wider and better than a mere restoring of the style of a period, and shows a disposition towards that kind of treatment of Classic design in a Gothic spirit which we have often advocated as the real answer to the demand of the day for a style suited to its wants, and yet artistic and picturesque in effect. At the same time it must be observed that Mr. Stevenson's paper, in spite of his remarks on this head, really went to the point of recommending for special imitation the old brick house with flat arches and what he termed a brick frame to the window openings, and with the window-frames close up to the outer face of the wall, with which we are all so familiar in some of the older neighbourhoods of London, as well as here and there up and down the country. No one will deny to these old houses their interest and a certain picturesque quality, but that kind of thing can hardly, we fear, do duty for "Free Classic architecture."

In commencing a discussion on the subject treated of in the paper, Professor Kerr did not think that what was termed the Queen Anne style would have a lasting hold upon us. We had at least got over the idea now that any particular style was of superhuman origin; a feeling which, in his younger days, really did exist in regard to the "five orders." Change, no doubt, was necessary and unavoidable, and it was besides good for us; but could any one say what would be the style of architecture ten years hence? Ten years ago no one would have expected that they would at this time have been listening to such a paper as the one they had just heard. There was a great feeling in favour of enthusiasm in one's practice now: a young man was to bend over his drawing-board "lovingly,"—he believed that was the word; but they could hardly be expected to expend that enthusiasm on a style which, like this under consideration, was in fact only a stepping-stone. Gothic had been utterly ransacked in search of what was novel and picturesque; if they had stopped with Gothic and worked out its elements in their own way, they might have arrived at a new Gothic style; but the desire for novelty was too great, and they had found out another style with much that was picturesque, and which was novel to some people, but which he hoped they should get out of again before long. He was not a partisan of Gothic; but really good Gothic was a thing that every one could admire and feel proud of; whereas the "Queen Anne" was merely something new, and would, under present conditions of taste, have given place to the Japanese style, if the Japanese had possessed any architectural style for us to adapt. However, he admitted one merit in the style, it was

* In the *Builder* of some ten or twelve years ago will be found a paper in which we pointed to buildings of that period, not for reproduction, but as affording a basis for a style of domestic architecture.

not barbarous, like much of the modern Gothic, and its practitioners might very likely end by passing into the early French Renaissance, which was a much better style, and might from this evolve a really new Classic style, more befitting the character of an ambitious and artistic people than anything in the Queen Anne style. This latter expression, by the way, was rather vague, and he should be glad if the advocates of the style would define its boundaries a little. He proposed a vote of thanks to Mr. Stevenson, who had stated his case very ably, and with a thoroughness which indeed showed no little moral courage.

In reply to the question as to the definition of the Queen Anne style, in Mr. Stevenson's view of it, several works were cited as examples, those of Mr. Norman Shaw, in Leadenhall-street, and the house shown in a drawing now in the Academy; the new School Board Offices on the Thames Embankment, by Mr. Bodley; the red brick house at Kensington, by Sir Digby Wyatt; and some others.

Mr. Waterhouse had listened to the paper with interest and dread. He did not agree with the last speaker, as to his proposed method of getting out of the Queen Anne style by getting into French Renaissance. After having ransacked the world for Gothic detail, and studied Gothic under every form, that was just the time to go on with it, not to give it up. The difficulty of the Gothic window had been got over in the main, by placing the wooden window-frame behind the arch instead of following it; and Gothic had been shown to be capable of meeting our practical wants. It would be a great pity if we should throw it all over now.

Mr. Sharpe thought we should go into a larger question, looking beyond ourselves, and inquire whether there was really any such reaction of public taste in favour of the new style as was referred to in the paper. He thought we were deceiving ourselves, and that the movement is forced on by certain architects, and not by the public at all. He remembered the rising of the Gothic movement, and the time when his own taste in the matter was first formed; and it was by the publications of Rickman and Britton that he was influenced. [But we may remind Mr. Sharpe that these publications would not have been produced unless there was already some probability of a demand and a market for them.] But granting the influence of public taste, was there any falling off in the public interest in our great Gothic monuments, or any interest in the Queen Anne style at all corresponding to this? Look at the numberless photographs of our cathedrals and churches, which were sent all over the country, and found buyers everywhere. He would mention one fact in illustration; they knew what sort of a place Ely was,—apart from its cathedral a mere village. Some time ago he had helped a small bookseller at Ely with a Guide to the cathedral that he was getting up; and had revised and corrected it for him. Recently the publisher had expressed himself as much indebted for this assistance, "for," he said, "I have sold in a few years more than 10,000 copies of the Guide." Each of those copies would probably represent two or three visitors, and this amount of interest attracted to a little place, with absolutely nothing but its cathedral to draw people to it, showed an unmistakable and deep-seated interest in the Gothic style of architecture. Had we ever adequately responded to the demand of the country in regard to Gothic architecture? Some years ago about three millions were voted by Government for building new churches; were the architects then equal to the occasion, able to furnish the best that could be asked from them? Were they so now? Can we, in short, produce any effect on the public mind, by our new works, commensurate with that which is produced by the monuments of Mediæval architecture? We had much to study yet in the Mediæval buildings of our country. For one thing, we had to learn from them restraint in the use of ornament, as well as to catch the right spirit of Gothic carving. In our great new Gothic buildings, our railway stations and hotels, we saw much carving, often coarse and destitute of feeling, and, moreover, greatly in excess in quantity. A good deal was said the other evening about the education of the public in architecture, but he maintained that the public had already a very general appreciation of certain things in architecture which were grand and impressive, and they are quite aware that our Gothic is not as good as the old Gothic. We required very much an improvement in our

* See p. 641 and p. 645.

knowledge and study of detail, also a clearer study and devotion to one style, so as to thoroughly know and comprehend it.

Mr. Tarver, as delegate of the Architectural Association, wished to say a word, though he had unfortunately not heard the whole of Mr. Stevenson's paper, having been occupied in designing a "reactionary" staircase. Mr. Sharpe had spoken eloquently in favour of Mediaeval architecture; but his remarks almost all referred to external characteristics of the Mediaeval style, both in regard to general effect and detail. No doubt, externally the Mediaeval Gothic was a style admirably suited to the climate of England,—in fact, the natural "outcome" of it. But the interiors of buildings were but poorly finished or furnished in the Middle Age period. Subsequently the change in habits of life had brought on a change in the internal fitting of the building, and this had necessarily given an impulse to joinery, which had received great improvements and refinements in design and in the manner of putting together, as compared with Gothic joinery and woodwork; and this had exercised an influence upon the style of architecture of the Jacobean and Queen Anne period. It was a style developed from within the building, and eventually reaching and influencing the exterior design; and what was called the Queen Anne style was, in fact, a style based upon joinery.

One or two other speakers concurred in this view. Mr. Eastlake, who made some remarks to that effect, wished also to ask, in reference to a remark of Professor Kerr's, why an architectural student should not go to his work "lovingly," or why it should be made a charge against him that he did so? It was at least better than going to it sneeringly and contemptuously.

Mr. Stevenson, in making a few remarks in reply, said that the architects who were taking up the movement he had referred to, were not the originators of it; that they were merely moved by the tide of public feeling, and that in fact they were the last to move. The revival of Gothic architecture had arisen out of the influence of the literature and poetry of the period which gave it birth. It was certainly a pity that we should have to give up Gothic, but we had to give up many things we had been enthusiastic about; and the fact was that a style of architecture, like many other things in the world, loses its interest when we have mastered it. The search after a style, like the search after truth, was better than the thing itself. He had no wish to be considered as the prophet of the Queen Anne style; it might be commonplace, no doubt, but then London life was mostly commonplace, and the architecture—must be the expression of the life of its day. (1) Referring to the Gothic window question, he thought the method of placing the straight frame behind, and the arched architecture in front, was essentially bad and un-architectural. The window near the wall surface, and with small panes, was valued for this reason, that it met the great feeling of the day in favour of surface; diversity and richness of surface was one of the things most sought after at present, and plate-glass especially was the greatest enemy of surface. As to the fact of there being a reaction, we had only to look at the works of Mr. Shaw, Mr. Nesfield, of Mr. Waterhouse himself (in some of his recent buildings at Cambridge and elsewhere), of Mr. Gilbert Scott, jun., whom he regarded as one of the ablest young architects of the day, to see that such a reaction was certainly a fact. No doubt it might, as had been suggested, be only a stepping-stone to something else. Life was mostly made up of stepping-stones; but as to what it would lead to, whether Early French or any other style, we had better leave that to futurity.

We may cap the discussion with a remark or two on our own account. The origin of the peculiar features and feeling of the Queen Anne style, suggested by Mr. Tarver, is a probable one enough; but, in so far as the advocates of the style are concerned, it proves too much, for features and methods of treatment which have their origin in joinery, must, for that very reason, be unsuitable and untruthful for brick and stone construction; and, in fact, the Jacobean and Queen Anne styles, when carried out in at all an elaborate manner, are, as we have before now said, very like cabinet-maker's work translated into architecture. And in this light Mr. Stevenson's pet style has no claim to the character for truthfulness which he asserts for it. It is only when its characteristic ornaments are mostly

wanting, and it is reduced to that erection of brick wall and flat arch-heads referred to, that it becomes purely architectural in character. The view put forth, that this commonplace style is right, because London life is commonplace, is one of the most extraordinary we remember to have met with. If Mr. Stevenson thinks London life commonplace, he must be very blind to the intellectual interest of a city which Dr. Arnold thought "more sublime than the sea or the mountains," and which a gifted poetess, Mrs. Barrett Browning, "has characterised as 'the meeting-place of souls.'" But if it were commonplace, we had fondly thought the object of the arts, and architecture among them, was to raise us above the commonplace, and afford an escape from it; not to assist in tying us down to it. On one point we believe Mr. Stevenson is correct,—that there had been a re-action in favour of dwelling-houses, at least, of the Queen Anne period, before the architects took it up; and we will mention one instance of this from a purely literary source, viz.: in an essay of Canon Kingsley's, contributed several years ago to *Fraser's Magazine*, and since published among his collected essays. We have not the book at hand, and forget the title of the particular essay; but in it there occurred a kind of imaginary sketch of what the writer thought an ideal country-house; and after describing the situation and the grounds, he said, "I will not have the house Gothic,—every one has that now," and he proceeds to describe a Queen Anne house, in a very picturesque manner, as being precisely the thing that would suit him. Mr. Kingsley may be taken as a very good representative of the average feeling of educated persons in England at that period, and there is no doubt the essay in question was written, at any rate, long before the present movement entered into the heads of any of the architectural profession.

Pending the introduction of the discussion in regard to the employment of surveyors, Mr. Hine took the opportunity of giving expression to the opinion of the Architectural Alliance, that there should, if possible, be some steps taken to draw closer the tie between the Institute and the country societies and provincial architects. He requested permission to read the following resolution passed at a meeting of the Alliance:—"That the delegates of the Architectural Alliance be requested to state it is hoped that at future Conferences, before the programme is arranged, the Alliance may be invited to co-operate therein, and that, if possible, the subject of increasing the facilities for provincial architects becoming members of the Institute be discussed at the next Conference."

The chairman said the resolution would be duly considered as a recommendation of the Alliance. The discussion in regard to the

EMPLOYMENT OF SURVEYORS

in taking out quantities was then opened by Mr. Cates, who read the report of the Committee of the Institute on the subject, previously printed in our columns, in which the recognition of the quantities as part of the building contract, and the responsibility of the architect for them, is more or less directly recommended. With this was read the minute of the Council of the Institute on this report, to the effect that "the principal suggestions contained therein, and which wholly originate from that Committee, namely, the incorporation in one form or another of the quantities in a builder's contract, are so novel that the Council cannot advise the adoption of the report," and that the whole matter required more consideration. On receiving this minute of the Council, a letter was addressed to the secretary, suggesting that the resolution was inconsistent with fact, as the suggestions did not "wholly originate" with the Committee, but were founded, among other things, on suggestions made in the course of the president's (Mr. Wyatt's) address at a previous Conference, and the resolution by which the Committee was nominated actually arose out of that address. No action was taken on this, however. The Committee had sent round circulars to the number of about 1,000, requesting information as to the practice in regard to bills of quantities in various localities. To these they only received sixty-six replies, of which fifty were in favour of their views, and sixteen against them. They endeavoured to gain further information as to the relation between clients and surveyors, and between the latter and the architects, but only received four replies; and to copies of letters further circulated among mem-

bers of the profession they only received two or three replies. Under these circumstances, I thought it best to present the original report a second time.

Mr. Hall read a letter from Mr. Hayward, who was unable to be present, suggesting several points for consideration in regard to the employment of surveyors. 1. Was it customary or obligatory to employ quantity surveyors measuring up work? 2. If so, at what charge? 3. Should an independent surveyor be employed to measure up, along with the quantity surveyor? 4. Should payment be the same to each in case, or should the sum otherwise due to the surveyor be divided between the two? 5. Should the builder bear the cost? 6. In case of a dispute, and the builder employing a surveyor in his part, should the architect allow him charge for this? These, Mr. Hayward admitted, were important questions, of which definite settlement was desirable.

Mr. Nash, as one of the "four" referred to who had replied to the circular of the committee, thought the architect simply wished to get building honestly executed, and did not object about the quantities, and he objected not to including them. One result was, that in small alterations remeasurement was required, and a consequent readjustment, sometimes annoying to the client. What the client was to know was how much money he would have to pay, which it was almost impossible for him to know if he had to take the quantities into consideration.

Mr. Morris thought the council of the Institute, by their line of action in this matter, standing between the public and a great deal of business, were proposing to be adopted to remove a certain responsibility from the shoulders of the architect, and he would be enabled to shelter himself, by reference to a bill of quantities, from the consequence of employing a novice or inexperienced builder; besides that, a scope would be given for the running of extras; for they all knew that in such a case every little thing done in excess of the quantities would be noted and charged by the builder while little items on the side of omission would be forgotten or overlooked.

Mr. Papworth proposed as a resolution that the best thanks of the meeting be voted to Messrs. Cates and Rickman for the trouble they had taken; that their report be received; that the council be requested to bring the matter before a meeting of a future Conference, and more information might be obtained on the subject.

Mr. Chatfield Clarke seconded the motion. In regard to the complaint about the phrase "which wholly originate" with this committee, there seemed to have been a misunderstanding as it was only meant that the Institute never sanctioned any of the propositions contained in the report in that form; it was a committee of the Conference, and not of the Institute. As to the fifty assents to their report, which the committee had received, that in reply to about 1,000 papers sent and they must remember that probably the men who assented would take the trouble to reply, so that they had only one or two on their side after all. He was not in favour of the proposed movement, and would look at a contract as a definite matter and did not want to hear anything of quantities; and he had reason to know in his practice that quantities opened the door to much litigation. Quantities were merely a means of saving time when tenders were numerous. The fact that the builders were all pressing for the incorporation of the quantities in the contract indicated clearly enough to whose advantage the arrangement was likely to be.

After some remarks from various other members present, Mr. Waterhouse, among other things, urged that we must consider also the interests of the builders, Mr. Papworth's motion was unanimously adopted, and the further consideration of the subject is therefore indefinitely postponed.

This brought to a close the final business meeting of this Conference. We have felt it right to give as full a summary as our space would allow of the opinions expressed in the various papers and discussions which took place. We cannot add, however, that the whole proceedings seem to us to have been not only somewhat uninteresting (which might be inevitable in regard to some of the subjects), but also singularly deficient in practical results. Nothing definite has arrived at in regard to professional practice,

sectional meeting on Art, which surely after 1 is the most important thing we have to do this, was little better than a *jeu de*. If these meetings are really to do any good, beyond promoting mutual acquaintance and good feeling, they must be conducted in future in a higher spirit, and the communications read should be of more important character, and more deliberately and thoughtfully composed than has been the case on this occasion. It would be better to invite high-class essays, of a rather more extended description, upon important subjects,—such essays as would have a permanent value,—and to shorten proportionately the time for discussion, which, to a considerable extent, is only idle talking, and in which a few who have acquired a habit of speaking mostly have it and lead their own way. There was amusement, certainly, in some of the discussions, but it should say a great many "winged words" were left to fly to little purpose.

BUILDING APPLIANCES AT THE INTERNATIONAL EXHIBITION.

The South Gallery on the ground-floor at the Exhibition, adjoining the spot where the diving-bell performs his evolutions, contains models of various buildings, as well as the apparatus for completing them. As the greater should come before the lesser, we may notice one or two of these. The model of Dunrobin Castle, sent by the Duke of Sutherland, is a bad model in point of execution, the texture and finish being totally unlike any building construction, except painted paper, and otherwise there is nothing to remark about it. The Commissioners for Japan send a model of a pagoda, accompanied by a sketch drawing, half section half elevation, minutely drawn enough, though the constructive details are shown in a manner not quite intelligible to the European eye. What strikes one in its erection, practically speaking, is the enormous proportion of the roofs to the actual size of the plan, and the waste of material involved in securing the peculiar form of projecting roof considered, we suppose (as was suggested at the Conference about the "orders"), to be of "superfluous origin." Adjoining this is a model of a greenhouse, as plain and practical as the other building is the reverse, showing a contrast between the way of treating ecclesiastical and business edifices, which is not confined to Japanese construction of the storehouse, which looks nothing like a magnified dog-kennel with its mouldings round it at intervals, consists of a wood framing, with layers of plaster of some kind over it (as indicated by the model of construction adjoining), finished apparently with hard cement, and painted black. The doors in the general model look very like iron safe-doors, with two or three thicknesses of chambers, forming several deep rebates. They are, however, only cement on a strong wood framing. Mr. Ellis, of Seacombe, Cheshire, gave a novelty in cottage-building,—six residences in a hexagon block, with a central chimney-stack from the whole. It is frightfully ugly, but ingenious, as an economical way of covering land. A plan appended indicates the method of laying out a building-plot, in similar hexagon blocks, beshive fashion, but with a very inefficient amount of space between. The models at the Centennial prison, including a large model of a prison erected entirely by convict labour, have a certain interest in an economic point of view, though kingbolt in the section of the roof appears to have been omitted. The saving to the public, by using convict labour instead of letting the work to contractors, appears in figures something over 30 per cent. The church at Stranmillis, designed by Col. Du Cane, is a much better specimen of engineer's Gothic than we generally see,—a simple Romanesque design, with a small open-arcaded gallery under the eaves, in the manner common in Lombardic churches. Coming from the buildings to the buildings, we find under No. 5,760 a very extensive collection of specimens of building-stone from various parts of England, which Mr. Albert, of Victoria Wharf, undertakes to supply. An architect might, in front of these shelves of variously-tinted cubes, amuse himself by setting out in his mind's eye various combinations of natural polychromy. The blue mantel stone is a beautifully-tinted material, which will go well with some of the warm shades of which various shades are available. The Northfield and Corshill stones exhibit a

rich red tint, but not one that it would do to employ in large quantities, and they are besides not very encouraging in regard to quality and texture. Adjoining this collection, a very large stone landing shows the kind of assistance which the Scotch Ash Stone Company are prepared to afford to the practical architect, with promises of much larger landings if he requires them. The Cornwall and Devon granites, of which specimens are shown in abundance, are good and well known. The Watcombe Terra-cotta Company, Torquay, show a terra-cotta arch decoration, a *melange* of Cupids and flowers, certainly not novel in design, but very sharp and neat in execution, and the material has a very pleasing dark red tint, which would match that of some of the patent red brick which is so much used, and might thus be useful, in particular where a decided monochrome effect of red was intended,—an effect which may be very good under some circumstances. At all events, we prefer both the tone and the surface of this to those of the blue-coloured terra-cotta which is more generally used. Passing from this plain and honest material, we come to a blaze of scagliola exhibited by Bellman & Ivey (5657), really extraordinary as imitation material, and presenting very fine tints and markings. The general merits of Messrs. Doulton's pottery work we have made well known, and their present exhibit does not call for further remark. We mention, however, their medallions representing scenes from the passion of Christ, in which there are good feeling and good design: clever things, but not without weaknesses. The author of these should be named.

The ornamental brickwork by Looker (Kingstone-on-Thames) consists of running mouldings and archivolts frets, &c., the lines in the main very true, and the colour of the red brick exceedingly good, a dull deep red, not loud or startling. We like this better than the tone of the red brick by R. & N. Norman, farther on, in whose specimens, however, the moulding of the curves is remarkably clean and sharp; but the brick has not so good a ring to the touch as that first mentioned. The vitrified blue bricks from Mr. Hamble's, West Bromwich, are splendid specimens of building material in regard to hardness and apparent durability, uninviting as their appearance is. Those by Wood & Ivey, from the same quarter, are a mistake in point of design in the ornamental bricks, being poor imitations of carved trusses, &c.; the material seems very good.

The Silicate Paint Company exhibit a trough of porous cement, standing within an iron trough half full of water; the cement trough, treated on one of the sides with petrifying liquid and then paped, and on another side with enamel paint, is, as yet at least, perfectly dry inside; the cement is about an inch thick. The Selenitic Cement Company exhibit a great number of specimens of wall facing made with a background of selenitic lime and sand, and a face of selenitic lime, lime putty, and powdered brick, the tints of the brick giving the colour to the surface; these have the hardness of marble, and give fine rich tints in some cases also. The artificial stone used by the Industrial Dwellings Company, and of which specimens of door heads, &c., are shown (as used in the Waterloo Buildings, Bethnal-green, and elsewhere), is a singularly disagreeable pasty-looking stuff in appearance, and has not been well treated in regard to design; we should hardly recommend it on any ground but that of economy, which, indeed, is its principal claim to notice. Some specimens we have examined *in situ* appear to have worn very well.

A new step in the art of imitation-work is offered by Mr. Hide, of Worthing, in the shape of what he calls "fresco," of which the main object seems to be to produce a cheap imitation of ornamental pressed brickwork, to be put on in slabs as a facing. We cannot promise much chance of success to Mr. Hide's undertaking. Among more legitimate methods of ornament Messrs. Dunkirk & Co.'s encaustic tiles exhibit some novelty here and there in design and colour, in the employment especially of the delicate tertiary tints so much affected by German tile-makers; and the parquetry of Mr. Turpin is in every way good in workmanship, and in the style of design employed, consisting of square geometrical forms and straight lines, arranged in a manner entirely suitable to the material. It does not do to attempt too much in parquetry design, and especially not in flooring patterns; they should be such as to go with the grain of the wood; and, indeed, the

simple alteration of the grain in two or three different directions often suffices to produce a good effect almost without the help of variously-tinted woods.

The fireproof flooring on Homan's patent is on a very good and simple principle, specially recommended at a discussion on fire-resisting materials at one of the General Conferences of Architects, a year or two ago, and consisting of light iron beams embedded in a rough kind of concrete. Among practical appliances of a more detailed character we notice a method of hanging window-sashes so as to dispense with cords, by employing spring beads pressing against the sash, which support it at any point to which it is raised: unfortunately in the specimen exhibited the sash works so stiffly and with such difficulty as to neutralise any advantage in the method of hanging. There is a considerable exhibition of what the unsophisticated visitor takes for marble chimney-pieces, but which are specimens of another form of imitation by enamelling slate; the imitation is precise, but the design of nearly all these articles is very poor. The spread of imitative workmanship at present is very great, and not altogether agreeable to contemplate.

ON THE RECENT RE-ACTION OF TASTE IN ENGLISH ARCHITECTURE.*

WHATEVER may be the opinion of those interested in architecture as to the wisdom of the reaction which is the subject of discussion in this Conference, there is sufficient evidence of the fact that there has been recently in England a reaction of taste against Gothic architecture towards what is commonly called Queen Anne architecture, a name which, though inadequate and unsatisfactory, is sufficiently intelligible.

But though this style of architecture is a form of Classic, the question which engages us to-day is not the often-fought "Battle of the Styles," of which we are all weary. The issue under discussion is different. There is no question on either side as to whether the forms of architecture are to be bound down for ever to the same unalterable proportions, or as to whether we are to use a native style or one imported from Italy. Both those who favour the reaction and those opposed to it admit that Queen Anne architecture violates classic rules; and that it is of native growth as much as Gothic is.

Nor are the combatants the same as in the old well-fought battle of the styles. The peculiarity of the present movement is that the upholders of this form of Classic are the same men who have hitherto been the devotees of Gothic; who thought it, as I confess I need to think it, an abandonment of principle to use any other style, who practised it in its severest forms and even thought Chartres Cathedral a little too late; some of whom acting as if they thought the monuments of English history ceased to be of value or interest after the sixteenth century, and, regardless even of what used to be thought the respect due to the memory of the dead, have helped to clear out of the old churches of England every vestige of what they considered debased Pagan taste with as much zeal as ever Puritan purged church of idolatrous images. That these men should have been carried away by what Mr. Ruskin calls "the foul torrent of the Renaissance," and polluted themselves with what another writer calls "the abominations of Sir Christopher Wren," and fallen in love with a style which the upholders of Classic and Gothic equally denounced as base, degenerate, and corrupt, seems to require some explanation.

Of the fact there can, I think, be no doubt. There has been an awakening in the minds of some men, who formerly cared nothing for any style but Gothic, to the interest and merit in Queen Anne architecture. One architect told me that going back after a long absence to the office where, full of youthful enthusiasm for Gothic, he had served his apprenticeship, he was astonished to find that it contained a most beautiful Georgian staircase, which he at once wished to measure, but which, though he had gone up it every day for five years, he had never before noticed. Another, not an architect, but interested in art, told me that he had lately been surprised and delighted with the beauty of Hampton Court Palace, which on a former visit, some years before, he had found disappointing and uninteresting.

* By Mr. John J. Stevenson. Read at the General Conference of Architects, June 18th, 1874.

We see also buildings in this style, the work of architects brought up on Gothic.

Nor is the movement confined to architecture. The pre-Raphaelite school of painters have abandoned the purity and restraint with the stiffness and imperfection of Mediævalism, and glory in the fulness of physical life and the richness and freedom of Classic ideas.

These are, I believe, true evidences of a reaction in taste. The rise in the price of Queen Anne furniture and chimney-pieces, pounds scarcely buying now what shillings bought a few years ago, is evidence merely that the movement has become fashionable, and consequently in danger of becoming vulgarised.

Some assert that the whole movement is a mere fashion, first started by Dante Rossetti, and imitated by his followers. As well say the Gothic revival was an imitation of Pugin or of Horace Walpole and his Strawberry Hill. Pioneers like these are not causes, but the first results of the causes which move the waves of the world's history. Their distinction lies in being taller than their fellows, and their eyes being the first to catch the beams of the new light that is rising.

In fact, the architectural movement in each case is the sequence of a previous religious and literary movement.

As in the new light of French Revolution, doctrines, the few vestiges of the middle ages which had survived the Renaissance, were passing away, there revived in the feeling of the time an appreciation of the glory and chivalry and adventure of the middle ages, of their religion also, and subsequently of their art.

In England, this reaction to middle-age ideas strongly influenced the more imaginative minds; since the time of Sir Walter Scott, their religion, poetry, and art have been Mediæval. It was a natural and living movement, and for this very reason subject to the law of all living things—change, growth, and development. The feeling grew that there are elements of modern life which not middle-age chivalry nor asceticism, nor Gothic architecture, was fitted to satisfy. The naturalism and emotionalism, the absence of restraint and conventionality, and also of refinement, began to pall, and men turned as in the sixteenth century the generation trained in the same Mediæval ideas had turned for satisfaction of the wants they felt rising in their nature to the treasures of classic literature, to the classic conception of life, glorying in full, healthy, natural outcome, yet moving in measured rhythm, and to the art which is the manifestation and expression of such life.

Minds which have passed through this process found in the forms of Renaissance art, produced under a similar process three centuries before the expression of their own thoughts and feelings. Correct, rigid, classic art had no interest for them. They had still too much of the life and freedom of Gothic in their souls to submit to be bound down to ready-made lifeless rules. To classic art in them the infusion of the Gothic spirit gave,—what the infusion of Gothic blood had given to the worn-out civilisation of the later Roman empire,—new spirit and new life, and the hope of higher development.

The springing up of a taste for some form of free Classic architecture is therefore not unnatural, but was to be expected in those who had drunk deeply of Gothic; and the form of free Classic which thus arose was naturally determined by local accidents. Englishmen working in brick, and using sliding-sash windows, according to the custom of the land (a custom, the necessity of complying with which has ever been a thorn in the side of modern domestic Gothic), found the natural expression of their feelings in the brick architecture of the restoration of Queen Anne and the Georges.

This architecture has neither the exquisite grace and refinement of Greek, nor the romance and high aspirations of Gothic, but it is perhaps not therefore the less suited for the common daily wants of English life. It has much to be said for it on practical grounds. Take the ordinary conditions of London building,—stock bricks and sliding-sash windows. A flat arch of red cut bricks is the cheapest mode of forming the window-head. The red colour is naturally carried down the sides of the window, forming a frame, and is used also to emphasise the angles of the building. As the gables rise above the roofs it costs nothing, and gives interest and character to the building, to mould them into curves and sweeps. The appearance of wall surface carried over the openings which, in

Gothic, the tracery and iron bars and reflecting surface of thick stained glass had taught us to appreciate, is obtained by massive wooden frames and sash-bars, set, where the silly interference of the Building Act does not prevent, almost flush with the walls; while to the rooms inside these thick sash-bars give a feeling of enclosure and comfort.

With these simple elements the style is complete, without any expenditure whatever on ornament. Some may say this is not architecture at all, but mere building. As well say eloquence is impossible without sounding epithets and flowery paragraphs. Such simple building may test to the full an architect's highest faculties—the power of producing harmony and proportion—for there is nothing but harmony and proportion to depend on for the effect. We may, if we have money to spare, get horizontal division of the façade, in this style, as in Gothic, by string-courses and cornices, and we have the advantage over Gothic that we can obtain vertical divisions by pilasters, which, though not constructive any more than string-courses as used in modern Gothic, have at least as much meaning in a London house as pointed window arches.

Under other conditions some other form of the free Classic style would naturally prevail; as in Scotland, what is called "Baronial," which, while using Classic details, is full of the spirit of Gothic; though the usual modern revival of the style, with its mimicry of fortification at the top and huge undivided plate-glass windows at the ground level, expresses rather modern ostentation than the quiet, reserved dignity of the old Scotch houses. In a stone country like Derbyshire the old local Classic of the district, with the windows divided by mullions and transoms, is still suitable for modern wants; while in the more important buildings of our towns we may have a wide choice among the numerous forms of Free Early Renaissance. It is an abuse of words to call all these styles "Queen Anne." The term "Free Classic," or, if it is not barbarism, "Re-renaissance," would more correctly designate the movement.

The style in all its forms has the merit of truthfulness; it is the outcome of our common modern wants picturesquely expressed. In its mode of working and details it is the common vernacular style in which the British workman has been apprenticed, with some new life from Gothic added. The great mass of dwelling-houses are built now, as in former days, without the aid of architects, and as the builder, in his own work, is apt to imitate anything new which he sees architects have produced, there is some little hope of his carrying out this style without the painful blunders he, and some architects also, it must be confessed, make in attempting Gothic, of which they do not understand the grammar.

In truth, the success of Gothic is, with those who loved it, one cause of this reaction. Its advocates urged that it was good, not only for churches, but for every kind of building; that it ought to become again, as it had once been, the vernacular architecture of the country. The wish has been granted. The nineteenth century has expressed itself in Gothic; and, in gipsies, rows of houses built to sell, semi-detached villas, chapels and churches, Gothic, which of old was simple and unpretending, by means of its boasted freedom from restraint, has lent itself with fatal facility to the expression of loudness, vulgarity, obtrusiveness, and sentimentalism more objectionable far than the dreariest Classic of Gower or Wimpole street. That may be very dull prose; the other is screeching, sensational poetry or Daily-Telegraphese.

The account which I have attempted to give of the genesis of the movement explains the fact that it has not extended to churches. In those, Gothic has not the practical difficulties which it encounters in house-building; and although, as Dr. Newman says, the architecture of the Jesuit churches, with their untrammelled magnificence, is the true expression of Catholic feeling, Gothic architecture has for English Churchmen the strong authority of old custom, and suits better their simpler ritual.

It explains also why those who have been affected by this movement would still design churches, and, if need were, other buildings also in the Gothic style, which they have not ceased to understand and reverence, though it does not now, on all sides, bound their horizon.

It is much more important that our architecture should be good whatever style is adopted, than that it should be in any particular style. Nor is it likely that the Queen Anne style in

its old form should again become that of old London streets. It is cheering here and there to see old houses blossom out again in fresh red brick angles and white paint on the window frames, which, if done up a few years ago, would have been swathed in the dead-clothes of straw Tugs and shreds of the style will doubtless appear in speculative builders' houses, and may even see street rows in it, violating its characteristic of freedom and spontaneity, repeating the same fantastic gable or the same elaborate porch as many times over as there are houses in the row. But the incompetent modelling of the London Building Act and the sovereign will of the five or six great noblemen who dictate to Londoners the style of the house they must live in, compel an autocratic monotony and forbid the characteristic features of the style, with the picturesqueness and variety which make old towns so charming.

But one thing, perhaps, from this reaction may hope for,—that the wanton destruction of the old buildings of the style may cease; as in the quaint spire of Hampstead Church may be left to us; that the estate regulations, which on lease renewings, instead of freshening up a cheery old red brick and white window-frame of the Bloomsbury houses, has been transforming them into vulgar dismal stucco, may be allowed to cease; that in the district farthest west, all the elegant old balcony railings of the pretty wooden tracery of the lunettes above the doors may not give place to coarse cast-iron or plain sheets of glass. We may even, perhaps, see the plate-glass removed again, and the tracery and small panes restored. And I do not even despair that Mr. Burgess himself, who almost of the champions of Gothic has been true to his first love for it, and has never far away to heathen abominations, may yet come to have such reverence and love for St. Paul's, as only as an historical monument, but as the great work of a great artist, as may make him feel impossible for him to carry out his proposed effacing and destroying Wren's design.

INTERNATIONAL COMPETITION.

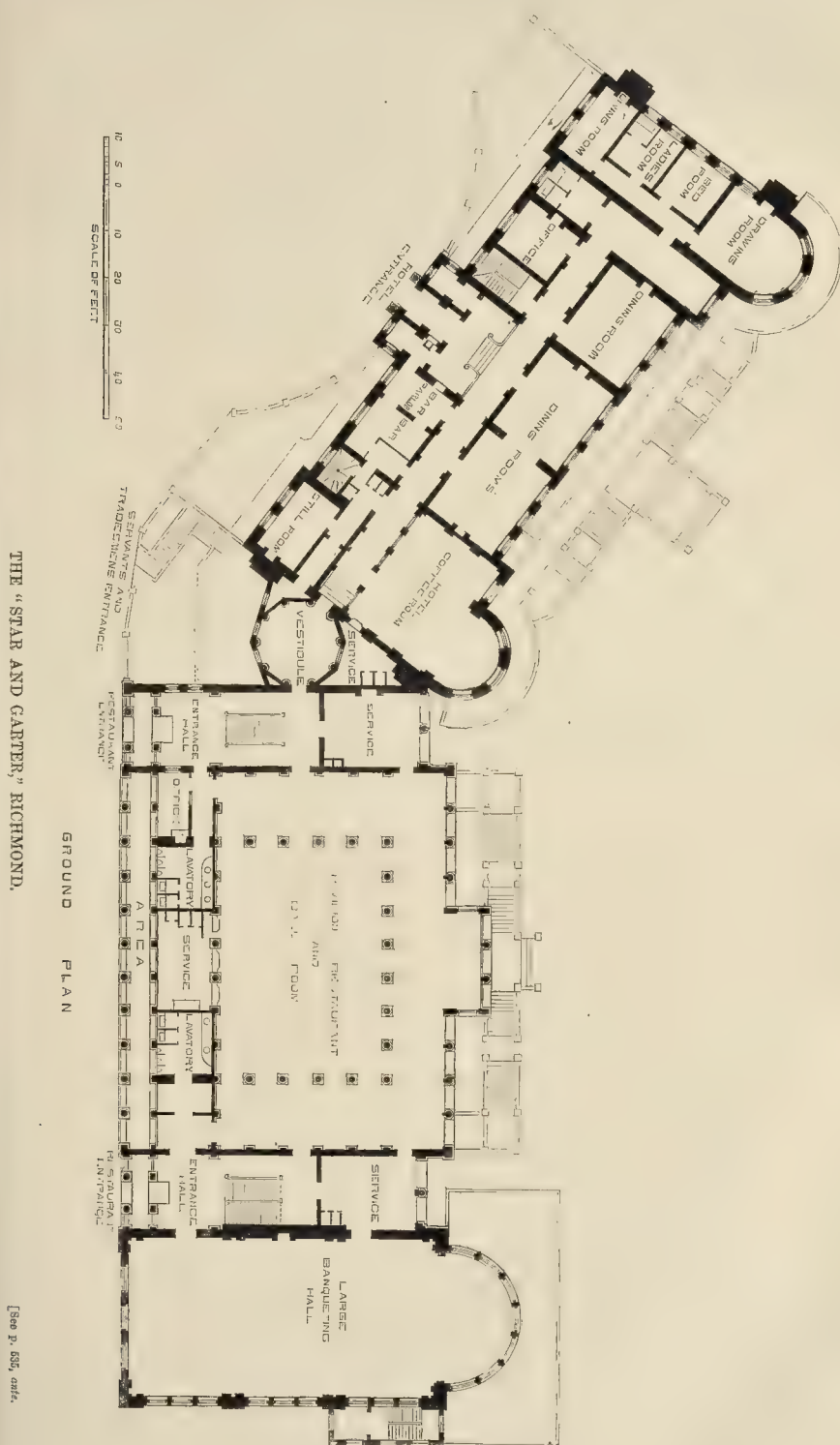
The Municipality of Odessa (Russia) in native and foreign architects to submit designs for a Lyric Theatre by the 1st of November 1874. It is to contain from 1,800 to 2,000 persons, and the cost is not to exceed 800,000 roubles. The premium offered is 6,000 roubles. The municipality will gladly forward the programme and conditions of competition to any architect who applies for them.

LABOURERS' COTTAGES IN CHESHIRE.

A REPORT of the inspector to the rural sanitary authority of the Nantwich Union discloses the existence of a very bad state of things in a district. In Ridley the majority had but one bed-room, of very small dimensions, taken up by the roof, and it was often only possible to stand upright in the centre. The windows were of the smallest description. In one of the cottages a family of fifteen children had been born, and nightly, with their father and mother, occupied one of these small places. During wedded life of the parents, four adult corpses besides the bodies of several children, had been laid out in that one room, the father sleeping in the same room. Taking a case Bulkeley, he said the wife's mother had lain for a long time of a lingering disease, in which there was a most offensive continual charge, and the family, consisting of child, father, and mother, had to sleep with her in one room night by night, and when she died had to sleep side by side with the corpse. It might be expected, they were ill themselves afterwards. At another house he found eight persons had slept in a small room with corpse. The inspector says of one of the townships examined:—

"At the cottages generally, pigsty, shippon, and outhouse, joined the dwelling, and I was told at one or two places they could hardly breathe for the offensive smell that came into the house. At Ridley Tollgate the pigsty joined the pantry. The privy is two yards from the back wall of the house, and the only window in the house that opens the pantry window, which looked out on to the pig-outhouse. There were six people crammed into the little bedroom here, without the slightest ventilation, except that, to prevent suffocation they had knocked pane out of the window."

The board discussed the subject, and the state of the cottages will at once be brought under notice of the landlords.



[See p. 535, *ante*.

THE ARCHITECTS' DINNER.

THE CONFERENCE in connection with the Royal Institute of British Architects, terminated with a dinner, which was given on Friday evening, the 19th inst., at Willis's Rooms, King-street, St. James's, under the presidency of Sir Gilbert Scott.

There was a large number of persons present, among the latter Col. Sir James Hope, M.P.; Mr. A. J. Beresford Hope, M.P.; Sir John Gilbert, B.A.; Captain Douglas Galton, Professor Kerr, Mr. John Gibson, Mr. G. Valliamy, Mr. F. P. Cockerell, Mr. J. S. Phené, Mr. W. Burges, Mr. T. Chatfield Clarke, Mr. E. Sharpe, Mr. E. C. Robins, Mr. E. H. Cooke, Mr. C. L. Eastlake, Mr. E. J. Tarver, &c.

After the cloth was cleared, The President said the first toast which he had the honour of proposing stood foremost in all social relations, and how much more would he be at a Royal dinner like this one. The toast he referred to was that of Her Most Excellent Majesty, the Queen," which was then proposed. It was followed by the toast, "The Prince and Princess of Wales," were duly honoured.

"of Parliament," the President said for brevity's sake they might, on this occasion, the toast of the "Army, Navy, and Volunteers." It might be said that they, representing a specific art, might not think much of the service; but they must disclaim such idea. The members of the Institute thought as much of them as a legislator, and that they equally valued the preservation of peace. Not only so, but many of the members were actually legislators themselves. Upon the present occasion, he passed to another duplicate service, the two Houses of Legislature; but even there they did not come to a representation of peace, for when any architecture goes before the Legislature, the arguments, there was great fighting about it. But he trusted that in the future whenever any question of architecture came before Parliament they would be able to get the best of it. He was calling and decide points in favour of the glory of the country as represented by the buildings; and further that they would have due regard to architects in their dealings with clients. He had much pleasure in calling to mind the name of their past president, Mr. Borensford Hope.

Mr. Benford Hope, M.P., assured those present that he very much felt the double complement of the House, the House of the City of London, and the House of the County of London, to respond to the toast to which they had just drunk, particularly so when he saw a gallant friend of his (Colonel Hogg) present, who had achieved the greatest work himself by introducing the biggest Bill into Parliament. He could not exactly understand whether the House did or did not use the members of Parliament as men of peace; but he (the speaker) was equally prepared for either character. There were circumstances when a man of peace was a popular character; and he had heard that very day from a friend of his, a Vice-Chancellor, that to be a man of peace at any price was to be a power; but that was an academic view of the question. He will assure the Institute that in that assembly to which he, as well as Sir James Hogg, equally belonged, other characters were equally well known. There was naturally a man there who was coming and going were so mysterious, whose wary fluctuations of feeling were so unaccountable, whose caprices were so generally inexplicable, as that of Hogg's faithful Commons. He was glad to see that another assembly was at length after dignified repose, with panting breath, it might be, aided with considerable good intentions, trying to step into the shoes of the House of Lords for the first time. He had heard twelve o'clock strike before it had broken up; and when they saw a legislative assembly keeping such bad hours as that, he assured them that it was on the path of some amendment. But he had been asked to speak on behalf of architecture. There was a former House of Parliament, and in that House there was a right honorable gentleman who represented art and architecture; and the benign influence of that distinguished statesman had been such, that no man had dared to refer to art or architecture in the manner in which it had previously been spoken of in the newly-constituted House. Of course, these gentlemen were too tender and too modest as yet to broach the

and had been the means of preserving, with no splendour, many of those noble structures which the hand of the less skilful man would have destroyed in the act of restoration. In conclusion, he would ask them to cordially drink "Prosperity to the Institute," which toast would couple with the name of Sir Gilbert Scott.

The toast "wine been drunk."

The President, who was warmly received for thanking them for the way in which they had drunk the toast, said that as regarded the Institute, he felt that he had done little just to it during the past session, for which a formal letter was sent directly to a dog to the members. Mr. Beresford Hope had as much about enlarging the basis of the Institute was a letter to the members (Mr. Gilbert) had much at heart; but at this moment there was a deal of anxiety for considering this subject in all its bearings; for increasing the pecuniary resources, and what was still more important the breadth of membership; and for increasing the number of directions in which the usefulness of the Institute would be applied. It would be unbecoming of him, as he was not a member of that committee, to suggest any subjects for their consideration; but he earnestly hoped that they would appreciate the importance of the work which had been delegated to them, and that they had the usefulness, or the reverse of this great Institute in their keeping; and that the committee the members looked for every possible way in which every possible means to the influence of the Institute. There existed here this Institute a junior Association, called the Architectural Association, which was doing good work indeed; and he earnestly hoped that they would do it, they were doing it in the senior Institute some of the good work which they were so well carrying out. It was one of the duties of the Institute to see something about the training of architects. There was a vast deal of both good and bad architecture in the world, and it was the duty of the Institute to see that the good should be so thoroughly indoctrinated, that it should be as a rule, and the bad was good should increase and multiply for the betterment of the age in which we lived.

Mr. Russell, in proposing to the friends said that one of the great necessities for architecture was that the architect should be almost as one being; for the architect so thoroughly himself in the master of the profession as to refuse to unite himself to the client; but at the same time to work with their client in unity. He would be to couple with the toast the name of Colonel Sir James Hogg, M.P., and Captain Douglas Galtoun.

Col. Selous, after thanking the Com any the manner in which they had responded to "res," said that the President had alluded to position which he had the honour to uphold, had always an earnest desire to carry out most kindly and friendly relations between the Board of Works and the Institute, and he trusted that in the proposed construction of the street at Charing-cross, which would, he thought, be an incalculable benefit to the metropolis, they would still continue to work together. His friend, Mr. Boreford Hope, had referred him as the gentleman who had brought the "biggest Bill" of the session before the House. This Bill was now before an important committee; and he felt quite certain that it would turn out a very good Bill, and it would not be his (the speaker's) fault if it were not an Act of Parliament before the end of the session.

Captain Golt said that there were now being erected in London many buildings which would be landmarks in the history of the architecture of this country; these were the Courts of Justice, the Natural History Museum, and the new Houses of Parliament, which had just been completed by the President of the building—the Home and Colonial Office.

The President next proposed "The Sister Societies." In doing so, he said that it all art and the artist had been disposed to associate themselves in four entities, feeling the war association. Coming to their own time, during the whole half of the last century artists were yearning earnestly after such association. Many attempts were made at forming such associations, which had at last culminated, under the fostering hand of George II. and Sir Jos

Reynolds, in the Royal Academy. Since that time, a number of societies had been formed. They had not acted in a spirit of rivalry, but the very reverse. It was to these associations asked those present to wish prosperity. He was alluding more particularly to painters and sculptors, and particularly painters. Art was a comprehensive and expansive term, and it was generally the practice of some of the members, and he wished it was more so, to unite in their buildings all the other decorative arts. There were impediments in the way; some persons objected to painting, and ecclesiastical authorities objected to both painting and sculpture, wishing the temples of God to represent only one art. It was monstrous to think that the dignity, having endowed His intelligent creatures with the powers of practising architecture, painting, and sculpture, should have disallowed two of them to be exhibited in His temples. It was to be hoped that such a base superstition could soon be dispelled. As regarded other buildings, it was chiefly motives of economy that prevented the uniting of the sister arts. As their wish to unite all the arts under the aid of architecture as one delightful, lovely line of sisters, trying to show up each other's virtues and each other's excellencies.

Sir John Gilbert, in the name of his brother painters, heartily thanked the company for the manner in which they had responded to the toast. Speaking on behalf of himself, he felt very great pleasure in being present that evening, for architecture was his first love; and when a young man, it was his anxious desire and aspiration to become an architect, and he had devoted some considerable time to the learning of the art. Thus far he had been able to become acquainted with all that interested in the architectural world; and he took great interest in the architectural publications of the day.

Professor Kerr proposed the next toast, "Prosperity to the Conference of Architects." His Conference, he said, must now be regarded as an established institution. The profession had become a most extended and a very useful one as regards the service which it rendered to the public in various ways; and numbered now not far short of 2,000 members. The Conference of Architects was a somewhat difficult undertaking. It was found desirable, once in every two years, to convene the architects from all parts of the three kingdoms, whether members of the Institute or not. In the course of the Conference, he would tell Sir Gilbert Scott that they had known what to avoid as well as what to do. They had not taken up the question of St. Paul's; but if they had done so, it would have been taken in a form most satisfactory to the public. If there was one member of their number more than another, in whose artistic genius they had confidence, it was that of Mr. Burgess; and he (Professor Kerr) was particularly happy to have an opportunity of relieving that gentleman's mind of any little misgivings which he might have had on account of the newspaper correspondence on the subject. If an angel from heaven had come down with a plan for St. Paul's, it would have met with precisely the same treatment as Mr. Burgess's plan had. Be that as it might, he hoped his friend would come out of the affair triumphantly in the end. Another question the Conference had not taken up was the Metropolitan Buildings Bill. The Institute had actually appeared as an opponent of that measure before the Select Committee; but he thought that it was agreed on all hands that the Bill was a harmless one. Another subject, which was not taken up, was the question of what ought to be done when a gold medal was respectfully declined. Had they taken up this matter, it must have led to unpleasantness. They were prepared for very considerable licence of imagination on the part of the gentleman on whom the honour was conferred; and they were also prepared to find that gentleman, with reasons of his own, venturing, with an amount of moral courage which he had displayed on many occasions,—venturing, probably against his own interest and his popularity, to intimate an objection which at the moment must not appear objectionable. No doubt, in the course of time some explanation would be forthcoming, which, if not satisfactory to them, would be most profoundly satisfactory to himself. The Conference had treated of the reaction of taste which had taken place in architectural design, and had carefully arrived at the conclusion that the transfer of their homage as a great artistic body, from the later English Gothic to the

style of Queen Anne was now a mystery which at the present moment they could not entirely solve. They had also been most anxiously considering the difficulty as to the means of the education of the architect, not so much the elementary as the higher education of the architect; and he thought that they had compelled each other to perceive that there lay beyond "the three Rs" of architecture and construction a much more elevated sphere, which it was extremely necessary and absolutely essential in such an age as the present, that the profession should maintain before a public like theirs with the utmost possible anxiety. It was necessary that the architects of England should educate themselves long after many of them thought it was time to have done learning, and to extend their acquisitions into those fields which at the present time were occupied by collateral architects and constructors, so that they might be possessors of artistic and constructive powers of the highest character.

Mr. Hine, Nottingham, in responding, remarked that the provincial architects very much appreciated what the Conference did for them, and thought it was of great benefit to both town and country architects. He stated, on behalf of himself and his country brethren, that a Conference held every two years in the first city in the world was not enough, and suggested that something more should be done. He ventured to say that if the Institute held Conferences at large towns in the country, as did other societies, it would be of great benefit; and on behalf of provincial societies, he was sure the Institute would be well received.

Mr. Hansard then proposed the health of the secretaries of the different committees connected with the Conference.

Mr. Charles L. Eastlake, in reply, said that it was gratifying to see there assembled such a number of the profession who had followed an art which chronicled the history of past ages and which was equally ready to record that of the present. All would feel pleased that the Institute, as a representative body, was never more powerful, more prosperous, or more popular than now.

The President, before dismissing the assembly, apologised to the Conference for not having taken his place at their meetings. He hoped that they would excuse his absence; and he expressed his hearty sympathy with its objects; and trusted that its efforts would not be limited to the question of elementary education.

ALTERATION AND ADAPTATION OF BUILDINGS AT NEWCASTLE.

MR. MATTHEW THOMPSON, architect, and Mr. Dunn have just completed an adaptation of buildings improving the appearance of Newcastle-on-Tyne, as well as utilising ground space. The property is a large building situate in Newgate-street, lately occupied by wholesale chemists and oilmen, and obtained by Messrs. Stephenson & Sons, veterinary surgeons and livery-stable keepers. The building is a large square block of four stories, in addition to the basement; and, having been built for an entirely different purpose, it has required considerable alterations. Accommodation has been prepared for horses not merely in the basement and ground-floor, but also in the upper stories of the building. Ranges of stables have been constructed on every floor of the building, and access can be obtained very easily from the bottom to the top by a gangway or passage, leading from one story to another, at so easy a gradient that there is no difficulty or danger, it appears, in riding even a hunter from the top to the bottom; and the stalls and loose-boxes are planned and arranged with every consideration for ventilation and cleanliness. The basement-floor has been fitted up with stabling suitable for putting up the horses of farmers and others who come into town from the country on two or three days of the week to attend the markets, and who require their horses stabled for two or three hours during the day. Of these stables there are two long double ranges, capable of receiving some thirty horses. The ground-floor is occupied by the office, surgery, stalls, and boxes for Mr. Stephenson's private horses. Ascending by means of the gangway, which is situated within the building on the south-east side, the first floor is reached, which contains a dozen boxes and stalls ranged round the walls, and constructed of metal and timber work of ornamental and useful design. The stalls and boxes are roomy and airy; and the

space has been utilised by the adoption of the manger manufactured by Musgrave & Co., of metal, lined with enamel. The floor is of concrete. There are two other floors above, both of them laid out in a similar manner. The story next the roof is occupied by stores of hay and corn.

TROY.

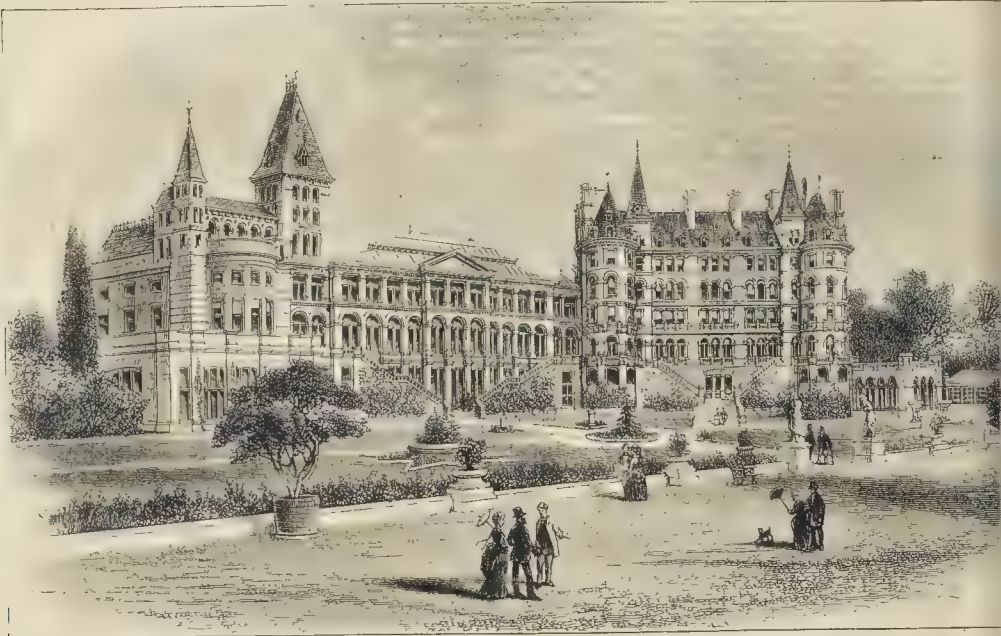
Dr. SCHLIEHMANN states that he has discovered the site of Troy, and among its ruins the *δῆπας ἀρχαῖππλον* of Homer. He says he has discovered abundant proofs that there a city was built and perished. The doctor has also discovered mill-stones, stone hammers, flint saws, &c. It now appears that there was once an Ilium of authentic history; but it was not on that Ilium that the traditions composing the "Iliad" had their foundation. Hissarlik, where Dr. Schliemann has discovered so much, is all that now remains of that ancient city,—now proved to be of Pelagic style. Every reader of Roman history knows that when Rome was founded, the coasts of Italy were studded with cities cognate to those of Greece, all of which belonged to that ancient stock called Pelagian. The cup that the explorer has discovered could never have been of the same city as the stone hammers. We also know that long before and after Rome's foundation cities sent out colonies; and it was one of these colonies led to the great Samnite war with Rome; therefore it is not unreasonable to suppose that some Greek colony was founded on the place where now stands Hissarlik, and that to that colony the *δῆπας ἀρχαῖππλον* mentioned by the doctor belonged. That this cup was used in Greece is shown by a passage in Aristotle (H.A. 9. 10), where he describes the cells of bees to be like *ἀρχαῖππλον*; hence it follows that a Greek colony was founded on the very spot where the doctor has made the discoveries.

But, stop, he has found stone hammers. Now these point to a barbarous age, as may be seen in early Scottish history, which proves that, at that early period, all nations were equally barbarous, except the Greeks and some others.* It seems that the Trojans used wood for war, for Homer says (Iliad, iv., 47):—"The day will come . . . when Priam and the people of Priam of the good *ἀσπερ* spear will perish." Here he states that the spears were of ash—a very primitive weapon indeed. But it also appears that the Trojans were possessed of ships (for *Aeneas* sailed away in one), which indicates a more advanced state of civilisation. Here are two very doubtful statements: the former would seem to favour the stone hammers, the latter the golden cup. The explorer has found remains pointing to ages entirely different—the one barbarous, the other civilised: hence we may suppose that two cities did exist on that spot, neither of which would exactly correspond to Homer's Troy. It is, therefore, very probable that Homer took his description from *another city*, be it what it may. He calls the citadel Pergamos; the citadel of Athens was called the Acropolis (from *ἀκρος*, *τόπος*), meaning "the higher city," hence "a citadel," akin to Pergamos, which is itself akin to *πύργος*, a tower. Compare with these the German Burg, old German Purg, English burgh and borough, and all of these are akin to berg, meaning a "hill." However, Hissarlik may be a hard-contested battle-field among the distinguished men of our own and other countries. T. A. M.

OFFICIAL LONGEVITY.

ON Wednesday last, the 24th instant, 100 years had elapsed since the passing of the first Metropolitan Building Act, the well-known statute, 14 Geo. III., cap. 78. Under that Act district surveyors were first appointed; and, singular as it may appear, during the whole subsequent period no death-vacancy has occurred either in the district of St. Pancras or Paddington. The statute referred to was in great measure drawn by Sir Robert Taylor, the architect to the Bank of England. Since its passing it has been twice "amended," and even now a fourth Act is undergoing the pangs of Parliamentary labour, and seems to give rise already to numerous objections. The original appointment of district surveyors was in the gift of the magistrates, and the most successful candidates obtained districts in the City and other localities lying in or about the centre of the metropolis,

* See Mackenzie's History of Scotland, under "Unwritten History, and How to Read it."



THE "STAR AND GARTER," RICHMOND.—Garden Front.

the remoter districts at that time being quite despised. Mr. John Crunden, the last candidate on the list, was, in June, 1774, appointed to the districts of St. Pancras, Paddington, and Chelsea, then villages, supposed to be to the district surveyor of the value of about 20l. a year each; and in the year 1824, when at the age of eighty-four he vacated these offices, although he lived ten years afterwards, Mr. Henry Baker and Mr. George Gutch were respectively appointed to St. Pancras and Paddington. Those gentlemen are still fulfilling the duties. Mr. Baker was elected to the office at the early age of 22, so that he, after entering his 50th year's service, has reached the age of 72, whilst Mr. Gutch is, we believe, upwards of 80. May both these gentlemen eventually eclipse in longevity their predecessor, Mr. Crunden! Both having been intimate with him, their joint memories united to his may, in effect, be said to go back to the origin of the Act, a century ago.

Recently, on the death of Mr. Oke, chief clerk in the Lord Mayor's Court, it was deemed worthy of record that a vacancy had only occurred two or three times in fifty years. Similarly, we consider that but one vacancy (and that not by death) in a hundred years in the district surveyorships above alluded to, is a no less remarkable circumstance, and one speaking well for the hygiene of the profession as well as for the habits and mode of life of its members.

FROM SCOTLAND.

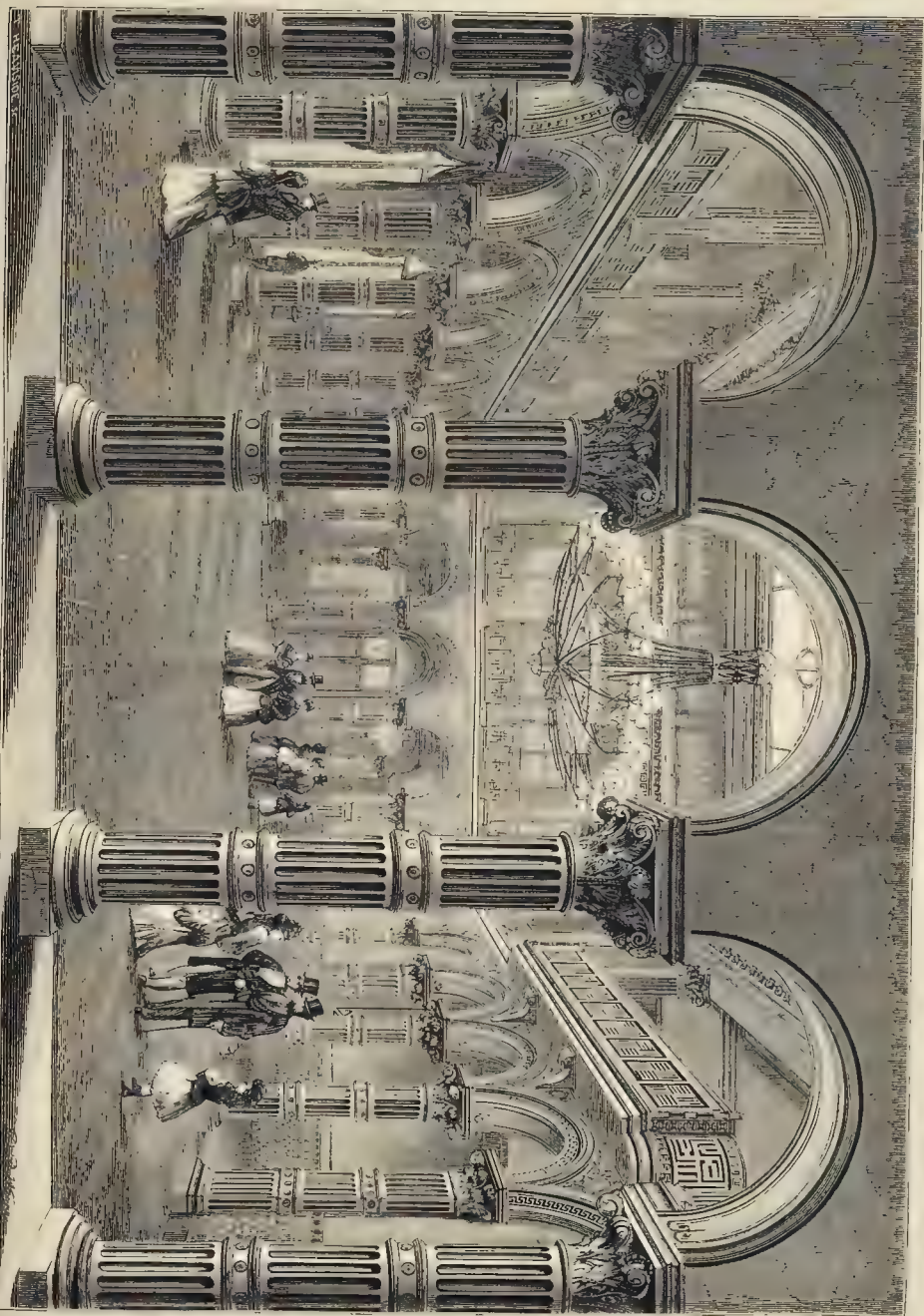
Stained Glass.—An influential committee has been appointed to supervise the substitution of stained for the present plain windows in St. Giles's Cathedral, Edinburgh, with a view to making the restoration of the choir of the building as complete as possible. It being likely that the whole of the cathedral will ultimately be opened up similar to Glasgow Cathedral, the committee have earnestly considered the subject of the stained glass, and have sketched out a plan to which all donors of memorial windows will be required to conform.

The inharmonious and incongruous effect which would have resulted from allowing every donor to follow his individual taste may thus be avoided. The committee has settled upon a series of Scripture subjects from the Old and New Testament, each window to have its special subject and no other. Nothing is to be admitted of a merely legendary character; neither will obtrusive heraldic devices be allowed. The committee has been called upon to consider two points in connexion with the subject—the era of the building and the shape of the windows. The building is substantially of the fifteenth century, although there are fragments of an earlier date. The windows put in at the renovation of the outer walls forty years ago are of the Flamboyant style, and therefore in keeping with the century named. The windows are divided across about half way up by transoms, which, although they may not be perhaps in the purest taste, would involve a large expense were they removed. Apart from this, however, the transoms will serve a certain artistic end by allowing the introduction of more than one subject. According to the plan approved of by the committee, each window will contain four subjects, viz., one stretching across the three upper lights, and one occupying each of the three lower lights. Limited meanwhile to the choir, the committee has followed the usual arrangement of devoting the windows in that part of the structure to New Testament subjects. The series of Old Testament history will commence in the south transept. The committee have been in consultation with Sir J. Noel Paton and Mr. Hardman as to the style to be adopted, and they have decided that the designs to be admitted shall be simple and unostentatious,—not glaring or distracting the eye, but with delicate light and shade, well-drawn figures, and a sparing but effective use of colours. All this will be in accordance with the era of the building, and agreeably to the rules of art. Each design will have to be submitted to the committee. Every donor of a window must be prepared to pay the whole expense to be incurred, which will range from

270l. to 1,150l., the windows of medium size costing from 337l. to 352l. Already an offer has been accepted to fill up one window.

Increased Value of Property in Leith.—The value of houses and lands has been rapidly increasing in Leith. Ground suitable for least is worth five times more than it was eight or ten years ago. Land which then could be leased for 20l. per acre, readily brings 100l. and upwards at the present time; and even at the high price of land, building operations are both numerous and extensive. In Prince Regent-street alone new dwelling-houses which will cost between 17,000l. and 18,000l. are being erected. Altogether, upwards of 200 dwelling-houses have been built in Leith during the past year.

A Church Building at a Standstill.—At the meeting of the Edinburgh Town Council last week, an interesting discussion took place in reference to the completion of the Trinity College Church, which it was decided some time since in the House of Lords, that the Town Council was bound to erect at a certain expenditure. The Law Committee reported to the Council that the cost of the church was not to exceed 7,000l., but instead of the church being built according to this plan, it had been erected according to other plans, and the cost already incurred for completing the church was about 70l. in excess of the 7,000l. In its present unfortunate state the church was suffering damage, and ought to be completed without delay. The recommendation that the Council authorise it to be done, and the balance of the 700l. to be charged against the City's proper revenue. The proposal met with some opposition, but the who brought it forward stated that the "beautiful and ornamental church" was going to "wreck and ruin," and "the Council were losing a great part of the 7,000l. they had expended." The opposition was based on the fact that the estimate had been exceeded, and that the congregation themselves ought to meet the deficiency. Ultimately, it was decided by a small majority, to pay the 700l. and proceed with the work.



DINING HALL, "STAR AND GARTER," RICHMOND.—MR. C. J. PURVES, ARCHITECT.

SANITARY EXHIBITION, GLASGOW.

The third Exhibition of Sanitary, Educational, and Domestic Appliances in connexion with the Social Science Congress will take place from the 30th of September to the 10th of October next, in the Drill Hall, Burnbank, Glasgow. The success which attended the two previous exhibitions, viz., at Leeds in 1871, and Norwich last year, encourages the managing committee to look forward to a very large and valuable display of scientific and useful appliances coming within the reach of its operations. The object of the Exhibition is to bring under the notice of the public generally, and particularly those who are interested in social, sanitary, and educational questions, the latest scientific appliances for improving the public health and promoting education. These will be classified under the following heads:—1. Warming, ventilation, and lighting. 2. Cooking and domestic appliances and economic apparatus. 3. Sanitary architecture and appliances, for outward and interior ornamentation. 4. Sanitary engineering and installations. 5. Food and clothing; and 6. School furniture and educational apparatus, comprising models, and plans of school buildings.

THE COVENTRY SEWERAGE WORKS.

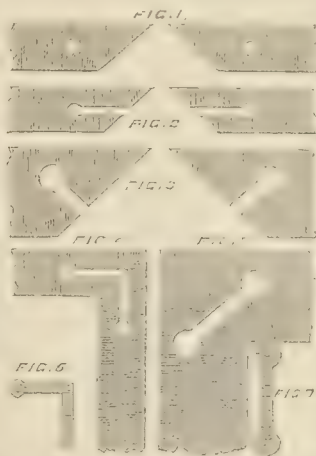
The ceremony of formally opening the new sewerage works at Whitley, erected by the General Sewage and Manure Company, Limited, for the purpose of dealing with the whole of the Coventry sewage, took place, as we have already mentioned, in the presence of a number of gentlemen concerned in the success of the undertaking. The works are now complete, and in working order. The sewage of Coventry amounts to nearly two million gallons a day, and the purified water is returned to the river. The organic matter which had so recently fouled it being retained for use as an agricultural manure. The process employed is that known as the Anderson process, one which, after many years of scientific investigation, was discovered and patented by Dr. Anderson, of Coventry. The defecating agents, vitriol, alumina, and lime; and Dr. Anderson claims for the process the special merits of simplicity and inexpensiveness. The process has been in operation for nearly two years at Nantwich, where the General Sewage and Manure Company has, during that period, conducted many experiments in reference to the purification of rivers, and disposal and utilisation of town sewage. The first block of buildings entered at the new works is termed the chemical and extractor works. The sewage passes through this block of buildings, entering it at the extractor chamber, a large room containing two of Mr. Edwin Latham's sewage extractors. These are 20 wheels, measuring 15 ft. in diameter, and revolving slowly. They are used for the purpose of straining the sewage, by which process the whole of the grosser particles in mechanical suspension are to be separated from it. The machine appears to be self-cleansing, and delivers the solid substances at a point from which they are easily removed, and, being dried, converted into manure. The next process is that of mixing the emuls with the sewage, the whole of which is accomplished by mechanical contrivances. There are four large circular chemical tanks, each provided with an agitator and other means for preparing the alumina solution, which is run to the sewage by means of earthenware cocks. The sewage is then stirred by an agitator in a large well, and passes away to another block of buildings called the alkali-works and drying-works. The first block is also provided with machinery and appliances for the manufacture of the necessary chemicals used on the premises, viz., of soda, drying-rooms, mill, and mixer, and the engine-room contains a 10-horse-power portable engine, which drives the whole of the machinery in that portion of the works, as well as a 14-horse power boiler, to afford steam for chemical purposes. At a distance of about thirty or forty yards from the first block of buildings, containing the separate large rooms, that in the centre of the line-works, and those on either side of drying-rooms. The line-works contain line-tanks, two of them circular, and filled with water for the preparation of milk of lime, and apparatus for running it into the sewage in such quantity as may be required; a stirring well, provided with an agitator, is also found in this block, and it contains another 10-horse-power

engine for driving the whole of the machinery in this block of buildings. The sewage, now chemically treated, enters the precipitating tanks (of which there are four, each containing 250,000 gallons), at one end in a black and filthy condition, and the clear water flows over a weir at the other end, transparent as spring-water. The precipitate is lifted by means of elevators into wooden tanks, descending therefrom by gravitation into Milburn's patent drying-machines. The precipitate is kept constantly in a state of motion while being dried, and is also pushed gradually from the end at which it enters to the other end, where it falls out of the machine in the form of a dry powder, worth 60s. to 70s. per ton. This completes the process. The buildings occupy about two acres of land.

A NEW JOINT.

A METHOD for making joints to unite the sides of boxes and other matters has been recently patented by Mr. W. M. Beaufort, in England, France, Belgium, and the United States, through the agency of Messrs. L. de Fontainemoreau & Co. The joint is made with great speed and with little labour.

The two pieces of wood to be fastened together are first mitred in the usual manner, and a hole is then drilled (preferably by a drilling machine) vertically in each piece, from the bottom upwards, at a short distance from the



mitred edge as seen in Fig. 1. A channel or groove is then cut by a circular saw or otherwise, from the mitred edge to the drilled hole. This channel is of a less width than the diameter of the hole, and may be cut either parallel to the sides of the piece of wood, as in Fig. 2, or at right angles to the mitre, as in Fig. 3, so that when the two pieces are put together a continuous channel shall be formed between the two holes, as seen in Figs. 4 and 5. The two pieces are then held tightly together, and a key is formed by running metal, such as lead or "fusible metal," in the molten state into the channel; by this means the key, which is to bind the two pieces together, is cast in the place which it is to occupy. The key may also be made separately, of solid metal, as seen in Figs. 6 and 7, and driven home into the prepared channel. The invention is likely to be useful.

INAUGURATION OF THE BUNYAN STATUE.

THE Duke of Bedford's fine statue has, by Lady Augusta Stanley, been publicly unveiled on St. Peter's-green. The portrait of Mr. Bunyan's bronze figure was modelled from a contemporary painting by Sadler, in the possession of the Rev. Mr. Clive. The figure is 9 ft. high, and contains about two tons of bronze. On the pedestal are scenes in relief from the "Pilgrim's Progress." The front represents the termination of the fight with Apollyon, and on the sides are the meeting of Christian with Evangelist, and the burdened Pilgrim's release from his load, and interview with the angelic messengers. At the

back of the pedestal the following words are inscribed:—"It had eyes lifted up to Heaven; the best of books in his hand; the law of truth was written on his lips. It stood as if it pleaded with men." He wears the broad collar and general costume of the Puritans of his day.

In the Corn Exchange there were several relics exhibited.—Bunyan's will, found in his cottage at Elstow, yellow with age, dated December 23rd, 1685, and with signature distinct; a page of a church record, written by Bunyan himself; an old-fashioned pint mug, used by Bunyan while a prisoner; the walking-stick which accompanied him in his itinerations; and other relics.

Bunyan's cottage at Elstow has been restored; but original portions of the building still remain, and in the vestry of Bunyan's place of worship in Bedford the veritable armchair in which "Bishop Bunyan," as the Bedfordshire people named to designate him, sat. Not a vestige of the prison to which the little blind girl used to go for the lace which her father wove remains; and there is, even in Bedford, as we well remember to have found when some years ago we personally inquired into the subject, doubt as to which was the actual prison where Bunyan wrote and dreamed.

THE FEVER ATTACK AT CAIUS COLLEGE, CAMBRIDGE.

THE report of Dr. Buchanan, of the Medical Department of the Local Government Board, on this subject, is before us.

Reviewing, judicially, the whole history, both the facts of the outbreak, and all suggested explanations of them, he is disposed to think the introduction of the fever, and the phenomena that were special about it—an fact, for Caius College, the scene of the outbreak, was not a new building, and the outbreak was not a new phenomenon.

"I would not," he says, "be understood to affirm that the fever was introduced by a student, but I presume this, I think, for the great majority of the attacks. The apparent inadequacy of a cause so small to produce so large an effect, and the fact that the fever will be to some people, I should suppose, a hindrance to its introduction, are arguments in favour of the view that the fever was introduced by a student. The circumstances of distribution, produce very large and irregular results. And, moreover, the fact that the fever was introduced by a student, and the fact that the fever was introduced by a student, are arguments in favour of the view that the fever was introduced by a student."

At the time of the outbreak, the college was that means of ventilation, apparently efficient and safe, were being applied to all the college drains, and that all minor hazardous or suspicious conditions which had fallen under notice were being actively remedied. At the same time, structural changes have been made by which, in every part of the college, it will in future be impossible for any drinking-water to become impregnated by sewer-air in the way in which it is alleged to have been impregnated last year. Special closets or service-boxes are being put to every water-closet where they were before wanting, so that no closet will henceforth be supplied from any drinking-water pipe, and therefore there cannot henceforth be any suction from any closet into any such pipe. After a very minute examination of the college, no other precaution suggested itself as being required.

SCHOOL-BOARD SCHOOLS.

THE opening of London Fields Board School took place on the 8th inst. The school is in West-street, on the south side of London Fields, Hackney. At the opening there was even a larger number of children in attendance than accommodation was provided for. The new school, which is built like the others already completed, and a view of which was given by us from Mr. Robson the architect's balcony on the 30th ult., stands on a space of ground containing 10,296 square feet (purchased for 1,452l.), and has been built by Mr. Ennor, of the Commercial-road, at a cost of 7,172l., or 6l. 7s. 10d. per head, not including the cost of site. It will accommodate in all 1,122 children, viz., 313 boys, 359 girls, and 450 infants. Attached to the school is a large playground, partly covered in, for the recreation of the girls and infants, it being considered that the London Fields, in front, is sufficient accommodation for the boys. In the evening a crowded meeting was held in the playground, presided over by Mr. B. Lucraft, member of the London School Board, who, in the course of his address, said he wished the meet-

ing to understand that the School Board Schools were not erected alone for the poor and neglected, but for all classes, and every one had a right to send his child to this place for education. The belief in special schools no longer existed, and now it was advisable to do away with class schools. All children were born on an equality, and the education given at these schools would tend to prove the truth of this maxim. The desire of the Legislature was to raise the standard of education throughout the country; but in doing so there was no desire to interfere with the religious prejudices of parents, and therefore a clause had been wisely introduced leaving it optional with the parents whether their children should even be permitted to read the Bible.—
The new Board schools in Central-street, St. Luke's,—one of the densest parts of the metropolis,—have been opened by Sir Charles Reed, chairman of the Board. The site of the new schools contains scarcely 10,000 square feet of land, but the great cost of ground, about 4,282l., formed a prohibition against obtaining more. The building has been erected by Mr. G. S. Pritchard, from the designs of Mr. G. R. Robson, the architect to the Board, at a cost of 5,919l., or 7l. 0s. 9d. per head, exclusive of the cost of the land. Accommodation is provided for 255 boys, 248 girls, and 338 infants, or a total of 841 children; and there are in addition a teachers' room, a drawing-class room, and a caretaker's house, besides an enclosed internal playground for the use of the infants.—The committee having received tenders for the erection of a school to provide accommodation for 315 children on the site in Chatham-gardens, Hackney, the list of which was given on the 13th inst., recommended the acceptance of the lowest tender, that of Mr. Adin Sheffield, of 98, East India-road, Poplar, E., amounting to 5,884l. Cost of site, 2,680l. 13s.; cost of building, 7l. 6s. 10d. per head. After some discussion, the report was adopted by the Board.

Bratford.—The new Board schools at Whetley-lane are now approaching completion, and have been opened for work. They occupy a site near the bottom of Whetley-lane, and are meant to supply school accommodation for the inhabitants of the Girlington district. The total area of the schools and playgrounds is over 11,000 yards, being more extensive than that of any other of the schools now in course of erection by the local Board. The cost of the schools, however, will be considerably less than that of others which occupy far less ground. The school is built to accommodate 600 children in three departments, viz., 168 boys, 172 girls, and 260 infants; and the arrangement of the building takes somewhat the form of the letter H. Each department has, in addition to a large school-room, two class-rooms, together with ample cloak-room and lavatory accommodation. The dimensions of the boys' and girls' schoolrooms are 55 ft. by 21 ft. each, and of the infants' school 60 ft. by 30 ft., the average height of each being 25 ft. to the ceiling. The six class-rooms vary in size, but will be about 21 ft. by 18 ft. The cubic space allotted to each scholar is 248 ft., whilst the Government minimum is 80 cubic feet per head. The area allowed for each scholar is also greater than usual, averaging 10½ superficial feet for each scholar. The walls of all the rooms are finished with plinths of cleansed ashlar, above which they are lined with narrow pitch-pine boarding to the height of the window sills, and plastered to the wallplates. The floors are laid with pitch-pine boards, and the ceilings, which take the form of an arch, are boarded, stained, and varnished. The walls of the lavatories, cloak-rooms, and lobbies are lined with white glazed brick, and the lavatories are fitted up with enamelled iron basins with slate tops. Hot and cold water is provided to each basin. All the internal doorways are of cleansed ashlar. Externally, the building is of wallstones with ashlar dressings, the style Gothic. The main front is parallel with Whetley-lane, the two gable ends of the boys' and girls' schoolrooms, with the tower over the entrance to the infants' school, being the principal features. The tower is 13 ft. square outside, and is crowned with a slated spire, together rising to a height of 83 ft. from the ground. The belfry-stage has a two-light open window in each face, and the spire is enriched by a band of open tracery work, and finished with crockets. The warming of the building is effected by Perkin's patent hot-water apparatus, and coils of these pipes, passing through cisterns, warm the water for the lavatories. The gas pendants are by Messrs. Richard & Co., of

Coventry; and the W.C.s by Messrs. Macfarlane, of Glasgow. The work has been carried out by Messrs. James Wilson & Son, from designs of Messrs. T. H. & F. Healey, architects, and under the superintendence of Mr. A. Wallace, clerk of works. The cost of the building, including furnishing, boundary walling, architect's commission, &c., will amount to about 9,200l.

CHURCH-BUILDING NEWS.

Bournemouth.—A new transept is in course of construction at St. Peter's Church, Bournemouth. The foundation-stone has been laid. The work is being executed according to the original design of Mr. G. E. Street, and is expected to be completed in November next. The transept is to have a north and south gable, the roof being at right angles with the roof of the nave, and will afford additional accommodation for 140 persons. The total amount required to carry out this work is 2,200l., of which upwards of 1,500l. have already been raised. Mrs. Hale, builder, of Salisbury, is the contractor.

Oxford.—The new church of St. Peter-le-Bailey, in New Inn Hall-street, has been consecrated by the Bishop of the Diocese. The old parish church, which stood at the corner of the New Road and Queen-street, and was inconveniently prominent upon the roadway, was pulled down some months since, in order to carry out the much-needed improvement of widening the roadway, towards which the Local Board contributed 4,400l. To this has been added a large amount collected by public subscription, but a sum of about 200l. is still required to free the church from debt. The church having been sufficiently completed some months ago, was licensed, but the chancel being now completed, the edifice has been consecrated. The building consists of a nave of four bays, with north and south aisles, a chancel and north chancel aisle, and a tower, and south-west of the chancel adjoining the east end of the south aisle of the nave. It at present accommodates 533 persons in the nave, nave aisles, and chancel, and contains space for further accommodation in the chancel aisle for from 20 to 30 people. The peculiar feature in the new church is a chamber in the first-floor of the tower, which is groined, and opens with an arch into the chancel, occupying the position in which, in some old churches, a minstrel's gallery was introduced. This chamber serves for the accommodation of some of the monuments from the old church, which have been preserved. Some few brasses which remained in the old church are placed in the chancel-floor of the present building. The font, which is an imitation of the ancient font in Winchester Cathedral, and was presented to the old church some years back, is also transferred to the new church. The site of the building is somewhat circumscribed. A stained-glass window, executed by Messrs. Heaton, Butler, & Bayne, from designs by Mr. Henry Holiday, fills the tracery at the east end of the church. Externally, the chief feature is the tower, which rises to a height of 82 ft., the only elaborate details therein being the traceried parapet and the niche in the eastern side, containing a figure of St. Peter. The style of the church is English Gothic of the fourteenth century, and it has been the aim of the architect not only to preserve a strictly English character in his work, but, as far as possible, to give it a specially local appearance. In the destruction of the old church of St. Peter-le-Bailey, which was built in its present form in the last century, remains were found in the heart of the walls of architectural details varying in date from the twelfth to the fifteenth centuries. The present church is built partly of the material of the old fabric, and partly with new stone from the Box Ground quarries. It is heated by a hot-water apparatus, supplied by Mr. D. O. Boyd. The entire cost of the church will have amounted to over 6,000l. The architect is Mr. Basil Champneys, of London. The clerk of the works was Mr. William Burgess. The contractors were Messrs. Honour & Castle, of Oxford.

Oldham.—The foundation-stones of a new church and schools at Glodwick, Oldham, have been laid. The church, which is to be named St. Mark, will cost about 7,000l., and it is being erected at the sole cost of Lieutenant-Colonel Lees; while the expense of the school building, over 1,600l., will be met by Mr. James Collings.

Emmington.—The parish church has been re-opened. This church, consisting of a chancel, nave, and roofed tower, dates about the four-

teenth century, and is mostly of the Decorated style of architecture. A year since the restoration work was commenced, under the Messrs. Holland, builders, Thane. The design of the chancel was given by the late Mr. C. Buckridge of Oxford and London, architect, and this part of the building has, since his death, been superintended by Mr. Pearson, architect, London.

Kings Norton.—The tower has been repaired and strengthened. The roof, the nave, and aisles were found, on removal, much dilapidated, and their condition dangerous. It was, therefore, decided to place a new roof on the nave and the north aisle. It was also found advisable to rebuild the arcade on the north side, instead taking measures to restore it to an upright position, as at first proposed. It was decided to retain the gables which were not decayed, in the south aisle, and to ease the roof internally with boarding of a similar character to that in the nave-roof. The parishioners and others have liberally subscribed to accomplish this object. The restoration committee suggest that, in order to complete their plans, the western doorway should be rebuilt, also an organ-chamber, at that the floor in the nave and aisles should be suitably laid. The amount expended on the objects is 3,176l. In addition, persons connected with the church have presented painted windows in the south aisle, and one in the recently discovered Norman window in the chancel; carved figures of the Saviour and St. John, in the niches of the tower, and carving of the corbel supporting the nave, roof, &c. The floor around the chancel and the font has been decorated. These gifts were made at an outlay of 600l. It is estimated that about 300l. are necessary to complete the designs, and a committee has been formed to complete the proposals.

Huish, Dorset.—The parish church of St. James-the-Less, in the village of Huish, has been re-opened, after having been almost entirely rebuilt, at the cost of Lord Clinton, as a memorial to members of his family. The only portion of the old edifice now remaining is the tower. The new building is in the Early Decorated style, and consists of, in addition to the tower, a chancel, nave, south aisle, organ-chamber, and vestry. The whole of the exterior fabric is of local stone, with dressings of Tisbury stone, the tracery and mullions of the windows and buttresses being of the same material. The interior of the church is of stone from the Huish Hill quarries. The nave is divided from the aisle by an arcade of arches, supported by circular columns, with octagonal bases. All the windows are of stained glass, with clear glass figures, and were designed and supplied by Messrs. Clayton & Bell. In the north wall are three windows, of two lights each. The figures in the first are Aaron and Elijah (priest and prophet); in the second, St. Paul and St. Barnabas (Apostle of the Gentiles and Son of Consolation); and in the third, St. Boniface and Petrock. The second window was presented to the church by the rector and his family, in memorial to a deceased brother. The first window in the chancel contains a representation of the Annunciation. The principal, or east window, is of five lights, with figures of St. James-the-Less (patron saint of the church), the Virgin Mary, our Saviour on the Cross, St. John the Divine, and St. Andrew. The third window in the chancel contains a representation of the Resurrection, and the Ascension; and the south aisle there are three windows, representing respectively, (1) the Resurrection, and the Ascension; (2) St. Cecilia; (3) three miracles; three types; and (5) the Baptism of Christ. The whole of the subject is cleverly treated. The architect for the restoration was Mr. G. E. Street, R.A.; the contractor, Mr. Samuel Hooper, Hatherleigh; the clerk of the works, Mr. W. H. Williams. In the process of pulling down the old fabric remains, showing that the church of St. James-the-Less dates from the Norman era, were discovered; carved capitals, tracery of windows and jambs of doors being found built into the walls and foundations. From the appearance these remains it would seem that the material used in the first structure was stone from the

Battery quarries, near Hatherleigh.

Collyhurst, Manchester.—A new church, dedicated to St. James, has been consecrated by the Bishop of Manchester. It is built on the site of Collyhurst Old Hall, at the junction of Richardson and Teignmouth streets, a short distance from Rochdale-road. A few years since the whole of this district was a rural suburb of Manchester, but now it is crowded with

ouses, occupied by the working classes, and the parish in which the new church is situated has grown from 17,000 to 18,000 inhabitants. The church, with three schoolhouses and parsonage, forms one of the most complete and compact ecclesiastical establishments in this city or neighbourhood. The church is in the Early English style. The nave and aisle aisles, 93 ft. by 59 ft., are separated by five pointed arches on each side, surmounted by a lofty clearstory with coupled windows. The tower and spire at the north-west angle have a total height of 168 ft., and above the belfry, visible from a considerable distance, is an illuminated clock, with four dials, made by Messrs. Gillett & Bland, of Croydon. Excepting the windows of the chancel and west end, which illustrate in stained glass the designs of St. James, the windows of the aisle, clearstory, and transept are of tinted glass in geometrical designs—the whole of the glass being manufactured by Messrs. Edmundson & Sons, of Manchester. The outlay on land and buildings 26,000l. to 27,000l. The church affords accommodation for upwards of 800 persons, fully re-halved unappropriated. The architect is Mr. Lowe, of Manchester, and the execution of the work has been superintended by Mr. R. L. Corlett, who has acted as clerk of the works throughout. The contractors for the church and parsonage were Messrs. Ellis & Hinchcliffe, and those for the schools and dwelling-houses were Messrs. Crellin & Bailey—both of Manchester. The land, church, and other buildings were the gift of Mr. Charles P. Stewart, of the Gas Works, Manchester.

THE METROPOLITAN BUILDINGS BILL IN COMMITTEE.

At the sitting of the Committee of the House of Commons on Thursday, the 18th inst., on the Metropolitan Buildings Bill, witnesses were called by Mr. Mackrell, who appeared for the wholesale and retail traders of London, and so for the Builders' Society, with the object of showing that several of the clauses in the Bill are objectionable.

The first witness examined by Mr. Mackrell was Sir Sydney Waterlow, M.P., chairman of the Artizans' Improved Dwellings Company. He said that from an experience of ten years his company found that those tenements were much more sought after where the population was less than in any other part, and therefore they are confining their operations much more to the centre of London than they did when they first commenced building. The cost of land in the centre of the metropolis necessitated the erection of buildings much higher than might be necessary other parts in order to enable them to obtain a remunerative rate of interest. They did not find at the top stories were more difficult to let than the bottom stories; on the contrary, many people preferred the top, as they said they were more airy, and another reason urged in favour of upper stories was that the children could play on the flat roof, and be kept out of the streets. Practically, the company found that they could not afford to pay more than 10s. or 12s. a room ground-rent, which for a three-roomed tenement would be 30s. per annum, or something like 8d. a week for ground-rent. They did not find seven stories at all inconvenient; and he would submit to the Committee the result of his experience during the last few years, that if the walls from the footpaths to the chimney-pots were of a proper thickness, and properly built under the control and watchfulness of the district surveyors, practically the only restriction that need guide them in dwellings of that kind would be the height to which they could bring their water, because they now adopted the plan of a continual supply of water in cisterns on the roof. The New River Company now delivered water as high as 70 ft., and if by some improved contrivances water could be delivered at a greater height, he should think there need be nothing in the law to prevent any going to eight or nine stories, because he believed they could go with safety to that height if the building was properly constructed, and he was sure that the ninth story would be as readily as the ground-floor story. There was one point in reference to the height of buildings which he wished to bring under the notice of the Committee, and that was the necessity of preventing danger to the inhabitants from fire. The company's buildings were erected with external staircases; that was to say, that the only staircases were outside the

wall of the buildings, and consequently persons might go up and down the staircases with the whole building in flames, and persons on the top were quite as safe as any one living on the ground-floor, because when they were once outside the wall of the building, and on the staircase, they might ascend and descend with perfect immunity from fire; and therefore the question of protecting the inhabitants from fire did not arise where they insisted upon external staircases in cases where the buildings were occupied by a large number of persons. Their highest block of buildings was at the back of Grosvenor-square. That was 65 ft. high, and contained seven stories.

To the Chairman.—I cannot see the necessity for any restriction in the height of buildings if the walls are properly constructed, and if there is a proper arrangement for the escape of persons in case of fire.

Examination by Mr. Mackrell continued:—In addition to habitations his experience extended to premises for the purposes of trade. While in business he had some experience, unfortunately, in the construction of buildings for manufacturing purposes. They were burnt down once, and from other causes he had had that experience. Recently his brothers had consulted him with reference to new buildings, the tenders for which were to be opened the following day. They were to be erected at the height of 74 ft. from the pavement to the parapet, and they had been arranged so that there might be the same facilities as regarded protection of life from fire, which he had explained with reference to the model lodging-houses. There was no staircase inside the walls of the buildings. He had a strong feeling that in all cases where there were large cubical contents in manufacturing premises, they ought to be compelled to have external staircases, both on account of safety in case of fire, and in order to prevent up and down ventilation; because if one room caught fire, if the ventilation was laterally, the fire would not increase in anything like the ratio that it would if it was stimulated by an upward draught coming up the staircase. The fire was fed by the staircase, and increased at a tremendous rate compared with what it would do if it was only fed laterally from the windows on either side. He did not say that he would not, to some extent, restrict the cubical contents of buildings, but he thought that where arrangements were made for external staircases, larger cubical contents might be allowed. The trades of the metropolis required very much larger premises than they did ten or twenty years ago, as business was carried on on a larger scale. There was no doubt in his mind that the tendency of business was to concentrate itself into the hands of a few people, and the establishments were much larger than they were twenty or thirty years ago; and that no doubt necessitated increased facilities for carrying on the extensive trades. He thought the existing arrangement of the district surveyors worked fairly and well. He was of opinion that some large powers might be given to district surveyors in matters of detail. He thought they should have greater powers to interfere where they found that buildings were being constructed with improper and unsafe materials. He could not shut his eyes to the fact that buildings, especially in the suburbs, were run up with bricks unfit to be used, with mortar improperly mixed, and of proportions which no man who wished to construct a building to last would think of using; and he thought the district surveyor should have some power of controlling the character of the materials that were used, and some means of preventing materials being used which were unfit for the construction of buildings if safety was to be regarded as an important element. Assuming the law to be so altered as to give those increased powers, he did not see any necessity for removing the supervision from the existing institution of district surveyors. His experience was that the district surveyors had done their duty well, as far as they had power given to them. He had had considerable experience of them, because the buildings his company had erected were almost in every part of the metropolis, and they had therefore come in contact with certainly the majority of the district surveyors appointed for the metropolis. He thought alterations not affecting the safety of the structure might be fairly left to the owner, but that as regarded all alterations that did affect the structure he thought notice should be given to the surveyor, and that he should have the power of assenting

to or dissenting from the proposal, but he thought it would be a great trouble to the inhabitants of the metropolis if, for such an alteration, they had to memorialise the Board of Works, or had to go out of their own district.

Cross-examined by Mr. Philbrick.—He was aware that in all streets which had become new streets since 1862 they could not build to a height above 50 ft. unless they set back to the extent to which they exceeded that 50 ft.; but he thought that 50 ft. was not sufficiently high in streets 40 ft. wide. He had had experience of houses much higher in old streets, and he did not find any material objection to it. He thought in a 40 ft. street they ought to be permitted to go higher than 50 ft. He should think 65 ft. high in a 40 ft. street a fair ordinary limit, subject to a power with the Metropolitan Board to permit a greater height in cases where they thought the circumstances would justify it. He thought some public authority should have the power to allow the limit to be increased in a fit case, because it was impossible to tell what new plans or designs for buildings intelligent and talented architects might produce, and what circumstances might arise to justify their erection, with cubical contents even larger than that contemplated by the Bill; but some public authority should have the power of determining whether they would be safe if so constructed, or whether they would be dangerous.

Sir James Hogg.—I think as to the height of the rooms in your model buildings, you never have any less than 8 ft. 6 in.?

Witness.—That is the lowest; 8 ft. 6 in. is the minimum.

Sir James Hogg.—You think, that for the health of the inhabitants, that that is the minimum which should be allowed?

Witness.—We have thought that ought to be the minimum, because if we had thought a less height would be sufficient to admit of proper sanitary arrangements we should not have gone to that height, because economy is a most important matter with us.

Sir James Hogg.—You have said that you do not think it wise to have internal communications?

Witness.—I think they should be restricted as far as can be, except with the consent of the public authority, where a case is made out fairly for internal communication.

Sir James Hogg.—You would prefer access by an external staircase?

Witness.—My experience is strongly in favour of that course of action, and my brothers have experience of a building so constructed, and they are so satisfied with it that they are going to spend 100,000l. on a warehouse to be constructed on the same plan.

Mr. Samuda.—With regard to warehouses you have told us that you consider that a restriction might reasonably and properly be put upon the cubical contents?

Witness.—I think such restrictions ought to be put.

Mr. Samuda.—Would you apply that same restriction to buildings not of the warehouse class; such as, for instance, manufactories, or banks, or chambers?

Witness.—I think 300,000 cubic feet is quite sufficient for any bank or building occupied for business.

Mr. Benjamin Hannen, of the firm of Messrs. Holland & Hannen, builders, was amongst the witnesses called and examined by Mr. Mackrell. He said he was chairman of the Central Association of Master Builders, and one of the Special Committee of the Builders' Society, to whom the Bill had been referred. Along with the other members of the committee he had taken great pains to examine the provisions of the Bill with a view to bringing about such legislation as might be most desirable. Taking the Bill generally, he thought in some cases it went needlessly into details for the purpose of securing all that the law should have secured, namely, the erection of safe buildings, and buildings healthy to live in. He understood that under one of the clauses of the Bill the owner or occupier would not be allowed to remove a parapet without the leave of the Board, in case he found that parapet too heavy. He had no particular objection to it. It would be a question as to the parapet as regarded protection from fire, and therefore that he should remove it altogether would be objectionable. He saw no reason why there should not be a restriction as regarded the removal of it, and he did not see why he should not be allowed to repair it without getting permission to do

so. The witness, in reply to Mr. Mackrell, pointed out his objections to several clauses in the Bill. There were one or two objections to Clause 17 with reference to the adaptation of an old building for the purpose of a warehouse, factory, or workshop. He considered that that clause should be limited so as not to apply to cases of small buildings. The clause said that "where a building not used as a warehouse or factory becomes so used, it shall be altered so as to be in conformity with the Act." The definition of a building of the warehouse class was "warehouse, factory, manufactory, brewery, or distillery," but a manufactory was not included in clause 17. He wanted to know why there should be a difference under the Act between a factory and a manufactory, because under clause 17 a manufactory need not be altered to be in conformity with the Act, but a factory must. It was necessary to define the difference between a factory and a manufactory, otherwise the clause was not intelligible. The walls of those buildings might have to be altered, because they would come under the warehouse class; and the question was, what was the difference between a manufactory and a factory? because, if it was a manufactory, it did not come within the clause; but, if it was a factory, it came within the clause. The other question was with regard to the conversion of houses in neighbourhoods that were declining, such as many at the East End of London, where there were dwelling-houses at the present time let off in different floors to small working jewellers, straw-bonnet makers, and so on. Under this clause, as it stood, it would be impossible, without subjecting the proprietor to a fine, for him to let any portion of that house for those purposes, unless he had previously altered the walls so that they should be in conformity with the Act with regard to warehouse buildings; there should be limitations to that. It might be said that it should not apply to buildings below a certain size: that was one way of dealing with it. He also saw an objection to clause 25, to the effect that when one part of a wall was used as a party-wall, the whole of it should become so. It was clearly not necessary that a party-wall should be a party-wall beyond the point where it was used as such. With respect to cubical contents, as builders they were of course glad to find that there was to be an extension; but at the same time they did not admit that there was any necessity for the restriction as to cubical contents at all. It applied to them more particularly with regard to their own premises. So far as the construction of the buildings was concerned, that was a question for the owners of property, more than builders; but this clause applied to witnesses' firm as builders, with regard to their own premises, and the limiting of the cubical contents, or making them divide one building vertically, was a matter of very considerable inconvenience to them. Their business required that they should have great facilities with regard to space, both for the carrying about the long pieces of timber and stuff that were required for the purposes of joiner's work, which was principally done in their buildings, and also as a question of supervision. If their premises were divided off by party walls with only openings between them, comparatively small openings, it gave them a great deal of trouble, with regard to the shifting about of their materials, and it materially increased the cost of supervision, because in every one of those blocks they must have somebody to superintend the workmen: therefore the smaller they made them the greater the cost of supervision was to the builder. Those were the builders' objections to limiting these spaces, and they failed to see for what object it was done. It was not for the builders' interest, as proprietors of premises, because they should prefer to run the risk as against fire rather than be put to the expense of these divisions, and the difficulties they entailed. Whether it was or was not for the purpose of limiting the risks which fire insurance offices ran was not material, because it did not appear to him that that was an object that the Bill ought to seek to secure; and with regard to the outside public and adjoining premises, he thought that all risk to them could be quite as well guarded against by directions, with regard to the construction of buildings, as to thickness of walls, fireproof roofs, fireproof sashes, and other details of that description, and that with buildings above a certain size, say above 300,000 cubic feet, to restrict the way in which they should be con-

structed would be a better way of arriving at the object the Board appeared to aim at than by limiting the cubical contents the building should contain. That was generally the builders' objection to the clause. Assuming that there was a limit and a dispensing power in the Board, having regard to the enormous interests at stake in questions of this kind, he could not see any reason why, in all important cases, there should not be a right of appeal from the Board in case of a difference of opinion between themselves and any persons wishing to build. There might be cases in which an adverse decision of the Board with respect to trades which could not be carried on with the restrictions imposed upon it might operate to annihilate such trades. If the trade could not be carried on except in buildings of a greater capacity than the 300,000 cubic feet, and if the Board refused to give permission for the extended space, the trade of course could not be carried on, and as special difficulties might arise, he thought there ought to be some appeal from the decision of the Board. As he read the Bill, there was no security for questions of construction being dealt with by a competent surveyor. There was no clause which said that the supervision which was required under the Bill would be exercised by a district surveyor, or even a surveyor of the Board. Without any clause to that effect the Board might send any clerk in their office, or any person to whom they might delegate the work, to go and exercise a supervision. The Bill nowhere said that the district surveyor had any position at all. Everything was done in the name of the Board. What the Builders' Society thought was, that there should be some provision that the work of supervision should be exercised by the persons now holding the position of district surveyors, who, after the Bill, if carried, would be the surveyors to the Board. As regarded clause 70, limiting the height of buildings, they should be glad in streets over a certain width, say over 30 ft. wide, that there should be no restriction, but that was not actually a builder's question; it was a property-owner's question.

At the close of Mr. Hannen's examination the Committee adjourned until Tuesday. At the sitting of the Committee on Tuesday, Mr. George Francis Trollope was examined by Mr. Mackrell. He said he was a member of the firm of Trollope & Sons. He was a member of the Builders' Society, which comprised all the leading builders of the metropolis; and he was also a member and vice-president of the Central Association of Master Builders, which comprised about 300 or 400 members. He said he generally agreed with Mr. Hannen in the views which he had expressed with reference to the Bill. He thought Mr. Hannen's evidence fairly represented the opinion of the Builders' Society and of the Central Association of Master Builders. There were two points upon which the builders thought that the Bill would be very objectionable. The first point was that the builders thought the present system was very simple and direct as regarded the question of district surveyors. They served a notice on a district surveyor at his own office in their own district, and the district surveyor immediately gave attention to it, and there was no objection from waste of time. Under the present Bill everything was to go to the Board, and there were many questions of repairs, for instance, in a gentleman's house, where he thought the delay and circumspection would be very objectionable in carrying on the operations. They were sometimes taken to banks and other places for alterations, where time was a very great object, and serving notice on a Board, and there taking the usual routine which must inevitably attach to a Board or body, would be objectionable. That was their serious objection. They had looked as well as they could, not being lawyers, to clause 81 in the Bill, which showed how the operation was to be carried on. It said, in the first part, that the Board might from time to time appoint a superintending architect and district surveyor. But when they came to the second clause of the section, it said that whatever the Board were authorised by the Act to do in relation to any building, might be done under their authority, not by the district surveyor, but by their officers. It seemed to the Builders' Association to take the power out of the authority of the district surveyor altogether.

Mr. Mackrell.—You would like to see the existing system preserved, would you not? Witness.—Either that or something like it, so that there shall be no delay, because time is, I

need not say, money, particularly in London. We are bound down by contracts for time very often. I do not see the advantage of having a direct official communication from a Board is writing, on every transaction.

Mr. Mackrell.—I think another point which affects you very much, not only as a builder, but also as a cabinet-maker, is the question of the size of the buildings?

Witness.—I think that manufactories ought to be put in a different category to warehouses: warehouses like the Pantheon might be separated by walls, without involving a very large expense to those who are carrying on the trade of warehouse-keepers; but supposing on premises are burnt down, and we are obliged to build them up with division-walls, it would make a serious extra cost to us in the conduct of our business, having small factories, as compared with large ones. I think we ought to be put in some way with the brewers and engineers; that we ought to have the opportunity of having large premises for conducting our business. My premises are, at present, considerably larger than would be allowed under this Act, supposing we were burnt down.

Mr. Mackrell.—As regards the openings in party-walls, would it not be a great convenience that, where the buildings are divided by party walls, the existing restriction of 7 ft. by 8 ft. as the size of the opening should be enlarged?

Witness.—I think so; and I would ask the attention of the Committee to this, which is one of the things we object to, touching the question of iron doors. At our interviews with the superintending architect, we pointed out to him the absurdity of this thing, which they do not appear to have altered.

Mr. Philbrick.—We have purposely not altered the schedules at present.

Witness.—Then they say that the doors shall be so large as to be self-closing. Fancy an iron door of 7 ft. or 8 ft. wide made with a spring for self-closing! I never saw such a thing, nor did any of my brother builders. It would be dangerous. It would knock anybody down. There are so many minute things of that sort in these schedules that they ought, I think, to be altered, to be consistent with sense.

The Chairman.—Were your present premises built under the present Building Act?

Witness.—Our premises were built by the Government, and all this woodwork which you see round you in this house, was manufactured there. On the part of the builders we desire to say that one provision in this Act we think very good—that assessors should be appointed to advise magistrates. We have had to go before magistrates occasionally, and we find that the magistrates are very much puzzled to understand even the present Building Act, in various points; and as the law was passed last year, allow judges to have assessors under the Judicature Act, we think that the same principle would be very good if applied here.

Mr. Mackrell then said that with the evidence of Mr. Hannen and Mr. Trollope he thought he had fairly put before the Committee the views of the metropolitan builders with reference to the clauses. As regarded the schedules he had touched upon them, except with reference to party-walls, and he did not propose to trouble the Committee further with regard to that. He did not wish to offer any further evidence, unless the Committee would like to have evidence with reference to a building which had been referred to, and which, perhaps, might help the Committee as to the size and height of the building. He alluded to the building of Messrs. Cook, St. Paul's Churchyard, which had a height of the parapet of 82 ft. It was constructed in the way that had been approved of by the Fire Offices, and if the Committee wished to try Mr. Cook's evidence, he was present. Mr. Mackrell then read the description given by the Fire Offices of Messrs. Cook's buildings, after which Mr. Cook was called, and stated that the facilities now afforded to him by the building, as it existed, were necessary for carrying on the trade of the firm.

Mr. Howard next addressed the Committee on behalf of the timber-merchants, saw-mill owners, and manufacturers of timber generally, and objected to the Bill on the ground that it unduly limited the area required for manufacturers in the course of carrying on their business. In support of his statements Mr. Howard called

Mr. Isaac Hunter Donaldson, of the firm Gillow & Co., Oxford-street, who said that the present area of their premises exceeded 216,000

cubic feet, and that it was altogether inadequate to their necessities at the present moment. They would wish to rebuild and increase their premises very considerably, which would exceed twice 300,000 cubic ft., as named in the Bill under the consideration of the Committee.

Mr. Arthur Wellington Peaty, of the firm of Esdaile & Co., City-road, saw-mill proprietors and timber-merchants, was also called, and stated that it was positively necessary that the cubical contents of their buildings should be very spacious. For the purposes of this investigation he had had the cubical contents of the principal building that they were then working in, surveyed, and the contents of the central block of contiguous and communicating buildings were about 640,904 ft. One divided portion alone exceeded the limit fixed by the present Bill, being 388,762 cubic feet. In any possible reconstruction of the premises he would not be content to be restricted in the size. On the other hand, in the future they might reasonably expect to require still larger buildings, and a restriction would be greatly injurious to their interests.

This witness's examination brought the evidence on the Bill to a close, and the Committee adjourned.

On Wednesday the whole of the day was occupied by the address of Mr. Philbrick in reply, on behalf of the promoters. He dwelt at great length on that portion of the Bill having reference to the district surveyors, denying that there was any intention of interfering with or lowering their status. He next adverted to the proposed limitation of the height of buildings, and strongly defended this portion of the Bill from the objections which had been urged against it. Whilst the learned counsel was addressing the Committee on this part of the Bill, the Chairman intimated that the Committee wished to deliberate, and the room was cleared. In about an hour strangers were readmitted, when (without any further communication, the Chairman intimated to Mr. Philbrick that he might proceed.

Mr. Philbrick then vindicated that portion of the Bill having reference to cubical contents of buildings, and at the close of his address,

The Chairman stated that the Committee had agreed to adjourn to Wednesday next, for the purpose of considering the general character and provisions of the Bill. He wished the parties to desist from that when they met again, it would not necessarily be with the view of going through the clauses, because they might be engaged some hours in considering the general provisions of the Bill.

The proceedings were then adjourned to twelve o'clock on Wednesday next.

SOMEBODY AT SEA AT POPLAR GUARDIANS' MEETING.

Sir.—The Board proceeded to open and consider tenders for sanitary work and certain repairs to the workhouse tank, according to a specification prepared by Messrs. Hills & Fletcher. There were seven tenders received, amounting in amount from 184*l.* to 420*l.* Mr. By's offer to execute the work for the first-mentioned sum was accepted.

What can be the reason for this difference?

A.

THE LIGHTING OF THE HOUSES OF PARLIAMENT.

The outlines of a proposition for lighting the Houses of Parliament and the public departments at Westminster with gas manufactured by the Government has been submitted for the consideration of the Chief Commissioner of Works and his colleagues. The proposal, as announced in the *Morning Post*, is that gas of a superior quality should be manufactured at works to be constructed in a convenient locality for the purpose, and that it should be applied to the South Kensington Museum, Buckingham Palace, the House of Commons, the House of Lords, the Admiralty, the War-office, and the royal palaces. It is believed that gas of a superior quality can be manufactured at a great saving to the public, and that the cost of the works in a very few years be recouped, while the Government will become independent of existing sources of supply. The sum now paid for

lighting the Houses of Parliament, the various public offices in the neighbourhood, and the royal parks, amounts to about 30,000*l.* per annum.

SOCIETY OF ARTS' CONVERSAZIONE.

A CONVERSAZIONE of the Society of Arts was held on Friday evening in last week at the South Kensington Museum. The visitors were received in the South Court by Major-General F. Eardley Wilmot, R.A., and other members of the Council. The whole of the building was brilliantly lighted. The galleries, art-schools, and art-library were thrown open and rapidly filled by the visitors, who flowed in, in an uninterrupted stream, up to nearly ten o'clock. The band of the Grenadier Guards played at intervals in the North Court. In the course of the evening a vocal concert was given by the London Glee and Madrigal Union, under the direction of Mr. Land. The locality selected for the concert was the lecture theatre; it holds about seven hundred people, and three or four times that number were excluded from it by reason of the competition for places. Those who were disappointed in this respect found their way into the various picture-galleries, the art-schools, and the new court, recently opened. The conversations was pronounced a great success.

THE RUINS IN SLOANE-SQUARE.

SINCE the building of the Metropolitan District Railway, the Company have left, all along their line of route, houses half in ruins, and unsightly boardings at the corners or other parts of the streets.

Some months since, owing to a pressure, the Company disposed of these dilapidated premises, and the Duke of Westminster bought up all that were on the Grosvenor Estate, and has since leased part for building new houses, and given a site over the line for a church which is nearly erected, so that Pimlico is not quite so disgraceful in its public thoroughfares as formerly.

In Chelsea, the Earl of Cadogan bought up a large corner left in a shameful state by the Railway Company, and his lordship has just given a site on the spot for a Rectory-house and parochial school in connexion with Holy Trinity Church, Sloane-street, and as soon as the funds can be procured this blot on the street will be partly obliterated.

The parish of Chelsea received from the Company 10,000*l.* for damage to the rates, and the Vestry appear to have allowed the Railway Company to act as they chose afterwards.

THE NEW BUILDINGS BILL.

Sir.—If the Buildings Bill be likely to pass, I think a clause should be added, giving to surveyors unwilling to act under the altered regime under the Board of Works a power to ask for compensation in a gross amount, and to retire from office under such altered conditions.

A SURVEYOR.

THE TRADES MOVEMENT.

Nottingham.—Mr. Kettle has made an award, as requested, in the matter of the Nottingham building trade. The carpenters and joiners sought to have their wages advanced $\frac{1}{2}$ d. per hour, namely, from 7*d.* to 7 $\frac{1}{2}$ *d.* During the arbitration the men produced a list of employers, some of whom belonged to the masters' association, who were willing to give the rise. Mr. Kettle has awarded the advance demanded, and says,—"I beg publicly to state that my decision is founded upon peculiar local circumstances relating to this branch of the building trade in Nottingham."

Canterbury.—Five hundred bricklayers and labourers, employed in the construction of the new county lunatic asylum at Chartham, near Canterbury, have struck work for an advance of $\frac{1}{2}$ d. an hour, and the right to leave off work on Saturday at one, instead of four, p.m. The contractors (Messrs. Furness) are under an engagement to complete the work under a specified time.

Shields.—The operative bricklayers and masons of South Shields have struck work for an advance of wages, from 3*s.* to 3*s.* 6*d.* per week, during the summer months, and from 3*s.* to 3*s.* 3*d.* during winter. The operative joiners, also, of South Shields, have struck, objecting to work

by the hour system, instead of by the week, as previously.

Porth.—The journeymen joiners have struck work, their employers having declined to give the former $\frac{1}{2}$ d. per hour in addition to their present wages.

"ENGLISH MEDIEVAL FOLIAGE."

Sir.—Will you allow me to explain, in answer to that portion of your notice of my work on "English Medieval Foliage," which you were kind enough to give in your last number, where you speak of its want of a consecutive arrangement, that in the volume, although not in the parts, the plates have been arranged and numbered consecutively, beginning with the earliest examples, and finishing with the latest. This has been one great object far as I could, without making too large and expensive a book, a continuous view of the alterations observable during the progress and development of English floriated ornament from the twelfth to the fifteenth century.

The plates of the parts being left unnumbered, if my subscribers will take the trouble to number them, as I have recommended them to do, on the cover of the last part, according to the index, they may be bound up in the same order that they are arranged in the volume; or, if this be too much trouble, if they will forward their copies to me, I will have them so bound for them, upon their paying the necessary expenses.

JAMES K. COLLING.

CONTRACTS.

MORTON V. EASTWOOD.

THIS case, in the Court of Queen's Bench, before Mr. Justice Blackburn, Mr. Justice Quain, and Mr. Justice Archibald, raised a question as to the effect of a letter sent by mistake. It was an action for breach of a contract for the erection of an iron market-house, and it arose under these circumstances:—

On the 15th of July, 1873, the defendant asked the plaintiff to tender for the work in question at per cent. according to a certain description and plan sent. The plaintiff did so tender, and on the 22nd of July, the defendant accepted the offer with the stipulation that a specification should be agreed upon. On the 23rd of July the plaintiff acknowledged the receipt of such letter, but stipulated that the specification should be subject to his approval. Meanwhile it appeared that the defendant's letter of acceptance of the 22nd of July had been sent by mistake, and was, in fact, intended for another firm named Eastwood; and, accordingly, on the 23rd of July, the defendant telegraphed to the plaintiff to that effect, but not until after the plaintiff's letter of that date had been written. It appeared that the defendant was a contractor for the Government, who had stipulated for a formal specification.

The Court, in making the rule absolute, decided that the stipulation as to the specification was a material part of the contract, and, as the parties were not at one on that point, there was no complete contract.

Judgment for the defendant.

HOLIDAYS ON COMPULSION.

M'DONALD V. THE DARLINGTON IRON COMPANY.

THIS action was brought, in the Darlington County Court, to recover 12*l.* 16*s.* 8*d.*, one week's wages. The peculiarity of the action was, that at Whitsonide the works of the Darlington Iron Company, like most large firms, were laid off for the week, and notices were placed about the works the week previously, stating it was the intention of the company to strike work.

Mr. M'Donald, not wishing for a holiday, went to his work, and offered his services on Whit-Monday, but was stopped by Mr. Barningham, the manager, who represented to the plaintiff in the action that the number of men who would work were so few that the firm could not keep the works going.

The plaintiff, however, informed the manager that it was his intention to come to work at the usual time all the week, and should expect to meet the cashier at the payable. Mr. M'Donald kept his word, but the cashier not obliging him, he now sued for a week's pay.

It was urged on behalf of the defendants that Whitsonide being a holiday the closing of the works was justifiable, as most of the men took the other five days of their own accord. It would never answer to keep fire and steam up, with foremen, clerks, and managers in attendance, to oblige a few.

The Judge, Mr. B. R. Turner, however, decided that the plaintiff was entitled to seven days' notice, and this not having been given, the defendant must pay the amount sued for, with full costs.

VARIORUM.

Women and Work is the title of a new weekly journal. The editress, Miss Emily Faithfull, says of its purpose:—

"By recording week by week what is passing in the fields of employment at present open to women, by advocating new spheres of labour, by establishing a permanent medium of communication between employers and employees, *Women and Work* will earnestly strive to promote the industrial pursuits of women. A column for Notes and Queries will be kept open to aid in this desirable purpose."

In the first number a recommendation that ladies should become architects was by some accident erroneously attributed to the conductor of the *Builder*. With every disposition to increase the number of employments open to females, we cannot endorse the recommendation in question. Some might become able architectural draughtswomen and designers, and might, doubtless, find employment; but beyond this we cannot advise them to attempt to go.—The

Leisure Hour, speaking of Olney, says:—"Hundreds of visitors from distant places make pilgrimage there every year. The summer-house, immortalised in Cowper's Letters, and in 'The Task,' is covered all over with names of visitors, many of them from across the Atlantic. Many of these visitors must be wealthy, and could well afford some generous help in the work, seeing that both the living and the parish are poor. It is not the name of Cowper alone, though itself a host, that endears and consecrates Olney. The Rev. John Newton, whose 'Cardiphonia,' and whose Letters, bright with the Christian truth and balmy with the earnest love that pervades them, is best known to us as curate of Olney. Good old Thomas Scott, the commentator, also for four years laboured in this place. The vicar, then non-resident, was the Rev. Moses Browne, a disciple of Isaac Walton, as well as a zealous 'fisher of men.' In the preface of a little book, Moses Browne tells us that he brought up in the vicarage of Olney a family of ten children, and that he never had an income of more than forty pounds in his life! His fishing in the Ouse must have been a business as well as a pleasure and recreation for the poor man. The Rev. Henry Gannett, author of a practical and devotional commentary on the Revelation, the Rev. Dr. Langley, and the present incumbent, the Rev. J. P. Langley, have kept up the evangelical succession, and maintained the worthy traditions of the place. Surely there are many who, if they knew that the church in which these good men ministered and worshipped now sadly needs restoration, would deem it a privilege to send some help towards so good a work."—"The Royal Academy and the Hanging Committee," is the title of a pamphlet (Whitfield, Strand), attacking the Academy for the treatment outsiders have received on the present occasion. Without taking on ourselves the defence of the hanging committee, we must say that the writers of this pamphlet appear to have overshot the mark; for if they are to be believed, we really have no painters at all, to speak of, either in or out of the Academy.

Miscellaneous.

Inauguration of a Memorial at Shrewsbury.—The memorial in front of the General Railway Station, Shrewsbury, erected to the memory of the late William James Clement, a local celebrity, by public subscription, and just completed, has been inaugurated. It is after the Byzantine school of architecture, and is the design of Mr. John Gibbs, of London and Leamington. At the base on each side is a tier of three steps, which lead to four semicircular drinking-fountains, each having a canopy; and above the whole of these, in broken lines, is the chief base of the structure, the details of which, and of every other part, are bold, as are also the various pieces of carving which adorn it. There are large panels above the fountains, in one of which is a bronze medallion portrait of the late Mr. Clement, by Mr. J. Durham, A.R.A., of London, while in another of these is the inscription. Above is a cornice with moulded and carved details, and upon it are four large ornamental gables, having carved and emblazoned shields in them bearing the arms of the borough, the arms of the Royal Free Grammar School, and those of the late Mr. Clement. The adjacent portion of the memorial is the upper base, parts of which fill up the angles of the gables named, and from which rises an obelisk-like form having ornamental hands at five stages on each side. The memorial is about 40 ft. high. The work was executed by Mr. Dodson.

Monumental Pillar to the late Mr. and Mrs. Paget.—The *Scarborough Gazette* says:—"It will be remembered that in October last, a melancholy occurrence took place on Flay Brigg. We refer to the drowning of Mr. Charles Paget and Mrs. Paget, who were suddenly engulfed while loitering over the rocks, on a fine day, not for a moment suspecting danger. By way of recording the event and of giving a caution to parties visiting the famous projection, the members of Mr. Paget's family recently commissioned Mr. William Dove, of that place, to execute a monumental pillar to be placed on the spot. The work is just completed, and may be seen at Mr. Dove's yard in Cemetery-road. It is a marble pillar, neat and plain, with an inscription—the letters of which are of lead, let into the marble, for durability."

Female School of Art.—The Archbishop of York has distributed the medals and prizes to the successful students of the Female School of Art, Bloomsbury. The distribution took place in the Theatre of the Museum of Geology, Jernyn-street. The report of the committee stated that there were 194 students on the books, the largest number yet attained. One of the principal premiums, 30l. to head-mistress and mistresses of a school of art, had been awarded to the head-mistress of the school, Miss Gann. Her Majesty had purchased a life-study in chalk, by Alice Hanslip. The Gilchrist trustees had granted in connexion with this school a scholarship of 15l. a year, tenable for two years. The winners of prizes in the competitions with all the schools in the kingdom were named; and besides these more than sixty prizes and certificates were distributed to the pupils of the school. After the distribution of the prizes, and the Archbishop's address, Mr. J. C. Horsley, R.A., alluded to the great progress made in art-education. Last year, he remarked, 180,000 works of art had been sent in from the different art-schools; 91,000 of these had been received for examination, 1,200 had received local prizes, and 1,600 had been selected for national competition, of which 190 had been awarded prizes.

Excavations in Greece.—Professor Mylonas of Athens, whose assistance the Prussian Government has secured for its excavations proposed at Olympia, has recently made (according to the *Levant Herald*) a general survey of the places where the excavations are to take place, and fixed his choice upon the site of the Temple of Jupiter, from which the French on an earlier occasion removed some beautiful sculptures to the Louvre, and the slope of Mount Korneos, taking in the Grove Altis (Pelagian for *aldos*, i. e. *lucus*) the stadium, and the hippodrome. In the latter site Pausanias records seeing thousands of statues and figures, but at present all is covered with earth, one solitary pedestal only rising from the soil, showing on its surface the marks of feet which once supported a figure. The *République Française* publishes a letter from Athens, endeavouring to show that the treaty of the Greek Government with Prussia might, from a purely artistic point of view, embarrass considerably, if not entirely annihilate, the French school in that city. One of the articles of the convention says,—"Germany reserves the exclusive right, for five years from the date of discovery, of taking impressions or mouldings of objects found without her co-operation."

The Sewers of Marylebone.—We learn that the surveyor, Mr. Tomkins, is at the present time engaged in a systematic inspection of all the sewers in Marylebone parish. Dr. Whitmore writes as to these sewers,—"I have no hesitation in saying, from my own personal knowledge, that there are many which will be found to require a considerable amount of cleansing, repairing, and, I may add, structural alteration, before they can be declared to be in a proper sanitary condition. In a part of St. Mary's district some of the sewers are very foul, and one or two I could name are but little better than large elongated cesspools; much of this is owing to the want of the new sewer on the south side of Marylebone-road, extending from York-place to the Yorkshire Stingo, the necessity for which I ventured to suggest at least three years ago, and which is now so urgently needed, that unless it is constructed without further delay it is improbable that the health of the inhabitants of that particular district may become very seriously affected."

Gifts to the Public.—A despatch from San Francisco, dated the 4th instant, states that the act of James Lick giving almost the whole of his property to the public has excited much comment. He gives 700,000 dol. to the constructor of the largest and best telescope in the world, for the observatory at Lake Tahoe; 420,000 dol. for public monuments; 150,000 dol. for public baths in the city; 100,000 dol. for the Old Ladies' Home; 10,000 dol. to the Society for the Protection of Animals; 25,000 dol. to the Ladies' Protection and Relief Society; 10,000 dol. to the Mechanics' Library; 25,000 dol. to the Protestant Orphan Asylum; 150,000 dol. for the erection of a bronze monument to the author of the "Star-spangled Banner"; 300,000 dol. for the endowment of a school of mechanical arts in California; and the residue, in excess of 1,750,000 dol., to the Pioneer Society. He makes ample provision for his relatives, and reserves a homestead and 25,000 dol. per annum for himself.

Fatal Fall of a Warehouse in the City.—An accident of an alarming character, and which has already resulted in the loss of one life, has occurred on the premises of Messrs. Hilco Anderson, & Co., Portland Cement Wharf, Upper Thames-street, City. It appears that as two men were engaged in removing some bags of cement from the second floor a loud crash was heard, and the second floor immediately gave way, carrying with it the first floor down to the basement. A bargeman, named Barnes, who was rescued and carried to St. Bartholomew's Hospital, suffering from internal injuries and fractured thigh. Another unfortunate labourer remained embedded in the building for some hours. At the inquest some of the jury wished to endorse their verdict of "Accidental death" with an expression of opinion that, having regard to the age of the building and its present condition, the floors were greatly overweighed; but they were unable to agree upon the point, and eventually recorded a simple verdict of "Accidental death."

A New Station on the Liverpool and Southport Railway.—In 1865 about 300 acres of land upon the sea-shore at Blundell San were set apart for building purposes, and the design was prepared by Mr. T. Mellard Read, civil engineer, of Liverpool. Roads were formed and steps taken to develop the various parts of the estate—special arrangements having been made with regard to the sanitary requirements of the district. Since that period many detached and semi-detached residences have been erected, and a new station about a mile nearer Southport than Crosby to be called the "Hall-road Station" is being constructed. The works have been in progress for some time, and it is expected that the station will very shortly be opened. From the building a road will be constructed to Crosby Hall, the residence of Colonel Blundell. Within the new station is completed the estate will further develop to the extent of nearly 4 miles towards Southport, and to the depth of about 700 yards or about 150 acres.

Improvement in Plymouth.—Drinking fountains have been constructed in Tavistock-road, and the reservoirs have been thrown open. The *Western Morning News*, however, asks what reason there is why the tap or vent to the drinking-fountain has been, after a lapse of two days from its being put up, deprived of its bronze-work which bore as an inscription a toast which has been handed down from generation to generation in honour of Sir Francis Drake:—"May he who gave us water never win wine." Every one can see, says our authority, that the wholesome aspiration that the descendants of Drake may "never want wine" is based on the strictest total abstinence principles, inasmuch as it goes further than merely saying, "May they never drink wine," but invokes upon them the blessing of never even *desiring* wine. Certainly some explanation should be given to why a hope so salutary and well expressed should not be handed down to posterity as a deliberate wish of the Corporation of Plymouth.

Ventilation of the House of Commons.—By means of the new air-machine in the House of Commons a constant supply of air, of any required degree even in the warmest weather, can be supplied, it is stated, at the rate of from 60,000 to 90,000 gallons per minute. The House contains about 900,000 gallons of air, so that when the apparatus is working at its maximum it is possible to renew the air without sensible draught even six minutes. Previously, when the windows were opened, the air used to rush in and escape in part through the roof without providing proper supply for the occupants of the chamber. The temperature then rose, and the result was directly the reverse of what was expected. The improved mode of ventilation is quite independent of open windows and of the fans (formerly in use), which were objectionable on account of draughts and dust.

Worcester Diocesan Architectural Society.—The first excursional meeting of the society for the present season was attended by numerous party of ladies and gentlemen. Churches of Colwall, Coddington, and Booby were examined in succession. Bosbury was the chief point of attraction. Some old foundations had been lately discovered at the west end of the churchyard, which were examined with interest, and believed to have been connected with some part of the old palace. A party more than fifty dined under a spacious marquee at the Crown Inn.

Labourers' and Artizans' Dwellings.—The Bill bearing the names of Sir Percy Barrrell and Mr. Cunliffe Brooks, which has been introduced into the House of Commons, is to give increased facilities for the erection of labourers' and artizans' dwellings. Its preamble states that there is a great deficiency in the supply of habitable dwellings necessary for the moral and physical improvement, and for utilising the labour and industry of labourers and artizans. The Bill, which is a very short one, provides that owners of real property in fee simple, or in tail, or limited owners, desirous of building improved dwellings, may borrow of the Public Works Loan Commissioners, on loan bearing interest at 3 1/2 per cent. per annum, such sums of money as shall be mutually agreed upon, on the security of such real or limited estate, and its interest may, according to arrangement, be repayable as a first charge on the estates, or be repayable in whole or by instalments of less than 25th sterling.

Gift of a Church at Wakefield.—Mrs. May Robinson, of Torquay, has devoted a large portion of her fortune to the foundation of a church in Wakefield. The site had already been purchased, and a mission-house, school, and schoolmaster's house are now in a fair way of progress, and Mrs. Disney Robinson has just laid the foundation-stone of the new church in connexion with them, in the presence of a large concourse of people. The style of the church is Early Decorated, of thirteenth century, and the proposed building will consist of a nave, aisles, chancel, and a lofty tower and spire. The plans have been prepared by Messrs. Macpherson & Co., architects, who have partially erected Sandal Church. The church, parsonage, and mission-house, which are the gift of Mrs. Robinson, are estimated to cost £5,500; the schools, school-master's house, and site, which will otherwise have to be provided, will cost £2,500.

The Scarborough Aquarium.—The whole of the capital required for this undertaking has been subscribed. The Aquarium will be erected on designs by Mr. Birch, C.E., who designed the Brighton Aquarium. The works will be executed by Messrs. Kirk & Parry, of Sleat, the contractors for the Scarborough and Rydy Railway. The site of the aquarium is Old Horse and Carriage Stand, well known to all visitors to Scarborough, and the intention is to excavate the whole of this space and the adjoining roads, which will give a site of wide extent. Over the buildings a wide carriage-road will be formed, giving an approach to the sands, which will be continued by a good roadway for a great extent along the foreshore. A tender has been accepted for the execution of the work, at £70,000, and operations will be commenced soon as the ground can be cleared.

Luton Hoo Park.—The mansion belonging to Mr. J. G. Leigh, of Luton Hoo Park, has lately undergone extensive alterations and repairs, the most conspicuous of which is the adaptation of the north wing (destroyed by fire some years ago) as a private chapel. The entire apse is of plaster, the chancel arch and capitals of which are carved. The chapel is also embellished with a painted ceiling, by Mr. Bell, of London; the walls will be filled in with colour from designs by the architect. The stalls are of oak, and the canopies. The entire work has been carried out by Mr. Simpson, of Tottenham-court-road, from the designs of Mr. Street, the carving being executed by Messrs. Smith & Finley, London. Mr. Eyars was clerk of the works.

Egyptian Remains.—A gift of some importance has just been presented to the Egyptian Museum of the Louvre by Count de Vogüé, the French ambassador at Constantinople, whose position as an archaeological explorer is well known. The gift consists of a "stèle," an ancient antiquity and in excellent preservation, found in Lower Egypt. In the centre, the perforation for whom the tomb was constructed is seen before a table covered with offerings, according to an inscription on it, he was named, and was head Grammate of the Keaur priest of the Goddess Baset. He also witnessed the functions of prophet at the pyramids of Tati-Asa, which was the final resting-place of King Teti, of the sixth dynasty.

Fire in the Music Halls.—Five weeks ago Gloucester Music Hall was destroyed; Cheltenham Music Hall was destroyed by fire last week; and now the Bristol Alhambra is burnt.

Durham Cathedral.—We understand, says the Academy, that Sir Gilbert Scott is about to undertake some alterations in Durham Cathedral. He proposes to erect a very open choir-screen, and to re-arrange the stalls so that the back row shall be brought in front of the piers, instead of being between them, as is now the case. Their present position dates only from about the year 1845, when the Jacobean organ-screen was removed. The organ will probably be divided. The old stall ends—very rich and interesting examples of the carving of Charles I.'s time—are to be retained, a conservative measure which we hope will be limited elsewhere.

Stowmarket.—The foundation-stone of the new Institute was laid on Friday, June 12th, by the Lady Frances Pettitward, in the presence of Lord John Hervey, the Mayor of Ipswich, and the principal inhabitants. The building comprises lecture-hall to accommodate 550, with suitable retiring-rooms, reading-room, library, and chess-room. The design is of simple Gothic style, the front of white brick with yellow arches and bands. The design was selected in competition, and is by Mr. H. Lovegrove, of the Adelphi, London; and the contract has been undertaken by Messrs. Andrews & Son and Mr. John Crowe, of Stowmarket.

Chinese Contractors.—Otago is sacred to Scotchmen. Here is a story which, besides being good, is true in illustration of the fact. The other day tenders were wanted for some public work in Otago. One Macpherson was successful. Mr. Macpherson was accordingly invited to attend and complete his contract. To the amazement of all the officials, a full-blooded Chinaman with a noble pig-tail put in an appearance. "Where's Mr. Macpherson?" asked the clerk. "Me!" replied John. "How came you to be called Macpherson?" "Oh, nobody get nothing in Otago if he not a Mac," answered the unabashed Celestial.

Mr. Philip Cunliffe Owen has been nominated to the direction of the Museum Division of the Educational Department. The duties of the new office comprise the superintendence of the South Kensington and Bethnal-green Museums, and we think the public is to be congratulated on the appointment. If Mr. Owen shares the same qualities at South Kensington and Bethnal-green which secured him the appreciation of those who knew him at Vienna, we can hardly doubt the appointment will give general satisfaction.

Mr. Nesfield.—Dr. Lankester held an inquest on the body of Mr. Arthur Markham Nesfield, aged thirty-three, a landscape architect, lately living at 7, Dorset-square, Regent's Park. On Tuesday before last deceased was riding a horse belonging to a relative, and was seen going towards St. John's Wood, when the horse started, and went off at the rate of sixteen miles an hour, upon which the deceased lost his seat, and fell on his head. The jury returned a verdict of accidental death, and expressed regret at the loss society had sustained by his unexpected death.

The Cadiz Waterworks.—These works, we see from advertisements in the daily papers, are now nearly completed, and are being tested before opening in a few weeks. The directors expect a net annual income of £3,420^l. They advertise an issue of 335 eight per cent. first mortgage debenture bonds of 100^l. each, the balance of 100,000^l. first mortgage, secured by a first charge on the entire undertaking and property of the Company. The interest on the entire debenture capital is stated to be only 8,000^l. per annum.

Church Building and Restoration.—A return has been ordered by the House of Lords, on the motion of Lord Hampton, showing the number of churches (including cathedrals) in every diocese in England which have been built or restored at a cost exceeding 500^l. since the year 1840, and showing also, as far as possible, the expenditure in each case, and the sources from which in each case the required funds were derived.

Barnsley.—Opening of Public Baths.—On Monday, the new public baths, which have been erected at the expense of the town, were opened by the mayor. The baths have been erected on land given by Mr. T. E. Taylor, J.P., in York-street, and are in the Italian-Gothic style of architecture. The building contains a large swimming and plunge bath, slipper-baths, &c. The cost of the erection will be about 5,000^l.

Memorial Window for St. Giles's, Reading.—There is a proposition to erect some memorial of the Rev. O. H. Travers, on his resignation of the living of St. Giles's, Reading. At a meeting of the Committee of the Church Board, it has been unanimously resolved that the memorial shall take the form of a stained glass window, to be erected in the south transept of St. Giles's Church. The amount required is estimated at about 300^l., and nearly a third of the sum has already been promised.

The Opening of Leicester-square.—A letter was read at the last meeting of the Metropolitan Board of Works from Mr. Albert Grant, M.P., asking the Board to fix Thursday, the 2nd of July, for the transfer of Leicester-square to the public, and enclosing a code of laws which he had prepared for the regulation of the square as soon as it is thrown open as a place of public recreation. After some remarks from members, the request was agreed to.

The New Colonial and Home Offices.—The whole of the wrought-iron riveted girders and rolled beams for these buildings, described by us last week, amounting to over 354 tons in weight, were supplied by Messrs. Matt. T. Shaw & Co. The same firm supplied something like 3,000 tons of ironwork for the large warehouse built for the London, Chatham, and Dover Railway Co. at Blackfriars.

The Proposed New Municipal Buildings in Reading.—Mr. Clarke, of Bath, one of the tenderers, in 1872, for the work, having, on application now, required an advance upon the amount of his tender, the Town Council have resolved to apply to Messrs. J. Farnell & Son, of Rugby, to execute the works for £4,657. 9s., the amount of their tender of 1872.

A New Roman Catholic Church in London.—The R. C. Archbishop of Westminster, assisted by a great number of Roman Catholic clergy, has laid the foundation stone of a new church in the Fulham-road. The church is to be dedicated to "the Sacred Heart of Jesus and His Immaculate Mother," and will be in connexion with St. Mary's Priory.

Site for the Mint.—The site which the Government are prepared to recommend to Parliament as the best on which to place the Mint, on its removal from Tower-hill, is the piece of land on the north bank of the Thames, between the gas-works at Blackfriars and the Temple.

A Brickfield 'decided to be a Factory.'—The Sittingbourne magistrates have fined Mr. G. Smeed, one of the largest brickmakers in the kingdom, for employing a girl under sixteen years of age. This decision was based on the assumption that a brickfield is a factory within the meaning of the Act.

Real Property Assessments.—Returns have just been issued as to assessments on real property from 1815 to 1873. Last year the gross estimated rental was 132,453,870^l.; the rateable value, 112,317,603^l., according to the poor-rate assessment.

Fall of Floor.—A terrible accident has occurred at Syracuse, in the State of New York. The floor of a church gave way during a festival, killing four persons and injuring one hundred.

Ephesus.—A fresh cargo of antiquities from Ephesus has arrived at the British Museum, and they are now unpacked.

The Institute Conversazioni.—The Annual Conversazione will be held in Conduit-street on Wednesday, the 8th of July.

TENDERS

For new Board schools for the Hunsdon School Board, Suffolk. Mr. Frank Whitmore, architect:—		
Rivett.....	£1,230	0 0
Mason & Son.....	1,019	11 0
Fell & Mason.....	1,205	10 7
Halls.....	1,006	0 0
Thebald.....	937	10 0
Fudney & Son (accepted).....	923	0 0
For the erection of new wards and other works at the Chelmsford Union. Mr. Frank Whitmore, architect:—		
Byatt.....	£1,377	3 3
Gossett.....	1,205	10 7
Kennell.....	1,179	0 0
Fincham.....	1,087	0 0
Beaumont (accepted).....	1,087	0 0
For a pair of labourers' cottages, at the Hands farm, Writtle, Essex. Mr. Frank Whitmore, architect:—		
Last.....	£375	0 0
Gann.....	354	0 0
Kennell.....	332	10 0

For church of St. Peter, Hoxton. Mr. R. W. Drew, architect. Quantities supplied by Messrs. Linsell & Giffard:—

	Doubling and Stone.	Corsham Down.	Corsham Down.
Jarrett	£7,783	£3,920	£6,881
Hargreaves	6,983	6,673	6,356
Booth	6,400	6,310	6,230
Hill, Higgs, & Hill	6,280	6,170	6,045
Waldraun & Co.	6,183	6,100	6,073
Longmore & Burge	5,983	5,940	5,878
Adamson	5,938	5,872	5,866

For rectory at West Stoke, near Chichester, for Rev W. F. Shaw. Messrs. Newman & Billing, architects. Quantities supplied by Messrs. Franklin & Andrews:—

	Flint.	Brick and Stone.
Ward	£3,923 0 0	£198 0 0
Irish	3,850 0 0	239 0 0
Coleman	3,458 0 0	390 0 0
Pink	3,411 0 0	198 0 0
White	3,400 0 0	523 0 0
Rapley	3,357 0 0	322 0 0
Morey	3,200 0 0	330 0 0
Cook	3,195 0 0	450 0 0
Smith	3,150 0 0	305 0 0
Fielder	3,100 0 0	97 10 0
Quick	3,050 0 0	415 0 0
Barnes	3,015 0 0	410 0 0

For a new factory, to be erected on the site of Finsbury-market, for Messrs. Watcson & Sons. Mr. William Ward Lee, architect. Quantities supplied by Messrs. Gardiner, Son, & Theobald:—

Rider & Son	£50,525 0 0
Brass	49,750 0 0
Ashby & Horner	48,880 0 0
Ashby & Sons	48,680 0 0
Conder	48,082 0 0
Browne & Robinson	46,762 0 0
Downs & Co.	46,690 0 0
Hill, Higgs, & Hill	46,650 0 0
Lucas Brothers	45,360 0 0
Baker & Sons	44,280 0 0
Brown	44,100 0 0
Holland & Hannen (accepted)	43,560 0 0

For the repairs, &c., to nine houses, Mildmay-park, North London. Quantities supplied by Mr. J. Gibson:—

Bostel	£490 0 0
Robson	519 0 0
Saley & Son	493 0 0
King & Son	469 0 0
May (accepted)	368 0 0

For repairs and decorations at No. 2, Montague-street, Russell-square, for Capt. Moss Defries. Mr. H. H. Collins, architect:—

Clarke & Manoch	£973 0 0
Heaps	958 0 0
Vernall	891 5 0
Bird (accepted)	812 10 0

For new offices, Bonar's Head-yard, King-street, Westminster, for Mr. James Henry. Mr. John Norton, architect. Quantities by Mr. S. J. Thacker:—

Stephenson	£8,671 0 0
Boyer	6,664 0 0
Gribble	6,587 0 0
Robins	6,397 0 0
Garrud	6,347 0 0
Hobson	6,187 0 0
Brady, Jopling, & Co.	6,150 0 0
Wilson Brothers	5,963 0 0
Crockett	5,805 0 0

For partially rebuilding a house in Lake-street, Leighton Buzzard. Mr. J. T. Lawrence, architect:—

Bullock	£1,686 17 0
Dover & Co.	1,373 0 0
George	1,200 0 0
Burkett	1,189 0 0
Edwards	1,123 0 0
Cook	1,110 0 0
Sturges	1,100 0 0
Whiting	860 0 0

For new infant school, with walling, &c., at North-town, High Wycombe, for the Parish School Board. Mr. Arthur Vernon, architect:—

Spicer	£215 0 0
Reavell	812 0 0
Cooper	798 17 0
Woodbridge	780 0 0
Baughmet	750 0 0
Hunt	745 0 0
Snell	739 8 0
Sexton (accepted)	734 0 0

For new offices, with residence, at Portmadoc. Messrs. Axmann & Perrott, architects:—

Griffith	£1,440 0 0
Lloyd & Son	1,385 0 0
Hughes	1,200 0 0
Owen	1,152 0 0
Jones	1,177 0 0

For the erection and completion of a villa residence, at Addlestone, Surrey, for Mr. H. R. Perry. Mr. S. Wonnacott, architect, Farnham. Quantities supplied by Mr. R. Carpenter, Reading:—

		Extra in pitch pine.
Gribble	£3,085 0 0	£190 0 0
Nightingale	2,959 0 0	—
Crabb	2,650 0 0	89 0 0
Woods	2,610 0 0	60 0 0
Collings	2,390 0 0	54 0 0
Johnson	2,315 0 0	107 0 0
Niblett & Son	2,200 0 0	80 0 0

* Accepted.

Accepted for repairing, painting, &c., Victoria Station, Manchester, for Lancashire and Yorkshire Railway Company:—

May	£1,300 0 0
-----------	------------

Accepted for Salford goods depot, for Lancashire and Yorkshire Railway Company:—

May	£700 0 0
-----------	----------

For house and shop, Cannon-street-road, St. George's-in-the-East, for Mr. E. Wallis, Messrs. A. & C. Hurston, architects:—

Moyd	£2,416 0 0
Ennor	1,388 0 0
Hearle	1,354 0 0
Falmer (accepted)	1,375 0 0

For new kiln to malting at Wandsworth, for Mr. W. E. Bullock. Mr. George Scamell, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Wigmore	£1,406 0 0
Sharlington & Cole	1,197 0 0
Cook & Green	1,184 0 0
Nightingale	1,183 0 0
Wagner	1,136 0 0
Grimwood & Sons	1,067 0 0

For warehouse in London-wall, City, for Ryland & Sons (Limited). Messrs. John & John Belcher, architects. Quantities by Mr. T. B. Insell:—

Brass	£11,893 0 0
Trolope	11,743 0 0
Simpson & Son	11,647 0 0
Jarrett	11,467 0 0
Perry & Co.	11,390 0 0
Coleman	11,350 0 0
Bayes & Ramage	10,750 0 0
Brady, Jopling, & Co.	10,300 0 0

For three houses and shops in Walworth-road, for Messrs. Harding & Mitchell. Messrs. John & John Belcher, architects:—

Jarrett	£3,890 0 0
Brady, Jopling, & Co.	3,295 0 0
Downs	3,093 0 0

For the church of the Sacred Hearts of Jesus and Mary, West Brompton, exclusive of foundations and granite pillars. Messrs. J. A. Hanson & Son, architects:—

Gorrings	£7,150 0 0
Dickens	7,000 0 0
Bowles	6,887 0 0
Dover, Son, & Co.	6,861 0 0
Sharlington & Cole	6,837 0 0
Sawyer	6,161 0 0
Farmer & Brindley	6,880 0 0
Rudkin	6,793 0 0
Stephenson	6,793 0 0
Simpson	6,733 0 0
Staines & Son	6,664 0 0
Little	6,620 0 0
Wright Brothers & Goodchild	6,599 0 0
Niblett & Son	6,300 0 0
Grimwood & Sons	6,160 0 0

* Delivered too late by post.

Schools, William-street, Chelsea.—For "Hood and Aldry," read Hook and Oldrey.

TO CORRESPONDENTS.

E. B. F. W. L. J. W. A. L. C. B. W. L.—Mr. C. C. R.—J. H. J. & Son.—H. G. C. & L. P. E. T. A. H. & S. & Y.—A. & P. C. G. C. R. G. L. R. C. G. F. G. O. A. R. W. H. C.—J. B. H. & O.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

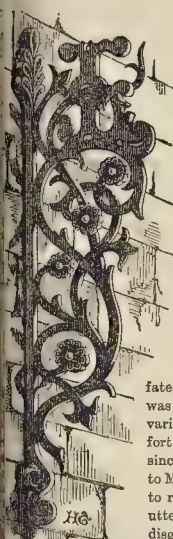
CHARGES FOR ADVERTISEMENTS.

Six lines (about fifty words) or under .. 2s. 6d. 6s. 6d. 10s. 6d. 14s. 6d. 18s. 6d. 22s. 6d. 26s. 6d. 30s. 6d. 34s. 6d. 38s. 6d. 42s. 6d. 46s. 6d. 50s. 6d. 54s. 6d. 58s. 6d. 62s. 6d. 66s. 6d. 70s. 6d. 74s. 6d. 78s. 6d. 82s. 6d. 86s. 6d. 90s. 6d. 94s. 6d. 98s. 6d. 102s. 6d. 106s. 6d. 110s. 6d. 114s. 6d. 118s. 6d. 122s. 6d. 126s. 6d. 130s. 6d. 134s. 6d. 138s. 6d. 142s. 6d. 146s. 6d. 150s. 6d. 154s. 6d. 158s. 6d. 162s. 6d. 166s. 6d. 170s. 6d. 174s. 6d. 178s. 6d. 182s. 6d. 186s. 6d. 190s. 6d. 194s. 6d. 198s. 6d. 202s. 6d. 206s. 6d. 210s. 6d. 214s. 6d. 218s. 6d. 222s. 6d. 226s. 6d. 230s. 6d. 234s. 6d. 238s. 6d. 242s. 6d. 246s. 6d. 250s. 6d. 254s. 6d. 258s. 6d. 262s. 6d. 266s. 6d. 270s. 6d. 274s. 6d. 278s. 6d. 282s. 6d. 286s. 6d. 290s. 6d. 294s. 6d. 298s. 6d. 302s. 6d. 306s. 6d. 310s. 6d. 314s. 6d. 318s. 6d. 322s. 6d. 326s. 6d. 330s. 6d. 334s. 6d. 338s. 6d. 342s. 6d. 346s. 6d. 350s. 6d. 354s. 6d. 358s. 6d. 362s. 6d. 366s. 6d. 370s. 6d. 374s. 6d. 378s. 6d. 382s. 6d. 386s. 6d. 390s. 6d. 394s. 6d. 398s. 6d. 402s. 6d. 406s. 6d. 410s. 6d. 414s. 6d. 418s. 6d. 422s. 6d. 426s. 6d. 430s. 6d. 434s. 6d. 438s. 6d. 442s. 6d. 446s. 6d. 450s. 6d. 454s. 6d. 458s. 6d. 462s. 6d. 466s. 6d. 470s. 6d. 474s. 6d. 478s. 6d. 482s. 6d. 486s. 6d. 490s. 6d. 494s. 6d. 498s. 6d. 502s. 6d. 506s. 6d. 510s. 6d. 514s. 6d. 518s. 6d. 522s. 6d. 526s. 6d. 530s. 6d. 534s. 6d. 538s. 6d. 542s. 6d. 546s. 6d. 550s. 6d. 554s. 6d. 558s. 6d. 562s. 6d. 566s. 6d. 570s. 6d. 574s. 6d. 578s. 6d. 582s. 6d. 586s. 6d. 590s. 6d. 594s. 6d. 598s. 6d. 602s. 6d. 606s. 6d. 610s. 6d. 614s. 6d. 618s. 6d. 622s. 6d. 626s. 6d. 630s. 6d. 634s. 6d. 638s. 6d. 642s. 6d. 646s. 6d. 650s. 6d. 654s. 6d. 658s. 6d. 662s. 6d. 666s. 6d. 670s. 6d. 674s. 6d. 678s. 6d. 682s. 6d. 686s. 6d. 690s. 6d. 694s. 6d. 698s. 6d. 702s. 6d. 706s. 6d. 710s. 6d. 714s. 6d. 718s. 6d. 722s. 6d. 726s. 6d. 730s. 6d. 734s. 6d. 738s. 6d. 742s. 6d. 746s. 6d. 750s. 6d. 754s. 6d. 758s. 6d. 762s. 6d. 766s. 6d. 770s. 6d. 774s. 6d. 778s. 6d. 782s. 6d. 786s. 6d. 790s. 6d. 794s. 6d. 798s. 6d. 802s. 6d. 806s. 6d. 810s. 6d. 814s. 6d. 818s. 6d. 822s. 6d. 826s. 6d. 830s. 6d. 834s. 6d. 838s. 6d. 842s. 6d. 846s. 6d. 850s. 6d. 854s. 6d. 858s. 6d. 862s. 6d. 866s. 6d. 870s. 6d. 874s. 6d. 878s. 6d. 882s. 6d. 886s. 6d. 890s. 6d. 894s. 6d. 898s. 6d. 902s. 6d. 906s. 6d. 910s. 6d. 914s. 6d. 918s. 6d. 922s. 6d. 926s. 6d. 930s. 6d. 934s. 6d. 938s. 6d. 942s. 6d. 946s. 6d. 950s. 6d. 954s. 6d. 958s. 6d. 962s. 6d. 966s. 6d. 970s. 6d. 974s. 6d. 978s. 6d. 982s. 6d. 986s. 6d. 990s. 6d. 994s. 6d. 998s. 6d. 1002s. 6d. 1006s. 6d. 1010s. 6d. 1014s. 6d. 1018s. 6d. 1022s. 6d. 1026s. 6d. 1030s. 6d. 1034s. 6d. 1038s. 6d. 1042s. 6d. 1046s. 6d. 1050s. 6d. 1054s. 6d. 1058s. 6d. 1062s. 6d. 1066s. 6d. 1070s. 6d. 1074s. 6d. 1078s. 6d. 1082s. 6d. 1086s. 6d. 1090s. 6d. 1094s. 6d. 1098s. 6d. 1102s. 6d. 1106s. 6d. 1110s. 6d. 1114s. 6d. 1118s. 6d. 1122s. 6d. 1126s. 6d. 1130s. 6d. 1134s. 6d. 1138s. 6d. 1142s. 6d. 1146s. 6d. 1150s. 6d. 1154s. 6d. 1158s. 6d. 1162s. 6d. 1166s. 6d. 1170s. 6d. 1174s. 6d. 1178s. 6d. 1182s. 6d. 1186s. 6d. 1190s. 6d. 1194s. 6d. 1198s. 6d. 1202s. 6d. 1206s. 6d. 1210s. 6d. 1214s. 6d. 1218s. 6d. 1222s. 6d. 1226s. 6d. 1230s. 6d. 1234s. 6d. 1238s. 6d. 1242s. 6d. 1246s. 6d. 1250s. 6d. 1254s. 6d. 1258s. 6d. 1262s. 6d. 1266s. 6d. 1270s. 6d. 1274s. 6d. 1278s. 6d. 1282s. 6d. 1286s. 6d. 1290s. 6d. 1294s. 6d. 1298s. 6d. 1302s. 6d. 1306s. 6d. 1310s. 6d. 1314s. 6d. 1318s. 6d. 1322s. 6d. 1326s. 6d. 1330s. 6d. 1334s. 6d. 1338s. 6d. 1342s. 6d. 1346s. 6d. 1350s. 6d. 1354s. 6d. 1358s. 6d. 1362s. 6d. 1366s. 6d. 1370s. 6d. 1374s. 6d. 1378s. 6d. 1382s. 6d. 1386s. 6d. 1390s. 6d. 1394s. 6d. 1398s. 6d. 1402s. 6d. 1406s. 6d. 1410s. 6d. 1414s. 6d. 1418s. 6d. 1422s. 6d. 1426s. 6d. 1430s. 6d. 1434s. 6d. 1438s. 6d. 1442s. 6d. 1446s. 6d. 1450s. 6d. 1454s. 6d. 1458s. 6d. 1462s. 6d. 1466s. 6d. 1470s. 6d. 1474s. 6d. 1478s. 6d. 1482s. 6d. 1486s. 6d. 1490s. 6d. 1494s. 6d. 1498s. 6d. 1502s. 6d. 1506s. 6d. 1510s. 6d. 1514s. 6d. 1518s. 6d. 1522s. 6d. 1526s. 6d. 1530s. 6d. 1534s. 6d. 1538s. 6d. 1542s. 6d. 1546s. 6d. 1550s. 6d. 1554s. 6d. 1558s. 6d. 1562s. 6d. 1566s. 6d. 1570s. 6d. 1574s. 6d. 1578s. 6d. 1582s. 6d. 1586s. 6d. 1590s. 6d. 1594s. 6d. 1598s. 6d. 1602s. 6d. 1606s. 6d. 1610s. 6d. 1614s. 6d. 1618s. 6d. 1622s. 6d. 1626s. 6d. 1630s. 6d. 1634s. 6d. 1638s. 6d. 1642s. 6d. 1646s. 6d. 1650s. 6d. 1654s. 6d. 1658s. 6d. 1662s. 6d. 1666s. 6d. 1670s. 6d. 1674s. 6d. 1678s. 6d. 1682s. 6d. 1686s. 6d. 1690s. 6d. 1694s. 6d. 1698s. 6d. 1702s. 6d. 1706s. 6d. 1710s. 6d. 1714s. 6d. 1718s. 6d. 1722s. 6d. 1726s. 6d. 1730s. 6d. 1734s. 6d. 1738s. 6d. 1742s. 6d. 1746s. 6d. 1750s. 6d. 1754s. 6d. 1758s. 6d. 1762s. 6d. 1766s. 6d. 1770s. 6d. 1774s. 6d. 1778s. 6d. 1782s. 6d. 1786s. 6d. 1790s. 6d. 1794s. 6d. 1798s. 6d. 1802s. 6d. 1806s. 6d. 1810s. 6d. 1814s. 6d. 1818s. 6d. 1822s. 6d. 1826s. 6d. 1830s. 6d. 1834s. 6d. 1838s. 6d. 1842s. 6d. 1846s. 6d. 1850s. 6d. 1854s. 6d. 1858s. 6d. 1862s. 6d. 1866s. 6d. 1870s. 6d. 1874s. 6d. 1878s. 6d. 1882s. 6d. 1886s. 6d. 1890s. 6d. 1894s. 6d. 1898s. 6d. 1902s. 6d. 1906s. 6d. 1910s. 6d. 1914s. 6d. 1918s. 6d. 1922s. 6d. 1926s. 6d. 1930s. 6d. 1934s. 6d. 1938s. 6d. 1942s. 6d. 1946s. 6d. 1950s. 6d. 1954s. 6d. 1958s. 6d. 1962s. 6d. 1966s. 6d. 1970s. 6d. 1974s. 6d. 1978s. 6d. 1982s. 6d. 1986s. 6d. 1990s. 6d. 1994s. 6d. 1998s. 6d. 2002s. 6d. 2006s. 6d. 2010s. 6d. 2014s. 6d. 2018s. 6d. 2022s. 6d. 2026s. 6d. 2030s. 6d. 2034s. 6d. 2038s. 6d. 2042s. 6d. 2046s. 6d. 2050s. 6d. 2054s. 6d. 2058s. 6d. 2062s. 6d. 2066s. 6d. 2070s. 6d. 2074s. 6d. 2078s. 6d. 2082s. 6d. 2086s. 6d. 2090s. 6d. 2094s. 6d. 2098s. 6d. 2102s. 6d. 2106s. 6d. 2110s. 6d. 2114s. 6d. 2118s. 6d. 2122s. 6d. 2126s. 6d. 2130s. 6d. 2134s. 6d. 2138s. 6d. 2142s. 6d. 2146s. 6d. 2150s. 6d. 2154s. 6d. 2158s. 6d. 2162s. 6d. 2166s. 6d. 2170s. 6d. 2174s. 6d. 2178s. 6d. 2182s. 6d. 2186s. 6d. 2190s. 6d. 2194s. 6d. 2198s. 6d. 2202s. 6d. 2206s. 6d. 2210s. 6d. 2214s. 6d. 2218s. 6d. 2222s. 6d. 2226s. 6d. 2230s. 6d. 2234s. 6d. 2238s. 6d. 2242s. 6d. 2246s. 6d. 2250s. 6d. 2254s. 6d. 2258s.

The Builder.

VOL. XXXII.—No. 1639.

The Good Work in Leicester-square.



LEICESTER Fields, says the *Country Craftsman* of April 16th, 1737, "is going to be fitted up in a very elegant manner, a new wall and rails to be erected all round, and a basin in the middle, after the manner of Lincoln's-inn-fields, and is to be done by a voluntary subscription of the inhabitants." This was seventeen years before the ill-fated statue of George II. was put up (1754), and varied have been the fortunes of the "Fields" since then. It was left to Mr. Albert Grant, M.P., to rescue them from the utterly discreditable and disgraceful state to which vested interests and the

vine right of individuals to damage their neighbours within the law had brought them. The daily papers have made known far and wide what has been done, and have justly given a wide popularity to the liberal and unselfish donor. We must, nevertheless, repeat some of the particulars, for the sake of easy reference hereafter. In the midst of a difficulty Mr. Grant came forward, purchased the various interests in the square, at the cost of about £9,000, and made a gift of it to the inhabitants of the metropolis. The square has been laid out and charmingly ornamented. The garden is enclosed by a bronze and gilt railings upon a marble base, and the grounds are tastefully and artistically displayed. Mr. James Knowles was the architect, and has done his work well. Mr. John Gibson, jun., was the landscape gardener; and Mr. J. Nourse clerk of the works. In the midst of the square is the Shakespeare Fountain, a large marble basin and fountain in the centre, the water proceeding from the mouths of dolphins at the four corners, the whole being surmounted by a statue of Shakespeare. The material of this work is Sicilian marble. The statue, which has been executed by Signor Fontana, is a slightly modified version of the Westminster Abbey statue, which was designed by Kent, the architect, in the reign of George II., and carved by the painstaking Peter Scheemakers, who sold his shirt to pay his last expenses on the road to Rome. The well-known statue of the Abbey was chosen as the traditional Shakespeare of England, which everybody would recognise at a glance without any label.

And Shakespeare came to be chosen of all as the first of a series of great Englishmen who had to open-air statues yet in London,—the first English poet. The argument used as to the adoption of Scheemakers' statue is not without force; nevertheless, we should have been better pleased to see a new creation. Of the fountain as a whole we give a view,* and our readers may

be glad to know the idea the architect sought to embody in designing it. His notion was, he tells us, to represent the poet standing, colossal and inaccessible, cut off from the rest of the world, in himself, as his statue is by the circumambient water, but brought near to all men in his works,—embellished by the grass and flowers which spring up round the margin of the fountain, and which its water continually nourishes and bedews.

The dolphins are an allusion to the Arion like attraction of the great bard for the "sane and simple" animal part of us, and the quotation, "There is no darkness but ignorance," to his deep and keen spiritual insight. It was a responsible thing to select and record the words to be always in Shakespeare's mouth, addressed to the world in the midst of London; but it is to be hoped that he himself, if his spirit walked, would admit their appropriateness to the current time.

Leaving the fountain, the remainder of the enclosure is filled with turf and beds of flowers, while the four corners are occupied by life-size busts of four eminent men who formerly lived in or near it, standing on pedestals of Aberdeen granite, with the name inscribed in gold letters. These are as follow:—Sir Joshua Reynolds, by Mr. H. Weekes; Hunter, by Mr. T. Woolner, R.A.; Hogarth, by Mr. J. Durham, A.R.A.; and Sir Isaac Newton, by Mr. W. Calder Marshall, R.A. Each of these busts, all bold and effective works, is backed by raised beds of evergreens and flowers while the whole garden is surrounded by a handsome railing, as we have said, in wrought and cast iron, painted a chocolate tint, much relieved by gilding, and resting on Sicilian marble. The footpath round the square has been paved with the compressed asphalt of the Val de Travers Asphalt Company. The total cost of the work is estimated at about £27,250, including the land.

The details of this cost will not be without interest:—

Iron railing, gates, and lamps, executed by the Coalbrookdale Company, painted and gilded by Messrs. Thorn & Co., with allicote oxide paint; cost about.....	£1,400 0 0
The marble kerb, executed by Messrs. Thorn & Co.; about.....	800 0 0
Asphalt pathway and new granite kerb; about.....	450 0 0
The marble fountain, consisting of the basin and surrounding colonnades and vase, executed by Messrs. Walker, Emsley, & Beall; the pedestal and foundations by Messrs. Thorn; the statue by Signor Fontana; the dolphins by Mr. Daymond; and the water works by Messrs. Easton & Anderson; about.....	4,500 0 0
The four granite pedestals for busts, executed by Macdonald, Field, & Co.; about.....	150 0 0
The four marble busts; say.....	1,400 0 0
Laying out and planting of garden, executed by Mr. Gibson; about.....	4,000 0 0
Garden seats and iron bordering to grass, executed by Messrs. Kennard & Co.; about.....	250 0 0
Laying on gas and water; about.....	200 0 0
Sundries.....	1,100 0 0
Cost of land, about.....	£14,250 0 0
Total.....	£27,250 0 0

The time occupied in these works has been very short,—in some respects, we have no hesitation in saying, unprecedentedly so.

The designs were only begun by the architect in February last, and by the time these were ready about three months were all that could be allowed for their execution by Mr. Grant, who was determined to open the square to the public as early in the summer as possible. The various contractors, however, proved themselves equal to the occasion, and bound under penalties of 50l. per day for overtime, in no case transgressed their limit; on the contrary, in several cases claimed the bonus which Mr. Grant had offered for anticipating the contract date.

The work of preparing for the garden was very severe. The whole enclosure of the square was a mass of old foundations,—concrete and brickwork. These were in part the remains of Mr. Wyld's "Great Globe," and in part, according to those concerned, the older remains of the

original Leicester House, which had long since totally disappeared from above ground.

The figure of Shakespeare was completed in the time allowed only by the indefatigable exertions of Signor Fontana, who worked literally night and day, assisted by skilled workmen brought over for the purpose from Italy and France. The Sicilian marble, which has been employed throughout for the sculptures and the architectural parts of the work, is of the same description as that used in the Prince Consort memorial in Hyde Park. There seems reason to believe it will stand the English climate out of doors, and unprotected, which is not the case with other marble. Hydrants have been placed at convenient spots, from which a hose can be taken to every portion of the square; and, as the water is always laid on at high pressure, the most ordinary care in the use of this hose will keep the whole of the marble work clean.

Marble was chosen for the outside kerb in order to secure a permanently white framework for the railings and the square, instead of the dingy and mouldy edging which prevails throughout London in similar positions.

Mr. Grant himself has been indefatigable in his personal attention to the mass of detail of all sorts and descriptions which had to be grappled with, and has taken as careful and minute an interest in it as if the works were entirely for his own private enjoyment and occupation. It is a pleasant coincidence for the architect who has been here engaged, that he should have been called upon to build a house for the greatest living poet (Mr. Tennyson), and a monument to the greatest of all poets. Mr. Tennyson, by the way, laid the first stone of his house on Shakespeare's birthday.

We mentioned with a reservation the statement that parts of the foundations found in forming the garden were remains of the original Leicester House, because we are not quite certain that this is correct. Leicester House appears to have been at the side of the enclosed area, not in it. Strype, as quoted by Peter Cunningham, calls,—"Leicester Fields, a very handsome, large square, enclosed with rails, and graced on all sides with good built houses, well inhabited, and resorted unto by gentry, especially the side towards the north, where the houses are larger; amongst which is Leicester House, the seat of the Earl of Leicester, and the house adjoining to it, inhabited by the Earl of Aylesbury."

Hogarth, already named, lived on the east side of the square, in a house which was afterwards absorbed in the Sablonnière Hotel; John Hunter lived at the next house, and Sir Joshua Reynolds at No. 47 on the west side, afterwards occupied as the Western Literary and Scientific Institution,* and now Messrs. Puttick & Simpson's Auction Rooms. Sir Isaac Newton dwelt hard by. Stories of the square, and the notable dwellers in the neighbourhood, have been told in various quarters, *à propos*, of recent doings, but no where more effectively and pleasantly than in a paper in last month's *Temple Bar*, which we may without hesitation ascribe to Dr. Doran. Through twenty-three pages the erudite and amusing Doctor relates anecdote after anecdote, illustrating his subject. Of course, he talks of old Leicester House. The popular idea of the Earl of Leicester, says he, is Elizabeth's Robert Dudley. Well, that earl had a sister, Mary, who married Sir Henry Sydney, of Penshurst. This couple had a son, whom they called Robert, and whom King James created, at successive periods, Baron Sydney, Viscount Lisle, and Earl of Leicester. And this Earl Robert had a son, who, in 1626, succeeded to the earldom; and to him King Charles, in 1631, gave Swan Close and

* The lecture theatre of this Institution was constructed, in very early days, by the conductor of this journal, and had a certain reputation for good acoustic qualities. The Institution did much good in its time.

some other part of the lammas land, where he erected the once famous Leicester House.

This last Robert was the father of the famous patriot, Algernon Sydney; also of the handsome Henry. He is still more famous as having for daughter Dorothy, the "Sacharissa," with whom Waller pretended to be in love; and he gave his family name to Sydney Alley. When, some years later, the Earl of Salisbury (Viscount Cranbourn) built a house in the neighbourhood, he partly copied the other earl's example, and called the road which led to his mansion Cranbourn Alley. The lammas land thus given away was land which was open to the poor after Lammastide. Cunningham quotes two entries from the St. Martin's rate-books to this effect:—"To received of the Honble. Earle of Leicester for ye Lammas of the ground that adjoins the Military Wall, 31." The "military wall" was the boundary of the Wormwood Scrubs of that day. The earl also had to pay "for the lammas of the ground whereon his house and garden are, and the field that is before his house, near to Swan Close." The field before his house is now Leicester-square, "but Swan Close," says Peter, "is quite unknown." Lord Carlisle's letter in the State Paper Office states that the house was to be built "upon Swan Close." It was a palatial mansion, that old Leicester House. It half filled the northern side of the present square, on the eastern half of that side. Its noble gardens extended beyond the present Lisle-street. At first that street reached only to the garden-wall of Leicester House. When the garden itself disappeared the street was lengthened. It was a street full of "quality," and foreign ambassadors thought themselves lodged in a way not to dishonour their masters if they could only secure a mansion in Lisle-street.

On the 7th of February, 1662, the only queen that ever lived in Drury-lane,—the Queen of Bohemia, daughter of James I.,—removed from Drury House and its pleasant gardens, now occupied by houses and streets, at the side of the Olympic Theatre, to Leicester House.

Six years later, in 1668, the French ambassador, Colbert, occupied Leicester House. Pepys relates how he left a joyous dinner early, on the 21st of October, to join Lord Brouncker, the president, and other members of the Royal Society, in paying a formal return visit to Colbert; but the party had started before Pepys arrived at the Society's rooms. The little man hastened after them; but they were "gone in" and "up," and Pepys was too late to be admitted. It is easy to guess why the Royal Society honoured themselves by honouring Colbert. The great Frenchman was something more than a mere Marquis de Segneai. Who remembers M. le Marquis? Who does not know Colbert,—the pupil of Mazarin, the astute politician, the sharp finance minister, the patron,—nay, the pilot,—of the arts and sciences in France? The builder of the French Royal Observatory, and the founder of the Academies of Painting and Sculpture and of the Sciences in France, was just the man, says Dr. Doran, to pay the first visit to the Royal Society.

Leicester House was, luckily, to let when the Prince of Wales quarrelled with his father, George I. In that house the Prince set up a rival court, against attending which the *Leicester Gazette* thundered dreadful prohibitions. But Sir James's was dull; Leicester House was "jolly"; and the fields were "all alive" with spectators "hooraying" the arrivals. Most celebrated among the Leicester House maids of honour was the young, bright, silvery-laughing, witty, well-bred girl, who could not only spell, but could construe Caesar—the maid of whom Chesterfield wrote,—

"Should the Pope himself go roaming,
He would follow dear Molly Lepell."

And there rattled that other Mary—Mary Delenden, laughing at all her lovers, the little, faithless Prince himself at the head of them.

During the tenancy of Frederick, Prince of Wales, Leicester House was the scene of political intrigues and of ordinary private life occurrences: Carlton House was more for state and entertainment. Leicester House and Savile House, which had been added to the former, had their joyous scenes also. The story of the private theatricals carried on in either mansion has been often told. The actors were, for the most part, the Prince's children. He was afterwards George III. was among the best of the players.

Later on, Dr. Doran refers to an incident at one

of Reynolds's suppers in the square that brought out Johnson. The rather plain sister of the artist had been called upon by the company, after supper, as the custom was, to give a toast. She hesitated, and was accordingly required, again according to custom, to give the ugliest man she knew. In a moment the name of Oliver Goldsmith dropped from her lips, and immediately a sympathising lady on the opposite side of the table rose and shook hands with Miss Reynolds across the table. Johnson had heard the expression, and had also marked the pantomimic performance of sympathy, and he capped both by a remark which set the table in a roar, and which was to an effect that cut smartly in three ways. "Thus," said he, "the ancients, on the commencement of their friendships, used to sacrifice a beast between them." The affair ends prettily. A few days after the "Traveller" was published, Johnson read it aloud from beginning to end to delighted hearers, of whom Miss Reynolds was one. As Johnson closed the book, she emphatically remarked, "Well, I never more shall think Dr. Goldsmith ugly." Her brother painted the portrait of the new poet, in the Octagon Room in the square; and the mezzotint engraving of it was speedily all over the town.

The Alhambra, formerly the Panopticon, on the east side of the square, would supply some modern anecdotes from behind the scenes; but we will not venture upon them. In all the history of the square there is no better thing to record than its present change and presentation to the public,—a grant from A. Grant, as a joker might say, which all approve and applaud. One word more and that an appeal. Let the public preserve what belongs to the public. The same liberal improver has his eye upon other arid deserts. He has already offered, as we happen to know, to deal as he has dealt with Leicester-square with another well-known square a little to the north, and any transgression of propriety in the garden already formed might materially check these good intentions.

Leicester-square was formally opened on Thursday; and by the time these lines reach our readers, the hoardings will have been removed and the gates unclashed for good and all.

SANITARY AND OTHER APPLIANCES AT THE INTERNATIONAL EXHIBITION.

THE low passage behind the refreshment-rooms, described in the Exhibition Catalogue as the "south corridor," contains objects inviting in exterior certainly, but which would not be passed over so indifferently by visitors if they could recognise the fact that their own health, and that of thousands of others, depends in a great degree on the execution of such work as draining-pipes, and junctions and ventilating appliances. Two ideas which the great extension of systems of drainage and of water supply has brought prominently forward are the necessity for flushing sewers, and the desirability of preventing waste of water in large towns. Mr. Rogers Field, of Cannon-row, exhibits a patent self-acting flush tank (iron), for flushing drains, "disposing of house slopes," &c. This latter scheme consists in letting the waste from the sink accumulate in the flushing cistern till the latter is filled, when it is let out and sent through an open-jointed drain to percolate into and fertilise the land. If this were adopted, the open drain should have a pretty good fall, so as to ensure the bulk of the waste water being taken sufficiently away from the house walls before percolating, otherwise this "sub-irrigation" might turn into a serious evil in the form of damp walls and unhealthy deposits in the foundations. Mr. R. W. P. Birch, Victoria-street, sends a self-acting penstock for flushing drains, the action of which, however, is not fully exemplified in the model. Another self-acting flushing tank is exhibited by Mr. A. Richmond, of Bishop's Hall. Here the requisite action at the right moment is produced by the water, when the cistern is full, running over into an iron bucket suspended in a separate compartment of the cistern, the bucket being attached to one end of a lever which is depressed by the weight of the water, and the other end of which raises the plug in the bottom of the main cistern. Water-waste preventers are very numerous, and the demand there evidently is for contrivances of this kind is a measure of the difficulty experienced now in supplying our large and overgrowing towns with an adequate amount of the pure element, and the strictness of the official super-

vision which has to be exercised over it. A simple form is that exhibited by Messrs. Dennis & Co., Chelmsford, where the supply depends on the filling of the cistern which supplies each flush, and which can be timed so as to leave from one to four minutes before a second flush can be obtained. Mr. R. Ellis (Stoke Newington), Harling (King's-cross), Mr. Edgar Jobs (Derby), and others, exhibit appliances with the same object; that of the last-mentioned exhibit is specialised as "valveless." Mr. Bailey (Horn) sends a very elaborate-looking apparatus for securing efficient ventilation by means "an extractor pump with inlet and outlet valve in communication with the chamber to be ventilated, which draws out the vitiated air, and expels it through any channel provided." Practically, of course, such a scheme can only be applied to large public buildings, where it would be worth while to have engine or manual power at work for the purpose; private dwellings must be made to ventilate themselves. The apparatus was not working, so we cannot further judge of its efficiency. The "London and General Water Purifying Company" exhibit portable cistern filters; one fitted in a galvanised iron tank, in use on board a yacht; among others, also, a decorative design which they name a "Bacchanalian filter," from the nature of the figures in relief,—a name which seems a little out of keeping with the preparation of a draught which Bacchus at least has nothing to do with. Messrs. Doulton & Co. send a quantity of what they term "sanitary ware"—pipes, valves, traps, &c. The question of the adequate joining of draining-pipes is receiving much attention at the hands of this firm; and they show two specimens of pipe put together in three lengths (one of these is a 21 in. pipe), which they assure us have been raised and dropped into position again, weighted in the middle, &c., without impairing the soundness of the joint. A specimen now manufactured and here shown by Messrs. Doulton is "Stanford's patent joint for stone ware pipes," invented with the view of ensuring a sound and tight joint in wet and bad ground where it is most required, but where there is also the most difficulty in making it. The object is to avoid the necessity of a cement joint, making the spigot of one pipe fit mechanically into the socket of the one next to it. As this cannot be attained at all perfectly in earthenware, the firm "of cheap and durable material" is cast into the spigot and socket of the pipes, which when put together, fit accurately into each other and require no more than the mere insertion. The rings being made "of a spherical form" (spherical section, we presume), a certain amount of settlement may take place without destroying the accuracy of the joint. Some of the water-filters of this firm combine to a commendable extent with the useful very happy. The charcoal ventilators for drains with wire baskets for holding and removing the charcoal which required, show how easily and comparatively economically this sanitary invention may be applied to drain and sewer ventilation. Cheaper "rapid water-filters" form a feature in the collection in this part of the building; and we may mention Latham's sewer ventilators in earthenware, also fitted with charcoal baskets with movable covered tops and an upcast outlet bent from the side of the charcoal chamber. Drain-pipes are sent by the Bourne Valley Pottery Company, by the Branksea Island Co., by Messrs. Hamblet (West Bromwich), and others. Messrs. Brooke & Son's sewer ventilators are on the same principle as those of Mr. Latham, but with vertical shafts for connexion with deep drains. Herr Galasse-Klein (Rue Manchester, Brussels) shows a very efficient joint for iron piping, with flanges stiffening the whole and forming a protection against any relaxation or opening of the joint from the leverage power of an unequal lugged pipe. Looking over these articles, one cannot but reflect how much there is of care and ingenuity at the disposal of those who wish or ought to wish, for thorough and satisfactory drainage, if it were only utilised to the extent to which it might be.

Before leaving this corridor we should mention a very simple and ingenious form of ventilator, impervious to rain, to replace the old louvre system, which is, as we all know by no means so: this is formed of a series of upright mouldings of sheet iron, in two sets, inner and outer, the outer alternating with the overlapping the inner; the centre space of the inner moulding forms a deep vertical hollow,

like that of a Gothic jamb-moulding, which forms a channel to convey all water at once down on to the weathering of the sill at the bottom. A spray jet placed opposite this gives the opportunity of ocular proof that this ventilator is quite impervious to a driving rain.

Coming into Room XXIII., we notice a large collection of Messrs. Lambert & Son's valves, taps, and so on, which have long enjoyed high credit for good principle and good workmanship; this the specimens here shown appear quite calculated to keep up. Mr. Jennings's automatic disinfectant supply for water-closets is one of those recent pieces of ingenuity which show how difficult it is to keep pace with our sanitary demands in large towns in these respects. Our civilisation demands more and more exemption from the concomitant evils and *disengagements* arising from "matter in the wrong place," and what we shall ultimately come to in the way of these kind of provisions it is difficult to foretell; as difficult as to imagine how our fathers contrived to exist in those coarser days, when facts as well as names were so much more nakedly dealt with. We believe that out of all the experiments in these difficult and, to many, repulsive subjects, will be evolved some larger and simpler principle of dealing with refuse animal matter than any that exists at present, and that perhaps we may even come to find that everything has its use in the world, and is not, in its right place, contemptible or odious. In the mean time, such a contrivance as this of Mr. Jennings's, by which a supply of chloralum is brought down to the closet-basin by the same action which discharges its contents, seems (in its present form, at least) rather a makeshift, which at least can scarcely be available for universal application. One or two other exhibitors, Mr. Banner in particular, send specimens of the same kind of contrivance. It is perhaps by chemistry rather than with mechanics that the ultimate solution of this class of sanitary problems rests; but the solution has not yet been brought at all events into a universally applicable and economical system. Messrs. Smeaton's remarkable combination bath, with different sets managed by different levers, we noticed in our article on the opening of the Exhibition; it still in full play, to the great edification of spectators, and looks remarkably inviting on a hot and dusty day. Such a "bathing machine" of this, however, is also of course a luxury for the few. In an opposite sense we may notice the "self-acting cinder-sifting ash closet" exhibited by the Sanitary and Economic Manure Company of Manchester, who, we believe, are doing a good deal, though with only very partial encouragement, to promote a more scientific treatment of refuse matter on the banks of the river. The contrivance here shown consists in a slanting wire "screen" between the asphalt and the closet portion, against which everything intended for the asphalt is thrown, the ashes descending into their proper receptacle and the soil going through the screen and falling on the soil under the closet seat, thus acting as a leodoriser. Among other specimens of closet apparatus are the self-acting dry closets shown by the "Peat Engineering and Sewage Filtration Company," and which are specified as "noiseless" though in what particular respect they are more noiseless than other dry closets is not immediately apparent; no doubt a noiseless action is a great advantage in small tenements, where the closet cannot be kept much removed from the dwelling-rooms. Those by Parker, of Woodstock, are remarkably simple and durable in make, with removable tin pans beneath. This does away with one chance of derangement in the working, and would supply very suitably and inexpensively the wants of houses of a low rental figure. The arrangement shown by Messrs. Caffal & Co., Fleet-street, for "inodoros commodos," is very ingenious; the seat being self-closing by two slides, which meet over the pan, and separate on the depression of the seat: at the same time one is always inclined to think that the simpler these things are, and therefore the less liable to derangement, the better; and we do not know that the articles exhibited here show in the main any improvement on those of the originator of the system, exhibited by the Moule Patent Earth Closet Company. These appear to us to keep the mean very well between too much and too little mechanical ingenuity, and to act admirably. In connection with the subject we may mention Smeaton's "Waste Not" water-closets, in a specimen of which here the action of the serving

cistern, with its apparatus, is shown in a glass tank over the model, and is beautifully complete and neat in its working; the valve cover of the service-pipe being raised by the vacuum caused in a small cylinder over it, the piston of which is raised by the pull of the closet-handle; the air is then allowed gradually to introduce itself, and the cover descends into its place after allowing time for a sufficient flush of water.

Among things connected with sewer and other ventilation we notice Mr. W. B. Head's arrangement for the ventilation of drains through a pipe carried from just below the closet-trap to the roof or near it, with a carbon air-filter in the head, which is made somewhat like the head of a rain-spout, and may very easily be made to range with the rain-spouts, so as not to attract attention or cause any unsightly appearance. A model of the Albert improved dwellings at Spitalfields shows a simple method of insuring outlet ventilation from the rooms by carrying up one vitiated air-shaft running behind all the fireplaces which are over each other on each floor; one or two at least of these being always in use, the air-shaft is kept at a temperature which insures a current; there is an outlet into it from each room, over the fireplace, and the Company's energetic secretary, Mr. Gatiliff, states that this simple expedient has acted well, and required no modification for twenty years.

Of dealing with sewage on a large scale, we are shown an example in the drawings and model of the "General Sewage and Manure Company's" works at Coventry. The model shows the sewage extractor, in a tank adjoining the large reservoir, and from which the sewage is passed into another tank, to be operated upon by the drier, the main feature of which is a large series of radiating open frames, arranged in wheel fashion, being, in fact, a very large and broad wheel, which takes up the sewage matter for drying; the drying-wheel being turned by the same power as, and working simultaneously with, the extractor.

Messrs. Gascoyne exhibit a patent lead D trap, cast so as to give a large waterway and a less liability than usual to the retention of deposit; still, we cannot think that such a trap as this can ever be really effective in ensuring immunity from effluvia without the assistance of thorough ventilation of the drains, and another outlet for the pressure of foul gases, which otherwise will and do force themselves through the water of the trap. In fact, the D or S trap should be considered as a safeguard after everything else has been done to divert the effluvia in an innocuous direction. A great number of lavatory services are on view here, of which those of Mr. Jennings are so well known and so widely approved, as scarcely to need mention; the work of Messrs. John Warner & Sons is exceedingly good, especially in the matter of baths; and Sudder & Co.'s "tip-up" lavatories deserve praise for excellent workmanship and convenient arrangement. *Apocryphos* of baths, we may notice also a model of a safety bathing and swimming saloon for deep water, by Mr. Alfred Rae: this is in the form of a ship's hull, of square and heavy lines, and filled inside with a sloping open iron floor, through which the water freely flows, while at the same time the unlearned swimmer has all the safety of a shore bath with a solid floor.

Improved railway trucks for cattle may legitimately come into the category of sanitary apparatus, and there are a number of models here, mainly intended to exhibit plans for placing food and water for the cattle in transit, so as not to be in the way, or take up too much space, and for providing safe and easy ingress and exit for the animals. Some of these are arranged as stalls inside; but this arrangement, not economical at all, is scarcely necessary, unless with very valuable show cattle; and those trucks which have an unencumbered floor, and food and water receptacles fixed in the sides, appear to us the most workable. In connection with the subject, and as they are in the same room, we may mention a very sensible idea for a railway carriage-door latch, in which the latch is visible, and therefore it is always evident whether or not the door is securely fastened; the latch shoots with a spring on closing the door so as to require no turning of the handle. The Belgian method of arranging and extracting railway tickets from the rack is also exhibited: each bundle of tickets is loosely placed in a compartment of its own, which is then partially closed by a small bar at each side, the bottom of the compartment by a slip of metal

with a projecting tongue; the clerk draws this out, as far as it will go, and brings with it the lowest of the pile of tickets; on letting go the tongue the metal springs back, leaving the ticket in his hand: this can be worked with great ease and rapidity. A similar class of "save-time" invention is that exhibited by Col. Tomlinson for rapidity in printing where no out-of-the-way words are required, the types being cast in words instead of in letters, and arranged so as to place ready to the printer's hand a great number of the leading words of the language. Whether this could be very well worked in conjunction with the letter system, without confusion, is the question. We should think it could be.

The patent boat-disengaging apparatus of Messrs. Hill & Clark, of which a model is exhibited, appears to be one of the simplest and most direct ways of attaining its end that could be hit upon. Our non-nautical readers may not all be aware that one of the great dangers of lowering boats at sea arose from the difficulty of ensuring the simultaneous working of the fall tackle at each end, so as to bring the boat level on the water instead of sending her in bow or stern first, which on the old system, especially when a boat had to be lowered in a hurry, often happened with disastrous results. Several patents have been taken out to obviate these catastrophes: this one is peculiarly simple; the two ropes by which the boat is hung, instead of being secured to her bows and aft, are passed through two rings and brought towards each other in the centre, stretched tight and connected by a coil of thinner rope, passed backwards and forwards several times through rings in the ends of the main ropes. All that is required to lower the boat is to loose the knot of this centre coil, and let it run, with proper care, which practically amounts to gradually lengthening the ropes by which the boat is suspended, in such a manner as to ensure an equal lengthening at both ends. This can be worked by one man, apparently, from the centre of the boat. The principle might be applicable to other matters besides boat-lowering.

Though it is not a sanitary matter, we may mention, in conclusion, that in this gallery is a model showing the principle of perspective, by means of a model of a house, the lines of which are drawn in perspective on a piece of glass placed in front of it, and representing the "plane of delineation"; an eye-piece being placed in the proper focus, through which all the lines of the drawing are seen falling in their place on the corresponding lines of the object. Such a thing as this would be valuable in schools, and it is just possible that a good many fair heads (for the ladies seemed to pay great attention to this) may have got their first notion of what is the real mystery of perspective drawing, during their passage through Gallery XXIII.

THE METROPOLITAN BUILDINGS BILL.

REPORT OF THE COMMITTEE.

In the *Builder* of last week, having given the evidence on either side to the close, we informed our readers that the committee adjourned until Wednesday last for the purpose of taking into consideration the general principles of the Bill.

When the committee re-assembled on Wednesday, the lobby presented an unusually active aspect. It was manifest, from the various groups engaged in conversation in the lobby, that the Bill by the several parties interested, was regarded as one of more than ordinary importance. Engineers, architects, and surveyors were present in large numbers, in addition to numerous other interests involved in the Bill. From twelve o'clock (the hour when the committee assembled), until about half-past three, when the public were called in to hear the decision of the committee on the main principles of the Bill, the grave importance of the powers sought by the Metropolitan Board was evinced by the earnestness of the discussion which prevailed, and by the varied and opposite opinions which were manifested.

A little after half-past three o'clock the doors of the committee-room were opened to the parties interested, when the chairman said that he had to read the resolutions, which, after considerable deliberations, had been agreed to by the committee, and which might possibly be a guide to future action on the part of those who were responsible for the Bill. With reference to the general principles of the Bill he said

that the committee, in arriving at their decision, had embodied them in a series of resolutions, which he was instructed to read to the parties. He then read the following resolutions:—

"That it is not desirable to fix any limit as to the height of buildings in new streets, above 50 ft. wide.

Secondly. That it is not desirable to fix any limits as to cubical contents in buildings, other than warehouses.

Thirdly. That where a building is used partly as a store for goods, and partly as a shop for selling goods by retail, the portions used for storing goods must be regarded as a warehouse, and subject to the limitations as to cubical contents provided in the Act.

Fourthly. That with regard to district surveyors, their status should remain the same as under the former Acts of Parliament, the power of appointment, suspension, or dismissal resting with the Metropolitan Board of Works; but that the Board shall have power to institute proceedings before a magistrate in regard to any question of dispute arising between a district surveyor and a builder or owner of property, or in regard to any matter connected with the discharge of the duties of the district surveyor, in which they think the public interest is involved.

Fifthly. That the district surveyor, or the Metropolitan Board, shall have full power to stop the progress of any building in which the materials or construction is calculated to be dangerous or injurious to health, and to summon the builder or owner before the magistrate."

The committee further signified their wish that the schedules to the Bill should, as far as practicable, be incorporated in the Bill itself.

The chairman, after reading the above resolutions, stated that he was requested by the committee also to state that in the course of the inquiry the committee had taken into their consideration the great number of clauses in the Bill, more especially that in reference to the district surveyors in which occurred the sentence "unless the Board shall otherwise direct." The wish of the committee was that the dispensing power of the Board would be better provided for by a general clause which should point out the nature of the case in reference to which the special power of the Board should be limited. The committee also wished him to state to the promoters of the Bill that it appeared to them that in several clauses of the Bill there were alterations in language without any material alteration of the existing law, and they thought it desirable that the old language should, as far as practicable, be adhered to, and that scope should not be given for new questions, arising from the unnecessary use of new language. He was further desired to state, on behalf of the committee, that they thought, after the intimation which it had been his duty to convey, the Metropolitan Board would require some time for deliberation as to the form and method in which the resolutions which had been submitted should be carried out; and they, therefore, proposed to adjourn the further proceedings until Tuesday next. It was, however, possible that the adjournment to Tuesday would not be sufficiently long to enable the Metropolitan Board of Works to deliberate upon the resolutions at which the committee had thought it their duty to arrive, and in that case, if their clerk would communicate with the committee, they would be glad to arrange for a still further adjournment.

The proceedings of the day then closed.

The inference can scarcely be avoided that the Buildings Bill will not be passed this session.

THE PROPOSED NEW METROPOLITAN BUILDINGS AND MANAGEMENT BILL.

The following letter has been addressed to the Select Committee of the House of Commons:—

"My Lords and Gentlemen,—I am an architect and surveyor, and some time since contemplated applying to be appointed a district surveyor; but when I found that the incomes from the districts varied, and that if I made any income worth talking of I should have to be very diligent,—be constantly on the look-out to see that no work went on without my supervision (because if it did I should get no fees),—I gave it up as being likely to be troublesome. I felt the system was too antiquated, and resembled too much the mode of living of the ancient Britons, i.e., the game must be hunted for, or there would be nothing to eat; but if you will

kindly pass such a Bill as will enable the Metropolitan Board to pay the district surveyors by salary, then I may become a candidate, because it won't matter whether the builders' operations are looked up; or whether the district is all built over or not; there will be a fixed income whether little or much is doing, and I feel under such an arrangement I could take it easy, and make the builders love, entertain, and take me out to little pleasant treats.

There is also another part of the Act which you will oblige me by passing; I refer to the threescore relaxing clauses, as they are euphemistically phrased. I ask this favour because if I should fail in getting appointed a district surveyor, I may get elected to a seat at the Board, and being a surveyor, of course I could get on to the Building Act Committee; and as every one intending to build must ask permission first, and show us what they propose doing, why then I could object always to something (that line is a safe and simple course). The public would then see what relaxing clauses meant, and it would soon leak out who the Mephistophiles was, and people intending to build would come to me to prepare their drawings on account of my influence and position, and then I would change sides! Now supposing there were, say four of us on the Board, why we could divide the metropolis into four parts, and by means of a little judicious touting, the right man to apply to would soon become known, and we should secure a large proportion of the business; and supposing it was dubbed a conspiracy, what matters? Nothing succeeds like success!

I, Pump-court."

A. FOX.

Sir,—Permit me to call attention to some matters, which, if this Bill passed, will operate injuriously in a pecuniary sense, on some of the present district surveyors.

Many whose incomes have been small, and are improving, will be deprived of any augmentation, or chance of increase, by the proposed mode of compensation, which draws a hard and fast line, and effectually limits the income to its present shape: this would be by no means an equitable assessment.

Again, under the present Act he may, upon giving notice to the Board, practise professionally within the limits of his own district: this source of income is also cut off.

A SURVEYOR.

REMOVAL OF THE LIVERPOOL TRAMWAYS.

A SPECIAL meeting of the Liverpool Town Council has been held to consider the question of retaining or doing away with the tramways in the town. A long discussion ensued, and it was ultimately resolved to give the company three months' notice to remove their tramways; but that if the company had any suggestion to make with the object of improving the condition of the lines the Corporation would give careful consideration to the proposal. Our metropolitan tramway companies had better take warning. There are some of them at least that require it, both as regards their roads and their cars; others are less objectionable, which only shows what can be done.

ASSOCIATION FOR IMPROVING THE HOMES OF THE POOR.

THE annual meeting of this Association, the object of which is to erect improved dwellings for the working classes, or to renovate the existing dwellings where practicable, combining in their construction and alteration the several improvements in drainage, ventilation, a due supply of water, and such other advantages as shall be calculated to render the sanitary conditions as complete as possible, has been held in the Board-room of the Association, 8, Finsbury-circus, E.C., when the directors presented their thirtieth report. The Right Hon. Lord Claude Hamilton, chairman, presided.

The report presented congratulated the shareholders upon the increased interest the public were displaying in the object to which their labours were directed, and also that Her Majesty's Government had recognised the importance of the subject, and had pledged themselves to facilitate the erection of improved dwellings for those who are displaced by the introduction of railways and new streets. The directors announced the near approach to completion of the buildings now in course of erection in Farringdon-road, providing accommodation for 263 families, where 1,300 persons will be housed on 33,886 superficial feet of ground, of which area 15,971 feet are applied as approaches to the building, and thus afford space for recreation and ventilation.

Of the rents due to the association,—12,257l.—

a deficiency of only 156l. had occurred, through vacancies. The death-rate in the dwellings belonging to the association, during the year, has been only 14 per 1,000, against 22 per 1,000 of the whole metropolis. The revenue account showed the profits of the year to be 5,675l. 2s. 1d. sufficient to pay, free of income-tax, a 4½ per cent. dividend. The report was adopted. Mr. Symes wished to know why a like association under Sir Sydney Waterlow, could pay a dividend of 6 per cent., and their association only 4½ per cent. Mr. Russell Scott said that the society referred to by the last speaker did not keep a proper debtor and credit account, but went upon the principle of valuation. A dividend of 4½ per cent. was declared.

THE HOMES OF THE LABOURING CLASSES.

LAST week Lord Shaftesbury presided at the annual meeting of the Society for Improving the Condition of the Labouring Classes, held at Willis's Rooms, St. James's. Mr. Charles Payne, the secretary, read a report of the society's work showing its practical transactions during three years in the endeavour to improve the homes and habits not only of the lower classes of the working population of London, by converting some of the dens of London into habitable dwellings; at such rents, too, as could be afforded by the people for whom they were designed; as by supplying baths and washhouses; and also by rendering information and instructions to those who in other parts of the country desired to follow out the same class of practical usefulness. The society has acquired "properties" in the lowest parts of London, and these pay rent; but the improvements necessarily made in the dwellings; to fit them for healthful habitation lead to costs which are not covered by the rent paid; hence the society is in need of assistance from the charitable. The balance-sheet shows that the amounts received during the year from all sources reached the sum of 5,615l., and while the balance left last year came to a total of 6,250l. The expenses of the lodging-house repairs, &c., took of this sum so much as to leave a balance of 490l. The real property in the hands of the society was estimated to amount to the sum of 35,348l., and the general liabilities 21,223l. Lord Shaftesbury expressed his gratification at the fact that the Government had undertaken to deal next year with the subject with which this society had been practically dealing so long and so well, and he trusted that the measure now promised would be a comprehensive one, for this was a matter well touched deeply and nearly the general welfare of the labouring classes. The society, he said, had done a great good work, and it had set an example which had been followed in many Continental cities, in America, and even in India. The Hon. W. F. Cowper-Temple moved the adoption of the report, and spoke of the ability with which it dealt with the practical social work carried out. Canon Nesbet seconded the motion. Dr. Ross, who supported it, stated, from his own experience in St. Giles's, facts which showed the benefits to the health and general well-being of the poor arising from their having good dwellings. The report was adopted *nem. con.* A vote of thanks to the chairman closed the proceedings.

WATERWORKS FOR CHICHESTER.

THE foundation stone of the engine-house of these works has been laid by Lord Henry Lennox, M.P. The inhabitants of this city have hitherto taken their water from wells, the purity of many of which has of late years been more than questioned. A well has been sunk at Fishbourne, about a mile and a half from the centre of Chichester, and at the depth of 22 ft. an abundant supply of what is stated to be excellent water was obtained. Though the works are commenced, the capital subscribed is not yet sufficient to warrant the directors in accepting contracts for the supply of the whole of the works, which will include, besides a well at engine-house at Fishbourne, a water-tower as a reservoir on the Broyle. The contract, which has been entered into with Messrs. Hasell & Gambier, a firm of contractors having experience in this work, is to sink the well, build the engine-house, and lay a main of 8 in. iron pipe to the Market Cross—about a mile and a half. This work, we believe, is to be executed within eight months from the present time.

GRACE,
AS A CHARACTERISTIC OF ARCHITECTURE,
SCULPTURE, AND PAINTING.

In the study of the principles of Art, whether in the specific case of the fine arts, ordinarily so called—Sculpture, Architecture, and Painting—in the wider sense of that æsthetic truth which underlies every form of artistic expression, and holds up a mirror to reflect all that is most charming in nature; we have had occasion to remark, more than once, on the importance of accurate use of technical language. Accuracy of speech, indeed, on any subject, is at once a consequence and a cause of clear ideas, and of a masterly grasp of the subject. But apart from a precision of technical terms, or from the natural flow of poetic beauty of expression, lies the question of the central ideas that are indicated by words that are not in themselves technical, but become so in their use. By the examination of such terms it may be possible to detect, and place before the student, that central idea in actual purity. By so doing we make a decided step towards attaining a mastery of Art. We know more clearly what it is that we mean in certain terms. Knowing what we mean, we are advanced at least the first stage on the road to its attainment.

The word "grace" is one of those terms which we used to imply the highest kind of compliment; and yet of the actual meaning of which will be hard to find a good definition. If needed, a person who used the word might say it implied a certain vague and indefinable charm. If that be really the case, it would be vain that the architect or the painter should strive to produce graceful works. He cannot give, or at least he cannot intelligently and artistically strive, after the undefined. Unless he knows what be the nature of the charm in which he seeks to clothe his works, how is he to be able to attain it?

The artist may, indeed, proceed a step in the arduous pursuit. He may say that the female figures of such a painter—and to none will the mark more fitly apply than to Correggio—of proportion and outline of such and such example of classic architecture, are renowned as unrivalled for their grace. By imitating him, he may argue, he shall imitate, and thus grace, the graceful. But the answer is, that an imitation, if successful, will be mere mannerism. It will differ from the manner of an artist who is copied, just as photography differs from art. Correggio, in regarding nature, has certainly done so from a rare and enviable standpoint; and has thus known how to reproduce her in some of those phases which are rare. To any person of taste, whether educated or not, native, one of the exquisite groups of Correggio will furnish an object that he never ceases to contemplate; and which, even when presented to the eye in the black-and-white relation of the engraver, may be one of the most cherished ornaments of an elegant apartment. But to the artist, the contemplation of such an object should be more than a source of pleasure. It should be a means of instruction, so to imbue his memory with every detail, of line and of chiaroscuro, in which the genius of this great master expresses the poetry of his imagination, he may produce something Correggic. But in so doing he will but take a place in an unremembered place in the temple of Art. The true lesson which he should draw from the glories of Italian magic, is to look, under the teaching of Correggio, at nature herself, and the beautiful, as he saw it. And if, in regarding one object of purity and beauty, the student comes to see through the paint and beyond the canvas,—to look with the gaze of kindred spirits, until the very idea that was present to the painter rises distinct to his own mental vision,—then will come not imitation but rebornance; not a faint and mannered reflection the technical expedients employed by Correggio, but a similarity of conception and of feeling, that would raise the possessor to a place of his own in the temple of fame.

In the same way we may measure, with minute accuracy, every detail of an ancient temple. We copy every inflection of the mouldings, we reduce to algebraic expression the exquisite proportions that are found to underlie the sign. In the magnitude, permanence, and mobility of building, indeed, we have far more scope for positive imitation than in the case of painting. Given the sun, and the sky, and the winds; given the clear air of Greece or of Italy, the pure azure of the heavens, the deeper

turquoise of the Tuscan or Ionian Sea, the glitter of the marbles of Pentelicon or of Paros; we are not about to deny that even a Chinese artist, working with that absolute fidelity which results from infinite patience, might so reproduce the Parthenon, that the living spirit of the architect might yet seem to rejoice in his work. We do not say that this would be so. We can cite no example of such an *anastasis*. But we are not prepared to deny that it is possible.

But whether it be within the limits of possibility that a mechanical copy of the Parthenon, erected on the site of the Parthenon, might be a faithful representation of the original wonder of art, or not, one thing, we think, will be admitted by all. If the circumstances were at all varied,—if change of locality or of local incident should call for some modification of the original design, the artificial copyist would be at once thrown out. Either he would make no change, and thus the incongruity would be manifest to the competent critic; or he would make such change as best he could, and then the incongruity would be evident to the mere tyro. Indeed, it may well be the case that it is to the notion that copying dimensions and imitating construction is the same thing as reproducing architectural works, that we owe many of the hideous caricatures of earlier buildings, whether of the Southern trabeate architecture, or of the native classical architecture of our own snow-bespinkled climates, which are so often a grief and a shame to the true architect.

If, then, we seek to rival or to follow the graces of any charming work, or of any great artist, let it be Ictinus, or Praxiteles, or Correggio, certainly one of the preliminaries to the effort must be the attempt to understand what it is that we desire to seize. What, then, we have to ask, is that description or element of beauty that we express by the word "grace"?

In the English language we find the word employed in connexion, if not interchangeably, with the word "elegance." The graceful and the elegant are spoken of as if synonymous. But if we go to the root of this relationship, and inquire what elegance is, or at least what is the natural, etymological meaning of the word, we shall find that it only bears a tribute to the rarity of that charm which is called grace. For the elegant means, properly, the select. Such is the primary sense of the word. Such is the sense in which it is used by Cicero. The elegant is that which is taken out,—picked from the mass, selected from the herd,—so picked as being most rare, most precious; and, in this primary and proper sense, the graceful is, unfortunately, not different from the elegant. We may have heard a laugh raised at the very frequent use, in that rich brogue which is the attribute of some of the sweetest and most melodious voices in the world, of the adjective "illigant." But the question may well be put whether both the Irish usage, and even the Irish pronunciation, of the word are not more classic than our own.

If, then we seek, however, the very cradle both of the word, and of the embodiment of the idea,—grace,—we shall find no room to hesitate as to the meaning. To us, indeed, the word has only come indirectly. It is one of the relics of the Roman occupation of our island for 500 years. And in this transfer to our shores, there is no doubt that much of the original perfume of the Grecian *XAPIE* has evaporated. The Roman *GRATIA* has something that is more mature, dignified, reserved. The impulsive infantile beauty of the Greek grace has changed into the draped dignity of the Roman vestal.

We have no native word for grace. Our Teutonic ancestors seem to have laboured under the same difficulty. They, too, have borrowed from the yielding, supple, gracious Italian speech. *Amantius* seems to have a Semitic affinity. *Reis* originates in an idea the very opposite of that which we seek. The Graces, pure and simple, are the daughters of Greece. Their cradle has been lulled by the murmurs of Southern seas. Like all the goddesses and heroines of old, they betray their nature by their names. Homer knew only two. If either of them was unborn in his time, it must have been the most winning of the three. *THALIA* took her name from the word that means feminine, if, indeed, it be not from the shoot of the olive. If we adopt the former signification, we need go no further. We arrive, in the word, at grace absolute. If we take the vegetable analogy, we have the idea of tender, budding youth, of full vivacity or energy of life; but rather than blossom; hope rather than per-

formance. At a yet more remote period of ethnographical life and of language, the two ideas, and the two words, may have sprung from a common origin.

AGATHA, on the other hand, comes from a word which is best explained by its use, in the verse of Pindar, as an adjective applied to water,—pure, clear, glittering. The glow of health, on the skin; the glitter of happiness in the eyes; the pure, happy candour of youth; the blush called up by every new emotion; such is this second grace.

The third name is of another order. We come to a later born, though not less welcome maiden. *EUPHROSYNE* is the outspoken expression of content—cheerfulness.

We have not turned to pages so dear to memory merely for idle gratification. We want to know what grace is. We think we are on the way to find out. We must distinguish between outline and movement, between form and expression. It is in the second order of these ideas that we shall first find what we seek. Thence we may trace back the expression of the sentiment in its sterner or more conventional form.

We think that there will be little hesitation in admitting that the true idea of the gracious involves, at all events, a gentle sympathy; an accord of temper and of tone; a rendering of favour to the supplicant, and a return of thanks to the giver. In both Latin and Italian the word *Gratia* has this double significance. It expresses the Divine gifts. It expresses the best return that man can pay. It is first assent to prayer; and it is then the returning incense of gratitude.

In the natural language of physiognomy this sentiment, or state of feeling, is expressed by a gentle smile. This truth is not only instinctively known—to the child, to the lover, to the poet,—but it has been formed into a sort of canon by the painter. The Graces are dressed in smiles. This chief charm of human expression has, like all excellences, its counter-part. Homage is paid to the merit of the true coin by the fabrication of the false. Thus the artificial, or stereotyped smile, is, when detected, one of the most odious of human expressions. It is worn at courts, like a uniform, as has long since been pointed out by the satirist; and it is a uniform thrown aside with haste and disgust the moment that its service can be dispensed with.

But the true smile, which the poet, or the painter, or the lover (who is more earnest than either), well knows from the counterfeit, has in it something of the breaking down of a gentle barrier. It is that mobile play of the features that unconsciously, or irresistibly, displaces a sweet and modest gravity. It may be as momentary as one of those far-off flashes of summer lightning, half seen on the distant horizon, as to which we are in doubt whether we really saw the gleam or no. It may more gradually and more permanently shed over features, perhaps of very homely mould, a radiance that partakes of the divine. But be it what it may, so that it be pure and true, it is the most faithful reflexion of the light of heaven that is cast on the human face.

We may refer to the *Vierge au Panier* of Correggio as one of the most exquisite representations of this tender grace that is known to art. With this may be contrasted the ever-present grin which Greuze has made to do duty on almost every face. If the budding point of the sweet girlish face on *La Cruche cassée* be compared with the ordinary expression to be found on other faces limned by this painter, it will be readily seen how much of artistic merit has been stunted and wasted in the attempt to create perpetual smiles. The contrast is like that between the tranquil happiness of the young mother, alone with her first treasure, and the ordered smile, illuminated by the foot-lights of the stage.

If we have been correct in this appreciation of that which forms the most winning charm, the truest grace, of human expression, we have gained a great step in the inquiry as to what constitutes the graceful in art. The idea now before us is that of a yielding to gentle pressure. If this be the truth with regard to what we may call the dynamics of grace, it is clear what must be its statical expression. We arrive at the result that the graceful, in symmetry, is, to a certain extent, synonymous with the slender. Of course in this, as in any other direction, exaggeration is possible, and failure is, in such cases, certain. But within the limits of true symmetry, whether we regard a human

figure, or a Grecian column or temple, it will be to the more slender, in relation to the height, other things being equal, that we attribute the character of the more graceful.

The architect will at once respond to this remark. He will remember that, from early days in his art, the Doric, the Ionic, and the Corinthian orders have been compared to the man, the matron, and the maiden. Is it not the case that there is a real truth underlying the comparison? Does not the history of architecture show that the advance in classical art has been almost continuous in the direction of increased loftiness, as measured by the modulus; that is to say, of increasing slenderness? What do we find to be the case in our simplest architectural text-books? We find the earliest proportions of the column in Egypt to give only thrice the diameter for the height. At Karnak we have this proportion, and we have also the proportion of a little more than four modules—say four and a fifth—to one. At Denderah we find four to one; at Beni Hassan, five to one; at Maharraga, six to one. We suppose that there is no one who will deny that, with this gradual variation of proportion, we find the idea of massive and mighty strength gradually yielding to the idea of structural grace.

A similar progress is to be detected in Greece. The earlier type of Grecian Doric, which is found at Selinus, gives us an example of columns of 4½ diameters in height. At the Parthenon, the proportion is five to one; at the Thesaurus, five and a quarter to one. In the Tuscan order, we have the column, including base and capital, of 7½ the height of the diameter. In Ionic buildings the 8½ to 1 of Priene, and 8½ to 1 of Delos, rise to 9½, and 10½ to 1, in the Erechtheum. Thus we find the same tendency evinced both in the succession of style to style and in the internal development of each style, viewed apart. The development, in either case, follows the same law. Grace is gained, not, perhaps, at the expense of real stability, but at the expense of that massive proportion which, in the earlier period of art, was taken to be the proper expression of stability.

Sculpture followed the like law of progress. In our most archaic examples of Greek sculpture, and even in examples to be found in the British Museum, the figure is so squat that the head and neck make up one-fourth part of the total height. Amongst the earliest Egyptian works we find the head alone occupying three-sixteenths; while the neck, which in the other figure was almost as large in girth as the head, is discernible. In the first Egyptian canon, as laid down for the regulation of the kolossal figures, or coloured reliefs, with which the tombs of lower Egypt are adorned, the head occupies three out of nineteen divisions, or nearly one-sixth part of the height. The date of some of these conventionalised figures reaches, according to the reliable determination of Brugsch, to a period 3,400 years earlier than the Christian era. This ancient canon remained in force for nearly 3,000 years. It is not till the time of the twentieth dynasty, some 600 B.C., that the head is reduced to something more like the actual proportion of life. This reduction, however, was accompanied by an extraordinary development in the height of the head-dress, a representation which probably was only the reflection of the actual attire of the period, and is one of the most ancient examples of the power of what we now call fashion.

Lastly, a like progress is found in the development of the human form. At birth the head occupies one-fourth part of the total height of the figure. At maturity, in the most symmetric figures of ancient sculpture, it occupies one-eighth. Thus it seems that the sister arts,—of architecture and of sculpture,—have, in their growth and development, as represented by their most famous relics, followed precisely the same course, and almost exactly the same proportionate method of development, as that by which the human form itself passes from infancy to maturity.

We can only call to mind a single argument which may be drawn, from this very analogy, against the general view that slenderness of symmetry is a main element in architectural or sculptural grace; that is to say, in grace of construction, as distinguished from grace of expression. That argument may be thus conceived. All persons will admit that there is much grace connected with the forms, or at all events with the movements of children. But

their structural symmetry is special. It is squat and dumpy. At a very early age, when the little creatures can but just walk, a healthy child is but half as slender, measured by its own height, as a well-formed man. How is it, if grace be denoted by slenderness, that chubby children are graceful? Are not the lovely groups of *Il Flamingo* so many carven protests against our former proposition?

We think not. It is possible that there may lie, beneath the surface, a true cause for the apparent anomaly. That cause we take to be the weakness of the child. The infant form is not made to struggle either with human competitors, or with the ruder forces of nature. It is the subject of the most careful maternal tendence. The first struggle of those little limbs is with their own gravity. The first great effort is to walk. In the half-learned exercise of the new powers, the period that most charms the observer is that when the pace is just passing from a totter into a trot. But if it be the case that the fattest and chubbiest children are often the most graceful, there is still the question of the *post* and the *propter*. Fatness in a child under seven years of age is usually a sign of health. The healthiest child is, naturally, the most charming. But if, health being equal, a little girl of hereditary slowness and delicacy of girth be compared to her plumper playmates, she will be certainly esteemed more graceful, and the charm is even heightened by the contrast. A child crawling on all fours has many charms, no doubt, especially to loving eyes. But it cannot be cited as a graceful object. Neither is the term very applicable, so long as motion is accompanied with evident effort and difficulty. It is when the power first overcomes the resistance, that the most interest is excited by the movement, regarded as a graceful movement. In violence, grace is absent; whether in the case of painful struggle against overpowering force, or in that of energetic force scathing and destroying resistance. But the movement that is perfectly proportioned to its aim, whether it be the bound of a deer, the poise of a bird, or the playful amble of a girl, is graceful. And it is so, for the same reason, at all events, in accordance with the same or, at all events, that we before gave of the graceful. We hold, then, that it is perfectly consistent with the view that structural grace is generally intimately connected with slenderness of symmetry, to admit that a well-developed child, though anything but slender, may nevertheless be perfectly graceful.

THE "LABOUR" PROBLEM: WORK AND PLAY.

It has many a time and often seemed to us as a thing not a little strange that no philosophic thinker, in a combined politico-economic and artistic sense, has gone to work, and tried at least to solve the problem of labour, *i.e.*, manual labour. A somewhat difficult word to define is the word "labour." Johnson calls it—the act of doing what requires a painful exertion of strength: pains, toil; and a labourer is one who strength: pains, toil; and a labourer is one who is employed in coarse and toilsome work. The evident idea to be conveyed by the word is that of continuous manual exertion, with but little or no mental activity either needed or in exercise. In its widest sense the word, of course, includes intellectual and manual work characterised by difficulty or continuance. But the first-named idea of the word is that with which we propose to deal at present, and to say a little; for it has lately acquired a new interest from the efforts that have been made at Oxford to interest even "Graduates" of that famous University in mere manual labour, and to induce them in their own proper persons to go to work and to "mend a road." This is a very curious fact indeed, and may well cause wonder. Wonder at the infinite number of phases of man's activity; and wonder, too, perhaps, at the strange way in which it has been sought to employ the leisure time of those whose lives are dedicated to mental pursuits and intellectual training, but whose bodily and demand exercise, but which exercise they seem able to obtain only through amusements or play of some kind or other, no matter how hard or laborious or even long-sustained and exhausting.

This subject of manual labour is indeed a far more curious and all-important one at the present time than very many think for. We allude here especially to it as affecting those who are supposed to be more or less above the necessity

of bodily labour, or even simple exertion, as a serious business of their lives; but who only to it occasionally as a pastime, and in a few which suits their fancy. It is but comparatively a very few indeed who are able to employ themselves in intellectual occupations only; bodily and mentally the many are unfit for and incapable of it. Some earnest and esthetic students of "man and his ways" are, who seem so wholly taken up with "intellectualities" that they seem to almost forget physical requirements; but these are only a few in number. The vast majority are for however keen-minded they may be, to bodily excitement and exercise, not only for health's sake, but for the mere pleasure of moving about and doing something. To a class belong certainly the vast majority of what are termed highly-educated Englishmen, a bodily, physical outlet is absolutely necessary for their stout and healthy energies and spirits. But then the question comes, *how* is this to be accomplished? What kind of activity is to be sought out and gone through? The answer is, as we all know, sometimes king, sometimes cricket, football, gymnastics, which heading lies a vast variety of wonderful things; running, as in Greek days, incline. It must be borne in mind here that these things though not universally approved, are not out of date, for they are even fashionable, certainly approved by the scholastic powers, far, so good. It remains only to discover, and in what best way to do so, with bodily work and may be to contrast it with bodily work yields a profit.

Indeed, and in fact, it will be found that bodily exertion may be conveniently, for present purpose, divided into two kinds, viz., mere labour that may be gone through without thought; but still with a definite result,—as the Oxford road-mending societies, and that other labour, or bodily exertion, which is called forth and exercised in the play, various "games," pleasurable in themselves, but which yield no material profitable result. But to balance this deficiency, they are intensely pleasurable, and at the same time de intellectual or mental effort of some kind, other,—as polo, cricket, quoits, booby gymnastics, and not a few others. It is wonderful to think of, how much is involved in this kind of bodily exertion. Think for a moment of what the Greek did with his mere "game." Nothing seems to have been lost sight of. Everything that could in the culture be got out of a game was got, and pains would seem to have been spared to of these games really artistic performance. All and everything went to aid and help. The very clothing of the antique Greek was expressly fitted for the games, and for the purpose of adding to the freedom and grace of the bodily movements. It was fine art in its visible attire, and the Greek public the "artistic," not only in marble merely, in actual flesh and blood, alive and moving, old Greek, therefore, made use of mere unproductive labour, in its politico-economic sense, as a real means of intellectual culture, the very highest order. He not only saw the physical nature of man, and acknowledged his bodily need of exercising his strength, but he compelled this bodily exercise to graceful product and a mental delight. It should this fall us nowadays? We need to follow the old Greek as in a rear-mirror, but cannot we do as he did in *our way*?

It is not a little curious to compare the of the men of past times with our own of now-a-days, and to mark the difference. A Greek had his leisure hours, as we have that we are quite sure; and he had to something to fill up that leisure something other. He went to work in his antique and invented his great Olympic Games, as the first of the Olympiads must have of a living volume of fine art, better, indeed than any book, however learned, can be. This is what the antique Greek did, and Gladstone notes this power of the Greek Homer's day as a world-wide good, and to all time, and, as we have learned, can we teach power. But what do we do with physical and educated human powers when new turning-point, as at Oxford? Why away from "games" and turn to primitively simply useful human labour, and that the humblest kind, and wherein, certainly, are no part.

It is worth while to pause a moment to glance at the ways of humanity in places remote from over-present and too familiar surroundings. It has to do, too, with this plan of utilising the physical powers of educated men. It is among the very greatest and most interesting problems of human nature, and involving in itself the very essence of artistic action. Listen for a moment to what a great authority in railway construction matters has to say from personal observation on the condition of things in that rich land, Italy. Hereabouts,—close to Pisa,—signs of railway construction are apparent; but such very original methods of procedure would excite the derision of the most astute English contractor. The digging was and is effected by a sort of adze, and the loosened material lifted deliberately by a long shanked pole, to be carried away in small baskets on the heads of women and girls,—bands of barefooted female navvies,—each in turn casting down her modicum of earth to swell the slowly accumulating heaps, all paid for at the rate of a few pence a day. What is Italy to do in its efforts to ape the doings of more advanced countries? The writer continues,—“One would not be surprised to see processes so barbarous carried on in Turkey and Japan; but in Italy, with its proficiency in high art, it is certainly unexpected and startling. It shows that a country may be far advanced in picture-making, sculpture, and other objects of taste, and yet remain in practical ignorance of tonnage and economic methods of industry familiar to the humblest Englishman.” Of this there can be no doubt; but what is the remedy, may we ask in passing? Why, the tools to him who can use them, whatever they may be. The spade for the Briton, for he can use it; the brush for the Italian, for he can use that. Each can work, and work well, in his own way.

But let us not be too hard on the too backward Italian, for we may get a lesson even from him in the way of digging and delving. Road-making and road-mending are ingenious things, and might perhaps test those who, as above, construct railways in Italy. It does seem a strange thing to organise, for the first time, a long body of educated “graduates” to do that which even the “women and girls” of Italy could do, not only as well, but may be better and quicker. Could not,—for that is the question,—could not the physical energies in the useful, and profitable, and economical way be more usefully and better directed? To wit, the laying the rails of a railway takes the wit and hands of a “tradesman,” as the term is, to do it well, though the work may appear to be simply mechanical. And to build a rubble-wall with care, so as to look like artistic work, is a thing more proud of, as may be evidenced to all who will compare the rubble of some castle or cathedral with our modern attempts at the same work. We confidently recommend this last apparently simple muscular labour-problem to the attention of the Oxford graduates when the work is finished, and when work may be slack. It is a wonder, indeed, that a something long ere this has not been done towards putting some manual work into the hands of men higher in mental capacity and tone than our working men generally are. It is a difficult thing to define in words, but patent enough in fact, for “caste” there is, say the philosophers what they will, and it is. Its difference gets apparent through the material it sometimes works upon. It is impossible to imagine what the future of art may produce when the executive power employed in its production comes to be better seen through it.

We may here see that of the two methods of proceeding in the effort to employ the bodily powers of the educated it may be somewhat difficult to determine which to take, other circumstances being equal. The old Greek must be surely done both. It seems impossible that the Parthenon, with its multitude of inaccuracies and refinements, could have been built up by other than highly trained and educated workmen; not men able simply to toil, without thought or taste, but of those whose workmen were able to see into the purpose of the refinements they executed. This is a great question certainly, but perhaps for the future. Profitable and art-producing at the same time, and pointing to very many things,—the grace of movement, a component part, fitness in many things now thought to be less of but little or no moment. The other of employing, or rather of exercising, the physical powers of ever-active youth and man-

hood, though not profitable, may or may not be the best; but it is, and must be, good and fit. “Amusement,” however the word be defined, is a human necessity, and fits for work, and the problem is not to do away with it, even to mend a by-road in a neglected British village, but to make it more artistic, and refined, and more pleasurable. To call forth by it the latent physical powers and beauties and vast capacities of the human frame, to improve the “figure,” and to make the very mind itself more and more active and healthy through the health of the body. To make the boy better than his father, and to make the new and coming world better than the old and past. There is vast latent artistic power in “games,” yet unthought of.

THE MAKE OF A BILLIARD-TABLE.

THE redoubtable Captain Crawley, in his excellent “Book of Billiards” (which, by the way, is appropriately dedicated to the Prince of Wales), tells us that “billiards has grown into a science since White and Kentfield first illustrated its peculiarities; and so rapidly has the game improved of late years, that all rules and theories respecting it in former treatises are already obsolete.” Few people who know anything of the subject will be prepared to dispute this. The game of billiards was never so popular nor so scientifically studied as it is at this moment. We may add, that it never possessed so respectable a character! It is not so very long ago since it was held to be an amusement of a doubtful if not a disreputable kind, inseparably associated with the sports of betting-men and tavern-frequenter, Oxford undergraduates, and Regent-street sharpers. But this reproach, which we must confess was not altogether undeserved, has passed away; and now-a-days there is scarcely a local club, a mechanics’ institute, or a town mansion of the least importance without its indispensable billiard-table. In a modern country-house, the billiard-room has become quite as great a necessity as the conservatory; and it is impossible to overlook the fact that the gentle sex must now be numbered amongst its distinguished and assiduous votaries.

The cause of this is not very far to seek. The game of billiards stands in the very front rank of what our gallant authority describes as “indoor athletics.” Requiring far less mental exertion than chess or whist, it has the advantages of being a more social game than either of them—since it may be played by two persons or by a dozen. And, what is of greater consequence, while it provides an exhilarating amusement for the mind, it affords at the same time most ample exercise for the body. We will give a single illustration: an active and intelligent player walks about a couple of miles round the table in the course of an hour; during which time he has been constantly solving some of the most intricate problems connected with the parallelogram of forces.

Our object in this article, however, is not so much to dwell on the acknowledged claims of billiards to be ranked as an intellectual amusement, combined with a physical recreation, as to give some account of the nature and construction of the billiard-table itself. We take it for granted that our readers all know what it is. If not, we can only define it in a rough and round sort of way as a “board of green cloth” (!) with the addition of the necessary complement of pockets and balls. It differs literally in one respect, and Westminster, of which we wot,—inasmuch as the balls which are thrust into the billiard-table pockets are made of ivory; while those which fall into the parliamentary pockets are made of silver and gold. The conceit is a poor one, no doubt, but it is so extremely obvious that we could not resist it; indeed, it would be easy to carry the analogy much further if we had to deal with the game as compared with certain of our Parliamentary proceedings. But this might turn out a losing hazard in our case; therefore let us abandon all metaphor, and proceed.

What is a billiard-table? How is it made? Of what materials is it composed? What are its separate pieces? How are these joined together? How is it constructed, in short; and fitted up and kept in order? These are the questions we purpose trying to answer; and they are not, we may hint, such simple questions as might at first glance be supposed. Few, we presume, of the multitudes of ladies and gentlemen who give their days and nights to the study of the surface of the table bestow a

single thought on the anatomy, so to speak, of its framework; and, as far as we are aware, there exists no sound and exhaustive monograph on the subject. Without any pretension to fill up the hiatus, we shall do our best to shed some light on it; and it is proper to mention that the whole of the technical information which follows was derived from a series of visits we were kindly permitted to pay to the extensive manufactory of Messrs. Morison & Co., of Edinburgh,—a firm, we believe, which stands second to none in the kingdom for solidity and accuracy of construction, and beauty of finish. Their reputation as cabinet-makers and upholsterers has in this instance stood in good stead; for it must always be remembered that a billiard-table is just an ingenious combination of cabinet and upholstery work.

The modern full-sized first-class billiard-table consists of a rectangular bed of slate, 12 ft. in length by 6 ft. in breadth, resting on a massive framework supported by eight ponderous legs, surrounded with a ledge of elastic, or rather resilient, india-rubber cushions, covered with green cloth, and supplied with six netted pockets, one at each corner, and one in the middle of each side-cushion. The proper height of a full-sized table is 3 ft. from the floor to the top of the cushions.

The object and intention of all the various games played on this billiard-table is, in the first place, to force one or more solid ivory balls into one or other of the six pockets, by means of a third ball (a hazard), struck by that well-known tapered rod which we call a cue; or, secondly, to force one ball in such a manner as to make it strike other two balls (a cannon); or, thirdly, to make those two strokes simultaneously (a hazard and cannon). The games most commonly played in this country are billiards, pool, and pyramid. Foreign games have often been introduced, particularly those which are known as the Russian and American games. But they have never very long stood their ground against the game of billiards properly so called, which is played with two white balls and a red. This well-known modern game is, in fact, a combination of the ancient hazard game with that of the Continental cannon, and is played as the game of Englishmen in every quarter of the globe.

These definitions will probably serve our purpose for the present, since we must on no account be guilty of the presumption of trying to unfold the intricacies of the game. Theoretically it will be perceived that this rectangular table contains two equal squares inside the cushions; but in practice this exact mathematical ratio is departed from. The precise measurement of the bed in all good tables is 12 ft. by 6 ft. 1½ in. We tried to get some explanation of this seeming geometrical irregularity; but we could find none excepting that which the celebrated Stradivarius assigned for the shape of his priceless violins,—viz., it was the result of the longest experience of the best players. In fact, it was at one time the fashion to make billiard-tables square, round, oval, octagonal, and of various other shapes; and on the Continent these variations of form are still by no means uncommon. The ordinary billiard-table of the French provinces is an oblong of 8 ft. by 4 ft. without pockets, and hence, of course, only fitted for the cannon game.

The timber most suitable for the framework of the best tables is either mahogany or walnut. Fine oak may also be employed with advantage; but in either case it is of the last degree of importance that the planks should be properly seasoned. It is, of course, possible to construct a table with good Baltic timber, or even with Norwegian pine; and in point of fact many tables in Copenhagen and Christiania, and other cities in the north of Europe are so constructed. But the tendency of inferior timber to warp is fatal to the principle of absolute rigidity essential to a good table; and we believe we are correct in stating that the best material for the framework is good mahogany.

Supposing this timber properly seasoned, and cut to the requisite scantlings, the first step in the order of building up is to produce the eight ponderous legs, which are turned 7 in. or 8 in. in diameter, out of solid mahogany. It was the fashion some years ago, in the dark ages of billiard-table manufacture, to model the feet of these legs upon the orthodox pattern of a dining-room chair; that is to say, of tapering downwards through several members to the lowest extremity where the smallest diameter rested on the floor. But we have now changed all that. The foot of a modern billiard-table’s leg bears the same

resemblance to the tapered foot of a table or chair that the foot of an Indian elephant does to that of an Arabian horse. The reason for this change of form in the design,—which some may think is at the expense of elegance,—is clear enough. The superincumbent weight, as we shall presently ascertain, demands the utmost solidity of foundation. Those legs are turned, carved, and fluted to any desired pattern; and it is hardly necessary to say that in this particular there is a considerable outlet for taste and expense.

Having now got our legs reduced to order, the next important step in the frame-work is to produce the side-rails and bearers which unite them. These consist of four massive slabs of mahogany, about 10 in. in breadth by 3 in. thick, usually panelled on their exterior surface and often elaborately carved. After being properly prepared they are strongly mortised and bolted into the square plinth of the legs, exactly after the manner (only with double the strength) in which a heavy four-post bed is bolted together. There is this further general resemblance in construction to the four-posted bed that the side-rails support a set of strong inside rails, nine in number, 6 in. by 1½ in. in their section; only the great difference is, they are not laid transversely. In order to gain strength and stability these inside rails are crossed at right angles and at proper intervals, besides being strongly mortised into the side rails and to each other. When all these outside and inside rails are securely bolted to the massive legs the lower framework of the table is completed.

We now arrive at the most important of all the modern improvements on the billiard-table, viz., the slate bed. This bed is composed of five thick slabs of the finest slate which can be obtained from the quarries of Bangor or Penrhyn, in Wales. These slabs are first of all ground to a perfectly level surface by the best means which our mechanical ingenuity can devise,—that is, by the attrition of fine silicious sand and water used with a huge flat iron or "float"; and, secondly, they are jointed with that minute accuracy which is said to have characterised the marble masonry of the Parthenon, the joints of which refused to admit a slender thread of gold. When we state that this slate bed weighs something approaching to 15 cwt., our readers will see that it is a very different affair from a hair mattress, and will recognise the necessity of the strong framework upon which it rests. It should be mentioned that many London firms employ slates of only 1 in. or 1½ in. in thickness; but those we saw in Edinburgh were 2 in. thick. This increase has been found in practice to give the surface greater solidity and smoothness, together with greater power of resistance to atmospheric changes. Slates have been introduced into the beds of billiard-tables only within the last twenty-five years, and the improvement has been great. Previously to that period, timber, stone, and even iron, were all in use, but with very inferior results. After the invention of the planing-machine, it was thought that cast iron would supersede all other materials; but, although perfectly level when fitted up, the true plane of the table soon gave way to changes of temperature, and the hollow reverberation created during the game resembled those sounds we are all familiar with in a railway tunnel. On the whole, there has been no material applied to the beds of billiard-tables, nor probably ever will be, that can equal in the essential requirements those heavy slabs of Welsh slate.

The cold, hard, and obdurate slaty bed has now to be provided with a smooth and warm blanket,—in other words, it has to be covered with green cloth, the very best West of England, varying in price from 18s. to 34s. per yard. This cloth is known in the trade as "broad billiard green," and is always specially manufactured for the purpose. West of England is preferred by all good makers to Yorkshire wool, not only on account of its finer quality, but also of the superiority of colour and finish. Why the cloth should be green invariably, and usually a dark shade of that most positive colour, is a question we cannot answer, except on the old hypothesis that it is most agreeable to the eye. Red tape may do very well in good hands; but, fancy the effect of a scarlet billiard-cloth! It was for long a mystery to us the method by which this cloth was so beautifully stretched and bound over the slate; but the process is simple enough. Fillets of wood, about 2 in. broad, are secured through countersunk holes to the under edges of the slate, and to these wooden fillets the cloth is stretched and nailed.

We now arrive at the "crowning of the edifice,"—namely, the cushion rails and the cushions. These rails are six in number; that as well as their length being necessarily determined by the six pockets. They are constructed of the same timber with the same degree of finishing; and their primary purpose is to serve as a basis for the elastic cushions and next as a convenient support to the pendent pockets. They are screwed to the edge of the slate with several bolts to each piece; in fact, the slate is for the purpose of receiving the different bolts and screws we have mentioned, drilled in thirty-two places vertically and laterally. That beautiful close and level joint made at the junction of the cushion rail with the cushion cloth is effected by a "feather" (or wedge), filling the groove the whole length of the joint, from which the cloth is stretched over the cushion, and so tacked to the deal below. The cushions after the slate bed are the most important, and we must add, the most tantalising members of the whole structure. All good billiard playing is thrown away upon bad and non-elastic cushions. At one time the cushions were stuffed with hair and layers of cloth. We have even heard of hair being employed. But the introduction of india-rubber, which occurred almost contemporaneously with the introduction of slate, created an entire revolution in the manufacture. The newest form of cushion has, attached to the ordinary basis of deal, about eight piles of strip rubber, varying from ¼ to ½ of an inch in thickness, so convolved as to make the projection inside the table from 1½ in. to 1½ in. altogether. From good india-rubber cushions a ball struck moderately hard will traverse the table three or four times from end to end; indeed, on some very fast tables as many as eight passages may be made. But the fastest tables, we understand, are not always the best.

It is of the greatest importance to regulate the temperature of the room, as affecting the elasticity of the cushions; and for the same reason it is the custom, particularly in clubs and public rooms, where there are regular attendants, to run a hot-water pan round the cushions every morning as soon as the table is brushed. But this, it must be told, takes a great deal more pains than private people to keep their cushions in order; and, moreover, the tables there are in more or less constant exercise. In a private house, on the other hand, a table may stand cold and neglected for several months at a time. In such a case, the native rubber cushions turn as hard as stone, and it requires a good deal of time and attention to restore them to their proper tone. To meet this frequent objection, a new and improved form of cushion, made from vulcanised indiarubber,—that extraordinary substance in which all the properties of the original gum are metamorphosed by a chemical combination with sulphur,—is employed, which is not affected by ordinary changes of temperature, and accordingly does not turn hard when the room is cold, or the table not in use. It may be added that these vulcanised cushions are built up from strips or sheets in the same manner as the others, which are made from native rubber. These cushions are screwed on to the inside surface of the cushion-rails, through their timber bases, by means of common screw nails; the cushion-rails are themselves screwed on to the ledge of the slate by means of bolts; the pendent pockets are attached to the pocket-rails by means of stout semicircular solid brass rims; and the table, as far as its construction goes, is now completed.

There now remain the processes of finishing and fitting up. All first-class tables are veneered with choice Spanish mahogany on the flat surfaces; the heads of the bolts are concealed in the cushion-rails by means of knobs, and on the edges of the legs by means of raised panels or templates. The whole timber surface, including the carving, is, of course, magnificently polished; and the cloth and cushions are elaborately ironed. It is necessary to add that the table is accurately levelled and properly tested before it leaves the warehouse. We have only to add here that the cost of such tables ranges from 80l. to 150l., though a very good table may be had for much less than the lowest of these sums. We had something to say about the balls and the cues; but our space is exhausted. The regular billiard-ball is made from the finest African ivory, perfectly spherical, 2½ in. in diameter. The red hazard-balls are dyed with vermilion, and the pool and pyramid balls with other pigments according to their tint. The table is nothing without the balls; and the balls

are nothing without the cue. That well-known, long, slender, tapering instrument is made from many varieties of timber, including lance-wood, boxwood, Brazil-wood, and other curious wood; but nothing is so serviceable, and, actually, successful, as thoroughly-seasoned ash. It cannot, however, enter on this subject at present; nor can we dwell on the details of accessories of the billiard-room—the long butts, rests, maces, and more particularly the marking-board, which, in its present improved condition, is a most ingenious invention. We shall devote a few words, in conclusion, to the process of fitting up the billiard-table in a billiard-room.

When a billiard-table has to be fitted up in a country mansion not originally designed with a billiard-room,—the makers usually advise the proprietor, if the room be on the ground floor, to support it with a solid block of masonry corresponding to the superficial area of the table. In upper rooms they always endeavour to the flooring and strengthen the joists with cross-braces; for it must be remembered that the entire weight of a first-class table is from 20 cwt. to 25 cwt. The best covering for the floor is plain cork carpet; kamptulicon, and that class of fabrics do not answer the purpose so well. Sometimes a rich Brussels carpet is laid down in which case an ornamental matting is made to surround the table on its four sides. All levelling the floor the first operation is to fit the odd-looking lights, with their shades. The next is to fit up the framework; then to put the slates; next to stretch the cloth; screw the cushion-rails and pockets; and finally brush and iron the surface and spot the table ready for play.

THE ITALIAN CINQUE-CENTO AND THE EARLY FRENCH RENAISSANCE.

At the last ordinary general meeting of the Architectural Association, held on Friday evening, the 26th of June, Mr. F. C. Penrose read a paper, entitled "Influence of the Italian Cinque-cento on Early French Renaissance." In the course of his remarks he said that the Cinque-cento Renaissance, style or phase of architecture, and deserved to have, great interest for it. It was perhaps the most plastic style on which they could base modern architecture. It was not the grandeur of the Egyptian nor of the Greek, nor had anything been achieved in style which could compare in dignity with the earlier Gothic or the Romanesque,—in this it included the best specimens of the North and he ventured to call the Romanesque more solemn than the thirteenth-century Gothic. It must be granted, however, the Renaissance, properly so called, had been used,—was, fundamentally,—in so few of the more important cathedrals and churches of Europe, its capabilities had never been brought to still, he thought, they were justified in this of it rather as suitable to civil, palatial, domestic purposes than to ecclesiastical. Speaking thus of the Renaissance, he exhorted St. Peter's at Rome, and other churches such as St. Paul's, built on the fully developed classical idea, from this category altogether. In this place, he neither affirmed nor denied if these might compare with those of St. Eustache; but he was speaking of St. Eustache; in Italy, such design as the front of the Cathedral of Pavia, which might indeed compare favourably with the later Gothic, but not in respect of dignity with the earlier. But leaving alone the question of the suitability of the Renaissance architecture for ecclesiastical buildings, he ventured to offer it as an opinion, formed upon study of many years, that for buildings, ecclesiastical the greatest success had been attained in the Renaissance style. In Italy it was nothing to surpass the Venetian palaces built by Sansovino and San Michele; by Michele at Verona, by Bramante and Baldassare Peruzzi at Rome, and by Galeazzo Alessi at Genoa. In Spain the finest results were of this period. The finest he would quote was the Town-hall of Seville. In France the Palace of Chambord and the older part of the Louvre would alone suffice to give to this style the rank in that country of palatial architecture. The arts which took so deep a root in Greece were exotic amongst the Romans; but were fashionable, and patronised by the Romans. There were, however, other races of Italy of Greek or Etruscan origin, with w

they flourished naturally, and amongst their descendants they ultimately revived. Wherever classical antiquity had left important traces, the Mediæval architecture and sculpture were deeply influenced. For instance, in the South of France, especially in Provence, details of Romanesque work were to be met with which it required some discrimination to distinguish from classical work. Nor was this surprising. Even the northern architects thought that they were allowing out and reproducing the forms of classical architecture, and they owe much, if not most, of the originality shown in their works, to the difficulty of access to the ancient models. This separation of the Northern artists from the ancient models, however favourable it might have been to the development of a new style of architecture, was not advantageous to that of the sculpture of the period; and it was from Italy that the influence came which, although of very limited period, brought up the Mediæval culture to a very high state of excellence. To the famous Niccolò da Pisa the credit must be assigned of this reform which, beginning with his works about 1225 at Pisa, extended gradually to Rheims, Westminster Abbey, and Lincoln. His impulse was, however, soon lost in Northern Europe, and the sculpture of France, England, and Germany degenerated much more than did the architecture, more at least than did the English Perpendicular. This Italian search for excellence in sculpture and painting was accompanied by an extraordinary desire to recover the lost or buried literary treasures of antiquity; and Dante, Petrarch, and Boccaccio, were among the most influential and the most laborious in bringing the lost treasures of learning again to the knowledge of their countrymen, and through them gradually to the rest of Europe. Chaucer, born 1328, soon responded as an author; at England went on for about a century and a half before Chaucer began to write,—before the date of the Mediæval arts of architecture, sculpture, or painting was run down to its lowest ebb, and returned with the flood tide of the Renaissance. Both in England and France the turn of the tide was nearly contemporary. In France, however, had still more reason than the English for hailing the new style. In the Perpendicular the English had achieved at least one building worthy of all time—the King's College Chapel, Cambridge; whilst in France there was nothing but the pitter and prettiness of the Flamboyant; and probably, in consequence the Renaissance took more decided and stronger root in France than in England.

After tracing in detail the general revival of classical architecture in Italy, which began in Florence with Brunelleschi in his first work of the Church of San Lorenzo, which would be about 1420, Mr. Penrose went on to say that it was then received in various parts of the North of Italy, then by Rome and Venetia, San Michele importing into the Venetian and Venetian examples much that he had gathered from his own studies of antiquity. Germany followed, and, through the influence of Henry VIII., it was received in England some years before it took any hold upon France; but it did not take root amongst the English as it did in France for some time. In France and Spain it was received about contemporaneously. One of the earliest and most characteristic of the Renaissance efforts in France connected with church architecture was the eastern portion of the church of St. Pierre, at Caen. The whole of the structure was Gothic; but the stalls were to a great extent classical. The chief difference between the first Italian and the first French examples had been, that the French had borrowed the detail whilst still employing the general form derived from the Gothic. England was brought into the growing fashion by Henry VIII. inviting Torregiano, a Florentine, to put into the new chapel at Westminster a monument to his father. Torregiano's hand was probably to be found in the fine Renaissance screen and stalls, scarcely inferior to any similar works added in the reign of Henry VIII. to King's College Chapel, Cambridge. The designs for the painted windows of the same chapel have been referred with some probability to Holbein, who was at that time established in England. There was a small but elegant and, for England, almost unique example of early Renaissance at Tiverton, Devonshire, in a chapel built by John Greenway, a merchant, dated 1515. The style of the work rather suggested that French aids were employed in its execution. Referring to the Renaissance. About the year 1530, Francis I., whose military excursions into

Italy although unsuccessful had given him a strong feeling of admiration for the arts of that country, invited the artists Rosso and Primaticcio, and subsequently Serlio and Benvenuto Cellini, into France, which gave a new impulse to the style which was soon exhibited in the Hôtel de Ville in Paris; the *châteaux* of Fontainebleau, Chambord, and that named Madrid; and the Château Gaillon, both near Paris. That of Madrid was entirely destroyed, and of the Château Gaillon, only a screen which was built, forming one side of the court, remained, and was preserved in front of the Palais des Beaux Arts. This monarch also built other palaces, and the chief feature in them was their towering roofs, ornamented with tiers upon tiers of dormer windows and turret staircases of the most picturesque and fantastic character. There were still other beauties in the shape of doorways and window-dressings, ornamented with great delicacy to satisfy the eye on nearer approach. At this time, about 1540, France possessed two native artists of the very highest character—Bernard Palissy and Jean Goujon. Jean Goujon, if not himself known to be the architect of any buildings, was known to have added to them their greatest charm. His sculptures in the great court of the Louvre, and his "Fontaine des Innocents," which was recently removed and its character destroyed by the restoration, put Jean Goujon on the very highest pinnacle of merit as a Renaissance architect and sculptor. The noble painted windows of the chapel in the Château of Vincennes were executed from his cartoons. He was shot whilst working on a scaffold at the "Massacre of St. Bartholomew," in 1572. The Hôtel de Valois at Caen, though not large, was one of the most graceful buildings of the more picturesque class—such as Chambord and Blois,—with quaint dormer windows and the combination of sculpture figures of heathen and Jewish worthies with fine arabesques by the same hands, no doubt, who, a few years earlier, had finished the neighbouring church of St. Pierre, was extremely pleasing. For the great court of the Louvre, Francis I. invited designs from Serlio, who probably considerably influenced the design; it was purer than the other works mentioned, where the French character had more scope. Whatever Serlio might have done, however, the actual architect was Pierre Lescot. The architecture of this palace was of so high and pure an order, bringing the delicate Italian feeling into a more robust growth as suited to northern latitudes, that it was one to which their attention should be particularly turned, because there was considerable danger lest in using so malleable a style as the Renaissance they should be led to indulge in licence, as their school was very much too apt to do. They found abundance of freedom, but still wholesome restraint, in this great palace. He had here indicated an example which they should all follow, from the able pen of Sir Digby Wyatt, who had written of it:—"It remains for us only to invite the student to cultivate the beauties as sedulously as he could, and eschew the extravagancies of the Renaissance style. Where great liberty is afforded in art, no less than in poetry, great responsibility is incurred. In those styles in which the imagination of the designer can be checked only from within, he is especially bound to set a rein upon his fancy. Ornament let him have in abundance; but in its composition let him be modest and decorous, avoiding overflourish as he would nakedness. If he has no story to tell, let him be content with floriated forms and conventional elements in his enrichments, which please the eye without making any serious call upon the intellect; then, where he really wishes to arrest observation by the comparatively direct representation of material objects, he may be the more sure of attaining his purpose. In a style which, like the Renaissance, allows of, and indeed demands, association of the sister arts, let the artist never lose sight of the unities and specialities of each. Keep them as a well-ordered family, on the closest and most harmonious relations; but never permit one to assume the prerogative over another, or even to issue from its own, or to invade its sister's province. So ordered and maintained, those styles are noblest, richest, and best adapted to the complicated requirements of a highly artificial social system, in which, as in that of the Renaissance, architecture, painting, sculpture, and the highest technical excellence in industry, must unite before its essential and indispensable conditions of effect can be efficiently realised." Upon the walls were hung photographs and drawings illustrative of the subject treated, to

which Mr. Penrose directed attention from time to time, and several casts illustrating the French and Italian Cinque-cento had been kindly lent for the occasion by Mr. Brucciani.

In the discussion which followed, Mr. Stannus thought that the subject—the influence of the Italian Cinque-cento upon early French Renaissance—was especially interesting now that the style of English architecture appeared to be turning in that direction; and several persons he had heard of had visited the valley of the Loire to study the styles. In discussing the question it was necessary to recollect that before the time of Charles VIII., the Flamboyant, a late kind of Gothic, was in existence; and one could see how the details crept in, and how the Gothic architects used the Gothic structural forms, but adapted the delicate ornaments of the Italian style to these forms. One ought to remember that a great number of the details of art, of what was called Francis I. style, came from metal-work chasing. With respect to applying Classical details to Gothic construction, there were many buttresses that were treated as pilasters with moulding round them. He considered that the Renaissance in France was hardly the style to be emulated, the style of a century and a half later being much better. The Renaissance style, he believed, came to France through fashion; there was no particular liking for it on the part of the French; but Charles VIII. and Louis XII. saw that the Italian work was rising up, and they invited the Italian men to Paris; and, of course, when it became fashionable in Paris it was fashionable all over France. One great drawback in Italian Classical art was that one always knew the men by whom the work was done, which case was reversed in Gothic art.

Mr. Ravenscroft thought that, with the exception of one or two names, there did not appear to be any school of men in France that took up the Italian work. Was the work of the church of St. Pierre, Caen, he asked, by a Frenchman or an Italian? While the Italians exercised an influence on the French art, he would like to know whether the Gothic in France, in its turn, exercised any influence on the Italian work; and also whether the influence of the northern work was felt to any extent?

Mr. Clarkson said, with regard to the more severe buildings of the Renaissance style, he certainly thought that there was something of interest in the great chapel of the Escorial to merit the beautiful description given of it. There was not, he considered, to be seen in England, with the exception of the great cathedral, a building on a grand scale, designed with a grand idea. He would like to know the probable causes that for a century or more made the sudden springing up of the revival or new birth of Classic art to be suspended? There appeared a unity of all art in the sense that the very best work of the Renaissance school was very much on the level of the best work of any other school. The Renaissance work and modern work must also be classed in the same category if it only had a true quality in itself.

Mr. Acton Webb thought that the Renaissance had certain defects which were difficult to overcome.

Mr. Penrose, in reply, said that he did not propose the work of St. Pierre, Caen, for immediate study; but what he did suggest, as suited for their severe study, was the court of the Louvre, which was a work of the highest class. He quite agreed that many of the finest works had been produced by men whose names were unknown, but, generally speaking, in the finest works that had been obtained the leading artists had been supported in the heartiest and most liberal manner by their workmen and assistants. With regard to the question whether the Gothic of France reacted upon the Italian, to a great extent it did; and in the earlier period there were, in various parts of Italy, Gothic buildings of a decided northern style; but at that time Italy was so entirely bent upon the revival of their architecture, that they took no heed of Gothic. The chapel of the Escorial alluded to was a very grand work; the walls of its chapel and the piers and arches were very simple—merely granite; its vault alone, however, was ornamented in a manner that was worthy of very great praise and observation. As to the finest work of the Renaissance school being equal to that of any other school, he did not think that such work could rank with the finest of the Greek, although it might with the best Roman work. The question of the practical use of the Renaissance required more than a single evening

o be devoted to it; but he could say that it was a style which, if properly treated, was capable of the greatest success.

At this stage of the proceedings, Mr. Cadwell trusted that the members would show their hearty appreciation of the services rendered by their president during his term of office. To Mr. Tarver was due in a great measure the success of the session, for besides being very regular in his attendance, he had in other ways worked hard in the interests of the Association. A resolution to this effect was then carried, as was also one to the hon. secretaries.

The President, in response, thanked the members for passing the resolution, and then declared the meeting adjourned till next session.

Before the proceedings terminated, the scrutineers declared that the following was the result of the election of officers to serve for the ensuing session:—

President.—Mr. George H. Birch.
Vice-Presidents.—Messrs. John S. Quilter and Bowes A. Paine.

Treasurer.—Mr. J. Douglas Mathews.

Solicitor.—Mr. Francis Treadell.

Auditors.—Messrs. H. Stannus and F. J. Marvin.

Librarian.—Mr. Walter L. Spens.

Assistant Librarian.—Messrs. R. E. Fownall and L. A. Shuffrey.

Secretaries.—Messrs. S. Flint Clarkson and E. J. Hayes.

Reviser.—Mr. John S. Quilter.

Collector.—Mr. Alfred Hill.

The Committee.—Messrs. H. O. Boyes, T. U. Cutler, E. Flint, J. Johnson, A. H. Kersey, W. Ravenscroft, W. W. Robertson, R. P. Spens, J. Sulman, and E. J. Tatver.

EARLY NOTES ON HEALTH AND SANITATION.

THE Scriptures afford us some of the earliest allusions to sanitary requisitions. The Jews buried their dead outside the cities, and the Romans were forbidden by an express law of the Twelve Tables to bury their dead in the city:—"Hominem mortuum in urbe ne sepelito, neve urito" (Tab. x. lib. 12). Salutiferous cleanliness was enjoined by the ceremonial law, in Dent. xxiii. 12, 13. Linnæus, in his "Amoenitates Academicæ," mentions several instances of smells being noxious or poisonous, specially noticing the bilge-water in ships, and the dung and filth of great cities. The Turks, as well as the Jews and Romans, at one time studied cleanliness in person and home, by getting rid of substances that poisoned the surrounding air. The *London Magazine* of 1765 instances an excellent regulation in Paris not yet imitated in London:—"All the slaughter-houses in Paris have been removed to the faub de Cignes below the capital; before which time the butchers used to slay and prepare their meat in one of the most populous quarters of the city." The principle of establishing regular abattoirs was recognised in Paris in the middle of the last century, and acted upon in the first decade of the present century. In 1765 also burials were forbidden within the walls of Paris, except a considerable fine was paid. Dr. John Rutty, in his "Natural History of Dublin," published in 1772, writes:—"The mischiefs of stagnating air, especially when loaded with putrid steam, have been abundantly shown by physicians in the generation of the low putrid fevers, and particularly by that great friend of mankind, Dr. Stephen Hales, who, with indefatigable zeal, has introduced his ventilators into our prisons, hospitals, ships, &c., to the preservation of many a life; and were it not for the benefit of the natural ventilations above mentioned, undoubtedly this city [Dublin] would be far more unhealthy than it is, though the ill effects of such an air in close weather in the summer, and even in open windows, especially among the poor, are too apparent." That good scavenging and watering of the streets improve ventilation there can be no doubt, and this was understood in Holland long since, for in Amsterdam and other cities the streets were cleaned every morning, before nine o'clock, by the dirt-carriers. In the civic records of the city of London, in the thirteenth, fourteenth, and fifteenth centuries, royal orders, and several municipal ones, will be found for cleansing, and the preventing of nuisances and the poisoning of the air of the city, or of the waters thereof. Orders were even issued against infected persons or lepers entering the city, or leaving their lazar-houses, which were situated outside the town, at Hackney and other places. In 45 Edward III., 1371, a royal order was proclaimed for the preventing of the slaughtering of beasts within the city of London, in which are detailed the abominations and stench that had arisen from the practice. It was ordered that all oxen, sheep, swine,

and other large animals, should in future be slaughtered at the village of Stretford, on the one side, and Knyghtbruggo, on the other [Stratford-le-Bow and Knightbridge].

Antoine Gouan, National Professor of Botany in the School of Health at Montpellier, addressed to the National Convention a paper containing the result of some experiments made by him on the "Preservation of Grain and Roots in Workshops, Magazines, and, above all, on Shipboard." He says, "In the year 1786 I tried the experiment of placing different roots, &c., ripe and newly gathered in a box which I had bored for the purpose of giving admission to mites and other insects. At the corners of the bottom of the box I placed several leaves of hart-wort, the odour of which I knew was noxious to several animals. In another I put leaves of horehound, of rue, and of tansy. The boxes thus prepared remained for a full year on the ground under my shelves. At the end of that term I found the roots, &c., perfectly sound, but the odour of the plants more or less remained, and fearing that it might communicate itself to the outward skin, and occasion a disgusting taste, I proceeded to substitute for the former bitter aromatic herbs, such as a little centaury, wormwood, thyme, mint, &c." He thus preserved the grain for a number of years without renewing the plants. Those he presented to the Convention (1793) had been preserved since 1788. He concludes with the belief that if grain and seed, when gathered ripe, be kept from a moist air, they will preserve for a very long period their vegetable faculties, and may be conveyed in safety and planted with success after the longest voyages.

In the "Transactions of the Society for the Encouragement of Arts" in the last and present century, papers will be found respecting dry rot in timber, foul-air nuisances, &c.; and on the subject of ventilation in connexion. Dr. Priestley in the last century communicated to the Lords of the Admiralty a method of impregnating water with fixed air, obtained from an effervescing mixture of chalk and vitriolic acid, and of making an artificial Pyrmont water. The operation was afterwards improved upon by the invention of Dr. Nouth's glass machine, with Mr. Parker's and Mr. Magellan's improvements. The object sought was to give to ordinary water the properties of mineral waters, for the use of the sick on board ship and in hospitals. Towards the close of the last century, Thomas Henry, F.R.S., of Manchester, a member of the Medical Society of London, published "An Account of a Method of preserving Water at Sea from Putrefaction, and of restoring to the Water its original Purity and Pleasantness, by a cheap and easy Process." This paper was afterwards republished, to which was added a "Mode of impregnating Water in large Quantities, with Fixed Air, for Medicinal Uses on board Ships and in Hospitals; and likewise a Process for the Preparation of Artificial Yeast." In the "Memoirs" of the Literary and Philosophical Society of Manchester another similar paper appears by the same author. These papers, and others mentioned, are worth referring to by those who are interested in all that appertains to the history of public health preservation. In the *Phil. Trans.* will be found several particulars relative to providing fresh water for ships, and the value and necessity of cleanliness and fresh air in ships and buildings.

In an article entitled "Military Reveries," by Dr. Saint John, of Waterford, in the *Anthologia Hibernica*, for March, 1793, the following words under the sub-heading of "Health," occurs:—"The sooner a campaign begins in spring and the sooner it terminates in autumn the more healthy. Troops should be encamped on the side of a dry hill. A quantity of limestone should be burned, and on every Saturday or other stated day in the week, be thrown into the necessities at the rear of each regiment. The power of lime to dry up animal substances in fermentation is astonishing and immediate; and this would prevent putrid fevers and the contagion of fluxes." The continuation of the subject and the advice given are equally good. In an article in the same magazine for the month of March, entitled "Thoughts on the Nature and Cure of Scurvy," there are many curious remarks concerning the nature of soils and atmospheric air. The writer thinks that "mixed soils, therefore, like mixed elements, are the most proper for the support not only of the vegetable but animal creation. A due proportion of calcar, silice, and argill seems to be productive of the most salubrious air." In the same article we come upon a passage in relation

to the earth houses or sweating-houses worth producing here. It is the old form of Turkish or rather ancient British baths. "Even in this island, the common people have a great predilection in their favour, considering them as a general remedy in most disorders; for which purpose small conical houses are frequently erected on the confines of bogs, woods, and other places, where firing can be had at little expense, and which the sick are brought in order to be sweated, and by that means restored to the health. Sweating-houses and fumigating-baths are of the greatest utility in northern climates, and if generally practised in this country would cure or prevent many disorders of which we now complain." In the *Anthologia Hibernica* for June and July, 1793, a "Treatise on Elementary Air" appears, which is both amusing, interesting, and suggestive. The subject is treated in eight chapters. Chapter 1. Of Air in General, and the *pabulum vite* of it; 2. Elementary Air gives cohesion to solid bodies; 3. Different States of Elementary Air, and how to discover it; 4. Immutability of it proved; 5. Its Effects upon the Land; 6. Its Effects upon the Water of the Ocean; 7. On the Internal Effects of Elementary Air; 8. Useful in Spas, &c.

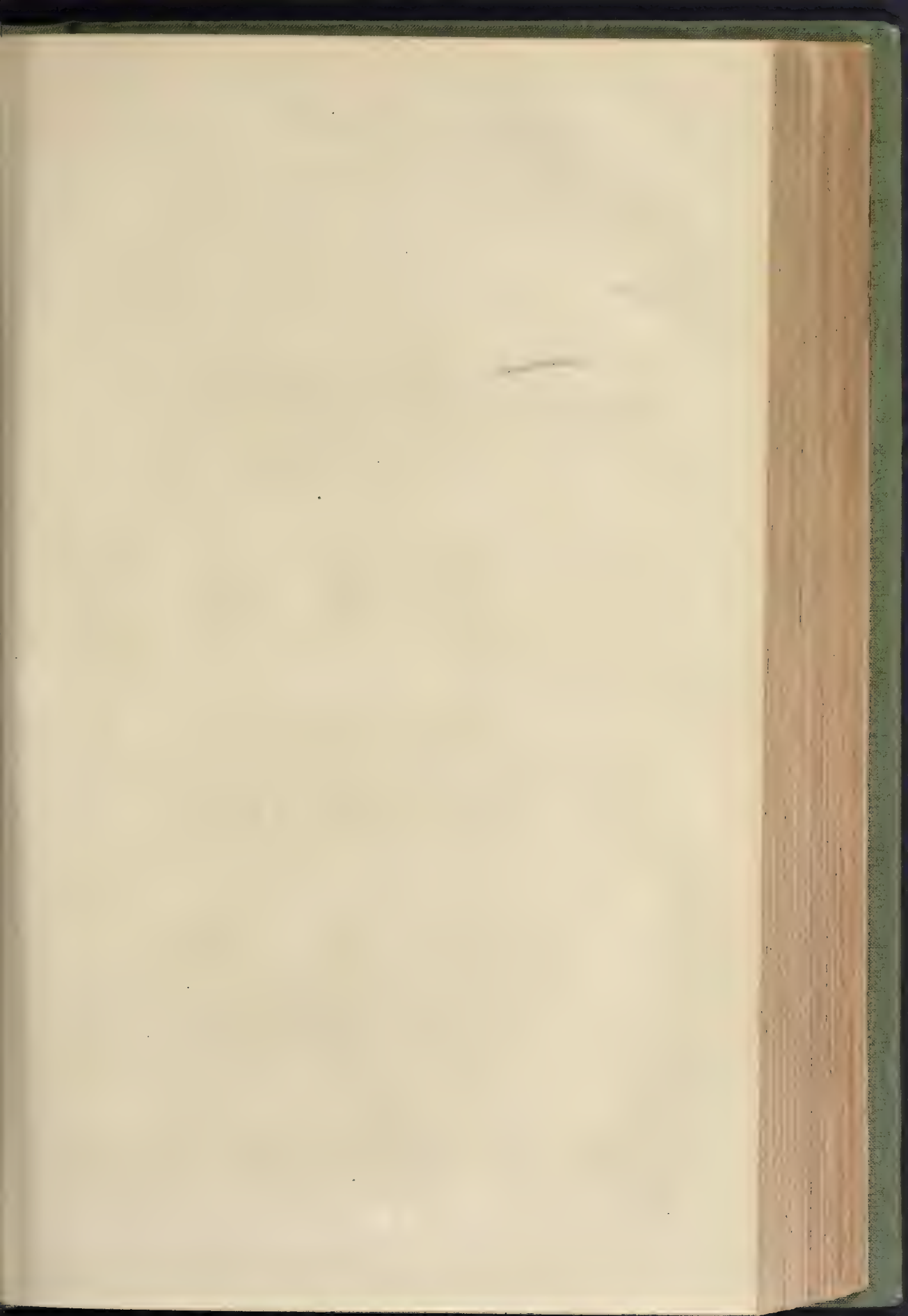
Two works were published in the last century and were considered popular early in the present century, one of which at least possesses an interest from its author's name—"Observations on Smoky Chimneys, their Cause and Cure, with Considerations on Fuel and Stoves. Illustrated with proper Figures. By B. Franklin, LL.D. London: sold by I. & J. Taylor, High Holborn." The second was entitled "An Essay on the Construction and Building of Chimneys, including an Inquiry into the Common Causes of their Smoking, and the most effectual remedies for removing so intolerable a Nuisance, with a Table to proportion Chimneys to the Size of the Room. Illustrated with proper Figures. New edition. By Robert Clavering, Builder, London." The *Measuring of Chimneys Reformed*, is the title of a work by Venter Munday Linder. Printed in the year 1717. It has some curious plans and comments on the subject treated, but it says nothing upon ventilation. The author produced another curious book for the use of building operatives, entitled "The Marrow of Measuring," before the date mentioned.

To sum up for the present, we may mention that scattered through the old volumes of the *Gentleman's Magazine* during the last century several odd particulars will be found in relation to ventilation and the public health, and it means adopted by individuals and public bodies to meet the difficulty. It has taken a long time to make people listen.

THE TEMPLE.

The benches of the Inner Temple have been decided to erect some new chambers on their land adjoining the Thames Embankment in continuation of Harcourt Buildings. A similar extension of the Plowden Buildings is projected by the authorities of the Middle Temple, and it is proposed that if possible the two societies should agree upon a uniform style of elevation for their respective new buildings, the southern end of which will face the river. Mr. Sydney Smirke, R.A., was architect and surveyor to the Inner Temple for many years, and until he relinquished the active practice of his profession. On his resignation, the benches decided to separate the offices of architect and surveyor, and not to have an official architect. Mr. Cates was accordingly appointed surveyor, and the post of architect was left vacant with the intention of nominating an architect for a particular work for which his services might be thought necessary. In pursuance of this arrangement, the benches passed a resolution the 12th inst., appointing Mr. Edward M. Barry, R.A., to act as their architect in respect of works now proposed, and above described. The new buildings will occupy a conspicuous position as regards the frontage towards the river and will mark the boundary at this point of the property of the two societies of the Inner and Middle Temple. Mr. St. Aubyn acts as architect on behalf of the latter body.

Shaftesbury.—The governors appointed carry out the scheme of the Endowed Schools Commissioners for founding in this town second-class school for boys, have obtained an excellent building site, and have elected Mr. James Sopitt their architect.





THE ECONOMIC LIFE ASSURANCE COMPANY'S OFFICES, BRIDGE STREET, BLACKFRIARS.
MR. EWAN CHRISTIAN, ARCHITECT.



THE SHAKESPEARE FOUNTAIN, LEICESTER SQUARE.—MR. JAMES KNIGHT'S ARCHITECT.

THE OFFICES OF THE ECONOMIC LIFE ASSURANCE SOCIETY.

The Economic Life Assurance Society, founded 1823, erected their new offices in Bridge-street, Blackfriars, of which we now give a view, 1873, the jubilee year of the society. The new buildings cost about 13,000*l.*, and were erected from designs, and under the superintendence, of Mr. Christian. The front is of red brick and terra-cotta,—the terra-cotta supplied by the Watcombe Works, near Torquay; all ornaments being designed by the architect, and modelled under his immediate supervision. The arch is partly of stone, and has granite shafts, the carved capitals and wrought-iron gates of elaborate and agreeable design. The office and principal rooms are handsomely decorated, the ceilings framed with moulded wood panels and panels.

The contractor was Mr. Braas, of Old-street, and Luke's. The modelling of terra-cotta arches and first-floor windows was done by Mr. Jeffers, and is very creditable to him; and the wrought-iron gates were executed by Mr. Rivell.

THE NEW BARRACKS AT GLASGOW.

MAKED progress is now being made in the construction of the new barracks at Maryhill, Glasgow, which are intended for the accommodation of the troops stationed in the city. The work was commenced so far back as the year 1869. In late Mr. John Kirk, the contractor, agreed to have the buildings completed within three years at a cost of about 100,000*l.* The year after the undertaking was commenced, however, dispute arose between the War Office and the contractor, which resulted in the suspension of the works. The quality of certain materials used in the construction of the barracks formed the subject of dispute, which had to be ultimately tried in a court of law. Representations to the Government of the day had at length the desired effect, and the work was resumed under the direct supervision of the War Office. At the close of the autumn manoeuvres at Cannock Chase last year the 32nd company of Royal Engineers, under the command of Capt. Gehle, were sent to Glasgow. This company, which numbers eighty men, all being skilled workmen, accompanied by a detachment of the 64th Regiment, and strong, and by a body of civilian artificers numbering between 400 and 500.

The barracks, with recreation and exercise ground, occupy an area of thirty acres, the site on a portion of the Garrioch estate, Maryhill. The land on the west side slopes down to the valley of the Kelvin, and has been secured by Government with a view to its being used as an exercise-ground. The barracks are enclosed within a high wall, constructed in bastion form, with a series of projecting angles. There are three entrances, the main gateway, with handsome stone piers, on the Maryhill-road, and the second entrance from Garrioch parish road. As originally designed, it was only intended to provide accommodation for Infantry troops, but the plans now comprise artillery and cavalry quarters in addition. The quadrangular form has been selected, with open parade-ground in the centre, measuring 490 ft. by 380 ft., and will accommodate in all 600 single men, with quarters for fifty-eight officers, twenty-one staff-sergeants, and forty married soldiers.

The position occupied by the officers' quarters at the north of the parade-ground, and they consist of a range of three-storied buildings, measuring 350 ft. in length. They are now nearly completed, and being finished with cut stone, are both massive and ornamental in appearance. The site of the soldiers' quarters, both married and single, is to the south of the parade-ground. There will be four buildings, two being of three stories, and the remainder having three stories. The former will accommodate 240 and the latter 360 men. Two of the blocks are in a forward state, but the others have not yet been commenced. The canteen recreation-room and little-alley will also be to the south of the parade-ground. To the east of the soldiers' quarters are ranges of buildings, all of one story, consisting of quartermaster's quarters, stores, regimental and barrack stores. Immediately to the south, and extending to the boundary wall are the provost's establishment, water-magazine, baths, and cook-houses. Ranges of buildings for married sergeants are situated on the east side of the parade-ground. The staff-sergeants' quarters are to the south

of these, and also facing the parade-ground. The sergeants' mess-rooms and kitchen will be near the same spot. There is, also, to be a chapel, gymnasium, five-courts, and an infant school in this portion of the site. Only the foundation of the chapel has yet been laid. It is to be in the Gothic style with open timber roof having a bell turret at the west end. On the outside of the boundary wall of the barracks are a series of subordinate buildings. The west side of the square was originally left blank in the plans, but it has since been resolved to erect thereon cavalry barracks and stables for one squadron, and artillery barracks and stables for one field battery, with officer's quarters, &c. The foundations have been laid, and the buildings are in course of erection. The plans have also been prepared of a commodious hospital to be erected on the plateau outside the walls and fronting the south. The new building will stand on a pleasant elevation, commanding an extensive view of the wooded valley of the Kelvin lying between the barracks and the west end of the city.

In deciding on the external arrangements of the new military establishment the authorities have included a thorough system of surface and subsoil drainage, while the internal economy comprises all the most recent sanitary requirements and modern improvements. Among other noticeable features, ventilating grates on a well-known principle are to be used for heating the rooms. An opening is made in the outer wall, and a stream of fresh air passes to a hot-air chamber at back of the grate, whence it is carried by a vertical shaft to the upper part of the room, into which it is admitted by a grating below the ceiling. The vitiated air passes through a foul-air shaft at one end of the room, and escapes through the roof. The stone used in the construction of the buildings is obtained from two quarries opened on the ground, and it is hoped the supply may prove sufficient for the whole work. Fortunately one of the quarries furnishes facing and the other backing stone. At the former a steam crane is being used, by means of which the slabs are hoisted to the top of the quarry, from which a line of rails has been laid on a nicely-adjusted declivity, so that the wagon runs down by force of its own momentum, application of a brake being all that is necessary. These rails were originally made for Sir Garnet Wolseley's expedition. Sufficient coal has also been obtained above the rock, which is being quarried to serve as fuel for all the steam machinery in use. Hopes are entertained that the barracks will be completed about the end of next year, but much remains to be done in levelling the ground independently of the building. The works are being carried on under the superintendence of Captain Gehle and Lieutenants Cardew and Chippendale, assisted by an efficient departmental staff.

A memorial was presented to the Glasgow Town Council last week praying them to approach the Government with a view to convert the site of the old barracks in Gallowgate, when vacated, into an open square, and it was decided to take action in the matter.

LINCOLN ARCHITECTURAL ASSOCIATION.

DURING the recent meeting of this Society in Mansfield, Mr. Harvey read a paper on

Bulsver Castle.

The reader traced its history from the time of Peveril down to a recent period. The celebrated Bess of Hardwick believed that she should live as long as she continued to build, and accordingly she pulled down the old fortress and its basement story, and built dining-room, drawing-room, bed-rooms, two dressing-rooms, which were very uncommon in those days, and above these was a dome or cupola, with eight bed-rooms leading out of it. In the recesses outside the rooms the ladies' maids used to sit until their mistresses clapped their hands to call for their attendance. A secret passage from the fortress to the village was left untouched. It was 6 ft. high, and big enough for two men in armour to walk through it abreast. It was now walled up, and could not be entered. In 1607 when the masons were busy on the roof a sharp frost set in which lasted six weeks. During this time no work could be done, and Bess, who was above eighty-seven years of age, could not last it out. She died, and it passed to Sir Charles Cavendish, who built up the gable end,

and part of the ruins, for his servants and guests. His son William, Earl of Mansfield, was a devoted and beloved friend of the unfortunate Charles I., and entertained the King several days in the Castle. In 1633 when the King left he told him he would come the next year; and bring the Queen to partake of his hospitality. One hundred workmen were at once summoned, and on the return of his Majesty, Duke William welcomed the Queen in regal state in a suite of rooms which he had built for her reception. The King and Queen stood on the balcony, which still remained, and bowed to the subjects assembled below to greet them, whilst Ben Jonson, the poet, acted before them a mask called "Love's Welcome." Duke William added greatly to the ornamentation of the castle. He also built the first riding-school ever seen in England, the shrubbery ground serving as his tilt yard. On the fall of King Charles he escaped to Antwerp, and there wrote his celebrated treatise on horsemanship, a work which was still prized as an authority on the subject. One of Cromwell's generals took possession of the Castle, and the mark of one of their cannon balls was still to be seen on the walls near the stables. After the restoration of Charles II. the Duke and Duchess returned to the Castle, and it was kept up in its entirety until 1740. Shortly after that date there was a disastrous fire at Welbeck Abbey, and the then Duke of Portland sent over his wagons to Bulsver to remove the leaden roof to assist in repairing his damaged buildings. It was ultimately assigned to the clergyman as some compensation for the tumble-down vicarage-house, and the living was given to one who restored the Castle to its present state, and finished it as well as he could. In its dilapidated days it was preserved from intrusion at nightfall by the terror of a ghost, who was said to be the Lady Arabella, niece of Mary Queen of Scots, a lady who was set up by the Roman Catholics as a claimant to the throne. The cries of Lady Arabella were now no longer heard, and there were no ghosts at the Castle. She died mad in the Tower of London in 1615.

The Rev. Henry Cottingham discoursed on

Hardwick Hall.

observing that its history carried the mind back to generations of noble men who had been the possessors of it. The manor of Hardwick was granted by King John to Andrew de Becham, and later on it was held by the annual rental of 3 lb. of cinnamon and one of pepper. The Hardwicks possessed it for six generations, when Elizabeth, the third daughter and co-heiress of Mr. Jno. Hardwick, brought the estate to her second husband, Sir William Cavendish, from whom it had descended to its present noble owner. The building, surrounded on all sides by an undulating and well-timbered park, presented in the distance, or when viewed from a nearer point, a striking feature in the landscape. Of the founder of the building they had no certain evidence; but in the central part of it vestiges remained among the ruins which were of the time of Henry VIII. There was a stately room still to be seen which, from two colossal figures over the fire-place, had acquired the name of the giant's chamber. It had long been considered by architects as a perfect specimen of grand and beautiful proportions, and he had authority for saying it was thought fit for the pattern of a room in the palace of Blenheim. A portion of the original building was standing until the time of William III., when it was pulled down and the timber used at Chatsworth. The present house of Hardwick commenced about 1576, and was finished about 1600. The statement current in the neighbouring villages that Hardwick Hall had more glass than wall was literally true, and nothing could present a more fairy-like appearance than it did when the setting sun threw its golden rays upon it, and lighted it up with its splendour. To state who was the architect who designed and superintended the building was no easy matter; but the Smithsons, father and son, who were architects of Wollaton Hall, had probably a claim on this monument of great professional genius. The chimney-pieces were very fine, being larger and better executed than those in the old hall. One in the dining-room was decorated, and in words of gold they were admonished that the conclusion of all things was to fear God and keep His commandments. The glory of Hardwick was its tapestry, and in this respect it was not excelled by any other house in the kingdom. In the great hall along the grand staircase the subjects were mostly taken

from Robens whilst in the Presence Chamber, the history of Ulysses is represented. In the long gallery there was tapestry more ancient, dating as far back as 1428, and that on the staircase, from the costume of the figures and treatment of the subject, was probably of a still earlier date, and was very grand. The pictures were by Holbein, Moore, Sir J. Reynolds, Gainsborough, Sir Francis Grant, and many others, and were an excellent collection. Mary Queen of Scots was detained at Hardwick seventeen years in the custody of the Earl of Shrewsbury, and there was her portrait at full length as she appeared dressed in a mourning habit. It was dated 1578, the 36th year of her age, and the tenth of her captivity. The noble earl and his wife did not agree very well together. At first all was happiness, and he thanked God he had met with such a woman; but a change came.

Mr. M. H. Bloxham, of Rugby, read a paper on

Roof Screens, Roof Lifts, and Roof Altars.

He said during the first two centuries of the Christian era they had little information of material buildings purposely erected and set apart for divine worship. In the early part of the third century, however, places appropriated to the purposes of Christian worship appeared, and in the latter part of the same century or early in the fourth, some slight account was given of the arrangement of the sacred structures. "Let the building," said an old document, "be long, with its head to the east and its vestries on both sides at the east end." At the commencement of the fourth century, in the tenth and last general persecution, it was ordered by the edict of Diocletian that the churches should be levelled with the ground. Many of them were consequently destroyed, but on the cessation of the persecution others were built, and not a few heathen temples were converted into churches. In the fourth century a distinction between the different portions of the church, the body and the sanctuary, which were now designated as the nave and chancel or choir, was shown to have existed. In our own country of Britain the introduction of Christianity appeared to have taken place at an early period, though at what precise time could hardly be ascertained. He passed by the story of the Pope who flourished in the year 180, but they knew that the bishops of the ancient British church attended the Council held in the year 314. Bede told us that the Pagan Saxons, in their successful endeavour to obtain ascendancy in the country, destroyed the churches of the British Christians, slew their priests, and upset the altars. Augustine came on a mission from Rome to introduce Christianity, and there was an allusion to one religious church, the church of St. Martin, near Canterbury, probably on the site of the present church. He believed the reconstruction to be of a period not earlier than the twelfth century, but it contained, worked up in the wall, Roman tiles and bricks, evidently fragments of an earlier structure. Remains of ancient British churches were by some thought to have been discovered on the coast of Cornwall under the diggings of the sand, but he did not think we had any churches or remains of churches in this country earlier than the seventh century. In these they saw the present features of arrangement, the tower, the nave, and the chancel; the tower sometimes placed at the west end of the church and sometimes between the chancel and the nave. The Saxon chancel arches were often exceedingly narrow, and he did not think there was any screen or division of wood across these arches in the Anglo-Saxon churches. He believed the division between the chancel and the nave was formed by a curtain. The earliest chancel-screen he had met with in this country was one now removed from its original position in the church of Thurstaston, in Leicestershire, a village known as the birthplace of Bishop Latimer. Specimens of screen work of the fourteenth century, though not very numerous, were more common than those of an earlier period, whilst in the fifteenth chancel screens were so numerous that he did not think it necessary to refer to any particular examples. In several old documents they found that money had been left to build roof-lofts, and in Machin's diary was the following entry:—"The second year of the Queen Elizabeth was all roof-lofts taken down in London." In the visitation articles of Archbishop Parker, in 1569, inquiries were to be made whether the altars had been taken down, whether the images and other monuments of idolatry and superstition were destroyed, whether

the roof-lofts were pulled down according to order, and whether the partitions between the chancel and the church were kept, showing that the screens were to be kept.

CISTERNs AND DRAINS.

COUNCILLOR JAMES GOWANS, of Edinburgh, has done some service to his countrymen by publishing his views—which are very sound as far as they go—on the important question of the bad sanitary condition of their cisterns and drains. The subject is not new, of course, to our readers; and those who choose to refer back to our researches on the condition of Edinburgh, Glasgow, Stirling, Perth, Dundee, and other towns in Scotland will find that we then pointed out the very prevalent but fatal mistake of planting water-closets in the very centre of the tenements, destitute of any communication with the external atmosphere, and accordingly without either light or ventilation. At most we found as a general rule that both of these elements were derived from the common stairs, which thus became, in every sense of the word, a common nuisance; and for this obvious reason, that the common stair itself was unventilated and ill-lighted. Such evils were not confined to common stairs. Nothing, we also discovered, was more common in the water-closets of self-contained houses than the cistern which supplied the water for domestic purposes being placed immediately overhead; and, considering the great powers of absorbing gases which water possesses, we came to the inevitable conclusion that such cisterns were, as a means of propagating disease, dangerous in the extreme. Writing with similar views, Councillor Gowans, at the request of the Local Health Committee, has recently issued the following suggestions (see the *Scotsman* of June 20th), premising that although he does not wish to alarm any one unnecessarily, still a large number of fatal cases are constantly occurring which may be traced to such highly imperfect sanitary arrangements. We condense the gist of his observations. He recommends—

1. To cleanse thoroughly and systematically all cisterns which contain water for domestic supply.

"Cisterns should only be placed where easy access can be got for cleansing them at fixed periods, and those who leave town for the summer season should not neglect to have their cisterns seen to before they again occupy their houses, and also that the water is let on so as to fill cess-pools (or traps) which, during their absence, have become dry. Cisterns ought to be in a convenient and accessible part of the house, and not stuck up in the roof, or immediately under or over water-closets, as many are. In large establishments I would have a cistern-room, where everything would be clean and cool, as it ought to be."

2. To cut off all connexion between such cisterns and the house-drains. The overflow-pipe of the cistern is usually connected with the cesspool of the closet, whereby the bad air of the drain finds an outlet, within an inch or two, it may be, of the surface of the water in the cistern. Cut off this connexion with the drain, and allow the overflow to vent into the bath, sink, or other open space.

3. To provide a special cistern for the supply of all sanitary conveniences. Wherever it can be done I would have two cisterns, one for domestic supply and the other for sanitary purposes; because, although the overflow-pipe of the cistern may be cut off from the drain or soil pipe, you have still a pipe in connexion with the closet, which at best is objectionable. [Very objectionable indeed.]

4. To see that all traps to cesspools have an air-pipe to prevent suction. As to the fourth, many of the traps or cesspools in use are deceptive, owing to the want of an air-pipe, and no householder should rest satisfied until he has seen whether this indispensable adjunct is attached to the cesspool or not. A double trap is the surest preventive, as the one bend always holds good while the water or soil is being displaced in the other. [Bad gases will force their way through even "double traps" if there be no ventilation.]

5. To see that the outflow-pipe of fixed wash-hand basins empties to the open air. As to wash-hand-basins, where these are connected with the soil-pipe, nothing is more likely to allow bad air to get into a dwelling, and if the outlet cannot be got quite apart from the drain such basins would be better dispensed with altogether.

Mr. Gowans then proceeds to comment on some of the evils of the present system of water-closets, and urges very strongly upon Scotch architects the necessity of planning houses in which these sanitary conveniences, as well as all

others, should be lighted and ventilated from the outer wall of the building. When this is done drains are kept where they ought to be, as the drains are placed under the building there is great risk of the sewage finding an outlet from badly-made joints, whereby the whole stratum gets gradually soaked, and the house becomes unhealthy very soon. And, therefore, I would advise householders to put more care upon dwellings where the water-closet, soil, or such places are kept on the outer wall. This were done, I am certain that many of the cases which swell up our death-rate would be prevented, and the difficulty there is in carrying out the Provisional Order and Public Health Acts would be more easily overcome.

It is impossible to overrate the importance of such suggestions; and we are sorry to understand that neither of the numerous Acts of Parliament relating to the public health of cities, towns, burghs, and populous places in Scotland has the necessary power to make such provisions compulsory. Notwithstanding all the legislation bestowed upon Scotland during the last twenty years, sanitary matters remain very much in their previous condition. Villages and towns are every day built; unsanitary tenements are every day erected. There is no proper supervision of the construction of a house-drain; of its connexion, whether level or otherwise, with the street sewer. As to the ventilation of sewers we have very little account of progress. I cannot but share in the opinion of the great necessity of making the following appeal to plumbers—"A word to plumbers before I am done. No tradesmen connected with the erection of a house have a greater responsibility in the way of making it healthy or unhealthy. Cess-pools without air-pipes, badly-made joints, and such like results in what they themselves would deprecate could they foresee the consequences, and I would beseech them not only to do their work thoroughly, but to set their minds to such contrivances as would prevent bad air from getting into houses at all, as far as their work was concerned." [Only we are just afraid it may turn out augury. "I can call spirits from the vasty deep," says Owen Glendower. "So can I," says Hotspur, "or any other man. But will they come?" Plumbers are rather more prone to indulge in the pastime of burning down cathedrals in our day than of inventing improvements. But let us hope they may take "a thought and mend."]

THE LATE SIR CHARLES FOX.

THIS eminent civil engineer died at Blandford Heath. He was the youngest son of Dr. F. Fox of Derby, and was born in that town in the month of March, 1810. He intended to be a young man to enter the medical profession, and studied for some time with this object in his brother, Mr. Douglas Fox. His natural bent, however, in the direction of engineering and constructive design, and even in early years he manifested unusual mechanical skill. Therefore, at the age of nineteen, according to the *South London Chronicle*, joined the well-known Mr. John Ericsson, then in business in Liverpool, to whom he was attached, and where he assisted, among other things, at the trial locomotive engines at Rainhill, on the Liverpool and Manchester Railway, in the year 1829. He was then placed by the late Mr. Robert Stephenson on the London and Birmingham Railway, then in course of construction; first at Watlington and afterwards in charge of the Extension Works from Camden-town to Euston-square. Upon completion of this work, he joined the late Mr. Bramah in the manufacturing firm of Bramah, Fox, and some time afterwards, upon the death of Mr. Bramah, became the senior partner in the firm of Fox, Henderson, & Co., of London, Smithwick, and Renfrew. Since the year 1841, he has practised in London as a civil and consulting engineer, with his two elder sons, who have continued the business under the firm of Sir Charles Fox & Sons. During the forty-five years of his professional life, Sir Charles had been engaged in works of magnitude in all parts of the world. He was the inventor of Fox's safety switch, contributed largely to the improvement of permanent way and fittings of railways and ironwork construction generally. His civil work, however, was the building in Hyde Park for the Exhibition of All Nations in 1851. The late Sir Joseph Paxton having suggested the idea of a structure of iron and glass, up to that time never applied on a large scale, Sir Charles (aided by Mr. Fox) was enabled, from his intimate know-

with a thickness of case in proportion to the quantity, would produce a concussion of the air sufficient to cause some such result as those I anticipate. In preparing such an article a small tube should be left from the first for the insertion of the fuse, and each layer of paper, &c., should be dry before covered with another. In firing such an article, advantage should be taken of any elevation.

G. A. ROWELL.

THE LATEST CRAZE.

It was with mingled feelings of surprise, wonder, and amusement that I read Mr. Stevenson's paper on "The recent Re-action of Taste in English Architecture," together with your leader thereon. Truly I felt inclined to offer, as did Arcturus Ward in one of his amusing stories, "Five dollars to the man who tells me who I am and where I am!" So we are at last landed in this anti-climax of the age of revivalism, the so-called "Queen Anne Style." Having discovered a new *point de depart* we are now to trot merrily along until we suddenly find it to be all a mistake, and have to "hark back" to another age, which, as a natural reaction to architecture based on cabinet-making, will perhaps be the neolithic age of stone.

Seriously speaking what inference are we to draw from this instability of taste? Can it be otherwise than that the art of architecture is a lost one, and that all our ideas of it are based on principles that are fundamentally false? Certainly it seems to me to be reduced to something just above tailoring, and a trifle beyond millinery! Let us see if we can philosophically account for the latest chance.

Undoubtedly of late years the artistic element has been predominant, and the architectural features and forms in use not having been naturally evolved by the necessity of the day, but rather the result of an over and, to a large extent, unintelligent admiration of antiquity, the utilitarian view has forced itself upon us; but not being natural in anything we do in architecture, rather than trust to our own resources, we have fallen back on the age of Queen Anne, and a less artistic age it would perhaps be difficult to find; therefore, as being the greatest novelty, we have chosen it.

That man is an imitative animal was a discovery made even long before Dr. Darwin published his views; and were one inclined to be sarcastic, which I am not, it might be said that the "missing link" would be looked for in the architectural profession; indeed, with all this constant reversion to olden types, it would hardly surprise me to find our ears growing pointed, the canine teeth becoming longer, and other symptoms of a return to the ancestral forms which the greatest naturalist of the day has credited our progenitors with.

Without claiming for myself any special exemption, it seems to me that the practice of the profession is too often to design pictures and then build them. One cannot but admire the skill in this way, shown by some of our rising men; and though I, as much as any one, admire some of their spirited designs, it is at the same time with a lurking suspicion that all is not right,—that in fact, they are, though good compositions, picturesque in outline, varied and harmonious in detail, architecturally speaking, an embodiment of false principles. This is a feeling that has grown with me, and which the Queen Anne bathos into which we have glided, is not likely to do otherwise than strengthen.

To criticise is easier than to point out a remedy for the architectural evils of the day; but so far as my experience goes, I think a course of scientific training would be the best corrective of this excessive,—if I may coin a new word,—artisticism. Whatever the abilities of our architects may be, and they are great in particular lines, there is a sad want of scientific knowledge such as that which Wren pursued, and which made him, independently of fashion and taste, an architect of all time.

T. MELLARD READ.

Value of Land near Plymouth.—At a sale, Saltmoor and Woodvale, West Whiteleigh, comprising a dwelling-house, farmhouse, cottage, and 51a. 2r. of pasture, arable, and garden land, were purchased for 3,250*l.* Lot 6, 3a. 1r. of garden, pasture, and arable land at Honicknowle, bought for 750*l.* Lot 7, 24a. 1r. of pasture and arable land at Honicknowle, sold for 1,800*l.* Lot 10, 17a. 1r. of arable land was bought for 755*l.*

SEWER BUILDING.

"An Engineer" says in the *Builder* that the plan of manholes or lampholes as given in Mr. Latham's book was devised by Mr. McKie some twenty-two years since, and was subsequently matured by Mr. Rawlinson and Mr. Lawson. Let me inform him that a plan of mine for "manholes" to a tubular system of sewers was published and distributed among engineers long before Mr. McKie, or Mr. Rawlinson, or Mr. Lawson devised and matured it. In truth, my plan, and that of E. Wiebe, which "An Engineer" says was adopted from Mr. Rawlinson's works, are so nearly alike, as will be seen on comparison, that one would infer the latter was borrowed from my plan and evidence.

The following is the evidence referred to, extracted from the First Report of the Metropolitan Sanitary Commission, 1847:—Proposed Access to Tubular System of Sewers.—"Would you build side entrances to a tubular system of sewers?—In some situations I would do so; but I believe their use, in some degree, might be superseded. Means of access to the sewers, so as to be able to get at and remove accidental obstructions, would readily suggest themselves. A shaft, having a strong movable grating, on top, could be built over the sewer, with ladder-irons built in the angles, to admit a man to go down and up, with a recess at the bottom on one side to give room. This shaft may be also made to serve as a ventilator." My idea was to build a series of "manholes" to the pipe-sewers at the intersections of streets, and at intermediate places "for inspection, for cleansing, for flushing, and for ventilation," as described by "An Engineer," as well as for obtaining long curves at the angles and connections which could not be obtained by the usual pipe junctions and bends.

JOHN PHILLIPS.

VENTILATION OF DWELLINGS.

SIR,—It appears from the *Builder* of June 6th, p. 475, that the directors of the Improved Industrial Dwellings Company desire designs, with descriptive particulars, for dwellings for the industrial classes, to be erected on a large site in Goswell-road, and that they offer premiums of 250*l.* and 150*l.* for the first and second best plans, and amongst the particulars relating to construction to be observed are:—

(a.) The dwellings must be self-contained, with the entrance-door opening to the external air.

(b.) Each dwelling must be so arranged that a free current of external air can be passed through the dwelling by opening the doors and windows.

Now in Spon's Dictionary of Engineering, just completed, there is a very elaborate article on Ventilation, illustrated by forty-nine woodcuts, and occupying about twenty-six pages of letterpress, in which occurs, at p. 3,025, the following:

"No system of ventilation can be considered perfect that allows the fresh air to enter at the same temperature as that of the external air, and experience has shown that no such system can be successful even in effecting an adequate ventilation by reason of the opposition it meets with."

The condition of warming the air previous to admission greatly complicates the problem of ventilation, but it must be considered as essential to any system."

These two statements are apparently so very contradictory, perhaps some of your scientific readers will ventilate them, and tell us which is right. My own simple plan, which I have practised for years with a large family, is to always keep bedroom windows open a little at top; in fact, they are so made that they cannot be shut close, and never are, except on the very coldest nights in mid-winter. Bedroom doors are also left a little open, care being taken that no draughts pass over the head of the beds. This keeps us all in good health, and free from doctors.

J. B.

Farringdon Market Competition.—We are informed that the Corporation of London have awarded, on the recommendation of the Markets Committee, the following prizes, in regard to the designs which were submitted in competition for this building:—First premium of 300*l.* to Mr. Lewis H. Isaacs; second premium of 200*l.* to Mr. J. D. Mathews and Mr. Thomas Blasbail; third premium of 100*l.* to Mr. T. E. Knightley. The three extra premiums of 50*l.* each were awarded respectively to Messrs. Butler & Deshon, Mr. Robert Walker, and Messrs. Driver & Rew.

THE STRIKE AT CHARTHAM.

SIR,—I have this moment had my attention drawn to a notice in your publication for 1 week, headed "Canterbury," which states that "500 bricklayers and labourers employed Chatham on the County Lunatic Asylum had struck work for an advance of 4*d.* an hour, you go on to say, "the contractors (Messrs. Furness) are under an engagement to complete the work under a specified time."

I know you are anxious to do justice in all cases, and as your information is not quite accurate I think it desirable to put you right by giving you the facts. In the first place, it is not "Messrs. Furness" who have the contract, but "F. Furniss"; and secondly, only the bricklayers asked for the one o'clock on Saturday, the labourers were willing to continue the system of working until four o'clock on the day; but as the labourers would have been no less without the bricklayers, I offered them one o'clock system, which they accepted with the advance of 4*d.* an hour.

I trust that as in all contracts there is a time named for completion, but my contract with the justices fully provides for any extension of time in consequence of any delay caused by strike, and I may say that if another attempt is made (this being the second this summer) to gain further advantage, the justices are ready and willing to stand by me, as I am paying bricklayers 8*d.* an hour, and labourers 5*d.* an hour, and this is considered an excessive rate for that part of the country.

FRED. FURNISS.

RESCUE FROM FIRE.

WHILST examining the stock of a retailer in indiarubber articles, I inquired the use of a lot of stout vulcanised rope cut into various lengths, and was informed they were for boys' catapults. It occurred to me that the manufacturers of these articles might drive a more useful trade than exciting boys with those dangerous machines, knock people's eyes out. I beg to propose a cable secured to the first and last house in a street under the coping, a strong brass ring at hook, with a rope to bring the hook to any house and window in the row, to rescue inmates from fire; those below to pull the life-line down when they have tied a sheet, &c., round the rope for the hook; by the same means a man could ascend to the window to assist others.

R. T.

RE-OPENING OF ST. MARTIN'S, DORKING.

THE restoration of St. Martin's Church, Dorking, involving an expenditure of about 11,000*l.* now approaches completion. The church is so far rebuilt as to be reopened for divine service. The tower and spire only remain unfinished for the present. The new edifice raised on the foundations of the ancient parish church. The demolition of the late church commenced in August, 1872, and the foundations of the tower were laid by the late Bishop Wilberforce on the 29th of May, 1873. Upwards of 8,000*l.* have been subscribed or promised towards the amount required (namely, 6,600*l.* for the church, and about 1,450*l.* for the tower).

The chancel was rebuilt in 1866, at the expense of the late Mr. Henry Forman. The architect of the chancel was Mr. H. Woodyer, of Grafton, who was instructed to prepare plans for the completion of the church, removing the central tower and spire, and reconstructing the chancel and tower. The plans, for the most part, standing on the old foundations, consisted of an elongation of the chancel by one bay, instead of the tower (formerly used by the choir), no and south transepts, the former of which contains the organ; a nave and its aisle of four 21 ft. bays, and south porch and western steeple, the tower of which is already carried up as high as the nave roof, or nearly to the bell floor.

The materials externally are black flint and Bath stone, and the style chosen is Decorated; internally the blue Forest stone has been used for the piers, and the severe arches are moulded. The clearstory is divided by piers into bays, each containing three engaged and two light windows. The spire, when completed, will reach a height of 200 ft. and springs from the tower, supported by an arrangement of pinnacles and carved buttresses. The south porch, when built, will of considerable size, and carefully worked. A portion only of the fittings of the nave have

present been completed. The contractors are Messrs. Goddard, of Farnham, under the direction of Mr. Davidson, clerk of the works.

CHURCH AT LEYSDOWN.

The Archbishop of Canterbury lately consecrated the new Church of St. Clement, Leydsdown (near of Sheppy). The building which recently stood in the churchyard had no claim to the title of old, as it was only erected in the year 1784, and was quite unfit for the purpose to which it was devoted. There was an ancient church standing on the same site in the time of Henry III., and it must have been a building of handsome proportions. Much of the old stonework was found in taking down the late edifice, many battlements, mullions, tracery, &c.; also a sort of a Norman arch, giving evidence of the early origin.

The new church has been erected by Mr. C. H. Whitstable, from the designs of Mr. R. H. Fowler. It stands on the site of the early church, and encloses within its walls the ancient manor. It is built of Kentish Rag and Bath stone, the inside being red brick, and has a nave, chancel, vestry, and porch.

The east end is considerably elevated above the nave, and the altar-table is covered with a cloth, principally worked by the wife of the vicar (Mrs. Lewis), the super-frontal being the work of Miss Rigdens, of Faversham.

A new vicarage-house is about to take the place of the present dilapidated structure.

BRISTOLTON CHURCH, NEAR BRISTOL.

This church has just undergone very extensive works of repair, and also some additions. The chancel has been rebuilt and lengthened 10 ft.; the north chancel aisle (formerly used as vestry) has also been rebuilt, as both were in very bad condition. The chancel arch, however, though somewhat crippled, was a genuine medieval feature, and being fairly preserved, has not been touched. On the south side of the chancel an organ-chamber has been erected. The nave and south porch roofs have been opened, and their lath-and-plaster ceilings taken away, and new cornices put. A new panellled ceiling has been made for the north aisle in lieu of the lath and plaster. The south aisle roofs have been repaired and cleaned where necessary, and new cornices. The new chancel, organ-chamber, and chancel-aisle, all have oak panellled roofs, that to the chancel being widely moulded, and with ornamental cusped panels. The north chancel aisle is now provided with seats, and separated from the chancel by an open arch screen, while the vestry is placed at the west end, under the tower, divided from the nave by panellled oak screens. The cumbersome galleries, with which the church had to an unusual extent been provided, have all been taken down. The five arcades have been repaired, and on the south side rebuilt. All the high pews have been removed and replaced by open benches of American oak, with solid square-moulded panels. On the chancel more elaborate benches have been added with open tracered fronts. The whole floor of the church (except under the seating) has been paved with encaustic tiles, arranged by the architects. The chancel pavement is rich, with glazed and pattern tiles, and Plymouth marble steps. All the tiles are from Lurgan, near Hereford. The old Jacobean pulpit has been cleaned and repaired, and put on a substantial stone base. New stone crosses to the gables have been placed, each of a different design. All the windows have been reglazed with leaded glass, in ornamental lead quarries, several tints. The new east chancel window, however, filled with painted glass, designed by Messrs. Clayton & Bell, and is a memorial to the late Mr. W. H. P. Gore Langton, M.P. The ruin of the old churchyard-cross has now been removed by a new cross of appropriate design. A considerable sum has been spent in changing the bells to the tower, with the addition of one new bell, new frames, &c. The total cost (exclusive of the bells and frames) will probably be about 2,900l. Messrs. Wall & Hook, Brimscombe, near Stroud, were the builders, and the architects were Messrs. Benjamin Grey and Edmund B. Forrey.

Fortune's Favours.—A jobbing painter in Strathairn, Fifeshire, has, it is said, by the aid of a distant relative, come into possession of property valued at nearly 100,000l.

ST. PAUL'S, CLERKENWELL.

The foundation-stone of the new church of St. Paul, Clerkenwell, was laid on Saturday last by the Earl of Shaftesbury, on the site purchased of the Chartered Gas Company. A large concourse of people assembled to witness the ceremony. The principal part of the money necessary for the erection of this church will be provided by the Ecclesiastical Commissioners of England, out of the sale of the disused church of St. Mildred, in the Poultry, opposite the Mansion House. The church will be erected from the designs of Mr. Ewan Christian, of Whitehall-place, and will seat about 550 people. The architecture will be of the thirteenth century. It will be a structure of Kentish-rag, with a small tower for the bells, and facing Central-street. The audience will be seated on chairs. The pulpit, font, communion-table, chairs, bells, and one or two silvered vessels, are from St. Mildred's, Poultry. The pulpit is quite an historical one, and is carved. There will be three entrances to the church,—one facing Central-street, another under the tower, and the third in Pear Tree-street. It is proposed to raise about 2,000l. more to complete the building, and also 1,200l. to be invested by the churchwardens to help to keep up the 100l. per annum which will be required to carry on the services. A sum of 750l. is being partly provided by the Bishop of London's Fund to erect a mission-house somewhere in or near Old-street.

THE ECCLESIASTICAL AND CHURCH ESTATES COMMISSIONERS AND THE CAPTULAR ESTATES.

The following is a synopsis of the practical working of the "Commissioners' intention to appropriate the estates of the ancient customary tenantry of the Dean and Chapter of Durham."

The intentions of the Commissioners have caused considerable excitement in the North:—

Heretofore each 100l. of annual value has been so apportioned that lessors have had about 25l., and the lessees, or customary tenants, the remaining 75l.

This is explained by the outrents being assumed at 3l. 10s., and each septennial renewal at a year and a half's value, 150l., or 2l. 10s. per annum, leaving a net revenue for the lessee of 75l. per annum.

This net revenue capitalised, at twenty-five years' purchase, gives the lessee an interest in the property, amounting to 1,875l. for every 100l. of annual value, while the lessor's interest in the soil, at the same rates, is 625l.

The terms at which the Commissioners would sell to the lessee their interest in the property, exclusive of the value of timber growing thereon, and exclusive of the material lying underneath, are:

For the outrent, 30 years' purchase of 3l. 10s.	2 10s
For the septennial fine, 15 years' purchase, at 100l.	1 500
Making the Charge for Emfranchisement	£1,605
Add to this charge of 1,605l. the lessee's existing interest in the property, viz., 1,875l. as above shown, and it gives a total cost to him of 3,480l. for every 100l. rental. The cost of a customary freehold, minus the timber, of 100l. rental at 25 years' purchase is 2,500l.	

The result of this figuring shows that for each 100l. of annual value, the Ecclesiastical Commissioners would obtain from their tenants a premium of about 1,000l., and it appears that the Irish Commissioners for the same sort of property, or thing, accepted less than 130l.

SCHOOLS OF ART.

SOME time since the St. Martin's School of Art sent to the Sketch Clubs of the various metropolitan schools of art an invitation to join with them in the first annual competition between the clubs. The terms of the competition were as follow:—Three subjects were selected, comprising figures, landscape, and animals, the sketches for which were to be worked out in any material. The award of honour was to be made to the club producing the best aggregate amount of work, and prizes each of equal value were also to be awarded for the best sketch in each subject. The subjects chosen were, for figures, "Freedom"; for landscape, "Evening"; and for animals, any subject from the fables of Æsop.

The Lambeth School of Art being the only school which had responded to the invitation, the

sketches sent in by the members of the Sketching Club of that school, and by the members of that of St. Martin's, were exhibited at the St. Martin's School, on Wednesday, the 24th ult. Mr. Parker (head-master, St. Martin's School) and Mr. Sparkes (head-master, Lambeth School) were in attendance.

Mr. Parker said he regretted the absence of Mr. Calderon, R.A., who had acted as judge in the matter, and had expressed himself much pleased with the sketches in general. He had, however, had no hesitation in deciding that Mr. Lucas (St. Martin's School) deserved the prize in the figure subject for his water-colour drawing of a tavern scene. He had also spoken in high terms of the illustration of Gray's "Elegy in a Country Churchyard," by Mr. Phillips (Lambeth), to which he awarded the prize for the landscape subject; and he had awarded the prize in the third subject to Mr. Beere (Lambeth), for his carefully-modelled figure of a crouching lion. The award of honour was to the Lambeth School more especially on account of the high quality of the models exhibited by the students at that school.

Mr. Parker regretted very much that the Lambeth school was the only one which had answered the invitation, and expressed a hope that the challenge which would be sent out next year would be more generally accepted.

FROM VICTORIA.

St. Arnaud District Hospital.—The new district hospital of St. Arnaud will form a considerable addition to the charitable institutions of the colony. It is designed by Mr. Joseph A. Schneider, architect, Melbourne, and consists of two pavilions, each 45 ft. by 20 ft., with baths and nurses' rooms at the rear. Each pavilion accommodates twenty beds, and gives each patient 1,400 cubic feet of air space. The administrative block in the centre contains on the ground-floor committee, surgeons', and out-patients' room, dispensary and dispenser's quarters. The first-floor has a temporary ward for females, bath, bed-rooms, and other offices, and in the rear of this central building are the kitchen, pantry, cellar, baths, washhouse, laundry, and lavatory. There is a continuous system of hot and cold water supply, and the general ventilation is upon approved principles. The building is of brick, with cement dressings, and cost 3,500l. in construction.

Fitzroy Town-hall.—This building is described as one of the most imposing edifices surrounding Melbourne. It is situated at the corner of Moor and Napier streets, the front elevation facing the latter thoroughfare. The most striking feature of the building is the clock tower, which, if not strictly classical in its character, is lofty, and is a prominent object, visible from all parts of the surrounding neighbourhood. A loan of 25,000l. had been obtained, and the plans were prepared by Mr. W. J. Ellis, on which plans the structure has been erected. The large public hall is 102 ft. long, 47 ft. wide, and 38 ft. high; the council chamber is 40 ft. long, 24 ft. wide, and 16 ft. high, and has a library conveniently placed of 40 ft. by 20 ft. by 16 ft. The clock-tower, which has four stories, and an open pillared mansard roof, encircled by an ornamental iron-railed balcony, is 17 ft. 6 in. by 13 ft. 6 in. in area, and 104 ft. high. The portico, which stands prominently out from the main building, has six Corinthian columns, each 23 ft. high, approached by a broad flight of out blue-stone steps from the street. The interior of the hall is ornamented with Ionic pilasters, having a covered ceiling and enriched panels. The basement story is intended to be used as corporation offices, and the entire building will be of utility as a place where public meetings, concerts, or other reunions may be held.

Temperance Hall, Richmond.—The situation of the Temperance Hall, Richmond, is at the corner of Church-street and Darlington-parade. The style of architecture is Italian, the structure of brick, cemented externally, standing on a plinth of dressed Malmesbury blue stone. Accommodation is provided in the building for about 400 persons. On the left of the entrance-hall, which is 6 ft. wide, is a library 18 ft. by 12 ft., and on the right are the secretary's office and a cloak-room, also a wide staircase leading to a lodge-room above, 29 ft. by 18 ft. Attached to the front two-storied building is the assembly-hall, 66 ft. by 28 ft. and 20 ft. high, with stage and retiring-rooms at the rear. A feature in the hall is that the corners of the room are rounded. The means of ventilation and egress from the hall have been

carried out in conformity with the amended Health Act. The building has been erected under the superintendence of and according to designs furnished by Mr. J. A. B. Roch, architect, Richmond, at a total cost of 1,100l.

Clunes Town Hall.—The town-hall of Clunes, of which the *Australian Illustrated News* gives an illustration, is one of the most pretentious of the public buildings of the non-metropolitan boroughs of Victoria. It is built of brick and stone, and the tower can be seen from all parts of the district. The foundation was laid by Sir Charles Gavan Duffy, at the time he held office as chief secretary. The building comprises three bays or compartments; the first being the central, containing the large hall, mayor's and committee rooms; the second, the police-court, magistrates' rooms, &c.; the third or left wing, the borough offices. The approach to the central hall is by a flight of steps leading to a portico of columns with carved capitals, which support an ornamental arch. This leads into a good-sized vestibule, and a flight of stairs thence to the great hall, which is 142 ft. by 47 ft. Care has been taken in the construction to provide for ventilation, and for rapid egress in case of fire or other emergency. Above this apartment is the clock-tower, 104 ft. high, for which a large clock is being made by Mr. Sleep, of Ballarat. The designer has arranged for all the executive offices to be in close proximity to each other. The architects are Messrs. Fox & Oakden, of Ballarat; Mr. Davey being clerk of the works; and the contractor, Mr. William Cowland, also of Ballarat.

Town Hall, Wangaratta.—This township is one of the most important opened up by the North-Eastern Line, and has a population of about 4,000. Competitive plans for a town-hall were called for in December, 1874. Only a portion of the building is at present erected, viz.:—Council chambers, town-clerk's and surveyor's offices, and public reading-room. There is yet to be added a town-hall, 48 ft. by 30 ft., by 20 ft. high, with pannelled ceiling; also, a public library and store-room. Tenders were called for in 1867, and the lowest for the whole was 3,670l., but the council being unable to expend more than one-third of this amount, a portion only could be proceeded with. Now there is a railway communication, which has cheapened the price of materials, the rest of the building will perhaps be soon proceeded with. The architect is Mr. M. Egan, of Melbourne.

MOVABLE SCHOOLS, LIVERPOOL.

The Liverpool School Board have decided to remove the Love-lane Schools to a new site at Walton-lane. These schools, together with those in Mill-street, our readers will remember, are constructed on a system invented by Mr. T. Mellard Reade, civil engineer, of Liverpool, by which they can be unscrewed, taken down in sections, and re-erected without damage to the various parts of the structure. The Love-lane schools will accommodate 400 children; and the tender of Messrs. Jones & Son for removing the buildings and fittings, playground-walls, latrines, laying drains, connecting with the sewers, laying on water, &c., complete, amounting to 247l., has been accepted by the Board.

SOUTH NORWOOD SCHOOLS.

SOME time since we mentioned that designs for the South Norwood Schools, to be erected for the Croydon School Board, had been sent in by four architects, and gave their names. The design of Messrs. Rutley & Blackwell was accepted. Tenders for the same have been received by the Board.

The schools are planned to accommodate 550 scholars, with class-rooms, library, lavatories, and play-sheds; also, a master's residence. Quantities were supplied:—

Stephenson	£5,732 0 0
Hearle	5,487 0 0
Legg	5,125 0 0
Smith	5,274 0 0
Hyde	5,176 0 0
Preskell & Taylor	5,169 0 0
Holledge & Smalbridge (accepted)	4,915 0 0

Works of the late Owen Jones.—An exhibition of these works has been opened at the International Exhibition, Entrance, north end of Exhibition-road, Kensington. It includes not only designs but works in the shape of carpets, hangings, wall papers, and so on, as actually carried out, and will be found very interesting.

SCHOOL BUILDING NEWS.

Marshall (Dorset).—An elementary Church of England school, for 160 children, and a residence for school teacher are about to be built at Marshall, Dorset, upon a site given by the dowager Marchioness of Westminster. The materials are local rag stone, with Exbury brick for walls, and plain tiles for roofs. The style is an adaptation of domestic Gothic.

Dereham.—At a meeting of the Local School Board, G. H. Cooper, esq., chairman, tenders were opened for the erection of two new schools, to accommodate about eighty children, one at Toftwood and the other at Elsing-green:—Messrs. Nelson, Bros., Neeton, 976l. 6s.; Mr. W. Lerner, Dereham, 771l. 15s.; Mr. Pearce, Dereham, 820l.; Mr. James Munford, Dereham, 787l.; Messrs. Bone & Monument, Dereham, 448l., Toftwood only. It was proposed and unanimously agreed that the tender of Mr. W. Lerner (with the consent of the Department) should be accepted.

Seaton.—A new school at Seaton, intended to meet the educational requirements of that village and the adjoining village of Camerton, has been formally opened. The school, which stands on a plot of ground in the centre of Seaton, presented by Miss Pearson, of that place, is built from a design by Mr. George Watson, of Penrith. The style of architecture is Gothic, and the building consists of one large mixed school-room, one infant school-room, one class-room, and a master's residence. It is built of stone from a local quarry, covered with 14 in. of cement, and furnishes accommodation for 238 children.

AS TO THE RIGHT OF WORKMEN TO LEAVE OFF AT A MINUTE'S NOTICE.

LITIGATION of a rather bitter character is taking place between the London street masons and paviors and Mr. Griffiths, contractor, stonemason, and pavior, of Bridge Wharf, City-road. The case is this:—

Mr. Griffiths has been summoned by a number of his men to two police-courts for refusing to pay them wages due, and the cause of repudiation is undeniably one of more than usual interest to the workmen themselves, as regards their liberty to refuse joining the trade-unions.

Before Mr. Hannay, the magistrate, it was urged on the part of the employer of the men that those who had sued him had actually struck work because Mr. Griffiths employed hands who refused to join the paviors' trade-union. This impeshment the men did not deny, and contended that, as they were paid and engaged by the hour, they were at perfect liberty to pick up their tools any hour they liked without giving notice, it being the custom of the trade to do so; that the masters were in the habit of taking men on to work at six o'clock in the morning, and discharging them before breakfast, and what was "saucy for the goose was saucy for the gander." The men further complained about the bullying of a foreman, whom they would not work under.

In giving judgment, the magistrate said it was clear, from the evidence, that it was the custom of the trade for the men to leave work at six o'clock, and that they expected no better treatment from their employers. He was bound to say that the men had behaved very arbitrarily towards their fellow-workers, and that they had acted badly in the matter, but he must make an order in their favour, and direct Mr. Griffiths to pay the wages claimed, and he should allow 1l. 5s. costs. Notice of appeal was at once given.

VENTILATION OF LEEDS TOWN HALL.

Sir,—Before the Leeds Corporation, or other public bodies proceed further with the application of the much vaunted system of ventilation introduced there, it is desirable that a thorough investigation of what it professes to do, and of what it really accomplishes, should be made. Its advocates claim for it:—1. Simplicity; 2. Success in the purification of ill-ventilated rooms; 3. The absence of draughts.

As to the first claim, "Simplicity," it may be cheerfully conceded; indeed, a more explicit term would not be out of place. All that is done is to cut away a portion of the window-cash, leaving an opening, which is called the "system," and directness as the lowering of the window, or the removal of one of the upper panes would do. The action would be in both cases precisely the same. The opening is subject to no regulation, but is of the same size in all temperatures, and from whatever quarter the wind may blow.

2. The claim to "Success in the purification of ill-ventilated rooms." Perfect ventilation can only be effected by the removal of the warm air at the top of an apartment, and the replacing it by fresh air at the bottom. Now, this so-called "system" makes no provision for the removal of impure air, and, therefore, after its application all the worst evils arising from the presence of carbonised air remain.

3. The claim for "Absence of Draughts." Having explained above the manner in which fresh air is introduced by this plan, it will be evident that as the air is a fluid, and as cold air is heavier than warm air, not even the philosopher, whose grand discovery has been purchased by our Corporation, can prevent it from falling first upon the heads of the occupants of any room into which it is admitted from above, and then pleasantly diffusing itself around their feet. Having the pleasure of suffering from chronic catarrh and sore throat as the result of the introduction of this "system," I have a right to subscribe myself,

OST WIND KNOWS.

STAINED GLASS.

Tradescant's Home, Bradford.—The chapel attached to this building has just been further enriched by the addition of two stained-glass windows by Messrs. Camm, Bros., of Smetwick, near Birmingham. The subject is "The Good Shepherd," and "Behold, I stand at the door and knock." The figures are on a lig ornamental ground, surrounded by a colour border and bands of colour.

The Priory Church, Bournemouth.—The church has been further beautified by the addition of a stained-glass window, the gift of Mr. Brander family, which makes the sixth two-light window that has been placed in this church by the same family. This window will complete the whole of the north aisle. The subjects are a medallion, and represent, on the left hand, the Act of Charity, with the following text beneath in quatrefoil,—"Inasmuch as ye have done unto me"; whilst the right-hand side represents the Just Steward, beneath which reads, "Well done, thou good and faithful servant." In the bottom of the window is an inscription. This window is the gift of Mr. W. M. Brander. The tracery of the window is filled in with ornamental cinquefoils, containing the arms of the family. The window is the work of Messrs. Cox & Sons, of Southampton-street, Strand.

Langtree Church, North Devon.—A stained glass window has just been completed and placed in this church, to the memory of the late Rev. J. Guard, for thirty-three years rector of the parish. In the centre-light of the window is a representation of Christ blessing Children, and, on either side, in the two side-lights are scenes of the chief of the Apostles bringing disciples to be blessed by Him. The window is by Mr. W. H. Dixon, of London.

St. Andrew's, Derby.—A stained window to the memory of Miss Emma Georgina Clarke, sister of the Rev. J. Erskine Clarke, has been dedicated. The window was supplied by Messrs. Lave Barrand & Westlake, of London, its subjects being St. Simeon and St. Anna. The cost, 4l., was defrayed by friends of the lady.

Church Parish Church, near Accrington.—By large east window in the chancel of this church has been recently filled with stained glass. The window is in the decorated style, and is divided into five compartments, in each of which is introduced three medallion subjects, the central or middle one being considerably larger than the different in form from the other two. In every medallion is depicted one of the principal events in our Lord's life, reserving the most prominent incidents for the large central ones. The tracery openings are treated in harmony with the rest of the window, with floriated ornaments and borders. The window was executed by Mr. W. Gardner of St. Helen's Stained Glass Works, at cartons by Mr. Henry Casolain, of the station, and led to the presentation of three of windows to the same church. It is a memorial window.

Fulford Church.—The large west window of this church has just been filled with stained glass by Miss Wilson, of Fulford, to the memory of her sister. The window is divided into five compartments, in each of which is a figure representing the Presentation in the Temple, the Epiphany, the figures being SS. Simon, Joseph, and Anna and the Virgin Mary. Underneath the figures, in scrolls, is inserted part of the Song of Simeon. The window has been executed by Messrs. Morris & Co., London, from their own designs.

Chichester Cathedral.—Messrs. Clayton & Bell have just inserted stained glass in the east window of the Cathedral Lady Chapel as a memorial of the late Mrs. France, it being the gift of her husband. The subject, portrayed is "Our Lord's Passion." The window is of lights, and there are ten groups introduced, divided by the inscription taken from the Litany, "Oh, Lamb of God, that takest away the sins of the world; grant us Thy peace." The most prominent figure is that of our Lord upon the cross; other groups introduced represent His agony at Gethsemane, His arrest, before Pilate, fainting upon the cross, &c. A Latin inscription, setting forth the object, which the window is erected, runs along the bottom.

St. Luke's, Chatham-place, Hackney.—Stained glass windows have been placed in church, one representing various scenes of the Lord's Passion, and the other our Lord as Good Shepherd and the Light of the World. They were both executed by Mr. W. H. Constantine of Cambridge.

All Souls' Church, Grosvenor Park, Cambridge. The stained glass windows have been unveiled this church. They were the gift of a lady, a member of the congregation, in memory of her husband. The artist was Mr. Constable, of Abridge. The subjects are "The Betrayal," "The Agony," "The Crucifixion," "The Descent," "The Last Supper," and "The Resurrection."

Magdalen Church, North Wales.—A window, by Constable, of Cambridge, has been erected by this church, for Messrs. Lewis and Septimus Wells, in memory of their father.

ARCHITECTURE AT UNIVERSITY COLLEGE, LONDON.

The following is a list of the prizes, &c., awarded at University College in Professor Lord Lewis's classes of architecture and construction:—

FINE ART.—Ancient Architecture.—Donaldson silver medal and first certificate, C. R. Pinkie; second certificate, Harold A. Peto.

Medieval and Renaissance.—Prize in book and certificate, C. R. Pinkie; second certificate, Harold A. Peto.

CONSTRUCTION.—First Term.—Donaldson silver medal and first certificate, Vyvyan Trubshaw; second certificate, C. R. Pinkie; third certificate, H. Wood.

Second Term.—Prize in books and first certificate, Vyvyan Trubshaw; second certificate, C. R. Pinkie; third certificate, W. H. Wood.

A CROMWELL FOR MANCHESTER.

At the last meeting of the Manchester City Council, Mr. Alderman Heywood stated that in Mr. Noble, the artist, had asked the grant of the Corporation of a site in the New Town for a marble statue of Oliver Cromwell, which he had received a commission from a private donor in Manchester. It had since been found a site for a colossal statue, which would be erected to the artist, could not be found in the town-hall, and the lady who had given the commission had resolved that the statue should stand in bronze, so that it might be placed in open air, upon a site to be assigned by the Council. He moved that a sub-committee be appointed to make the necessary arrangements for selecting a suitable site for the statue. He stated that a letter had been received from Mr. Noble, in which he said that the statue should be completed in bronze in a month. The Council was unanimously adopted. The Town Clerk, on being pressed, said the statue was the gift of a lady who was very dear to Mr. Heywood, and added that it was intended to be one of the most successful statues that Mr. Noble had ever executed: a statue of the head in the Reform Club, London, was subject of general admiration.

ARCHITECTS' ACTIONS.

ST. AUBYN V. RANDELL.

There was an action brought by an architect, Mr. Justice Lush, to recover his charges for preparing plans for a school at Stoke, near South.

A committee was formed at Stoke for the purpose of raising subscriptions to build a school. The defendant was chairman of this committee. Sir Edward St. Aubyn gave the site for the building, and stipulated that the plaintiff should be retained as the architect. Mr. Randell, on behalf of the committee, instructed Mr. Aubyn to prepare plans for the school, the cost of preparing which should not exceed 1,000*l.* Mr. St. Aubyn prepared a set of plans, but said that the sum of 1,000*l.* by the committee was quite inadequate. These plans were submitted to the Council of Education but rejected, because no accommodation was provided for the school. No charge was made for this set of plans. A second set was prepared, and this set was approved by the Council of Education. Mr. St. Aubyn expressed an opinion that the cost of the building would be about 2,000*l.* Mr. Randell said he was sure that the cost would not be so high. A tender was sent in for 2,000*l.*, and these plans were abandoned on account of expense. The site of the building was then changed, and the building would not be so compact, and consequently less ornament required. A third set of plans was prepared, and a tender sent in for 2,000*l.* The committee had previously expressed a desire that the building should not cost more than 1,200*l.* The plans were not carried out, and the scheme was abandoned. The reason for this did not appear. Mr. St. Aubyn claimed 500*l.*, being 6*l.* for the second set of plans, 100*l.* for the last set, besides 3 per cent. on 2,000*l.* for the last set, and 3 per cent. on 1,200*l.* for the last set. The defendant paid 40*l.* into court, being 30*l.* for the last set, 10*l.* for the second set.

Mr. J. J. Terry, a member of the Royal Institute of British Architects, was called, and said that although 24 per cent.

was the charge authorised by the schedule of the Royal Institute of British Architects for plans, elevations, and sections when the building is not carried out, 3 per cent. was in this case a fair charge, as working drawings had been prepared; and he said that plans, elevations, and sections in the schedule did not include working drawings.

His Lordship, in the course of a careful summing-up, directed the jury to consider whether the defendant had authorised the plaintiff to prepare plans for a building to cost 2,200*l.*, and he drew their attention to the fact that when the account was sent in, in 1870, no objection was made to the charge of 50*l.* for the second set of plans nor for three years afterwards. He also asked them whether 24 or 3 per cent. was the fair charge.

The jury returned a verdict for the plaintiff for 30*l.* beyond the sum paid into court.

THE CONCRETE MODEL BUILDINGS AT HASTINGS.

On the statement of our agents, Messrs. Newington & Co., Lewes, I informed you that the above buildings were erected with Salento Cement. Messrs. N. & Co. have since discovered that they were in error, and that the Salento Cement they supplied was for other works. I regret the error.

THE MANAGER OF THE SCIENTIFIC CEMENT COMPANY.

"* * We trust the manager will be more careful another time before he calls upon us to insert a statement."

THE PIANOFORTE NUISANCE.

SIR,—Perhaps one of your correspondents can inform me if I have any remedy against my next-door neighbour who renders my house practically uninhabitable by the incessant "teaching" of music; the nuisance rendering it necessary to close some of the rooms entirely, and injuring the house as to letting. In "Ball v. Ray" (the Green and Stable case) Lord Justice Mellish seemed to think piano-playing a justifiable nuisance. It is of serious consequence to householders, as, if it is "so written in the law," any man may take a house in the middle of a row ("terrace") and very soon render his neighbours' houses on each side unbearable, so that they would be glad to sell on any terms. I am not prepared to say whether something of the kind is not at the root of the nuisance in my own case—noises of the most dreadful kind being produced incessantly.

W. H. F.

"* * One of our correspondents was subject to this "nuisance" for several years, and was at last compelled to buy the house to get rid of the tenant, who in spite of notice to quit held on for nearly two years afterwards."

CASES UNDER THE METROPOLITAN BUILDINGS ACT.

D. S. OF HAMMERSMITH V. VAN SENDERS.

The defendant, who had erected, at 23, Gold Hawk-road, a wooden fowl house, of small dimensions, and attached it to a party-fence wall, was summoned before Mr. Fagham, at the Hammersmith police-court, for not giving notice in writing. His contention was that it was not a building. Mr. Knightley, the district surveyor, contended that it was "a building" within the meaning of the Act, and in support of that view read over the provisions of the Act, amongst which such structures as the one in question find no place. He also read Sec. 69, which relates to dangerous structures, observing that if the structure in question was in a ruinous state, it would then be recognised as a "structure" or a "building," and urged that if it was in a dilapidated state the law took cognizance of it; that circumstance, together with the fact that it was not specially exempted, was sufficient to justify the enforcement of the rules of the Building Act. In this view the magistrate concurred and decided in favour of the district surveyor.

CONSECRATION OF A JEWISH SYNAGOGUE, MIDDLESBROUGH.

A new Jewish Synagogue, which has been erected in Brentnall-street, Newport-road, Middlesbrough, has been consecrated and opened for Divine service. The new edifice is a structure built of red brick, with stone dressings. It stands on a site between Brentnall and Baxter streets, and is seated "for 132 male adults." The building has been erected by Mr. Joseph Lord, for the contract sum of 1,650*l.* from the designs of Mr. Edward Tidman, architect, Middlesbrough. In the ceremony of consecration, the Chief Rabbi, Wardens, and others brought the Scrolls of the Law to the door of the new Synagogue, and the Rabbi exclaimed:—"Open unto me the gates of righteousness; I will enter them, and praise the Lord." The door being opened, the Rabbi and others entered in procession, with the scrolls in their arms. The procession then passed up the Synagogue, until it arrived at the ark; thence under a purple velvet canopy and round the Synagogue seven times; during each circuit psalms were chanted by the reader and choristers; and after the seventh circuit of the Synagogue had been made, the curtain in front of the ark was withdrawn, the folding doors were opened, and the scrolls deposited. The canopy was then removed from the centre of the Synagogue, and the afternoon service was proceeded with. In front of the ark was a maroon-coloured velvet embroidered curtain.

MAIDSTONE LOCAL BOARD SURVEYORSHIP.

A MEETING of the Maidstone Local Board has been held, to appoint a surveyor, in the place of Mr. Livingstone, who has gained a similar position at a higher salary in London.

Seven gentlemen who had been placed on the list, selected from the sixty-two candidates, were in attendance, and examined. They were,—Messrs. Anscomb, and Bridge (Maidstone), Morgan (Southampton), Robson (Westham), Watson (Croy), Willard (Tonbridge Wells), and Stovin (Sheffield); and finally Mr. Anscomb was appointed.

The Board provided a luncheon at the Star Hotel for the candidates, and a couple of hours were accordingly passed in a very pleasant and friendly way. Mr. Livingstone occupied the chair, and Mr. Anscomb the vice-chair; and the health, both of the outgoing and incoming surveyors was heartily drunk. In the evening, a number of Mr. Livingstone's friends entertained him at the Bell Hotel. Mr. T. Wells presided.

MEMORIALS TO PUBLIC MEN.

THE first of the series of statues of distinguished statesmen which it is proposed to place in the ornamental gardens known as Parliament-square, opposite Palace-yard, is now nearly completed, and the full-sized figure in bronze of the late Lord Derby, the work of Mr. Noble, sculptor, will be hoisted on the pedestal erected for it. The site is in the centre of the southern garden. The base is of polished red Aberdeen granite, and the cornice of the solid die above is relieved by a chain of oak-leaves and acorns in bronze carried round the four sides, while similar leaves and acorns also run round the top of the columns. On each side of the die spaces are left which will be filled in with bas-reliefs in bronze depicting the House of Commons, a Cabinet Council, the installation of Lord Derby as chancellor of the University of Oxford, and a scene typical of the exertions made by the distinguished statesman in relieving distress during the cotton famine. A similar monument is to be erected in the adjoining garden to Lord Palmerston. The statue is in hand, and it will occupy the central position in the ground facing Palace-yard.

ACCIDENTS.

Bristol.—The Foresters' Hall, Broadmead, has followed the lead of the Alhambra, and been totally destroyed by fire. On Monday evening nothing was observed to be wrong in any part of the building when the performance terminated. About half-past four on Tuesday morning flames and smoke were seen issuing from the roof, and the police and fire-engines were promptly on the scene. There was a good supply of water, but it was found impossible to save the hall. As usual with such places, it burnt very fiercely. The roof was almost completely destroyed. The premises were insured in the Royal and West of England offices in the sum of 6,000*l.*, and the damage done is estimated at about 2,000*l.*

A Bridge destroyed by Fire.—A large wooden bridge on the high road between Doncaster and Sheffield and crossing the river Don near to Donaby Main, has been entirely consumed by fire, the damage being estimated at 600*l.* The bridge separates the townships of Donaby and Mexbro', and the loss will fall upon the two. The fire is supposed to have originated from a refuse heap which had been burning for several weeks past, within a few yards of the bridge.

Destructive Fire in Gray's-inn-lane.—Sage's Buildings, comprising an extensive block of premises, approached from Gray's-inn-lane by an archway, and extending some distance towards Leather-lane in a backward direction, and lying between Baldwin's-garden and Portpool-lane, have been ravaged by fire. The owner of the property, Mr. Sage, provided steam power, and more than a dozen trades were carried on on the premises. The newly-erected school in connexion with St. Alban's, Holborn, was attacked by the flames. The fire destroyed that portion of the building where it originated, and which was six stories in height, the roof of the school being burnt, and other damage done.

"The Cadogan and Hans-place New Roads and Improvements Bill" has been passed, and Royal assent given.

CHURCH-BUILDING NEWS.

Mitcham.—The new church at Singleton has been consecrated by the Bishop of Winchester. The edifice, which contains 550 sittings, has been built from designs by Messrs. Francis, of London, the total cost being 4,283*l*. The chief part of this sum has been the joint contribution of Mr. and Mrs. Harris, of Gorrings Park, Mitcham, who have also erected, at their sole cost, a parsonage and mission-room, on the adjoining ground. The amount of their gift is between 6,000*l*. and 7,000*l*. The site has been in part the gift of Emanuel College.

Gloucester.—The foundation-stone of All Saints' Church has been laid. The family of the Rev. T. A. Hedley, the first perpetual curate of St. James's, offered a contribution of 2,500*l*. towards the building of a new church in the district, one of the stipulations being that the chancel should be dedicated to the memory of their father, and that an equal sum be raised to complete the chancel. This offer was readily accepted, and liberal donations were made. About 1,700*l*. have been raised by subscription, and grants of 900*l*. will be made by the Church Building Society, the Diocesan Association, and the Warneford Trust. After some difficulty a site was obtained in Lower Barton-street, adjoining the Midland Railway, at a cost of 1,086*l*. Sir Gilbert Scott prepared plans for the church, and the contract was taken by Mr. James Clutterbuck for 4,860*l*. The structure will be of stone, with Bath stone dressings. It will consist of a nave, 76 ft. by 28 ft.; chancel, 34 ft. by 20 ft.; chancel aisle, 22 ft. by 15 ft.; south aisle, 76 ft. by 15 ft.; with vestry and south porch. Provision will be made by the erection of a blank brick wall for the addition of a north aisle should that be found necessary and possible. The windows will be tracery, and the roof timbered. Accommodation will be provided for 540 persons, with free sittings. Heating apparatus will be fixed.

Woakey Hole, near Wells, Somerset.—The nave of the church here, together with the lower portion of the tower (which serves for a porch), has just been completed. When finished, the entire design will comprise the tower, situate at the south-west angle, 38 ft. 9 in. high, with a spire, 45 ft. 6 in. high; a chancel, 24 ft. 6 in. long by 21 ft. 4 in. broad (the same width as the nave); vestry, 11 ft. by 8 ft. 6 in.; and organ-chamber, 10 ft. 6 in. by 8 ft. The length of the nave is 46 ft. 9 in.; the height up to the underside of the cornice, 15 ft. 6 in. The church will eventually accommodate 150 persons. The chancel arch has been built, with a temporary wall just beyond. The walls are principally built of the rough local stone, the freestone used being Doulting. Coupled shafts of Kilkenny marble, unpolished, sustain the chancel arch. Externally the roofs are covered with Broseley tiles. The ceilings are of deal, stained in two shades, but not varnished, and thus more capable of future coloured decoration. The seats are low open benches, skeleton framed, and are not fixed to the floor, which throughout the church is of encaustic tiles. The latter, around the font, and to the passages, are in ornamental patterns of different colours, arranged by the architects. The church is heated by one of Porritt's underground stoves. The windows are glazed in ornamental quarries of cathedral glass, variously tinted by white glass intermixed, the design of each window being different. The total cost, including boundary walls, will probably amount to upwards of 1,500*l*. Mr. Diment, of Bristol, was the contractor; Mr. Edward Brooks, clerk of works; and Messrs. Benjamin & Edmund B. Ferrey were the architects.

Stratford.—Trinity Church and burial-ground have been consecrated. The church is erected upon an elevated site in the village, not far from the old parish church and the rectory, and consists of nave, apsidal chancel, vestry, organ-chamber, vestry-porch, and tower at the south-west angle, in which is the principal entrance. The style is Twelfth Century, freely treated, and the building is faced externally with Mendip stone, rubble-worked, and Bath stone dressings both externally and internally. The tower is four stages high, with angle buttresses, the third stage having three piercings, with stone dressings and label moulds for clock dials. The west end of the nave has a triplet window, with stone rear arch, and the north and south walls two-light windows. The chancel has two single-light windows in each bay of the apse, and stone doorway to the vestry porch. The reredos of the chancel is of Bath stone, panelled. The roof of the

chancel is open-timbered and boarded, the whole stained and varnished. To the feet of each principal are carved caps and bases, and polished marble shafts, and the nave principals have carved corbels. The timbers of the nave roof are open, but with moulded panels, which are plastered. The whole of the joiners' work (pews, &c.) is wrought in oak, and polished, the bench standards being cut and moulded. The roofs are covered with Broomhall tiles, the colour of which harmonises with that of the walling. The contract has been executed by Mr. J. W. Falkner, of New Kent-road. The architect is Mr. W. Wigginton, of Cornhill, who superintended the works. The plumbers' and glaziers' work was executed by Mr. Robert Hughes, of Faringdon. The peal of four bells is from the manufactory of Messrs. Warner & Sons; the clock, from Messrs. Gillett & Bland, of Croydon; and the organ, from Mr. H. Willis, of Camden Town. Mr. Grundy's patent apparatus is applied to heating the church.

Books Received.

Horizontal Wells: a New Application of Geological Principles to the Solution of the Problem of Supplying London with Pure Water. By J. Lucas, F.G.S., of the Geological Survey of England. (Stanford, Charing-cross. 1874.) EVIDENCE is here brought forward by Mr. Lucas to show that the larger accumulations of permeable beds are capable of yielding to subterranean galleries quantities of water far exceeding that which could be drawn from their surface.

The materials made use of in the paper, as the author names it, are arranged in chapters under certain headings, viz.:—1. To show need of a fresh supply of drinking-water to London. 2. Sketch of geological principles on which the proposition contained in this paper is based. 3. The principles applied to the case of London; account of geological formations from which supplies may be drawn. 4. Account of the excellent quality of their waters. 5. Statement of the main proposition,—how to obtain the largest possible proportion of quantity of rain falling upon them. 6. Position and heights above sea-level of galleries. 7. Calculations as to probable quantities to be collected by them. All details fall under one or another of these heads. An appendix, embodying the result of observations, has been added since the writing of the paper.

VARIORUM.

The Country says:—"The return of owners of land and heritages in Scotland, recently presented to Parliament, affords much interesting information on the subject of the revenue yielded by its rod-fishings. The amount derived from these fishings varies considerably in different counties, for whilst in Elgin they are valued at 5,848*l*., in Linlithgow they produce only a rent of 10*l*. Taken collectively, the rod-fishings of Scotland are at the present moment worth about 30,000*l*. per annum. The following are some of the figures contributed by the various districts: Aberdeen-shire, 2,510*l*.; Argyleshire, 1,848*l*.; Inverness-shire, 3,012*l*.; Kincardineshire, 2,444*l*.; Perthshire, 2,010*l*.; Roxburghshire, 1,159*l*.; Sutherlandshire, 1,845*l*.; whilst the angling in Elginshire produces, as we have said, 5,848*l*. In a previous impression, we noticed a few of the rentals derived from the Scotch shootings. If to these are added the sums directly received for rod-fishings, the sporting rights at present let in Scotland yield little less than 270,000*l*. When the money necessarily spent by the various lessees is taken into the account, the total value of the fishings and shootings can scarcely be estimated at less than three-quarters of a million per annum."

"Charles Knight Memorial."—A subscriber complains of slow progress, and says,—
"Spasmodic attempts are made to bring it before the public by means of advertisements, and this without the concurrence or even knowledge of the committee; no committee, I am informed, having been convened for upwards of twelve months. If active measures are not at once adopted, the public will surely have a right to ask that their money may be returned. I think, sir, that a meeting of the committee ought to be called at once, so as to ascertain what steps should be taken to augment the funds before the season again breaks up."

Miscellanea.

New Offices of "Reading Mercury."

These offices in the Market-place, Reading, now open. They present a striking contrast to old, dilapidated buildings, where, for more than a century, the publication of the *Reading Mercury* has been carried on. The front of the public office is built of Bath stone, with Forest of Dean piers and Portland bases. The building, which is spacious and lofty, consists of basement three stories. The style adopted by the architect is a fifteenth-century Gothic, somewhat modified in the lower portions so as to adapt it to requirements of a newspaper office. The top is usually occupied by the cornice and facade, adorned with elaborately-pierced, moulded, carved projecting panel-work, somewhat resembling balconies in the Renaissance style, supported on richly-carved corbels flanked by moulded fan tracery, with grotesque figure bosses. The various departments have been planned to render it one of the most complete of provincial newspaper offices. On the first-floor are the editor's rooms and other departments. Communicating with these premises are the printing-offices, the basement of which is occupied with the machinery. The composing room is a lofty hall, 70 ft. in length, with a pitched roof. From the composing-room direct communication is obtained through the over-roof [?] to the readers' and reporters' rooms. The plans for the buildings were prepared by Messrs. W. & J. T. Brown, and F. W. Alcock, architects; and the contractors were Mr. W. Rolfe, for the printing-offices, and Mr. Barnard for the frontage and publishing office. The contractors were Messrs. Searle, Wright, Shackel, Millington, Grover, and Harris. The offices are on the same site, and the publication of a newspaper at the same time, involved obstacles of no ordinary nature.

Derby Central School of Science.

An excursion in connexion with this school has been made, by permission of Messrs. Crompton & Co. to the Stanton Ironworks in the Erewash Valley, and then subsequently to Deepdale. At Stanton they were courteously received, and shown a thing which could interest them. Having viewed the mode of removing the "slag" or dross from the moulds prepared to receive the iron in molten state, the whole party were drawn up inclined plane (steam being the motive power) to the top of the furnaces. Whilst there, the party had the opportunity of seeing the interior appearance and capacity of the furnaces, the number being in process of repair. The machinery by which the blast is produced, atmospheric compression was witnessed at the bottom. After a general tour round the works, students were conducted to the new premises, where the course of erection for Messrs. Crompton, of all the most recent improvements in iron casting are to be utilised. Here the materials of the furnaces are to be raised by a "lift," the gases generated are to be utilised in producing steam power; the horizontal flue by which the iron is to be collected was traversed, and other manifold appliances in connexion with new works were fully explained. On arriving at Deepdale, after a pleasant drive, the party were traced in *extenso*, and, assembling at the solitary arch, which is the chief remnant of the pile, Mr. Richard read the first part of an interesting paper on the subject.

Departure of a Derby Architect.

Australia.—A farewell dinner, reported in the *local Advertiser*, has been given to Mr. Brookhouse, architect, who is about leaving his native town to seek his fortune and better prospects in Australia. Mr. Alderman Barton presided, and Mr. Councillor Harpur occupied the chair. There were also present Mr. Coulson, Mr. Councillor Dunsant, and about other friends of Mr. Brookhouse. Mr. Brookhouse, in wishing him "God speed" and a pleasant voyage, said he had known Mr. Brookhouse as a boy, and knew him to be a young man of ordinary ability and talent, who, although he had practised as a professional man for many years, had already made a name for himself in his native town, and won the respect and admiration of all who knew him either in business or private capacity. Mr. Brookhouse had done much of his time and energy to forward the cause for the enjoyment and benefit of the people of Mr. Brookhouse goes to Melbourne and Antipope from Liverpool.

Bristol Master Builders' Association.—An annual meeting of this association took place Wednesday last week. A number of the members and friends from Bristol and Bath being to departments of the building trades and tradesmen of that city. Having looked at the cathedral and admired its beauties and excellent workmanship, the lions of the place were done, and afterwards about forty sat in to dinner at the Globe Hotel. Mr. J. Land, president of the association, occupied the chair, and the vice-chair was filled by Mr. Coates, the treasurer. In the course of the dinner speeches, it was remarked that circumstances were continually arising which necessitated the cordial co-operation and united action of members of the building trade generally, while the want of it tended to encourage unwarranted demands on the part of the operators. With a desire of promoting more united action, the members of the association having the year reduced the entrance fee to 2s., and the subscription to not less than 1s. It was reported that the funds of the association were in a very satisfactory state. Mr. Prose, Bath, responded to the health of the visitors, and also Mr. Moss.

New Vegetable Market.—On Monday, meeting of the Court of Common Council, several propositions relative to a new vegetable market had been discussed and rejected, following motion by Mr. H. A. Isaacs was read, namely:—"That whereas the site of the old Farringdon Market is of considerably better value than that adjoining the Metropolitan Meat Market extension; and whereas the site has the advantage of frontages in streets, and the further important advantage of contiguity to three principal lines of railway, which would enable growers living at a distance from the metropolis to supply the markets with fresh vegetables at prices considerably below the current market values; whereas a new market could be erected on said latter site without displacing the trade now carried on in Farringdon, this Court opinion that in the interests of the traders in the Farringdon Market and of the poor of thisropolis, and also financially of the Corporation, a new fruit and vegetable market should be on the site adjoining the new meat and vegetable market extension at Smithfield."

Purchase of Northumberland House.—At a meeting of the Metropolitan Board of Works last week, the Works Committee recommended that a cheque for the sum of 497,000l. be drawn in favour of His Grace the Duke of Northumberland and Earl Percy for the purchase of Northumberland House and adjacent property, and a cheque for 2,100l. in favour of the Duke of Northumberland for the purchase of Nos. 2 and 3, Northumberland-court, and a cheque for 2,500l. in favour of Messrs. Phillips for stamp-duty on conveyance, and a cheque for 1,000l. in favour of the solicitor, in full satisfaction of their costs and expenses in the matter; that the committee be authorised to make such arrangements as may think desirable for permitting the Duke to view Northumberland House and grounds, and to take all necessary steps for the protection of property after it has been handed over to the Duke. The committee have given directions for insuring Northumberland House against fire for a further period of three months from the 1st of the sum of 5,000l. On the motion of Mr. Bantz the report was adopted.

St. Martin Church, Westminster Bridge.—The memorial-stone of the Lincoln of Christ Church, Westminster Bridge, towards which the Americans, through the Newman Hall, have contributed one-half of 2,500l., is to be laid on the 23rd prox. General M.P.s and other gentlemen of eminence are to take part in the proceedings. Of British half of the subscriptions, 1,200l. have been raised.—*South London Chronicle.*

Use of Lords Frescoes.—Lord H. Cavendish informed Mr. Hankey in the House, that he had communicated with Mr. Cope, R.A., in reference to covering with glass the eight windows in the passage leading to the House of Commons, and Mr. Cope thought it might be done. If the pictures were retouched he (H. Cavendish) would give orders for the work to be done.

Opening of the Delancey Fever Hospital, Cheltenham.—The completed portion of the Delancey Fever Hospital has been formally opened. The institution is situated at Pilley, Leckhampton, and the design of the trustees is to erect a complete institution for the reception of all kinds of infectious fevers; but circumstances led them to proceed with the work in sections. The block just opened is for the reception of small-pox cases. The architect is Mr. Middleton, and the contractors are Messrs. Channon. The blocks will contain eight beds for general patients, two private rooms, and accommodation for convalescents, making in all fourteen, besides which a nurse's room and small surgery are provided. It has its own kitchen and cooking arrangements. In external appearance it consists of a long block of one story in height, built of red coral bricks, with black bands, and dark-brown tile roof. The window mullions and tracery are of stone. In the interior the rooms are partially lined with white glazed bricks, the passages with glazed and plain bricks in patterns. The gas-lighting is so arranged that the flame is enclosed entirely, and the products of its combustion are carried away by a draught of its own creating.

The Ragged School Shoe-black (Central) Society.—The new building which has recently been erected for the committee of this institution on Saffron-hill has been opened. Mr. Martin Wade, the honorary secretary, made an interesting statement as to the work accomplished during the twenty-two years of the society's existence, and also gave a few particulars relative to the new building. Since 1851 more than 3,000 boys have passed through the institution, and their earnings have amounted to 45,638l. Many of these young men are in respectable situations in life, and instances were given showing that some of them are in receipt of handsome salaries. The institution is self-supporting, but the committee have been obliged to appeal to their friends and the public for assistance to defray the cost of the new building, which will be about 3,800l., of which sum the boys themselves have contributed out of their earnings no less than 1,500l. The building is plain and substantial. Mr. M. C. W. Horne was the architect; Mr. H. R. Wagner, the builder and contractor, Victoria Works, Buckingham-gate.

Opening of a Coroner's Court House.—The Coroner's Court-house, St. Mary's Chapel of Ease, Holloway-road, already mentioned by us, has been opened for use. This Coroner's Court-house and new Mortuary is the first of its kind in London, and has been erected by the Vestry of Islington, under the supervision of their Sanitary Committee, in a portion of the burial-ground attached to the Chapel-of-Ease. The building consists of a coroner's court-room properly fitted up; adjoining the court-room a waiting-room for witnesses and others, fitted with lavatory, &c., while at either end of the building a mortuary is arranged with every sanitary improvement,—one fitted with dissecting-tables, sinks for washing, and everything necessary for post-mortem examinations, the other for the reception from private houses of the bodies of persons dying from contagious diseases. The building has been erected at the cost of about 640l.

Ancient Human and other Remains.—An interesting discovery has been made by workmen at Cividale, near Goerz. While digging in the Piazza di Paolo Diacono the men came upon a stone slab, concealing an ancient tomb. Within this lay the few bones spared by time of a warrior, enveloped in a rich gold embroidered vesture, and surrounded with magnificent armour and insignia of high office. The tomb contained among other things several crosses, one of precious stones, and a small flask of clear water. From the inscription, deciphered with some difficulty, it appears that the bones and armour are those of no other than Gisulph, Duke of the Longobards, who was killed in battle in the year 611.

Photographs on Tombstones.—In Shrewsbury a practice has grown up of affixing to the tombstones in the cemetery the photographic *carte-de-visite* of the person buried beneath. The exhibition naturally attracts the curious, who walk over the grass to the detriment of the property of the Burial Board, who, "by allowing the grass to grow long, and then cutting it," realise from 20l. to 30l. a year, and consequently view with the gravest displeasure this new manifestation of mourning.

Oxford Architectural Society.—An excursion was recently made by the Oxford Architectural and Historical Society to East Hagbourne, a distance of a mile and a half from Didcot Station, where a timber house of the fourteenth century was pointed out by Mr. James Parker. The church was visited, and Mr. Parker described at length its peculiarities. The party afterwards went to Blewbury Camp, the most extensive of the British fortresses in the neighbourhood, and thence on to Moulsoford. Some made across the fields from the site of the Camp to Lowbury, accompanied by the Rev. Mr. Hooper and Mr. Parker, who pointed out the probable site of the battle of Evesham. The third and last excursion of this society for the present term was devoted to visiting Dorchester and Ewelme.

Annual Excursion of the Yorkshire Architectural Society.—A visit to Kirby-moorside, Kirkdale, Lastingham, and Appleton, has been made by the members of the Yorkshire Architectural Society, who thus spent an agreeable day in Ryedale, North Yorkshire. To the number of nearly twenty (a few ladies included) the party went by the York railway in a special saloon carriage attached to the ordinary train, for Kirbymoorside. The journey throughout was a thoroughly enjoyable one. The programme for the day's excursion included Kirkdale, with the Saxon sundial, and the quarry, showing the entrance to the famous caves in which numerous bones, of various species of animals,—have been discovered; Lastingham Church, with its crypt and altar-pieces; and the church of Appleton-le-Moor.

The Channel Passage as a Ford.—A correspondent, signing "Henry D. Murrehead," writes us, believing that he has solved this problem. His idea is to have a bridge on wheels, 150 ft. in diameter, and supporting a platform 500 ft. long, and capable of being raised or lowered some 200 ft., to suit the varying depths of the British Channel. This apparatus he proposes to tow or run across by means of wire-ropes—cables, we should have said,—worked by stationary engines on either side. On the platform might be rails on which trains of railway carriages could be carried. This idea is not new, and we need scarcely say that we do not agree with the projector that the problem is thus to be solved.

Discoveries at Durham Cathedral.—Excavations have been commenced at Durham Cathedral. They have been limited to the site of the eastern portion of the chapter-house, which is now being cleared out, in order to show the original foundations. Under the flooring of the old chapter-house many of the early bishops of Durham were buried. Some of the slab-covers of the vaults of the early occupants of the Episcopal see have been found apparently undisturbed. These, and others which may be found in like condition, will be repaired, and the whole area kept open. A portion of the apsidal termination has been met with. The old chapter-house was demolished by the cathedral restorers about the year 1780.

The Munich Gallery.—A collection of pictures, varied in style as in subject, but chiefly of German origin, is now on view at the Munich Gallery, in Great Marlborough-street. The most noteworthy works are two cartoons of great size by Kaubach, the one representing an incident of the Spanish Inquisition, the other illustrating an event of a far pleasanter and more imposing character,—the opening of the Scottish Parliament in Edinburgh by King James II., A.D. 1532. Professor Conrader's picture, entitled "The Last Moments of the Emperor Joseph II. of Austria," apart from its artistic merit, which is not inconsiderable, possesses great historic interest. A work by Carl Piloty has been added recently.

"Hospital Saturday."—We are asked to assist in this movement, having for its object, it is stated, the collection of subscriptions from the working classes for the benefit of the hospitals and dispensaries of the metropolis. We do not sympathise with it. Why should any attempt be made to separate the almsgiving of working men from those of other classes? It has been thought desirable to institute what is known as Hospital Sunday, and it seems to us something like an impertinence to suppose that working men who are disposed to give their aid will not do so unless a separate day be set apart for them. The desire which some people have to thrust themselves before the public leads to many unwise acts.

Lassington Church.—Since the commencement of the restoration of this church remains of ancient (probably thirteenth-century) painting on the east wall of the chancel have been discovered, and brought to light from beneath several subsequent coats of colour. The architects, Messrs. Medland & Son, have traced a complete architectural design of two arcades, but no figures. The lower arcade consists of six bays, three on either side of the altar, with red columns and cusped arches, the spandrels being filled with foliated ornament. Above the arcades are remains of a running decoration, with chevron ornament on either side, forming a gable over the whole.

The Electric Light on the Westminster Clock Tower.—In reply to Mr. Torrens in the House of Commons, Lord H. Lennox stated that since the discussion on this subject, many hon. members had expressed to him a wish that the light should be made permanent, whilst none had expressed a contrary opinion; and that being so, he would during the recess endeavour to see what were the best means to be adopted.

TENDERS

For alterations and additions to the Dolphin Tavern, Coleman-street, City. Mr. J. E. Saunders, architect. Quantities not supplied:—

Young £731 0 0
Bowles (accepted) 698 10 0

For the erection of a pair of cottages at Grosvenor-rise, Walthamstow, for Mr. D. Roberts. Mr. F. W. Seale, architect:—

Reid £713 0 0
Rist & Brown 498 0 0
Tabby (accepted) 485 0 0
Muggleton 421 15 4

For the erection of a house in the Bedford-hill-road, Balham. Mr. Thos. Clarke, architect:—

Taylor & Parsons £2,718 0 0
Holden & Son 1,950 0 0
Gooding 1,790 0 0
Mills 1,406 0 0

For an addition to Tenby House, Ramsgate, for Mr. J. Venten. Proprietor to find all materials. Mr. John K. Collett, architect:—

Lavender (accepted) £212 10 0

For new laboratory and alterations to anatomical department, King's College, London. Messrs. Wigg & Oliver, architects:—

Robinson £3,087 0 0
M'Leachan 2,707 0 0
Holland & Hannen 2,678 0 0
Jackson & Shaw 2,663 0 0
Eanor 2,630 0 0

For new offices, Stanley Works, Chelsea, for Messrs. A. Ransome & Co.:—

Cr. Old Materials.
Hill, Higgin, & Hill £2,780 £490
Jackson & Shaw 2,680 59
Clark & Bracey 2,550 10
Nixon 2,819 39
Gammon & Sons 2,611 73
Trollope & Sons 2,583 24
Adamson & Sons 2,127 68

For entrance-lodge, at the Hospital for Consumption, Brompton:—

Bath Stone. Portland Stone.
Wilson £2,270 £2,373
Stevenson 2,081 2,221
Bull 2,000 2,116
Jackson & Shaw 1,907 1,937
Wilks 1,868 1,981
Oliver & Sons 1,850 1,907

For additions to the administrative department of the St. Pancras baths and washhouses. Mr. Henry H. Bridgman, architect:—

Willsons, Brothers (accepted).

For additions and alterations at Downing College, Cambridge. Mr. Edward M. Barry, architect. Quantities supplied by Mr. J. H. Stradwick:—

Holland & Hannen £21,680 0 0
Peto, Brothers 21,393 0 0
Downs 20,973 0 0
Trollope & Sons 20,483 0 0
Booth 19,870 0 0
Perry 19,165 0 0

For erecting villa residence, with coach-house and stables, at Barnes, for Mr. J. B. Wedgwood. Mr. J. Palmer, architect. Quantities by Mr. V. Barnett:—

Stimpson £2,480 0 0
Chamberlain, Brothers 2,396 0 0
Thorn 2,374 0 0
Adamson 2,289 0 0
Boyce 2,254 0 0
Trevena 2,223 0 0
Hunt 2,125 0 0

For chancel, &c., to Trinity Church, Hampstead. Mr. H. S. Legg, architect. Quantities supplied by Messrs. Arding & Bond:—

Nightingale £4,165 0 0
Foster 4,102 0 0
Newman & Mann 4,080 0 0
Hill, Higgin, & Hill 4,015 0 0
Manley & Rogers 3,975 0 0

For alterations and alterations to Woodthorpe, Willemsden. Mr. Wm. Bradbear, architect:—

Knight £275 0 0
Prebble & Morley 273 10 0
Steel 268 16 0

For the erection of coach-house and stabling, at Hampton Lodge, Stonebridge Park. Mr. Wm. Bradbear, architect:—

Prebble & Morley £189 0 0
Steel 188 0 0

For finishing a pair of villa residences, at Wallington, Surrey. Mr. Wm. Bradbear, architect:—

Crowley £1,469 0 0
Steel 1,252 0 0
Prebble & Morley 1,040 0 0

For alterations and additions to the church of St. John the Baptist, Upper St. James-street, Brighton. Mr. Gilbert R. Blount, architect:—

Bruton £2,200 0 0
Lockyer 2,102 0 0
Cheesman 2,090 0 0
Wright & Goodchild 1,968 0 0
Botting 1,891 0 0
Batching & Webber 1,891 0 0

* Won by drawing lots.

For the erection of a shop and warehouse, Nos. 185 and 186, Tottenham-court-road, for Mr. G. F. George. Messrs. J. Tarring & Sons, architects:—

Kelly, Brothers £2,663 0 0
Jackson & Shaw 2,644 0 0
Wild 2,610 0 0
Cooke & Green 2,583 0 0
Shurmer 2,572 0 0
Roberts 2,538 0 0
Boden 2,390 0 0
Brindle 2,318 0 0

For alterations at the Westmoreland Arms, George-street, Manchester-square, for Messrs. Messers. Mr. H. B. Cotton, architect. Quantities not provided:—

Hyde £1,960 0 0
Newman & Mann 1,940 0 0
Fosley 1,918 0 0
Bann 1,725 0 0
M'Leachan 1,640 0 0
Williams & Son 1,477 0 0
Toms 1,370 0 0

For works, Amburst-road, Hackney, for Mr. M. Rose. Mr. T. K. Green, architect. Quantities prepared by Mr. Poland:—

Barker £2,885 0 0
Sharpton & Cole 2,833 0 0
Newman & Mann 2,498 0 0
Stimpson & Baker 2,463 0 0
Serven & White 2,379 0 0
Salmon 2,262 0 0

For gardener's house, vinery, &c., at Castlebar, Ealing, for Mr. F. F. Kelly. Mr. C. N. Beazley, architect.

Quantities by Mr. Mallett:—

Nightingale £1,093 0 0
Bays & Ramage 1,038 0 0
Nye 891 0 0
Newman & Mann 891 0 0
Adamson & Sons 888 0 0

For sundry works, No. 14, King William-street, City, for the Lancashire Insurance Company. Mr. C. J. Phipps, architect. Quantities not prepared:—

Newman & Mann £1,478 0 0
Luggs 1,076 0 0

For alterations to St. Laurence's Church, New Brentford, Middlesex. Quantities supplied:—

Wall & Hook £2,500 0 0
Jerrard 2,400 0 0
Gibson, Brothers 2,370 0 0
Doug, Brothers 2,245 0 0
Atis & Co. 2,240 0 0
Adamson & Sons 2,197 0 0
Brunson 2,175 0 0
Gouldard 2,160 0 0
Nye & Son 2,028 0 0

For new school, Orchard street, Hackney, for the London School Board. Mr. E. R. Robson, architect:—

Fox £9,350 0 0
Sewell & Son 8,116 0 0
Serven & White 8,048 0 0
Wicks 7,990 0 0
Tarrant 7,894 0 0
Ennor 7,868 0 0
Newman & Mann 7,748 0 0
Sheffield 7,734 0 0
Pritchard 7,757 0 0
Perry & Co. 7,650 0 0

For new studio, Cadogan gardens, for Mr. F. Moscheles. Mr. H. Petit, architect. Quantities by Messrs. G. Lansdown & Pollard:—

Stephenson £1,990 0 0
Bird 1,891 0 0
Adamson & Sons 1,493 0 0
Mills & Sons 1,490 0 0
Stimpson & Co. 1,440 0 0
Cullum 1,398 0 0

For alterations at No. 35, Norfolk-street, for Mr. B. Hiday. Mr. R. C. Robins, architect:—

Newman & Mann £106 0 0
Carpenter 275 0 0

For rebuilding the Peacock public-house, Maiden-lane, Covent-garden. Mr. Chas. Fowler, architect. Quantities by Mr. H. Lovegrove:—

Cunder £1,890 0 0
Longmire & Burge 1,313 0 0
Wall 1,253 0 0
Crabb 1,178 0 0

For rebuilding Strewan-mews, King's-road, Chelsea, Messrs. Croft & Williams. Mr. F. N. Kemp, architect.

Quantities supplied by Mr. E. J. Styles:—

Begwood £721 0 0
Stevens 679 0 0
Godbold 675 0 0
Dredge 608 10 0

For proposed master's house, and other works, at Paul's Schools, Bethnal-green. Mr. Thomas Pocklington, architect:—

Parsons, Brothers £559 10 0
Paul tenant 657 0 0
Hopton 623 0 0

For alterations and repairs to No. 23, Bedford-square. Mr. Lewis Solomon, architect:—

Blake & Rampton £584 0 0
Willson 447 0 0
Woods 387 0 0
Richards (accepted) 385 0 0

For repairs to No. 13, Abbey-road. Mr. Lewis Solomon, architect:—

Coltman £315 0 0
Clark 309 2 0
Cohen 235 0 0
Woods (accepted) 216 0 0

For the erection of a malt-kiln and malt-store, at lane Maltings, Wandsworth, for Mr. W. E. Bullock. G. Scannel, architect. Quantities supplied by Mr. Curtis & Son:—

Wignore £1,466 0 0
Sharpton 1,197 0 0
Cole & Green 1,184 0 0
Nightingale 1,183 0 0
Wagner 1,136 0 0
Grimwood 1,067 0 0

TO CORRESPONDENTS.

Erratum.—In our report of Mr. Beresford H. Poch at the Architects' dinner, it is stated that he had heard from a "Vice-Chancellor," that a man of peace-at-any-price was to be a "power," last word should have been "coward."

J. N. (we do not know of any other list than the one given in our issue of 27th June, 1874, and the subject was mentioned in our columns a few months ago).—H. (should send amount)—S. P. D. (leave let us see the figures).—H. D. M.—R. W.—H. W.—H. E.—P. E.—H. H.—S. H.—R. W.—H. P.—E. H.—T. E. K.—J. J. L.—C. H. P.—W. Dr. R.—S. H.—L.—S. A. & Co.—W. C. T.—I. B. W.—W. H. P.—L.—S.—H. J. & Son.

We are compelled to decline pointing out books and addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily published.

NOTE.—The responsibility of signed articles, and papers for public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

Six lines (about fifty words) or under 2s. 6d. 6s.
Each additional line (about ten words) 6d. 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is published, abstracted from the Office, in any part of the United Kingdom at the rate of 12s. per annum in Advance.
Half-yearly stamps accepted for amounts under 5s. Any Jan. should be returned by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to DOUGLAS FOUNDRY.

Advertisements cannot be received for the current week's issue later than THREE o'clock on THURSDAY.

The Publisher cannot be responsible for advertisements left at the Office in reply to advertisements, and strongly recommends that C. ONLY should be sent.

T. TRELOAR & SONS,

SUPERIOR GOOD FLOORING

COCOA-NUT FIBRE MATTING 69, LUDGATE HILL, E.C.

AND MATS. CAMPTULIN CORN CARPET

Manufacturers and Warehousemen,

69, LUDGATE HILL, E.C.

AND MATS.

The Builder.

VOL. XXXII.—No. 1640.

The Trades connected with Building, and the Numbers Employed Therein.

N a former article we showed in detail the number of persons in England and Wales who are occupied in the building trades, strictly so called, and we intimated that on another occasion we should review the various occupations which, though not strictly included under the building trades, are, nevertheless, more or less connected with them.

In proceeding now to redeem our promise, we may first mention the exceptional case of the thatchers, whom the Census authorities place, not amongst the occupations connected with building, but amongst those engaged in the hay and straw trades. Part of this class,—those whose

principal occupation is with the covering of stacks of hay and straw,—belong to the agricultural interest. The remainder,—those principally engaged in the thatching of cottages, barns, and outbuildings,—belong as strictly to the building trades as slaters and tilers. It has, however, been impossible to distinguish the one class of thatchers from the other. Their total numbers in 1861 were 3,355, while in 1871 they are reduced to 4,148. This decrease of more than 20 per cent. in ten years is no doubt due in large measure to the increasing substitution of tiles and tiles in place of straw for the roofing of cottages and farm buildings.

Another occupation, not included by the official writers, in the building trades, but which beyond doubt very intimately connected with them, is that of civil engineering. In 1861, the civil engineers of England and Wales were 29 in number. In 1871 they had increased to 5,234. There was not one female amongst them. The increase in this profession has been nearly 60 per cent. in the ten years. This enormous addition (1,905 persons) in so short a period, is not surprising when we remember the gigantic engineering works which have been carried out in that time; but there seems every likelihood, unless a considerable percentage of the younger members should in due time find a career in the colonies and the less developed countries beyond the seas, that the ranks of the profession will before long become overcrowded in this country.

We now come to several distinct classes of trades the object of which is either mainly or directly to supply the builder with his materials. And, first, we will take those who deal with timber. The timber merchants and wood dealers numbered 10,055 in 1861, and 12,859 in 1871,—an increase of 2,804 persons, or more than 28 per cent. in the ten years. Of these numbers 3,769 were women in 1861 and 840 in 1871. The others, on the other hand, have diminished in number. There were 31,647 of them in 1861 (16 of them women), and only 27,965 in 1871

(16 of them women). This decrease of 3,682 persons, occupied in sawing, is doubtless to be attributed to the more general introduction of steam-power in this occupation in recent years. The wood-turners, again, decreased from 7,684 in 1861 (56 being women) to 7,350 in 1871 (141 of whom were women), and this reduction may be set down to the same cause as in the previous instance. The lath fence and hurdle makers, on the other hand, have increased in number from 2,749 in 1861, to 3,023 in 1871. Altogether these workers and dealers in timber numbered rather more than 52,000 in 1861, and very nearly as many in 1871.

The next class of occupations partly or principally engaged in supplying the builder with his materials are those which deal with stone, clay, lime, and other minerals. The number of stone quarriers rose from 22,138 in 1861 (65 of them women) to 25,661 (none of them women) in 1871,—an increase of more than 3,500 in the ten years. The number of quarry-owners returned in 1861 was 111, and only 38 in 1871,—numbers which are probably very imperfect, as many owners of quarries are not returned as such, having other occupations of greater importance. The stone merchants and agents, together with stone dressers and cutters, increased from 4,712 in 1861 (33 being women) to 6,072 (23 being women) in 1871. This increase of more than 25 per cent. in the stone-cutters, and that amongst the quarriers of 16 per cent., seem to point to the fact of a considerable increase in the use of stone in building and paving during the past ten years. The slate quarriers increased from 9,360 in 1861 to 9,814 in 1871,—a very moderate addition in the ten years. The slate merchants, manufacturers, and dealers, on the other hand, advanced in number from 401 in 1861 to 1,185 in 1871. There has been a total increase in the workers and dealers of this class of about 6,000,—from 36,722 to 42,790,—in the ten years.

In 1861 there were 59 persons, in 1871 only 29 persons, returned as clay merchants. The number of clay labourers in the former year was 2,812 (247 of them women); in the latter year they had decreased to 2,522, of whom 183 only were women. The brickmakers likewise decreased from 39,020 in 1861 (1,852 of them females) to 38,779 in 1871, of whom 2,530 were women. There has thus been a total decrease in the class of clay labourers and merchants, and brickmakers, of 1,161 in the ten years. In that period, however, the number of bricks manufactured has enormously increased. The two facts are sufficiently explained by the extensive adoption of brickmaking machines in recent years. It will not escape notice that there has been a not inconsiderable increase in the number of female brickmakers since 1861.

Limestone quarriers, lime burners and dealers, have diminished in number from 6,006 (98 of them women) in 1861 to 5,281 (87 of them women) in 1871. Plaster and cement dealers, on the other hand, have increased from 1,083 at the former date to 2,053 at the latter; the women in the trade numbering respectively 14 and 12. Chalk workers and dealers have also increased from 392 to 435 in the ten years. Sand and gravel dealers have likewise increased from 158 to 553 in the same period. In this class of building materials, the numbers employed have increased from 7,639 to 8,322 in the ten years.

Railway contractors have diminished in number from 549 in 1861 to 251 in 1871. In the same period navvies or excavators, plate-layers, and railway labourers have increased from 43,012 to 45,070. Passing from the iron roads to the common highways, we find that road contractors, inspectors, and surveyors have gone up from 1,022 at the earlier date to 1,447 at the latter. Labourers, who returned themselves as working on roads, on the other hand,

decreased from 9,502 to 8,302; but as a vast number of labourers did not sufficiently distinguish the special branch of labour they followed, little value can be attached to this apparent decrease. Scavengers, and dust-collectors and sifters numbered 1,769 in 1861, and 2,245 in 1871. There were 77 women in 1861 and 71 in 1871 among the dust-sifters. There were 333 men in 1861, and 373 in 1871, employed in connexion with the sewers and drains of towns. Connected with the drainage of the land for agricultural purposes, there were 1,761 men in 1861 and 1,255 in 1871. The waterworks service employed 1,507 persons at the earlier date, and 2,555 at the latter. The well-sinkers numbered 523 in 1861 and 596 in 1871. Locksmiths and bellhangers increased from 5,528 to 7,326, and gasfitters and gasfitting manufacturers, from 6,122 to 9,317 between the two dates. In the miscellaneous occupations just given the aggregate numbers of persons employed have risen from 71,625 to 78,737 in the ten years.

Finally, we have another miscellaneous list of occupations which are all more or less engaged in supplying builders with their materials or tools, or otherwise employed in producing articles required in the fitting-up, finishing, or furnishing of houses. What they are, and what changes they have undergone between 1861 and 1871, we will now tell in the briefest possible manner.

Nailmakers have decreased in number from 26,130 (10,761 of whom were women), to 23,231 (of whom 10,864 were women); screw-cutters, from 2,683 to 2,119 (the women having decreased from 1,546 to 1,479); and hinge-makers, from 772 to 713. Ironmongers and hardwaremen have, on the other hand, gone up from 10,780 to 17,368; tool-makers, from 6,310 to 7,627; and cutlers, from 5,912 to 17,903. Saw-makers, from 1,960, have decreased to 1,953; and glaziers' diamond-makers, from 12 to 6. Altogether, there has been an aggregate increase in this miscellaneous class from 54,559 in 1861, to 70,925 in 1871.

Taking the whole of these subsidiary classes together, we find that the number of persons employed in them was not quite 275,000 in 1861, and that they had increased to upwards of 300,000 in 1871, and that, too, notwithstanding that in some of the most important of them improved machinery and steam power have been extensively adopted, thereby effecting a more or less considerable economy in the mere manual labour required.

It will not, perhaps, be uninteresting to our readers, if we here append a few words and figures, showing the changes that have taken place in the number of persons employed in the building trades in London itself. The carpenters and joiners of the metropolis were 27,598 in number in 1861. They had increased to 31,742 in 1871,—an addition of upwards of 4,000 in the ten years. The bricklayers rose in the same time from 16,535 to 17,983, having added 1,448 to their number in the interval. The plumbers and glaziers increased from 20,441 to 27,817, showing an increase of no fewer than 7,374 in the last ten years. The masons and paviors increased in the same period from 4,588 to 6,029; the plasterers from 5,206 to 6,167; the paper-hangers from 1,081 to 1,497; the marble masons from 636 to 853; and the slaters and tilers from 476 to 603. The master builders increased in the period in question from 3,845 to 5,700,—an increase of nearly 50 per cent. in their numbers in the ten years. The surveyors rose in number from 749 to 971; while the architects, who numbered 1,459 in 1861, had increased to 1,928 by 1871. In the former year there were 827 persons, and in the latter 1,138 persons following a variety of minor occupations included in the building trades. The number of women in these trades was only 305, of whom 43 were carpenters and joiners, 43 builders, 93 plumbers and glaziers, 66 blind-makers, and 35 miscellaneous.

These women were, doubtless, nearly all proprietors of businesses. Altogether, the building trades of the metropolis employ, therefore, 103,844 persons, of whom 103,539 are males and 305 females. Such, then, is a brief review of the numerical strength of the building trades, and the occupations connected therewith, as they may be said to stand in this country and in the metropolis at the present time, and as they stood ten years ago.

EXHIBITION OF WORKS IN BLACK AND WHITE.

THE interest of the exhibition of works from which colour is excluded is kept up this year, and fully justifies the recent establishment of this type of picture exhibition. The value of a collection of this kind consists partly in affording an opportunity for studying the free thoughts of eminent artists in their original form, partly in the opening which it gives for the exhibition of drawings displaying genuine artistic feeling and power by those who have not had time to carry out the more elaborate forms of art execution in oil and water-colour. Sketches like many of those here would scarcely be noticed if exhibited at a large picture exhibition, where every one is taken up chiefly with works of a more ambitious class. Here they are accepted and criticised on their own footing, and assert their real value; and it is instructive also to see how much of the intellectual interest of art may be present in works executed in such simple materials and on so small a scale as most of these.

Among the forms of colourless art, that of etching claims the pre-eminent place for the strong individuality of tone and style attainable by this method, and the mechanical and aesthetic problems which it presents to the artist, who must not only have mastered the manipulation of his art, but must know very thoroughly what can and what cannot be achieved in it. No form of drawing gives better than this what may be called the metaphysical beauty of scenery—the tone and feeling apart from the details; indeed, in respect to landscape subjects, it may almost be said of etching that the less it attempts the more it gives. Among works here which illustrate the real power of this art in landscape are Slocombe's "Margate Cliffs and Jetty" (167); Bradley's "Canal la Vena, Chioggia" (240); and "On the Marshes, Pisa" (361), the latter a most masterly study; and Vaillant's little studies "In and About Boulogne" (224), showing how much of poetry this art can impart to the simplest combinations of common objects or scenes. "Le Soir au Village," by Roc-Bhian (229), is an example of the opposite style of laboured and finished etching, and a very good one it is, but then by loading the plate in this way much of the characteristic tone and effect of etching is lost, and the thing comes to resemble an engraving too much. In the treatment of figure subjects and heads etching can be carried with success to a much higher elaboration; it affords facilities for representing the texture and lights of dresses and accessories (perhaps we should rather say "capabilities," for "facility" is no part of this style of etching), without bringing them into too full and prosaic realism. Of such successes in the art there are here several examples in impressions from the unequalled work of Jules Jacquemart, in whose country the art has received such great encouragement, and been consequently carried much further than elsewhere. The reproductions by this artist of Reynolds's "Mrs. Seaforth and Child" and Carl de Moor's "Bourgmestre de Leyde" and "Elizabeth de Valois" are admirable; also, in a slighter manner, his "Sir Richard Wallace," after Baudry, originally done (as, we believe, were the others) for the *Gazette des Beaux Arts*. Rajon's "Portrait of an Old Woman," after Rembrandt (225), also made for the same publication, is a splendid specimen from a painter whose works form peculiarly good subjects for etching, owing to their broad and powerful *chiaroscuro* treatment. E. Edwards's etchings of old inns are topographically interesting, a little too merely realistic as drawings; the "Lavatory Cloisters, Gloucester," by the same hand (183) is a much better specimen of the true power of etching. Braquemond's "dry-point" (i. e. drawn with the needle direct on the copper without acid) of "The Locomotive, after Turner" (37) is an exceedingly clever attempt at a subject scarcely suited to the material; his "Souvenir du Siège, 1871," has interest. A "dry-point" by Dr. Evershed, "Still Life"

(321), shows great neatness of execution; the plate and a proof are exhibited in one frame.

In the style of execution most allied to etching, viz. pen-drawing, we have several of the originals of M. du Maurier's capital illustrations to *Punch*; the ladies' "school of art" among others. In the "flower of fashion" (54) may be noticed the admirable indication of the texture of dress, in the lady's jacket especially; similar excellence is to be remarked in "Early Grammar" (176). Mr. Brewer sends an elaborate pen-drawing of "Old London Bridge and Southwark Mills" (387), an excellent specimen of architectural drawing of this type. In her two spirited studies of cavalry from Woolwich and Aldershot, "Gallop" and "Halt!" (190, 233), Miss Thompson proves to demonstration that she can draw horses in action right well, in spite of the doubtful hind-leg at the Royal Academy. Fantin's two lithographs "À la Mémoire de Robert Schumann" and "Manfred" (135, 203), deserve attention as instances of a peculiar and in its way very effective method of execution entirely by cross-hatched lines; there is a certain power and fancy in the designs, though they are not of the first order, but the method of execution has the merit of having a language and a feeling peculiar to itself, and not to be confounded with anything else. Charcoal is another method considerably illustrated here, especially by the drawings of M. Léon Lhermitte; and nothing could be more characteristic of French artistic habitudes than his fine sketch of "Gleaners," with the figures stooping on the dark field against the evening light, roughly drawn on a piece of paper with uncut edges, mounted equally roughly on blue paper, and surrounded by a frame like that of a school slate. The subject is everything, and the setting nothing. There are others of great merit by the same artist. A good charcoal is that by Mr. R. Townroe (399), "Over-worn," a single figure of considerable pathos, and which is to some extent a set-off against the same contributor's very unhappy "Original Drawing of the Certificate for the Whitworth Scholarship."

Among figure-subjects are the original studies for the two principal figures in Mr. Marks's picture, "Capital" and "Labour" (160, 185), in crayon, on toned paper; these are highly-finished studies: the old gentleman who represents Capital had not at this stage bethought himself of his gold chain, however, and his hand rests by his side. A small study by G. F. Watts in red crayon, "Sleeper awakened" (241), with the motto, "The people that walked in darkness have seen a great light," is beautiful in feeling and composition. Compare the artistic value and interest of this little study with that of a certain very large sacred subject, in the Academy at present; we could not have a better instance how little the intellectual value of a work is dependent on its size or finish. A very delicate little pencil study by Mr. Watts (271) shows a figure of a lady with her hands clasped before her in a thoughtful attitude, very charming and suggestive.

Mr. Powell, whose reputation as a sea-painter may be said to be now established, sends a very fine large study of sea, under the title "The Isles of Fingal" (78); the island is seen half shrouded in mist and rain, the heavy swing of the deep water is very finely given. Mr. Raven's large study, which occupies the corresponding place on the opposite wall, "Upper Valley of the Conway" (255), has, to our thinking, a little too much of the appearance of a magnified book illustration; there is rather more of picture-making than of real art feeling in it. It is to be hoped this artist, whose very beautiful landscapes in one or two recent Academy exhibitions showed him to be capable of more than mere painting of "effects," will not desert his former and better line of work.

Among other things that should be looked at are Leighton's "Rubinella, Capri," a figure study (90); Wolff's admirable drawing of monkeys in the middle of their gambols (102); a very fine charcoal drawing by the late G. Catermole, "Kenilworth" (153); "Twilight," by Clough Bromley; a study of the foliage and growth of "Lemou Tree, Capri" (171), by Leighton; "Evensong" (191), an original design for the *Illustrated News*, by S. Read; "Homeward" (196), a sepi drawing by H. Goodwin; "La Pipe de Tabac" (213), charcoal, by Regamey; two pen-drawings of scenes "À Nantua" (260) by A. Appian; "Spring Inundation, Canada," by F. A. Hopkins (354); Captain Wyndham's works; and others of more or less interest and merit.

BOOK-COVERS.

AMONG modern "revivals" that of bookbinding has its place, as one of those subsidiary movements in ornamental art which have accompanied, or perhaps arisen from, the revival of the central ornamental art of architecture. The state of the bookbinder's art in the eighteenth and nineteenth centuries respectively, has, in fact, no little affinity with the condition of architecture in England during those two cycles. The plain strong marbled backs of the durable volumes of the last century must have suited the taste of the people, who thought nothing good to live in as the solid square brick houses *simples munditiis*, of which we see types in Chelsea and other of the older suburbs of London; and the architectural activity of the present day, in its fifty different forms and styles, finds its type represented in the varieties and vagaries, some of them picturesque enough, the ornamental book-covers of the day. These as well as the older styles of Mediaeval binding are pretty fully represented in the International Exhibition, where they form, not inappropriately, a kind of connecting link between "lace" and "leather."

The development of bookbinding to any great extent of course dates from the invention of printing, and the consequent multiplication of books; but we find some of the most characteristic forms of earlier bookbinding already illustrated, and in an elaborate form, in copies of some of the mere manuscript books of the pre-Carolus era. Of these are some of the large and reverend-looking volumes lent by the Dean and Chapter of Durham to the Exhibition (No. 6,578), bearing the old-world titles on the back in what I. Cunningham would call "the customary ecclesiastical Latin." These exhibit mostly designs of small stamped or incised ornaments on leather covering the whole surface of the back, and geometrically arranged in parallelograms or other regular figures. These are mostly "blind-tooled," i. e., simply stamped without gilding; form of decoration very lasting and very usable, but somewhat dull in effect, and requiring pretty close examination to follow out the designs. Indeed, an old writer on the subject enters protest against the exclusive use of blind-tooling which "converts what should look like a book into a piece of mahogany furniture." This will depend partly on what we happen to this a "book" should look like; but there are specimens in this case quite deserving attention as suggestions in design; a "Budeus," for instance, with the main design in the form of Oxford cross-frame, the centre space filled with vertical stripes of differing arabesque patterns; and a glossary of the Psalms, "Liber Hugo Episcopi," covered with little medallions containing animals or geometrical figures. The Ecclesiastical Institution of Durham, it may be observed, has an hereditary reputation in regard to the care and ornamentation of the books in the Cathedral Library; Bishop Cosin, who has the See towards the end of the seventeenth century, would seem to have put much of his heart into his bookbinding, and his minute correspondence on the subject of the covering his books is somewhat edifying, as also the receipt from a goldsmith for 100*l.* in part payment for the covers of a Bible and a Prayer-book for this episcopal virtuoso. As early as the sixteenth century the vehicle of much more elaborate artistic work than the old tooling and gilding could supply, one means of glorification of the volume being the insertion of carvings in relief in the binding. Thus the outside of the book became in itself a valuable work, and required massive angle studs for it to rest upon when laid on its side; and it may have been consequence of the value of the binding as well as the book, in some cases, that the system of chaining them to the shelves in libraries was one time so general.*

Some of the old bindings exhibited here are, however, of no little interest artistically, without displaying any of the more sumptuous resources of the art. The collection of French and Italian bindings lent by E. Spencer (6,612), mostly of the sixteenth and seventeenth centuries, contains a good number of these intricate devices of interlacing ribbon patterns (mostly perfectly symmetrical) which occur so frequently in bindings of this period.

* In Sir Thomas Bodley's papers mention is made of "chaining" as a well-known and recognised trade, whose bills also seem to have been pretty long.

fine oil study by David Cox, modern Venetian glass by Salvetti, and numerous architectural drawings and sketches by various members of the Institute, were among the things which offered agreeable matter for interest or study.

The band of the Coldstream Guards was in attendance in the lower rooms, and played with their usual excellence during the evening; but the result would have been better had the band been accommodated, as on previous occasions, in a gallery at the end of the room, and not in the centre of the floor and close to the auditors. There is room for improvement in the musical bill of fare on these occasions. A programme entirely of the lightest music, in which such titles as "Weib, Wein, und Gesang—Waltz" (Strauss), "La Vie Parisienne" (Offenbach), Galop, "Neck and Neck" (Godfrey), form items, would lead to the supposition that the musical tastes of the architects generally were of a very superficial, not to say dissipated description, which is scarcely the case. There is no reason why music should not be as well illustrated as the other arts on these occasions; it might, at least, be free from vulgarity and commonplace.

PARLIAMENT STREET.

On Monday last Mr. Goldsmid put a question to the First Commissioner of Works as to the intention of the Government in regard to the removal of the remaining block of houses in Parliament-street, and the reply given by Lord Henry Lennox was to the effect, that such removal would depend on the decision which the Government should come to as respected a new War Office and other offices for the public service. His lordship seemed to ignore altogether the fact, that the public had long clamoured for the removal of these houses, in order to complete the grand street of Whitehall, as far as the Abbey. The fact is, that about one-third of these houses are Government property, and occupied by tenants at will. The sum that is therefore needed for the improvement is not so considerable as should deter the Government from carrying out so great an improvement to the approaches to the Houses of Parliament. The Metropolitan Board has the power to borrow money for like improvements, and to spread the cost over fifty years; and it is not unreasonable that the Government should obtain a similar power if desired.

THE UNIVERSAL ALLIANCE.

"The object of the Universal Alliance is to promote International Works of Humanity by means of diplomatic action." It seeks by various means to attain the one object and aim for which it exists—"Humanity"—in all social relations and in all circumstances. Various societies have been established in England and other countries, with special humane objects in view, such as the prevention of cruelty to animals, the protection of poor women and young children, and generally for the suppression of various forms of brutality exercised by the strong over the weak. It will be seen on reflection that the special laws which have been framed with these objects in view should be of universal application, and in many instances they are of such a nature that they can only be effective in any one country by being enforced in all countries alike. The Alliance has therefore created this International Committee with the view of promoting such measures as may tend to harmonise and enlarge the scope of the human laws of all countries. The action of this committee will extend to whatever may be classed under the head of cruelty or inhumanity, whether towards animals or to our weaker fellow creatures.

Amongst its departments is an International Sanitary Committee. This Committee interests itself in all international sanitary questions, whether originated by itself or by societies or individuals, with a view to their solution by diplomatic action. The praiseworthy initiative taken by the Emperor of Austria, with a view to checking the spread of cholera in Europe, is an instance of the latter kind, in which the co-operation of this Committee will bring the force of public opinion to bear on a question of the highest general interest. It has been decided that the International Cholera Conference which has been convened to discuss the means of preventing the spread of cholera, will meet in Vienna on the 1st of July, 1874. All the

Powers have accepted the invitation to send representatives, who will discuss the terms of an international treaty respecting measures of quarantine upon an outbreak of cholera, and the nomination of an International Commission to be appointed to study the causes of the disease.

The various branches of the Universal Alliance in Europe and America have agreed that the International Congress shall meet on the 1st of June, 1875, in London. In the meantime an International Congress is to be held at Brussels on the 15th of July, to discuss the rights and duties of belligerents in time of war. Such of our readers as say "I am a man; and anything that concerns man concerns me," will do well to call at No. 41, Pall Mall, and learn something more about the Universal Alliance.

CHESTERFIELD PUBLIC HALL COMPETITION.

Mr. T. C. HINE, having been instructed to report on the twenty-seven designs submitted, says at the close of his report,—

"There are so few designs marked by a rigid adherence to the printed conditions, that in the selection of the merely premiated designs I am compelled to overlook some departures from the same, but taking as comprehensive a view as my three days' study of them has enabled me to do, my recommendation is that after 'Hope' they be placed in the following order of merit:—
No. 1, 'Hope'—Messrs. Smith & Woodhouse, Manchester.
No. 2, Maltese Cross.—Messrs. Rollinson & Masters, Chesterfield.
No. 3, 'Lux'—Mr. J. C. Gilbert, Nottingham.
No. 4, 'Carbon' (alternative design).—Mr. H. J. Paul, Manchester.
No. 5, Intersected Triangle with Letter E.—Mr. J. B. Everard, Leicester.

For the reasons before stated, I do not flatter myself that the design which I have placed first on the list is one which will meet with general acceptance; but so far as you deem it right to abide by your instructions, you need not hesitate to confirm my selection."

EAST ARDSLEY SCHOOL BOARD COMPETITION.

COMPETITIVE plans were recently invited from architects for the new schools to be erected by this Board. In response, thirteen sets of drawings were submitted, with the result that the first premium has been awarded to Messrs. Holtom & Connon, of Dewsbury.

LAMPETER WORKHOUSE COMPETITION.

The Board of Guardians of the parish of Lampeter, in Cardiganshire, having been required by the Local Government Board to erect a workhouse, invited four architects to submit designs for it. After duly considering the plans, in conjunction with the Government inspector, they selected those submitted by Messrs. Schlumper & Aldwinckle, of London and Aberystwyth.

PROGRESS IN HARROW.

In 1871 a fund was raised, called the "Lyon Memorial Fund," for the purpose of acquiring land and erecting buildings for school purposes at Harrow. The objects contemplated were,—
1. A speech-room, which could also be used as a concert-room. 2. The purchase of land to check building beyond the control of the school; and, 3. other buildings, connected with different branches of education, including schoolrooms, a museum, a laboratory, a room for drawing, a gymnasium, and lecture-rooms for the study of natural science. A subscription was immediately set on foot. The money promised up to the present time amounts, including interest, to nearly 28,000*l.*, of which sum no less than 6,000*l.* has been expended in the purchase of sites for the speech-room and for the laboratories, including a house in the near vicinity of the former.

Of these buildings, the gymnasium, erected on a site granted by the Governors, from designs by Mr. O. F. Hayward, is now completed and in full working order. Its cost will be about 3,500*l.* The laboratories, built also from designs by Mr. Hayward, have been in course of construction since December last, and are proceeding rapidly. Their cost will be hardly less than 6,000*l.*, exclusive of the cost of site.

The new speech-room, of which the first stone was laid on the 2nd inst., will be built from a design by Mr. W. Burgess. It is estimated that this building, exclusive of nearly 4,000*l.* paid for the site, will cost in all 14,000*l.*, but this does not

include the upper part of the higher tower, the cost of which is estimated at 1,500*l.*

A further sum of 7,000*l.* is desired during the next three years, to relieve the committee from all anxiety, and complete the work, including new terraces in the lower garden, in a manner worthy of the name of the school and of the tercentenary commemoration.

MANCHESTER SOCIETY OF ARCHITECTS.

The annual meeting of this society was held at the Royal Institution on Monday, June 22nd. The report of the retiring council was read, referring to the work done by the Society during the past session, the more prominent matter being the efforts made to promote the education of architectural students and the technical education of the workmen of the building trade, and the endeavours that are being made to induce the City Council to adopt such building regulations as would have the effect of a Building Act. The thanks of the Society were tendered to the president, council, and the honorary secretaries for their services during the past year. The following gentlemen were elected officers for the ensuing session:—President, Mr. J. Murgatroyd (re-elected); Vice-president, Mr. Isaac Holden; Honorary Secretary, Mr. John Holden; Council Messrs. A. W. Mills, G. T. Redmayne, Wm. Royle, Edward Salomons, and J. M. Taylor.

LAYING THE BOUNDARY-STONE OF THE LAMBETH CEMETERY EXTENSION.

A short time ago the Lambeth Burial Board purchased a quantity of land adjoining the cemetery at Tooting, and last week the boundary stone, showing the original area together with that of the extension, was laid by Mr. Robert Taylor, chairman of the Board, in the presence of several of the members, and of Hugh Macintosh, the surveyor. The original ground, consisting of thirty acres, purchased 1553, and the recent purchase in May last, ten acres, make together forty acres. The amount of the contract is 1,965*l.* for completing the boundary by the erection of wall and railings. Mr. Joseph Stone and Mr. John Tyerman are contractors, and the work is to be completed within four months. Mr. Taylor, the chairman in laying the stone, said it was twenty years since he became acquainted with the Lambeth Burial Board, as one of its members, and little thought there would have been any occasion to extend the area of the cemetery, as there was now about to do. He had no doubt the addition would be sufficient for the next thirty years to come.

SCHOOL-BOARD SCHOOLS.

London.—Mr. Currie brought up a report of the works committee which was received:—The committee had invited tenders for the erection of a school to provide accommodation for 801 children on the site in Blackheath-road, Deptford. The following are the respective amounts:—

Scriveners & White	£3,200 0 0
Boyes	8,068 0 0
Niblett & Son	7,639 0 0
Cooper	7,860 0 0
Hill, Higgs, & Hill	7,820 0 0
Atchinson & Walker	7,655 0 0
Jerrard	7,283 0 0

The committee recommended the acceptance of the lowest tender, that of Mr. S. J. Jerrard of Homsedale, Lewisham, amounting to 7,283*l.* (Cost of site, 2,567*l.* 16*s.* Cost of building, 4,716*l.* 9*s.* 10*d.*) The committee had invited tenders for the erection of a school to provide accommodation for 801 children, on site in Orchard-street, Hackney, the amount of which we have already given. The committee recommended the acceptance of the lowest tender, that of Messrs. J. Perry & Co., of Tredegar Works, Bow, E., amounting to 7,814*l.* An endeavour was made to build the school without disturbing the existing infant school. The scheme was abandoned as being mistaken economy. The present tender, therefore, includes two sets of quantity surveyor's fees, caretaker's house of three rooms and a scullery, three teachers' rooms, covered playground and covered ways. An additional source of expense arises from the fact that the buildings are done in two sections. (Cost of building 7,814*l.* 7*s.* 6*d.*) Tenders had also been invited for the erection of boys' and girls' depa-

nts for the William-street, Hammersmith, school, providing accommodation for 801 children. Their amounts were:—

Nisbet & Sons.....	£3,995 0 0
Shapher.....	3,950 0 0
J. & S. Williams.....	3,800 0 0
Atchinson & Walker.....	3,795 0 0
Hobson.....	2,754 0 0
Borvenor & White.....	2,698 0 0
Hook & Oldrey.....	3,359 0 0

The committee recommended the acceptance of the lowest tender, that of Messrs. Hook & Oldrey, of 113, Southam-street, Westbourne Park, amounting to 3,359. (Cost of building head, 111. 3s. 2d.) On the 29th of January, 1874, the Board accepted a tender amounting to £224, for the erection of a school to provide accommodation for 1,665 children on the site in St. Paul-street, Bethnal-green. The site is surrounded by small houses, and will require boundary-walls to be erected on each side.

New Board Schools in Southwark.—The new school erected by the School Board in Tamar-street, Southwark, have been opened. The building is an adaptation of the Queen Anne style, and is designed by Mr. Robson, architect for the Board. The accommodation for 1,100 pupils, and will cost £2,800.

Schools.—New schools are about to be built by the School Board at Burley Lawn and Hunslet. The land at Burley Lawn is situated at junction of Carriagan-road and Burley-road, is nearly an acre and a quarter in area. The land at Hunslet Carr is situated on the south of Woodhouse-hill-road, and is an acre in area. The same design is to be carried out for both the schools, so that they will be exactly the same in plan, elevation, and general arrangements, and vary slightly in the out-buildings and boundary-walls, which have been designed separately, so as to suit each site. The plans of each school comprises three departments:—

Boys, girls, and infants,—and will accommodate 700 children, allowing 10 square feet to each child. The infants' school-room will occupy the centre portion of the building, and, like the boys' and girls' school-rooms, is 50 ft. long by 18 ft. in width. Each department has three classrooms, opening direct into the main room, fitted up with galleries and desks; also separate entrance and lobby, fitted up with chairs. The basement, which is covered with brick vaulting, contains heating-chamber, boiler, and boiler-house, the latter having a boiler. The principal rooms have open tiled roofs, the height to the wall-plate 18 ft. and to the ceiling-line 28 ft. 6 in. The roofs are covered with dark Westmoreland slate, with bright red ridging. Each school has large covered playsheds, with out-offices opening out of them, one for the boys, the other for the girls and infants, and also has large playgrounds to the front of the buildings. The materials used are brick, with hand-dressed brick facing, and banded stone dressings; walls internally will be plastered to within 6 in. of the floor, which space will be filled with moulded skirting and capping. The schools are well lighted with windows, and played monials, transoms, and heads, several openings being filled in with glass and sashes, the upper portion of the lights having hopper casements. The ventilation is by means of air-trunks carried to the ceiling, with openings into rooms, and connecting each at each end with flues, which run alongside of smoke-flues. The doors have ed jambs and pointed and played heads; are framed and panelled, and hung double patent brass floor spring hinges; fanlights arranged above each doorway, with played sills, heads, and sills. The drawings have been prepared by Mr. Richard L. Adams, of the Duke of Adams & Kelly, architect to the School at Burley. These schools at Burley Lawn and Hunslet Carr make thirteen that are either completed or are in progress.

THE WORKMEN'S CLUB IN PIMLICO.

More than seven years since, a working men's club, founded by the munificence of the late Duke and present Duke of Westminster, was situated in the Buckingham Palace-road, and named the Grosvenor Club. The club has had a great success, so much so that, partly to a member is a difficult matter, partly to a bona fide working man. It appears that the committee of the club are on the eve of adding to their premises a building at the rear of the club, in Flask-lane, for

concerts, balls, public meetings, lectures, and private theatricals, the first-floor of which is to be 90 ft. long by 32 ft. wide. On the ground-floor will be rooms for meetings, suppers, gymnastic, intellectual pursuits, and for classes. Part of these premises are to be let to building, benefit, and trade societies. The new building, it is estimated, will cost about 3,500, and the Duke of Westminster has promised another 1,000. Towards the expense the trustees hold 400, and if the members subscribe about 500, the trustees of the Working Men's Club and Institute Union, 150, Strand, undertake to raise the remainder, so as to open the new place by Christmas.

SOCIAL SCIENCE CONGRESS.

The following are the special questions appointed for discussion at the Glasgow Congress in the Health Department:—1. "What are the best methods of sewerage towns, and of disposing of their organic refuse?" 2. "In what way can healthy houses of a corresponding class be substituted for those which it has been found necessary to remove for sanitary, municipal, or other purposes?" 3. "What influence has the employment of mothers in manufactures on infant mortality, and ought any and what restrictions to be placed on such employment?"

The questions in the Economy and Trade Department are:—1. "What are the probable effects of the spread of manufacturing industry in Europe on the future commercial prosperity of the United Kingdom?" 2. "What legislation should follow upon the report of the commission on friendly societies?" 3. "What are the best means of drawing together the interests of the United Kingdom, India, and the colonies?"

THE METROPOLITAN BUILDINGS BILL.

The Committee of the House of Commons on this Bill was to have assembled on Tuesday last, but in order to prepare amendments in compliance with the decision of the committee a further adjournment was found necessary, and Thursday was fixed as the day when the committee would re-assemble. The printed amendments, however, have necessitated a still further adjournment, and the committee will meet to consider the amendments. The amendments which have been printed by the promoters of the Bill, in agreement with the decision of the committee, show that, as to the height of buildings and also in reference to the question of cubical contents, the committee have drawn up new clauses in accordance therewith. The limit as to the height of buildings in new streets above 50 ft. wide is abandoned, and in reference to cubical contents, buildings which are absolutely warehouses, and not manufacturing premises, are alone included within the provisions of the Bill.

In reference to the question of district surveyors, several new clauses have been introduced into the Bill, and many clauses defining the duties and position of the district surveyors are restored from the existing Act.

NEW REREDOS IN BERKHAMSTEAD CHURCH.

A REREDOS has just been erected in the parish church of Great Berkhamstead, in memory of the late rector. The design is by Mr. Burrow, and is exhibited at the Royal Academy, the subject being, "The Crucifixion," with the Virgin and St. John in the centre, and St. Peter (the saint of the church) and St. James on the side panels. The whole work is by Messrs. Powell, and executed in their mosaic. A corona also forms part of the memorial. Amongst the contributors were his Royal Highness the Duke of Cambridge, the Earl Brownlow, the Bishop of the diocese, the present rector, the Rev. J. W. Cobb, and many friends and parishioners, including many among the poor. This offering, and the large paintings of the Ascension, which were recently placed in the church by Mrs. Hutchinson, also in memory of her husband, form together a chief feature in the internal decorations of the church. We understand that further work is contemplated, the rector having given orders for the preparation of a design for the whole chancel; and a series of paintings of angels with musical instruments will, in all probability, soon adorn the spaces between the arches of the nave.

FOLKESTONE.

On Thursday, the 25th of June, a new aisle, which has recently been added to the parish church, was opened for public worship. The aisle, which is erected as a memorial to the great Dr. Harvey, is designed in the style of the latter part of the fourteenth century, with moulded open timber roof, and rich tracery-headed windows, which at present are glazed only in the most temporary manner in anticipation of stained glass, funds for which it is hoped will soon be forthcoming. It is intended also to decorate the roof and the walls in polychrome. The architect is Mr. Slingby Stallwood, of Folkestone, under whose directions the works have been carried out by Mr. W. H. Holdom, builder, at a cost of about 750.

SURVEYORS' CHARGES.

MINNET V. SYMES.

THIS was an action brought, in the Westminster County Court (before Mr. Francis Bailey, Judge), by a quantity surveyor, carrying on business in Parliament-street, to recover from defendant, who resides in Bristol, the sum of 19l. 10s., for commission in taking out quantities for some buildings which the defendant had employed an architect to carry out at Bristol.

Plaintiff said he had been employed by the architect, Mr. Rogers, to make out the quantities for the work in question. The lowest tender was about 800, odd, and for this tender he took out the quantities, charging commission on the amount at the rate of 24 per cent. The architect had been paid, but on his (plaintiff's) presenting his bill, he was told by defendant that his commission and all other charges connected with the work (which was never carried out) were included in the sum charged by and paid to the architect, and defendant therefore declined to recognise the plaintiff's claim.

John Rogers, an architect, said that in April last he was employed by defendant, who is a wholesale provision merchant at Bristol, to draw up plans for the alteration and improvement of some warehouses belonging to defendant at Bristol, but the work fell through in consequence of defendant's being dissatisfied with the expense. To take out the quantities for the preparation of the tenders it was necessary to employ a quantity-surveyor, and he (witness) selected the plaintiff, who ultimately sent in his bill to defendant, who refused payment on the ground that the work ought to form part of the amount which the architect (witness) had been paid.

Evidence having been given that it was the custom in the building-trade for the surveyor's charges to be taken as a separate item from those of the architect.

His Honour gave judgment for plaintiff for the full amount claimed and costs.

WARD V. PROCTOR.

In this action (Hanley County Court), Mr. Henry Ward, of Hanley, architect, sued Mr. John Proctor, of Tunstall, builder, to recover 12l. 10s., professional charges for supplying bills of quantities. The case was tried by a jury.

Mr. Ward stated that two years ago he prepared plans and specifications for the erection of a building for the Brownhills Pottery Company. Four builders, of whom Mr. Proctor was one, were invited by him to tender, and the letters inviting them were accompanied in each case by a copy of the bills of quantities. The messenger who delivered the invitations to tender said in each case that 24 per cent. must be charged for the quantities. Mr. Proctor's tender was accepted, and in conformity with custom, he, as the successful competitor, was called upon to pay for the quantities, the commission being in this instance 12l. 10s. Mr. Proctor refused, however, to admit his liability, and hence the action.

Mr. Alfred Eardley, one of the partners in the Brownhills Pottery Company, was called to prove that Mr. Proctor was the successful competitor. Mr. E. Maddock, architect, Hanley; Mr. Cooke, builder, Burslem; and Mr. Blackhurst, builder, Burslem, stated that in limited competitions like this it was the invariable custom for the successful builder to pay the architect for taking out the quantities.

Mr. Hollingshead having addressed the jury for the defence, Mr. Proctor said when Mr. Eardley (not Mr. Ward) asked him to tender he declined at first on account of the unsettled condition of the trade. Mr. Eardley then pressing him to tender, and subsequently bringing him the plans and specifications, he at length tendered, and his tender was accepted. Before he signed the contract he had not had the slightest communication with Mr. Ward, nor had he received the quantities. They came two days afterwards, but he did not make any use of them. The contract having been signed, they were of no use in enabling him to arrive at the price, nor did he use them during the progress of the building. Three weeks after he had commenced the work Mr. Ward came to him and said, "How about the quantities?" He replied that he could not think of paying for them because he had not received them in time for them to be of any use to him. The custom of the trade was that if an architect put plans and specifications into a builder's hands, and supplied quantities to the builder, telling him to charge for them in the tender, the architect was entitled to payment for the quantities. The quantities were not supplied to him until a fortnight after three other builders had tendered, and their tenders were found to be too high. He took out his own quantities.

Mr. A. Wood, architect, Tunstall, said if the quantities were not sent to the builder the architect expected to be paid by his client. If a building contract were undertaken without the assistance of the architect, the latter was not entitled to recover for the quantities. The jury, after a few minutes' deliberation, returned a verdict for the plaintiff for the amount claimed, namely, 12l. 10s.

THE PROPOSED WORKS IN ST. PAUL'S.

We have great satisfaction in being able to say that the "Committee for the Completion of St. Paul's" have postponed the consideration of the designs before them until November next. Moreover, Mr. Burges's charges have been paid; so that they will then resume their work perfectly free to adopt what may be considered the best course. We are informed that the gentlemen invited to fill the four vacancies in the committee have all declined to serve,—a significant hint to those now upon it. We have received a communication in support of the all-but universally condemned scheme, and being quite willing that our readers should hear what can be said in favour of it, have given the letter a place. We must add, however, that it does not seem to us to advance the object it has in view. The title is the writer's own.

THE "BEDIZENMENT" OF ST. PAUL'S CATHEDRAL.

SIR,—It is the boast of Mr. Burges' opponents that only one journal of importance has given him its unqualified support in the view he takes of the best means of completing St. Paul's Cathedral; and perhaps Mr. Burges' friends have done well to leave his case in the competent hands of a *Saturday* reviewer. Still, Professor Donaldson makes an unfortunate suggestion in one of his recent letters to the *Times*, which has evidently received the approval of some, and, if acted upon, would redound to the discredit of all connected with the profession of architects. The question before the public, who seem to care very little about it, is a purely sentimental one; but the question before the profession is characteristically practical, since it aims at the deliberate rejection of the accepted sketch designs, and the inauguration of a general competition for other modes of decoration,—a competition which, begun in flagrant injustice, would probably terminate only a little less unjustly than many of the equally important ones which have been held during the last thirty years.

The opposition to Mr. Burges' scheme is based principally upon the fact that he proposes to cut away a part of the inside face of Sir Christopher Wren's walls. Now, sir, kindly grant me space to consider this and other proposals,—open to all sorts of objections, I freely admit,—in the oldest and most widely circulated of the professional journals. The majority of architects know that their subtle brethren of Pericles' time admitted little that could not be viewed by the light of their reason. The naïveté of the Mediæval builders, both European and Asiatic, has credited them with a reputation for constructive truth. Suppose the metropolitan cathedral rased to the ground. Let us imagine then what might happen if one of those old masters could be invited to rebuild St. Paul's, upon Wren's foundations, according to the Greek or the Mediæval systems of construction which are strangely identical in principle. He would first look at the sun peeping through soot and mist, or at clouds which send rain to soil, not to clean, the streets; and his choice of materials would probably fall upon granite for the basement walls, the external angles, piers, and projections; and upon glazed bricks and majolica for the general external surfaces of the building. He would cover the inside face of the walls up to a certain height with marble; not for the sake of brightness and light alone, but for cleanliness, and because it was near the eye and liable to be touched. The internal pilasters, instead of being mere decorative projections, and composed of courses of stone, would be monoliths of polished granite or deeply coloured marble—giving rigidity at intervals to the walls and forming points of support upon which to concentrate the weight and thrust of the arches and vaults above them. Their bases and capitals would be marble upon which would be fixed leaves and other ornaments in bronze. High overhead the inside of the building would be continued in hard stone to be ultimately enriched with mosaic decoration; and this for a cogent reason, because after their long and disastrous experience the Greek and Mediæval artists would not gild or paint large surfaces of stone which is now known to be liable to atmospheric action from the hour it leaves the quarry until it crumbles to dust. They would not scruple to use cement or plaster wherever distance would soften such materials to the view and guarantee them from the touch,

for, moreover, plaster can be painted upon with impunity. Below, under foot, would be spread a carpet rich and varied in colour but of materials of uniform resistance to pressure and wear. As regards the windows it would be remembered that in the heart of London light has to be courted, not repulsed; and, instead of attempting to admit colour, it would be sought to brighten the colour of the walls.

Convinced of these things, it seems to me a mockery to compel an architect to have "reverend regard to the intentions of Sir Christopher Wren," and in default of knowing what such intentions were, it is certainly a contradiction to make him adopt the style of the best Italian architects of the sixteenth century. Wren never penetrated further into Europe than Paris; and his knowledge of Italian architecture was necessarily restricted to a few French buildings and the wandering Italians who built them. Surely the best way to complete St. Paul's according to the lights of an Anglo-French architect of the seventeenth century would be to employ one of the large decorating firms in Paris; in their vast workshops drawings and casts of every ornament which unhappy ingenuity has devised during the last three centuries can be procured with absolute exactness, and applied with experienced despatch. The result might be an interior, only a little less vulgar than that of St. Peter's, but there would be the satisfaction of knowing it to be correct. By using paint and *carton-pierre* the saints might both sprawl in effigy upon the walls, and lounge upon distorted pediments, each holding in one hand a garland of fruit or calico, while pointing with the other to gilt stars stencilled on a concave sky!

But Mr. Burges has attempted to think as in all human probability, Wren would have thought had he enjoyed the advantages of the present day. Not satisfied with making the interior of the cathedral clean, he wishes it to be always kept clean; and for this purpose he proposes to line the walls wherever the eye can easily distinguish, or the touch easily penetrate, with materials that will wash; and this without altering to a hair's breadth the contour of Wren's mouldings and pilasters, or the section of his walls. He has left most of the friezes intact, simply adding bronze figures which a fastidious posterity may easily remove. He has made use of the numberless panels in the building, and offers them in some cases for memorials of notable people, in others for bas-reliefs of scriptural subjects. Those unfinished portions of the stone surface in the spandrels of the arcades, in the soffits of the arches, in the coffers of the vaults, which were left plain by Wren,—simple *épannelage*, as French workmen call them,—are now to be carved, or sunk, or enriched. The stone is to be painted only here and there, and in lines and bits; mosaics, majolica, and bronze being the principal materials of colour decoration. The glass in the windows is to be white and clear, with a little colour to define the sacred subject portrayed upon it. The pavement is to be all marble, with a carpet of colour running the length of the building right up to the altar; and in the aisles it is panelled to emphasise the plan and echo the architecture of the vaults below. I submit that Greek or Mediæval artist, or Wren with modern advantages to aid him, could do little more. It is but architecture at second-hand, be it remembered,—the conclusion of a tale with an old plot, of which two-thirds are already published.

It is possibly a fault that the decorations of a House devoted to the worship of the Infinite and Unseen should be capable of rationalistic explanation. Instead of offering suggestions for which prosaic reasons are easily found, Mr. Burges might have revelled in poetical parable, and he would have probably obtained a legion of adherents had he indulged in license enough to be untranslatable. But herein the irony of circumstances is conspicuous, since the man who, nearly every one thought, would commit himself to some ultra-artistic eccentricity is now justly charged with an undue preponderance of common sense. Hampered with masters divided against themselves, Mr. Burges has tried to offend none when he ought to have thought only of pleasing himself. That his suggestions may be improved by study who would care to deny? His most devoted partisans will not refuse to admit the force of much hostile criticism. It is perfectly true, as one powerful journal has put it, that modern restoration, however learned, is only the churchwardenism of our grandfathers refined. But in this case there is no question of restoration; it has

been simply decided to "bedizen" St. Paul's. Then let his colleagues at least pay the accepted architect of the new work the compliment denied to Wren's old masterpiece—let him alone; let him to accomplish unfettered his first efforts at a task for which the liberal majority of a jealous profession believe him to be eminently fitted.

WILLIAM H. WHITE.

QUEEN ANNE'S STYLE.

SIR,—Why add the above name to the already abundant list of styles of architecture? Many of us living in the valley of the Thames to name, conversationally used, may seem explicit enough, and imply such a combination of the local material, brick, and of the forms suggested by local convenience, with modes of decoration not always well understood, of which a very limited number of foreign travellers, or of readers of foreign books, had given descriptions, as being associated with Roman power, or with 'sarm' generally. But Queen Anne reigned over six countries as well as over loamy countries. Her distant counties local feeling for decoration would come in conflict with Italian fashion. Individual idiosyncrasy would interfere to make the style of one building of Queen Anne's date very different from that of another. At that date we have talked to a generally well-informed man about these being differences of style in Gothic buildings of 500, 400, and 300 years anterior, would have seemed like drawing hair breadth distinctions. Yet such a man might have seen abundant differences between different buildings of his own date. To him the style of the merchant prince's suburban mansion, of Tom Tower at Oxford, of Blenheim, of St. Paul's Cathedral, and of St. Mary-le-Strand, would perhaps have been so strongly marked as to enlist his fervid approval for one, whilst another called forth his utter detestation. And are we now to lump them altogether in an undistinguished mass? And is not the doing so with the architectural profession calculated to raise a smile on the countenances of outsiders?

TROY.

ONE reads with no little surprise the following passage, signed F. A. M., in the *Builder*, p. 543. Homer "states that the spears were of ash, very primitive weapon indeed."

A spear is not necessarily a spear-weapon; where it seems that ash staves might make very good spears; the question how they were tipped would receive light from other parts of the poem.

The uses of metal in Homer are a study in itself, the general impression being that describes weapons from the later bronze point of view; thus the word *Χαλκός* represents metal in general, also brass and copper in particular. *Σίδηρος* (iron) does occur, but not describing a material in common use; on the contrary, it is a rare, costly, and unmanageable sort of article.

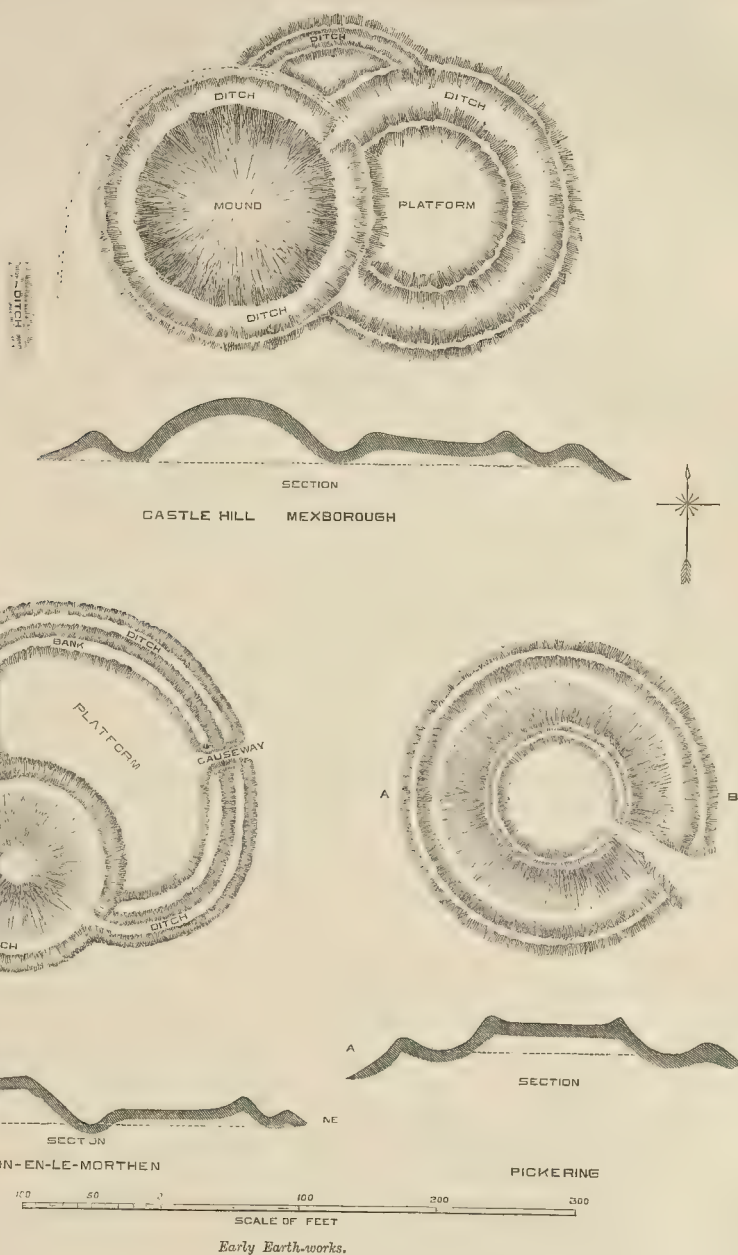
If I understand Dr. Schliemann's standpoint right, the more primitive weapons found at Hissarlik represent the subsequent relapse to a stone age, after the expulsion of the Dardanian heroes.

STAGNATION OF TRADE THROUGH HIGH WAGES.

The President of the South Midland Institute, Mr. Edward Jones, mining engineer to Lillishall Coal, Iron, and Engineering Company, speaking last week in Wolverhampton, observed that the stagnation of trade was unprecedented.

From whatsoever country English firms—passed for orders, the same reply was returned "Your English prices are too high," and in prevailing stagnation there would be, he might assert, no change until prices all round were lowered. Nor did he fear to say he believed they soon would be. Meanwhile he considered as well as all business men, that the present acerbic operatives was most distressing and hurtful to the whole country.

The Sewerage of the City of Winchester is again about to be seriously considered by Town Council. How best to dispose of sewage is to be inquired into by an inspection from the Engineer Department of the Government Board.



Early Earth-works.

EARTH-WORKS OF THE ENGLISH PERIOD.

LAUGHTON-EN-LE-MORTHEN.

The Castle-hill.—This very perfect and very interesting earthwork, an earthwork with a story, stands in a grass-field a few yards west of the parish church, the lofty spire of which is a well-known landmark. The churchyard, and possibly the church itself, have encroached somewhat upon the boundaries of their older secular neighbour. The earthwork is composed of the Castle-hill and an enclosed area appended to one side of it. The hill is a wholly artificial mound of earth, conical in form, with

a flat circular top, about 25 ft. in diameter, while the base is about 112 ft. It rises about 30 ft. out of a circular ditch, 12 ft. deep, measuring from the level of its outer side, and about 42 ft. broad. Outside this ditch, resting upon it, and covering about one-third of its circumference on the north-eastern quarter, is a more or less lunated enclosure from 5 ft. to 90 ft. across in depth, also included within a ditch which communicates at each end with that of the mound, so that, of this outwork, the main ditch forms the rear or concave defence, and its proper ditch the convex defence or that to the front. Along this convex edge, a strong bank, 8 ft. high and 15 ft. broad, crests the ditch, which is about 20 ft. broad, and 6 ft. below the exterior level. The bank is cut through and the ditch traversed by a narrow causeway towards the east-north-east, no doubt representing the original entrance, which probably was over a timber bridge. There may have been other works, but they are not at this time very apparent. In the churchyard, a little north of the church, is a straight bank, now very low, which may, as at Barwick, have covered the approach to the mound, but is more probably a trace of a Roman camp, hereabouts not uncommon, and for which the position is very suitable. This is a very common, perhaps the most common type of a Saxon or Early English dwelling; for the arrangement is not

concentric as at Barwick, but the mound is in the general enceinte, of which two-thirds or so of its proper ditch form a part, as at Tickhill and Tonbridge. Had it suited the Norman settler to inhabit this spot he would have placed a shell keep upon the mound, and built a curtain round the edge of the attached area, bringing its ends up the slopes of the mound to the keep, as at Hawarden, Warwick, or Tickhill. Here, as at Huntingdon, the ditch of the mound shuts it off from the rest of the place. This is not the case at Hawarden, nor at Tickhill, unless indeed the ditch at the latter place has been filled up on the inner side.

Laughton belongs to a district full of the traces of Saxon rule and occupation. "Morthen" is thought to represent the moor-portion or division, and Laughton is no doubt Law-town, the seat of an early Saxon jurisdiction. Laughton appears in the Domesday as the "aula" of Earl Edwin. "Ibi habet comes Edwinus aulam," and it belonged fifty-four or fifty-five carucates of land. Edwin was a powerful person, being himself Earl of Mercia, the brother of Morcar, and with a sister married to Harold. Laughton was the head of a soke which contained the townships of Laughton-with-Thropum, north and south Anstean, Thorpe-Salvin, and Wales. There seems reason to add to these four more, Lettwell, Firbeck, Gilding Wells, and Woodsetts, forming altogether an extensive fee. The English lord held also Slade-Hooton and Newhall, and a part of Dinnington. The present parish still corresponds with the ancient soke, although its ecclesiastical dependencies or chapelry of Wales, Anstean, Thorpe, Lettwell, and Firbeck were not attached to it until the reign of Henry I. The church is not actually named in Domesday, but it is undoubtedly of early English foundation, a presumption enhanced by its dedication to "All Saints." Laughton, therefore, as the mother church of a large parish, the head of a considerable soke, and the residence of an English Earl, was from remote times a considerable place, and there is great fitness in its position, and in the spire of 185 ft. high, which later piety has combined with traces of masonry of the age of Henry I. Mr. Hunter takes Laughton to be the "Mortington" or town of the Morthing, mentioned in the will of Wulfic Spot, the other places named in this early document being around it. The entire soke of Earl Edwin was granted by William to Roger de Buili, and under his rule became a member of the Norman Honour of Tickhill, though in the Survey it takes precedence of that place, being at the head of the Earl's possessions. The descent of Laughton from the Conquest is that of Tickhill. It was always held by its lords in demesne, the rest of the Honour being in the hands of tenants, so that the tradition of the Empress Maud having lived here may well be true. In the foundation charter of Blyth, Roger de Buili grants the tythe of the residence, "decima aulam," so that the hall or house probably survived the Conquest. Long afterwards, 42 Henry III., Geoffrey de Lusignan held Laughton *in capite* from Prince Edward, and 1 Edward II., he was there seized of a messuage and an acre of land, which no doubt represented Earl Edwin's Hall.

BARWICK-IN-ELMETE.

Hall Tower-hill.—This also is a very remarkable earthwork. It is wholly artificial, and stands on very high ground in a grass field about a furlong west of the parish church, and almost within the village. The ground is the highest in the immediate neighbourhood, and slopes rapidly towards the west. The work is composed of a conical mound, known as Hall Tower-hill. It has a slightly hollow summit, no doubt originally circular, and 40 ft. diameter, but which has been rendered slightly oval and otherwise affected by the slipping off the earth. It is about 30 ft. high, and covers a base of about 200 ft. diameter. It stands in and rises out of a circular ditch, from 6 ft. to 12 ft. deep, measured from the outer level, and here and there partially filled up. This circle is placed within a platform of irregular figure, the exterior limits of which are from 15 ft. to 60 ft. and even 100 ft. from the inner ditch, and which is surrounded by a bank of earth, which, to the south, where the platform is 15 ft. wide, rises about 8 ft. above its level. On the north side, the platform is 60 ft. wide and the bank 6 ft. high. Beyond the bank in each direction is a ditch. The south is the weak side, and there the bank is at its highest and the ditch at its broadest. This higher part of the bank is about 240 ft.

long. It ends abruptly towards the east. These works are less plainly seen on the east and west sides. On the latter the natural slope rendered them of rather less consequence. The entrance was apparently on the east side, from the village. At the north-east quarter, where a new burial-ground encroaches somewhat on the works, the northern bank, instead of sweeping round the eastward, seems to have turned in a direct line eastward, possibly to cover the approach. Attached to the above work, on the north side, is, or was, a large and more or less circular area, enclosed within a bank and ditch, and known as Wendell-hill. It is now very obscure, partly from tillage, partly from some cottages and their gardens. Whittaker mentions it.

It is to be remarked that this Barwick earthwork is concentric, that is to say, the mound and its ditch stand within and clear of the above described second inclosure, more or less perfect, to the outside of which Wendell's Hill is an appendage. Also, it may be remarked that here, as at Laughton, and unlike Old Sarum, there is no bank on the outer edge, or counterscarp of the ditch. In its detached mound and surrounding area Barwick may be likened to Pickering Castle (not the camp), although the earth-works there, being governed by the character of the ground, and altered to some slight extent by the later masonry, present more of an angular outline.

Barwick, or Berwick, usually is a name applied to an appendage to a manor. Mr. Whittaker suggests that this particular name may have been Bergwio, the village of the berg or burgh, or castle, an etymology which would carry back the earthworks to a period before the parochial nomenclature was fixed, early in the history of the Northumbrian kingdom. However this may be, Barwick is the reputed residence of Edwin of Northumbria, at the time of his conversion by Paulinus in A.D. 620. The works are certainly very unlike any of known Roman or British origin, and closely resemble those of the district admitted to be Saxon. Whittaker is disposed to regard Wendell's Hill as a corruption of Edwin's Hill. There is no trace of masonry upon or about these earthworks, and no tradition that they were ever inhabited by any Norman lord.

THE RIBblesdale MOUNDS.

About three miles below the town and castle of Clitheroe, the Ribble receives, on its right or western bank, the Hodder, the two streams forming the boundary of a cape of Yorkshire, which there projects sharply into Lancashire. The combined waters, thus augmented considerably in volume, are projected against the mass of high ground to the south, and encircle within their sweep a broad expanse of perfectly level meadow, evidently deposited as the river has shifted its course. In the centre of the bend, upon its left or southern bank, the river is joined by a third stream, the Calder, which flows down from Walley Abbey, placed upon it about two miles higher up. Here, in this water-girdled flat, a very striking position, are two large "mounds," so entitled on the Ordnance map. They are placed about a furlong apart, and about the same distance from the river. The larger and best defined, that to the south, is oval, or somewhat pear-shaped in plan, and about 27 ft. by 50 ft. on the table-top, and about 30 ft. high. The top is scarred as though it had been built upon, or perhaps partially opened. The other is less defined in outline, and not quite so high. Neither has any surrounding ditch, nor any sort of appended earthworks. They are possibly or probably sepulchral, and although placed most conveniently for defence, do not appear to have been so intended. The walk to the river side from Whalley is a pleasant one, and there is a ferry a short distance from the mounds.

ROTHERHAM.

Upon the right of the Tickhill-road, scarcely clear of the town, is a deep valley, containing a brook which descends from the south-east and flows across the town to feed the Don. Upon the left bank of this stream is an oblong knoll, which looks very much as though it had been a Saxon earthwork.

PICKERING.

On the right bank of the Beck, a little below but in full view of the castle, is a curious earthwork of the circular type so common in Yorkshire. It is placed on the summit of a round hill, 200 ft. or so above the river, and a few score yards to the west of it. It is composed of a central mound and circumscribing ditch. The

mound is not, like those of Barwick and Laughton, wholly artificial, but the contents of the ditch have been thrown inwards, and the ground thus increased to a height has been trimmed and scarped. The mound, as at present seen, is conical with a circular and flat top, surrounded by a light bank or breastwork about 4 ft. high. The mound is 90 ft. in diameter at the top, and about 190 ft. at the base, and 20 ft. high. It rises out of a circular ditch, about 10 ft. broad and at present not above 6 ft. deep. The entrance seems to have been on the south-east quarter. The position though slightly lower than that of the castle, commands a much finer and more extensive view, not only of the town and castle, and up the rocky ravine down which the river descends from the Cleveland Moors, but far eastward and south over the fertile vales of the Seven and the Rye, from Kirby Moorside and Hemsley to the wooded ridge of Slingsby and New Malton, a fair and fertile region, and one full of objects of antiquarian interest.

CASTLE-HILL, MEXBOROUGH.

The earthwork so called is situate about a mile east of the town of Mexborough, and upon the eastern and subsiding end of the ridge upon a higher and broader part of which the town is built. The Don is here flowing eastwards about a quarter of a mile distant, the earthwork being on its left bank. Also it is placed between two roads which unite a little to the east of it and lead to the adjacent castle of Conyngsborough. Thus although the ground to the west is considerably higher than the work; that to the north, south, and east is much lower, and before the country was drained or fully inhabited, was probably a marsh. To the immediate north also lies the course of the Dearne, which joins the Don about two miles lower down. The site, therefore, though not lofty, was on the whole well chosen, and was especially strong on the west, whence the Danes, the most dangerous of the Saxon foes, were likely to make their approach. The site actually occupied by the work is well marked, about 50 ft. above the adjacent ground, and perhaps 80 ft. above the Don. The work is composed of a circular motte, girt by a ditch, appended to the outer side of which are two wards or enclosures, each with a bank and ditch. The mound is about 25 ft. above the adjacent ground, and nearly 35 ft. above the bottom of the ditch. The top is no longer flat, having been rounded by time and weather so that its original diameter is lost, also it is scarped although it had been dug up. At the base it is about 120 ft. diameter, and the ditch may be 12 ft. more. On the outer edge or counterscarp of the ditch is a bank, steep where the ground is level, small and low where it falls more rapidly. East of the ditch is a lunette enclosure, the notch being the side abutting on the main ditch. This area is about 120 ft. square and west by 130 ft. north and south. It contained within a bank, and beyond that a ditch. Thus, so far, the general plan of the work is a figure of 8, the mound occupying one circle and the outer ward the other. The notch between the two circles is, however, covered on the north side, by a smaller work, about 45 ft. diameter. This, resting upon the two circles, is itself about a quarter of a circle. It also has a bank and exterior ditch. The approach to the work is from the south-west. As the work ascends the ridge, on the left is seen a small curved bank and ditch, by which it is covered from the west. On reaching the outer edge of the ditch of the mound the road skirts it for a few feet, and then passes into the rear of the lesser ward, by means of a causeway which divides the main ditch from that of its outwork. Thence it is continued along the edge of the main ditch, until it reaches two causeways, or leading into the larger ward, the other upon the foot of the mound, the entrance to which was thus protected by the junction of the two ward works. The works are wholly artificial, and have certainly been both higher and deeper, and probably rather more extensive. Enough, however, remains to show that the work belongs to the same class with Laughton, Barwick, Wincobank, Pickering, and Tickhill, and therefore has been a Saxon or Early English strong residence. According to Matthew of Westminster, the Saxons were defeated by the Britons in the neighbourhood, A.D. 487, at Masebail, which has been supposed to be at or near Mexborough, and no doubt in those early days the Yorkshire dales, and especially those about Doncaster, and the old Roman seats, were the scenes of many such

contests, although probably such an earthwork as Castle-hill belonged to a more settled period, when the Saxon leaders had possessed themselves of landed property, and had laid the foundations at least of law and order. Mæthborough appears in Domesday as "Mecheburg," which seems to be a recognition of the burgh or castle. Ulfae, Uchel, and Uchelch then held five carucates under Roger de Buisi, the tenant in chief. Roger's lot included the four great earthworks of Tickhill, Loughton, Barwick, and Wincobank.*

G. T. C.

"THE DREAM OF PILATE'S WIFE."

In the work bearing the above title, M. Gustave Doré has added another to that class of what may be termed religious-spectacle pictures which is so popular in England. The mention in the New Testament account of the dream by which the governor's wife had been troubled in reference to "that just man," is taken by the painter as the basis of a kind of scenic display of the historical progress of Christianity, in which the future procession of church dignitaries and Christian kings, in the train of the then despised founder of Christianity, is shown by an angel to the Roman lady. To the left is a staircase, on which the dreamer stands, with the angel hovering on the other side of the balustrade in a rather unaccountable kind of manner. To the right is the figure of Christ, in a strong light, amid a group of Roman soldiers preparing the instruments of execution. Beyond this foreground group stretches a vast crowd of lessening figures, going off into a cold blue distant gleam, in the midst of which, in the distance, the cross is finally seen the supreme and centre object, radiating light upon the crowd below.

The figures of the dreamer and the angel strike us as singularly weak; but the foreground figures in the other portion are more precisely and clearly drawn and grouped than is usual with the artist, while it is in some respects very successful indeed, the countenance differing considerably from that of ordinary representations of Christ, and presenting an expression of combined dignity and grief which is very pathetic without being weak or sentimental. This is the redeeming point in the work, which otherwise we cannot look at with admiration or satisfaction. The whole treatment is entirely conventional in feeling (except what we have named, as to the principal figure); the dream of Pilate's wife we should have taken to be something of a much more human and genuine character; the natural reaction of the mind against cruelty and persecution. As to the merits of the painting, in regard to effect and colour, they appear to us to be exactly those which belong to effective scene-painting; a hard glitter and a violent opposition of heated and cool colours. What the painter has apparently aimed at is that he should succeed in attaining; but it is that which is false in feeling and false in art, and can have no lasting value. The example of Martin, whose aims and merits were very much the same as those exhibited here (except that Martin's figures were certainly inferior to Doré's) ought to be a warning to those who paint and those who admire such things. Where are Martin's "Plains of Heaven" and "Last Judgment" now? Chromolithographs of them are found in the bedrooms of country inns. M. Doré can do work which Martin never could do; in certain qualities of engraving, and in grotesque design, he has hardly a rival. He had much better be doing good work of a kind which has a real value, than be bidding for popularity with the multitude by these melodramatic productions. Such things do absolutely no good, either to religion or to art, or to the artist; we wish it were equally certain that they do no harm.

THE PLAGUES OF DUBLIN.

The powers are being moved at last to do something to abate the nuisance caused by the sewer pollutions of the Liffey, and aggravated by the continual neglect and unsoundness of the municipal body. Dublin has experienced many periodic visitations of the plague since the twelfth century, but for many years the capital has been suffering severely from the presence of a chronic one. Several days ago, the Lord Chief Justice of Ireland, in the Court of Queen's Bench, threatened to adjourn the proceedings of the Court if some steps were not immediately taken

to have the Liffey nuisance abated, and at the same time he rated pretty warmly the Corporation for their continued neglect of the river. Two or three days after, the nuisance was made the subject of a motion in the House of Commons, and almost *pari passu* came the action of the Lord Lieutenant of Ireland. The Viceroy called upon the Corporation to move; at the same time his Excellency submitted, through Mr. Roberts, of the Board of Works, a plan for the Corporation to adopt for the temporary abatement of the nuisance, pending the construction of the main drainage. The Viceroy left it optional with the Corporation to adopt his plan or one of their own, but in either case he informed them they must proceed at once, or the Board of Works would be commissioned to proceed, and in that event the Corporation would be charged with the cost. Then ensued a series of meetings of the town council, characterised by the most disgraceful scenes of factional opposition, one party or body opposing the other. Resolutions and counter-resolutions, and amendments to the end cropped up and were knocked over; lawyers and engineers were consulted, and Babel reigned triumphant for awhile. Counsel stated, on looking over the several Acts bearing upon the port, the city, and the river, that the temporary remedy rendered works necessary that would interfere with the bed of the Liffey, and that portion of the river was under the control of the Port and Docks Board, and the Corporation could not touch the bed without getting the authority of that Board. The powers of the Corporation were derived from being a Nuisance and Sewers Authority under the Sanitary Acts, and it appeared the municipal body had full authority to pollute the river, but none to interfere with its bed with a view to its cleansing. Here we see the darling evils of divided sanitary authority, which is working such beautiful results under the present Public Health Acts. The Port and Docks Board can proceed (if they like) against the Corporation for interfering with the bed of the river, removing its noisome deposits, or constructing works there with a view of keeping up a certain level of water; and, on the other hand, the Corporation can proceed against the Port and Docks Board for the abatement of a nuisance. At the same time they will render themselves liable to a cross action, as the Port and Docks Board can compel the Corporation to stop the pollution of the river by preventing the sewers from discharging their filth therein. Unless both these public bodies agree to waive their privilege, the Local Government Board, who are vested with sufficient power under the Sanitary and Public Health Acts, will have to step in and perform the necessary work.

The sanitary authority and powers vested in the Corporation plainly and clearly enable them to take steps to abate the nuisance, and these powers may be set in motion either by proceeding against the Port and Docks Board, or independently with the sanction of the supreme authority. The temporary plans submitted by the Lord Lieutenant comprised the erection of a form of weirs to be placed obliquely across the river, at certain distances, the length to be divided into three reaches. Sluices will be provided somewhat similar to the French barrage system, and the navigation will be secured by the adoption of certain appliances worked in connexion. At low water a stated depth will be maintained, and, as the foreshore will be always covered, the effluvia that arises at present will be absent.

After all, this is only a temporary experiment rendered necessary for the abatement of a most intolerable nuisance, pending the prosecution of the main drainage works, which the Corporation are to be compelled to proceed with. The cost of this temporary scheme is estimated at £2,000, but it is more than probable, if the work is performed by the Corporation instead of the Board of Works, or the Port and Docks Board, it will greatly exceed that sum.

At the last meeting, after two days' discussion and wrangling, the Corporation resolved, by a small majority, to postpone all action upon the main drainage scheme, until the Lord Lieutenant's plan, or one in consonance with it, is carried out. Sir John Arnott has since proposed, in a letter to the Dublin Town Council, to cleanse the Liffey at his own expense, on a plan nearly similar to that suggested by the Lord Lieutenant. A deputation has been appointed to consult with the Port and Docks Board as to the feasibility of the plan and the propriety of accepting the offer.

NEW ORPHANAGE, BARTRAMS, SOUTH HAMPSHIRE.

This establishment is being erected for the religious order of Sisters of Providence, on a well-chosen site, from the designs and under the superintendence of Mr. C. G. Wray, architect, and is arranged in three separate divisions, namely, an orphanage for 160 children, a convent, and a ladies' boarding-school, all having a covered approach to a chapel forming part of the structure.

The first portion, namely, the orphanage and chapel,—is completed, and has been opened by Archbishop Manning with much ceremony.

The buildings are faced with Malm bricks, with Ancaster stone bands and dressings, and internally have fire-proof floors constructed of Dennett's arching and wrought-iron girders. The chapel has a handsome open-timber roof and traceried screen. The ground floor of the orphanage is divided by removable partitions, so that the whole area can be thrown open for exhibitions, &c. The infirmary will be over the convent, and the entire space in the roofs is utilised for drying and ironing rooms, there being a lift to the same from the laundries, which are on the basement floor.

Messrs. Robins & Co., of Clapton, are the contractors for the works; and the warming arrangements have been carried out by Messrs. Bacon & Co., of Oxford-street.

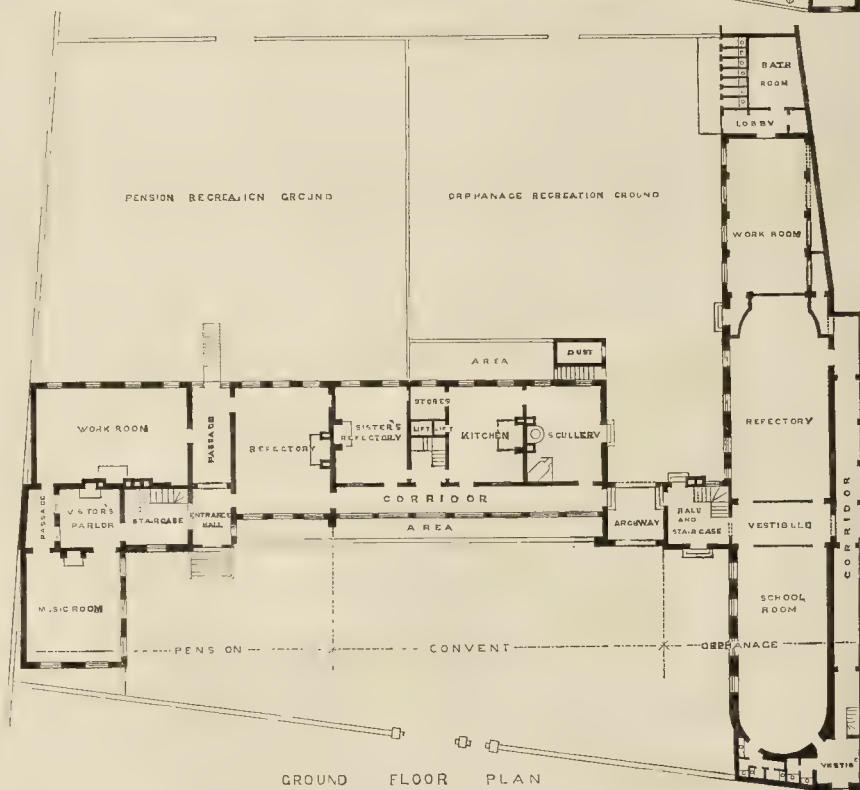
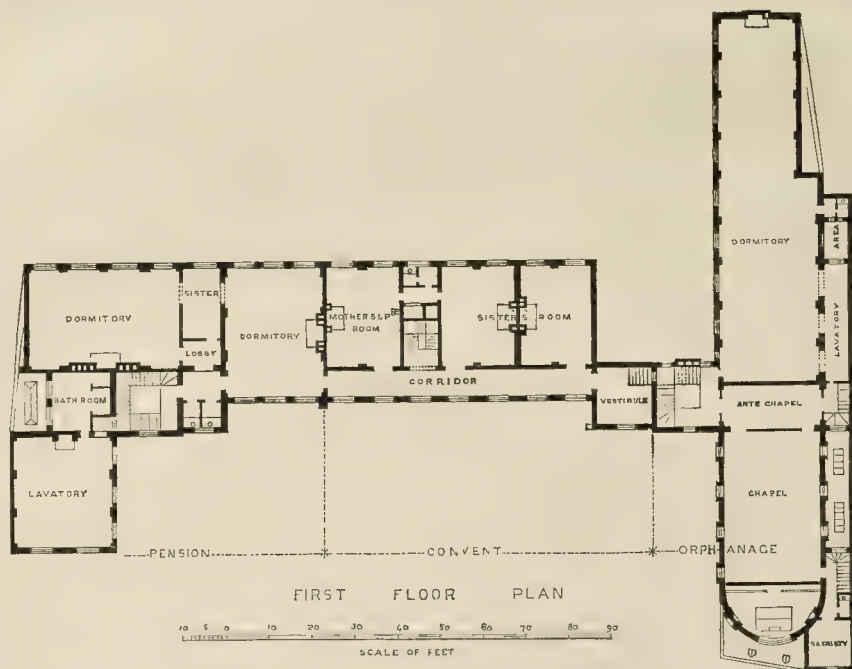
NEW BANK-NOTE PRINTING BUILDINGS.

A LARGE new building of some architectural proportions has just been erected in Farringdon-street, nearly opposite the Metropolitan Railway Station, which is to be exclusively used for the printing of bank notes and drafts. The building, which has been erected for Messrs. Bradbury, Wilkinson, & Co., has an elevation to Farringdon-street 70 ft. in length, and about 55 ft. in height, and contains four lofty stories. The main central entrance of stone is a prominent feature in the elevation. It is about 11 ft. in width. On each side there are piers, enclosing a recessed pointed arched doorway, supported by columns. The basement is carried up considerably above the street level, in Portland-stone. The rest of the elevation is in yellow brick, with stone dressings, and red and black brick ornamentation. The ground-floor, and the first, second, and third stories, have a range of eight double windows, the fourth story having eight triplet windows. Immediately above the ground-floor windows there are panels filled in with terra-cotta. Between the windows from the ground-floor to the top of the second-story windows, columns are carried up, surmounted by capitals in terra-cotta, the windows being recessed, and having the appearance of being continuous to the top of the second-story windows, which terminate with a Gothic arch, composed of stone, and red and black brick, this portion of the elevation representing a range of eight lofty windows, about 25 ft. in height. The upper-story triplet windows have arches in red brick. A deep string-course in red and black brick marks the division between the ceiling of the first floor and the floor of the second story. There is a return frontage carried along Charles-street, uniform in its architectural features with the elevation already described. The interior of the building is spacious, and fitted up with every convenience for carrying on the special business for which it has been erected. The basement is set apart for the actual printing department of the establishment, and for this purpose a large number of machines have been erected. Messrs. Harding & Bond, of Bedford-row, are the architects; and Messrs. Elkington & Co., are the builders.

THE PAYMENT OF THE ARCHITECT FOR THE LAMBETH NEW INFIRMARY.

At the meeting of the Lambeth guardians last week, a report from the committee of the whole Board was brought up respecting the arrangements to be made with the architect of the new infirmary, Mr. F. H. Fowler, and they recommended, if his plan was approved of, that he be paid 3½ per cent. commission on the whole amount. It was remarked by a member present that if it was to be a lumped sum, and extras were to occur afterwards, it would be imposing on the architect. It was, however, moved and seconded that the payment be a fixed sum, and the voting was nearly equal, the amendment being only lost by a majority of one. The original motion for the payment of the architect at 3½ per cent. was then put and carried.

* To be continued.



NEW CONVENT, SCHOOL, AND ORPHANAGE, BARTRAMS.



NEW CONVENT, SCHOOL, AND ORPHANAGE, BARRISAN, SOUTH HAMPSHIRE.—MR. C. G. WAT, ARCHT.

BUILDING IN CONCRETE.

At the Annual International Exhibition, in the portion of waste ground near the machinery room, known as the Western Annex, there are our firms exhibiting buildings of concrete in course of erection. With reference to these, Mr. W. C. Homersham, C.E., contributes an article to the *Journal of the Society of Arts*, part of which we quote:—

One exhibitor, Mr. Lish, is showing a material he calls "Tilo-concrete." In this case a single room with door and window is being built, and the material is concrete faced with tile and terra-cotta mouldings. The tiles are arranged in a supporting frame in their proper position, and concrete filled in behind. They are formed with a dove-tail or feather behind, round which the concrete sets and holds them fast. The effect is thus produced of a smooth tiled wall. The cost is stated to be about the same as that of the best brick-work. A principal feature of this exhibit is the method of construction employed. At the commencement of the work "guide screws" (in place of the external up-iron now in use) are set in the foundation trenches and "plumbed," when the concrete for foundations is filled in round them; after this material has set, these "guides" are screwed up to receive cross-heads, from which the wall studs are suspended. For building ordinary concrete walls plain wooden panels are used, and when the work has to be faced with tiles a skeleton iron panel is employed with rebated runners to retain the tiles accurately in position. At each day's work has set. When one portion is sufficiently set, by means of the screws the panels and the platform which rests on them, serves instead of a scaffolding, are raised, and the work continued as before.

There is one fact noticeable in all the exhibits, greater or less degree, and that is the ignorance shown by the constructors of the great strength of concrete to bear strains, tensile and shear. There can be no doubt that the insertion of the wrought-iron rolled joist in the floor is a source of weakness rather than of strength. Portland cement concrete will not adhere to a surface of iron with anything like the same amount of force that the particles of which it is composed hold to each other. In the building, also, which is entirely covered by a domed ceiling in concrete, a mistake appears to have been made. Are walls 12 in. thickness, and nearly as many feet in height, expected to take the thrust at the top of a very arch? Would not a floor of uniform thickness, and containing less material (concrete), be the stronger? To enable the reader to form an opinion for himself on the subject of latter question, some facts will be hereafter given concerning the strength of Portland cement concrete. A thorough examination of the structure must alone convince the most sceptical on the point of the great value of concrete in Portland cement as a building material, not only for walls, but for the flooring of every story and roofing of houses of every description. The changing corner of the flooring at the well the stairs, in no way supported from below, is quite firm and free from vibration when stepped on, or even when jumped upon by two men of an aggregate weight of over 2 cwt. The floor is $\frac{7}{8}$ in. in thickness.

From the result of experiments made some time since, it can safely be affirmed that the thickness necessary for carrying a concrete floor, in green or wet state, of a room, say 12 ft. in width, by 25 ft. or any other dimension of length, may be struck in a week after the completion of the floor if the concrete be only 6 in. uniform thickness, and gauged in such proportions that every cubic yard when *in situ* contains bushels of cement and six bushels of clean, sharp, silicious sand. One month after the floor has set, the floor would be capable of sustaining an equally distributed load of 40 cwt. per foot superficial, and twelve months after an equally distributed load of 4 cwt. per foot superficial. If the thickness of the floor be increased to 12 in., and the concrete gauged as above, a room 19 ft. 6 in. in width, 10 ft. or any other dimensions in length, may be gauged with the results as to strength the same as those given for the room 12 ft. 6 in. in width.

The roof of a room 12 ft. 6 in. in width may be formed with a layer of concrete 4 in. in thickness, and that for a room 20 ft. in width need not exceed 9 in. in thickness. Concrete in and cement is admirably adapted for the

construction of roofs of buildings; concrete is far less pervious to water than the best brickwork, and when its surface is rendered with a thin coating of compo gauged one of Portland cement to one of sand, it is perfectly impervious to damp, though it be kept covered with water. The fact may not be generally known that Portland cement compo has not that tendency to peel off when on concrete in cement, which impairs its efficacy as a facing for brickwork. This is accounted for partly by the surface of concrete (being rough) forming a capital key for the compo, but principally by the far more important fact, that there is no damp in Portland cement concrete after it has thoroughly set. Brickwork absorbs and retains moisture, which, being acted upon by frost, swells, and lifts the smooth surface of brickwork. Such cannot be the case with concrete.

Not only is a coating of Portland cement compo valuable on the top surface of the layer of concrete forming a roof, as a protection against damp, but it forms an excellent surface for the flooring of a building. A surface of Portland cement compo resists the action of the tread quite as well, if not better, than some of the superior sorts of stone used for making steps.

The people might here derive great advantage from the practical manner in which the exhibitors have explained their respective ideas on the subject of building in concrete. The houses they are in the act of constructing will doubtless do much during the season to convince many a visitor that it is possible to construct not only cottages but mansions the most extensive in concrete. A structure composed solely of concrete in the stairs, floors, and roof, as well as walls, is practically monolithic, and not only perfectly water and damp-proof, but as nearly as can be conceived proof against the ravages of that all-devouring element—fire. By forming the division walls between the various rooms, of Portland cement concrete, each room will be rendered sound-proof, concrete being an excellent non-conductor of sound. The concrete for the walls of buildings need not contain more than three bushels of Portland cement and six bushels of sand per cubic yard. In critically examining the structures in concrete being constructed in the Western Annex, the visitor must not lose sight of the fact that the exhibits are made by firms desirous of calling the attention of the public to particular forms of apparatus for facilitating construction in concrete, and not by architects desirous of ventilating their professional abilities in the art adapting a comparatively speaking novel material to building purposes. Had the case been otherwise, there is no reason to doubt there would have been no drawback to the efforts made by the exhibitors in an architectural point of view, such as there is at present. The surfaces of the walls and ceiling of some of the structures are in the rough state, and exemplify the truth of that which has been stated above concerning the excellent key that can be left on the surface of concrete for a rendering of compo. The inner and outer surfaces of the walls, &c., of the building erected by one of the exhibitors are finished off, and have a very neat and clean appearance, though it must be owned the sight reminds one too much of our suburban builders' style of architecture. The writer has seen some very handsome face-work on concrete made by embedding split flints therein, with the split face exposed. How many lovers of good architecture have walked miles to examine a particularly fine piece of flint-work, such as is to be seen at St. Augustine's Monastery, Canterbury, and in many other old buildings in that city? Why should not we of the present generation attempt at any rate to vie with our ancestors in this particular art, if such a use of the term may be permitted? In chalk countries where suitable flints are plentiful, field-labourers are generally to be found who have been taught the knack of splitting flints. In places where such is the case, a facing of split flints exceeds but little in cost that of forming a face of compo.

For cottages and outhouses, &c., a very clean and neat face may be given to the walls and ceiling by placing a course of pebbles on the exterior surfaces. The pebbles, when their outer surfaces have been freed from any compo that may have passed between them during the time of the setting of the concrete, form a surface that is agreeable to the sight and capable of receiving any amount of relief or ornament to key the same. Little more need here be said on the subject of embellishment in concrete, as there are many members of the engineering

and, doubtless, of the architectural profession also, who could and would design and build a structure wholly in concrete that would prove as pleasing to the great majority of persons of taste in such matters as if it were constructed with brickwork and stone.

Notwithstanding that the exhibits prove the great strength of Portland cement concrete, they present no data on which to calculate the exact strength of any particular piece of flooring or wall. Mr. John Grant, C.E., of the Metropolitan Board of Works, investigated the subject of the properties and strength of Portland cement, and has given the valuable and thoroughly reliable results to the world in papers read before the members of the Institution of Civil Engineers. The first paper was read by Mr. Grant in the session 1855-6, and will be found in the 25th volume of the Minutes of Proceedings of the Institution of Civil Engineers, and a second paper was read in the session 1870-2, and will be found in the 32nd volume of the Proceedings.

To attain uniformity in the strength of concrete, so essential in the construction of monolithic floors and roofing, it is advisable to adopt the French system of mixing; that is, gauging the cement and sand into a compo in the first instance, and then adding clean-washed shingle or burnt ballast, or a mixture of the two, in the proportion necessary, according to the nature of the work to be executed.

Great attention must be paid to the quality of all the materials used in making concrete in Portland cement, even to the water, which should be perfectly clean. The weight of the cement per imperial bushel should not exceed 116 lb., or be less than 112 lb., when dropped into the measure from a board fixed, say 2 ft. above the top of the measure. The sand should be rather large-grained, sharp, silicious sand, and must be washed perfectly free from loam or other extraneous matter. The shingle also should be washed free from particles of sand as well as of loam and other foreign matters. The thorough incorporation of the cement and sand is facilitated by mixing them dry under edgerunners for a period of five minutes for each portion of sand there is to one of cement before adding the water; thus, in the concrete for the floors, the writer would recommend the compo to be gauged one and a half of sand to one of cement, therefore it should be mixed dry under edgerunners for $(5 \times 1\frac{1}{2}) = 7\frac{1}{2}$ minutes. In the concrete for walls if the compo be gauged at two of sand to one of cement, the time of mixing dry should be $(5 \times 2) = 10$ minutes; and when the nature of the work to be executed is such as to permit of the compo being gauged three of sand to one of cement, then the time must be extended to 15 minutes.

The prime cost of concrete varies considerably according to the site on which it is used and the nature of the work to be executed. Thick walls of a building in concrete, as in brickwork, are less expensive per cubic yard to construct than walls that are thin. Boundary or garden walls may be constructed with safety of concrete gauged in such proportions that each cubic yard contains only two bushels and a half of Portland cement and seven bushels of sand.

The public have the advantage of seeing in the exhibits two distinct materials used to form the body of the concrete—gravel and burnt ballast. Both make equally good and strong concrete; but perhaps concrete of burnt ballast is to be preferred for the construction of flooring and roofs. It is both lighter and better adapted to resist the action of fire than concrete of gravel.

The first cost of cottages in concrete, with concrete stairs, floor, and roof, is from 30 to 40 per cent. less than a building of brickwork, with slate roof and timber floors. Besides first cost, the cost of maintenance has to be taken into consideration in determining the actual value of any property. This is entirely on the side of concrete as a building material. There have been many cases where far larger sums have been expended, and fairly expended, in breaking up a piece of good concrete in cement than it cost in making.

To enable the reader to form an approximate idea of the cost of Portland cement concrete *in situ* in a cottage or two-story building, it may be mentioned that the cost for labour of all kinds should not exceed 2s. 9d., but say, 3s. per cubic yard, or 1l. 14s. per rod. The cost of Portland cement may be taken at 2s. 6d. per bushel delivered on to the works, including the cost of testing. The paper read by Mr. Grant

before the members of the Institution of Civil Engineers (see 25th volume of the Proceedings) concludes with a most needful warning from the author against the use of Portland cement, by any engineer or architect who is not prepared to take the trouble and incur the expense of thoroughly testing every bulk of cement on its delivery on the site of the works.

First-class concrete for floors and roofs, as has been shown, requires 4 bushels per cubic yard, or 45 bushels per rod, making the cost for Portland cement 10s. per cubic yard, or 5l. 13s. 6d. per rod.

Concrete of the second class, for walls of buildings, contains 3 bushels per cubic yard, or 34 bushels per rod, the cost of which is respectively 7s. 6d. and 4l. 5s.

In garden-walls and steps for stairs the cost of the cement is only 6s. 3d. per cubic yard, or a little less than 3l. 10s. per rod. Two bushels and a half per yard, or twenty-eight bushels and a third per rod, are thus all the cement that is required.

Should there be a pit of good clean gravel handy to the site of the works, to produce the necessary quantities of shingle and sand, the cost of the gravel to make one cubic yard of concrete should not exceed, say 15d., including carting, screening, and washing,—that is, 14s. 2d. per rod. When the cost of getting first-class gravel on to the ground exceeds 3s. or 3s. 6d. for the quantity necessary to make a cubic yard of concrete, it may prove more economical to burn clay from the foundations of the buildings, &c., and make burnt ballast.

The minimum cost of burning ballast when clay fit for the purpose is found on the site of the works may be put down at 3s. per cubic yard, including the cost of labour in sifting and washing, but not of providing the necessary quantity of water. The quantity of water required for washing and soaking burnt ballast is about 20 gallons per cubic yard, or a ton weight per rod. One half that quantity will suffice for washing good gravel, containing the proper proportion of clean sharp silicious sand; such only should be used in making concrete. The quantity of water requisite for gauging the compo is about three gallons per bushel of Portland cement and one gallon per bushel of damp sand.

The case will prove to be very exceptional where the cost of Portland cement concrete 3s. 6d. in a building proves to be on the average less than 10s., or more than 16s. per cubic yard, *i.e.*, 5l. 13s. 6d., or 9l. 1s. 6d. per rod.

PROPORTION IN PHYSICAL EDUCATION.

WHAT is the real aim of the physical education agitation? Do the agitators desire to inculcate the notion that it is superior to, and ought to take the precedence of, mental education, and is the only education in which it is worth while for humanity to graduate;—that a man's sole study should be how to become a muscular being, a giant in strength, a Hercules; or do they admit other considerations,—the claims of the intellectual faculties, to share with their physical their due of exercise and development?

It is important, in these questions should receive concise answers. The notion that physical exercise and development may be urged to any extreme without detriment to vitality, without injury to the manhood, morally and intellectually is a most pestilent error. We cannot ourselves conceive of any but the most rabid enthusiasts in the cause, holding so exclusive and extreme a view, and to the mental and moral cost, as it inevitably must be, of the youth's discipline. But, we regret to say, there are many men who do,—from want of that deeper kind of thinking which would expose its fallacy and danger. To become real public benefactors, the out-and-out promoters of physical education must moderate their opinions, and desire to establish only such exercises and physical training as will conduce to health and beauty, as will develop that proportioned and balanced symmetrical condition in which well-being consists. The adjustment of the intellect and physique, is fundamentally a proportionate adjustment, and we must thoroughly understand the principles of ontological proportion before venturing to advise, or daring to legislate, on any subject connected with education.

Disproportion in the human system is the

result of the misleading or misdirection of the vital forces. We cannot conceive of either a being, or a system, perfectly proportioned, having a tendency to err. But disproportion once induced, by some extraneous influence, becomes in time a set and permanent source of error. Disproportion, in brief, is the cause of all evil. Disproportion in either mind or body, and between mind and body,—inequalities in social relation, unequal distribution of the means for education, and healthy recreation, disproportion of population to the requirements of industry,—in fact, throughout the whole solar system, where there is aberration you shall find there is a disturbance of symmetry,—disproportion. We are not permitted to suppose that human nature was set and established in disproportion, and must conclude that this condition was induced by the misdirection and misuse of the humanity. We have now, if we desire to re-establish and rectify man in just proportions, to adopt a converse process, *viz.*, by rightly directing and teaching him the moral use of his mental and physical faculties.

Disproportion, either in mind or body, and between mind and body, is sometimes congenital, at others, induced by injudicious training. It is also induced by the unwholesome conditions under which thousands and tens of thousands of human beings in a densely-populated country are compelled to exist,—conditions which render an equable, balanced, and natural life impossible to a large number of persons. The dangers to the disproportioned human argosy on the sea of life are as imminent as to overloaded, untrimmed, unbalanced ocean-going craft. The more unbalanced the humanity, the more untrimmed the ship, the greater the probability of disaster and total wreck. It is the unbalanced, disproportioned natures in which diseases arise, become uncontrollable, mar, and capsize the humanity.

If there is individual or personal responsibility, there is also a collective responsibility. The true legislative function of the State is, when analysed, to reform, re-adjust; or, in other words, to proportion society and men.

To educate men properly is to proportion them, and it is consulting to those who have this grand object in view, to know that human nature is sufficiently plastic and modifiable to render its rectification possible, and that there is always a tendency to reaction from any vicious extreme to aid the judicious teacher.

Accepting the science of proportion as the true basis of a rational system of education, we must, in the words of Shakespeare, say, "Let distribution undo excess," and endeavour to duly divide the vital force between the intellect and physique. To formulate the great principle of education and hygiene, we have only to slightly alter the wording of Bentham's famous political axiom, and declare that to be "the greatest health and strength to the greatest number of faculties." Now, "the greatest health and strength to the greatest number" is only to be attained by the equable and just exercise of all the faculties, both intellectual and physical; inequality in their exercise only being permitted when natural disproportions are to be remedied. All decadence, degeneracy, disease are manifested by either a local or general disturbance of the just proportions of health; by a disproportioned, unbalanced condition of the system. The whole aim and end of State Education should be the restoration of the people to that symmetry, to those balanced proportions in which well-being consists, in which health and beauty inhere.

The science of proportion not only points out that central ideal or moral form which a right system of education should endeavour to develop, that balanced constitution which qualifies for true citizenship, but how men, if need be, may be educated or trained for special purposes, for soldiers, sailors, &c., for callings in which physical strength is in greater request than intellectual—for preparing youth for such callings we may lay more stress on the physical than the mental training; or *vice-versa*, when intended for the learned professions and the liberal arts, emphasise the intellectual. But in either case we must bear in mind that there has been a departure from the great central highway to a more or less byre or unbalanced condition, for which we must be prepared and make due allowance. *In medio tutissimus* this should ever be present to the educator, as it is to the wise in all mundane affairs. The golden middle course is the safest and best. The central, symmetrical, or balanced humanity is the most masterful humanity; for the mean or average condition is

that which can be more readily than any other, turned to any special purpose.

The English are, more than foreigners, prone to adopt a partial and one-sided view of a question, and to run their hobbies to extremes. This has been the case in respect to the advocacy of physical education. Muscular Christianity was a few years since to effect everything, to regenerate society. The consequence has been that the press and the medical profession have had to call the public to sober reason by directing attention to the fatal effects which ensue from an obstinate and persistent encouragement of physical education, to the exclusion of all those considerations which should mitigate and moderate it.

There does, at the first blush of the question appear to be some plausible excuse for carrying physical exercise to extremes in the heyday of life; it is regarded in this case as a safety-valve for superabundant vitality. But we ought to remember that this is just the season of life for moulding mind and body into permanent forms; and that if the promoters of physical education at any price encourage it on this score, ar under the conviction that no permanent injury will ensue to the youth so trained, they will, they only study the laws of nature of proportion more attentively, be finally converted to the belief that physical education, promoted as carried out on their plan, would produce a permanent list in the humanity, tend to injure health, and shorten existence. Moreover, a safety-valve is a bad substitute for moral control, a substitute which does not elevate but degrade. If we are to institute a safety-valve for superabundant vitality, why not let the steam-vapour off in mental, instead of bodily effort? The country requires strength of mind more than strength of body, and the one development is as practicable as the other. But the moral nature is, *par excellence*, the balanced nature.

The error of the physical educator appears to lie in this, that he entertains the ridiculous notion that if you could succeed in making man a Hercules in body, you would at the same time make him an intellectual giant,—a prodigy of health, and so on. Never was notion more opposed to nature, more falsified by our every day experience. The vital force is in every man a fixed quantity, which may be turned in various directions,—all to one side if you please; but this case there will be deficiency and weakness on the other. The ideal of education is, as we have before stated, equable distribution,—the greatest health and strength to the greatest number of faculties. We cannot, therefore, divorce the consideration of the subject of physical education from mental without leaving a tremendous loophole for error, or carry it regardless of other considerations without permanently injuring English manhood.

W. C. T.

A NEW THAMES TUNNEL.

At a special meeting of the Greenwich District Board of Works, Mr. Barlow, of Charlton, attended to explain the details of a scheme to provide a road and railway communication from East Greenwich, across the marshes, to Blackwall Point, and thence straight across the river by a tunnel to Poplar, thus forming a direct communication from the East India Dock-road on the north side of the river, to the Woolwich and Greenwich road, on the south side. Mr. Barlow stated, as his opinion, that a tunnel, substantial build, and of dimensions suited to the large and important traffic which would pass through it, might be constructed at a cost less than the average cost of the bridges in the metropolitan area above London Bridge. (The north side there were five railway companies—the London and North-Western, the Midland, the Great Eastern, the Great Northern, and the North London,—and there was a point on the railway near Canning-town, on the line owned by the Great Eastern, where all these companies had running powers; so that, by making a second tunnel for railway purposes and uniting it to the Great Eastern system at this one point, the whole of the five railway companies could be brought across the river and obtain direct access to Greenwich, Woolwich, &c., and also unite with the South-Eastern system. Mr. Barlow stated that until the subject was fully reported upon, was not prepared to speak definitely as to cost, but his impression was that if the Metropolitan Board of Works made the road by itself, the cost would be from 500,000l. to 600,000l., but that

It was made jointly with a railway-tunnel, its cost would be from 400,000. to 450,000. It was resolved to memorialise the Metropolitan Board of Works in favour of the project.

ACCIDENTS.

Fell of a Building at Woodhouse Junction.—During the last two months three stone houses have been in course of erection at this place, and they were nearly completed, when the whole of the gable, to the foundations, fell to the ground.

Fatal Accident with a Hoist-Chain at Dewsbury.—At the works of Messrs. Macchell Brothers, shoddy manufacturers, Dewsbury, the firm are erecting a five-story factory near their present works, in Cloth Hall-street, and the masonry is nearly finished. Four men were ascending in a steam hoist to the top story, and had all but reached it, when suddenly the hoist-chain broke, and the men were precipitated to the ground, a depth of 60 ft. or 70 ft. One died in a few minutes, his body being shockingly mangled. The rest received frightful compound fractures of the legs and other injuries.

WORKMEN'S CLAIM FOR WAGES DURING ILLNESS.

Mr. Pattison, surveyor to the parish of Chelsea, commended the surveyor to remunerate their workmen when absent through illness. He said he suggested, as he had advised the men to form some sort of benefit club among themselves to assist those in need, and they took no notice of it. Mr. Kingsbury said it was cruel and absurd to suppose workmen earning only 15s. a week, and having families could afford any portion of it for benefit clubs. He moved that if the men's wages were paid during illness. Mr. Birch strongly opposed such a motion, as he believed it would open the door to imposition. The recommendation of the surveyor was eventually carried by a large majority of the vestry. In the parish, in the end, are likely to be the losers by this piece of charity, for the sick men, with their wives and children, will have no alternative but to go into the workhouse, and become paupers, perhaps for the remainder of their lives.

THE WASTE-NOT VALVE.

"The Waste-not Valve" referred to in your article of July 4th, p. 587, are Messrs. J. Taylor & Son's patent, only fixed and exhibited by me, W. SARAZON.

LOYALTY TO EMPLOYERS.

"Having been in the country for the last four years, I have been reading the journals. On my return, I saw a notice of my 'Record of Thoughts,' &c. which appeared in the *Builder*, April 11, 1874, & was pointed out to me, in which mention is made of a betrayal of confidence on my part as to some literary assistance rendered to Sir M. Digby Wyatt. Now I must say that seems to me too severe upon me, although I am ready to admit, at once, that I ought not to have made public engagements of a private nature. But in thinking of myself we are apt to forget what is due to others, and that was my case. Directly, however, I saw my fault, I (tended to retract, and I could say, although I do not not 'cancelled' the aforesaid passages, I at once then rearranged and reprinted, and have withdrawn the remaining copies of my first issue. No one has greater admiration of Sir M. Digby Wyatt's genius and abilities than myself; but the question at issue remains still the same, it seems to me, as to whether I assisted him or he assisted me? I have always contended for the right of every one to claim his own work and have it recognised. On the other hand, we have the great examples of Raffaele and Rubens, to whom a quantity of work is ascribed which is really done by their assistants. The public benefit of such a system perhaps, and yet it has never seemed to me quite correct. It would take up too much space to go into the arguments *pro* and *con*, in question; but I am going to admit that, in point of fact, every architect is, most of necessity, obliged to merge the names of his assistants, and adopt the entire work as his own. J. D. WARRING.

VENTILATION OF LEEDS TOWN HALL.

"In the *Builder* of last Saturday you publish a signed 'One who Knows,' which is an attack upon the system of ventilation recently adopted by the Leeds Corporation, evidently proceeding from the pen of some one whose motives would be more apparent to the public eye ventured to drop his anonymous mask—a course which I confidently predict he will not dare to adopt. As my letter is a series of misstatements concerning my patent, I must request you to give me sufficient space in your issue to answer his attack, and to expose his ignorance. 'One who Knows,' whilst admitting the perfect simplicity of my invention, says—'All that is done is to cut by a portion of the window-sash, leaving an opening which acts with the same 'simplicity' and directness as the lowering of the window or the removal of one of the panes or sashes would do. Will you believe, sir, that in the Leeds Borough Court, a test building which I have ventilated to the satisfaction of the corporation, there is not such a thing as a window-sash, and that the fresh air is introduced by means of a series of rectangular tubes, in accordance with my patent? I must, at least, have window-sashes visible before I can cut them away, and unhappily for

my smallest statements, this desideratum has not been supplied in the room in which I have tested the worth of my invention.

He says, secondly, that my 'system makes no provision for the removal of impure air.' Does it not? At least, it not only provides, but insures, the continuous admission of pure air into the apartment ventilated, and until 'One who Knows' has shown us how to cram the greatest amount of foul air into an apartment to believe that fresh air can be poured into an apartment in a continuous stream without the expulsion of the lighter foul air, which must be driven before it like chaff before the wind.

Lastly, your correspondent declares he is suffering from 'chronic catarrh and sore-throat, as the result of the introduction of this system,' and he therefore alleges that there is not that absence of draughts which I claim as the distinguishing feature of my invention. Strange that it should be left for a gentleman who does not dare to sign his name, to state in the columns of a London newspaper a fact so contrary to the experience of those who have tested my invention in Leeds. I beg, sir, to deny positively and distinctly that your correspondent is suffering through any defect in my system of ventilation, and I do so on the ground that from all who have tried it in Leeds—from the borough magistrates (who sit daily in the court-room I ventilated, after it had baffled the attempts of everybody else); from their clerks, from the borough engineer; from the editor and proprietors of the *Leeds Mercury*, whose offices and writing-rooms have been ventilated by me; from Mr. Orley, ex-mayor of Leeds, and head of the banking firm of Wm. Williams, Brown, & Co., in whose bank premises I have introduced my system; and from several other gentlemen of equal weight and equal experience, and, finally, from the unanimous tendency that there are no draughts under my system, and that its adoption by them has been followed by none but beneficial results. MARTIN TOMLIN.

THE LONDON HOSPITAL SATURDAY FUND.

SIR,—The council of the Hospital Saturday Fund cannot but regret the unfavourable notice of its motives and work contained in the *Builder* of the 4th inst. The reason for instituting the Hospital Saturday is the fact that a large proportion of the working men do not attend places of worship. This undeniable fact arises from various causes, which it is needless to go into. It was therefore thought desirable to institute a Hospital Saturday, not in opposition to Hospital Sunday, but in aid and extension of its charitable work. So far from wishing to confine the Hospital Saturday subscriptions to the working classes only, the Council will be most happy to receive subscriptions from all classes. What it especially desires is that those, to whatever class they belong, who do not subscribe to the Hospital Sunday Fund may be induced to aid the hospitals and dispensaries of the metropolis by subscribing to the Hospital Saturday Fund. Such a fund has been most liberally supported by the working classes in Manchester, Liverpool, Glasgow, and Birmingham, and it cannot, therefore, be an 'improbability' to ask the working men of London to support a similar fund in the metropolis.

That the utmost aid possible may be given to the above-mentioned institutions is the sole motive which prompts the action taken by the Hospital Saturday Council, and certainly not any doing on the part of its members to 'thrust themselves before the public.'

We remain your obedient servants,

BRANSON,
E. H. HAYES,
J. W. PROBYN,
GEORGE SAVAGE,
Hon. Secretaries of the Hospital Saturday Council.
EDMUND PARKER, Secretary.

SURVEYORS AND ENGINEERS.

In a recent number of the *Builder*, a paragraph appeared with reference to the Sunderland Corporation's intentions to appoint a civil engineer in lieu of a surveyor.

Mr. Younger, the present Borough Surveyor, not liking the contemplated alterations for many reasons, desired of the Town Council an opportunity to refute the charges of inefficiency brought against him by the Committee, and that he was wanting in administrative ability and engineering skill; and the Committee having heard the surveyor's explanations, submitted the same report to the Council. The matter came before the Town Council at their last sittings.

Mr. Hugh Robson moved the adoption of the report, and cited instances wherein he alleged the Borough Surveyor had proved himself incompetent as a civil engineer; but Mr. Younger's faults, he said, were sins of omission rather than commission, for unfortunately their surveyor had not been a professional engineer's education. The report being seconded, it was warmly opposed by Aldermen Reed, Ranson, and others, all of whom concurred in denouncing the proposition as a great injustice to one of the oldest servants of the Corporation. It was agreed all round that the surveyor had served the borough faithfully in carrying out some most important works, and Alderman Ranson further dwelt upon the fact that the proposal emanated from the friend of a professional engineer who aspired to the position. On a division, five only voted for an engineer in place of a surveyor, and the report of the Committee was negatived by a large majority.

Public Improvements.—In reply to Mr. Goldsmid, in the Commons, Lord H. Lennox said the question of providing increased accommodation for the Government Departments was now under the consideration of Government, and he could not therefore give any pledge to preserve the block of buildings between the new Home and Colonial Offices in Parliament-street and St. Margaret-square. The plans for a new roadway from Hamilton-place to Grosvenor-place were not yet matured.

* We never said it would be.—Ed.

CHURCH-BUILDING NEWS.

Melton Mowbray.—Harby Church is about to be restored. Mr. N. W. Johnson is the architect, and Mr. George Hayes, of Melton, is the contractor, for 2,200l. Mr. Hayes also secured the contract for alterations of Mr. Brewster's house at Old Guadalupe, at 1,400l.; and Mr. Johnson is also the architect.

Worcester.—The foundation stone of the new Church of St. Margaret, in St. John's parish, Ladywood, has been laid at the corner of Loddam-street and Alston-street. The cost of the new church will be over 4,000l. All the seats will be free, and accommodation is to be provided for about 700.

Wimborne.—The newly-erected Church of St. Peter at Wimborne has been consecrated. The church consists of nave, chancel, and chancel-arches, with south porch. It accommodates rather more than 300 people, with power at a future period to add 100 additional seats. The tower, surmounted by a spire, rises from the western compartment of the chancel to a height of rather more than 100 ft. The aisles are separated from the chancel by two arches on each side, with two columns in depth of red Monisfield stone, and choir. The roof of the chancel is groined with wooden ribs and boarding. The roof of the nave is open, the timbers wagon-headed. The total length internally from east to west is 95 ft. The seats throughout are low and open. The church is warmed by Messrs. Haden, of Trowbridge. The style is transition from Early English to Decorative. The main body of the wall is brick, faced with Ancaster rubble stone, having bands, at certain marked distances apart, of a brown or rust-coloured stone from Dunston. The whole of the dressings and tracery are of red-bed Farleigh Devon stone. The roofs are covered with stone seating from the Colley-Weston Quarries, Northamptonshire. The works have been executed by Messrs. Holland & Hannen, London; Mr. T. H. Wyatt being the architect. They have been superintended by Mr. Fowles, who, in a similar manner, has had charge of the Churches of St. John and St. Mary, in the parish of March. The carving has been done by Mr. Sanson, London.

Tringford (Bedfordshire).—The parish church, which had been undergoing restoration for the past twelve months, has been opened. The aisles have both been re-built, with two new porches; the roofs of the nave and aisles are also new and re-leaded. A new stone parapet has been placed on the tower, with pinnacles at each corner, mounted with crockets and finials. The stone-work internally has been restored and the walls re-plastered. The seats are open benches of English oak, with square ends, copied from the original. Mr. Browning, of Stamford, was the architect employed; and Messrs. Law & Son, of Luttrellworth, Leicestershire, the contractors; the stonework being executed by Mr. William Wade, of St. Neots, Hunts. Mr. Stuart, at whose cost the work is done, is also having a wall erected to the churchyard, which has been enlarged.

Longsight.—The foundation-stone of St. Clement's Church, Longsight, has been laid by the Bishop of Manchester. The new parish of St. Clement's is an off-shoot from St. Matthew's. In addition to the new church, a parsonage is to be commenced immediately, and the accommodation of the adjacent schools is to be greatly increased. The church will be built of brick, both inside and out; on the inside red brick, relieved with white. The plan comprises nave, aisle, chancel, and chancel aisle, with porch, and a staircase leading to an end gallery. The chancel is apsidal, with no window in its eastern face. At the other end of the long plot of land forming the site will stand the parsonage. The space between the church and parsonage will be laid out as a garden. The designs have been prepared by Messrs. Medland & Henry Taylor.

Ramsgate.—A new church, erected in Kingsgate, and dedicated to St. Paul, has been consecrated by the Archbishop of Canterbury. The edifice is in the Gothic style, and has been built by Messrs. Smith & Son, of Ramsgate, from designs prepared by Mr. R. Wheeler, of Tunbridge Wells. The church will seat 250 persons; it is 69 ft. in length and 30 ft. in width, and consists of a nave and one aisle. The total cost of the building, including the site, amounts to about 1,500l.

Salford Priors.—Salford Priors church has been restored from a condition of partial decay, and re-opened for Divine service. The church,

named St. Matthew's, has been restored from the designs of Messrs. T. D. Barry & Sons, of Liverpool. The amount of the contract was 2000*l.*, and it is probable that a deficit of about 150*l.* will remain. The nave, which is 25 ft. high, had until recently two square-headed clerestory windows, and two other windows of similar character. These have been removed, as they probably formed no part of the original structure, and four foliated, triangular clerestory windows, have been inserted. A new porch has been added outside the Norman tower. The new roof of the chancel is composed of moulded ribs, divided by minor ribs into panels, and forming a pointed arch internally. The ceiling is finished in plaster, a cornice running from east to west, in which are placed angels with extended wings, and shields. This portion of the roof will be decorated at a future period. There is a reeded of Caen stone with black marble shafts, and ornamentation of Early English character. The chancel floor is paved with ornamental tiles. The western gallery has been removed, and the old pews have been replaced by low seats, part of the old oak material being used for sittings in the south aisle.

Millbrook (Suffolk, Eng.).—The new church dedicated to the Holy Trinity, at Millbrook, has been consecrated. The church is built upon a site given by Lady Barker Mill, immediately opposite the Old Manor House, and has been about two years in erection. The church is in the Early English style—or rather of the transition period between Norman and Early English—with nave and side aisles; chancel and chancel aisles, vestry, tower, and spire, but the realisation of this as a whole, has not been attained, owing to want of funds, the tower and spire being still unfinished. The church is of Swange stone, with Farley Down stone dressings, and is 111 ft. 6 in. long; the chancel taking 39 ft. and the nave 72 ft. 6 in. The width of the nave is 51 ft. The height of the nave roof is 53 ft. The church will accommodate 700 people, and its total cost is estimated at 7,000*l.*, but work to the amount of 4,800*l.* only has at present been carried out. The architect is Mr. Henry Woodyer, of Guildford, and the builders are Messrs. Newman & Son, of Winchester. The works have been under the superintendence of a nephew of the architect, Mr. Connamaker. The main west window is a two-light lancet, geometrically glazed, with tinted edgings, and there is a smaller one at the end of the north transept, in keeping with the others lighting the church. The chancel is lighted by a window of seven lancets, surmounted by a small diamond-shaped opening. The roof is open timbered, filled in with plastering, and is supported by beams of pitched pine. The nave is 32 ft. high; and the total height of the proposed tower and spire, when completed, will be 140 ft. The site for the church was given by Lady Barker Mill, who has also aided the work in various ways.

Books Received.

On Building Contracts: a Legal Handbook for Architects, Builders, and Building Owners. By EDWARD JENKINS and JOHN RAYMOND, Barristers-at-Law. London: H. S. King & Co. 1873.

This title on the cover, "A Legal Handbook for Architects," probably led us to expect too much, and so we were a little disappointed with this volume when we first looked through it. Viewed, however, as an introductory treatise on Building Contracts, we may safely say that a large number of our readers will find the possession of it an advantage. As the authors themselves say, they do not seek to present an exhaustive treatise on the Law of Contracts, or to offer to the profession of architects a book of reference in all cases likely to arise out of their numerous and complicated relations with a great variety of persons or bodies corporate. In large and important cases nothing can in the long run prove so safe or so satisfactory as to refer for advice to some competent legal authority, and have the preliminaries and the terms of an agreement, or the effects of a certain course of action, premised with distinctness and authority. But cases are daily arising in the ordinary practice of an architect in which he desiderates some immediate authority to which he may at the moment refer, to inform him respecting the proper course to be taken in completing an agreement, or in meeting some emergency which

has arisen. Moreover, it cannot but be useful that the legal decisions that have from time to time been given on questions affecting their practice should be brought together and classified in a compendious form for the information and assistance of the profession. And all this the work supplies.

In treating of taking out quantities the authors thus summarise the rules to be deduced from authorities, by which the transactions of the parties as to the quantities would be governed in the absence of any agreement to the contrary:—

"When an architect is employed to prepare plans and specifications for a new building, he is implicitly authorised to contract, as agent for his employer, with a surveyor to take out the quantities, such being the usage."

On the contract thus made by the architect the employer is liable. But (the contract being conditional) if a tender be made and accepted, and the works proceeded with, the liability will shift, and the contract will then be taken to subsist between the builder and the surveyor.

In this case the surveyor is not the agent of the employer, or building-owner."

The Towns Improvement Clauses Act, 1847; parts of the Metropolis Management Act, the Building Act, Forms, General Conditions of Contracts, and the Schedule of Charges published by the Institute are given as an appendix.

The volume is dedicated by permission to the Royal Institute of British Architects.

The Complete Measurer of Boards, Glass, &c. By RICHARD HORTON. Second edition. London: Lockwood & Co., Ludgate-hill. 1874.

THE very long title of this work is as follows:—"The Complete Measurer, setting forth the Measurement of Boards, Glass, &c., unequal-sided, square-sided, octagonal-sided, round Timber and Stone, and standing Timber; with just Allowances for the Bark on the respective Species of Trees, and proper Deductions for the Waste in hewing the Trees, &c.; with other essential Instruction to Timber-growers, Merchants, Surveyors, Architects, Stonemasons, and others." By Richard Horton. Second edition, with important additions."

The work seems to be something more than a mere compilation of numerous tables. The author is of opinion that the extant tables and systems are in many instances productive of serious loss to the seller, whilst in other cases they cause great loss to the purchaser; but the worst of it is, that both seller and purchaser are likely to be guided more by their respective interests in the adoption of a measuring-book than by its more strict accuracy. Ultimately, however, the right mode must prevail. We have used the improved and other tables in this volume, and have not observed any unfairness or inaccuracy.

It is surprising how the years go by without anything like a clear settlement either in word or idea as to what an inch square is, and how it differs from a square inch. In this second edition of Mr. Horton's work he says, to this end,—

"It is important that those who use the following tables should clearly understand the sense in which the terms inch and part are there employed. In the table of surface measurement the inch is to be regarded as the twelfth part of a square foot; it is a strip, 1 in. wide, cut from a margin of the square; this strip is therefore 12 in. in length, so that it contains 12 square inches; and it is the twelfth part of this quantity which is called a part; hence a superficial part is 1 square inch. In solid measurement, the inch is to be regarded as the twelfth part of a cubic foot; it is a slice or slab, 1 in. thick, cut off aside of the cube; so that it contains 144 cubic inches; and it is the twelfth part of this slice which is called a part; hence a solid part is a stick of the material 12 in. in length and 1 in. square at the ends: it contains, therefore, 12 cubic inches."

VARIORUM.

The Sanitary Record: a Journal of Public Health (Smith, Elder, & Co.), is the title of a new weekly journal of the progress of hygiene in cities, towns, rural districts, mines, factories, and habitations; the food, water, gas supply, and drainage of towns and rural districts; the vital statistics of population; the influence on health of trades and occupations; and the operation of Acts bearing upon public health. It is to be edited by Mr. Ernest Hart, and publishes a strong list of contributors. Judging from the first number just now published, the conductors seem prepared to retrieve all the roads we have painfully trodden for many a long year. We cordially wish them success.—Professor Gruener, in the *Art Journal* for July, speaks thus as to early enamelling.—"The most recent

researches have led to the conviction that enamelling was practised by the Egyptians and the Greeks, and that it was not only on earthenware and bricks that they used the enamel, but that they were also acquainted with enamelling metal; although they cultivated at the same time another process, by which they filled with coloured mastic, or with gems and glass pastes the ornaments which they had out in their metallic utensils and ornaments. It was not, however, before the beginning of the third century of our era that a classical writer, the Greek philosopher Philostratus, living at the court of the Emperor Severus, mentions the art of enamelling for the first time as 'practised by the barbarians near the ocean;' this was the earliest enamel, called *email cloisonné*, in use by the Celtic nations in the conquered Roman provinces. When an easily-melting glass, coloured by means of certain metallic oxides, is by heat vitrified on the surface, or in the cavities of gold, silver, or copper, it is called enamelling, and the coloured glass itself *email*. In the earlier manner, called *champlevé*, the outlines of design were formed by placing wire, or thin plates of gold, edgewise to the object that was to be enamelled, and soldering them to the base, thereby forming cells, which were filled with the powdered enamel, a paste of which had been previously prepared by mixing it with purpurine. So prepared, the work was exposed to high degree of heat, that melted the glass. The technique was practised from the seventh to the tenth century in various parts of the Continent when a second improved method was invented whereby the outlines were no longer soldered to the main body, but in which they remained the solid of the vessel, and those parts that had to receive the enamel were cut out, and the filled with the glassy substance. Gold was no longer used, but red copper, of which the outlines were gilt. The manner is known by the French term *champlevé*." —From the June number of Cassell's *Household Guide* we get some directions for preparing water-proof paper:—"Common paper, by a very simple process, may be converted into a substance as strong as parchment, by means of sulphuric acid. The paper is simply dipped in the acid; but the acid must be of an exact determined strength, and mixed with half its bulk of water. A sheet of paper dipped in the liquid is almost instantaneously changed in character. It becomes tough, hard, and fibrous, but its weight is not increased, and it is far better for writing purposes than animal parchment. It can be rubbed better than paper, almost as well as sheepskin, and it serves as vellum in bookbinding, and for all legal purposes as well as animal parchment, for strong binding, and as a substitute for bladders to cover pickles and jam jars; and any paper that has ever been printed on may be converted, by means of sulphuric acid, into vegetable parchment. Paper can be made waterproof without giving it the character of parchment, by dissolving 24 oz. of alum and 4 oz. of white soap in 2 lb. of water, 2 oz. of gum arabic and 6 oz. of glue in 2 lb. of water. The two solutions are to be mixed, and the sheets of paper dipped into the mixture while warm. They are then to be hung up to dry, and pressed. This paper is very useful for packages exposed to the damp, or for any purposes connected with the preservation of articles from moisture."—"Easy Exercises in Arithmetic. By the Rev. James Harris, M.A. St. Catherine's College, Cambridge. London: Longmans, Green, & Co., 1874." The simple exercises are printed and published separately from the answers, which are issued as "Answers to Easy Exercises in Arithmetic. By the Rev. James Harris," from the same publishers.—"Metropolis Gas Supply: On the Chartered Gas Revision, 1874, by Arthur Silverthorne, C. London: Liverpool & Robinson, Bedford street, Strand, 1874." Mr. Silverthorne says of the late increase in the price of gas, all going through the whole matter *seriatim*:—

"It is consequently evident that the necessity for the present increase must be sought only in the enormous and extravagant nature of the present working expenses, which require some radical (not superficial) reduction of a mere audit. The prospect of gas-coal falling below 20s. 6d. can be depended upon with no degree of certainty, but the result will suffer further depreciation, likely, and consequently I cannot see how any material improvement can be expected further than that which is already taken place, and which would have justified the Commissioners in fixing a much lower price."

The remarks of the President of the Board of Trade, Sir Charles Adderley, in reply to a deputation on subject, sums up in a remarkable way the exact situation, and suggests as his opinion that nothing short of further legislation can amend the present state of this

that this excessively valuable suggestion will be taken up in the proper quarter there can be very little doubt; in fact, the City authorities, and the Metropolitan Board of Works, represented through their present eminent legal advisers, have watched over the interests of the gas consumers in the most assiduous manner, and but for their remarkable vigilance the injuries made by the companies would have been enormous; as it is, the Corporation of London have in particular been able to secure until now, the consumers in the City, not only cheaper but better gas than is supplied in any other part of London, and free from many vexatious charges. It was hardly possible, however, to foresee that Commissioners might be appointed, taking such a distrustful view of the provisions of the City of London Gas Act, intended exclusively for the protection of the consumers."

"Algebra identified with Geometry. By Alexander J. Ellis, F.R.S. London: Hodgson, High-square, Fleet-street." This is another book with a very long title, a small part of which is as follows:—"Algebra identified with Geometry,—that is to say, Ordinary or Commutative Algebra, including Incommensurables, Imaginaries, and Imaginaries, shown to be a purely geometrical (and not a purely Arithmetical) science, and the Higher Plane Geometry of conics, Fluecker and Chasles shown to be particular Results of Ordinary Commutative Algebra, which includes the much more General Geometry of Significance; in a Series of Nine Notes, forming Five Tracts." The title is accompanied with a photo-lithograph of geometrical figures.—"Some Remarks on Roman Military Signacula, found in Britain." By Henry Charles Coote, F.S.A., is a reprint from the Transactions of the London Middlesex Archaeological Society, vol. iv. It is illustrated by three pages of engravings of man leaden and pewter seals, most of them and at Brough, in Westmoreland.

Miscellaneous.

Change of Gauge for 200 miles in Three Days.—A great engineering feat has been accomplished by the Great Western Railway Company. Those who are old enough to remember a "battle of the gauges" will know how fiercely the contest was fought, and how warmly the mighty engineers of the day, Brunel and Stephenson, defended their respective systems. A cautious Northerner was the advocate of narrow gauge on the ground of economy, but Brunel argued for the greater efficiency and safety, combined with increased speed, to be derived on the broad-gauge system. The latter principle was adopted by the Great Western Company, and although it was found to possess the advantages which were claimed for it, it was not without disadvantages which more than outweighed the benefits. The extra cost of rolling stock and of engines of much greater power than ordinary, was enormous. Then, too, there was difficulty about the interchange of traffic, and there was no dispute as to the greater steadiness and consequent comfort, or of the increased speed, but these were results of which the public and not the shareholders reaped the substantial advantage. The consequence was the broad gauge was doomed. The work of conversion has been done by stages. The portion, which comprised the south-western end of the line between Swindon, Chippenham, Trowbridge, and Weymouth, and between Bristol and the branches in conjunction, was successfully relaid and altered from narrow gauge in the short space of 10 days. During that period no trains were run either for the conveyance of goods or passengers. It was a stupendous undertaking, could only have been accomplished by most complete and systematic arrangements. At the night the last of the broad-gauge rolling stock was received at Chippenham, and at that time an army of engineers and plate-layers, in number, took possession of the line. Men worked in gangs, for eighteen hours at a stretch. Sheds were built for them where they could not get lodgings close at hand, and the Company gratuitously found a portion of provisions, and paid them 1s. 6d. per day wages. All the rails, banks, and transoms were prepared ready to be laid in position as the old rails were removed, and the fact was that the entire 200 miles were relaid in the time specified.

Wood Paving.—The Commissioners of the City of London, at their meeting, decided that the following streets should be paved with wood by the Improved Wood Paving Company:—Bishopsgate-street Without, Finsbury-street, St. Martin's-le-Grand, King's Cross-street, and Angel-street.

The Healthfulness of Ascot.—Some of the people who visit Ascot intermittently on certain occasions would stop there if they knew how healthy and agreeable the neighbourhood is. The *Lancet* has recently given some striking particulars:—This favoured district, says the writer, stands upon the celebrated Bagshot sands, and doubtless owes its wonderful salubrity mainly to this circumstance. The vast bed of sand which underlies it is in most places several hundred feet in thickness, and is of course everywhere as porous as a sponge. In many places the sand is hardly covered, although in others a fertile soil has accumulated. With such a perfect natural provision for drainage, it is almost superfluous to say that the soil is dry. Rain disappears as fast as it falls, and house-drainage is got rid of so easily as to offer no excuse for the neglect of sanitary precautions. The supply of water is practically inexhaustible, and of excellent quality. It is commonly met with at a distance from the surface of about 20 ft., though occasionally, as at Collingwood Court, it lies at a much greater depth. Sir James Clark, who passed the last years of his life in this district, was always enthusiastic in its praise, and once said to Mr. John Waterer, of Bagshot, "In the circle of five miles round my umbrella you have the healthiest spot in the world." Few Englishmen know the wonderful and varied beauties of these wild downs, although they lie so near to the metropolis, and can be explored on any summer's day.

St. John the Evangelist, Holborn.—On Tuesday in last week, Lady Marian Alford laid the first stone of the church of St. John the Evangelist, at the corner of Red Lion-square, when a large company witnessed the ceremony. The Rev. Canon Cure, rector of St. George's, Bloomsbury, delivered an address, in which he said that during the past ten years they had not only built their parochial schools, and had purchased the site of the church, but had collected 9,000*l.* towards the building. They still, however, wanted 7,000*l.* to expend before the building would be ready for divine service. The church would be free, and open alike to rich and poor. The Rev. W. T. Thornhill Webber said that they had paid for the site of the church, but it had been thought desirable to acquire an additional site. The Bishop of London's Fund had come forward to aid them, and they had now 3,600*l.* in hand to pay for the foundations, for not having yet obtained enough money they had only contracted for so much of the work yet. They meant to have a building which should owe its beauty to its just proportions rather than to excessive ornament, but they would not have a mean building. The church will be built by Messrs. Kirk & Co., from the designs and under the superintendence of Mr. Pearson, architect.

Outrage at Manchester.—Information was given to the Manchester police of an outrage which was committed during Saturday night at a lodging-house at Miles Platting, near Manchester. Five brickmakers were sleeping in one room, when they were aroused by the smashing of their bedroom window, followed immediately by a startling explosion, the force of which threw two men who were sleeping in one bed on to the floor. The bed, which was overturned, was on fire, and when the flames had been extinguished the fragments of a bottle and a great many broken nails were found scattered about the room. The only lodger injured was a lad named Sines, who was rather badly scorched. An examination of the street outside the house resulted in the finding of a stone gingerbeer-bottle, which was loaded to the neck with gunpowder and nails. Attached to it was a fusee which sank deeply into the gunpowder. The outrage is ascribed to trade motives. The five men who were their victims are brickmakers, who are employed in turning out machine-made bricks under a contract for the Lancashire and Yorkshire Railway Company, and their doing so is known to have given great offence to the hand brickmakers in the neighbourhood.

The St. Pancras Vestry-hall.—The memorial stone of extra buildings at the Vestry-hall of St. Pancras has been laid. The new front will be in the Italian style of architecture, and three stories high. The ground-floor will be of stone, with polished grey granite columns at entrance, with special entrances for the Guardians and for outdoor paupers. The two upper stories will be of red bricks with stone dressings, surmounted by a clock in the centre, over which will be a statue of St. Pancratius.

Chicago Buildings.—The *Chicago Times* says,—It is a very good thing that the building business of Chicago has become dulle. Since the fire, Chicago has been flooded with irresponsible contractors, and architects, ignorant of the most necessary rudiments of their profession. These classes, owing to the great necessity of immediate rebuilding which occurred after the fire, found ready employment in Chicago. They have succeeded in inflicting everlasting damage on the city. The abortions of the latter have been produced as buildings; and the structures are rendered still worse by the ignorance and knavery of the men who build them. Not only is the city spotted with atrocious architectural designs, but also with buildings which, if not taken down within the next ten years, will fall from their own weight. The depression in the building business will have the effect to starve these people out. Now that the few men who are building are not hurried, they will look about, and see what has been done by those who apply to them for work. The result will be that bogus architects, and saw-lag contractors will find themselves frozen out. A scarcity in any department of labour has the effect to retain only the more valuable element. The present depression is, therefore, of value.

Ebony from Sea-Weed.—An American periodical says:—It may interest some of our readers who reside near the sea-coast to learn that there is considerable commercial value in the common sea-weeds which are thrown up so abundantly on the shore. In addition to their uses as a manure, and for packing, quantities are now converted into artificial ebony. The process consists in first treating the plants for two hours with dilute sulphuric acid, then drying and grinding them up. To sixty parts of this product, five parts of liquid glue, five parts of gutta-percha, and two and a half parts of India rubber are to be added, the latter two being first dissolved in naphtha. Afterwards ten parts of coal-tar, five parts of pulverised sulphur, and five parts of pulverised resin are added, and the whole heated to about 300° Fahr. When cooled, a mass is obtained which in colour, hardness, and capacity for receiving a polish, resembles ebony, and is much cheaper. This material is now actually made on a large scale, and used for nearly all the purposes to which ebony can be applied.

Suffolk Institute of Archaeology.—The district lying between Bacton and Westhorpe and the borough of Eye was that which the committee of the Suffolk Institute of Archaeology selected for their excursion for the present year. Among those present were Lord John Hervey the president, Rev. C. H. Chevallier, Mr. Fitch (Norwich), Professor and Mrs. Chubb, Babbington, Rev. R. C. Manning (Diss), Mr. G. Thompson (Bury), Mr. Amyott, Rev. G. W. Minns, Rev. Dr. Leo (Thorndon), Rev. J. T. Hassall (Wattisfield), Rev. Stote Fox, Rev. A. B. Hemsworth, &c. Westhorpe, Bacton, Cotton, and Menkesham Churches, Stoke Ash, and the churches of Thorndon and Braiesworth, and Eye castle and church were visited. A kind invitation from the vicar of Eye, the Rev. W. Page Roberts, to adjourn to the vicarage, where refreshments were provided, was gladly accepted, and this closed the proceedings of the day.

London Association of Foremen Engineers and Draughtsmen.—The half-yearly meeting of the above Association was held last week at the City Terminus Hotel, Cannon-street, Mr. Joseph Newton, C.E., presiding. The auditors' report and balance-sheet were read by Mr. Leith, which showed that during the half-year the members' contributions amounted to 107*l.* 7*s.* 6*d.*; the hon. members' life subscriptions were 53*l.* 5*s.* 3*d.*; 364*l.* 4*s.* 2*d.* had been invested in the purchase of 400*l.* stock in the Three per Cent., and 107*l.* 1*s.* 6*d.* deposited in savings banks, which, with 22*l.* 4*s.* 6*d.*, made the total of ordinary funds, 493*l.* 10*s.* 2*d.* After some routine business, Mr. Black (of Messrs. Black & Dobbin, Liverpool) read a paper on "Equilibrium Cabins and Turrets."

Banting's Memorial.—Under the will of Mr. Thomas Banting, who was buried in Broadwater Cemetery, near Worthing, on Monday, 60,000*l.* are left for distribution among various charities, and the residue of the estates (20,000*l.*) is left in trust for the establishment of a "Thomas Banting Memorial Institution" to enable convalescents to enjoy the benefit of the climate and sea bathing at Worthing.

Opening of an Industrial and Fine Arts Exhibition in Kentish Town.—An interesting exhibition was opened on Monday in last week at the training-schools, Wilkin-street, Kentish Town, under favourable auspices. The project was originated and has been mainly carried out by Mr. M. H. Wilkin and Miss Wilkin, the founders of the extensive middle-class training-schools in Wilkin-street. The school-rooms were utilised for the exhibition, which contained oil and water paintings lent by the artists or owners, a selection of architectural and other drawings, photographs, lithographs, prints, engravings, and specimens of wood-engraving, models of natural history, drawings, &c., from the permanent museum of the school, were brought out and shown. There were also specimens of plain and fancy needlework, wax-work, corkwork, straw, and paperwork processes of arts and manufactures, porcelain and articles of vertu, English and foreign curiosities, and works of industry of every kind. One of Morse's electric-telegraph machines was in work. Mr. M. H. Wilkin gave an explanatory lecture on the objects exhibited; and Miss Wilkin, and a staff of lady teachers attached to the schools were constantly in attendance. Pianoforte-music and part-singing were given at intervals, and light refreshments were provided. During the week lectures were to be given by Professor Smyth, Mr. Septimus Moore, Mr. M. H. Wilkin, and others, illustrated with diagrams and working-models, and a band of music was in attendance, and a concert given by the Literary Institute Choral Class. A bazaar was held, concurrently with the exhibition, for the benefit of the schools.

Window Gardening in Westminster.—The ninth annual flower-show of the Society for Promoting Window Gardening amongst the Working-Classes in the united parishes of St. Margaret and St. John, Westminster, has been held in College-gardens, Westminster. The president is the Dean of Westminster, vice-presidents the rectors of St. Margaret's and St. John's, the incumbents of the district churches in the united parishes, and Lord Hatherley. It depends for its existence in no slight degree upon the persistent efforts and sustained influence of Lady Augusta Stanley. The prizes given were 13 general and 108 local. The show was held in a large tent pitched upon the green, and ornamented within with flags and scrolls bearing texts, the plants being ranged upon a table running down its centre. They consisted chiefly of fuchsias and geraniums, with some calceolarias, musk, creeping-jennies, "old man," cacti, ilices, nasturtiums, houseleeks, and a few others of a more ambitious character. The duties of umpire devolved upon Mr. Annandale, who had been deputed by the Horticultural Society to perform this office. The Earl of Shaftesbury distributed the prizes, and presented a picture, the offering of the members of the flower-show, to Lady Augusta Stanley, as a token of the regard, affection, and esteem in which she was held. The band of the A division of police contributed to the afternoon's enjoyment.

Prehistoric Remains at Clickamier, Shetland.—The Loch of Clickamier, near Lerwick, on an island in which is situated one of the so-called Pict's castles, is being at present partially drained, and a considerable portion of the margin of the loch has been exposed to view. At the southern extremity, which is bounded by the "Air" or sea-beach, which separates the loch from the sea, two or three apparently artificially-arranged groups of stones have been found. In each case the stones are set on edge, and enclose a space somewhat grave-shaped, about 6 ft. or 6½ ft. in length, by from 18 in. to 24 in. in breadth. On digging into one of the enclosed spaces, two stone cels of small size were found. The enclosing stones are evidently *in situ*. The round tower or burg in the Loch of Clickamier, in the close vicinity, is one of the largest of the Shetland burghs, and was one of those scheduled in Sir John Lubbock's Bill.

Sir John Hawkshaw wanted in Brazil. Sir John Hawkshaw has received a commission from the Emperor of Brazil to proceed to his dominions for the purpose of surveying the extent of coast (about 5,000 miles) from Pernambuco to Campos, with the view of developing harbours and of mapping out lines of railway on the south-east coast of America. A part of Sir John's staff has already embarked, and he will leave this country early in August, and will not probably return to England before the end of the year.

Accident on the East London Railway Works.—An accident occurred at the East London Railway Works, by which five men lost their lives. It has been found necessary by the contractors for the works to underpin the main building of St. George's East Workhouse, owing to the peculiar nature of the soil through which the railway-tunnel has to pass, and its proximity to the building in question. For the purpose of the under-pinning operations several shafts have been sunk near the wall of the workhouse. The men were proceeding down one of the shafts at the north-east corner of the workhouse, when it was discovered that two men had fallen from the ladder to the bottom of the shaft. Others followed to rescue them, apparently not knowing or suspecting the cause of the accident; and, in spite of the shouts of one of the gangers near, six men in all descended the shaft to rescue their fellow-workmen. Besides the first two, three others fell to the bottom, and the sixth man was laid hold of just in time to prevent his death. The cause of the accident was an unexpected accumulation of foul air whilst the men were away at dinner.

The Fall of a Floor, New York.—The particulars of a shocking disaster, reported by telegram a short time since, have reached us. The scene of the calamity was the Central Baptist Church at New York. During the church festival, at which 500 persons were present, the church party-floor, 40 ft. square, in the second story, gave way, precipitating a number of persons down a fall of 15 ft., amid broken beams and clouds of suffocating plaster. Thirteen were killed on the spot and more than 100 injured. The crash having put out the gas, the work of rescuing the victims was performed in the dark or by the help of a few lanterns. The wreck was slowly cleared, timbers cut, and the sufferers taken out one by one. An examination of the building shows that faulty construction was the cause of the disaster. The wooden truss of the roof which supported the floors by iron rods was badly put together, and not cross-braced.

The Excavations at Durham Cathedral. These excavations are being continued. The apsidal termination of the Chapter-house has been more fully exposed, the remains of one of the buttresses having been brought to light. The buttress has the appearance of having projected but a slight distance from the line of the main wall. At some later time it appears to have been necessary to place a much deeper buttress next the shallow one of the original building. Two steps leading up to the episcopal chair, which occupied the centre of the apse at the east end, have also been discovered. It is intended, we understand, to clear out the whole of the area of the old Chapter-house. Several massive gold rings with sapphires and a bishop's crook, with remains of gold-worked vestments, have been found in stone coffins in the Chapter-house.

The Engineer of the City Sewers Commission.—At the last meeting a letter from Mr. William Haywood, engineer and surveyor, applying for an increase of salary, was read. It was to the effect that he had been in the service of the Commission for twenty-nine years, and that the last increase in his salary, to 1,500*l.* per annum, took place eleven years ago. The remuneration fixed eleven years ago was not productive of so many advantages at the present time as it was then. Mr. Deputy Stapleton said he believed that Mr. Haywood had given great satisfaction to every member of that committee during the years he had been with them, and he moved that the application be referred to the Finance and Improvement Committee for consideration and report. Mr. White seconded the motion, and observed that the engineer required no testimonial from him. The motion was carried.

Curious Effect of Lightning.—A flash struck the south-west pinnacle of the tower of Liberton Parish Church, knocking off a large piece of stone. There is a lightning conductor on the south-east pinnacle; but though only 14 ft. from the point struck, it was unaffected. A tree in Southfield grounds, Liberton, was shattered, and the bark peeled off, and several persons experienced a severe shock. At the hamlet of Stenhouse, 150 yards further on, the skylight of a house was broken by a flash of lightning, and a tailor, who was playing his craft there at the time, had the needle thrust into his hand by a shock of electricity, which is supposed to have struck his needle.

Working Men's Dwellings Bill.—Beside the Labourers' and Artizans' Dwellings Bill introduced into the House of Commons, there is another which the Earl of Shrewsbury is conducting through the House of Lords, and the object of which is to enable Corporations and other bodies having land to clear it for sites upon which are to be erected dwellings for the working classes. This Bill is based upon a system which has been in operation for some time in Edinburgh and Glasgow. It has been read a second time in the Lords. The Bill in the Commons, as we have already said, is a very short one as to borrowing, by owners of real property and others, from the Public Works Loan Commissioners, for the erection of working-class dwellings.

The New Harbour Works at Anstruther in Fifeshire.—Since their recommencement last year, these works have made steady progress, and there is now a good prospect of their speedy completion. The western breakwater, which is built wholly of concrete, has been completed without any damage from storms, and, in accordance with the recommendation of Sir John Hawkshaw, C.E., the Treasury engineer, a number of concrete blocks are being placed at the back of it, in order to catch the sea as it is thrown from the point of the east pier, which overlaps the breakwater. The outer section of the new east pier, which was overthrown by a storm ten years ago, is being rebuilt, about 80 ft. of the most exposed portion being of concrete, and it is believed that it will now be strong enough to resist the force of the waves during any storm. The works were commenced in 1866, and have already cost upwards of 60,000*l.*

A Hint about Looking-glasses.—The Trade Bureau (U.S.) says,—"It is a fact we worth knowing, but which does not seem to be generally understood, that the amalgam of a looking-glass is spread on glass plates to make looking-glasses, is very readily crystallised by actinic solar rays. A mirror hung where the sun can shine on it is usually spoiled; it takes a granulated appearance familiar to housekeepers, though they may not be acquainted with the cause of the change. In such a case the article is nearly worthless, the continuity of the surface is destroyed, and it will not reflect outlines with any approach to precision. Care must therefore be exercised in hanging." Care should also be taken in selecting looking-glasses we have seen many lately, and from first-rate manufacturers, too, which make every straight line round. There is something wrong in the manufacture which requires looking into.

Surveyor to the Rugby Board.—Mr. John Earle Palmer, who for eleven years was surveyor to the Rugby Local Board of Health, having recently left Rugby to occupy a similar position at Malvern, his friends at Rugby resolved to present him with some memorial of his residence here. For this purpose, a gold chronometer was made expressly for the occasion, bearing a monogram outside the case, and a suitable inscription inside. Mr. H. Bennett entertained Mr. Palmer and a party of friends to dinner at his residence in New Bilton, and afterwards, in the name of the subscribers, presented the watch, with earnest and sincere wishes for the future welfare of the recipient. Mr. Palmer, in reply, spoke feelingly of the many friendships he had made during his residence in Rugby, and of the pleasant recollections he took with him to his new sphere of duties.

Bethnal-green Museum.—Colonel Lane Fox has added to the art treasures already deposited in the Bethnal-green Museum his extensive and valuable ethnological collection of curiosities. It embraces the rudest implements of the prehistoric era, and the earliest efforts of American and Australian savages, and it brings down the progress of ethnological history to the scientific tools and implements of modern times. The collection is intended not only for exhibition, but also for instruction, and it is arranged to deliver lectures on the subject of ethnological study at the museum to working men on Saturday evening.

Steam Fire Engines.—The directors of the East and West India Dock Company in order more fully to protect the property in their warehouses, have entrusted Messrs. Shand, Macdonald & Co., with an order for two of their improved steam fire engines. They will be similar to the supplied to the Indian States Railway, and three recently supplied to the Metropolitan Fire Brigade, and tested by Captain Shaw.

Opening of a New Church in Belgrave.—The new church of St. Mary, Graham-street, ton-square, has been opened for divine service. This church, as our readers may recollect, is built immediately over the Metropolitan District Railway, and although trains are running underneath it every minute neither sound nor vibration is perceptible. The church is built of red brick and stone, and will hold 510 persons. Over the altar is a large sculptured reredos, representing Christ on the cross, with the Virgin Mary on the right, and Saint John on the left. The communion-table is of cedar, the slab being of yellow ash stone. The font is another piece of the same work, with quatrefoils filled with mosaics. The roof is stencilled, and coronal lights and brackets are suspended from it. The cost of the edifice is over 6,000.

The Liverpool Borough Engineer's Waste-water Meter.—Mr. F. J. Bramwell, Esq., has, at the request of the local water committee, examined and reported on the waste-water meter recently patented by Mr. Deacon, borough and water engineer. The report is favorable. Mr. Bramwell believes the meter to be effective; and he concludes his report by saying:—"I have no hesitation in advising the water committee of the Town Council of Liverpool to employ Mr. Deacon's waste-water meter in their districts; and I have no doubt that this has been done, not only will the average expenditure per head be most materially diminished, but that diminution will be accompanied by the benefits and all the simplicities in service attendant upon a constant supply."

Worfields (E.C.) Chapel.—In consequence of the excavation necessary for the extension of the Metropolitan Railway eastwards towards Bishopsgate-street, the southern walls of the church so long used by the Roman Catholics of London as a "Pro-Cathedral" at Worfields have lately exhibited some alarming cracks, in consequence of which the edifice has to be "underpinned" for fear of its tumbling down. It is now closed, and notices have been put up on the walls in conspicuous places, informing the public that such is the case, "in consequence of an award of the arbitrators between the trustees of the church and the Metropolitan Railway Company."

New Monument in Hodnet Church.—An edifice has just been made to the monuments in Hodnet Church. In 1870 a memorial chapel was erected on the north side of the Patron's Chapel, over the newly-made vault of the Heber family. A marble altar tomb has been placed in the centre of the chapel, with a recumbent figure of the late Miss Heber Percy, of West Hall. The inscription is in raised letters all round the tomb. At the foot, in colours, is a shield displaying the armorial bearings of the deceased young lady. The chapel is now separated from the church by floriated iron gates. The monument was executed by Mr. Dodson, of Walsbury.

Stagge Hospital for Wells.—At the Mayor's Palace a meeting has been held at which it has been resolved to establish a cottage hospital for Wells; and a list of subscriptions has been opened, amounting to about 100l., besides additional subscriptions to about 50l. The Bishop has said that 150l. per annum would be requisite, about 300l. to begin with for a building.

New Indian Museum.—The *Athenaeum* states that the Secretary of State for India in Council has at last granted the money required for building a new museum and library upon vacant ground opposite the India Office. It is said to be somewhere about 75,000l. It seems to be little doubt that the museum will be lodged at South Kensington, during the erection of the new buildings.

The Leicester Municipal Buildings.—The works on the lower story of these buildings are now in an advanced state, and, in accordance with a report and recommendation of the Municipal Buildings Committee, the Town Council has resolved to lay the chief stone, with some municipal and holiday observances, on the 6th of next, by the hands of the Mayor.

Rating of Tramways.—Mr. Edin, G.C., as Chairman of the Court of General Assessment, has given judgment on the appeal of the London Tramway Company against an assessment of the line made by the parish of St. Mary, Whitechapel. The gross estimated rental was fixed from 6,290l. to 4,141l., and the net rateable value from 5,890l. to 1,823l. There was no appeal made as to the costs of the appeal.

A Journal of American Architecture.

The American Institute of Architects have arranged for a journal to be published by Messrs. Jas. R. Osgood & Co., Boston, and the committee are now calling for the first installment of drawings and literary matter. The committee say that illustrations of unexecuted as well as of executed work will be acceptable, as will also plans and sections in addition to the elevations and perspectives of any submitted design. "Available designs will include bridges and other constructions, sometimes classed as engineering work; as also furniture, wall decoration, and coloured glass; and, in short, examples of any speciality giving opportunity for artistic treatment and allied to architecture."

The late Mr. Henry Godwin, of Newbury.—Mr. Henry Godwin, whose lamented death at his residence, Speen-hill, Newbury, Berkshire, has been announced, was a keen and instructed antiquary, as well as an estimable and excellent man in all the relations of life. He was a Fellow of the Society of Antiquaries, and an active member of the British Archaeological Association; usually attending the congresses and contributing freely from the stores of his information. We regret the loss of an old friend and useful member of society. He will be remembered as the author of the *Handbook of Archaeology*.

The Hanley Borough Surveyor.—At a recent meeting of the Hanley town council, pursuant to the recommendation of the committee, Mr. Alderman Ridgway moved that the salary of Mr. Lobley, the borough engineer and surveyor, be increased to 300l. per annum, from the 24th of June, 1874. He congratulated Mr. Lobley on the services he had rendered to the town, and said he thought that as the borough derived great benefit from those services, they were justified in raising his salary. Mr. Alderman Stephenson seconded the motion. After some discussion the motion was carried.

West Cheshire Labourers' Dwellings.—Mr. J. A. Davenport, sanitary inspector to the Northwich Rural Sanitary Authority, has presented another report to the Board, similar in urgency to the last; but, in this case, alluding particularly to the township of Bickerton, containing a population of 400. He says there are but few cottages in the township that can be said to be well and conveniently constructed, and to have fairly good arrangements outside. The Board discussed the matter, and ordered the inspector in all cases to summon occupants of the houses if the orders for removal of the nuisances are not attended to forthwith.

A New Roman Catholic Hall for Liverpool.—It is proposed to erect a new Roman Catholic Temperance League Hall for Liverpool. This is to be done by a limited liability company, the capital of which is to be 10,000l., raised in shares of 1l. each. A central hall has become a necessity for the efficient working of the League. The hall will be capable of holding at least 4,000 persons, and will be in a central situation and convenient for the labouring classes. A plot of land has been purchased in the new part of St. Anne-street. The directors will, in course of time, open a reading-room, refreshment-rooms, and recreation-rooms, supplied with such games as may be deemed prudent.

New African Expedition.—It is announced that arrangements have been concluded between the proprietors of the *Daily Telegraph* and *New York Herald* to despatch an expedition to Africa, to report upon the haunts of the slave-traders, pursue the discoveries of Dr. Livingstone, and complete, if possible, the remaining problems of Central African geography. This expedition will be under the sole command of Mr. Henry M. Stanley.

The late M. Van de Weyer.—The Communal Council of Louvain, M. Van de Weyer's place of birth, has resolved to give his name to one of the principal streets of the town, to place a commemorative tablet on the house where he passed his childhood and where his mother kept for many years a reading-room, and to invite subscriptions for erecting a bronze statue of him in one of the squares of Louvain.

The Phosphate Sewage Company.—The directors of this company having recently entered into a contract with the Corporation of Hertford for the treatment of the sewage of that town, and being in negotiation with several other towns with a view to prevent the pollution of rivers, made a demonstration of their process in the grounds of the International Exhibition on Wednesday last.

TENDERS

For Convalescent Hospital, Sanford, Sussex. Mr. E. A. Gruning, architect. Quantities by Messrs. E. Diven and T. Nixon:—

Lawrence	£7,698	.....	£273
Nash & Co.	7,564	.....	383
Culum	7,200	.....	271
Nixon & Son	7,150	.....	265
High	6,987	.....	250
Howell	6,873	.....	305
Vidler (accepted)	6,869	.....	293

For alterations and additions to boys' school, Henfield.

Mr. R. Adolphus Camo, architect:—	
Mighall	£405 0 0
Perry	333 0 0
Martin (accepted)	329 0 0

For whitelead and colour warehouse, Mack's-road, Hermondsey, for Messrs. Robinson & Anderson. Quantities supplied by the architect, Mr. W. T. Hollands:—

Tarrant	£394 0 0
Preston	769 10 0
Ashton (accepted)	760 0 0

For painting and decorative work at the Vestry-hall, St. George's-in-the-East:—

Clearer	£399 10 0
Charlton & Martin	275 0 0
Derby	269 0 0
Unno	200 0 0

For alterations and repairs to Wesleyan Chapel, Great Queen-street, W.C. Mr. Pocock, architect. Quantities not supplied:—

Kemping	£499 10 0
Hobson	846 0 0
Stains & Son	846 0 0
Little	730 0 0
Goldson	744 0 0
Charlton & Martin	723 0 0
Niblett & Son	700 0 0

For water-pipes, drainage, and reservoir, for Rural Sanitary Authority of Wincanton:—

Iron Pipes.

Newman	£2,004 0 0
Willcocks	1,600 0 0
Taylor & Co.	1,520 0 0
Spittle	1,440 0 0
Neave & Co.	1,360 0 0
Kerslake	1,356 0 0

Reservoir.

Willcocks	£1,465 0 0
Sweetman	740 0 0

Drainage Works.

Newman	£2,924 0 0
Cowdroy & Son	2,757 0 0
Willcocks	2,623 0 0
Neave & Co.	3,081 0 0
Hall	2,637 0 0
Sweetman	2,216 0 0

For enlarging the Royal Masonic Institution for Boys, Wood-green. Mr. Dennison, architect. Quantities by Mr. Barnett:—

Carter	£2,045 0 0
Cohen	1,870 0 0
Sawyer	1,856 0 0
Linsell & Son	1,900 0 0
Sheffield	1,792 0 0
Crook	1,646 0 0
Niblett & Son	1,635 0 0
Humphreys & Son	1,600 0 0
Bangs & Co.	1,350 0 0
Harris	1,592 0 0
Vagner	1,561 0 0
Boyes	1,444 0 0
Bottum	1,434 0 0
Hunt	1,413 0 0
Stamp & Bowles (accepted)	1,325 0 0

For printing-offices for Messrs. Diprose, Bateman, & Co., Lincoln's-inn-fields. Messrs. J. & S. F. Clarkson, architects. Quantities supplied:—

Dove, Brothers	£1,795 0 0
Thorne & Co.	1,767 0 0
Brass	1,898 0 0
Wilson, Brothers	1,889 0 0
Howard	1,886 0 0
Macey	1,650 0 0
Foxley	1,617 0 0
Patman & Fotheringham	1,608 0 0
Cooke & Green	1,603 0 0
Falkner	1,587 0 0
Merritt & Ashby	1,677 0 0
Nightingale	1,676 0 0
Stoner	1,657 0 0
Lather, Brothers	1,547 0 0
Kelly, Brothers	1,523 0 0
Waldram & Co.	1,603 0 0
Conder	1,498 0 0
Simpson & Baker	1,474 0 0
Hudson & Co.	1,473 10 0
Axford	1,455 0 0
Langmead & Way	1,400 0 0

Accepted for completing new mansion, and building new hunting-stables, for the Right Hon. Lord Walsingham, Aldwark Hall. Mr. W. Lewis, architect:—

Almigh (bricklayer)	£463 0 0
Harrison (joiner)	215 0 0
Baynes (plaster)	95 0 0
Hodgson (plumber)	90 7 6
Walker (stable fittings)	76 14 0
Bowman & Co. (masons)	56 13 0
Dove & Sons (ironmongery)	20 5 0
Gowland (stainer)	29 0 0

Interior of Mansion.

Hellerby & Co. (joiners, &c.)	£79 0 0
Weatherley & Rymer (terrace steps and gate piers)	56 0 0
Worthington (decorator)	478 3 3
Milburn (carpenter)	17 0 0

For new stables and additions to mansion, for Colonel Herbert, Upper Helmsley Hall. Mr. Wm. Lewis, architect:—

School (joiner).....	£624 0 0
Walker (bricklayer).....	483 10 0
Carill (plaster).....	112 16 0
Cook (for clock, &c.).....	61 10 0
Walker (stable fittings).....	119 3 0
Milburn (carver).....	12 10 0
Weatherley & Rymer (masons).....	112 0 0
Hartley (plumber and engineer).....	338 18 0
Hawling (plasterer).....	108 0 0
Wilkinson (concrete).....	60 19 8
Hartley (painter).....	66 2 0
Farley & Co. (saddlery pipes).....	40 0 0
Bollant (zinc work).....	12 0 0

For stone entrance to Manor House and New Home Farm, for the Hon. Egremont Lascelles, Middlethorpe Manor. Mr. Wm. Lewis, architect:—

Bellierby & Keswick.....	£435 0 0
For stone covered way and porch, and new wing, for Captain Hall, Ivy House, Acomb. Mr. Wm. Lewis, architect:—	
New Wing, Covered Way, &c.	
Weatherley & Rymer.....	£374
Harrison & Hebdon.....	£85

For new residence for Dr. Wilkinson, at Rowland-hill, Pocklington. Mr. Wm. Lewis, architect:—

Grant.....	£1,217 10 0
------------	-------------

For rebuilding the Waterloo Arms Tavern, for Mr. Karslake. Messrs. Berriman & Son, architects. Quantities supplied:—

Falkner.....	£2,477 0 0
Sawyer.....	2,424 0 0
Kent.....	2,397 0 0
Thompson.....	2,380 0 0
Misard.....	2,333 0 0
Cooper.....	2,189 0 0
Kirk.....	2,167 0 0
Dowds.....	2,169 0 0
Cook.....	2,145 0 0
Cullum.....	2,140 0 0
Limfield.....	2,138 0 0

For rebuilding the Smiths' Arms Public-house, Park-street, Borough. Mr. H. Lovegrove, architect:—

Cobbett.....	£1,943 0 0
Stone.....	1,492 0 0
Downs & Co.....	1,430 0 0
Stimpson & Co.....	1,390 0 0
Scrivenor & White.....	1,342 0 0
Nightingale.....	1,337 0 0

For new stables at the City of Gloucester, Chelsea. Mr. H. J. Newton, architect. Quantities supplied by H. W. Build:—

Taylor.....	£443 0 0
Hockley.....	439 0 0
Brindle.....	426 0 0
Shurmer (accepted).....	423 0 0

For alterations to billiard-room at the Kemble's Head, Bow-street. Mr. H. J. Newton, architect. Quantities supplied by H. W. Build:—

Hockley.....	£149 0 0
Shurmer.....	147 0 0
Taylor.....	129 0 0

For alterations and repairs to Nos. 8 & 9, York-place, W., for Bedford College. Mr. E. Hoole, architect:—

Lathby, Brothers.....	£3,200 0 0
Longmire & Burge (accepted).....	2,930 0 0

Benkert.....	£120 0 0
Strode & Co. (accepted).....	85 0 0

For new Congregational Chapel, Anerley-road, Pease.

Mr. Geo. Elkington, architect. Quantities supplied by:—	
Downs.....	£12,065 0 0
Rider.....	11,924 0 0
Dove, Brothers.....	11,855 0 0
Hill, Higge, & Hill.....	11,850 0 0
Carter & Son.....	11,808 0 0
Waldram & Co.....	11,794 0 0
Browne & Robinson.....	11,410 0 0
Bowyer & Sons.....	11,374 0 0
Little.....	11,268 0 0
Roberts.....	10,437 0 0

For the construction of a complete system of sewers, and for laying out 40 acres of land on a chemical and intermittent filtration process for the Local Board, Wimbledon. Mr. Wm. F. Rowell, engineer. Taking the following tenders from the list, the total amounts will be as under:—

Dickenson.....	£16,393 10 2
James Neave & Son.....	42,208 14 9
Potter (with others).....	46,036 14 10
John Neave & Son.....	41,740 15 8

For addition to house at Snarebrook, for Miss Cox. Mr. J. O. Abbott, architect. Quantities supplied by Mr. Jackson:—

Waldram & Co.....	£558 0 0
Jackson & Shaw.....	940 0 0
Manley & Rogers.....	890 0 0
Cuthbert.....	878 0 0
Downs.....	878 0 0
Ennor.....	891 0 0

For alterations and additions to No. 15, Hyde Park Gate, Kensington Gore, for Mr. Jacques Blumenthal. Mr. E. Power, architect. Quantities supplied by Mr. W. Barnett:—

Thompson.....	£4,169	Extra for Wainscot Staircase.....	£193
King & Son.....	3,680		175
Fish.....	3,300		153
Adamson & Sons.....	3,293		160
Sharpton & Cole.....	3,290		163
Rider & Son.....	3,262		136
Sewell & Son.....	3,180		154
Brass.....	3,167		123
Cole & Sons.....	3,139		145
Newman & Mann.....	3,116		148

For residence and wall at Dulwich, for Mr. A. C. Rich. Messrs. John Young & Son, architects. Quantities prepared by Mr. A. L. Buzzard:—

Barrow & Brooker.....	£2,047 0 0
Lawrence.....	1,939 0 0
Hart.....	1,933 0 0
Newman & Mann.....	1,903 0 0
Robins.....	1,810 0 0

For additions, &c., for grain warehouses, York, for Mr. J. Bolland. Mr. Lewis, architect:—

Whole Tenders.	
Kewick.....	£490 16 0
Weatherley & Rymer.....	484 0 0
Gray.....	440 0 0

Single Tenders (accepted).	
Sparling (brick, plaster, & stone).....	£237 4 10
Gray (joiner).....	65 10 0
Dickenson (plumber).....	29 0 0
Lee (painter).....	30 0 0
Carill (slater).....	3 15 0

For new girls' school and class-room, and two teachers' residences, at Hounslow Subscription Schools. Messrs. Treas & Innes, architects:—

	Schools.	Teachers' Residences.
Gorringe	£1,440	£1,015
Bray	1,121	1,068
Richards	1,139	906
Reesell	1,067	899
Nias	1,019	829
Wills	1,067	877
Hiscock	1,010	833
Taylor	980	900
Brusden	853	824
Simpson & Baker	997	764
Seal	827	791

For taking down and rebuilding No. 158, High-street, Borough. Mr. J. H. Swan, architect:—

Pritchard.....	£3,010 0 0
King & Son.....	2,860 0 0
Thompson.....	2,868 0 0
Perry.....	2,840 0 0
Rider & Son.....	2,750 0 0
McLellan.....	2,635 0 0
Deards.....	2,430 0 0

For certain works to premises known as Barbican Chapel, for Mr. J. Spaworth. Messrs. Parr & Strong, architects:—

Parsons.....	£4,333 0 0
King & Son.....	3,670 0 0
Adamson & Sons.....	3,883 0 0
Bangs.....	3,130 0 0
Robinson.....	3,232 0 0

For the erection of a warehouse, No. 59, Lendenhall-street, for Messrs. Field & Tuer. Mr. J. T. Newman, architect. Quantities by Messrs. Curtis & Sons:—

Rivett.....	£2,350 0 0
Foster.....	2,750 0 0
Cooke & Green.....	2,045 0 0
King & Son.....	2,045 0 0
Elkington.....	2,010 0 0
Sharpton & Cole.....	1,977 0 0

For rebuilding No. 51, Titchfield-street, Oxford-street. Messrs. Ebbetts & Cobb, architects:—

Longmire & Burge.....	£1,390 0 0
Nightingale.....	1,371 0 0
Macey.....	1,230 0 0
Atchison & Walker.....	1,145 0 0
Perkins (accepted).....	1,063 0 0
Hyde (too late).....	950 0 0

For vaults and foundations, No. 43, Mark-lane, for Mr. J. Dawson Kiddell. Messrs. Young & Son, architects:—

Ashby & Horner.....	£3,059 0 0
Lawrence & Sons.....	3,042 0 0
Young.....	2,960 0 0
Brass.....	2,965 0 0
Condon.....	2,905 0 0
Lawrance.....	2,840 0 0

For public hall at Newport, Monmouthshire, for Messrs. Ewins & Son. Messrs. A. O. Watkins & Son, architects:—

Welch.....	£7,500 0 0
Miles.....	7,307 0 0
Richards.....	7,250 0 0
Jenkins.....	7,200 0 0
Tinton.....	6,913 0 0
Dover, Sons, & Co.....	5,394 0 0
Diment (accepted).....	5,250 0 0

St. John the Baptist Church, Brighton.—For "Batching & Webber," read Patching & Webber.

TO CORRESPONDENTS.

Architects we decline to correct a manuscript wholly due to atrocious writing of our correspondent, resulting from a sort of last confusion.—W. T. (thanks).—R. S. (next week).—M. (in week).—O. (shall have attention).—C. & M.—T. N. Messrs. H. C. W.—E. D.—R. W.—W. A.—M. T.—W. B.—H. J. W. F. R.—J. L.—H. & Co.—J. E.—R. F.—A. T.—H. G.—J. T.—P. R.—B. W.—L. R.—E. P.—K. H.—W. B.—U. J. W. & Co.

We are compelled to decline pointing out books and addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily publication.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

Six lines (about fifty words) or under..... 2s. 6d.
Each additional line (about ten words)..... 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to readers in any part of the United Kingdom at the rate of 10s. per annum, payable in advance.

Halfpenny stamps accepted for payments under 5s. Any larger should be remitted by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to DODD & LANE, FOURTH EDITION.

Advertisements cannot be received for the current week's issue later than THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for the contents of the advertisements left at the Office in reply to advertisements, and strongly recommends that Correspondents should be sent.

Bath Stone of best quality.

RANDELL, SAUNDERS, & CO. (Limited).

Quarriesmen and Stone Merchants.

List of Prices at the Quarries and Depots, also cost of transit to any part of the Kingdom on application.

Bath Stone Office, Corsham, Wilts. [Adv.]

STONE BROTHERS.

Bath Stone Merchants.

supply direct from their own Quarries:—

Box Ground, CORSHAM DOWN.

FARLEIGH DOWN, COMBE DOWN, AND STONE GROUND.

Prices on application at Bath-stone Office, Bath.

London Depot, G.W.R. Mileage Station, Farringdon.

Stone Dressings prepared ready for fixing. [Adv.]

Whitland Abbey Green Slates.—T

Quarries are now fully opened out, and

producing Slates in all sizes, and in any quantity: sound, and of choice green tint. Or

can be executed without a day's delay, samples and further particulars, apply to

MANAGER, at the Quarries, Narberth, R.S.O. [Adv.]

Asphalte.

Seyssel, Patent Metallic Lava and

White Asphaltes.

M. S T O D A R T & C O

Office:

No. 90, Cannon-street, E.C.—[Adv.]

Patent Selenitic Cement, with double

usual sand, is much stronger than ordinary

Plastering finished in much less time at less

Excellent substitute for Portland cement

Concrete at less than half its price.—6 W

Belvedere-road, Lambeth, S.E. [Adv.]

Bills of Quantities, Specifications, and

Lithographed by ROBT. J. COOK & HAMM

29, Charing-cross, S.W., with accuracy

punctuality. Plans and Drawings Copy

Traced, or Lithographed.—[Adv.]

PERFECT DAYLIGHT.

WHY BURN GAS?

CHAPPAIS' REFLECTOR

IMPROVE NATURAL DAYLIGHT AND SUPERSEDE GAS.

P. E. CHAPPAIS,

PATENTEE AND MANUFACTURER

No. 69, FLEET STREET, LONDON.

The Builder.

VOL. XXXII.—No. 1641.

National Training School of Music.



PASSENGERS along the Kensington-road may observe, at the west side of the Royal Albert Hall, a rough brick structure in course of erection within about 50 ft. distant from the portico of the Hall on that side. This building is the practical result of the exertions of the Society of Arts during the last eight years towards promoting the study of music on a sound basis in this country.

After several years' futile negotiations with the Royal Academy of Music, negotiations latterly conducted by the Duke of Edinburgh, a meeting was held on the 29th of May, 1873, at Clarence House, when it was resolved by the Musical Committee of the Society of Arts that an attempt should be made to obtain a proper building for the Training School, which it was estimated would cost from £10,000 to £20,000. It was proposed that the money should be raised by debentures bearing 5 per cent. interest on the security of the land and building. But before any further steps were taken to raise the money, Mr. O. J. Freaكه called at the house of the Society on July 14th, 1873, and, with munificent liberality, marked through the paragraphs relating to the funds, and described these words instead: "I will undertake to have the building erected at my own expense!" And Mr. Freaكه is now giving effect to this public-spirited offer by causing the building to be erected by Mr. Waller, and he will no doubt do full justice to the structure.

The first stone was laid on the 18th of December, 1873, by his Royal Highness the Duke of Edinburgh, and, considering the nature of the building, great progress has been made in its erection. The *Builder* at the time gave a short account of the building (Dec. 27, 1873, p. 1034), which may be briefly recapitulated. The Commissioners for the Exhibition of 1851 have agreed to grant a lease of the ground for 99 years, at a rental of £801 a year. Mr. Freaكه is the lessee of the ground, but as he gives the free use of the building for five years, so the Commissioners will remit the ground-rent for the same period. The Albert Hall Corporation will grant the use of rooms for a library as well as of a theatre, and the great hall, and the school may probably be connected by a bridge with the Hall itself, if found to be necessary.

Lieut. H. H. Cole, R.E., has designed the school, and superintends its erection. His memorandum submitted to the committee was as follows:—

"1. After mature consideration and consultation, it was decided that the style of architecture to be adopted for the National Training School for Music should be so

different from that of the Royal Albert Hall as to provoke no comparison unfavourable to the school. The school is a small structure, containing only about 200,000 cubic feet, whereas the Royal Albert Hall is an enormous building, containing about 6,500,000 cubic feet. Any use of brick and terra-cotta was therefore to be avoided, and the use of brick with stone dressings was objectionable, because it would have brought the terra-cotta of the Hall unfairly into comparison with the plain stone dressings of the school. The same kind of objection, besides that of cost, made the use of stone undesirable. It is the practice at the present time to use plaster or cement for covering the surface of buildings. In former times plaster-work had a character and decoration peculiar to itself, whilst in modern times plaster-work only imitates architectural stone mouldings, &c., and errs against good taste and truth. 2. I propose, therefore, that the building shall be constructed in plain brickwork, but decorated with plaster on sound principles, that the use of anything that is like a sham or imitation shall be avoided, and that the decoration shall not be excessive in cost. I estimate that the cost of the building, including decorations and fittings, need not exceed one shilling a cubic foot, or any about 10,000. 3. It is also desirable that the building shall be as well lighted as possible. The windows are, therefore, made large. The Old English style of the sixteenth century, when large windows and plaster ornament prevailed, seems to be exactly suitable. For the ornament of the surfaces, the art of sgraffito, or cutting on plaster, is introduced. Sgraffito offers to supply at a moderate cost a school for all kinds of music. It may be remarked that sgraffito has been tried by the South Kensington artists on the east side of the Science Training Schools at South Kensington, and meets with approval.

(Signed) H. H. Cole, Lieut. R.E."

Mr. F. W. Moody will design and carry out the sgraffito panels and frieze of the exterior.

We give a view of the design,* and the plan of one floor.

The Society of Arts is the originator of this school. The Council have declared its object in the following extracts:—

1. The necessity for a National Training School for promoting the art of music in this country has long been felt, and at various periods has been urged by the highest authorities on the attention of successive governments. Such has been the unanimity of all those who are competent to give an opinion in this matter, that it is needless to discuss the question here. Suffice it to say that the whole subject of musical education in this and foreign countries was investigated and fully reported on by a committee appointed by the Society of Arts in 1865.

* See p. 609.

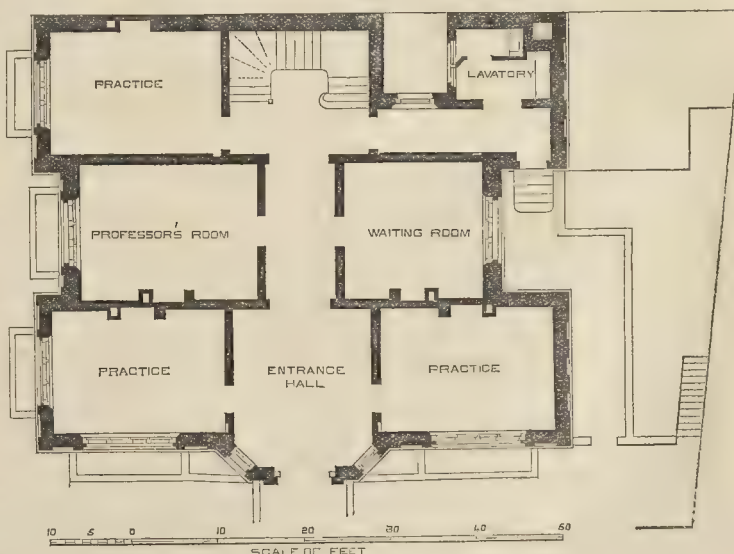
2. Although it appears from the reports of the Science and Art Department that the question of a State Training School was at one time under the consideration of the Lords of the Committee of Council on Education—Earl Granville being then Lord President—the Department of Science and Art up to this time has not taken any active steps towards its establishment. It has therefore been decided by the Society of Arts to take the initiative, and establish a Training School by voluntary effort, with the full intention that it should, and under the confident hope that it will, eventually, be transferred to the responsible management of the State.

3. The fundamental principle and primary object of the school is the cultivation of the highest musical aptitude in the country, in whatever station of society it may be found. In order to carry out this principle to the fullest extent, admission to the school will be obtained by competitive examination alone.

4. As the gift of musical ability is found in all grades of society, and frequently among persons of very limited means, it is evident that in a large number of cases the student must not only receive gratuitous instruction but also be supported during the period of his or her training. To provide for this it is intended to establish about 300 scholarships, for which the most influential support has already been promised, and further support is solicited.

5. The proposed scholarships will be of two kinds, the one to afford free instruction by paying the students' fees, the other to give such free instruction with a maintenance allowance in addition. It will be open to any county, town, public body, or private individual to establish one or other of these kinds of scholarships for competition under given limitations. Should there be more accommodation in the school than is requisite for instruction of these scholars, students paying their own fees will be admitted by competition to fill the vacancies, care being taken that they show sufficient aptitude.

6. It is proposed that the school should provide in the first instance for the free instruction of about 300 scholars. The school fee without maintenance, it is estimated, will be between 35s. and 40s. a year. The maintenance allowance



Plan of Ground Floor.

for the support of the scholar will be in addition to this fee, and independent of the school.

7. Such a training-school as now commenced, on the basis of free instruction given by public competition, occupies a field of action wholly distinct from that of any existing institution.

10. The new building, devoted to twenty classrooms, professors' rooms, and offices, has been designed expressly to meet the requirements of the school.

11. When all the local arrangements of the school are completed, it will have promises positively unrivalled by those of any school in Europe. It will have the use of the great amphitheatre and of an adjacent moderate-sized theatre; it will have libraries and professors' rooms, and a multitude of small rooms for instruction.

12. During the construction of the building, which will probably take eighteen months in completion, the Society of Arts will continue its movement throughout the United Kingdom to enlist public support for scholarships. The success which has hitherto attended the efforts of the Society gives promise that the nation will support the Society in this movement. A beginning has been made at Manchester and Birmingham, and committees have been formed at both places. From Birmingham it has been resolved to send ten scholars.

13. The Society will be prepared to send a deputation to explain the whole subject to any large town or corporation which expresses its readiness to form a local committee to aid in finding out the musical talent of the district.

14. The School, when built, will be under a Committee of Management, consisting of two members appointed by the Royal Commissioners for the Exhibition of 1851; two members appointed by the Council of the Royal Albert Hall; and three members appointed by the Council of the Society of Arts; and the Committee thus formed consists of H.R.H. the Duke of Edinburgh, K.G., chairman; H.R.H. the Prince Christian, K.G.; Admiral the Right Hon. Lord Clarence Paget, K.C.B.; Sir William Anderson, K.C.B.; Major-General Eardley Wilmot, R.A., F.R.S.; or the Chairman of Council of the Society of Arts for the time being; Henry Cole, Esq., C.B., and Major Donnelly, R.E. The committee has appointed Mr. Alan S. Cole honorary secretary.

15. His Royal Highness the Duke of Edinburgh, at the Royal Albert Hall, on the evening of the 18th of December, made the following observations:—

"Convinced as I am of the national importance of the work which has been this day commenced, and interested as I am in its success, I feel very much gratified at having had the opportunity of being associated with the proceedings of this day. You have heard the report read by the Rev. Canon Brookfield, which sets forth the history and condition of this undertaking at the present time; but there are a few words which I should like to add. Very naturally many will raise the question, 'Why should we establish a National Training School when there already exists the Royal Academy of Music?' This Royal Academy of Music, which has existed for half a century, has done much service, and the benefits arising from it none can doubt, for many of our most distinguished composers and musicians have been its members. There was a pause in the labours of the Society of Arts, and those labours have now extended over about fifteen years, but there was a pause which occurred at my own suggestion, on account of a thought on my part that the two institutions might have been united into one. I myself undertook a negotiation with the Royal Academy of Music with that view, but after some considerable time had been spent in them, we found that the principles on which the two institutions were founded were so far apart, that it was not advisable that they should be united into one. The Royal Academy has but few free scholarships for those who have distinguished knowledge and aptitude but have not means; the fundamental principle of the school we are assembled this evening to celebrate the foundation of is the free scholarships for all ranks of society. As Mr. Brookfield has read, nearly every county in England, and many in Scotland, Ireland, and Wales, as well as many places in the colonies, have given us the prospect of scholarships, and I have now the pleasure of announcing some others. Her Majesty the Queen proposes to found a scholarship of £60 a year. The Prince of Wales proposes to found a scholarship of £60 a year; and I hope to be permitted, as Chairman of the Committee, to do the same also. These scholarships have been established, and bearing in mind the best of the rules in force in the Continental Conservatoires, I think we shall be able to afford to the students of the new school a really excellent musical education; and not only that, but also an education in history, languages, elocution, and deportment, which are absolutely necessary for all musical education. I beg to return my sincere thanks to the proposer and seconder of the vote of thanks, ladies and gentlemen, you have so kindly awarded me, and I beg to propose a vote of thanks to the Society of Arts, which has laboured these so many years to bring this matter to the commencement we have made this day. It is a society which for 100 years has laboured to promote the arts, and I think music may be placed among the foremost of the arts."

16. During the erection of the building the Society hopes to obtain public support sufficient to establish 300 free scholarships for a period of five years.

The committee of general management has begun its work and held many meetings. It has under consideration the following scheme of management:—

It is proposed that when the building of the school and the endowment funds are sufficiently advanced, five members shall be added to its body, representing the founders of scholarships and subscribers to the scholarships and general school endowments. In the meantime the committee of management will provisionally elect five representatives from the first five towns which shall each found ten scholarships. After the first year of the working of the school, these five members will be elected annually by the general body of founders and subscribers. Every 11. of annual subscription to the scholarship or general school fund gives a subscriber one vote for the year, and every 251. of donation or endowment to the scholarship or general school fund gives the donor or his representative a vote in perpetuity.

The conduct of the school will be divided into three distinct sections:—

- (a) General administration.
- (b) Professional direction of studies.
- (c) Examinations.

The general administration will be conducted by a resident officer, to be called the "registrar," with an assistant if necessary. He will be charged with the registration and conduct of all correspondence, issue of prospectuses, enrolment of students, superintendence of accounts, compilation of the examiners' returns of examination; he will also be responsible for moral discipline; for correctness of attendances of the professional director, professors, and all other officers and students; for proper order of the establishment; for issue of orders for stores, music, instruments, and invitations to concerts, &c. He will also attend all meetings of the general committee and call and attend any of the meetings of the professors which may be held. A receiver and an accountant will also be appointed.

The direction of studies will refer solely to the curriculum prescribed for students, and to the methods of instruction. The committee of general management will appoint the director of studies, to be called the "professional director," who shall hold his office for one year, but be eligible for re-appointment. He will have the control and superintendence of the courses and methods of instruction, and he will prescribe the text-books to be used. He will recommend the professors for appointment to the general committee, and intimate to the registrar when he desires a meeting of professors. All his recommendations involving expenditure will be submitted to the general committee through the registrar.

Examinations.—A professional Board of Examiners, composed of musicians of the highest eminence, will be named annually by the committee of management, to conduct the local examinations of the candidates for admission to the school, and the annual examinations of the school. The seasonal examinations, any one at Christmas and one at Midsummer, will be conducted by the professional director, who will report the results to the committee of management.

Provincial Branch Schools.—As soon as the training school is established, and is in working order, the committee will direct their attention to the formation of provincial branch schools. The Lords of the Committee of Council on Education have this year directly recognised the importance of music in elementary education, by making a grant of 1s. on behalf of every child taught singing. It is to be hoped that this action may be completed by the establishment of provincial schools of music, and connected with the training school as part of a national system.

Charter of Incorporation.—When the arrangements are sufficiently matured, a petition will be presented to the Queen, praying for a charter of incorporation.

We look forward hopefully to the result of this movement.

The Indestructible Paint Company.

Paint which will really preserve stone, brick, and cement is a desideratum, and the Indestructible Paint Company, Cannon-street, claim that their material will do so; further, they produce a paint which resists acids, alkalis, and heat. The fact that their stone-solution is the one selected for St. Paul's Cathedral is sufficient to give it a claim on our attention.

THE OWEN JONES EXHIBITION.

In looking over the collected designs professed "architect," we are almost bewildered by whatever might have been the specialty of the designer, to take account, first, of what he done in the class of work which comes strictly under the denomination of "architecture,"—the designing and planning of buildings and the collection of drawings by one late distinguished decorative architect, now on view at the International Exhibition, furnishes an illustration of what we have observed in instances, that the special cultivation of decorative design is seldom found to co-exist with a very strong feeling for the purely architectural treatment of building materials. It will often happen that an architect who is known as such, in the strict sense, will be found to have no little ability and fancy at his command for decorative design, when called upon but the special direction of the attention to details of ornament seems to have a tendency to weaken the perception for the broader more dignified qualities of architecture, regarded as the art of building well. Not one of the designs of this class in the Owen Jones collection can be called particularly successful. Perhaps the best is the front of St. James's Hall, which may still count as a sensible method of treating the entrance to such a building, where more than a strip can be spared for the street front, though even here some of the details are out of proportion. The design for the Trafalgar Exhibition (No. 17 in the collection) is indifferent, and that offered in competition to St. George's Hall, Liverpool, is one which inhabitants of that town may well be thankful to have escaped. It seems to be just in proportion as the drawings get farther from what generally regard as architecture, and merge into pure decoration, that they become of a high excellence and value. It would seem as if close attention to surface decoration and colour weakened the perception of form, outline, and lines of construction, in this as in other instances, but this ought surely not to be an inevitable result.

An interesting portion of the collection formed by some of the original drawings for work by which Owen Jones first fully established his reputation—the splendid monograph of Alhambra. The view of the alcove in the "Pavilion of the Two Sisters" (26), is a remarkably fine drawing of an elaborate and carefully constructed elevation and sections of the palace with the ornament drawn out and coloured far as was necessary to enable the lithographer to complete it, by repeating the parts. The study at the ancient Moorish palace colour nearly all Owen Jones's subsequent work, sometimes to a too great extent. He imbibed that predilection for interwoven designs of straight lines, of which he made such good use, but which is hardly suitable to all materials and media. From the study of this Saracenic model, also, from which the figure is excluded by rule, he derived perhaps his own indifference to figures as centres or adjuncts of ornament, and thus deprived his work of one of its very important elements of intellectual interest. On the other hand, he brought from this source knowledge of the most picturesque methods of grouping and contrasting the main lines of ornamental design, and a store of beautiful suggestions for its filling in and elaboration, which rendered him at the time almost without a rival in this respect, and leaves his ornamental work still a model in point of fitness and elegance beyond a good deal of what is popular just now.

Of the more architectural class of ornamental work here (to come by degrees to the pure ornament) is a small Greek temple, designed for Gibson; no doubt with the view of exhibiting some of his neo-Greek statues with a suitable *entourage*. This is coloured after the manner in which it seems certain the Greeks must have coloured much of their marble architecture: the plinth black and red, the antae buff, and the spandrels and interspaces black. The strong colour shown here would have made Gibson's lightly-tinted Venus and Hebe, had they been niched in this temple, almost resemble that appearance of white of which the sculptor professed such an abhorrence. The series of chimney-piece designs for Mr. Alfred Morrison combine architectural features with ornament more successfully, perhaps, than anything else in the collection; the characters of the different rooms are admirably distinguished; those which

as most are the dining-room and library; the latter the doors of the close cases in the rest of the bookcases are made a field for ornamental treatment, in large light arabesque on a black ground. The drawing-room, handsome as it is, partakes a little too much of that laxity of line and mere conventional prettiness which, for a long time, has reigned far too much in drawing-rooms, even in quarters where artistic decoration has been the object. Two specimens of billiard-room decoration strike us as peculiarly successful; the more so, perhaps, because, in an apartment of this class, the artist felt compelled to curb his tendency to over-elaborate enrichment; in that for Mr. Mason (107 and 111) there is a black dado and a wall-paper which (if we mistake not) been often used, in two of bluish green: the upper portion of the wall is mainly cast tint, with gilding on the pierced panels for ventilation. The billiard-room for Mr. Gurney (114) is shown in a small section, and exhibits a bold combination of light and dark treatment. In the left portion of the room the walls are painted, each side of a black and red marble mantelpiece, in panels, with a light blue-grey arabesque on a lighter ground, surrounded by a purple arc. In the lower recesses at each side of the room the panels of corresponding range are painted strong morone with a blue border; thus imparting the appearance of an apartment with light and light centre, and lower dark sides. The combination appears most effective in drawing, and has a direct reference to the structural structure of the apartment,—a which should never be lost sight of by the decorator.

It is, however, in the designing of purely ornamental work for flat surfaces, such as wall ceilings, that the peculiar excellence of Owen Jones's design was best displayed. In regard to class of decoration he may be said almost to have himself revived the taste which he afterwards supplied by showing and insisting upon the desirability of flat conventional ornament, including nothing out of keeping with the material employed, or the use to which it was to be put. He has had the honour of being our modern principal deliverer, in the period of our taste, from the dominion of sprawling patterns, in apparent relief, on our wall papers and carpets, and of pointing out and extolling the superior beauty and fitness of the simpler and more geometrically-constructed ones. His rules laid down in regard to the use of this kind have been accepted and followed upon almost universally by our best decorators; by some who now are unwilling to credit his credit as the forerunner of the movement. In these designs for wall-papers and decorations especially, his study of the Alhambra, itself a school of wall decoration, placed a number of motives and suggestions at his command, and it is in the decorations of a modern Italian palace, that of the Viceroy at Cairo, that his greatest success appears among the things now exhibited, and it is here that his high powers in ornamental design received the opportunity of development. In these designs the employment of angular groupings of light lines, as the basis or framework of design, and which is so peculiar to Saracenic art, is largely developed; a very pleasing place is in the ceiling decoration (41), with its lead white lines, and delicate blue flower ornament. Among the richer designs of this type is one for a wall and frieze, a crowded composition of conventional floral types intertwined, but with decided tints of blue, white, and red. The bright effect of these designs, without being in any way gaudy, arises mainly from the judicious use of their colour, in accordance with their own expressed principle, mingled with pure colours so as to produce a combination in which nothing was markedly predominant, yet not dull or colourless tints were suffered to be the key of the whole. In some of the designs for the Viceroy's palace, however, we get help thinking that the want of any unoccupied space for the eye to rest on, the absence of decoration from floor to ceiling, leaves a little of the barbaric in total effect, never refined in detail; and in some of the designs there seems a want of sufficient relation balance between the upper and lower sections of the design; as, for instance, in drawings numbered 51, in which the frieze is remarkably rich in treatment in comparison with the light open design of the lower part of the work. The effect may be different, when the

whole apartment is viewed, from what it appears in the drawing; but these are not the only instances in which we appear to find a certain deficiency in relation and subordination of parts; a little too much effort to put as much as possible into every portion. Perhaps, however, this may have been intended as a means of realising a true Oriental gorgeousness of effect; for in his designs for wall-papers for English use, mostly exemplified in this exhibition by strips of the papers themselves, the relation between the lower portion (the dado) and the more highly decorated expanse above it, is most happily and carefully attended to. Among the designs for ceilings here is a portion of the full-size working drawing for the very successful and effective ceiling of St. James's Hall; and a fine specimen it is of bold and free drawing on a large scale.

Among the Cairo ceilings No. 58 strikes us as a model of ceiling decoration, with straight bands of blue picked with white, almost intricately interlaced, and the spaces filled in with rich floral designs in gold, with red and blue borders and grounds. The design has this peculiar merit, in addition to its beauty, that it could not possibly be taken for anything but a ceiling design. Another admirable ceiling, of quite a different type, is that designed for Mr. Mason (120), in which large circles meeting at the cardinal points form the dominant motive; they are cut into at these points by smaller three-quarter circles, enclosing gilt honeysuckle ornaments; the interspaces of the larger circles are filled with bold floral decoration. The smaller compartment of the ceiling, which is divided off by a soffit, is treated in an entirely different manner, in straight lines. There is much that is suggestive of further elaboration in the idea here given.

It was in the design of carpets alone, we think, that Owen Jones's Alhambra studies rather misled him. He applied to these articles, in too many instances, the peculiar straight-line intersection of Saracenic work, which, admirably suited to ceiling and wall decoration in hard and defined materials, and to tiled floors, is not suited in the same degree to the woollen texture, and necessarily uncertain lines of a carpet fabric. The large carpet designed for Messrs. Lewis (186), and hung at one side of the room, is not successful as a carpet, though an admirable design in other ways, and the same may be said of some of the numerous carpets originally designed for Mr. Morrison, though others show more of what we consider the real carpet treatment; and in one or two of them we may remark the effect produced by the use of a strong bright orange, almost yellow, ground, for the interspaces between some of the larger portions of the design. This is a bold effect, but for a carpet on a large scale and in a richly-furnished room it is highly successful. But in general we think the carpet designs too square and symmetrical; we see none of that happy irregularity of combination which we meet with in products of Indian looms, and which seems invented exactly to fit the exigencies of a carpet material and make. And it is noticeable that in some instances here, where the original coloured drawing and the finished carpet can be compared (as in the case of the large carpet in the centre of the room), the effect in the drawing is much better than in execution. Wherever this is the case, we may feel sure that a design has been made which the material employed cannot adequately represent; or, in other words, that the design is unsuitable to the material.

The inlaid chairs and cabinets, designed for Mr. Morrison, are beautiful specimens of workmanship in this particular form, but the inlay design is often so applied as to obscure and weaken the constructive lines of the furniture, instead of strengthening it; and altogether this is not a type of furniture design which we should wish to see imitated: so much it is almost a duty to say.

Some designs for bank-notes for foreign Governments are admirable, and show what a pretty thing it is possible to make of a bank-note. It is in doing little things of this kind with grace and fitness that much of the indication of national art, or want of art, may be discerned. Judged by such a standard, our artistic status would not be very high even now; that it is a good deal higher than it was five-and-twenty years ago is due not a little to the labours of Owen Jones; and one of the best guarantees for the future of our decorative art would be in finding plenty of worthy successors to the estimable illustrator of the Alhambra.

THE METROPOLITAN BUILDINGS AND MANAGEMENT BILL.

THE Committee of the House of Commons on the Metropolitan Buildings and Management Bill met again on Friday, the 10th inst., when the new clauses (referred to in last week's *Builder*) which had been drawn up by the promoters in consequence of the resolutions passed by the Committee, were taken into consideration. There was a full attendance of the Committee, every member being present.

Mr. Philbrick, in addressing the Committee on behalf of the promoters, said, that in compliance with the resolutions of the Committee they had modelled certain clauses which were then before them. Having stated that as the Bill was not a private Bill, the promoters had no power, without the leave of the House, to have it reprinted, the learned Counsel proceeded to remark that with regard to the clauses themselves, and the resolutions of the Committee, he desired to state, on the part of the Metropolitan Board, with all respect to the Committee, that were the Bill a private Bill merely, and in the entire control of the Metropolitan Board, it would be a very grave question indeed with them, the Bill being, in their opinion, mutilated, and deprived of some of the powers which they thought were most essential to the legislation which they proposed, how far they would proceed with the Bill; but it being a public Bill, they had deemed it their duty, out of respect to the Committee, and in the interests of the public, to model the clauses now submitted, which embodied, as they believed, the resolutions of the Committee, but which, in no sense, were their own proposals. With regard to the sixth resolution of the Committee, to the effect that the schedules to the Bill, and the bye-laws, ought to be incorporated in the Bill itself, it seemed to the promoters, in the view they took of the Bill, to be a matter to be dealt with on each clause as it arose.

Another suggestion of the Committee was that the dispensing power proposed to be given to the Board as to the height and area of buildings would be better provided for by a general clause, pointing out the nature of the cases to which that dispensing power should be limited, and they had framed a clause carrying out, as they conceived, the intention of the Committee. With regard to the resolution of the Committee to the effect that the old language should be, as far as possible, adhered to, the promoters also thought that that became a question of looking at the language of each clause as it arose. He (the learned counsel) had taken the trouble to look at every case, and to read every case, that had been decided upon the Building Act by the superior courts. There were not more than ten or eleven of them. In some of the cases questions of fact had arisen as to what was a building or what was not, there being no definition of what a building is under the present Act; and in other cases controverted questions had arisen, and he thought that as they came to each clause, and contrasted it with the language of the Building Act of 1855, they would see how far there had been a departure from the language of that Act, and whether it would be right to restore the old language or not. The learned counsel then asked for an intimation from the Committee as to the course of procedure they desired to follow, and stated that on the part of the promoters of the Bill he was quite ready to discuss the clauses before the Committee, but it would be in their recollection that in attempting in the first instance to give evidence as to specific clauses, and as to particular matters, he was restrained in giving that evidence, and the evidence was confined more to general matters, respecting which the Committee had decided certain points by their resolutions. He should like to know, for the guidance of the promoters, how far the Committee would desire that evidence should be called upon the clauses and the schedules of the Bill, which were matters of great detail, involving very many considerations. He felt bound, on behalf of the promoters, to state that the clauses had been with great particularity and great minuteness discussed between the Board and the builders. The present shape in which the Bill was before the Committee was the result of very many meetings, and a great deal of criticism,—not in an unfriendly way, but in a thoroughly cordial and co-operative spirit, to assist in the common object,—had been applied to the various provisions in the Bill. But, looking now at the period of the session at which they had arrived, it was of course apparent,—and he believed it had been apparent for some

time,—that with regard to effective legislation, it would be impossible to get the Bill into an Act during the present session of Parliament. The most that could be hoped for would be that the Bill would be able to pass through committee, and that that Committee would be enabled to report upon the Bill in its entirety. That would be the most that they could hope for, having regard to the period at which they had arrived.

Mr. Corrie, on behalf of the Corporation of the City of London, said that the promoters of the Bill had not attempted to deal with the most important part of the resolutions of the Committee; and, under these circumstances, he would ask why were they to go on day after day discussing the clauses, which the learned counsel admitted could not be carried into effect. The sensible course for the Committee to adopt was to report the evidence to the House, and also report the resolutions come to by the Committee, and then next year let the Metropolitan Board bring in a Bill that might pass. He trusted the Committee would not keep the parties there day after day, when, after all, the attendance must be useless.

Mr. Round, who appeared for the dock companies, took a similar view to that expressed by Mr. Corrie.

Mr. Layton, who represented the railway companies, said he was practically in the same position as Mr. Round. He submitted, that if anything was to be done with the Bill, it ought to be reprinted in the first instance before they could go any further with it.

Mr. Mackrell, on the other hand, said that the resolutions were very satisfactory to the large manufacturing and trading interests which he represented, and also to the Builders' Society; and on their part he said that he should be very sorry indeed if the resolutions of the Committee were not made law, particularly resolutions 2 and 3, as regarded cubical contents; and if the Committee could see their way so to vary the Bill, as to make it a short amending Bill which might possibly be carried through, one very important decision of the Committee would be carried out, very much to the satisfaction of the great trading community of London.

The Committee-room was then cleared, and on the parties being again called in,

The Chairman said the committee had requested him to state that they had arrived at the following resolution:—"That the committee do not consider it expedient to proceed to the consideration of the clauses of the Bill until the promoters shall have submitted to them a draft Bill, framed in accordance with the suggestions made, and the resolutions arrived at, on the 1st of July. The committee desire to know whether the representatives of the Metropolitan Board are now prepared to adopt such a course, and if so, within what time."

Mr. Philbrick said they could not print an amended Bill.

The Chairman, in reply, said that they could put the clauses by which they proposed to carry out the suggestions of the committee, before the committee as a draft. The committee felt that it was impossible for them to proceed with the consideration of the clauses when they had not those clauses before them in the shape and form in which they were intended to be.

Mr. Philbrick said, the shape and form in which the clauses were intended by the promoters to be, was as they stood in the Bill, as it was now before the committee, with the amendments. As regarded the shape and form in which, as he understood, the committee desired the Bill to be placed, they scarcely knew how far the committee desired the Bill to be modified, and as to one of the suggestions more particularly, it was almost impossible for them to gather what the views of the committee were.

Mr. Cawley.—Which is that?

Mr. Philbrick.—With regard to the language.

Mr. Cawley.—I do not think there is any difficulty about that.

A lengthened discussion followed on this particular feature in the Bill, and several members of the committee, including Mr. Goldsmid, Mr. Cawley, Mr. Walter, and others, expressed an opinion to the effect that it was very desirable not to alter the language of the existing law.

Mr. Philbrick observed that with regard to the definition of the word "building," to which Mr. Cawley had called his attention, only the day before a case was reported in the papers as having arisen at the Wandsworth police court, where the magistrate found a difficulty, because there was not a definition of the word "building"

in the Act. A person tried to exempt a sort of a caravan from the operation of the Building Act. He refused to comply with the order of the district surveyor, and in order to evade the operation of the law, he proposed, before the magistrate, to put it upon wheels, so that it should not fall within the definition of a building. It was intended as a washhouse, in which washing and mangling should be carried on. The magistrate held that it was a building within the Act. The promoters wished to define a building.

Mr. Cawley said that was not the point. He was not saying a word against defining a "building." He was talking about their introducing these words "or other proper party structure," "party structure," and "party wall." The question was whether they would modify the Bill for the committee, in order that they might have less trouble.

Mr. Walter said they had this definition of a building: "Building means a fixed erection, comprising a cubical space defined by walls, piers, posts, or other structures." That might comprehend an infinite variety of buildings. Then by clause 8 they provided that every building must be separated by an external wall or party wall, or other proper party structure, from the adjoining building. A party structure was defined on page 4, where a party wall or party fence wall was included under "party structure." Then, on page 64 in the schedule, there was a still further definition of a party fence wall; there were three sub-sections giving different descriptions of a party fence wall. They had to apply these definitions to party walls or party structures in the cases of all separate buildings. It would involve very difficult questions, and a great deal of litigation, to reconcile the administration of the law with those various definitions.

The chairman said it was not necessary to enter into illustrations of difficulties which the committee saw. The main point was this, that the committee had arrived at the resolution which he had read, and, in the terms of that resolution, he should be glad if Mr. Philbrick would inform the committee "whether the representatives of the Metropolitan Board are prepared now to adopt such a course, and if so, within what time."

Mr. Philbrick replied, that all he could say in answer to the question the chairman had put was this, that the agent who instructed him would take the instructions of the Metropolitan Board upon that matter, and would communicate the result to the committee at the earliest possible opportunity. The committee that had charge of the Bill would meet on Tuesday, and if the committee were to adjourn till Thursday, he should be prepared fully to state to the committee the course intended to be adopted.

The Chairman: That would be the 16th of July. Upon the 16th of July you are to tell us whether you will be prepared to remodel the whole draft of the Bill, and if so, within what time?

Mr. Philbrick: I am utterly unable to give an answer, as I might do if I had a client who could personally instruct me. I am acting for a public body, who must be convened.

Mr. Goldsmid: Then the solicitor is not properly empowered, as he ought to be.

The committee-room was again cleared, and when the parties were called in the chairman said, the committee have resolved that the counsel for the Metropolitan Board, having applied for time to consult his clients, before answering the question contained in the previous resolution of the committee, the committee do now adjourn to Tuesday next, to enable him to give such answer.

The Committee met again on Tuesday last, at twelve o'clock, Sir Seymour Fitzgerald, the chairman, presiding.

In the absence of Mr. Philbrick, the leading counsel for the promoters, Mr. Bazalgette, who was with him in the case, proceeded to state the decision at which the Metropolitan Board had arrived. He said that the Works Committee of the Board had met the previous day, and taken into consideration the resolution passed by the Committee on Friday last. He might there state that the Works Committee was a Committee of the whole board, and, therefore, the resolutions at which they had arrived might be regarded as the decision of the entire body. The learned counsel was about to read the resolutions passed by the Works Committee of the Board, when he was interrupted by

The Chairman, who stated that the Committee were not desirous of hearing the resolution read which had been passed by the Works Committee

of the Metropolitan Board. All they wished was an answer to the question contained in the resolution of the Committee, the adjournment having taken place in order to enable Mr. Philbrick to give such answer.

Mr. Bazalgette then stated that in consequence of the resolution of the Committee, the Works Committee of the Metropolitan Board recommended that it was not advisable on the part of the Board to take any further proceedings on the Bill.

The Chairman.—That is sufficient.

The committee-room was then cleared, and Committee remained in consultation for nearly two hours. When the parties were re-admitted.

The Chairman stated that the Committee resolved, if the House would permit them to make a special report on the Bill, and evidence which had been laid before them.

Mr. Mackrell, who, during the progress of the Bill had represented several of the large manufacturers and traders, then rose, and made application to the Committee. It was to the effect that the Committee would take steps laying before the Speaker the case of some of the parties as regarded the fees. He asked the parties who had appeared before the Committee for the purpose only of protecting their own interests should have their fees remitted, and that a representation be made to the Speaker to that effect.

Col. Hogg observed that the application was an unreasonable one, inasmuch as the Bill had been promoted by the Metropolitan Board as in the public interest.

In the course of the discussion which followed several members expressed themselves as the proposal being entertained; and ultimately

The Chairman said that should the Speaker make an application to the Committee on this subject, the Committee would state in plain circumstances under which the several parties had appeared before them.

The protracted and fruitless proceedings, which had occupied sixteen days, were then brought to a close.

THE CONNEXION BETWEEN PUBLIC HEALTH AND ACTIVITY IN THE TRADES CONNECTED WITH BUILDING.

We have more than once invited our readers to consider the movement of the building trade in this country; comparing the annual accommodation required by the growth of our population with the returns of inhabited houses, and of those which were in course of construction. Recurring in round numbers, what we have already given in detail, we note that 920,000 inhabited houses, worth, let us say, at fifteen years' purchase, 225,000,000l., have been added to the previous existing house property in England and Wales in the last ten years, on the supposition that 44 per cent. of these figures go to replace decayed houses.

It thus appears that we are safely within the mark, in the estimate that for each unit of population in our population—that is to say, for each individual of the annual surplus of births over deaths—50l. are laid out in building. Taking the figures for the last decade, in England and Wales, and confining our calculation to the inhabited houses, we shall find that no less than 86l. per head had been expended in building to provide accommodation for the increase of our population,—that is to say, of course, 86l. per head of the increase.

The 225,000,000l. laid out within the decade comprises not only the cost of labour, but that of materials, together with the building profit. This division it is, of course, out of the question that we can analyse minutely. With regard to materials, it must be borne in mind that their cost ultimately resolves itself into that of labour, with the addition of a small portion that represents rent, royalty, and the like. For even freight, which is a prominent element in the cost of foreign timber, resolves itself into the cost of navigation and the profit of the shipowner. The place, then, where cost and error creep in, is, here. A certain number of men are returned as exercising the building trade. But for the production and preparation of the materials of the builder, an amount of labour is employed which is divided under other heads; as, for example, that of commerce. For this reason we can only approximate the proportion between the gross cost of building, and the payment made for the labour of the builder.

It comes out, however, very clearly, that an allowance of 1 per cent. per annum, for replacement of decayed houses, can in no way represent

lay in repairs. In round numbers, 600,000 are employed in building. Most of these are skilled workmen. Considering the ruling wages of carpenters, masons, smiths, and other trades, it seems to us evident the average of 50l. per annum, for each engaged in building, must be considerably below the mark. But an expenditure of 22,500,000l. per annum will not yield more than 37l. 10s. per annum for our 600,000 workmen. It does seem from these facts that more than the work done by the building trade must be the nature of repairs and renewals, that in any increase the actual amount of house accommodation in the country.

Turning to the present rate of expenditure, per head for the housing of the annual increase of our population, it is evident that the cost of each healthy child that is in excess of the birth rate makes at least a year's work for the workman. Thus the prosperity of the building trade is intimately connected with the health of the people. Annual increase of population depends on two elements, namely, fertility and viability. Neither of these, taken directly affects the builder. But taken together, they form the very regulating power which determines the activity of the building trade.

It is not the birth of a child that makes the family too small, if that birth only replace a parent or an aged adult. But when the family is not only come in troops, but make good beds amongst us, we have to lengthen the cords of our tents. Here lies the direct and primary interest of the builder in sanitary and health practice.

Looking forward to the future development of the resources of this country, and more fully to that of its architectural splendour and comfort, an element of disturbance must be in our mind, for which due allowance ought to be made. It is hardly necessary to say that we are making any attempt at what may be prophetic prediction. Exactly to foretell what is to happen is neither possible nor desirable. But to calculate what must happen, and such promises being assumed, is not impossible, but wise. For, when we distinctly trace the tendency of any action, we have counsel as to whether we should adopt it.

To know what, if nothing arise from causes to interfere, will be the result of the present, is the very grammar of sagacity. To point to which we refer is the comparative fertility and viability of different regions of the country, and, notably, the difference, in this respect, between great towns and country districts. Thus, in the ten years ending in 1868, the average amount of mortality in 198 districts and sub-districts, comprising the chief towns of the country, was 24·47 per thousand; while in the rural portions of England and Wales, comprising small towns and country parishes, the average annual mortality for the same period was 19·99 per thousand, being in the favour of the country by 4·48 per thousand.

The tables of births are not divided, in the same manner, as the Registrar-General, in such a manner as to admit of an immediate comparison of the tables of mortality. But we can obtain an approximation. In the year 1869, throughout the whole of England and Wales, ten children were born to every 259 of the population. In London the proportion was ten to twenty. Considering the state of public opinion in the country, and remembering the very early date at which marriage is entered upon in the metropolis, we think there is reason to conclude that the increased fertility in the metropolis is due to the fact of a constant influx of immigration of young persons from the country, in the prime of youth. The population of London, we know, doubles in less than forty years. The population of London takes 55 years to double. This increase in the rate of increase is, evidently, due up by immigration from the country; the healthy character of this immigration seems to be indicated by the increase, year on year, in the birth rate.

Now, we compare the viability of the country-born child with that of the country-born child. We shall find a marked difference. Again, however, the form of the annual increase is not such as to lend itself to a ready comparison. We know how high is the rate of infant mortality in some towns, though we have not the fact in the most available form. The "London" of the Registrar-

General is a large district, and a district far healthier than those more densely populated parts, either of its own area, or of other large cities, in which the population is most thickly crowded. Thus, when we say that while, out of the whole population of England and Wales, the deaths which occur under five years of age are 88·8 per cent. of the total deaths, those which occur in London under five years of age are 45·4 per cent. of the total deaths, we are only giving a low example of the increase of infant mortality due to town rearing and town conditions.

These figures give us, then, but an approximate view of the actual internal movement of our population as to increase. Still, though approximate only, and that in a mode which detracts from, rather than exaggerates, the actual facts, it is highly instructive. Our rural population, in the prime of youth, is flowing from the country to the city districts, at a rate that makes the proportionate increase of London, in forty years, as much as that of the whole country in fifty-five years. The fertility of this population, constantly fed by new blood, is about five per cent. above that of the entire kingdom, or ten per cent. above that of Wales. But the mortality of the children so born is rather more than fourteen per cent. above that which prevails through the whole country, taking the deaths under five years of age. Thus, the permanent, or useful, fertility of the town population, taken under the most favourable circumstances possible, is some nine per cent. less than is the case with the country population; the excess of births, which is due to the age of the immigrants, and, perhaps, to some extent, to greater abundance of food and comfort, being so far overbalanced by the worse condition of infant hygiene.

Let it not be imagined that figures like these are insignificant; or that the subject is one undeserving of the warmest interest of the statesman any less than of the sanitary reformer. We see, in this country, causes at work which threaten a serious check to the material development of the power and resources of the nation. If any one say that the operation of those causes is too trifling in amount to deserve any serious heed, let him look to the other side of the Channel. There we see the same causes, stimulated, no doubt, by certain elements of French practice that are as yet almost absent in England, in full operation. Every one is aware of the immense attraction which Paris exercises over France; and of the stimulus given to that attraction by the magnificent mode in which the fair city has been, to a great extent, rebuilt, during the delusive glitter of the Second Empire. The result is expressed in the fact that out of the total number of 1,851,792 inhabitants of Paris (exclusive of a garrison of some 38,000 troops), at the last census, about one-third only were born in the city; 1,081,865 of the inhabitants being immigrants from the provinces, and 177,000 being naturalised foreigners. The period of time in which the population of Paris doubles we have not seen calculated. But we have the grave and menacing statement, made in 1867 by Monsieur Raudot,* that (as compared with fifty-five years in England, and with fifty years in Russia), it would take 183 years, at the present rate of increase, for the population of France to double. This period, according to the last census, is extended to 198 years. Something far more formidable, however, is detected by a minute examination of the details brought together by M. Raudot. The increase of population for some time has been growing feebler and feebler in this country. At length the balance has turned, and, in this respect, France is now actually in decadence.

So remarkable a contradiction to the usual course of those physiological laws which have hitherto been regarded as certain, and even as extremely embarrassing, by theoretical writers on Political Economy, is a phenomenon of no small magnitude. State it how we will, it is full of menace. Of menace, we do not say to France alone, but to civilisation. In many respects, France still justifies her boast of being in the van of the civilisation of the world. The immense impulse, whether for good or for evil, that she gives to this country is matter of notoriety. Sooner or later, the example of France produces a powerful effect on England. When we see, then, our nearest neighbour, gifted with a soil and climate that are certainly at least equal to those of our own country, and with a population endeared to

* Recensement de la Population de la France, en 1872, par M. Raudot, député de L'Yonne.

their native soil by ties to which those of the English peasant are as threads, steadily depopulating her rural districts by the dangerous increase of the turbulent centres of City life; we have before us an acute case of the same disease which now shows premonitory symptoms in this country.

We will spare our readers any of those preliminary and important corrections of first figures that have to be made for the loss of Alsace and Lorraine, on the one hand, and for the gain of Savoy on the other hand. We only refer to this part of the subject lest it should be thought that it has been overlooked. This is not the case. The proper corrections have been made. We come to the very serious statement that while, in the year 1867, the number of births in France exceeded that of the deaths by about 20 per cent., in 1871 the number of deaths in France outnumbered the births by thirty-three per cent. ! We add the actual figures.

In the year 1867, the births in France were 1,007,515; the deaths, 888,887; the consequent difference, or excess of births, being 220,628. In the year 1871, the births in France were 821,121; the deaths, 1,271,010; the difference, or excess of deaths, being 449,889.

That the foreign war of 1870-1871, and the civil war of 1872, have each had a disastrous effect, both in increasing deaths, and in diminishing births, there is no doubt. But that will by no means account for the figures in question. M. Raudot gives good reasons for estimating the deficit of men caused by actual loss in the war at 100,000. As to the births, it is not until 1871 that a falling off could have occurred from the war, if such took place at all. But the number of births in 1870 was 64,000 less than that in 1867. Year by year the births have steadily fallen off; and this is not all. Year by year the deaths have increased, and that increase has been more rapid than that of the births. In 1867, there were 186,394 more births in France than there were in 1871. In 1871, there were 384,123 more deaths in France than there were in 1867. This is burning the candle at both ends. If we double the allowance made by M. Raudot for war casualties, we still find the decrease of population to be as much from more deaths as from fewer births. What is the cause of a phenomenon that looks so inexplicable?

We can point out one cause. The influences which are now so apparently at work in diminishing the population of France are not of yesterday's growth. If only recently brought to light, they have been at work for years—a canker at the heart of the national life. The increase in the deaths denotes either a decreasing viability in the whole nation, or an excess of elderly persons,—due to a former check on the fountain that supplies the young. We think it must denote both. A proportionate increase of deaths, even to a large amount, might be due to the latter cause, but hardly a positive increase. It is, of course, out of our reach to ascertain how far such a decrease of fertility may be due to moral, and how far to physiological causes; but such a division, even if it were made, does not in any way alter the facts. In France there are 303 children born to every 100 marriages; in England, 392; in Russia, 472. Whether people defer marriage from prudential motives, or whatever other, and truer, reason may be adduced, the fact remains the same. If, instead of making our comparison by the number of marriages, we make it as a percentage of the population, the results are still more striking. In Prussia 507 children are born annually, to every 10,000 persons; in England, 354; in France, only 266.

It is very easy to draw up a sensational statement, and to say that, at the present rate of decrease in population, France will, in so many years, be entirely depopulated. Statements of that nature are all very well in their way, but they are apart from the province of serious literature. The facts are of sufficient gravity to dispense with exaggeration. What we actually see before our eyes is true. There exists, in France, a disproportionate or diseased tendency for the life-blood of the provinces to collect and stagnate at the heart. All the luxury of the capital, stimulated as it has been to the utmost, increases this morbid action in the national life. And the actual symptoms are,—decrease in the productive energy of the people; enfeebled viability; and gradual decline of agriculture, from the increasing sparseness of the country population.

When the house of our neighbour is on fire it is time to look to our own. Some of the most

threatening symptoms are, indeed, absent in our own case, but yet there are ample causes for anxiety. Our increase of numbers, although somewhat slackened, yet maintains a rate that has caused anxiety, from its magnitude, to a certain school of writers.

We have thought it well thus to show how the prosperity of one great interest, such as that of the building trade, is intimately bound up with, not only the maintenance, but the steady increase, of the national health. What is thus true in one case, is, to some extent, true in all. It is not to the selfish principles of human nature that we are appealing. We only take one illustration, which is capable of reduction to figures, to exemplify general truth. If the prosperity of the builder depends, not only on the maintenance, but on the increment, of national fertility and viability, so is it with every other calling. If the effect of disease, pestilence, or any other check to a normal and healthy increase of the people be to slacken the work in the builder's yard, it will be the same in the forge, the mine, the factory, the cottage; it will be the same wherever man is at work for his fellows. The tie may be called a selfish one, but it is a tie bound by Nature herself. We touch, at present, on only one part of a great subject,—that which relates to the prevention of preventable disease, and the maintenance of the normal energy of the country by the preservation of health and of viability. But there is another, and a no less important view of the subject at which we can only glance. It is to the effect that the prime instincts of human nature are not only conservative, but thoroughly true in their tendencies. If we find population press upon resources, the remedy is, not to diminish the first, but to augment the second. Every child born to the community is an addition to its productive power. It is the fault not of the child but of the community, if he be not trained to produce; and thus to become, in more ways than one, an addition to the material power of the country. We have read of a division of the population into producers and consumers. A no less true, and, from one point of view, a more instructive division, would be into producers and stimulators of production. In the latter sense every additional unit of population is a source of increment in the national wealth.

"DECORATION OF ST. PAUL'S."

Sir,—Mr. William H. White, in his defence of Mr. Burgess's design for decorating the interior of St. Paul's Cathedral, speaks of the interior of St. Peter's, Rome, as being "vulgar." Now, vulgarity is not a question of architecture, but a question of fact; a thing which is vulgar must be repulsive to the minds of all educated men; and the more refined the mind the more repulsive will vulgarity appear to it. Now I take it, the writer of "Childe Harold" was possessed of a refined mind and sufficient education to be a good judge as to the existence or non-existence of vulgarity in anything. Well, the writer of "Childe Harold" uses the following language with regard to this "vulgar" church:—

"But thou of temples old or altars new,
Standest alone with nothing like to thee—
Worthiest of God, the holy and the true,
Since Zion's desolation, when that He
Forsook his former city, what could be,
Of earthly structures in his honour piled,
Of a sublimer aspect? Majesty,
Power, glory, strength, and beauty, all are ailed
In this eternal ark of worship undefiled."

Thou movest—but increasing with the advance,
Like climbing some great Alp, which still doth rise,
Deceived by its gigantic elegance;
Vastness when grows. But grows to harmonious—
All musical in its immensities.
Rich marble—richer painting—shrines where flame
The lamps of gold, and laugthy dome, which vies
In air with earth's chief structures, though their frame
Sits on the firm-set earth—and this the clouds must
claim."

Surely a building which has called forth such sentiments and such expressions as these cannot be so very "vulgar" after all. And there is another view of the matter which is worth considering, and that is, whether the vulgarity does not exist in the excessive narrow-mindedness of the school of architects to which Mr. White belongs? And all persons who appreciate the true glories of Italian architecture, and honour the memory of the great Sir Christopher, must hope that his greatest work will be delivered out of the hands of a member of such a school.

H. W. B.

* "Childe Harold's Pilgrimage," canto iv., stanzas cliv, and clvi.

Sir,—In your last number there is a letter of Mr. W. H. White's on the "Bedizenment of St. Paul's," an unhappy term applied to the justification of the models now on view in the Royal Academy. He considers mine an unfortunate suggestion of a competition for other modes of decoration, "a competition," he says, "which, begun in flagrant injustice, would probably terminate only a little less unjustly than many of the equally important ones, which have been held during the last thirty years."

It appears to me, on the contrary, that this is a very legitimate occasion for competition, by which, it is to be hoped, a more satisfactory solution of the difficult problem of the decoration, I would not say *bedizenment*, of our metropolitan cathedral may be realised. The general voice condemns the models as false in sentiment and utterly opposed to correct taste in execution. There is an evident failure. The author will receive his remuneration: but is he entitled to expect a fresh commission? And are the committee to incur a like expense with the probability of a second failure after the first, when the artist was left unfettered in the exercise of his judgment, his imagination, and his taste? Should his abilities prove so transcendent, as possibly they may in this tournament with his rivals, he will be fully entitled to all the honours of his success, and he will not have to complain that his utmost energies have been called forth by the occasion.

The experiment of the decoration of a Protestant cathedral of this importance is a novel one. The type of the Roman Catholic must not be adopted. There must be a sober majestic treatment, not sparing as to the costliness of the materials to be employed, but with discretion in their use. We need not, we cannot, follow any existing like example. But the eminent success of the late Baron Triqueti in the sepulchral chapel attached to St. George's, Windsor, shows that the imagination of the artist has still open to him new fields of invention not hitherto entered upon.

The fabric of St. Paul's, as left by Sir Christopher, offers the best key-note for the decoration. In all its details it is marvellously pure, considering the period in which he lived: for he reverted to the school of Vitruvius and Palladio at the beginning of the sixteenth century, instead of adopting the perversions of the French and Italian schools of his own period, represented by Blondel and Bernini; men of genius, but instances of artificial aberration in the former, and of extravagant profligacy in the latter. These weaknesses our great architect avoided, and gave us the building of which we are justly proud, and which we must not spoil.

The "Parentalia" published by the grandson, and so many years after the decease, of Sir Christopher, is a mere collection from recollection of his opinions; and it is to be remarked, that we do not find the words "high altar" or "baldachino" used by the grandfather. But here and there in his reports and notes of his journey to Paris peep out evidences of his real individual simple taste. "The Palace, or, if you please, the Cabinet of Versailles, called me twice to view it; the mixture of brick, stone, blue tile, and gold makes it look a rich livery. Not an inch within but is crowded with little ornaments of ornament. The women, as they make here the language and fashions, and meddle with politics and philosophy, &c., so they sway in architecture. Works of flagrant and little knacks are in great vogue; but building certainly ought to have the attribute of eternal, and, therefore, the only thing incapable of new fashions."

Let us hope that the dean and chapter will not enact the parts of the French ladies of the time of Louis XIV., but call to mind these pregnant words of the fourteenth homily of our Church:—"The outrageous decking of temples and churches with gold, silver, pearl, and precious stones shall be confuted; fancying antirity that all people should be more moved to due reverence of the house of God, if all corners thereof were glorious and glistering with gold and precious stones!"

T. L. DONALDSON.

Value of City Property.—An instance of the great value of City leaseholds occurred on Friday, last week, at the Auction Mart, when Messrs. Frank Lewis & Kemp sold for no less a sum than 27,500l. the lease of the premises No. 31, Thread-needle-street, granted by the Merchant Taylors' Company in 1855, for 80 years, at 315l. a-year. The property is now sublet as offices.

NEW CHURCH AT KENNINGTON.

A LARGE and costly new church, dedicated to St. Agnes, is about to be erected at Kennington, immediately to the north-east of Kenning Park, on a portion of the site formerly occupied as a vitriol works, and the foundation-stone laid last week by the Hon. C. Wood. The church, which has been designed by Mr. Gilbert Scott, will be in the Decorated style, and materials externally will be red Luton brick with Doubling stone dressings. The body will be of unusual length, being 145 ft. long, 65 ft. wide. It will present three prominent elevations: one to the south, and two others to the east and west respectively. The south elevation will contain five four-light tracered windows with a lofty tracered window at the transept and six square clerestory windows above the west elevation, where will be the principal entrance, there will be a tower and spire, 11 ft. in height; whilst the east elevation will contain a lofty tracered window, 40 ft. in height, 18 ft. in width, surmounted by a gable of extreme height of this portion of the building being 73 ft. The height of the nave to the top of a high-pitched roof will be 70 ft., and the width will be 32 ft. high. Internally the church will be 138 ft. long and 62 ft. wide, the nave and chancel being 66 ft. long; whilst the remaining portion is taken up by the chancel and altar, which will be approached from the entrance-screen by steps, the floor-level of the altar being 1 ft. higher than the body of the church. The interior will be divided from the aisles by columns of Doubling stone, and the internal walls will be faced with grey Luton brick, with red brick quoins, the lower portion being painted round with wood to the height of 8 ft. The roof of the ordinary open roof, that in the aisles will be groined; whilst the nave and chancel will be continuously barrelled. The interior will contain one or two special features. One of these is a roof-loft, or gallery, which crosses the church over the chancel. This roof-loft will be flanked with figures of St. Mary and St. John,* and on either side the organ will be placed, in two positions. As the musical services in the church are intended to be of a ritualistic character, the roof-loft will contain an orchestral band for festival occasions. At the west end there is to be a gallery of peculiar construction, designed for the processional services of the church. It will be approached at either end by a flight of broad stone steps, leading into the church, and will be used only for the processions which will ascend into the gallery, and descend again into the church at the east end, thus avoiding the crowd of those who usually assemble at the west doors. The estimated cost of the church is 11,000l. Messrs. Dove, Broad, and the contractors.

INTENDED COMPLETION OF THE SOUTH KENSINGTON MUSEUM.

A FEW years ago, designs were arranged for the completion of the Museum buildings South Kensington, but it was considered by the late Government, when they came into power, that less money would do all that was necessary and designs were prepared for a less costly building. Nothing, however, was done towards carrying them out. Last week a meeting was held, at which were present the Duke of Devonshire (president of the Council), Lord Sandhurst (Chancellor of the Exchequer), the First Commissioner of her Majesty's Works, Mr. W. Smith of the Treasury, Capt. Galton, Sir Sandford, Gen. Scott, and all the officials, who, the idea of a cheaper building was given up, and Gen. Scott was directed to prepare a model of a design for completing the structure in a manner befitting its purpose and content.

Lead-poisoning.—The *Lancet* has called attention to the large number of cases of lead poisoning now under treatment in the East-end of London from the numerous white-lead factories in that district. In an article "On the influence of certain chemical manufactures on health" the question of lead-impregnation is fully discussed. It appears the precautions measures, if vigorously enforced, would be sufficient to prevent the entrance of lead into the system; but, unhappily, these measures are not enforced, and, consequently, the wretched operatives speedily fall victims to the poison.

* Mr. G. G. Scott is playing with fire.

THE FRENCH PICTURE GALLERY.

INTERNATIONAL EXHIBITION.

WANT of space has prevented us from noticing hitherto any pictures in the French Gallery, which was not opened when our former notes were made; and the collection as a whole is very inferior to those of preceding years. But word is due to the collection of fine portraits of Mdlle. Nele Jacquemart, which form the most important contribution to the gallery, and illustrate very well the talents of an artist who is not at present much known among us. There are nine of these portraits exhibited, all characterised by great simplicity and breadth of style, and a power of realising character and expression in countenance and attitude, without effort or pretentiousness. That of Marshal Garibaldi (144), leaning on one arm, and looking upward as if about to reply to some one who has just addressed him, is a fortunate example of easy and natural pose in portraiture; but the favourite with most spectators will probably be the half-length portrait of the Comtesse Plater-Zeberg (150), exhibiting a countenance full of interest and intellect, and in which the artist has caught evidently the typical expression of the face in its best moments—the art of portrait-painting. The full length of La Baronne Gaston de Montesquieu (146) is very dignified in pose and in the fall of the full and heavy dress, though the flesh tints are striking as we wanting in clearness and transparency. A very characteristic portrait is the half-length (147) of a lady in the act of walking past the spectator, and with a countenance and air so redolent of Parisian “good society,” that we might almost expect to hear her announced as “Mdlme. Octave de Camps,” or some other of the dignified women of the world who figure on the pages of Balzac. Mdlle. Jacquemart’s paintings are portraits pure and simple, with no accessories for the most part, but some indication of background in a single tone: the bust portrait of an old gray-haired lady (119) is happily placed against a warm red ground; and in the full-length figure of the “Comtesse de la Poëze” (151), one of the most characteristic portraits of the group, a very successful and pleasant harmony of colour is achieved by means of the dark purple tippet, light dress of a kindred tint, and the orange-toned sofa cushion; and all the tones comparatively soft, but clear.

Among other things in the gallery may be noticed one of the noblest works of Danbying, “Over du Lune” (90), in which the moon fully seems to radiate a mild light; and a newly-composed landscape, by M. Karl Pierre Danbying, “Les Crenniers à Homequeville” (81), gives us that the elder artist of the name has a worthy successor in his son. “Un Cauchemar,” by Antigna, is a very good specimen of the use of nude studies in which the artists of France are considered by some to excel rather much. In this case there is a real motive of interest in the delineation of unconscious bodily action under mental pressure. In this respect the work is a great contrast to the mere gar display of Serres’s “Le Sieste,” on the opposite wall. Collette’s “Paysanne de Cernay-Ville” (68) is a study of an old countenance, depicted with much feeling and pathos. A river landscape by the late Paul Huet, “Le Laïta” (14), is full of a rich and quiet poetry; and a portrait of a high kind attaches to Lévy’s “La Mère” (155), where the beautiful receiver of the epistle has thrown herself on her knees before the old man, forgetful of everything but the kindly very interesting contents of her letter. The picture is large one, displays that highly decorated luxury of furniture and accessories which artists of the school of Goupil have imitated us; but it has the “one touch of nature” which puts palaces and cottages on the same level, and makes the human interest pre-dominant over the mere accompaniments of the scene. The special catalogue of the French works exhibited, published by the “Commissariat Général,” is admirably got up, both as to form and matter.

Removal of the Monument.—It is proposed, according to the *City Press*, by a committee of the Corporation, to take down and rebuild the Monument, as the cheapest way of getting an improvement in connexion with the proposed new street in that part of the City. Trust our usually well-informed contemporary been misinformed.

ERECTION OF NEW SLAUGHTER-HOUSES AT THE METROPOLITAN CATTLE MARKET.

THE Cattle Markets Committee of the Corporation of the City of London have brought forward an important proposal to construct twenty additional slaughter-houses in Copenhagen Fields, upon ground on the east side of the Metropolitan Cattle Market, contiguous to the Great Northern Railway, the estimated cost being 26,000*l*. A report upon the subject was laid before the Corporation, at their meeting last week, and Mr. Fricker, in moving its adoption, said that, under certain sanitary regulations, slaughter-houses might be allowed to continue in suburban districts, but he believed that the authorities would, as long as they could, insist upon their being closed in the crowded districts of the metropolis, where there were 1,500 private slaughter-houses. He said that in crowded districts private slaughter-houses were a nuisance, and in confirmation of this statement he instanced the report by Mr. Liddle and Dr. Tidy to the Commissioners of Sewers, on the state of the slaughter-houses in the City. This report showed that there were twenty-eight licensed slaughter-houses within the City, the sites on which they were built, and their surroundings in the majority of cases being exceedingly objectionable. The entrances in the majority of cases were narrow, and the ventilation and lighting were both deficient. The report of the Cattle Markets Committee, in strongly recommending the desirability of erecting the slaughter-houses as proposed, stated that in respect of the present slaughter-houses in the City, the nuisance in Aldgate High-street, to four-passengers, was very great, owing to the offensive smell, the dirty condition of the pavement, the drippings from the entrails, the carrying of the carcasses, and the wheeling of barrows filled with dung and other offensive matters along the pavement. This would all be avoided in the proposed slaughter-houses, the arrangement being that each slaughter-house should be a detached building, having an open space of several feet in width between it and any dwelling-house; and it would not be so situated in a public thoroughfare as to enable passers-by to see what was going on inside. The walls would be constructed of a non-porous material, and of such a nature as to allow of their being scraped, and then thoroughly washed with soap and water. The drainage would be complete in every respect, the drains being well trapped, and the iron gratings over the traps being firmly fixed, so as to prevent their being removed, whereby the washing of all *débris* and garbage into the drains, which would be liable to choke them, would be prevented. A covered receptacle to contain the garbage and all refuse would also be provided, to be emptied daily, before seven o’clock in the morning. The doorways would be of asphalt. Mr. Fricker added that the extent of land which the committee proposed to appropriate for the slaughter-houses was nine acres and a half, and that fifteen persons, all of the highest respectability, were prepared to carry on business in them. It was proposed that the rents should vary with the size, from 130*l*. to 30*l*. a year. The discussion on the subject was adjourned to the next meeting.

LEICESTER SQUARE NINETY YEARS AGO.

PENDENT to what was said in these pages lately, the annexed extract, from Walpole’s “New and Complete British Traveller,” may not be out of place:—“Leicester Fields is a very spacious place, containing an area of between two and three acres. It takes its name from Leicester House, a large building on the north side, which was originally the mansion of the Earl of Leicester, and afterwards the residence of Frederick Prince of Wales, father of his present Majesty [George III.]. It is now occupied by Sir Ashton Lever, as a repository of the numerous curiosities collected by that gentleman. Adjoining to this is another large building, called Saville House, which was formerly the winter residence of his present Majesty, when Prince of Wales, but since Sir George Saville. The inner part of the square is inclosed with iron rails, and adorned with grass-plots and gravel-walks. In the centre is a gilt equestrian statue of his late Majesty King George II. The buildings that surround the square are in general very uniform, spacious, and handsome, and are

chiefly inhabited by persons of distinction.” The volume from which the above extract is taken is a large-sized gazetteer of 520 pages, profusely illustrated with views of public buildings, landscapes, lordly mansions, and county maps of Great Britain and Ireland. It bears the imprint of “Alex Hogg, at the King’s Arms, No. 16, Paternoster-row, 1784.” Does any otogenarian citizen remember gold-leaf, or the vestige of it, on the statue in Leicester-square, and how long is it since the very uniform houses spoken of ceased to exist? However, as the old adage has it, “All is not lost that’s in danger.” To which the public may reply,—“Granted.”

THE ST. GEORGE’S VESTRY HALL.

THE General Purposes Committee of the St. George’s Vestry, at their last meeting, submitted a proposal for the alteration of the vestry-hall, and the removal of the gallery, with a view to improve the sounding properties, and the general convenience; and also to provide a new committee-room which should be free from the noise and traffic passing along the road. The estimated cost is 450*l*. Objection was taken by several members of the vestry to that part of the proposal which involves the removal of the gallery, one gentleman observing that if the gallery was removed and the space thrown into the hall it would be nothing better than a large tank. He added that in the event of the gallery being taken away there would not be any accommodation for the public, a state of things which was very undesirable. That portion of the proposed alterations referring to the removal of the gallery was referred back to the committee for further consideration.

RE-OPENING OF ST. BENEDICT’S CHURCH, CAMBRIDGE.

At the completion of what may be termed its third stage of restoration, the ancient Church of St. Benedict in Bene’t-street, Cambridge, has been re-opened for divine service. The tower of this old church is a very ancient structure, and corresponds in some respects with the four celebrated Northamptonshire churches. The bells in this tower for many years have not been rung; but they were set swinging last week. With regard to the details of the present stage of restoration, the south aisle has been rebuilt, and covered with a roof the interior of which consists of Memel timber (flat curve) with tracery, spiral-pedals, hammer-beams trussed by carved corbels representing angels and foliage. The new chancel had a Gothic roof of the same timber, carved ribs with intermediate mouldings dividing the roof into panels, and hammer-beams with carved corbels. There is a new (Gothic) chancel arch, which does not finish on the foundation, but is trussed off with circular corbels; it is of moulded stone, and gives effect to the chancel. The outline stone-work of the two early English lancet windows has been preserved in the south wall of the chancel, together with the O-G sedilia-arch, piscina, and doorway which probably led to the rood-loft; the doorway leading on to the rood-loft itself has been preserved in the south-east wall of the nave. The new communion-table of wainscot on oak plinth has turned legs and mullions, and carved rails, with representations of wheat and the vine—emblematic of the sacrament. Above the super-altar a space has been left in which it is intended to place panels in coloured mosaic. The new flooring consists, in the chancel, of ornamental encaustic tiles of the fleur-de-lis pattern, whilst that in the nave and aisles is of plain black and red encaustic tiles. The new wainscot pews in the nave and south aisle have tracery-panels with moulded tops, the moulding of the rail corresponding with that on the end; and the seats in the north aisle will eventually be superseded by similar benches. The church is to be lighted by a corona in the centre of the nave and ornamental jets proceeding from the aisle walls. The churchyard has been lowered. The cost of the present restoration is about 1,500*l*. The architect is Mr. A. W. Blomfield; and the builders are Messrs. Dove, Brothers, of Islington, who have been represented during the progress of the work by Mr. C. B. Westcott.

Tonbridge.—The plans for the new Town-hall at Tonbridge have been approved by the Local Board, and the building will be at once commenced.

WORKS IN SCOTLAND.

The New Harbour Works at Anstruther.—These works are now approaching completion. They were commenced so far back as 1866, and have already cost upwards of 60,000*l*. Last week the western breakwater, which is built wholly of concrete, was finished; and the outer section of the east pier, which was overthrown during a storm some two or three years ago, is being rebuilt of concrete and without the parapet-wall.

Sale of a Portion of the Island of Harris.—It is stated that Lord Clifford has purchased from the Earl of Dunmore the southern part of Harris, in the Long Island. The price paid for this, the last portion of Harris in possession of the Earl, is said to be at least 120,000*l*. Mr. Scott, a London banker, bought the north part of Harris some three years ago for 150,000*l*. The rental of the whole of the island is about 5,000*l*.

Edinburgh Museum of Science and Art.—Every effort is being made to complete the arrangements at that portion of the museum which is at present closed to the public. Among other novelties a somewhat remarkable work of art has just been introduced. It is a *rerodis* of terra-cotta, in three panels, each 5 ft. long by 2 ft. 6 in. broad. They are the work of Mr. Tinworth, whose successful efforts in the restoration of Old English and German styles of pottery have done so much to enhance the reputation of art-pottery produced by Messrs. Doulton, of Lambeth. Only two copies of this *rerodis* have been made, the companion to that at Edinburgh being in the exhibition of the Royal Academy in London. The left-hand panel represents the Betrayal, the centre the Taking Down from the Cross, and the one on the right the scenes at the foot of the Cross. They are spirited and effective works.

The Scarcity of Water in Scotland.—Complaints as to present or prospective scarcity of water are general in various districts of Scotland. In Glasgow, which derives a plentiful general supply from Loch Katrine, the inhabitants of the south side of the river nevertheless consider themselves aggrieved. Last week two influential deputations, representing owners of property and the various Fire Insurance Companies doing business in the city, waited on the Water Companies to complain of the inferior quality and limited quantity of the water supplied on the south side of the Clyde. The deputations presented a very strong case, calling special attention to the great destruction of property which had recently been sustained in the district on account of the want of water to extinguish fires. The result was the preparation of an elaborate report by the engineer, Mr. Gale. The following reasons among others are advanced to account for the alleged insufficiency; viz.,—1st. Pipes while still sufficient for the ordinary domestic and manufacturing purposes get corroded inside, and thus lessened in diameter. 2nd. Large works are built on the outskirts of the town, and streets with only dwelling-houses, where fire seldom occurs, get suddenly converted into warehouses or factories, where fires are frequent. 3rd. The great size of the warehouses and factories recently erected was quite unknown twenty years ago. They are, moreover, built in many cases in a confined space for the sake of economy, in such a way that a fire is more confined, and has fewer thick walls to prevent its spreading, while the materials stored are constantly increasing in quantity and value. No less than fifteen miles of old pipes have been lifted during the last six years and replaced by larger pipes; this being at the rate of 2½ miles a year. At Dundee the supply has been cut off for the greater part of the day. At Paisley the authorities have issued precautions against unnecessary waste, and at Greenock a committee has just drawn up a report on the best means of checking the waste. In some cases where fittings were bad, the committee found that as much as 256 gallons per head per day were lost by passing through taps and closets, where, if the fittings had been in good order, the quantity consumed could not have been above 20 gallons per head per day, and in some cases much less. At Selkirk, until the occurrence of a thunderstorm last week, there was not sufficient water-power to drive the wheel in connexion with the works by which the water is sent from the collecting-well up to the reservoir. When the new water-works now in progress in various parts of the country are complete, it is hoped, that, even with continued dry weather, there will be a more plentiful supply.

Progress of the Glasgow Harbour Works.—The

splendid series of works being carried out by the Clyde Trustees on the opposite sides of the river Clyde, at Stobcross and Plantation, are making progress, though the appearance of advancement on the north bank bears no comparison with the air of completeness which the south quay is gradually assuming. The continuation of the fine wharfage at Plantation is being energetically carried on, the line of quay having been formed from Plantation shed several hundred yards down the harbour. The large crane fixed on the wharf at this point shows satisfactory signs of progress. Lower down the river the graving dock is beginning to show its magnificent proportions to great effect, and though the nature of the works yet to be completed will preclude its being entirely finished before the end of the year, still the dock presents a very forward appearance.

MONT ST. MICHEL.

ALL who feel an interest in the preservation of the magnificent monuments of ecclesiastical architecture bequeathed to us by our Medieval ancestors must have read with real pleasure an announcement which appeared in the daily papers not long ago to the effect that the French Government had declared the Abbey of Mont St. Michel to be "a national monument"; or in other words, that the Government had undertaken the responsibility of its preservation, and as far as necessary of its restoration.

It is perhaps not too much to say that there exists at the present day no monastic building of large scale which is so well preserved and so curious as the Abbey of Mont St. Michel. The great singularity of its position upon a lofty rock rising out of a shallow bay, which is only covered by water during a few hours of the day, and is at other times a vast stretching plain of sand, and the remote antiquity of its foundation, give this abbey an extraordinary amount of interest; and when to these is added the great architectural value of the buildings, it will be seen that the act of the French Government is one of the greatest importance to the archaeological world.

The best way to visit Mont St. Michel is by taking a coach from Dol, from which place to Pont Orson the road passes through a charming and fertile country. The first view of the abbey and the bay is gained from the top of a lofty hill, which is crossed by the road about three miles before arriving at the town of Pont Orson. Beyond the last-named place the road becomes flat and uninteresting.

The entrance, or rather approach to the Mount, is formed by a kind of small beach only, extending for a few yards along part of the base of the rock. Passing through a gate of fourteenth-century work, defended by two cannons, which are said to have been taken from the English, one is admitted into the singular winding street which forms the town or village, and in order to approach the abbey can either follow this winding street and admire the picturesque and beautiful old houses on either side, or, by ascending the ramparts and following them up a number of flights of steps, a more extended view of the little town can be gained. About half way up to the abbey is the singular little parish church, with its apse built over the footway of the road, and its quaint "saddleback" tower.

The gateway to the abbey is a castellated structure, defended by two round towers, and is shown in our engraving. Passing through this, one ascends a lofty flight of steps, which leads to a second gateway and the porter's lodge; upon ringing a bell here, the great oak door is opened, and the visitor is admitted into a vaulted apartment, where he is waited upon by one of the lay brothers of the religious order, who occupy the monastery, and serve the abbey church. On a large counter, in the centre of this apartment, are arrayed photographs and views of the abbey, which can be purchased for reasonable prices; and, as the proceeds are devoted to the restoration of the building, most people purchase here some view or *souvenir* of their visit to the abbey. A small charge is made for showing the abbey to strangers, but ample time is given for inspecting all its curiosities.

Until about twelve years ago this interesting and beautiful building was used as a convict prison, and its noble walls were out up by floors and whitewashed, and the church was disfigured by brick partitions. Since it was given up as a prison, it has been let upon lease to a religious community, who have slowly but judiciously carried out a partial restoration of the church and several of the halls; much, however, still remains to be done, especially the restoration of

the dormitory, which was terribly disfigured by partitions, floors, plaster, &c.; the cloister, which are still disfigured by a plaster ceiling; the spire of the church; and the high altar fitting and stained glass.

To describe the general plan and arrangement of this building, or series of buildings, would be impossible, nor could it even be explained by a ground plan, as the buildings and apartments occur so many different levels that nothing short of a model would enable one to realise the respective positions. It may, however, be stated roughly that the buildings in plan for the letter D, inclosing the church in the centre, and the straight side of the letter is formed by building called "Le Merveille." This building is of the very finest thirteenth-century architecture, and contains five superb vaulted halls supported by rows of columns. Over a portion of this building are the cloisters, which communicate with the nave of the church, which will thus be seen is on a much higher level than the "Merveille."

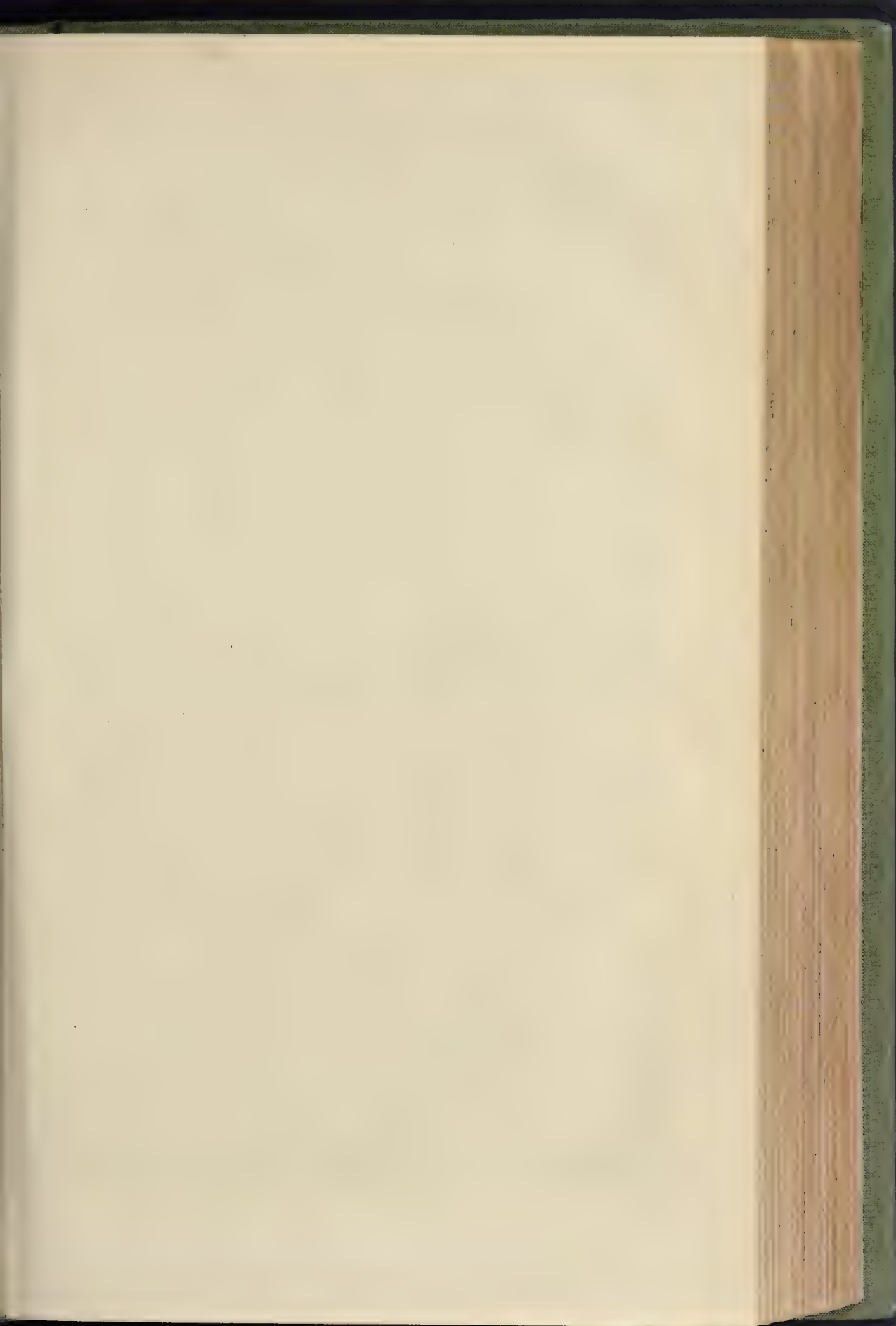
The church consists of a fine Romanesque nave and transepts, and, perhaps, the most magnificent Flamboyant choir and chevets existence. The choir is surrounded by aisles as radiating chapels, and supported by noble flying buttresses adorned with a profusion of pinnacles. In the choir the piers are very richly moulded and are without capitals. The clearstory is very lofty, and entirely pierced by large windows. The triforium is glazed, but what especially strikes the visitor in this choir is the great beauty of the vaulting, especially in the apse. In the chapels surrounding the apse are some interesting examples of late carving, especially an altar with a *rerodis* filled with small panels representing various scenes from the "Passion" carved in alabaster; these probably date from the fifteenth century. In the Lady Chapel is a new altar, with the *rerodis* and frontal cover with plates of silver richly chased and enamelled. It is a good example of modern French ecclesiastical art, carefully and delicately executed. Over the high altar is a large statue of St. Michael, also of silver, and, like the altar in the lady-chapel, executed with considerable care and skill. At present the church, although very fine, has rather a bare, unfurnished look, but this will be remedied when sufficient funds can be obtained for the purpose. In the choir are some ancient stalls of a plain but good design. Beneath the choir is a very fine crypt, the vaulting ribs and archmoulds of which are on to huge cylindrical columns without capitals. This crypt is used as an oratory, and is well preserved and cared for; in fact, the greatest praise is due to the religious order who have carried out the repairs, and taken much care in this magnificent ancient abode.

Of course, only a very small portion of the abbey is inhabited, and we cannot help thinking that if the monks would arrange some of the many unused chambers of the abbey to form a kind of hotel, as is done at the Great St. Bernard, they would confer a great boon upon the public, and find their funds very considerably increased. The present "hotels" on the island are everything that is bad; so much so, that few people will venture to spend a night upon the island, but if by writing beforehand there were a possibility of obtaining a room and a simple but wholesome meal in the abbey, we feel sure that many people would take advantage of it, and would be quite willing to pay something extra for such accommodation. This is done at several of the religious houses on the Continent, and was a common practice during the Middle Ages, and we should be glad to see it adopted at Mont St. Michel.

BUILDING SITE IN THE NORTH.

An estate over one mile in length, and of proportionate depth, extending from near the principal railway station at Darlington, in the county of Durham, to the leading thoroughfare of Bondgate, intersecting a large part of the town, has just been purchased of Mr. Spack Company, for 70,000*l*, and is to be devoted to building purposes, where a want of suitable land for dwellings, manufactories, and public buildings, has long been felt.

First-class mansions, shops, and workmen's houses are to be first built, and the whole undertaking it is expected, will employ an army of building operatives several years. As hands are very scarce to be procured in the North of England, the Company may find some difficulty obtaining sufficient men for their works.





THE ABBEY OF MONT ST. MICHEL, FRANCE.



THE NATIONAL TRAINING SCHOOL OF MUSIC, KENSINGTON.—DESIGNED BY LIEUT. H. H. COLE, R.E

[See p. 609 ante.

GOVERNMENT AND THE COLLIERY OWNERS.

The colliery-owners who have hitherto so shamefully disregarded common decency in their workmen's dwellings "have been playing with the bear till it has bitten them," and last week, at the instance of the Government, the two owners of the large Burnhope Colliery, viz., Mr. J. Sourby and Mr. R. Fletcher, were in the humiliating position of having to appear on summons at the Lancaster Police-court charged with not providing "accommodation" and ashpits to 120 houses connected with their colliery.

The sanitary inspector stated that only seven conveniences were attached to the whole of these houses, and they were in a most filthy and dilapidated condition. The ashpits were in a disgraceful state, and there was not one drain in the whole place.

Squire Fletcher said he was not aware his houses were in the state described, and Dr. Hall would tell the Court the place was free from disease.

Mr. Henry Smith, chairman of the magistrates, in great surprise, said he could not conceive how colliery-owners could visit their property without noticing the abominable condition their workmen's houses were in. With regard to their sanitary state, it was impossible the village could be in a wholesome condition, seeing that there was no drainage; and if any doctor said the village was free from disease, he should doubt his testimony. The magistrates at once ordered a conveyance to be made to every two houses, proper drainage and ashpits to be made, with costs against the two defendants.

NORTHUMBERLAND HOUSE.

Sir,—London is too ill-supplied with objects of architectural interest for the demolition of so characteristic a specimen as Northumberland House is, to be permitted to pass unchallenged and without notice. Every individual in the community possessed of either good sense or taste is intimately concerned in the right settlement of this matter.

I spent half an hour the other evening in melancholy musing upon this noble pile, so soon to be lost to us if nobody will take action; and I directed my special attention to the block of masonry which forms the central portion and gateway of the Strand front. I always thought well of it, but was surprised to find how much better it is even than I had supposed it. With the exception of the projecting bay (or oriel, as it might, though somewhat improperly, be called), which is, perhaps, too narrow to be quite symmetrical, it is a perfect study. The whole elevation is a model of appropriateness in the use and application of fluted ornament; there is no superfluity, no flourish, no waste. The forms employed are all kindred, though infinitely varied, so that an eye the most cultivated and severely critical runs freely over its intricacies, recognising finally with delight the presence of a symphony in form. It is, in fact, the work of one of those architects, few in number, who reach what may be called the Orphic treatment of a theme when the stones seem to swing into position, and there range themselves into symmetrical doublings of part against part as in a mystical dance.

Let us take a survey of the square, and we shall soon gather reasons more than enough why the Board of Works should hesitate to remove Northumberland House. We may admit that it does not harmonise with the square, but that would be a reason for pulling the square down and not for depriving us of the only piece of good work in it. To begin with, there are the two stucco-faced eyesores, the ugly club and the hotel opposite still more ugly. Gibbs's Church, St. Martin's, calls for no particular comment as it is put in a corner out of the way, and half out of sight. It is ponderous, but it is well proportioned, and those who know what Englishmen are capable of will bless it with at least a negative benediction, as poor Peter Cunningham did, because it is far better than much subsequent work which has cost double the money.

Next we come to the National Gallery. The pitiful device of the still more to be pitied Wilkins. He finished the building and afterwards put an end to himself. Of this one can only say, as the Irishman did, "Shure 'tis a pity the jintleman couldn't take a frind's advice, to reverse the order of the actions." This same gentleman, commenting on the present situation, might be expected to decant thus: "Shure 'tis an act of national suicide the reverse of right for the Board of Works to destroy, and put an end to an immortal thing, and lave the National Gallery all the while standing a building that would tumble down of itself, if it was well built enough to have any architectural taste in it at all, at all, and so could feel that it hadn't got any."

On the south side of the square you have a bank and a fire-office, which are models of constructive dyspepsia, congested *ad nauseam* with debased ornament and pillars innumerable of Purbeck, porphyry, and pink Aberdeen, with gilt scroll-work and globes that look like gas-lamps. In fact, they exhibit the usual plethora of abomination that arises where money is too plentiful and taste scarce. Such buildings look as if some David had gathered the rich materials with no wisdom of Solomon exceeding to put them together. Mark these phenomena well, study them, and you may extract from them in essence the very spirit of modern street architecture, which always appears to my mind to be mathematically based on some abstract principles, or system, deduced from the five quarters of hideousness, whether you examine our highest examples, as in the new Foreign Office, or the lowest, in perhaps some railway station or warehouse in Cannon-street.

What is that black thing which we see at the north-west corner? That place of gloomy aspect, melancholy and soot-begrimed, as if some surgeon rather than an architect had operated on its stones? An unpleasant design indeed, and yet it is appropriate, for the College looks, for all the world, as if Death had built it for the town residence of his best friend,—Physis.

The edifices are reviewed: the sister art of sculpture now invites us on. Byron had a reputation for skill in that line of criticism, but in the absence of that great master an inferior hand may approach the sacred theme and deal with it unblamed.

Behold, then, a pillar, foliate Corinthian, raised as an appropriate pedestal for Nelson, England's chief sea-captain,—mast-headed, as some say! In the Channel he was always sick, but his berth in Trafalgar-square must try him more. Trafalgar-square defeats Trafalgar,—France is avenged! A pillar is a symbol of support. It seems to support nothing when you set a man on the top of it;—

"For pygmies set on Alps are pygmies still."

This is admitted; but then in England they only place their very great men in such positions as these. The column is rendered consistent, and derives, it is supposed, an invisible appropriateness, from the great weight of their reputation. This occult principle in hideousness probably no Greek would have thought of. The column is provided with four feet, each of which is a quadruped. These feet, together with the central support, connect it again with the five quarters of hideousness, which constitute the great underlying motive of all true modern art.

Around the four beasts lies a revelation (such as no seer ever contemplated in ecstasy, unless it were a Landseer) of what may be described as a route of modern generals,—men who were never vanquished, but who if now alive would be overcome at seeing with what honour their recognisant country can load those in whom she delights. They would be, like Niobe, all tears, lest a grateful country should, after their decease, insist on turning them, like Niobe, to stone. The country votes him honours, and instantly a sculptor rises with Medusa head, and petrifies the hero, adding a fresh stone to the heap which is already congregated on the finest site in Europe,—and which is truly a sight to be seen.

Long as this letter is, I trust it is not too long. I have it much at heart that this scandal be not perpetrated, for a scandal it will be if this noble screen of Jacobean work is allowed to perish from our streets. As an object of art it is fine; as an object of history it has interest: General Monk concerted here about the Restoration. If the Percys are in want of the 500,000, let the country buy it of them. We shall soon require a special building for the National Portrait Gallery; and we might easily rearrange the interior of the house to suit this object. We want no more openings to the Embankment; but if the traffic requires it, the public have been informed by the best experts that it is perfectly easy to make suitable openings without touching a stone of the house.

We are pulling down churches by the dozen and building up Vandalian frontages by the score, public and private. It is very unwise in our Board of Works, to take the initiative in such an act. They ought rather to protect the spot, and to seek to preserve for all lovers of beauty the house that Canaletto thought worth painting. Northumberland House is one of the few things in London that a cultivated eye can rest upon without offence. We cannot afford to lose it.

C. A. WARD.

THE DECAY OF STONE IN BUILDINGS.

Sir,—Much has been said and written on the subject of the preservation of building-stones from decay, and various attempts have been made to prepare a chemical solution to meet the want; but it is certainly very much like working in the dark. The true cause of our buildings soon crumbling to dust lies in the very first of ration of the building, viz., in the preparing the stones by the masons; and if ever we are to have a building that will stand the atmosphere in a satisfactory manner, a radical change must be made in the masons' shop.

Competition has for some time been at a pitch that builders are compelled to cut the estimates down to the lowest item possible, and as a natural result, the mechanic is drawn in the vortex of competition with his fellow-workmen, as the contractor is on the look-out to keep the men that can turn out the greatest amount of work. Now this is all fair and reasonable; but then that brings us face to face with the evil; and, by way of illustration, let us go into the masons' shop (some of us have been there before) and watch the working of a single stone. The mason is given a piece of stone for a certain purpose, and it is very likely that he may be several others just starting on a similar piece for the same purpose; and now comes the time of war, each one being anxious to have his job the banker first. The mason will start by making either a bed or face to it, as he may consider best; and to do this he will have to reduce it to a fair surface by using a hammer something like six pounds in weight, and a heavy pun to match; and if he is a good mason he will punch it down quite close to the intended surface, then with a heavy mallet and a wide chisel, will go over it to make it level and smooth. The tools, for want of being sharpened, generally thicken at the point. This process is repeated to get the stone into its proper state. When the stone is finished it is turned off the banker, and is ready to be taken and fixed in its place. It looks well, and does the mason credit for finishing it off so soon, except if properly worked to the mould, which is what is the result? Those parts of stone which have been treated by the mason are the parts that will be exposed to weather; and the simple fact is, that the parts are a mass of bruises, having been stunned all over by the repeated heavy blows till the face of the stone for some depth is pounded to a fine powder, which the atmosphere will readily eat upon, and nothing put on its face will ever make it sound again, while building in a few years becomes in a deplorable state. I could call your attention to a building erected very many years ago that is sound good now; but then time and care were taken preparing it.

PRO BONO PUBLICO.

THE CHELSEA VESTRY AND UNSIGHT SPOTS.

The *Chelsea Times* says:—"The Builder is very complimentary to Chelsea Vestry. It winds up an article about some of the unsight spots left in Belgravia and Chelsea by the underground railway works in this wise:—'The people of Chelsea received from the company 1000 for damage to the rates, and the Vestry applied to have allowed the railway company to add these chose afterwards.' Our contemporary marvel of careful editing in the main—cannot expected to know the details of the parish life every district in the metropolis; and in instance, although guardedly using the word 'appear,' it tends to create a wrong impression as to the Vestry upon the minds of its readers. 'There are records of proceedings sufficient to show, first, that early in the matter the Vestry were not forgetful of their duty; and secondly, that they were really powerless to direct immediate control. The Vestry have since deavoured to bring about an improvement, the intervening dispute has, until very recently, been an obstacle; they were told they could file a bill in Chancery, but—wisely, we think the Vestry fought shy of expensive and (in probability) useless litigation. Vestries, we know, are hard to move in matters of real improvement, but we always bear in mind the inefficiency of their legal powers, and make allowance for the manner in which their hands are tied. The Builder was right in drawing attention to a public eyesore; but the Vestry records and our columns show that the Vestry was not the party who chose in the wrong.'"

THE DERBY MEMORIAL.

The bronze statue raised in Parliament-square to the memory of the late Earl of Derby was publicly unveiled on Saturday morning by the Right Hon. Benjamin Disraeli. Thither a large assembly had proceeded, as much to hear the expected speech of the Prime Minister as to see the memorial bronze. It was a notable group of statesmen and diplomats which gathered in the square at noon, and the presence of many ladies added a charm to the scene.

The statue is of heroic size. Lord Derby is represented in the flowing robes of Chancellor of the Oxford University, and the likeness has been well caught by the sculptor, Mr. Noble. The full particulars of the casting of this statue, at the Eccleston Foundry of Messrs. Young & Co., at Pimlico, appears in vol. xxi., p. 372, of *The Builder*.

On the pedestal supporting the statue four highly elaborated bas-reliefs are introduced to represent four of the most distinguished and memorable public events in Lord Derby's life, namely, his advocacy of the abolition of slavery in the old House of Commons, in 1833; his installation as Chancellor of Oxford, in 1853; his attendance as chairman of the Manchester Relief Committee, in 1865; and his presence as Premier at a Cabinet Council, in 1867.

These four bas-reliefs were cast at the foundry department of Messrs. Cox & Sons, of Southampton-street, Strand, by Mr. Moore, the experienced manager of that department, whose name deserves special mention. Oak leaves and acorns are wreathed round the pedestal, which, like the statue, is 10 ft. high. The pedestal is of Peterhead granite, highly polished; the mouldings and ornamentation are Gothic in style.

DAMAGE BY LIGHTNING AND HAIL.

This seems to be one of those years in which the destructive power of lightning shows itself to a degree beyond the average. Chesterfield church was recently struck, the old crooked spire, little above the clock, on the side where the new face has been lately put in, having had a large piece of stone carried away, and a part of the stonework surrounding the clock has also been damaged.

At Sheffield a lightning flash struck the offices of the Waterworks Company. A chimney-stack the building was completely demolished. The flash hurled down part of a lofty chimney Tyeack's Works, Hereford-street, through the brickshop roofs.

The spire of Christ Church, Salford, has been struck by lightning, and several large stones are displaced, as well as injury done to other portions of the building. The chimney-stalk at Messrs. E. Leigh & Co.'s machine works, Milington, was also struck. Half of the terrace parapet was thrown down, and a large portion of the stalk lower down was forced out. One of the detached stones fell through the roof of the smithy and grinding-rooms, slightly wounding five of the workmen. The injury done to the chimney-stalk and building was such that 400 men employed in the works had to be dismissed for the day until the necessary repairs could be made.

In a more recent storm, which has occurred in the north-east of London, various persons have been killed, and others more or less seriously injured. Trees were struck and splintered in Chatham-square, Homerton, in the orchards of St. John, Hackney, and St. John, Clapton, and also in Pond-lane, Clapton. The church of St. Luke, Homerton, was struck, between 40 ft. and 50 ft. of the roof torn up, the rafters set on fire. The current then struck the west window, and shattered the glasswork, some portions of which were carried to the force of the shock nearly 80 ft. up the wall. The engines of the Metropolitan Volunteer Brigade arrived shortly after, and under the direction of the fire was stopped. The Royal Post-office, St. Martin's-le-Grand, was struck, and a portion of the balustrade carried away.

During a heavy thunderstorm which burst on Woolwich, the lightning struck the military barracks at the Royal Artillery Barracks. The roof of the brickwork from the summit of the main ventilating tower about 50 ft. from the end showed where it had taken effect. Numbers of persons were in and about the building at the time, and their escape appears miraculous.

A severe storm has occurred in Perthshire. The steeple of the Church of Bracon or Ardoch was struck

by lightning, and rendered a mass of ruins, the greater part of the steeple rolling through the roof. An hour later the congregation would have been present.

Bullocks, sheep, horses, and human beings, have been struck and killed in various places by the lightning.

The Italian journals state that a hailstorm with which the city of Milan has been visited was of fearful violence, the streets were deserted in a moment, and the Victor Emmanuel Gallery was one of the places most thronged by persons seeking for shelter. They, however, found themselves there in greater danger than outside, from the fragments of glass battered down, and they had to crowd into the shops, expecting every moment to see the roof fall in. The damage done to that building is estimated at 90,000*fr.* The Duomo, the palace of the museum, had also a large number of windows broken, while the streets were strewn with glass from the shattered lamps. The plants and flowers in the gardens around the city present an aspect of desolation, as all vegetation is quite out of place. Pigeons and other birds were found lying dead on the ground, killed by the hailstones, some of which weighed three ounces!

There has been an earthquake at Constantinople.

SANITARY LAWS AMENDMENT BILL.

On the order for going into Committee on this Bill in the House of Commons, Mr. Solator Booth gave an explanation of its object. He hoped, he said, that before long it would be possible to undertake a complete consolidation of the sanitary laws; meanwhile it was only proposed to amend in some particulars the Act of 1872. The first part of the Bill consisted chiefly of amendments of a technical character, and sought to remove certain ambiguities. By Clauses 19 and 20 the Local Government Board took fresh powers to put into force orders which they were authorised to make upon sluggish or reluctant local authorities. It was proposed, among other things, that the Board should have power to obtain a writ of *mandamus*, with the view of compelling a local authority to execute works which might be considered necessary. There were clauses designed to introduce improvements in the election and arrangements of the sanitary bodies, and to put a stop to the present system by which applications for provisional orders as to borrowing powers were crowded together at the end of the Session, it being intended, in order to effect the latter object, that parties should be at liberty to give notice at any time during the year of their intention to apply for such orders. There was a very important clause giving power to local authorities to obtain from the magistrates an order to prevent the use of wells, pumps, or cisterns which were considered unhealthy. The question of the water supply was becoming an urgent one for the whole country, and perhaps before long Government would be able to propose some general provisions on the subject, of a kind which would be greatly to the advantage of the community. It was true that the Bill might well do more than it did, but he believed it was complete as far as it went, and that by passing it they would be taking a considerable step in the path of sanitary improvement. The right hon. gentleman concluded by moving that the Speaker should leave the chair.

Subsequently this Bill, as amended, was considered, and some additional amendments having been introduced, the Bill was ordered to be read a third time on Thursday.

UNSANITARY BATHING IN VICTORIA PARK.

A RARE week has elapsed since a long looked-for concession was granted by the First Commissioner of Public Works; but less than three days have been sufficient to prove the serious drawbacks that exist in connexion with the evening bathing experiment in Victoria Park. The lake allotted for evening bathing is about 300 yards long and 40 yards wide. The sides of the lake shelved down on either side to a central level of a few yards wide, and representing a depth in the middle of the lake of from 5½ ft. to 6 ft. A 3-inch service-pipe supplies the lake, the water being that of the East London Company; but the pressure and volume are so small that a 1½-inch pipe, with full pressure, would afford a far greater and quicker supply. The

value of a fast and continuous service is all-important in a fresh-water artificial lake, particularly where the number of bathers are not represented by hundreds, but by thousands, within a limited time. The public may form some conception of the freshness and volume of the water in the Victoria bathing lake when it is stated that it takes nearly three weeks to fill the lake, supposing the water be entirely cut off on any given day. The water runs off as slowly into an adjoining lake as it comes in to its feeder, and the consequence is that the water of the bathing lake, were there even no evening bathing, would be in an impure state. But now comes the aggravation of the evil: the evening bathers on the whole are more than three times the number of the morning ones, and whereas the morning ones come to bathe in a comparatively cleanly state, having left their beds a short time previously, the evening class, to the extent of two-thirds of their number, are covered, hands, arms, bodies, and faces, with the dust, grime, and colour incident to their different forms of labour. Many come from the colour factories, tar factories, chemical works, iron foundries, dye works, and infinitely more filthy employments. Into the lake they plunge, and the sights that may be at present witnessed in Victoria Park have no parallel in any part of England.

Without going into detail, we must add that there is danger of contagion, too, as matters now stand. The first things required are a better supply of water to the lake, a weekly draining off, an efficient supervision, for the purpose of maintaining order and decorum, and the enforcement of other obvious regulations.

A PROPOSED IMPROVEMENT IN LAYING ASPHALTE.

MANY years' experience of asphalt on our streets has proved that it is not a safe material. The smoothness of the surface and its slippery condition after a fall of rain render it dangerous both for man and horse. The present mode of laying asphalt is objectionable, and calls for improvement. In order to make the surface suitable and safe to walk upon, and that horses might obtain a better foothold, I would propose to form squares on the asphalt. The squares for streets to be 10 in. by 5 in., the squares for pavements to be 18 in. by 12 in.; and the edges of each square to be bevelled all round ¼ in., to the angle of 45°.

It would be requisite to make a mould of wood, 2 ft. 6 in. square, to be divided into squares of the required dimensions. When the workmen are laying the asphalt on the street or pavement, and when the material is in a soft state, then place the mould upon the surface and press it down until the required impression is obtained.

If this method was adopted asphalt would be more extensively used upon our streets, for this material possesses many qualities which recommend its use for various purposes.

JOHN LEMON.

SCHOOL-BOARD SCHOOLS.

Lenton.—New schools, under the auspices of the Lenton School Board, have been opened here by the Mayor of Nottingham. The schools comprise three rooms, for boys, girls, and infants, measuring 58 ft. by 23 ft., 40 ft. 6 in. by 20 ft., and 40 ft. 6 in. by 18 ft. respectively. Immediately connected with each is a class-room, so arranged as to be capable of easy division into two good-sized apartments with separate entrances. Accommodation is thus provided for 400 children, in the proportion of 150 boys, 120 girls, and 130 infants. A play-ground is attached to each division. The whole of the buildings are arranged to form one group, but the several portions are perfectly distinct, each having its own approach and entrance-door, as well as a separate communication with the play-ground. Arrangements are also made as to lavatories, and cloak and cap rooms. Large windows with mullions and pierced tracery work give additional light at each end of the principal rooms, the largest and loftiest of which, the boys' school-room, is finished with an open timber roof, having a boarded ceiling, the whole being stained and varnished. Open fireplaces with dog grates, are provided for warming the apartments, and arrangements for ventilation have not been overlooked. The style adopted for the building is Lombardo-Venetian-Gothic, the materials em-

ployed on the exterior being red brick, with Ancaster and Hollington stone. Staffordshire blue bricks are sparingly used in some of the dressings to the doors and windows. Molded bricks are also introduced into the cornices. The principal external feature, however, is the bell tower 80 ft. high, which forms a prominent object from whatever point the building may be approached. The cost of the whole erection, including fence walls, palisades and gates, with gas fittings and furniture, is 2,426*l*. Mr. Jas. Cooper, of Nottingham, was the general contractor, and Messrs. W. F. & R. Broker, of Nottingham, the architects.

THE IMPROVED INDUSTRIAL DWELLINGS COMPANY.

SIR,—In the *Builder* of the 4th inst., you publish a report of the proceedings at the annual meeting of the Metropolitan Association for improving the Homes of the Poor, in which Mr. Russell Scott is represented to have made a statement respecting "a like association under Sir Sydney Waterlow," which statement, if correct, would be, and deservedly so, most damaging to the interests of the Improved Industrial Dwellings Company, Limited, the Association referred to.

Will you permit me, however, to state that this company has always paid a dividend of 5 (not 6) per cent., and has accumulated a reserve fund of upwards of 12,000*l*. out of its net profits; that it keeps proper debtor and creditor accounts of its revenues, which are audited and certified half-yearly by Mr. W. Thurgand, of Tokenhouse-yard; and that so far from proceeding on the "principle of valuation," the assets in the balance-sheets show the actual cost of the buildings erected.

In proof of this I enclose a copy of our half-yearly report, and balance-sheet, to the 31st of December last, and shall be most happy to forward copies to any persons desiring the same.

JAMES MOORE, Secretary.

*** We have also received a note from Mr. Russell Scott requesting us to state "that in what he said at the meeting he made no reference whatever to the Industrial Dwellings Company of which Sir S. Waterlow is chairman." Looking to the journals, it seems that other reporters besides our own misunderstood the speaker.

A STRIKE FOR CLEANLINESS.

At a public meeting last week touching the sanitary state of Cuxhoe, the Rector (the Rev. W. H. W. Casely) of that sweet spot thus delivered his mind:—

"I say that death is stalking through Cuxhoe, Cornforth, Cassop, and Quarrington. The other day, in passing a house in Cornforth, I saw a heap of night-soil standing higher than I can reach. There were eight families connected with the dwelling, and the stench arising from the abominable accumulation of filth was something frightful. I have seen people throw out their night-soil, and they assured me they would like to have water-closets and water. The Rosedale Company has a right to be allowed to bring a large population together, and compel their workmen and families to live amongst large accumulations of filth and dirt, and without a supply of pure water.

Workmen strike for many things nowadays, and certainly it is a marvel to me that they have not struck before now against the continuation of the present lamentable state of affairs. I should be very glad to see them strike in a body, and tell their employers that they will not live in these dirty and filthy pigsties. It is a lasting disgrace to Messrs. Morrison & Co. that such a state of things should exist. Delay begins with a D, and so does death."

CASES UNDER METROPOLITAN BUILDING ACT.

Wooden Buildings.—At Wandsworth, Henry Perkes was summoned by Mr. P'Anson, district surveyor, under the Building Act, with reference to a wooden structure which had been erected on the Shaftesbury Working Men's Estate, Paterssea.

Mr. Corellis, in support of the summons, said that, on the complainant objecting to the building, four wheels were placed under it; but he submitted that it was still a building within the meaning of the Act. In support of his argument he cited decisions by Mr. Ingham and Mr. Dayman. The latter remarked that in these practical times even St. Paul's might be removed on wheels, and Mr. Ingham had recently decided that a wooden farmhouse was a building. Mr. J. Hebb, assistant to Mr. P'Anson, said the building was in the back garden of an inhabited house on the Shaftesbury Park estate. It was first built on a brick foundation. Mr. Jeune, who was defended, submitted that from the character and size of the building, the case did not come within the meaning of the Act. There was no precise definition of what a building

was in the section, but it implied that it must be one which had footings. Being on wheels, it was not a building. The character of it was similar to a bathing-machine or dog-kennel, which could be removed. In the first instance, it was intended to place a mangle in the building. He was instructed to deny that it was originally placed on a brick foundation. Mr. Hebb said the garden was surrounded by a fence, and that the building could be removed from it. Mr. Jeune said it was intended to remove it. Mr. Bridge said, intending to put a mangle in the building clearly showed it was to be used for habitation. It was intended to remove it there would be no harm in making an order. He then ordered the building to be removed in fourteen days, and the defendant to pay 1*l*. 1*s*. costs in addition to 2*s*. 6*d*. allowed for an adjournment.

"LOYALTY TO EMPLOYERS."

SIR,—In reference to my letter in the last number of the *Builder* relating to my connection with Sir M. Digby Wyatt in writing the Guides to his Courts at the Crystal Palace, Sydenham, I beg to state that after due consideration I feel and admit that I have been entirely in the wrong in the matter from the very beginning, owing to the exaggerated idea entertained by me as to the value of my assistance; and that my claims, excluding the sum advanced to Sir Digby Wyatt, were entirely unjustified. I have been met by him in a very generous spirit, to which I have long failed to do justice. To him is due the scheme of the guide-books, and it is only fair to mention, and some of the most valuable and original portions of each. If I brought the matter, it was he who infused into it life, and gave it form and shape; and without the valuable information he gave me as to works for consultation, I never could have done even what I did. I regret exceedingly that I should ever have taken a different view of the subject, which has made me unjust and ungrateful. In upholding this apology public you will greatly oblige.

J. B. WAXING.

SURVEYORS OF TURNPIKE ROADS AND MATERIALS FROM COMMON RIVER OR BROOK.

SIR,—In the 97th section of 4 Geo. IV., cap. 126, power is given to the surveyor of every turnpike-road to get materials for the repairs of the road from the common river or brook (subject to certain conditions) without being chargeable for trespass. As disputes arise sometimes in this country as to the meaning of the words "common river or brook," perhaps some of the readers of the *Builder* will kindly enlighten me, through its columns, as to the interpretation of the words in other parts, as to whether the term "common river or brook" is applicable to natural rivers or brooks generally, or is it confined to some special ones. Any information that would throw some light upon the subject will oblige a

ROAD SURVEYOR.

"BOOK-COVERS."

SIR,—If we do not quite agree that "one *tenon* pro *tenore* est," we let it with regard to the common censor when a criticism shows such sound taste as that published in your issue of the 11th inst.; but we feel called upon to protest against a wholesale condemnation of illustrative art as applied to the outside of books, and we fail to see that, in the instance cited by your critic, the use of hands and tuning-forks on the cover of a work on "Sound and Music" can be either "vulgar or inappropriate."

The difficulty of adapting mere ornament to give character to some books would be almost insurmountable; and, in justification of our so-called over-decoration of drawing-room-table books, it should be remembered that these are essentially gift-books bought by the donor, as any other ornament might be bought for the attractiveness of their outward appearance. The retail bookseller must have such books wherewith to decorate his counter and window; and it will be admitted that in the bygone style of cloth-binding there was little to make a show, and scarcely any attempt to individualise volumes. So many books are published now-a-days that we venture to think that an effort to give to each, when possible, a special character, is an effort in the right direction, and a convenient one to both seller and buyer. If, in our endeavour after this end, we are at times too realistic in treatment, we think the critics should be lenient. For an unknown writer to issue a work in too plain a style is commercially a suicidal act; the public will hardly take the trouble to examine the bushel to discover if there be a light under it or no.

We thank you for your notice of our rarely-noticed art.

JAMES BURN & Co.

INFREINGEMENT OF A TRADE MARK.

At the County Police-court, Strangers, A. Van Stan, cement manufacturer, Bridport-street, Dorset-square, London, was summoned for infringing the trademark of Messrs. Kay, Brothers, who are chemists, Stockport. It appeared that in October, 1863, Mr. S. Kay invented a new kind of cement, and adopted for it the distinctive name, "Coggins," and registered a label under the Copyright Act, with the word "Coggins" (a distinctive title never before used). From that time Mr. Kay had continued to sell the cement under the name of "Coggins," and had from time to time enforced his sole right to the patent. On the 25th of May last Mr. Thomas Kay, one of the complainants, went to the Botanical Gardens, Old Trafford, where he saw the defendant selling cement in a tent, and in the tent, fixed in a conspicuous position, was a placard, on which were the words, "Coggins patent, for fixing flowers, mending reliefs, variable clime. Will set in six minutes, and water." Mr. Kay purchased from the defendant a bottle of the cement, and then told him he had better remove the placard, and he had no right to use the word "Coggins." The defendant refused to do so, and he was, in law, and refused to remove the placard. Mr. Kay visited the gardens again on the 26th of May, and saw the defendant still selling the cement. Mr. Atkinson contended that the mere display of a placard did not come within the meaning of the Act. The real name of the defendant's cement was "Diamond Cement," and he used the name "Coggins" because he had heard that it was a sounding name. The defendant was fined in the full penalty of 1*l*., being 5*s*. for each day, and costs.

PLUMBERS AGAIN.

A DESTRUCTIVE fire is reported from Edinburgh, by which a fine tenement has been almost ruined; and the disaster is again ascribed to the plumbers on the roof! The block in question extends from the office of the Royal Bank in South Clerk-street to the corner of Preston-terrace, and is almost a new property. It appears that during the forenoon a plumber had been on the leads making repairs; and at one o'clock he left for dinner, leaving behind him, however, his "choffer" brightly burning, and, it is said, with a bolt in it. It is conjectured that the strong wind had blown over the choffer, when the hot bolt or the burning coals melting the lead had ignited the woodwork underneath. Be this as it may, it seems clear that it was near the spot where the plumber had been working that the fire commenced. The choffer, it may be mentioned, was afterwards found among the rubbish, and carried off by the police.

CHURCH-BUILDING NEWS.

Plymouth.—The fabric of St. Andrew's Church, since the alterations is once more, after the lapse of three centuries at the least, assuming its first aspect of an old typical Devonshire church. The western and transept galleries have been cleared away and the tower-arch opened. The removal of the transept galleries is, in its way, effective; and the apparent addition to the width of the structure is even greater than could have been anticipated. The north transept, or chapel, is now having a new oak roof put up, gabled. It has at length been decided that the organ shall be placed in the north transept—at the western end; where there is a dead wall. Thus only one window will be blocked. In the south transept the opening to the roof-loft staircase is apparently, and a squint has been uncovered, the angle of which indicates that the altar must have been placed further forward than the present communion-table. The east window of the transept, which was partially blocked to admit of the erection of the present diminutive vestry, will be lengthened, like the west windows of the aisles. The new vestry will be built between the south transept and south porch, where the staircase to the transept gallery is now; and it will be approached from the transept by a new ancient doorway, long blocked. The soil within the church appears to have been absolutely crammed with dead bodies. It is full of bones and several lead coffins have been discovered. There has not been much found that is of interest, in an antiquarian point of view, with the exception of a full-length effigy of a female which once evidently rested on an altar-tomb. It is apparently of twelfth or thirteenth century date. The face is much worn. Several of the monuments will have to be removed and re-erected. The east window is to be removed. Mr. Roach has offered to give the stone-work for a new window, and Sir Gilbert Scott is not preparing the designs. The reredos will also be designed by Sir Gilbert, and wrought either in Caen stone or alabaster. It is to be Decorated Gothic in style, with an abundance of floriated ornament. This work is not yet in hand, but the wood carving is progressing rapidly in the hands of Mr. Harry Hems. The Rev. C. T. Wilkinson has taken in hand the tower-window, and this is to be filled with stained glass, at a cost of some 235*l*. the artist being Messrs. Burlison & Grylls, of London.

Darlington (Derby).—The memorial stone has been laid of a new chancel to the parish church which is undergoing restoration at the cost of between 5,000*l*. and 6,000*l*. The church has been badly in need of restoration for a considerable time. It has always been without a chancel, and the old seating was very high, narrow and inconvenient. Besides this, several parts of the building were in a somewhat dilapidated condition. The flooring was bad, the ventilation defective, and, in short, a thorough restoration had become almost a matter of necessity. The contemplated cost of the work that has been undertaken is about 5,600*l*. The old and unsightly pews will be replaced by low and agreeable seats; the flooring will be new arrangements will be made for warming and lighting the church, and besides this there is a new chancel, organ chamber, vestry and chanc aisle, which will not only be the means of increasing the accommodation, but will improve the appearance of the building. The western

ally has been removed. The chancel is 7 ft. deep, and is being built of Chudleigh stone, with Doubling stone dressings. There will be a stained glass window in the east and west ends of the church. The work is in the hands of Mr. St. Aubyn, of London, architect. The builder is Mr. Diment, of Bristol, who built the Victoria Hall at Exeter. The amount already collected towards the cost of the restoration is about 3,750l., this sum including a donation of 1,600l. from Mr. P. R. Carey, by whom the memorial-stone was laid, about 2,000l. more, therefore, remain to be raised.

Hull.—St. Jude's Church has been consecrated. The building is in the Early English style of plain type, and consists of a nave, north and south aisles, with north and west porches, and a chancel, with vestry on the west side. Internally the whole is of red stone brick, with moulded brick arches, and jambs to the windows. The chancel has in the east gable a plet, with cusped centre light, and narrow triple lancets on the north and east walls. Internally the nave, of six bays, is divided from the aisles by circular stone piers, with moulded caps and bases, and moulded red brick arches, and from the chancel by a moulded chancel arch. An open roof, on arched principals, covers the nave—all the timber showing, with the bright arding in the top of the rafters. The roof is of similar description to the aisles, and a closed arched ceiling to the chancel. The walls are of deal, with ornamental ends, stained and varnished. The total length outside is 100 ft., and width, 64 ft.; the height to the top of the west gable, 50 ft. The lighting of the church is effected by an arrangement of burners round the caps of nave columns, and in the chancel by two ornamental brass standards. The works have been executed by Messrs. Hookney & Liggins, and their subcontractors. The architect is Mr. Edw. Simpson of Bradford. The total cost of the building is 4,500l.

Leeds.—St. Augustine's Church, Pendlebury, has been consecrated. The church and porches adjoining have been built at the entire expense of Mr. E. S. Heywood, of the firm of Heywood Brothers, bankers, Manchester; and though the actual cost is not known to the public, it is estimated that to complete the whole edifice, which have been in the course of construction for about 3½ years, will have cost at least 14,000l. The style is that of the middle of the fourteenth century, and is English in its details and general character. The windows show flowing traceries of various patterns. The piers are placed at a considerable height in the floor, and are in themselves of tall proportion. The building has thus a considerable elevation. Externally it is somewhat severe in character. The roof is one continuous arch, supported by the east window, and richer cornices to the choir. The east window, a large one of five lights, is of stained glass. It has the effect of the Crucifixion in the centre, with St. Mary and St. John, and is surrounded by other figures of saints. The tracery of all the windows is stained glass. The extreme length of the church from west to east is 159 ft.; and the height of the nave and chancel, without the aisle, is 24 ft. The height to the apex of the gable is 42 ft. 2 in. Mr. G. F. Bodley and Mr. J. H. St. John, of London, are the architects; and Mr. William acted as clerk of the works; Mr. J. H. St. John, of Deddington, has done the carving.

DISSENTING CHURCH-BUILDING NEWS.

Hartlepool.—The foundation-stone of a new chapel for the accommodation of the United Methodist of West Hartlepool has been laid by Mr. Thomas Richardson, M.P. for the county. The site of the new edifice is in Barbanks, immediately adjacent to the present school building, which, since its opening in 1868, the congregation have had to use as a temporary place of worship. The style of the edifice will be Italian. The total cost will be about 5,500l., and the material used will be red brick and stone facings. The architect is Mr. J. Garry, West Hartlepool.

Blyth.—The foundation-stone of a church for English Presbyterians at Blyth was laid by John Hedley on April 7th. The new building has been designed in the Gothic style of architecture of the Geometrical Period, and is on a commanding site at the junction of

the Waterloo-road and the new street. Externally the church will be constructed of pressed red bricks, from Cloppington, with stone dressings and ashlar bands. The whole of the windows will have double splayed brick and stone jambs, with arched heads and moulded stone labels, those to the main front and side gable being two-light with traceried heads. The doorways will be all deeply recessed, with splayed jambs and heads in three orders. The chief feature in the exterior will be the tower and spire, which will stand at the junction of Waterloo-road and the new street; it will rise to the height of 130 ft., and be surmounted with an ornamental wrought-iron finial and gilded weather vane. The architect has taken as his model for this feature, the type of tower and spire prevailing during the thirteenth century in certain districts of Normandy, the main characteristics of which are the lofty, deeply recessed, and enriched belfry windows, with their pignons louvres covered with ornamental stonework. The roofs of the church will be covered with grey Welsh slating, with ornamental red tile ridges and wrought-iron finials, and the principal gables will terminate with carved and moulded stone crockets and finials. Internally, the building will consist of nave and aisles, divided by means of cast-iron ornamental columns, with moulded caps and bases, which will also support the galleries, and be carried up to take the nave arading and roof principal. The galleries run round three sides of the interior, and with the ground-floor will accommodate between 500 and 600 persons. There will be, in addition to the church, a large school at the rear, facing Grey-street, arranged to accommodate about 200 scholars. The principal entrance to the church will be from Waterloo-road. The entrance to the school will be from the New-road, and a separate staircase will be provided, to enable the children to reach their seats in the gallery of the church without leaving the building, and to give additional means of rapid egress in case of any emergency. To this end six distinct means of exit would be available to the congregation should occasion require their use. The platform will be placed in a chancel recess at the south end of the church, and be so arranged that any one may obtain a direct view of the minister. The minister's vestry will be on the west side of the chancel, with separate side entrance, and with means of communication to the church and school. The lighting will be by means of two lofty two-light windows in the north elevation, and by coupled lancets in the aisles and to the galleries. The whole of the windows will be filled in with lead lights. The ceiling of the church will be wagon-headed, with stained and varnished roof principals, and moulded ribs at the intersections. The walls internally will be tinted a pale grey colour. The heating is proposed to be effected by means of a hot-water apparatus in the basement, and the ventilation by Sheringham valves for fresh air supply, and ventilating roof chambers and opening for carrying off the vitiated air. The total cost of the whole structure will be about 4,500l., or, exclusive of the schools, about 3,700l. Mr. Winship, of Blyth, will act as clerk of the works; and the contracts have been taken as follows:—Masons, bricklayers, slaters, and plasterers' work, by Messrs. White & Sproat, of Blyth; ironfounders and plumbers' work, and engineering by Messrs. Walker & Emley, of Newcastle; painters' and glaziers' work, by Mr. Thomas Walker, of Blyth. The architect is Mr. Thomas Oliver, of Newcastle-on-Tyne.

Chester.—The foundation-stones of a new Congregational chapel at Threapwood have been laid. The site of the old chapel has been enlarged, and the new one, though by no means imposing in appearance, or so capacious as that at Malpas, will be sufficient for the wants of the neighbourhood. For the erection of the chapel three tenders were sent in, and that of Mr. Thomas Hurley, of Malpas, was accepted. For a trifling less than 250l. he undertook to build a little Gothic chapel, to seat about 150 persons. The dimensions will be 30 ft. long, not inclusive of the apsidal termination, and 20 ft. wide, and at the north-east corner is a minister's vestry, 10 ft. by 7 ft. The gabled front, with an entrance porch, and two lights, one on each side, will face the west. There will be three double-light windows on each side of the chapel, divided by buttresses, the building being of brick, with stone dressings. The internal fittings will be of deal, stained and varnished, the seats open, and the minister's desk on a dais within the apse.

Upper Norwood.—The memorial stones of a large Wesleyan chapel at Norwood have been laid by the following gentlemen, viz.,—Alderman Barlow, of Bolton; Mr. D. J. Jenkins, M.P.; Mr. W. T. Whelpton; and Mr. John Riley, of London. The new chapel will be in the Early Gothic style of architecture, and occupy a site on the summit of Gipsy-hill. There will be a tower and spire of stone, and accommodation will be furnished for 1,000 persons, spacious schools, &c., being provided also below the chapel. The total cost, including land, will be 8,300l. The architect is Mr. Charles Bell, and the builders are Messrs. Bowyer & Sons. This will make the sixteenth of the fifty proposed new chapels to be erected in London under the auspices of Sir Francis Lytton's fund.

Maidstone.—A meeting has been held in the West Borough Congregational Church for the purpose of considering the desirability of erecting a new church. The chair was taken by Mr. F. Pine. Plans of the proposed church were exhibited, and the meeting appeared to be generally in favour of them. According to these plans, the new church will be a semi-Gothic structure; it will cost about 3,500l., and will seat about 500 persons. The building which is now used for public worship will, in the event of the new church being erected, be devoted to educational purposes. The subscriptions received and promised amount to about 350l.

Raunds, Northamptonshire.—A new Wesleyan chapel was opened here on the 8th inst. The building, which is in the Italian style, will seat 800 persons. In the basement a large hall for week-night services is provided. Ministers' vestry, class-room and other conveniences are placed under the gallery at the back of the rostrum. The floor of the chapel is reached by double flights of steps. The total cost, exclusive of the materials of the old chapel, will be 2,700l. Mr. W. Ranger, of Finsbury-pavement, is the architect, and Mr. Holdsworth, of Northampton, the builder. The building is warmed by Grundy's warm-air apparatus.

Cambridge.—The Congregational Church, which has during the past eighteen months been in course of erection in Trumpington-street, adjoining Little St. Mary's-lane, and opposite to Pembroke College, has been opened for divine service. The building differs from the general run of Dissenting conventicles, in that it boasts of a tower and spire, rising to an altitude of 130 ft., next the main street; and there are other features of interest which we have already noticed (see view and particulars in *Builder* of last year, pp. 264 and 267). The building is called "Emmanuel Congregational Church," and the entire cost of it with the site has been 12,500l. After the building was begun, a change was made in the design for lining the interior walling with fine ashlar stone instead of with brick. The church is, therefore, substantially of stonework throughout. The architects were Messrs. Fuller & Cubitt, of London; and the builder was Mr. Horsman, of Wolverhampton.

Macclesfield.—The opening services in connexion with the new chapel erected by the Baptist community in St. George's-street, have taken place. The chapel is Italian in style. It is approached by a double flight of steps. The schoolroom, which is in the basement of the building, is of native pitch-faced stone, and the rooms are lofty, well-lighted, and airy. The interior of the chapel is arranged into modern pews, all looking towards the minister, and of pitch pine. The gallery runs round the chapel over the vestries, behind the pulpit. The chapel will seat from 500 to 600 adults, and the school-room accommodates from 200 to 300 children. Five class-rooms and vestries are also provided. The chapel is lighted with star-light pendants and triple lights, ventilated by patent syphon ventilators fixed on the roof, and heated with steam pipes in the aisles. The entire cost, we believe, will be about 3,000l. The architects are Messrs. J. Horsfield & Son, of Manchester; and the contractors, Messrs. Burrows & Moseley, of Macclesfield.

Padgate.—The foundation-stone of a new Wesleyan chapel at Padgate has been laid by Mrs. Samuel Rigby, of Bruche Hall. The site, given by Mr. William Bennett, is near the Padgate railway station. The cost of the building, including the site, is 1,500l., and 1,100l. have already been promised, Mr. and Mrs. Rigby and Messrs. Bennett having subscribed to that sum. The chapel will be of Gothic design. The end gable will be principally occupied with a three-

light window, with a traceried head, the side next the road having single pointed windows, and a rustic porch of pitch pine. The building will be faced with Yorkshire shuddies, with dressings and bands of red stone, the roof being covered with bands of blue and green slates, finished with an ornamental red cresting. The interior of the chapel will be laid out to seat about 200 people, and there is, in addition, a school-room about 80 ft. by 18 ft. The whole of the pews will be of pitch-pine. The architect is Mr. C. O. Ellison, of Liverpool, and the builders Messrs. Gibson, of Warrington.

Rugeley.—The memorial stones of a new Independent Chapel have been laid at Heron-court. The new church will be in the Tudor-Elizabethan style of architecture, in keeping with the mansion, part of which will remain for school and residence. The chapel has an arcade entrance, consisting of three pointed Gothic arches, supported by stone shafts with moulded caps and bases. The building will be composed of red bricks, with stone dressings and buttresses, and have a tiled open roof, the principals of the roof being brought down the walls on stone corbels. The interior will be 60 ft. long, 37 ft. wide, and the height from the floor to the wall plate 21 ft., and from the floor to the ceiling, 32 ft. The church will be well lighted by four large windows on one side, and by a still larger one in the front over the entrance. The cost of the church is estimated at about 1,200*l.* exclusive of old materials reused, and it is to accommodate 350 persons. The entire cost of the building and ground will be about 3,000*l.* Mr. W. T. Foulkes, of Birmingham, is the architect; Messrs. T. & H. Brown, of Rugeley, are the builders; and Messrs. Tompson Brothers, Rugeley, have the execution of the gasfittings, &c., in hand.

Books Received.

Art Workmanship: a Monthly Magazine of Design to illustrate the Master-works of all Periods. London: Asher & Co.

The first six parts of this work, including sixty-four plates, have been bound together, and form a volume of interest and value. Goldsmiths' work, furniture, decorative painting, and ironwork are amongst the subjects well illustrated.

The Year Book of Facts in Science and Art; exhibiting the Most Important Discoveries and Improvements of the past Year in Mechanics and the Useful Arts, General Science, Electricity, Chemistry, Zoology and Botany, Geology and Mineralogy, Meteorology, and Astronomy. By JOHN TIMBS, author of "Curiosities of Science," "Things Not Generally Known," &c. London: Lockwood & Co., 7, Stationers' Hall-court. 1874.

ONE of our pleasantest experiences among books is the perennial refreshment of the memory, and additional acquisition of knowledge, as to what the year has brought forth in the arts and sciences, which the never-failing issue of Mr. Timbs's "Year Book of Facts" enables us to enjoy. The present volume is quite as full of interest as heretofore, and Mr. Timbs's vigour of mind in collecting, selecting, condensing, and otherwise compiling the valuable records of men of science and art seems inexhaustible. There is one oversight, however, in the series of Year Books: there is no record of the growing years of this standard work. To the young, nothing on the face of it shows it to be anything more than a book of the past year, whereas it is a Year Book of many years' standing, and this could be easily shown by stating the number of the issue on the title-page.

The present volume has an interesting memoir of Professor Tyndall, with a life-like portrait of him.

VARIORUM.

"The Sewage Question. By Sidney W. Rich, Analytical and Consulting Chemist. London: printed and published for the author, 20, Exeter-street, Strand. 1874." Mr. Rich here shows how a disinfecting and precipitating material may be manufactured as a waste product in the soda process. This was done by a systematic course of laboratory experiments to demonstrate the possibility of getting a clear effluent water, free from odour, with the moderate use of the simple saline precipitating agent,—sulphate of

alumina. These experiments were then tested by practical working on a large scale; a continuous trial of the process devised having been made in April, 1872, at the Tottenham Sewage Works. Some of the most hopeful experiments towards the solution of the sewage problem have involved the use of the earth-proper named alumina, or clay; its deodorising power in soils is well known. As regards earth-closets, the author agrees with us in believing it to be "abundantly clear that the majority of the towns that have once adopted the water-closet system can ever return to any earth-closet or midden system whatever." Nor, it is to be hoped, will it ultimately be necessary to do so. Meantime, it is just by such experiments as those with soluble salts of clay that the problem may probably be solved.

"The Twenty-third Annual Report of the Amalgamated Society of Engineers, Machinists, Smiths, &c., for 1873." Mr. Allen, the General Secretary, reports this to be "the record of the operations of a prosperous year." Eight new branches of this powerful association have been opened within the last twelve months. The year started with a reserved balance of 158,313*l.* odd, and ended with one of 200,923*l.*, showing a net saving upon the year of 42,609*l.* During the year 15,562*l.* were expended on donation benefit, railway fares, &c., for unemployed members. An excellent understanding, Mr. Allen reports, exists between the employers generally and the members. In support of the sick, 18,022*l.* have been expended, and for funeral benefit, 6,567*l.*

"The Twenty-second Annual Report of the Committee of Management of the Hospital for Sick Children, 48 and 49, Great Ormond-street, London, and Cromwell House, Highgate, has been issued in a printed form. It appears that the new buildings (erecting from the design of Mr. E. M. Barry) are already shown to be scarcely sufficient in extent. The money already expended on the building, including the foundation, is 13,164*l.* The completion of the outpatient portion of the new works is urgent before the opening of the in-patient wards in the new hospital.

Miscellaneous.

Clearing Ground of Trees.—On the estate of Grangemuir, near Anstruther, a new system of clearing ground of trees has been recently introduced by Mr. A. Gilchrist, Carvennour. Mr. Gilchrist is local manager in Fifeshire for the Scottish Steam Cultivation Company. Some three or four years ago he rooted out an old hedge which encumbered his farm by attaching chains to the stumps and drawing them out by means of the steam drum commonly used for plough traction. Finding that a great deal of time and trouble was thus saved, he applied the same method to the removal of trees, and with results equally satisfactory. The system has since, we believe, been tried in various places—among others, on the property of Mr. Gordon, of Cluny, and on the northern estates of the Duke of Sutherland. As exhibited lately, it was applied to the removal of a strip of plantation, consisting of oak, beech, and plane trees, said to be about a hundred years old. The engine, a machine of 12-horse power, used for steam ploughing by the wire-rope system, was placed in an adjoining field, near the trees to be operated upon. A chain being hitched round a tree at such distance from the ground as might be deemed advisable, the wire rope of the engine was attached, when, with a turn or two of the drum, the roots were wrenched up bodily with a large ball of earth adhering. The work went on apace, about 300 trees, varying from 6 in. to 12 in. in diameter, being rooted up in a few hours. Considerably larger timber was next operated on. The experiments seemed to show that with a sufficient power, applied at the proper height, any tree of ordinary dimensions could be wrenched from its bed. It was equally evident, however, that for trees of large size, which required to be laid hold of at no great height, considerable engine-power and thoroughly reliable tackle would be necessary. In new Colonial settlements clearing the land might be greatly facilitated in this way.

Working Men's Clubs.—The Dean of Westminster will preside at the annual meeting of the members and friends of the Working Men's Club and Institute Union, at three o'clock, on Tuesday, July 21st, at the Society of Arts, Adelphi.

A New Temperance Hall at Frome.—The new Temperance Hall at Frome, which has been built at a cost of about 1,450*l.*, including furniture, has been opened. The building stands on the site of the old mechanics hall. The upper and principal hall is an irregular parallelogram, 54 ft. by 29 ft. In the wall facing the entrance are three semicircular arches, two of which are supported by twin iron columns, with ornamental capitals, opening an extension of the platform, and the third filled with ornamental panelling. There is a gallery at the south end of the room, capable of seating about seventy persons. The hall is lighted by means of four large windows on the east side, two smaller ones on the north end, and four at the south end, the glass used being partly ornamental. The whole of the panelling of the room is of pitch pine, the panels being of white Baltic deal. The ceiling is vaulted, and semi-elliptical in form, being divided into compartments by ribs of red deal. These compartments have been decorated by Mr. C. J. Grant, of Frome, from a design furnished by the architect. From the centre of the iron ventilators in the ceiling are four pendants, terminating in starlights of eight *l.* each. Beneath the principal hall is a lower one, 24 ft. by 29 ft., with rostrum, and in connexion with which are various offices.

Accident to the Egremont Pier, Liverpool.—The works at the new pier which is being erected at Egremont have been seriously retarded by an accident. The pier, when completed, will extend about 100 yards into the river, at a height which will accommodate steamers at any stage of tide. The pillars which form the supports of the pier had been put into position, and the lattice-work which will constitute the sides had been laid on, everything in connexion with the frame-work being ready to be screwed up and bolted tight. In this condition the work was left over night. About four o'clock in the morning a steam-flat was endeavouring to find its way on to the gridiron at Egremont, when the rope slipped, and the flat drifted broadside on to the pier. There was very little resistance, and the result of the collision was that, except the pillars at the extreme points of the pier, they were overturned, the sides of the pier, of course, going with them. Fortunately no one was injured. The damage involved will amount to many hundreds of pounds, chiefly from the loss of the pillars and sidework of the pier are almost if not entirely intact; but the girders, which are sunk deep in the masonry, were considerably broken at the top. It will not be necessary to replace these and remove the mason-work, as is proposed to "cap" the tops of them, which when done, and the pillars again put into position, will, it is said, render the girders as strong as ever.

New Public Buildings, Westbromwich.—The public buildings erected by the Westbromwich Commissioners are now nearly complete. They comprise a town-hall, market-hall, library, and public baths, and are situated on a land fronting the hospital, the principal entrance being from the High-street, to which these imposing buildings lend considerable attraction. The market-hall having been completed in advance of the other buildings, was opened by a bazaar in aid of the building and furnishing fund of the District Hospital. The hall is 90 ft. wide and 151 ft. long. The interior is divided into a central avenue 40 ft. wide and 45 ft. high, on either side of which are arranged aisles, each 25 ft. wide, divided from the central avenue by handrails, arched, supported by iron columns 18 ft. high, having foliated caps. The elevation is of red brick, relieved by stonework and moulded brick with carving freely introduced, and the ridges are furnished with ornamental ironwork. Convenient and necessary offices are also attached to the building, which are available both for the covered market and also for a large open market at the rear of the hall. The whole of the work has been carried out under the direction of Messrs. Waller & Proud, architects.

Outbreak of Fever in Huddersfield.—It is informed that a serious outbreak of typhoid fever has occurred at Clayton West, in a neighbourhood of Huddersfield. Out of about 120 cases ten or twelve have proved fatal, several other persons are dangerously ill, and some families there are six persons ill, with scarcely any nurses to look after them. The outbreak is attributed to the wells being polluted with the refuse from stables and the graveyards.

International Memorial of Slave Emancipation.—The memorial stone of the Abraham Lincoln Memorial Tower, as it has also been called, which rises at the head of the Rev. Wm. Hall's church, at the junction of the Westminster and Kennington roads, was laid on the 9th inst. General Schenck, the United States minister, performed the ceremony; and among those who assembled on the site of the building were Mr. Cyrus W. Field, Mr. Moncure Conway, Mr. G. B. Lincoln (Brooklyn), Dr. F. Hayes, the American explorer; Mr. J. W. Brown, the American vice-consul; Rev. Newman Hall, and others; a large company of ladies and gentlemen being present. The Rev. Newman Hall read a brief statement as to how the idea of building the tower originated. The plan has been enlarged, and the tower and spire will now be 100 ft. high. The stars and stripes will be brought on the stone, and the British lion and American eagle will together ornament the sides of the tower, which will contain general rooms, the principal of which will be named "Washington" and "Wilberforce." Mr. Hall said, that till about a week previously no appeal had been made. About 3,600. had been subscribed as the British society, but, however, that 1,200. were wanting, he obtained subscriptions, which left the debt about 400. Mr. Hall added, that although the tower was attached to the church, it was wholly unsectarian and catholic, having been built by the contributions of all parties and as a manifestation of the sympathy of each with the other, and of their mutual joy at the destruction of slavery.

Fatal Accident in Excavating under a wall at Brighton.—Whilst men were excavating ground for the foundation of the new Arthur Wagner's new church in Russell-street, Brighton, to a depth of 16 ft., the ground beneath got out to the required depth in the wall, but only to the depth of 10 ft. near a ledge was thus formed on which the groundmen were employed "facing" the excavation the bricklayers before proceeding to dig out remaining 6 ft., and whilst they were at this the earth bulged out from the bottom, falling from the ledge, and bringing down the wall above. One poor fellow was buried alive, and severely injured; and another, pushed clear of the falling earth, was killed on the head by a piece of the wall, killed on the spot. At the inquest, the Coroner, in summing up, said there was a question about the cause of death, and the point for the consideration of the jury was whether a due amount of care was taken in excavating the ground. All the witnesses agreed in their belief that there was no danger, they were all men of experience. There was legal liability on the part of any one of them. The jury returned the usual formal verdict of "Accidental death."

London Bridge Waterworks Shares.—At a meeting held at the sale of a unique property effected by Messrs. Edwin Fox & Co. Ltd. It consisted of 274 London Bridge Waterworks Annuities secured by the New River Company, each producing 21. 10s. per annum for 208 years. The average price was 58l. 10s. 6d., the total amount realised being 16,000. The London Bridge Waterworks were built in 1580 by a Dutchman, who secured them from the Corporation of London for 500. When it was arranged between the Corporation of the City of London and the London Waterworks proprietors that the works should be removed, the New River Company took to pay the proprietors their then value of 21. 10s. per share as an annuity for 208 years unexpired in the original lease. It has been satisfactory to all parties, as the sale was now recorded. At the same time submitted 10 shares of 100l. each in the New River Company, 40l. per share being realised 100l. per share, being a premium of 150l. per cent.

Parish Church.—With reference to a report that the walls of this church were in a state of decay, it is now said that a gentleman sent Sir Gilbert Scott to make an examination of the church, upon being asked whether the case, replied that the walls are in a sound; and in confirmation of this, an article appears in the *Mold Parish Magazine* of July, contributed by Mr. O. H. an inhabitant of the town, and one of the committee appointed to carry out the necessary repairs.

The Explorations in Nineveh.—At a meeting of the Geographical Society on Tuesday week, Mr. Smith, in his account of his recent excavations in Nineveh, said his principal work was on the site of the palace of Sennacherib, called the South-West Palace. He recovered from this palace over 2,000 tablets, and fragments of cuneiform inscriptions of various ages. Mr. Smith said it was only a few days since the collection arrived at the British Museum, and he had not had time to estimate the contents of the inscriptions. He was convinced of the identity of Izdubar with the Nimrod of the Bible. Most of the fragments of cuneiform tablets would join on the other portions of the texts already in the museum, but much more required to be done to render the texts complete. It would require three years' work and the expenditure of 5,000l. to complete the excavation of the great library in the Palace of Sennacherib.

"Service is no Inheritance."—Every one knows that; and yet it is generally thought that service has its just claims, and may make them good during life. Even this, it would seem, is not correct. Talking accidentally the other day with one of the curators at the National Gallery, who bears a name known in the Royal Academy, we heard with extreme astonishment, not to say indignation, that after a service of more than thirty-six years, he is receiving exactly what was paid him the first year he took office. He was paid two guineas a week when he first entered the establishment, and now, in the thirty-seventh year, he is paid two guineas a week still. Surely this is a stern measure of justice, and deserves reconsideration. The purchasing power of two guineas is not what it was by 20 per cent.; and long service is in itself a claim.

The Building Trades Technical School, Bradford.—This institution has now been established some years, and it has quietly but efficiently done good work for the workmen and apprentices engaged in the building trade. Mr. Leadley is the technical teacher. Twenty-two of his pupils from the school were presented for examination in building construction under the Science and Art Department, and the result is highly creditable to the teacher, and gratifying to the managers of the school. Nineteen of the twenty-two passed. Mr. Gormall, teacher of the plain and solid geometry class, presented nineteen from his class for examination, twelve of whom passed. These results are very satisfactory, and the only regret of the managers is that a larger number of workmen and apprentices do not avail themselves of the great advantages these schools offer to the advancement of the trade.

A Sawing Machine of novel construction has been brought into use at Granton, near Leith, by Messrs. Calder & Lunnan, importers of timber from the Baltic. The invention is designed to cut railway-sleepers at the ship's side, in order to save the expense of carriage to the ordinary mills. The boiler and sawing-gear are of the ordinary description, but are placed on a floating platform or flat-bottomed punt, entirely decked over, and which, when afloat, is only a few inches out of the water. From the side of this vessel an elevator projects into the water, and receives the blocks of timber. They are then, by means of girder-chains, conducted to the saw-frame, and out through from end to end. The inventor of the machine is Mr. Robert Melvino, of Sunny-side Foundry, Alloa.

The Southborough Surveyorship.—At a special meeting of the Local Board, the chief business was to open the applications—eight in number—for the office of surveyor. Mr. W. Crittenden, a member of the Board, had resigned his seat in order to become a candidate for the appointment, which has now attached to it a salary of 70l. per annum. The several applications having been opened, the following were selected, viz.:—Mr. John Smith, Ore, near Hastings; Mr. Thomas Thompson, Cambridge-street, Tunbridge Wells; and Mr. W. Crittenden, Southborough. It was left for a sub-committee to examine further into the capabilities of these three gentlemen and to report to the Board.—*Kent Courier.*

The Brighton Aquarium Company.—The directors of the Brighton Aquarium Company have declared an interim dividend for the half-year ending June 30 at the rate of 10l. per cent. per annum.

New Church in Brixton.—On the 15th inst., the foundation-stone of St. Saviour's Church, Lambeth-road, Brixton-hill, was laid by Mr. James Watney, M.P. The building is designed in the Early French Gothic style, and consists of nave and aisles, chancel, organ-chamber, vestry, north and south porches, and a tower and spire at the north-west angle. It has a lofty clearstory and low aisles, divided by an arcade of arches. The accommodation is for 1,000 persons on the ground-floor. The church is to be faced with Kentish-rag and Bath stone dressing, and green slates are to be used for the roof. The vicar-designate is the Rev. J. Harding; the architect is Mr. E. C. Robins; and the amount of the contract, exclusive of the upper portion of the tower and spire, is 6,712l.

Manchester and Salford Sanitary Association.—The annual meeting of this Association was held on Tuesday, under the presidency of Dr. Noble. It was resolved "That, inasmuch as one of the fundamental objects of this Association is the prevention of diseases, this meeting trusts that the committee will use every means in their power to secure all possible precautions being taken to prevent the spread of infectious diseases." It was also resolved, "That the practical efforts of the committee to improve the condition of the poorer classes, by directing attention to sanitary laws, deserve the encouragement and support of this meeting and the public in general."

A Cottage Hospital is to be built at High Wycombe, providing for eight beds, with medical and nursing staff, &c. This good cause has been warmly espoused latterly. Lord Carington, the largest landowner of the district, has given a capital site; the subscription list already amounts to 700l. or 800l.; and it is hoped that the Prime Minister (whose country seat is within view from the site) will consent to lay the foundation-stone early in September. Mr. Arthur Vernon is the architect.

The Kensington-road.—A deputation from the Board of Works for the Westminster District, consisting of the following gentlemen, viz.:—The Hon. Ashley Ponsonby and Messrs. Z. D. Berry, W. Needham, E. D. Doughty, S. H. Cohen, R. H. F. Pitt, T. J. Tayton, J. Hutt, J. Sherry, and B. R. Arntz, surveyor; W. Rogers, solicitor; and J. Harris, clerk,—had an interview, on Monday last, with Lord Henry Lennox, H.M. First Commissioner of Works, upon the subject of widening the Kensington-road.

Concrete Warehouses for Maidstone.—Mr. Grant, the distiller, of this town, having built, in 1870, an extensive arched bonded vault in the West Borough, entirely of concrete, is now erecting, with the same material, a large warehouse of three stories above the basement, for the manufacture and storage of morella cherry brandy. The building will be 80 ft. long and 43 ft. wide, and not only the walls, but the floors and roof also, are to be of concrete, resting upon rolled iron girders.

Art-Schools, South Kensington.—In reply to Mr. Cowper-Temple, in the Commons, the Vice-President of the Committee of Council on Education, Lord Sandon, said there were no funds at present for the decoration of the building, and no decision could be arrived at as to the continued employment of the students on the decoration until the question of the building had been settled. The whole subject of the buildings at South Kensington was engaging the attention of the Government.

The Brunswick Monument at Geneva.—A preliminary design for the monument to Duke Charles of Brunswick, to be erected in the Place des Alpes at Geneva, has been prepared. According to the proposal an equestrian statue of the duke will be the principal figure, and surrounding it will be statues of six of the most remarkable dukes in the history of his country.

The Nelson Monument.—We are glad to observe that our remonstrance has not been in vain. Men are now engaged cleansing the bas-reliefs from the accumulated impurities which disfigured them. It is to be hoped that they understand their work, and are acting under proper direction.

The Adulteration of Food.—In the Commons, Mr. S. Booth, in reply to Mr. R. Hill, has said that, considering the late period of session at which the report of the committee on adulteration of food had been presented, it would be impossible for Government to legislate upon this difficult subject during the present session.

Public Hall, Hackney.—The project for the establishment of a public hall in Hackney appears to have been received very favourably, for the directors of the company have decided upon an immediate allotment of shares, and have instructed their secretary to invite tenders for the erection of the building.

Lowestoft.—A painted window has lately been put up in the church of St. John by Mr. C. L. Clemence, architect, as a memorial of his wife and nephew, the subject being "Faith, Hope, and Charity." The work has been carried out by Messrs. Gibbs & Moore, of London.

The Cole Testimonial.—The subscriptions promised now amount to 2,670*l.*, and arrangements are about to be made for the appropriation of this sum. Such of our readers as intend to subscribe should at once send their names to Mr. Cole, Wigmore-street.

The Fountain in Leicester-square.—Messrs. Yates, Haywood, & Co., of Dyer's Hall Wharf, wish it mentioned that the marble fountain in Leicester-square, with the exception of the centre, was undertaken and carried out by them.

The Working Men's Dwellings Bill.—This Bill, after a short discussion, has passed through committee in the House of Lords; but it was arranged that it should be re-committed in order that some amendments should be inserted in it.

TENDERS

For a new warehouse for Mr. Crawford, 118, Southampton-row, Russell-square, Mr. W. P. Griffith, architect:—

Lidstone	21,172 0 0
Moreland & Nixon	978 0 0
Lawrence & Sons	949 0 0
Pocock	795 0 0

For repairs, painting, &c., at the Guildhall, for the Corporation of the City of London, Mr. Horace Jones, architect:—

Harrison & Son	21,942 0 0
Mansfield & Sons	1,320 0 0
Macintosh	1,318 0 0
Taylor	1,258 0 0
Bracher & Sons	1,039 0 0
Philips & Basker	1,025 0 0
Pitman & Cuthbertson	989 0 0

* Accepted.

For repairs, painting, and decoration, at the London Institution, Finsbury-circus, Mr. E. N. Clifton, architect:—

Colman	21,320 0 0
Moxon	1,087 0 0
Battam & Co.	993 0 0
Public	878 0 0
Pitman & Cuthbertson	749 0 0

* Accepted.

For alterations and repairs to No. 20, City-road, for the Committee of the Spanish and Portuguese Synagogue, Messrs. Davis & Emanuel, architects:—

Heaps	2,364 0 0
Williams & Son	339 0 0
King & Son (accepted)	329 0 0

For bank at Peterborough, for the Stamford and Spalding Banking Company, Mr. Wm. Eve, architect. Quantities supplied:—

Past	24,800 0 0
Sheffield	4,277 0 0
Waldram & Co.	4,175 0 0
Pester	4,130 0 0
Nightingale	3,983 0 0

For the Church of St. Aloysius, Oxford, Messrs. Hanson & Son, architects. Quantities supplied:—

Waldram & Co.	29,835 0 0
Farmer & Brindley	6,760 0 0
Wright & Goodchild	6,570 0 0
Parnell & Sons	6,500 0 0
Dover	6,450 0 0
Jones	6,130 0 0
Claridge	5,910 0 0

For the erection of stabling and extension of running shed at the V. W. H. Repository, Swindon, Wils. Mr. W. H. Read, architect:—

Wiltshire (accepted)	2,600 0 0
----------------------------	-----------

For rebuilding Nos. 80 and 81, Strand, for Mr. James Asser, Messrs. Chadwick & Sons, architects. Quantities by Mr. Wimpey:—

Clemence	21,815 0 0
Colls & Sons	4,140 0 0
Williams & Son	4,353 0 0
Thorn & Co.	4,260 0 0
Macey	4,220 0 0
Scrivenor & White (accepted)	3,929 0 0

For workshops, Taylor's Buildings, St. Martin's-lane, for Messrs. Benham & Froud, Messrs. Chadwick & Sons, architects. Quantities by Mr. Charles W. Brooks:—

Hill, Higgs, & Hill	23,460 0 0
Clemence	3,243 0 0
Scrivenor & White	3,287 0 0
Williams & Son	3,287 0 0
Macey (accepted)	3,133 0 0

For alterations and repairs to York-street Chapel, Walworth, Messrs. Charles Searle & Son, architects. Quantities supplied:—

Nightingale	23,799 0 0
Cook	2,749 0 0
Dave, Brothers	2,697 0 0
Sewell & Sons	2,684 0 0
Marland	2,183 0 0
Brass	2,190 0 0
Hill, Higgs, & Hill	2,300 0 0
Macey	2,230 0 0
Newman & Mann	2,246 0 0

For alterations and repairs to Premises, No. 11, Bedford-square, Bloomsbury, Mr. Alfred Cross, architect. Quantities by Mr. John Glenn:—

Woodward	21,051 0 0
Prichard	990 0 0
Howard	945 0 0
Bayes & Ramago	925 0 0
Newman & Mann	899 0 0
Paris	804 0 0
Wilson, Brothers	682 0 0

For new premises for Messrs. W. B. Simpson & Sons, of 486, West Strand, W.C. Mr. David Ruddle, architect. Quantities supplied by Messrs. Strudwick & Mennie:—

Hill, Higgs, & Hill	21,139 0 0
Kirk & Co.	4,394 0 0
Bayes & Ramago	4,370 0 0
Mitchell	4,216 0 0
Sharpe & Co.	4,233 0 0
Perry & Co.	4,133 0 0
Williams & Son	4,080 0 0
Scrivenor & White	3,895 0 0

For paving and making up the roadways in Milton Court-road, Vauxhall-street, Alexandra-street, and Rutti-terrace, New Cross, for the Greenwich Board of Works:—

	Milton Court-road.	Vauxhall-street.	Alexandra-street.	Rutti-terrace.
Batch	4334	2332	4366	2330
Mowlem & Co.	338	344	420	263
Goodall	368	375	420	327
Rotheridge	363	390	400	295

* Accepted.

For the erection of a detached house, on Putney Hill, Surrey, Messrs. Lee, Bros., & Paine, architects:—

Paine (accepted)	23,694 0 0
------------------------	------------

For the erection of a new billiard-room at The Horns, Shoreditch (exclusive of fittings and decorations), for Mr. C. Higginson, Mr. Wm. Munday, architect:—

Brown	2,650 0 0
Poulson	648 0 0
Stamp & Bowtle	648 0 0
Blackmore & Morley (accepted)	629 0 0

For book-cases for the Congregational Memorial Hall Library, Farringdon-street, E.C. Messrs. J. Tarring & Son, architects:—

Filmer & Son	2,791 2 0
Collinson & Lock	689 0 0
George	613 11 0
Jackson & Shaw (accepted)	610 0 0

TO CORRESPONDENTS.

E. H. L. B. (shall have attention next week)—An Apprentice (a list of such books was given in our pages a few years ago)—B. (if our correspondent with a competition for his 300*l.* contract—a competition which offers nothing but to able to those who might be foolish enough to accept no, he will have to advertise in the usual way)—P. & R. (we shall be glad to see photographs, &c.)—W. J. A. (apply to an architect)—Y. H. C. (the account we gave was official)—J. D. H. (the slip corrects itself)—J. J. M. P.—H. C.—J. L.—R. K.—W. & P.—A. Y.—B.—R. C. R.—J. L.—J. H.—A. L. M.—C. Co.—J. H. W.—P. R.—W. H. R.—H. W.—M. W. P.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

None—The responsibility of signed articles, and papers read at public meetings, &c., of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

	Situations.	Situations.
Six lines (about fifty words) or under ..	6 <i>s.</i> 6 <i>d.</i>	4 <i>s.</i> 6 <i>d.</i>
Each additional line (about ten words) ..	6 <i>s.</i> 6 <i>d.</i>	4 <i>s.</i> 6 <i>d.</i>

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to residents in any part of the United Kingdom at the rate of 1*s.* per annum, payable in advance.

Halfpenny stamps accepted for amounts under 5*s.* Any larger sum should be remitted by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to DOUGLAS FORDRINER.

T. TRELOAR & SONS,

SUPERIOR

COCOA-NUT

FIBRE

MATTING

AND

MATS.

Manufacturers and Warehousemen,

69, LUDGATE HILL, E.C.

Advertisements cannot be received for the current week's issue later than THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for TENDERS left at the Office in reply to Advertisements, and strongly recommends that COPIES ONLY should be sent.

Bath Stone of best quality.
RANDELL, SAUNDERS, & CO. (Limited)
 Quarrymen and Stone Merchants.
 List of Prices at the Quarries and Depot also cost of transit to any part of the Kingdom application to
 Bath Stone Office, Corsham, Wilts. [Advt.]

STONE BROTHERS,
Bath Stone Merchants,
 supply direct from their own Quarries:—
 BOX GROUND, CORSHAM DOWN,
 FAREHAM DOWN, COMBE DOWN,
 AND STONE GROUND.
 Prices on application at Bath-stone Office, London Depot, G.W.R. Mileage Station, Paddington. Stone Dressings prepared ready for fixing. [Advt.]

Whitland Abbey Green Slates.—Quarries are now fully opened out, and producing Slates in all sizes, and in any quantity: sound, and of choice green tint. Quotations can be executed without a day's delay. Samples and further particulars, apply to MANAGER, at the Quarries, Narberth, R.S.O. [Advt.]

Asphalts.
 Seyssel, Patent Metallic Lava and White Asphalts.
M. STODART & CO.
 Office:
 No. 90, Cannon-street, E.C.—[Advt.]

Patent Selenitic Cement, with double usual sand, is much stronger than ordinary Portland Cement. Plastering finished in much less time at less cost. Excellent substitute for Portland Cement. Concrete at less than half its price.—6*l.* Belvedere-road, Lambeth, S.E. [Advt.]

Bills of Quantities, Specifications
 Lithographed by ROBT. J. COOK & HAMMILL, 29, Charing-cross, S.W., with accuracy, punctuality. Plans and Drawings Copied, Traced, or Lithographed.—[Advt.]

J. L. BACON & CO.
 MANUFACTURERS OF
IMPROVED HOT-WATER APPARATUS,
 FOR WARMING AND VENTILATING
 Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c., &c.

OFFICES AND SHOW-ROOMS:—
 476, NEW OXFORD STREET, London
 From FARRINGTON ROAD.

Publishers of a Pamphlet on "Hot-Water Heating."

MICHELMORE & REID
 Manufacturers of
CHARLES & COLLINGS' PATENT
COLLINGS' PATENT
 LEVER, SCREW, & BARREL
 AND IMPROVED GATE FITTINGS at every Description.
 36A, BOROUGHS
 LONDON.

Decant to Builders
 Illustrated sheet on application.

The Builder.

VOL. XXXII.—No. 1642.

Thames-street.

ANDSOMEST streets are often the least interesting, and many an out-of-the-way place with tumble-down houses has a better story to tell to the inquirer than has many a terrace of architectural houses. There is a street running parallel with the river which is well known to those who use the different boats that start from London to various parts of England and elsewhere, but few of these visitors make any stay in it, for a street of warehouses and wharfs is not likely to be chosen as a favourite lounge. Thames-street, however, is one of the most interesting streets in London, and its history may be said to extend back as far as that of

the City itself. During the earliest Roman occupation, London was a military post, covering the passage of the river, with a permanent camp settled in it, and it afterwards grew into a civil town. This early London probably expanded over ground upon the south portion of which Thames-street was afterwards built. It has been thought that Dowgate was the western end of the first Roman London, and Billingsgate the eastern gate. Many remains of old houses have been discovered here, and being the relics of what was supposed to be a public bath and sudatory. Later in the history of this wonderful London, when the banks of the Thames were built upon with wooden houses, this had become a famous street. Thames-street has been noted at different periods in its history for wine, fish, and cheese. The Vintners' Company is of great antiquity, and is placed eleventh on the list of the twelve great companies of London. The patron saint of the company is St. Martin, and one of the churches in the ward of Vintry was called St. Martin-in-Vintry. The hall of the company, which is a modern building, stands in Upper Thames-street, and contains portraits of Charles II., Louis II., Marie d'Este, and Prince George of Denmark. The "Three Cranes" in the Vintry are long well-known objects, and the remembrance of them still lingers in Three Cranes Wharf. Stow writes, "Vintry Ward, so called by Vintners and of the Vintry, a part of the bank of the river Thames, where the merchants of radeaux craned their wines out of lighters and river vessels, and there landed and made sale of them."

The Vintners have reason to glory in a lately-discovered fact, by which the interest of Thames-street as haunted ground has been greatly increased. Mr. Furnivall found, after diligent search, among the national records, that the hero of our great poet Chaucer was a vintner in Thames-street, and that at least twelve years of a-half of the poet's life (June 8, 1374, till December, 1386) were spent there, close by the future work-place, the Custom-house. On June 19, 1380, Geoffrey Chaucer, son of John Chaucer, vintner, re-leased to Henry Herbury all

his (G. C.'s) right to his father's former house in Thames-street. John Chaucer is known to have been the son of Richard Chaucer, vintner, and several other members of the family were of the same trade. It is thus quite possible that the author of the Canterbury Tales was storing his mind with pictures of life and character while he was serving his father's customers with wine.

Thames-street was also known as Stockfishmonger-row, and the old fish-market of London was "above bridge" in what is now called Old Fish-street-hill, before Billingsgate supplanted Queenhithe. The London Fishmongers were formerly divided into two distinct classes, called respectively "Stock-fishmongers" and "Salt-fishmongers," and the trade was a flourishing one. Stow, in describing Old Fish-street, takes occasion to mention the houses possessed by the fishmongers, which "were at the first but movable boards or stalls, set out on market-days to show their fish there to be sold; but procuring licence to set up sheds, they grew to shops, and by little and little to tall houses of three or four stories in height." Respecting the third commodity mentioned above, a writer in the *Connoisseur* (1754), says, "I had rather live all my days among the cheesemongers' shops in Thames-street, than pass such another spring in this filthy country," and Gay, when characterising the London streets, writes in his "Trivia":—

"Thames-street gives cheeses, Covent Garden fruits,
Moordfields old books, and Monmouth-street old suits."

So much for three of the early specialities of Thames-street, viz., wine, fish, and cheese. In the fourteenth century, although the street was in the heart of London, it was not overcrowded, and we learn from the Hustings Roll that Henry Chaucer, Vintner, and Juliana his wife, made a conveyance of part of their garden, which was near the stream Walbrook, on April 4, 1373. The river front of the street exhibited a long line of handsome buildings, and in the street itself were several churches. The Great Fire made a great change in the place, for none of the mansions, and some only of the churches, were rebuilt. Pepys went into the City at the time of the fire, and found that the overworked Lord Mayor had lost his head, and was hurrying about without knowing what he did. He noted in his diary:—"The houses too go very thick thereabouts and full of matter for burning, as pitch and tar in Thames-street, and warehouses of oyle and wines and brandy and other things." In the following year, he says, "Walked all along Thames-street, which I have not seen since it was burned, as far as Billingsgate, and there do see a brave street like to be, many brave houses being built, and of these a great many by Mr. Jaggard, but the raising of the street will make it mighty fine."

Thames-street extends from Blackfriars to the Tower; that portion above London Bridge is called Upper Thames-street, and that below Lower Thames-street. In tracing the history of the street from west to east, we commence with Puddle Dock, which, according to Stow, took its name from one Puddle, who kept a wharf there. This place is frequently mentioned by our old writers. Ben Jonson introduces it into his "Bartholomew Fair":—

"Puddle Wharf,
Which place we'll make bold with to call it our Abydos,
As the Bankside is our Sestos."

The house in Blackfriars which Shakespeare left by his will to his daughter, Susannah Hall, was near Puddle Wharf.

The name of Castle Baynard Wharf retains the memory of Baynard Castle, which was for many years an imposing object as seen from the Thames. It was built by a follower of William the Norman, named Baynard, but was soon forfeited to the Crown, either by the founder or one of his descendants. In the year 1111 it was granted to Robert Fitzgerald, son of Gilbert

Earl of Clare, in whose family it remained for three centuries. In 1428, by another forfeiture, it became a part of the royal possessions, and was soon after almost entirely destroyed by fire. It was granted to Humphry, Duke of Gloucester, who rebuilt it, but at his attainder it reverted to the Crown, and here the Duke of Buckingham offered the crown to the Duke of Gloucester, afterwards Richard III. From this reign to that of Queen Elizabeth, Baynard's Castle was used on many formal occasions by the Court. The Earls of Pembroke were tenants at will for a time, and the "plucky" Countess, "Anne Pembroke, Dorset and Montgomery, lived here, while her husband was at the Cockpit at Whitehall." Pepys relates that on the 19th of June, 1660, "My Lord [Lord Sandwich] went at night with the King to Baynard's Castle to supper."

Paul's Wharf is of no great interest, but two churches were named after it—St. Bennet's and St. Peter's. The latter was destroyed in the Great Fire, and not rebuilt. The former was rebuilt by Sir Christopher Wren in 1663. St. Bennet's is worthy of a passing notice, because Inigo Jones, Sir William Le Neve, John Philipott, and William Oldys are buried here. The last three were heralds from the college close by. Ashmole, the antiquary, was married to his first wife in this church (1638), and Dr. Samuel Clark held the living for a short time.

Broken Wharf, according to Stow, is "so called of being broken and fallen into the Thames." Here Bevis Balmer erected a brick waterhouse for supplying Cheapside and Fleet-street with water from the Thames. The engine employed was worked by horses, and the water conveyed by lead pipes.

Queenhithe is said to have been originally called Edred's hithe, from "Edred, owner thereof," but it has been known as Queen's-bank, or Queen-hithe, from a very early period. Peele, in his play of Edward I., also calls it Pottershithe. The church of St. Michael, Queenhithe, was rebuilt by Wren after the Fire. The vane, was made in the form of a ship, and of a size capable of holding a bushel of grain. The church of St. Martin, Vintry, was burnt in the Fire, and not rebuilt. Dowgate should be, according to Stow, Downgate, on account of the "down-going or descending thereunto," and the "Dowgate torrents," caused by the descent of the rain down Dowgate-hill to Thames-street, have been famous. The church of Allhallows the Great, also known as "Allhallows in the Ropery," was destroyed in the Fire, but re-erected in 1688 by Sir Christopher Wren. According to Pepys, this was one of the first churches that set up the King's arms before the Restoration. Allhallows the Less, or Allhallows on the Cellar, was destroyed in the Fire, and not rebuilt. The steeple and choir stood on an arched gate, which was the entry to a great house called Coldharbour. This was a place of great antiquity, but Stow could find no earlier mention of the messuage than the 13th of Edward II., when it was demised or let to Henry Stow, draper, anno 1320. After a time it was sold to Sir John de Poultney, who was four times Lord Mayor, and after him it was called Poultney's Inn. He did not live here long, and John, Earl of Huntingdon, magnificently entertained his brother, Richard II., in the house. In 1410 Henry IV. granted the house to his son Henry Prince of Wales. In 1483 Richard III. gave it to the Heralds, but after the battle of Bosworth they were turned out, and it became the temporary residence of Margaret, Countess of Richmond, the mother of Henry VII. In the reign of Henry VIII. the Bishop of Durham's house in the Strand was taken into the King's hands, and Bishop Tunstall was lodged at Coldharbour. In the last year of Edward VI. the house was taken from Tunstall and given to the Earl of Shrewsbury. In 1600 it was pulled down by Gilbert seventh Earl

of Shrewsbury, and a large number of small tenements were built upon the site. The old Watermen's Hall was in Coldharbour, but the new hall was built in Lower Thames-street near the Custom-house. In the old times, before bridges and steamboats, the London watermen were a numerous body. They were made a company by Act of Parliament passed in the 2nd & 3rd of Philip and Mary. In Elizabeth's reign the number of watermen was set down by Taylor the water poet at 40,000, and in Anne's reign the number was the same. When Blackfriars Bridge was built the Watermen's Company accepted 13,650*l.* as compensation for the loss of the Sunday ferry, maintained by them for charitable purposes. In 1744 there was a fire at the malt warehouse belonging to Sir William Calvert & Co., adjoining their brewhouse, when 4,000 quarters of malt were consumed. After the fire the Watermen's Company removed to Lower Thames-street.

The Steelyard, or Stillard was formerly the location of the Hanse merchants, who are said to have obtained a settlement in London as early as the year 1250. The place derives its name from the King's steelyard or beam which was erected here for weighing the tonnage of goods imported into London. When the tonnage was transferred to the City authorities, the King's beam was moved first to Cornhill, and afterwards to Weighhouse-yard in Little Eastcheap. Henry III. granted several valuable privileges to the Hanse merchants, which were renewed and confirmed by Edward I., and for many years these foreigners continued to be successful, but in the reign of Edward VI. the Merchant Adventurers made complaint against them, and "sentence was given that they had forfeited their liberties and were in like case with other strangers." Ambassadors came over from Hamburg and Lubeck to intercede with the King that this sentence might be rescinded, but without effect. In Elizabeth's reign a proclamation was issued by which the merchants of the Steelyard were expelled the kingdom, and commanded to depart by the 28th of February, 1597-8. After their departure it was ordered that the "house of the Stillards should be used and employed for the better bestowing and safe custody of divers provisions of the navy." Sometime after the Great Fire the Hanse merchants presented the parish of Allhallows with a handsome screen of oak, manufactured at Hamburg, in memory of their former connexion with this country. The "Old Swan" well deserves its name, as it is of great antiquity as a landing-place. In "A Chronicle of London from 1089 to 1483" "The Swan, in Tempe-street," is mentioned. The Swan stairs were much used before Old London Bridge was pulled down, as most prudent persons preferred landing here and walking to the other side of the bridge to trusting themselves to the rapids that ran through the narrow arches. In 1429 the Duke of Norfolk and his suite had their boat overturned in passing under the bridge, and one of Ray's proverbs—(London Bridge was made for wise men to go over and fools to go under)—shows the popular feeling in the matter. Having attended to the chief objects of interest in Upper Thames-street, we now pass to Lower Thames-street, of which there is not so much to be said. The church of St. Magnus the Martyr was destroyed in the Great Fire, and rebuilt by Wren. This parish enjoys the distinction of numbering among its former rectors the name of Miles Coverdale, the great Reformer. The church of St. Botolph, Billingsgate, was burnt in the Great Fire, and was not rebuilt afterwards. Its name remains in Botolph-lane and wharf. Billingsgate was a market "for fish, both fresh and salt, shell-fishes, salt, oranges, onions, wheat, rye, and grains of divers sorts" in Elizabeth's reign, but by an Act of Parliament (10 & 11 William III., c. 24) it was made on and after May 10th, 1699, "a free and open market for all sorts of fish." In old times the sellers of fish took great interest in fast days, as they were good for their trade, and in 1571 the Company of Fishmongers petitioned Parliament against those butchers who killed and sold flesh during Lent, and complained of the non-observance of Lent "whereby the sale of fish and the encouragement to fisheries were greatly injured."

The present Custom-house was erected in the years 1814-17 from the designs of David Laing, and the Thames front is due to Sir Robert Smirke; but a Custom-house on the same site was "new built" by John Churchman, Sheriff of London, in 1355. A larger building was

erected in the reign of Elizabeth, which was burnt in the Great Fire. The same disastrous fate attended the two Custom-houses that replaced this one, for Wren's was burnt in 1718 and Ripley's in 1814.

The Coal Exchange is a modern establishment, founded pursuant to an Act of Parliament passed in the 47th year of George III.'s reign. The present building, as our readers know, was designed by Mr. J. B. Bunning, and the first stone laid on December 14th, 1847. It was opened by the late Prince Consort on the 30th of October, 1849. In the basement are most interesting relics of Roman London, but few people go to look at them. Having now arrived at the east end of this famous street, we will close our notes with a short recapitulation. The whole history of ancient London was more or less connected with Thames-street, and when the city was small this street formed its entire southern boundary. Much, therefore, of the early history of England was enacted in its immediate neighbourhood. Thames-street was built upon in Roman times, and some remains of the villas pleasantly situated on the banks of the river, which were probably inhabited by the soldiers who were in command of the station, are still left. Stow reports a tradition that a large stone building at the east end of the street "was some time the lodging of the Princes of Wales, when they repaired to this city, and that therefore the street in that part is still called Petty Wales, which name remained there most commonly until this day, even as where the kings of Scotland used to be lodged betwixt Charing-cross and Whitehall: it is like-wise called Scotland." Some kings have lived in the palaces on the river, and others have been entertained there; Old World merchants have done their business on the quays; watermen in large numbers have congregated by the various stairs, making the Thames resemble the canals of the Venice of to-day; poets and scholars have walked in the streets; and reformers have preached in the churches. The history of the place is not closed yet, and Upper and Lower Thames streets, now much altered, will be important streets as long as London remains the port of the world.

HISTORICAL MONUMENTS IN FRANCE.

We have not been without noble illustrative works of our national monuments of architecture in this country, and certainly there has been no lack of "restoration" of these monuments, of one kind or another. But the work of illustration has been entirely that of private enterprise, and the work of conservation and restoration is left in the hands of local authorities, ecclesiastical or municipal, or to private care and liberality; and the feeling of the country on the subject (so far as "the House" represents the country) was apparent enough in the decided negative recently given to Sir John Lubbock's attempt to procure systematic governmental oversight of the monuments of antiquity in England. There is much to be said for private enterprise,—much to be urged against "bureaucracy,"—but the arguments in this direction look rather weak when we contemplate the result of intelligent official assistance and surveillance which is illustrated by the fine collection of architectural drawings in the International Exhibition, forming a small proportion of more than 8,000 drawings already executed, as careful memoranda or propositions for restorations, for the "Commission des Monuments Historiques" of France.

From the preface in the French catalogue we may abridge the history of this "Commission." Associating themselves with the movement which arose in the country about 1830, for paying more attention to archaeological study, the Chambers voted for the first time, in the Budget of 1831, a sum of 80,000 francs, to be applied by the Minister of the Interior (who had previously only the power of applying at discretion occasional sums for the repair of certain structures) to the conservation of the architectural monuments of the country. At the same time an Inspector-General, M. Vitet, was appointed, whose duty it was to decide what edifices needed most immediate repair, and who, during the two years that he exercised his functions, "imprinted on archaeological study a directing influence, of which the effects immediately made themselves felt in the Departments, where learned societies were formed which employed themselves in the search for monuments of interest, and in checking their spoliation." He was succeeded by M.

Prosper Mérimée, who pushed the subject very energetically, and procured an increase of the Government vote, first to 120,000 francs, and then to 200,000 francs. Subsequently to this the "Comité historique des Arts et Monuments," which had been instituted by M. Guizot in 1831, decided, on the suggestion of M. Vitet and Mérimée, to undertake a systematic research, with the view of forming an inventory of the "monumental riches" of France; every Department to be explored with great care by a competent archaeologist charged to describe and draw every monument of art. Public funds for so vast an enterprise were not forthcoming, however, and it was then decided to leave it to each Department to continue the publication of such drawings and descriptions after the Government model, and under the direction of M. Mérimée and three others as an acting committee of redaction. The Minister of the Interior, on his part, had in 1832 invited all the Prefects to state the situation of the principal churches in their respective departments, and to refuse authorisation to any important changes or reparations which had not received the approbation of the "Inspecteur-Général des Monuments historiques." In 1837, the period when the Government vote was raised to 200,000 francs, the "Commission des Monuments historiques" was first appointed under its present title, consisting of eight members under the presidency of M. Vatout, and including M. Mérimée (the Inspector-General), M. Dubay, and others who would be capable of disposing of the funds in a thoroughly satisfactory manner. In 1839 the Government vote was raised to 400,000 francs, and the Commission re-organised, M. Minister of the Interior becoming president, and M. Mérimée vice-president. The Commission now devoted itself to classifying an inventory under a system all the more judiciously obtained and then being obtained, appointing "corresponding inspectors" in each department, to furnish all information to the central body, and to assist the local officials in carrying out the objects of the Commission. With this systematic assistance the Commission was soon able to make their first classification of buildings which were of most importance, as to furnish a definite basis for the division and appropriation of the funds in their hands, these being, at that time especially, quite insufficient for all the work in hand, and being applied in preference to the restoration of those works which were types of a style, and which marked the progress or decadence of the art, "in order to preserve at least the models of all the systems which had been successively adopted by architects." The vote was raised in 1843 to 600,000 francs; in 1848, to 800,000 francs; then to 870,000; and, in 1859, to 1,100,000 francs, at which point it has remained since. The intelligence and activity which have presided over the labours of the Commission, and the apportionment of the funds, have received the approval of public opinion; the Chambers have not, therefore, hesitated to increase the resources of a service the importance of which was more and more appreciated, while under its direction certain edifices of great value, and which were supposed to be nearly ruined, have been restored for the study and the admiration of the public.

In 1848, 1852, and 1860 the Commission underwent sundry alterations. At the end of the year 1871 it was placed under the Minister of Public Instruction as official president, the acting president being M. Vitet, and the vice-presidents M. St. René-Taillandier and Charles Bligny. The Commission at present numbers twenty-four members of Council, including a large proportion of architects, among whom we notice the names of MM. Viollet-le-Duc, Bailly, Labrousse, Millet, Questel, and others whose names are more or less known to most of our readers. M. Viollet-le-Duc is the secretary. The sum of 1,100,000*fr.*, before referred to, as we are told, but a portion of what is really spent under the direction of the Commission at present is not *un fonds de secours*. The voting of the sum annually serves to give the Commission a direct hold over the treatment of architectural monuments in the country; but the work going on at five buildings alone (the Church of St. Denis, the Sainte-Chapelle, the Hôtel-Cluny, the chapel of the Château at Vincennes, and Laon Cathedral) absorbs 400,000*fr.* per annum. The Government adopts the principle, in many cases of demanding the contributions of the local administrations as the condition of official assistance from head-quarters, and thus it comes to

* We will continue the subject in our next.

glories of the National Gallery pictures quite as killing, though not so harmful, in its own way, as the fatal varnish. It is the practice that has been adopted in so many cases of glazing, *s.e.*, covering with plate glass, very many of the most precious pictures. Of course, it is well known what the motive is,—to preserve them from the dust, and perhaps it is thought the damp in the galleries. But we may ask in passing, does it really do this, effectually? We think decidedly not. But however this may be, it is almost fatal to the thorough seeing of the picture as it ought to be seen, and to its study, inasmuch as, stand where you will, it is absolutely impossible to see the whole of the picture at one view. You may get a view of first one corner, and then another, now the top of the picture, and now the bottom of it, and so on, and thus only you may get in time to see the whole of it, but only in detail, never all at once. It is truly perplexing, and not a little tantalising. One is perpetually wishing the picture in an auction-room, so that at least we might get good sight of it if but for a few moments. If any should doubt this, let them try to get eight comfortably of that great Titian, the Bacchus and Ariadne. It will be found a vain and hopeless attempt. You may see the pictures on the wall opposite, or yourself, or the passers by, or the skylight; but the great picture, except in parts, will be found to be an impossibility. Surely this is a mistake anyhow looked at. A picture that cannot be seen, from whatever cause, is as good as no picture at all. Cannot here a something be done to avoid the necessity, as it would seem, of this covering the pictures with glass? Would it not be a good plan to suspend silk blinds from the ceiling, such curtains to be drawn over the pictures when the galleries are closed, and when the dust suspended in the air, has time to deposit itself. And does not this point but too steadily to some defect in the very construction of a room, devoted to the exhibition of pictures. We cannot but think that it does, and that by careful construction of a building very much might be done to obviate the necessity of glazing the pictures at all. The doorways too, or openings, from one room or gallery into another, need some looking into, for in winter time,—we may mention in passing—such is the cold draught rushing through the doorway, awkwardly placed, between the two easternmost galleries, that it is almost impossible to look for any length of time at the great picture by Paul Veronese at the end of the long gallery. Might not this be amended at but little expense in some way?

And, again,—for it is difficult to leave the subject, so much depends on it. We cannot but hope that an opportunity may offer for a thorough and exhaustive trial, so as to evidence how far and how completely the successive coats of varnish can be removed from not a few of the national pictures. How glad we shall be to see them free of it, we need hardly say; and when free of it, we trust that they will be publicly exhibited before a single coat of even the best and purest of fresh varnish is passed over them. And still more fervently do we trust that in no case more than one single coat of varnish, whatever its nature, may be applied. Water-colour pictures, by the way, are not varnished; and why? It is felt by every painter that to do so would destroy a something or other; some subtle element in the drawing would either disappear, or at least be seriously damaged. Why, therefore, as matter of curiosity, we may ask, should oil pictures be varnished at all? It seems an infinite pity to do it. Many and many are the clever oil-sketches we have seen fresh from the hands of the painter, and no thought of varnish ever crossed such man's mind. What we want to see is, the *bona fide* work of the painter,—his subtle touch, and that nameless individualised manner of work which always must distinguish one man's work from another's. Varnish helps to obscure not a little of this.

We have often thought, and we take this opportunity to say it, what a useful thing it would be could but one of the rooms,—a small one would do,—of the Gallery be devoted to the exhibition of paintings in different stages of progress, from the cartoon or outline drawing in black and white, to the finished picture, or rather, two pictures; one without varnish, just as it left the easel of the painter; and then one with varnish, pure copal varnish, and but one coat of it,—a point, by the bye, of no small importance, and on which we could say a good deal from some special experience. Then it would be useful to show by the side of these one

of those unfortunate pictures which have suffered most, and which have been all but, by dint of varnishing, blotted out of existence. A useful room, indeed, might this prove to be by showing how much mischief is done by the injudicious use of things, good in themselves, but only when used with knowledge and caution. We might here name the pictures as they now are in the Trafalgar-square Gallery, which would usefully go to make up this instructive picture show. Suppose, for example, that the fine cartoon, by Carracci, "The Cephalus and Aurora," occupied the first place, by way of showing the pure drawing stage, the realisation in outline of the idea of the picture. This drawing cannot be seen where it is in the dark passage. Then, an oil sketch, by some Venetian, without varnish, thus with all technicalities, and paintings clearly visible, without hindrance. Then a varnished picture, and then one under the "fog" of successive varnish coatings. One thing, at least, as we judge, would come of such picture show, very many might be led, wittingly, or unwittingly, to look always in a picture for the handwriting, the painting, of the painter, and varnishing and glazing might disappear together.

MR. WHISTLER'S EXHIBITION.

THE small gallery at No. 48, Pall-mall, where an artist of originality and genius as unquestionable as his eccentricity has collected some of his works, presents a pleasant "artist's-studio" appearance, with its crockery and painted screens, its furniture in plain but rich-toned brown covers, and its ranges of oil paintings the collection is small, but includes one or two characteristic works, of which the best perhaps are the portrait of the artist's mother, known through its place in a recent Academy exhibition, and the portrait of a girl with a grey felt hat in her hand (5), under the title "Harmony in Grey and Green": this latter is a remarkably pleasing study of low quiet tones, and with considerable character in the figure. The sitting portrait of Carlyle, with the well-known crumpled hat on his knee, we should scarcely call a success in regard to character: the Chelsea prophet looks, to say truth, sadly like a Methodist parson; about the last kind of person, probably, he would expect to be taken for. The two portraits of girls, "Harmony" (in flesh colour and pink) and in "Grey and flesh colour" respectively (2 and 7), are too straight-up-and-down in pose and drawing to be really satisfactory, in spite of the unquestionable delicacy of the colour combinations. This objection does not apply to the "Arrangement in Black, No. 2" (3), in which the dark drapery is grandly designed in its flow and fall, and which only wants a somewhat more interesting countenance at the top of it to be a first-class specimen of art in portraiture. Of the small oil sketches, "Nocturnes" and "Symphonies" in "grey and gold" and in "blue and pink" &c., we fear it must be said that they are eccentricities, rather than contributions of much value to art.

Our own opinion is that Providence intended Mr. Whistler for an ether; at least it is in this peculiarly artist's art that his success is most incontestable. The etchings about the Thames and its environments are pretty well known, and a good many of them are here exhibited. But it is more remarkable to see what freedom and effect the artist has attained, even in subjects of some intricacy, with that stiff and scabrous method of execution—the "dry-point." Look at No. 2 among the etchings, "The Forge," and see how thoroughly and intensely the expressions of the man working in the heat of the open furnace-door, and the youths craning their necks to look in, are given. A "Portrait" (25) of an apparently invalid lady of much beauty of countenance, leaning back in an easy chair, is exquisite in the delicate portrayal of the features and the contours of the bust and figure. The portrait of the "Little Girl" (36), by the same process, has remarkable freedom of pose and brightness of expression. Nothing can furnish more unquestionable evidence of artistic power than such works, where the ordinary resources of finish are denied to the artist, where he must know the meaning and object of every line he draws, and where correction is all but impossible. Among the etchings proper the small highly-finished "La Vieille aux Loques" (8) is, in power of composition and light and shade, like a Rembrandt; on a small

scale; and of kindred excellence is the work "La Marchande de Moutarde" (9). French, we observe, seems to be taking place a kind of artists' language among us, and unworthily, and the small interior of "Saverne" (26), a momentary incident of lateral effect in a small room, with a female looking out of the window, which the artist caught and turned to poetry, for whose eyes to discern it. "The Parasol," "Miser," and the "Old Farm" may be mentioned as showing genius and interest; the latter is a masterly study of an old picture building.

Those who can see through the artist's oddities into the spirit which underlies designs, if they go once to the Gallery in Mall East, are not unlikely to look in a time.

A PROPOSED COLONNADE AND GALLERY UNDER THE EAST CLIFF, BRIGHTON.

A PLAN has been suggested to the inhabitants and the authorities of Brighton by Mr. V. MacFarlane, an elderly but enterprising man, and for many years an active resident of the town, for erecting a row of pillars from Chain Pier to Kemp Town, nearly a mile in length, under the cliff, and connecting the joists with the wall that has been built as a support to the cliff, for the purpose of forming a gallery, on which it is proposed to raise a gallery, glazed front towards the sea, to the top of the wall. The object of this is to supply a want of shade in summer, and of shelter in winter, for promenaders on the New Lewes from Kemp Town to the aquarium, the temple which have been made to produce by planting trees having failed, as they thrive. It is suggested that this scheme, carried out with little or no expense to the payers or inhabitants, on the condition that capitalists who undertake the execution be permitted to profit by the gallery, and letting it out to other parties for the sale and sale of useful and ornamental articles using it for those purposes themselves; principle, if successful, might be made applicable to other places, both by the sea-shore and where there is a similar want of accommodation with a population sufficiently large and enterprising to reward the speculator.

DEFICIENCY OF WATER IN BERMONDSEY.

THE inhabitants of Bermondsey are so sensitive that should the present hot weather continue much longer they will seriously from an inadequate supply of water. Already several districts are almost without water. These include the neighbourhoods of Grange-road, Blue Anchor-road, street, Dockhead, and other localities. A gentleman, Mr. Hornblower, of the Old Hero public house, Upper Grange-road, complains that although he pays for a constant supply, he seldom gets any water at all in the time, and is under the necessity of using the most careful supervision in order to see that his water is not run dry. There are several others in the same position, and they state that although they have written and complained to the Corporation (the Southwark and Vauxhall) they are to obtain either relief or even a reply. Hornblower states that his neighbours are constantly coming to him for water, saying they are altogether without. Mr. John Claremont Arms, also in Upper Grange-road, makes a similar complaint, and like the third publican in the Blue Anchor-road, states that people are continually "watered" from him. Similar statements are made by private residents who happen to have greater facilities for storage than the publicans. It further appears that last week particularly the supply was not only very inferior in quality; whilst another complaint is that when the water is turned on it does not remain so sufficiently long to fill tanks and cisterns to get full.

The cause simply seems to be, as is a by the Southwark and Vauxhall Company, that the capacity of the company's works, which were constructed when B-se was not more than a quarter its size, is altogether unequal to the demand, and what makes matters still more serious appears to be doubtful whether the new works

honorary secretaries of the Society of Architects in Leicester and in Bradford, and at their request copies of our papers have been forwarded to them.

The Council have felt called upon to protest against the course taken by the new Wardens of Manchester Cathedral, in placing the continuance of the restoration of the building in the hands of another architect, without in any way communicating with the gentleman under whose direction the work has been carried out for twenty-five years. The Wardens are, as you are aware, not in any way legally bound by the acts of their predecessors; therefore the Council could *do nothing* but protest against such a course. The explanation given by the Senior Warden, in reply, was to the effect that no reflection was intended upon the professional character of the former architect, but was in other respects, in the opinion of the Council, very unsatisfactory. The gentleman who has accepted the commission under these circumstances is not, the Council are glad to state, a member of the Society."

THE following are the chief works completing the list of selections by prizeholders this year:—

RAILWAY SUPERSTRUCTURES.

The work under this title, by Mr. Grover, is intended as a continuation of the author's previous work, "Estimates and Diagrams of Railway Bridges, Culverts and Stations." The object of the work is to afford the engineer concise information in a portable form, and to enable him framing rapidly his reports and estimates, especially in regard to the probability of the employment of other (lighter) gauges than the present standard one of 4 ft. 8½ in. In the notes to each diagram the quantities, weights, and rolling and fixed loads are given in each case, so as to admit of estimates and comparisons being made with facility. The diagrams, which, without any pretension to high finish, are drawn accurately and carefully made out and arranged, include details for ordinary bridges of various spans, calculated in some cases for centre gauge, and enough in the majority for standard gauge; a diagram of iron girders for various spans; a general statement diagram; timber bridges for straight and curved spans; castings, fencings, and other adjuncts of railroading in general. An outline or model specification is appended, for "the works necessary for the construction of the A and B Railway," which will serve very useful purpose as a general memorandum in drawing up a specification, and may enable the engineer to turn over the specifying in general cases, and where there are special difficulties, to subordinates, without the necessity of any necessary provision being overlooked. Suitable for rapidly computing amounts of earthworks, the basis of rough sections of the site of the line, calculated to save much time in making estimates, where the character of the work is tolerably similar over a large extent of line.

ishing work, and other adjuncts of railway construction. An outline or model specification is appended, for "the works necessary for the construction of the A and E Railway," which will serve very useful purpose as a general memorandum in drawing up a specification, and may enable the engineer to turn over the specifying in general cases, and where there are no special difficulties to subordinates, without fear of any necessary provision being overlooked. The table for rapid computing amounts of earthworks, on the basis of rough sections of the site of the line, is calculated to save much time in making estimates, where the character of the work is tolerably similar over a large extent of line.

The diagrams given are taken mostly from the works designed for actual execution, many of them having been carried out by the author and his assistants. The iron-work is given with details and dimensions, so as to be practically available for manufacturers and contractors. The author believes that "the examples in this volume, taken with those already referred to in his previous treatise, will cover those superstructures most generally required in actual practice in their primary forms."

In the report for the year 1873-4, read at the annual meeting, June 22nd, already referred to, the Council of the Manchester Society of Architects speak as follows:—

"One of the most important matters that have engaged the attention of the Council during the year is the pressing question of the consolidation of the Manchester Building Bye-laws on the notice of the City Authorities.

This subject was submitted to the Corporation during the last Session, 1872-3, but up to the present no steps seem to have been taken by the Corporation towards carrying out the suggestions contained in the documents presented by the Society. The Council have felt justified in again calling the attention of the City Authorities to the necessity for taking action in the matter. A letter from the Town Clerk on the subject will be laid before the meeting.

The Council have again felt it a duty to direct the attention of the Authorities to the character of certain new buildings erected in St. Ann's square, which they considered were of a highly dangerous character, from the almost exclusive use of timber in the construction. The Council consider that this would, in the event of a fire, render it almost impossible to save the adjoining buildings. At present it seems that the Corporation have no jurisdiction over the constructive part of the buildings proposed to be erected; but this they would have if the suggestions of this Society in regard to Building Bye-laws were adopted.

The Council are glad to state that the operations of the Society are not only recognised, but approved, by the Profession in other towns. Communications have been received from the

The Lion Cement Company.—The formal opening of the works of this company, which are situated at West Thurrock, near Grays, has been celebrated. The spot selected for the occasion was Parrock Hall, and the grounds attached were kindly thrown open by Mr. J. Lark, the original mover in the formation of the company.

Following will be found a fair synopsis of the sale of glebe lands introduced into the Lords by the Bishop of Carlisle. If any person is desirous of purchasing any of the same, and the incumbent is willing to sell, application can be made to the governors of the Bishop's Bounty to authorise the sale, and when so given, the governors in question must direct the diocesan surveyor of dilapidated glebe lands to report on the desirability and value of the lands.

governors are satisfied with the sur-
port they may authorise the sale after
that of the bishop and patron are ob-
tained, a contract is next to be entered into,
in which a form in the schedule of the Bill
is to be filled up.

Provisions of 2 & 3 Vict., c. 49, s. 22, as
to the validity of conveyances, shall be applicable
to the conveyance of the property, and the
conveyance is to be registered in
the Registrar's office, and Registrar's
fees are to be paid.

urchase-moneys are to be invested by
ors of Queen Anne's Bounty, and the
aid to the incumbent for the time
e the glebe lands were situate. By

* Iron and Timber Railway Superstructures and General Works; with some Earthwork Tables and Outline of Specification and Requirements. By J. W. Grover, M. Inst. C.E. London and New York: E. & F. N. Spon.

SANITARY MATTERS.

The Sanitary Condition of Walsingham.—The Town clerk has received from the Local Government Board a few copies of the report made to them by their inspector, Dr. Ballard, on the subject of his recent visit to this borough and the observations he made with reference to its sanitary condition, sewerage, &c. The report extends over twenty-nine pages of foolscap letter-press. The local *Chronicle* gives very full extracts from it. Amongst Dr. Ballard's recommendations he advises that the corporation should expend more money on sanitary inspection and medical superintendence; and that it is improper and unwise to leave old sewers still to be used after new and efficient sewers have been laid down; and that the proper drainage of courts, &c., should receive speedy attention, the water supply be improved, and the town wells closed.

The Taunton Sewerage.—The works for connecting the sewage of North Town with the general system are now rapidly approaching completion, and the sewage of that district, instead of being discharged at Firepool as in the past, will be intercepted by the new sewer in Grassgrove and carried to the main sewer in Priory. The eastern section of the work was completed first, and a gang of workmen have been employed in preparing for lowering the syphon which will convey the sewage under the river. This tube, constructed of 3-in. iron in twelve plates, and weighing five tons, was brought up from the founder's,—Mr. T. Kerslake, of Exeter,—in two lengths, and when riveted together measures 100 ft.; the measurement of the diameter outside being 2 ft. 6 in. This new sewer has a fall of more than 4 ft., and ample provision is made for stoppage by the construction of a valve at the upper end and sump holes at each end of the syphon. The old Firepool sewer will not be entirely disused, but will be utilised for storm overflow by the insertion of a weir at the point of intersection. No system has been adopted by the Local Board for disposing of the sewage when concentrated at the ground they have purchased, Target Field,—but it is probable that the filtration plan of their surveyor, Mr. J. H. Smith, will be followed.

Sanitary Condition of Bilston.—We learn that the inhabitants of Hartsborn, Thompson, and Shale streets, in Bilston, being dissatisfied with the unhealthy condition in which these streets have been allowed to remain for many years past, have laid a petition before the Local Government Board, and invoked their assistance in removing the nuisance complained of, and improving the sanitary condition of the streets.

The Fever in Carlisle.—The local *Journal* reports a decided improvement in the health of the city, there being a perceptible decrease in the number of patients in both hospitals. The eighteen cases then in the hospitals were made up of twelve cases of typhus, three of typhoid, and three of scarlet fever. There had been no more deaths; and in regard to scarlet fever throughout the town, it is less prevalent now than it was a week or two ago.

BRISTOL CONGRESS OF THE BRITISH ARCHEOLOGICAL ASSOCIATION.

THE proceedings of the Congress will include—Tuesday, August 4th, reception at the Council Chamber by the mayor and corporation; visit to the Church of St. Mary, Redcliff, under the guidance of Mr. Godwin, the Temple Church, St. John's Church, &c. Members of the Congress are invited by the president to the inaugural dinner given by him at the Royal Hotel; the president's address to follow. August 5th, the party will proceed to Clapton Church, Cadbury Camp, and Tickenham; then to luncheon at Nailsea; and afterwards to Backwell and Ashton. August 6th, the Congress will assemble at the Mayor's Chapel, and, after service, will attend the examination of the Cathedral and of its monastic buildings. The members are invited to an entertainment at the Merchant Venturers' Hall. The Association will then proceed to examine the Friaries and the Church formerly belonging to the Priory of St. James. August 7th, special train for Bradford-on-Avon. Under the guidance of Mr. C. E. Davis, F.S.A., the Congress will visit the Saxon Church at Bradford, the Parish Church, the Duke's House, and will proceed to Wraxhall House, and Chalfield. The Congress is invited to accept the hospitality of Mr. Buddle Atkinson, August 8th.

Thornbury Castle and Church will be visited, under the guidance of Mr. Edward Roberts, F.S.A. After luncheon, to Iron Acton Cross; thence to view the Church, Manor House, and Camp at Sodbury, returning to Yate for the train to Bristol. August 10th, at 9.30 a.m., the special train will start for Worle Station, whence the Congress will proceed by carriage to the fortification on Worle Hill and to Woodspring Priory, returning to Weston-super-Mare for luncheon; afterwards they will proceed by train to Axbridge and Cheddar.

BATH ABBEY CHURCH RESTORATION.

As a memorial of the rector's liberality in the work of restoration, a new font has been placed in the church. On the completion of some minor details it will be formally presented to the rector. Sir Gilbert Scott designed the font, which has been executed by Messrs. Farmer & Brindley. It is of Painswick stone, standing upon an octagonal base of Rouge royal (red Belgium) marble, which is in two slabs only, being, in fact, the halves of one block, and highly polished. The upper portion of the font is square, with the corners cut off, and is supported by an octagonal panelled pillar having a moulded base. The sides have recessed panels filled with Gothic tracery, each side bearing in relief an emblem of one of the four evangelists,—an angel, lion, bull, or eagle. At the corners are detached octagonal pillars, with varied capitals, which support angels, emblematic of the four rivers of Paradise. Over the angels are enriched canopies, with tabernacle work, attaching them to the body of the font. Round the upper edge runs a moulding with enriched border. Inside the font is lined with lead. Among the recent additions to the Abbey we may mention two windows inserted in the north-east aisle. That nearest Orange Grove has been erected to the memory of Maria Anne Doveton, widow of Lieut. Colonel Charles Edward Doveton, 38th Regiment Bengal Native Infantry. The main subject occupies the upper portion of the whole of the five lights, and is a representation of the miracle at the marriage-feast, in Cana of Galilee. The lower portions of the lights are filled with representations of Eve and her Children, Sarah and Isaac, Virgin and Child, Elizabeth and St. John, and Hannah and Samuel. The window is by Clayton & Bell. The other window is next to the organ, and has been erected to the memory of Mr. Benjamin Barrow Evans, of Cheltenham. It is illustrative of the Sermon on the Mount, the upper portions of the five lights being devoted to a general representation of its delivery, and therefore comprising the Saviour and his twelve disciples, besides several other figures. The lower portions, and the spaces above the main lights, are filled with subjects illustrating the beatitudes. Mr. Bell, of Bristol, was the artist.

CITY SLAUGHTER HOUSES.

SIR,—As the Government has determined to continue private slaughter-houses, we ask you, as well as the *Times*, to assist in getting rid of the nuisance in the City by letting the Government know through your pages what it entails in this neighbourhood, viz., Algate High-street, the south side of which is occupied by the trade, and which is the main eastern thoroughfare.

We have during the daytime cattle driven along the streets and across the footpath, and down the alleys (which also lead to numerous dwellings occupied by the poor) leaving their ordure on the pavement. We are constantly troubled by the slaughterers in their clothes begrimed with blood and filth. We meet the blood and offal as they are being conveyed across the footpath to the carts which come for them, and all the other concomitants of the trade.

Surely the Government should pause before it proceeds to continue this trade in the City, which, with other noxious trades, has had twenty years' notice to quit, and will otherwise expire by effluxion of time this year.

TWO CITIZENS.

The Proposed New Town-hall for Newbury.—A committee has been appointed by the town council to consider the most desirable course to be adopted with the view of securing the erection of a new Town-hall and Public Offices, the cost of which is likely to be about 10,000l.

EARTHWORKS OF THE ENGLISH PERIOD.*

MIDDLEHAM.

SCARCELY five minutes' walk southwards from Middleham Castle is a rather remarkable earthwork which has hitherto escaped notice. In the Inch Ordnance it is marked as a camp, but the scale is too small to allow of its details to be shown.

The long low ridge that separates Cover from the dale of the Ure becomes lower and narrower as it passes eastward, until it finally ceases altogether about a mile short of junction of the two rivers. A little above Middleham the ridge is known as the Low Moor, and is a celebrated training-ground for soldiers. Upon this ridge, at a point just east of the training-ground, where it is very narrow and not above 100 ft. above the town of Middleham, is seen the earthwork, which may be described as—A level space, nearly circular, about 75 ft. in diameter, is surrounded by a circular bank of earth about 7 ft. high above contained area, but on its outer side it passes down into a ditch, also circular, about 25 ft. 30 ft. deep from the bank, and about 1 ft. below the ground beyond it. This bank, however, which during most of its length is a ridge, is towards the west expanded into a sort of platform or mound, about 20 ft. in diameter and tolerably level on the top, beyond the ditch which surrounds this work, is a counterscarp, is a second bank, lower than the inner one. The whole of this platform the earthwork is about 260 ft. diameter, 240 ft., the excess of breadth being due to the expanded inner bank.

Towards the east, opposite to the broad bank is cut through and a causeway of the ditch showing that here was the entrance. On this side, covering therefore the entrance to a semi-lunar enclosure, appended to the enclosure and defended also by a bank and ditch. In the outer or eastern part of the enclosure, opposite to the inner entrance, is a second outer passage formed in the same way.

A few yards in front of this second of a slight bank and ditch are thrown forward yards across the ridge, and in advance of these is a further line of the same character, the object evidently being to protect the approach, which passed not through but between these two outer defences. The design, as a whole is simple, but not without skill, and the earthworks were higher and drier and palisades the strength of the work would be considerable.

Although the appended drawing represents truly enough the general plan of this earthwork, the representation is of far too precise definite a character.

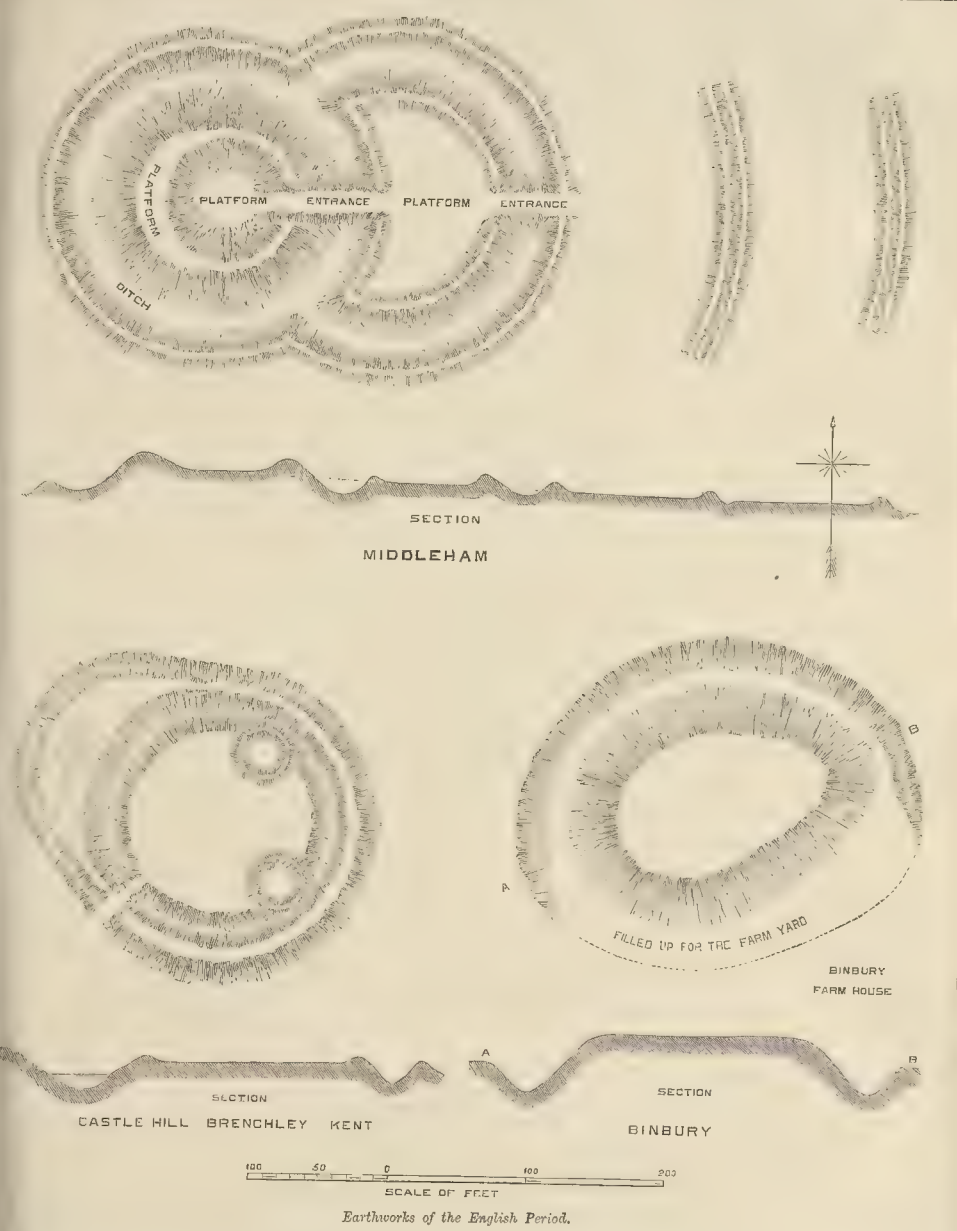
CASTLE HILL IN BRENCHLEY, COUNTY OF

In the county of Kent, the hundred and of Brenchley, about a couple of miles south of the Paddock Wood Station of the Eastern Railway, a tract of high ground terminates eastwards in a narrow ridge foot of which the Teise flows northward to join the Medway a short distance above. On the north slope of the ridge, a little to its crest and buried, most inconveniently for a visitor, in a chestnut copse, is the very interesting earthwork known as Castle Hill.

It is composed of a circular platform, diameter, about 5 ft. above the adjoining ground, and rising round its edge is a bank of about 15 ft. more. This bank creates the scarp of a circular platform, which surrounds the platform. This ditch towards the north is about 28 ft. broad and 15 ft. deep, the edge of its scarp, but on the south side, where the rising ground exposed to an attack, it expands to 100 ft., is about 10 ft. deep, and contains water. The exterior counterscarp is about 5 ft. lower than the part of this depth being also due to a high bank, from the outside of which the ditch takes its natural slope, to the north down to the south, after a little interval, up to the entrance was at the south-east quarter is indicated by a notch in the bank and a shallow of the ditch. Elsewhere, the ditch contains water and is marshy, the remarkably clean and sharp, having rather the aspect of a modern than—which it certainly is of an ancient excavation.

There are to be seen at two points within

* See p. 685, ante.



Earthworks of the English Period.

circle, but upon its edges, two small
is composed of a mound of earth about 3 ft.
containing a hollow centre about 20 ft.
ter. The entrance of each was through a
the bank, on the inner side. One of these
is on the north and one on the west side.
appear to have been wigwags or rude
ations, possibly made by modern charcoal
ers, probably by the original inhabitants of
work.
ere is no trace of masonry and no tradition
y kind of building. The name indicates a
ary origin, but the work has no history.
describes it as square, which it is not.
hinks it may have been the *Caput manoris*
ockhill and Stendmore. This it may have
and yet,—what it has much the aspect

of,—a Saxon or Early English fortified residence;
one of those houses of timber defended by a
ditch and palisade, of which they are traces all
over England, and especially in the northern and
western counties.
Hasted says there is in Brenchley parish
another ditch of great width and depth, which
once enclosed a building of great strength. He
does not indicate its site, and the Ordnance map
does not notice it.
BINBURY.
Binbury, also called Bingebury, about four
miles from Maidstone, was noticed some years
ago in the pages of the *Builder*. It is a com-
plete and very remarkable earthwork, standing
upon the high table-land of the chalk, in the

parish of Thurnham. In the Ordnance map it is
erroneously termed a barrow. It is a slightly
oblong mound about 155 ft. across from east to
west on its flat top, and 100 ft. in the opposite
direction. Its sides are steep, and it is sur-
rounded by a ditch, above the bottom of which,
at its deepest, the platform is about 35 ft. high,
and about 15 ft. above the surrounding ground.
The whole work, ditch included, measured, when
perfect, 300 ft. and 250 ft. upon its two diame-
ters; but the southern part of the ditch has
been filled up and encroached upon by an adja-
cent farmyard. The mound is wholly artificial,
very regular, and with its ditch, when complete,
it covered about an acre and a half; at present
it is thickly wooded. There are no traces of out-
works, and it is clear there has been no masonry
a

upon or about it. As the work is thrown up upon an elevated plain, where there are no natural advantages for defence, the site was probably selected as within the owner's private estate, and convenient for his lands. In this it differs materially from the camp at Thurnham, which was probably in great part the work of a tribe who lived by hunting and war, and therefore cared for an extensive view. Though in Thurnham parish, Binbury has always been an independent manor. At Domesday it probably, with Thurnham, belonged to Ralph Carbespine, the successor to Sbern Biga, who is thought by some to have resided here and contributed to its name. He was a large Kentish landowner in the reign of the Confessor, and likely enough to have had a house upon a mound of this character.

Binbury descended with Thurnham, and in the escheats of 12 Ed. II, Joan, widow of John de Northwode, was seized of the Manor of Thurnham and Binglebury.

HAWICKS.

Appended to the above descriptions, may be given one of a work, also in earth, and a conical mound, but in other respects different, and intended for a civil or judicial, rather than a military purpose. It is called *The Mote*, and is placed in the skirts of the town, on high ground, commanding a fine view of the Vale of Teviot. The tongue of land on which it stands falls rather steeply and narrows towards the north. The Mote is a truncated cone of earth, wholly artificial, circular, 300 ft. round the base, and 30 ft. high. The top is flat, and about 20 ft. in diameter, and inconveniently steep for an ascent, save where some steps have been notched in its gravelly slope. It stands entirely alone, has no ditch or outwork, and is certainly not a military or domestic station. It might be a sepulchral barrow, only such a barrow would probably have been placed on the top of the hill. Besides this, the tradition of the district, which would naturally incline rather to call it a camp or a barrow, pronounces it to be a mote,—that is, a moot or place for the holding of a court, or for the administration or promulgation of laws, or, perhaps, sometimes, for the execution of justice. These works, found in Germany, in the valleys of the Rhine and Neckar, and not unknown in England and Scotland, are probably of northern, not of British, origin.

This mote stands within enclosed land, and near it are gardens, towards the soil of which it would form a tempting addition. It is hoped that the authorities of the town will take it under their protection.

1871.

G. T. C.

PUBLIC AQUARIA.

I should like to have something to say on this important subject, which has been discussed, in a somewhat controversial manner, in the *Builder* of June 6th and 20th; in the *Field* of June 27th, July 4th and 11th, 1874; and in the *Times* of October 24th, 1872; and as I have had upwards of twenty-one years of experience in the matter, I think that a temperate and truthful statement from me should have some weight, if I write with reference to unalterable physical laws.

An aquarium, of whatever dimensions it may be, is an arrangement by means of which certain animals, marine and fresh-water, of kinds which do not breathe by lungs (lung-breathers are inadmissible in aquaria, as they, whether aquatic or not, only take up air, not from the water, but from the atmosphere direct), but which respire by gills or otherwise, and extract the air which decarbonises their blood or other circulating fluid, from the free air contained in the water, which water derives this air from the ordinary atmosphere in contact with it. The purifying process is further aided by living vegetation growing in and below the surface of the water, the plants appropriating to their own substance the carbon which the animals evolve by their breathing and other emanations; or, in other words, these plants decompose the poisonous carbonic acid gas given out from the animals, it being divided into carbon, which the vegetation employs and takes up, and into oxygen, which the animals use, and thus we set up a beautiful circle of life, animal and vegetable, one depending on the other. The water in which these reciprocities are conducted is a combination of oxygen and hydrogen, and in an absolutely pure state it has no power whatever to sustain animal life: it is only a medium for the presen-

tation to the creatures breathing in it of the air which does sustain existence so far as the vital process of the revivification of blood is concerned. Therefore as in nature we almost always find some form of animal life in water, so we also never find water in a state of nature in an absolutely pure condition: it always contains air, which the creatures in it and living below its surface, are engaged in extracting from it. Moreover, water has a much greater affinity for the oxygen which our atmosphere is composed of than it has for the nitrogen, which also, and more largely, enters into its composition; and as these two gases exist in our atmosphere in a state of mechanical mixture, and not, as water does so select and absorb it, to the advantage of the animals, which is a very wise arrangement. Now, as water is a substance which is decomposed with but great difficulty and slowness, there must be a reason for that, and the reason is that there is no change of water in nature,—no change in the sense of its being destroyed or converted into its primary elements, in any appreciable degree. In the ocean, for example, we have had the same unchanged water for ages upon ages, being kept merely flowing backwards and forwards and up and down by the forces made for that purpose. Some of it evaporates and rises, in the form of saltless aqueous vapour, or much comminuted water, in the shape of clouds, which discharge their contents on the sea or on the land, and if, when it falls on the latter as rain, the fresh water returns to the sea as rivers or brooks, and thus the ocean gets its own again. And in the same way rivers, ponds, lakes, and all other conditions of fresh water, are only changing, as far as change of place is concerned, and as far as there is a change from one to various degrees of combination with saline or other foreign matters; but there is no appreciable change into the primary, chemical, or elemental constituents of water.

These things being so in nature, it is quite possible and easy to reproduce them, as to general condition, in an artificial state. We get a tank or other receptacle; we fill it with water (sea or fresh water); we expose it to light; the light acts upon invisible germs of plants contained in the water or air, or both, and produces visible plants; we introduce animals, which, if fed, and if of right kinds, numbers, and sizes, live healthily, because of the air in the water, and because of the presence of growing vegetation. The water evaporates and becomes less, and we then restore it to its normal quantity by the addition of, if sea-water, more fresh water, as the saline parts do not evaporate. All goes on prosperously in this unchanged water, because we do what nature does, and we call the thing an aquarium. That is to say, health in the animals and clearness in the water continue so long as the amount of animal life is not in excess of the air which the water can absorb by passive surface contact, or when that surface is increased by motion, to decompose the various emanations of the animals. But if, as very often happens, there is an excess of animal life present, the water becomes turbid and unsightly, and the creatures suffer, become unhealthy, and die. One of two remedial things has then to be done: the amount of life must be lessened, or the aeration of the water must be increased in some way. It is a law that the capacity of water for absorbing air depends mainly on the extent of the surface of the water exposed to that air. Thus, if we take a cubic foot of water, and place it in a vessel measuring 12 in. in length, breadth, and height, we get a given absorbing surface, which, however, is doubled if the same bulk of water is placed in a vessel measuring 24 in. long, 12 in. broad, and 6 in. high, as the capacity of the water for sustaining animal life, as far as aeration is concerned, is increased in the same proportion, if the temperature is equal in both cases. But the most obvious mode of increasing the aeration is by adding more water, throwing away, wholly or partially, that which has been used for the animals, and which has become fouled by them. This may be performed either intermittently, as is rudely done when gold-fish are kept in a glass globe, or constantly, as when a current of good and clear water runs through a tank, whereby the air-absorbing surface is infinitely extended. But, unfortunately, we cannot always, nor, indeed, often, obtain for our aquaria water for this purpose in a sufficient quantity, and in clear and otherwise good condition. Thus, if at Brighton water were incessantly pumped into the aquarium there from the adjoining sea, so turbid as it is at or near the shore, the tanks also would be nearly always turbid that nothing could be seen in them, which may be of but small consequence in the sea, but it is much in an aquarium, where animals cannot leave the inconveniences to which they are put. And if at the Crystal Palace a stream of the best fresh water there obtainable (that from Lambeth Waterworks) be permitted to run through an experimental tank recently made and containing fresh water fish and other animals, they would be, and are, quickly killed by being poisoned with that water, and, in addition, there is the great expense of treatment, and also its turbliness in some weather as after heavy rains. We, however, remember that water which has been rendered unfit for use by the presence of decaying organic matters, only temporarily poisoned, and that if it is exposed to air, these organic matters become dissipated, and the water is rendered pure. This is the case, as we all know, with Thames water in ships' drinking-water casks at sea. Thus the sea-water at the Crystal Palace obtained four years ago at Brighton, was first discoloured and foul, and in every way unfit for animals to live in it, but, by keeping, has become pure and clear, as it is now so constantly running into the tanks in streams which are bright, sparkling, and cold,—so freshly cool and healthy for the animals, that in summer the temperature of the water on very hot days is so much as thirty degrees of Fahrenheit below that of the maximum true temperature of the external air when local influences are eliminated; thus presenting to the creatures a temperature the same as that which they find in the sea at such periods,* And in like manner the Lambeth fresh water, in course of time, comes fit for animal respiration. Therefore in an aquarium, we have a sufficient bulk of such purified water in store in a great reservoir we can draw on it cheaply and constantly for show-tanks, and let it run back again from tank to tank, and finally into the reservoir, without any deterioration whatever, as it is oxygenated every step of its progress. The water cannot be poisoned, as has been stated, "so that the poisoning of one tank would affect the whole of water in the other tanks," because there is inorganic poison present, and any organic poison is neutralised as fast or faster than it forms, so that the fluid is as good as at the end of a long circuit as at the beginning. It is evident that the larger is the capacity of the reservoir, the more in quantity is the water we have to work with, and the better the animals are; in the reservoir, if large enough, and if drawn upon quickly enough, so completely counterbalances all tendencies to turbidity and unhealthiness in the show-tanks, that the water never even requires filtering.

By these means we multiply the quantity of water to any extent, which is limited only the dimensions of the reservoir; and, so long as the water is maintained in a certain condition of temperature and aeration, we correspondingly increase the chances of health of the animals. Then the mode in which the water is injected into the tanks is important, as some of it is thrown in—in the form of a fine and forcible which carries air into the water so minutely divided that excessively small and slowly-rising bubbles permeate every part of every tank, and the surface of water exposed to air is thereby enormously increased. The fluid is thus kept saturated, so to speak, with air by the arrangement of minute division to create contact and absorbing surfaces that nature employs in the construction of the lungs of gills of animals, and every particle of decomposing organic matter (animal and vegetable) is by these means taken up without any manual cleaning being necessary, and quickly rendered harmless, the result being regulated by the speed of the machinery.†

* July 9th, 1874.	
Maximum external air in shade at Greenwich and Sydenham	52° F.
Maximum air in shade interior of Crystal Palace (mean of six situations)	54°
Maximum in shade, interior of Crystal Palace aquarium	77°
Maximum in water of Crystal Palace aquarium (all tanks)	61°

† Thus, on a sudden accession of organic matter, the speed of the circulating apparatus may have to be regulated so that the greater part of water in the system is in a state of the utmost effervescence, millions of minute air-bubbles being formed in the every instant. For example, from ten to fifty cart-loads may be brought as food for the codfish, and

water in an aquarium has thus a defined limit of bulk, and, being indestructible, it need not be changed; we have need only to change or renew the air in it, by bringing the water into sufficient contact with our limitless and inexhaustible atmospheric air, just as when a closed room has its air vitiated by the breathing of human and other lunged animals in it, we change that bad air, or dilute it with good air, by opening windows or doors, or by other means of ventilation, and thus we bring the deteriorated and limited atmosphere within the room into active contact with the boundless and healthy atmosphere without it, which atmosphere is assisted in its purity by the persistence of terrestrial vegetation growing nearly everywhere. This necessary ventilating operation, so familiar to all of us, is precisely analogous to what is done in an aquarium on the circulatory principle, and it is not in one on the non-circulatory system. Most of us, however, are not familiar with aquaria, and hence we make expensive errors, as at Brighton.

There is another thing. Water, and especially sea-water, into which light is admitted, has a strong tendency to cause the growth of vegetation in it, and if the light be long continued the water becomes darkly and opaquely green from the presence of innumerable microscopic, locomotive, ciliated spores, or seeds, of vegetation, each of about 1-2,000th of an inch in diameter. The only known mode of obviating this very real difficulty is by placing the water, or some of it, in the dark, thus reversing results by covering conditions. Messrs. Negretti & Zambra, of the Crystal Palace, have just published a remarkable photograph illustrating this principle. Therefore, in an aquarium where there is a sufficiently large dark reservoir, this very serious evil is never felt as it has been felt at Brighton and elsewhere, because the water is incessantly passing into darkness, and the spores are thereby induced from visibly accumulating. This system is hence termed the circulating system, and no other one for aquaria is known.

At the Brighton aquarium there are none of these refinements, though it is fair to say that they were at first attempted to be there carried out, but they were abandoned from want of experience as to their necessity. When new sea-water is required in any of the show-tanks at Brighton, it is pumped from the sea into some reservoirs, and is there left to settle; but it is reported that the reservoirs leak badly, and so the water cannot remain there long. Then it is pumped into the show-tanks in quantities varying as to their apparent necessity, and left to settle again. Or it is pumped direct from the sea into the tanks without the intervention of any reservoirs. As such of the turbidness of the water is

due to some other fish, and to last them three or four days alive to the extent of the shrimps may be desired, and the reservoirs are in a more or less strong condition, according to weather and other circumstances, it is impossible to spare so much time as would be required for a small pick-up tank, and the living and therefore the whole are thrown into one of the private reserve tanks, which forms the highest point of a series of six to a dozen or more of similar tanks, descending one to another like steps. The dead shrimps at once fall down to the bottom of the first tank, and there remain till removed, while the living ones swim out with a stream at the overflow into the next tank, and from that to the following one, and so on in succession to the last or lowest tank, where they are finally arrested, and it is found that the strongest have swum furthest, and that the intermediate tanks contain shrimps in various stages of strength. But this process of "natural selection," and "the survival of the fittest," of the shrimps, takes place usually all night; and during this period, if the oxygenation of the water were not increased by increasing the speed of the machinery to meet the demand thrown on the water, or rather upon the free air in it, by the fact that so many rapidly decomposing organisms as these which usually die, the whole of the water in the establishment would be made turbid and unhealthy. It is the same with the crabs which are obtained as food for the catfish, *Cat. Fel. con. d. d.*, which they demand to be given them alive and well. Several pecks of such crabs have to be kept and fed in the reserve tanks, to be finally taken out and used as food over a period of two weeks, and again the speed of the circulation is added to meet their varying requirements, in addition to those of the show inhabitants of the aquarium seen in public. It is the same with the oysters, large quantities of which are sometimes preserved alive in the reserve tanks till the moment they are cut up and used, when they are so used their flesh gives a milkiness to the water at the place where it is dropped, but which is immediately diffused and got rid of by the rapidly-entering means of water and air. So too it is with the vegetable matter which is kept in these reserve tanks in considerable quantities for some animals. It is necessary to keep all fish food, whether animal or vegetable, in a perfectly healthy condition till it is required to be eaten, by the introduction of air to the water containing the food, and in a degree varying with the varying amount of such food. But this cannot be done efficiently in aquaria where there are no streams of water, or where aeration is employed to be performed by the entrance of air-bubbles, as at Brighton.

due to carbonate of lime in suspension, washed from the adjoining chalky cliffs, the water is further cleared by the introduction of oysters, and these, being very hardy, live, in spite of adverse conditions, and give out much carbonic acid gas which by its excess converts the carbonate into a bicarbonate. But after these oysters have thus done serviceable work, they immediately begin to undo it, by again converting the bicarbonate into a carbonate. Such small mechanical aeration or extension of absorbing surface that the water in the Brighton tanks receives, is given to it on an old and exploded system invented twenty years ago by the late Dr. R. Ball, of Dublin, by a stream of air driven by a fan urged by a steam-engine, the air-pipes being passed through the water, and opening near the base of the tanks. The air then passes up through the water in large bubbles, and rapidly; but the great excess of such bubbles exposes but a very small relative surface of water to the air they contain, while the quickness with which they rise (in consequence of their large size) does not give them time, in the larger tanks especially, to aërate much more than the column of water they pass through. This certainly is motion, but it is such a disadvantageous form of motion as to be worth next to nothing, and it indeed is a very wasteful expenditure of the power which might be far better employed in pumping water instead of air, and in so gaining all the advantages of the circulatory system. There is, in fact, no continuous circulation at all: it is only a partial agitation or oscillation, and it would be more advantageous if the motive power were employed even in turning a small paddle-wheel, or, still better, a partially-immersed screw, in every tank, as then there would be something more like a thorough circulation, and a presentation of successive surfaces to air; yet, even then, the great benefits of the more perfect system, with its large water volume, would not be gained, and especially there would be no counteraction to the tendency to excessive vegetation. The only shadow of a shade of an advantage said to be gained by the Brighton system is, that when a large number of eggs of minute size are extruded by any animal, and when these eggs or the young creatures hatched from them are washed down into the dark reservoir, as of the Crystal Palace aquarium, by the currents of water, they are there lost to observation. But when, as in the case of codfish, lobsters, crabs, and many other forms of marine animal life, the young ones or the eggs they come from are very small and very numerous, in comparison with the dimensions of the parents, they are never reared in any aquarium, but all speedily die, probably from want of sufficient and proper food; so that it is of no great consequence whether they die in the show-tanks or in the reservoir, but if it be desired to watch their progress for a time, a little mechanical arrangement will enable such eggs or young creatures to be arrested from entering the reservoir without arresting the current. This was recently done when some codfish spawned in the Crystal Palace aquarium.

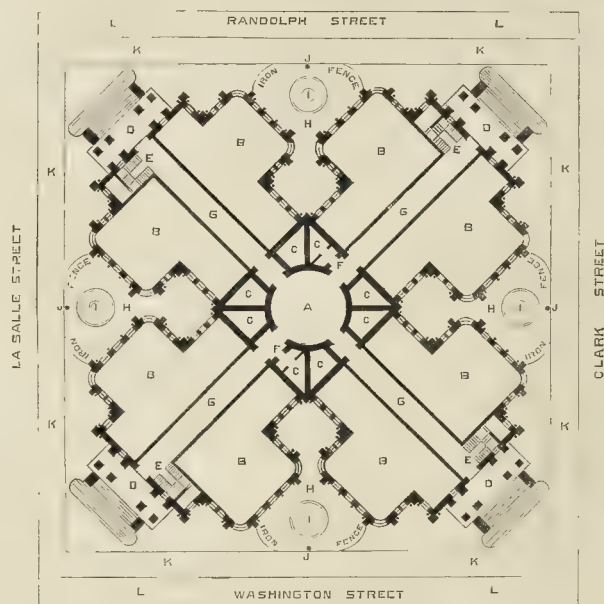
The water circulation at the Crystal Palace is incessant, day and night, the machinery, boilers, engines, and pumps being all in duplicate, so that one set may be in readiness in case of the accidental stoppage of the other set. Once a year, however, there is a stoppage of six hours' duration to clean a flue, and the time for doing this is carefully chosen in reference to cool weather, and good condition of the collection. During these few hours all the assistants anxiously watch the tanks, and agitate and aerate the water in them wherever animals begin to be distressed, as some are sure to be.

By way of depreciating this circulating system, it has been foolishly asked:—Where in nature do we find sea-water or fresh water lifted up by pumps and pipes, and then by other pipes discharged into tanks, and from them to run away to be again so circulated? The answer to this is that in the sea the water is being continually dashed against the rocks or lifted into waves by winds and streams, and that it is driven downwards in its fall so as to carry a great quantity of air with it, and that this operation is very closely and successfully represented by the system now advocated. But of course it is not necessary or possible to copy the operations of nature by the use of the same prime motor. We in such things never should endeavour to imitate, but only try to represent the application of the same general principles.

Thus at Brighton the general plan is that of allowing an evil to accumulate, and to endeavour

to remove it periodically, wholly or in part; while the better system obviously is that which continuously prevents the evil from being accumulated at all, as at the Crystal Palace. Speaking for myself, I have never seen all, or nearly all, the tanks at Brighton in a clear state at any one period, though I have visited the place many times. The only clear tanks have been those where there were, in my opinion, but a very small proportion of animals compared with the amount of water in which they were kept, and in comparison with the expense of construction.

It would be very difficult for any outsider to ascertain the accurate death-rate of the various kinds of animals in the Brighton establishment, and that being the case it would be unjust to merely assume it is large, even with the knowledge of the great ease with which deaths can be concealed, and fishes and other creatures quickly re-supplied from the sea near at hand, that method being possibly resorted to. It must also, in fairness, be admitted that there exist there copious growths of fixed animals, as sponges and some of the molluscs, as *Ascidia* and *Botryllus*, which come in a quasi-spontaneous manner there and in many other inefficiently aerated aquaria. But these sedentary animals are alone no test: and with them in an efficient aquarium should be associated the echinodermata and the creatures above them breathing by gills, and these latter are, in proportion to the water space, lamentably deficient, as to number and variety, at Brighton. It has been said that sea-water which is long used unchanged in inland places becomes "stale," and is deprived of nutriment for the animals which in the sea it contains in suspension, and that when, as at Brighton and other seaside aquaria, new sea-water can be occasionally pumped into the tanks direct from the sea, it is advantageous to do so, even at some sacrifice of the clearness of the water. This reasoning, however, only seems plausible, and it is in reality only an endeavour to make a virtue out of a necessity, arising from a mistake in adopting an erroneous mode of operation. If the vague word "stale" means that water containing a certain proportion of living plants and animals can become deteriorated if it be sufficiently oxygenated,—then that is impossible, no matter how long it may be used unchanged. And as to the supposed deprivation of floating food, that is also impossible, because it is continually, everywhere,—in all places at the sea and inland,—making its appearance in every aquarium in the form of innumerable multitudes of microscopic living organisms, animal and vegetable, on which some of the creatures feed. It is true that in some seas where the water is very pure and clear, and contains suspended food desirable for the animals in an adjoining aquarium, such food might, with proper precautions, be conveniently obtained for the aquarium by pumping it up into the tanks; but I have repeatedly examined turbid water from the Brighton tanks, and have found that the turbidness was due to the presence of sewage-matter and chalk, which of course no animal consumes. Certainly, if such water is not too much overcharged with such substances, it might, if cool, and if briskly pumped into the comparatively stagnant Brighton tanks, revivify the animals when they are partially exhausted by being kept on the non-circulatory system, and even this shows how valueless that system is. When in the Brighton aquarium the eggs of salmon and trout are successfully hatched-out, they are placed in a small apparatus made on the circulatory system with the water running from one trough to another, and thus is adopted in a contradictory manner the plan so much and so unreasonably objected to for other objects. This clearly shows that if the entire place could be easily and inexpensively changed into the circulatory system, the latter would be chosen. But, as it is, an error has been made in the original construction, and now this is sought to be made the best of, by saying that the wrong way is better than the right one. And this is the final upshot of the whole matter: the general biological results are so inconsiderable in proportion to the size of the place and its money cost, of construction and of maintenance, that any one having more special experience might have got twice the present Brighton biological results out of half the Brighton expenditure of about 100,000*l.* The poorness of outcome is because the place was not devised and carried out by a naturalist having sufficient acquaintance with physical laws to secure "the greatest happiness of the greatest number" of animals at the smallest cost, so as to earn the



PROPOSED COURT HOUSE AND CITY HALL, CHICAGO.—Block Plan.

- | | | | |
|------------------------|--------------------------|---------------|---|
| A. Rotunda. | D. Portico and entrance. | G. Corridors. | J. Drinking-fountains. |
| B. Offices. | E. Staircases. | H. Parks. | K. Side-walks. |
| C. Vaults around dome. | F. Elevators. | I. Fountains. | L. Proposed back-stands on Randolph and Washington streets. |

greatest money result for the shareholders. These two dozen last words,—seven by Malthus and seventeen by me,—really express in the smallest space the objects of such an institution, or any other aquarium intended to be commercially successful. Many public aquaria are now being erected, or are in contemplation, in various parts of the world; but not one imitates the Brighton system, save in the one begun to be made at Scarborough, where naturally the proportionate ends attained must also be insignificant, of course always remembering the money cost. It would be impossible, or very difficult at a paying rate, I am sure, for the Brighton aquarium to exist inland, as the system is so defective, because, as explained, it lacks independence from external sources of disturbance. To satisfy me, an entire modification of its construction would be necessary. In such a thing as an aquarium, the best system is the best anywhere, whether near the sea or not. The value, indeed, of having a marine aquarium by the seaside is the saving of the cost of carriage of some of the animals; the saving of some risk to their lives and health in such transit when it is long; and the saving of the expense of the first supply of seawater, which supply, once obtained, should be used incessantly without change, only the air in it being changed. One hundred thousand gallons of seawater delivered at Birmingham would cost about 700l. or 800l. It is of no matter what the dimensions are of an aquarium. Size, indeed, does not alter principles, and no scientific man would take advantage of mere amplification as being a benefit or a deterioration to a thing, without carefully giving his reasons why.

This discussion is no new thing, and when the matter was some years ago referred to the opinion of the late great chemist and physicist, Baron Justus von Liebig, he gave judgment on it in a written document which has just been reproduced in facsimile by Mr. E. J. Francis by his photo-chromolith process; and I shall be glad to send gratuitously one of the hundred copies I possess, to any one who is interested in this matter, involving, as it does, in these days of numerous public aquaria, applications of the principles which regulate the right or wrong expenditure of very many thousands of pounds of money. The question is not whether so-and-so has been done, somehow, and with a large sum

of money, but it is whether it has been done as scientifically and economically as it might be effected in reference to cost of making and maintenance. The outside general public have so little natural-history knowledge, that they and others who have to provide the money for such things cannot judge of this unaided.

Since the foregoing was written, there has appeared, on July 11th, 1874, in the weekly newspaper, *Land and Water*, which may be accepted as the avowed London organ of the Brighton aquarium, an account of some recently diseased fish in the Round Pond, Kensington Gardens, London, in which the mischief is attributed to the almost entire cessation of a stream caused by the stoppage of a pipe, and by inference, to the high temperature of the water, which it acquired in consequence of the cessation of the current; and it is added that when the stream was set flowing, and the pond was thus brought by it into contact with a greater mass of cool fluid somewhere else, the temperature of the whole was much lowered, and this stream, thus giving oxygen and clearing away the decomposing organic matter which the pond contained, caused the fish to be immediately better. It is also stated that the instinct of the fish so led them to know what they needed that they actually crowded in dense masses around the mouth of the submerged pipe from whence proceeded only a small trickle of water, and that they even got into the pipe to gain all the good possible from the running water.

Crystal Palace.

W. A. LELOYD.

PROPOSED CITY HALL, CHICAGO.

ANOTHER destructive fire has brought Chicago again under notice. But if they burn down there they also build up. The amount of building that has been done there within the last two years is almost past belief, and new buildings are still everywhere in progress. In 1873 designs for a new court-house and city hall were submitted in competition, and we were led to illustrate one of them as the most approved design, which in reality was not so. The design actually selected for execution we illustrate in our present number. It was designed by Mr. Thomas Tilley, architect.

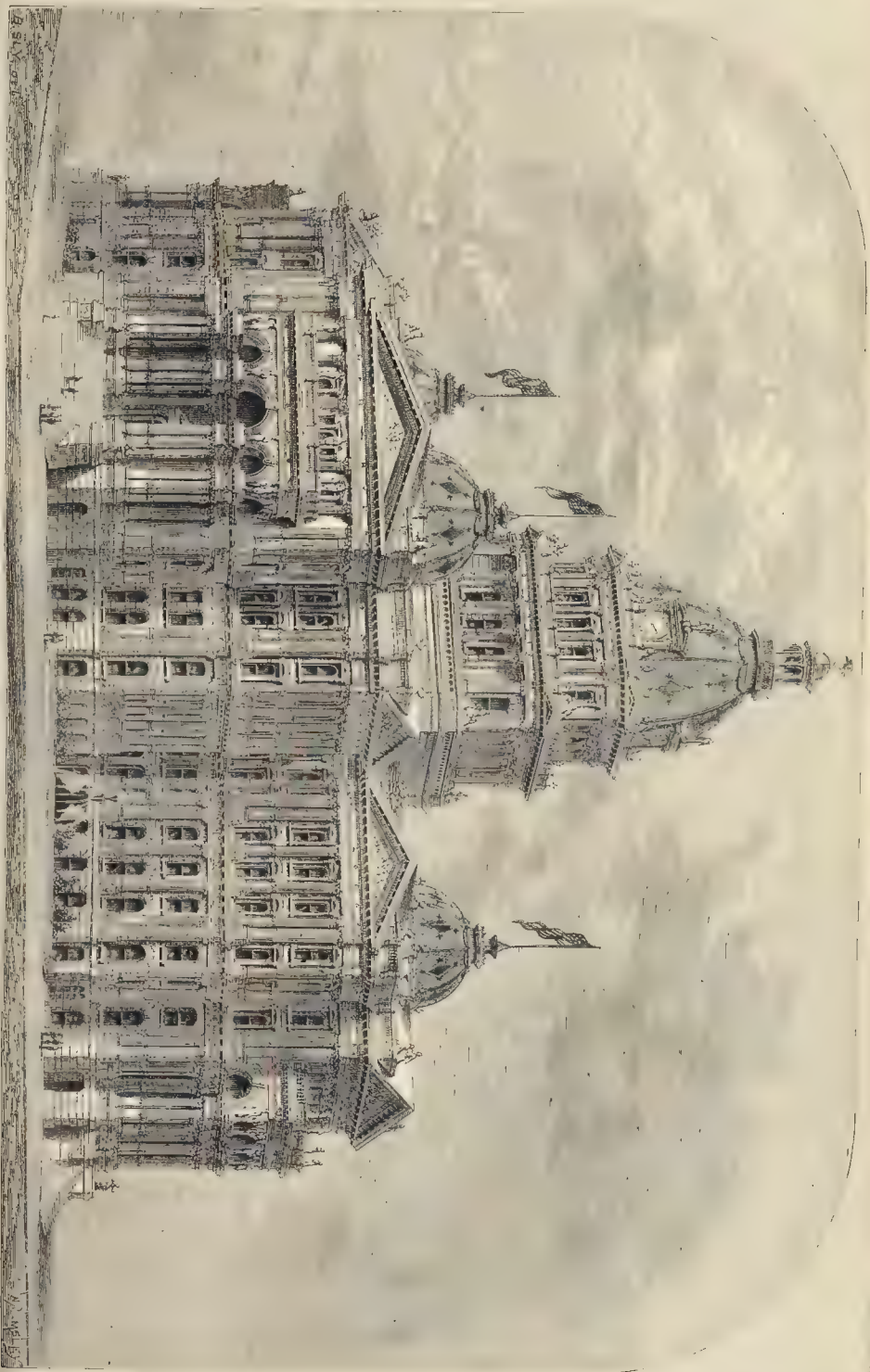
Mr. Tilley designates the form presented by

his plan as that of a "Compound Greek Cross." The whole square, bounded by Randolph-street on the north, Washington-street on the south, La Salle-street on the west, and Clark-street on the east, will be occupied, the wings being at right angles from each arm of the figure. In the elevation two orders of architecture are treated—from basement to second story, the Roman Doric, and above the Composite. The columns in each case are two stories in height, with fitting cornices.

Ornamentation in the form of statues in bas-relief is placed upon the corners. The entrances are four in number, situated at each corner. Massive steps lead to each entrance, terminating in a portico sustained by sixteen columns of the composite order. A hall-way leads directly to the great rotunda, which is a feature in the plan. The crown of the dome will be 275 ft. from the ground, and an unbroken view can be had from the rotunda. In the dome will be an illuminated clock, and crowning the dome will be the watch-tower and fire-bell, in a position to be useful in the whole city. Upon each wing will be placed a smaller dome of iron, to relieve the sameness which would otherwise be noticeable. The public hall will be in the third story, and 64 ft. by 150 ft. in size, surmounted with a wide gallery. The shape and size of the building preclude the possibility of a courtyard, and light is given to the various offices, halls, corridors, and rooms by the diagonal form of the building. The vaults are ranged around the rotunda, and are easily accessible. The details of the building are carefully elaborated. The architect recommends the use of limestone, sandstone, iron, and such other materials as are fireproof.

Mr. Tilley furnished the committee with the following estimate of cost. —

	Dollars.
Masons' work	763,741
Cut stone	938,973
Ironwork	673,866
Carpenters' work	168,784
Plumbing and gasfitting	57,304
Heating and elevators	87,304
Plate-glass	71,340
Freestone and painting	37,800
Tiling	43,794
Marble work	15,470
Statuary and decorations	33,153
Prismatic lights	3,750
Lightning-rods	4,100
Total	2,909,629



PROPOSED COURT HOUSE AND CITY HALL, CHICAGO.—DESIGNED BY MR. THOMAS TILLEY. A. B. W. 1874.

PROGRESS OF THE LIVERPOOL DOCK EXTENSIONS.

MUCH progress has already been made in carrying out the great scheme of dock extension at Liverpool, projected by Mr. G. F. Lister, the dock engineer, the principal features of which have already been described in the *Builder*. The new docks already begun are those to be devoted to the accommodation of the steam trade. They are to be made in the space reclaimed from the re-shore of the Mersey, between the north quay of the Canada Basin and the Seaforth shore. The area of this space is about 1,365,000 square yards, the length being about 6,200 ft., and the breadth 2,000 ft. At the front of this tract of land, and parallel with the river, a wall of enormous strength has been built, faced with granite. The back will be formed a roadway or promenade, which may become one of the attractions of the town, and will certainly be of advantage to the inhabitants of the surrounding neighbourhood, which is thickly populated. A large portion of the area thus inclosed is now being laid up; and, to prevent the encroachment of the sea, a wall has been built from Primrose Bridge to the river wall, a distance of nearly 200 ft. The foundations have been laid at the extreme westerly point of this wall, where it meets the river frontage, for a strong battery, to be constructed by the Government for the defence of the port.

The aim of the engineer has been to retain undisturbed, as far as possible, the existing arrangements and appropriation of the adjoining docks, while providing for largely increased dock and shed accommodation for steamers of unusually large size. The width of the entrance to the Canada Basin from the river is accordingly increased from 250 ft. to 400 ft. The area of the basin will be enlarged from seven acres to seven acres, and form one of the principal entrances of the new docks. There will be other very wide entrances in the new north dock wall. The basin is to be excavated to a great depth, and the sill will be laid much deeper than anything hitherto constructed on the Liverpool side of the Mersey; thus giving a depth of water at the highest state of the lowest tides during the year sufficient for the entrance of the largest steamers into the new docks, and obviating the necessity for their being loaded and unloaded in the river. In connection with this Canada Basin there will be a half-tide dock, covering an area of twenty acres, and having an aggregate quayage of 3,070 lineal feet. Northward of this will be the system of docks intended for the steam trade. The main portion of the dock, which will extend in a northerly direction, parallel with the river, will be 1,500 ft. long, by 500 ft. wide, forming three branches extending eastward, of total length of 1,400 ft. and a width of 300 ft. The total area of the system will be 43½ acres, and the total quayage 10,870 lineal feet. In order to expedite the overhauling and repairs of a new system of hydraulic docks, invented by Mr. James Clarke, C.E., has been adopted. These docks are to be 500 ft. long, and capable of receiving and raising the largest steamers. The north-western extremity of this dock will be formed, leading into the lateral dock, which will extend for 1,600 ft. in an easterly direction by a width of 500 ft. towards the north. The area of this dock will be eighteen acres, and its gross quayage 3,850 lineal feet. The engineer has also planned two floating docks on the eastern side of the half-tide basin, each 900 ft. in length. Adjoining these will be another dock for repairing, 820 ft. long, and 140 ft. wide.

These works, although they have only been a short time in hand, are already of a most interesting character, and indicate the great magnitude of the undertaking in hand.

WORK TO BE DONE AT ST. PAUL'S.

—The models and sketches produced by Mr. Burges for the illustration of his scheme to decorate St. Paul's Cathedral in the style of the Italian Renaissance School of the sixteenth century, and his proposed *modus operandi*, bear to me to be conclusive proofs that a plan in accordance with the conditions under which the work has been undertaken cannot be varied. I believe that neither Mr. Burges nor one of the many distinguished artists who are reported as having been requested to assist, can predict whether their united efforts, or his guidance will produce that harmony

of decoration which it must be admitted is essential, or whether each of their efforts will bear the stamp of individual workmanship, thereby rendering the whole nothing less than a series of disjointed decorative or pictorial works.

Mr. Burges's models must be accepted, of course, as an indication of his general scheme of decoration, and the analogy drawn by one of his supporters between his sketches and the rough draft of an important document is happy. A rough draft, although it may contain condensed and even abrupt expressions of thought, is or ought to be grammatical, and the abbreviations employed are of a sensible character. A variety of ideas may be expressed, and the whole draft contains indications of the principal points which, when enlarged and perfected, are fitted together to make up the final work.

I now propose to give a few notes upon the condensed or abrupt expressions of thought, and upon the indications of principal points which Mr. Burges has submitted to public criticism in his scheme for the decoration of St. Paul's, said to be in accordance with a well-defined style of decorative art. In proposing to employ various kinds of material and methods, such as mosaic, marble veneers, stained glass, modelling in plaster, gilding and paint, Mr. Burges does no more than a writer who indicates in his rough draft that his methods of expressing his ideas will be varied. I pass, therefore, to the quality and coherency of the thoughts. The proposed veneering with marble of the stonework has been forcibly and justly inveighed against. Italian decorators of the sixteenth century only used such veneers for rough brick surfaces, which were from the beginning of their work designed to be covered in such a manner. They did not veneer honest stonework. In his sketch-model Mr. Burges repeats the same design of arabesque or ornament for those panels, spandrels, spaces, &c., which are of the same dimensions. The sixteenth-century Italian decorators delighted in varying their details. Mr. Burges does not even give a hint that he proposes variety. A gold-moulded ornament of a definite character,—not an abbreviation of some more intricate and ingenious work,—holds a prominent position as border to the dado of the east end and adjoining walls. The sides of the large column which support the arches of the choir are each cut up into two panels. The upper panel is the largest. Then comes a feature of the main walls, and below is a panel of geometrical mosaic-work. Thus it will be noted that the gold ornament passing above the dado, and being introduced into the columns, brings the columns and walls into a unity. But the columns are important structural features, distinct from the walls altogether. They should be emphasised as such, and any ornament to be applied to them should assist their meaning as supports. The panelling treatment, if adopted, should be in one piece from the capital to the plinth. A good opportunity would be presented for painting fine flowing arabesques, such as an Italian Renaissance artist would have executed. To cut up the surface of the columns as suggested does not accord with the known principles of the best decorative artists of the sixteenth century. In regard to the spandrels of the arches above the north and south windows a great opportunity for using sixteenth-century suggestions will be lost if the geometrically diapered gold ground be adhered to. The roundels in the centre of the spaces lack the characteristic mouldings which a sixteenth-century decorator would have imparted to them. Above the spandrels come panels of figures illustrative of Biblical subjects, which, if adopted, will require good broad designing to make them decorative, effective, and according to sixteenth-century ideas. The panels suggested are at present remarkable for their harsh brilliancy of colour.

Raffaello, Michelangelo, Giovanni da Udine, Polidoro da Caravaggio, and their brethren, will turn in their graves if Mr. Burges's bulky carapace of flowers and fruits, his red-gold Cupids, and his escutcheons, hybrid in character, and seemingly derived from a *melange* of Louis XVI.'s style, and rollicking ornaments of Queen Anne's period, are permitted to be classed as decorations belonging to their period of Italian art!

Opus scille is well adapted for a mosaic pavement after a Renaissance design. Surely, however, the suggested pavement for the apse of the choir is of an early Romanesque style.

The other portions of the proposed pavement appear to belong to the *opus vermiculatum* class; but their indications are not very clear. Decorators of the best period of the Italian Renaissance did not use gilding as though it were whitewash. Yet what is one of the first comments of the casual visitor who inspects Mr. Burges's models? "Gill-gingerbread!" or "What a tremendous amount of gilding!" It seems obvious therefore that the decorations suggested by Mr. Burges represent a mixture of periods, and so fail to comply with the conditions under which it is understood he agreed to work. Mr. Burges has, I believe, given more attention to Mediaeval art than to other styles, hence the reason for his showing himself to be a tyro in the use of Renaissance art. He does not appear to be confident in his own judgment as to details, for one of his admiring critics has told us that he (Mr. Burges) found it advisable to confer with certain gentlemen of "that peculiar rank in the artistic hierarchy which made it possible for him profitably to consult them at the 'rough stage,' as he could not have done R.A.s." Here is a very weak point in Mr. Burges's scheme. There seems to be no atelier of students at his command to which he could communicate his general ideas. If such existed Mr. Burges would then have the means of being a master-mind to direct the work of the students or employes and the whole would at least bear the stamp of one style of art, whatever it might be.

Michelangelo's decorations of the Sistine Chapel bear the stamp of having emanated from one source, though he was undoubtedly assisted by workmen whom he had trained or whose inclinations he could control. Raffaello's cartoons give us another instance of a series of great works executed by a number of persons completely under the directing influence of the one originating general. In the absence of an atelier of trained students or workmen, what is Mr. Burges to do after his consultation with the gentlemen of the "peculiar rank in the artistic hierarchy"? Not being a strict disciple of the Italian Renaissance masters, not being professionally a decorative artist, and not feeling himself to be one, he has recommended the Committee for the decoration of St. Paul's to offer commissions to leading Royal Academicians for the execution of certain details. Mr. Burges's position as an accomplished architect of the Mediaeval school is unquestioned, but has he made a supreme position from which he may, like a Von Moltke, with a consummate knowledge and skill, direct the operations of artists holding high artistic positions? The leading Royal Academicians who may undertake to assist in the work, each has his own style. How can Mr. Burges, possessing an imperfect knowledge of the style required, infuse into the varying works of those artists a harmony of style? The task is impossible. The artists themselves are not specially known as followers of the Italian Renaissance school. Is the Lunette exhibited in the Royal Academy a specimen of Royal Academical decorative art?

The decoration of St. Paul's Cathedral as at present contemplated would be a gigantic and direful monument of British nineteenth-century inaptness and ignorance in the practice of a beautiful and well-defined style of Italian art.

A revival of Italian Renaissance art at the South Kensington Museum has been commended by the *cognoscenti* in such matters. It would seem to be a waste of national resources if the experience gained by this revival be not utilised.

Three questions arise—will the Committee of St. Paul's decoration send Mr. Burges and a class of students to Italy to study Italian Renaissance, and so form themselves into the required atelier of competent artists? will the Committee invite new designs from decorative artists who are versed in the practices of the Italian Renaissance school? or will the Committee instruct Mr. Burges to avail himself of the South Kensington experience, and then submit a new scheme for decorating St. Paul's? A.

Olney Church.—The thorough restoration of this church has been decided upon. Several efforts have been made at various times to erect in Olney some fitting memorial of the poet Cowper, but they have all proved unsuccessful. The present project, however, is likely to secure the sympathy and support of a large number of all denominations. The church "where Newton preached and Cowper sang" is well worthy of careful preservation.

THE PROPOSED NEW CITY FRUIT AND VEGETABLE MARKET.

SIR,—Some time since the Markets Improvement Committee advertised for designs for a fruit and vegetable market, and received in reply some twenty-four designs, and, as in the competition for the dead-meat market I had been successful, I thought to try my fortune again.

For the information of those who do not know the site, I would say that the present Farringdon Market stands on the side of a hill, with Shoe-lane on its highest level and Farringdon-street at its lowest, the difference in gradient between the two being 18 ft. 6 in.

The particulars furnished to competitors were very meagre: they told little, and, I may say, gave no information beyond the fact, that a market for fruit and vegetables was required, and the present site was the spot on which it was to be built; from which it might be inferred that the committee had no definite idea of the form the market should take, and so invited the architectural world to ransack its brains, or, in other words, men were invited to give the result of their experience, draw upon their own wit, and embody the whole in architectural drawing.

Now, I was one of those who supposed that he who most economised the site, showed the fullest extent of its utilisation, and made with an attractive design, would carry off the blue ribbon; but in that I was mistaken, as the following extracts from the public papers will show.

The design placed first contemplates cutting down the side of the hill, roofing over the excavated space, and having one market only, although it would be buried, and necessarily badly ventilated, surrounded as the site is by high buildings. The Shoe-lane side, however, is open, and the conclusion that most people would arrive at is, that, as light, air, and ventilation could be that way obtained, it should so be; but, singular to relate, this is to be built on. The sanitary effect is obvious.

Every market of importance in this country and on the Continent is placed in a public way that traffic may flow through it, and trade follow in its train; but this is to be a departure from the ordinary rule, and is to be "run to earth."

At a meeting of the Common Council (*vide City Press*), Mr. Deputy Fry, a member of the committee, asked Mr. Rudkin, the chairman, "Whether the court was to be committed to the principle involved in the 300l. premium design?"

Mr. Deputy Fry maintained that it would be inconsistent to give 300l. for a design which involved one distinctive principle, as being the best approved, and to build a market on the very opposite. If they carried out the plan of "Estelle," they would build in a hole, and it would not be appreciated. With two such frontages as they had in Farringdon-street, and in Shoe-lane they ought to be able to make a market that would draw.

Again, on Monday, June 30th (*vide the Times*), Mr. Deputy Fry contended that if the market was built on the low-level it would be simply burying it, and thus repeating the existing failure.

Mr. Rudkin, the chairman, replying to an observation by Mr. Deputy Fry, said the upper market would be reached from the Shoe-lane side of Farringdon-street; Stonecutter-street, *i.e.*, the present connecting way between Farringdon-street and Shoe-lane, being abolished and built over; but the design placed first has no upper market. Mine, however, which has been placed third, has an upper and lower market,—an arrangement which the configuration of the site naturally suggests, and of which examples are not wanting. See Aberdeen, Brussels, &c.

My object in writing is contention for position; for, although I am beaten, I feel not to have been fairly defeated, and as I charge "Estelle" with not having solved the problem satisfactorily,* I ask him to publish his design, and I will publish mine, in the professional papers: we shall then have the advantage of professional judgment, and each design will be relegated to its right status. T. E. KNIGHTLEY.

* Which sentiment is largely shared by many members of the court, as evidenced by Mr. Lawley's motion on the Agenda paper for Thursday, the 18th of July, and which runs as follows:—"It be referred to the Markets Committee to consult the architect, or take other professional advice, as to the desirability of erecting a high and low level market [which is the distinctive feature of my design] on the site of the present Farringdon Market, reporting forthwith to the court."

EASTBOURNE CONVALESCENT HOSPITAL CHAPEL.

THE new chapel which has recently been added to the All Saints' Convalescent Hospital, at Eastbourne, chiefly through the generous liberality of two donors whose names the treasures are not at liberty to disclose, has been consecrated by the Visitor, the Bishop of Chichester.

The architect is Mr. Woodyer, of Graftham. The building is connected with the main edifice by covered passages, and is of the same materials and of corresponding architectural style as the hospital itself. It is in length 111 ft.; in width, 31 ft. 6 in.; and in height, 32 ft. 6 in., and is intended to accommodate 300 patients, inmates, and officials. There are also smaller aisles, to receive a limited number of visitors. Internally the building is divided into eight bays and an apse, by moulded and clustered stone columns, the centre shafts of which carry the principals of the roof, whilst from the side-shafts spring arches, on which the moulded roof-plates rest. The polygonal apse and the two bays next to it are ceiled with wooden groining, which has been painted and gilt in foliage, with the heads of the Apostles in the several groined spaces. The walls internally are built of coloured brickwork, with bands of blue forest stone, stone tiles, &c., the easternmost bay of the apse being filled with stone tabernacle work, both as to the jambs and mullions of the windows. In the western bay is built a screen-gallery of oak, for the private use of the Sisters of Mercy, who superintend the hospital, and whose property it is. This is approached by a stone staircase in the eastern porch, and is carried by Devonshire marble columns. The same material is used for the steps, &c., at the east end of the chapel. A small transept building on the north side of the chapel contains the organ. The three eastern windows are filled with stained glass, by Messrs. Hardman, of Birmingham, as a memorial of the founder of the hospital, the late Rev. Upton Richards, and more will follow.

Messrs. Wheeler, builders, Reading, have carried out the works; the heating and water-supply are by Messrs. Addis; the carving by Mr. Nicholls, of London; and the metal-work by Messrs. Filmer & Mason, of Guildford.

In addition to the chapel the new works include wards for boys, linen-stores, three rooms for visitors connected with the institution, and the enlargement and completion of refectories for patients.

PLUMBERS ABROAD AND AT HOME.

SIR,—In your issue of the 4th inst. (p. 570) you, despairingly quoting Hotspur, inquire, "But will they come if you do call?" Depend upon it, they will. No one is to blame for the wretchedly negligent English plumbing but the architects themselves, who trouble little about such unnoticed work, being preoccupied with artistic details. Now, it is certainly indisputable that it is better to live in an elegant house than in an unsightly one, but that all the fine-art decorations in the world will hardly compensate for death by neglect of sanitary precautions, you will perhaps allow. Is it not a standing disgrace to us that, until Prince Albert actually died, and the Prince of Wales nearly died, of sewer poisoning, no one ever had a thought of closet ventilation, nor of the proper localities for closets in a house? Are we to spare a prince for every step of progress, or will our plumbers learn for the future without? They burn down cathedrals and music-halls with undisching impartiality, by means of a system of soldering long ago abandoned by other nations. Thinking a good "wiped joint" the perfection of human ambition, the plumber takes a long time over it, and admires it lovingly from every side before he can make up his mind to part with it. This choice production of human skill is perhaps laid in the earth, or built into a wall, and has no need of this fine-art finish, but gets it, nevertheless.

Elsewhere, by means of the French blow-lamp, such a joint could be made in half a minute to a minute, no metal lost, and no tin vapourised in the pot that is overlying on the fire. No fire, and therefore safety; no waste, and therefore economy; quickness, and thus economy again; all these are the advantages of this "wonderful lamp" and all these advantages the plumbers of England deny to the British public and to themselves. These joints are both stronger and quicker made than the

ordinary wiped ones, and cost not one-sixth the latter.

The quantity of tin that is lost through the "metal" in the melting-pot being on the first continually, must be experienced to be believed; the lead remains, the tin burns out, and then comes the stereotyped complaint that the "metal is too poor," and the sacrifice of another lump of tin to mend it. Then, again, the cost of coke, devils, ladles, and so on; the dropper, metal; and last, but not least, the risk inseparable from the use of an open fire!

Then as to soil-pipes. We use iron $\frac{3}{4}$ in. thick, lacquered with Dr. A. Smith's asphaltic varnish, spigot and socket ends leaded in. Generally the diameter is 5 in., and a zinc ventilation-pipe, nearly as big as the soil-pipe itself, is carried out through the roof, and fitted with a cowl. The closet-traps are of iron too, and that joy of the bold plumber, the infuriating "D trap" is kept religiously out of the country. The result is, of course, very few and very inexpensive repairs, as no one can either drive a nail in, or poke a cane through either traps or soil-pipes, or destroy their substance with disinfectives,—chloride of lime, for instance.

Neither do we, notwithstanding our severe winters, wake up and find pipes frozen, because the strict inspection usual forces the plumbers to lay pipes in situations where they cannot freeze; and if a dangerously cold locality must be traversed the pipe is insulated by felt, and, if necessary, warmed by a gas-flame and hot-air tube.

Many other rules exist on the Continent that would worry our London plumbers to death, especially the habit of actually doing a day's work of ten hours, and a full day too on Saturday. I tried the experiment of employing Englishmen and it did not pay. I tried about nine months with seven men, but desisted, one proof showing me its unremunerative character. I gave one with two labourers, a large job,—a mansion to be fitted with hot and cold water. He was over it three weeks, and had not then finished, then put into the next house (exactly a similar job) a German and one labourer on piece-work, and they were finished in seven days and a half. The difference in the price actually paid for the work was over one hundred per cent. in favour of the latter.

Now the German at piecework earned less than the Englishman at day-work, and came a fifth in the morning and worked as long as he could see at night. WILLIAM G. KING.

Frankfort.

DISPOSAL OF HOUSE SLOPS.

SIR,—As you refer to the question of disposing of house-slops, in your notice, last week, of my Self-acting Flush Tank at the International Exhibition, you may perhaps be interested to know the further history of the attempt to dispose of the house-slops at the cottages of mine in Essex, of which an account appeared in your paper of January 6, 1872.

To follow the order of my former account, I will first refer to the earth-closets. My subsequent experience fully confirms what I then stated, *viz.*—"That nothing short of an almost daily superintendence will secure the care requisite for earth-closets in the present state of ignorance and indifference of agriculturists, labourers, even of the better class." For at certain time I had frequent opportunities of visiting the cottages, and the earth was then applied with tolerable regularity. Afterwards I went less frequently, and then precisely in the ratio that the frequency of my visits decreased did the application of the earth decrease also. Finally, the practice of the tenants has settled down to merely throwing a certain quantity of earth in bulk into the cesspool when a visit is expected. Even this result, however, unsatisfactory as it is, is a decided improvement on the former state of affairs, as it is surprising how beneficial is the effect of the smallest supply of earth. The water-tightness of the cesspool moreover, has stopped the offensive percolation into the ground, while its reduced size enables it to be more readily, and therefore more frequently cleared out by the tenants.

Of the method adopted for disposing of the house-slops I am able to give a much more satisfactory account. The subnirrigation has now been in action for six years, and answers completely. The sewage is absorbed so quickly by the soil and vegetation that it has never reached the lower ends of the subnirrigation drains at all notwithstanding the rapidity with which it is

discharged from the syphon tanks. The simple method of laying the drains on a continuous bed (shown at the Exhibition) enables them to be taken up and relaid by a common labourer, and therefore reduces the cost of cleaning them to a few shillings annually. Some defects have, however, shown themselves in the syphon tanks. The quantity of water ordinarily used by the cottagers is so small that it is often not sufficient to set the syphon in action, but simply dribbles over just as it comes, so that the tanks practically only discharge on washing-day. The discharge of the tank gives rise to a suction which tends to empty the bell-trap in the sink, and sometimes allows an escape of foul air into the cottages. Lastly, the stone cover on the top of the tank does not close it satisfactorily, and the two covers are very inconvenient to move for cleaning out the deposit. My endeavours to remedy these and other minor defects led to the "Flash Tank," shown in the Exhibition, the application of which for flushing drains was an afterthought.

ROGERS FIELD.

FURTHER USES OF WASTE HEAT FROM LIME BURNING.

SOME time ago we noticed a new method of heating applied to the conservatories and greenhouses at Nidderly House, whereby a great saving of coal was effected. The heat of the lime-kiln being more than sufficient for the boilers of the greenhouses, it occurred to Mr. Wauchope, the proprietor of the estate, that the surplus might be turned to account in making gas, and accordingly an ordinary retort, 5½ ft. long by 12 in. in the bore, was built horizontally into the kiln, just above the cast-iron door by which it is fed. As described by our authority, the *Weekly Scotsman*, the mouthpiece of the retort projects about 1 ft. from the front wall, and from its upper side there rises a pipe by which gas evolved within it is conveyed to a hydraulic main over the top of the furnace. Through this main the gas passes to condensers, then to the purifiers, and finally to a gas-holder, about 100 yards from the furnace, from which pipes are laid to supply the houses. The experiment has proved successful, and it is found that of the heat generated by the burning of the lime there is even yet a good deal to spare. By one charge of the retort with common gas coal, about 700 cubic feet of gas are distilled, and it may be noted that the kiln which supplies heat to the boilers and retort is one with a draw of half a ton per day. The limestone is used in the proportion of two-thirds to one-third of coal, and it is expected that by selling the burnt lime the expenses connected with the making of gas as well as the heating of conservatories will be nearly covered. Were the system carried out to any extent, provided always that limestone could be obtained at small cost, there would actually be, it is asserted, a profit on the operations.

CASES UNDER THE METROPOLITAN BUILDINGS ACT.

WOODEN BUILDINGS.

Two summonses at the suit of the district surveyor of South Islington against George Frederick Egg, a builder, of St. Paul's-road, Highbury, were disposed of by Mr. J. L. Hanny, at the Clerkenwell police-court, on the 17th inst. The first charged the defendant with having incurred a penalty by erecting a building in the front part of the garden of No. 17, Highbury New Park without giving notice to the district surveyor as required by the Act; and the second was to force him to amend an irregularity, the said building being constructed of wood. The defendant was represented by a solicitor. It was shown that the building was 20 ft. long, 5 ft. wide at one end, and 7 ft. 5 in. at the other; and that it was originally 8 ft. 8 in. high at highest part. After notice of the irregularity had been given, defendant reduced the height to 6 ft. 6 in. at highest part, but would do nothing more. The question,—"What is a building?" having never previously come before the magistrate, defendant's solicitor offered various definitions from the dictionaries. The district surveyor placed before the magistrates reports of the most recent two decisions—*at Hammersmith and at Wandsworth.*

Mr. Hanny, after listening patiently to all

that could be advanced on the other side, said that if he had had only his own opinion to rely on, he might have postponed settlement of the question until he could have consulted some of his brother magistrates; but in the face of the decisions laid before him, he felt that to be quite unnecessary, and must pronounce against the defendant. He must fine him 10s. for not giving notice, and call upon him to amend the irregularity forthwith, with costs to the district surveyor on the two cases to the amount of 11. 5s.

It is within our knowledge that the defendant in this case used the names of some influential members of the Islington vestry by way of a threat to the district surveyor in the event of the surveyor doing his duty. If we mistake not, this is very close to a criminal offence, and we should not scruple to print his assertions, if necessary, to check such behaviour.

MACHINERY AND WORKMEN.

On the occasion of a festival given by the firm of Jackson & Graham, on Saturday, at the Alexandra Palace to their *employés*, Mr. Peter Graham, who presided, made some useful remarks upon the effect of the introduction of machinery into their business as upholsterers, and upon the question of trade unions and the relations between employers and the employed generally. Mr. Graham said, the recent large introduction of machinery into their new manufactory had been watched by the carpenters and joiners with some jealousy, but he was fully assured that so far from skilled workmen suffering from this introduction, they would really find their labours materially lessened, whilst their wages would be fully maintained. He did not think the workmen in any branch of his trade were overpaid; but they must remember there was a possibility of the line being drawn too tight, as had happened in the coal districts, where, during a temporary pressure in the demand for that mineral, the coal-hewers had struck for wages so extravagant as actually to impose a tax upon every person who lighted a fire in the three kingdoms. This had been followed by a reaction under which wages had been reduced to the lowest level, and the amicable relations between masters and workmen, which it was a national object to preserve, had been destroyed. He enjoined them to lay this example to heart, and not to be imposed upon by the specious arguments of agitators, whose sole business appeared to be to mislead those upon whose industry they fattened.*

THE DISASTROUS EFFECTS OF THE LATE STORM IN EAST LONDON.

From the proceedings which took place at the meeting of the Whitechapel District Board of Works this week, it appears that the destruction to property in Whitechapel-road and Mile-end during the great storm on Saturday week, was of the most serious character. It was stated that the sewage water was forced up through the gullies in the neighbourhood of Whitechapel-road, to such an extent that the basements of the houses were flooded to the depth of 3 ft. or 4 ft., and that, as a sanitary matter, apart from other considerations, the results were likely to be very serious, for the tradesmen of Whitechapel were occupied until past midnight on Saturday, and even until Monday, in clearing their dwellings of the fœtid filth thrown up from the sewers, so that it would be no matter of surprise if epidemic disease followed. In answer to a question as to what remedy the tradesmen had, some of the members of the Board thought they had no remedy, as no one was to blame for it, and "they could not control the ways of Providence." Mr. Gladding, however, said that they had their remedy from the Comptrollers of the Sewers, as the nuisance arose not from the rain from above, but from the sewage below, and this latter was under the charge of the Metropolitan Board. The inhabitants wished to know if they could seek a remedy from the Metropolitan Board for the serious losses they had sustained, and whether they must look to a recurrence of the flood should another storm arise. In reply to this, it was urged by Major Munro, and other

* We have received particulars of a number of outings enjoyed by the men of different firms—for example, those of Messrs. Morant, Boyd, & Blanford; Messrs. W. Cubitt & Co.; Messrs. Ford & Son (Rochester); and others. It is out of our power to find space for all, and it would be invidious to select.

members of the Vestry, that the fury of the storm was altogether exceptional, and that it was unfair to find fault with the Metropolitan Board for such an event. There were at least 2 ft. of water along the Whitechapel and Mile End roads, and the destruction of property had been enormous; but then it was an act of Providence, and the best conceivable system of sewerage would not have carried away the vast volume of water which descended in so short a time. After a very long discussion, in the course of which a great deal of evidence was given as to the extraordinary amount of damage caused by the flood, it was agreed to prepare a statement to be submitted to the Metropolitan Board.

PUBLIC LOANS FOR BUILDING AND IMPROVEMENT PURPOSES.

AN official document, just issued from the Treasury, shows at great length the loans advanced to counties and boroughs in England and Wales, chiefly for building purposes and public improvements. The total amount of the original loans borrowed by the counties in England was 4,818,815*l.*, and of this, up to the 1st August, 1873, 2,722,969*l.* remained unpaid.

In Wales the total amount of the original loans was 382,153*l.*, and of this no less than 241,746*l.* remained unpaid. The total amount borrowed by English boroughs was the enormous sum of 36,705,944*l.*, and of this 30,440,591*l.* remained unpaid.

When it is considered that the greater part of this 4,906,912*l.* has been expended amongst persons engaged in building pursuits, some idea may be formed as to the indebtedness of building operatives to a public loan.

The rate of interest ranges from 4 to 4½ and 5 per cent. per annum, and the sums advanced average from 1,000*l.* up to a quarter of a million sterling, and for short and long terms of repayment. The purposes of the loans are chiefly for county gaols, police-stations, lunatic asylums, militia stores, markets, sewerage, parks, flagging, improvements, hospitals, bridges, baths and laundries, cemeteries, and waterworks. The only security for these loans are the rates to be levied on the inhabitants of the places where the money is borrowed for.

GETTING OVER THE STYLE.

"Alas! poor Doric and Ionic, I knew them well."
Shakespeare (improved).

BRING hither hammers, chisels, and pick, and let's improve perfection, quick; remove those pillars, demolish that wall, out with organ-screen and stall; Classic, Romanesque, and Renaissance are pitiable works, on which we advance, Mediæval shall take their place at the point of the Vandal's lance; rescind this, and remove those bones, substitute veneer for stocks and stones; foxes are said to know their den, if you wait till we've done you won't know—WREN.

PROFESSIONAL PRACTICE AND RESPONSIBILITY.

A CONFERENCE of British architects summoned annually from all parts of the kingdom to discuss and suggest the best methods of carrying out professional education and practice, and of noting the progress and changes of architectural art, should undoubtedly be of practical benefit to the profession and the public. The interchange of opinion is as necessary for the growth and development of architecture and its practice, as that of civil engineering, law, or medicine. "*L'union c'est la force.*" No profession can expect to get on satisfactorily without union and co-operation, and if architects would be a trifle less apathetic, and if architects would be more free from jealousy and selfishness, much might be done that is at present left undone.

The subjects that received attention at the recent Conference, viz., "Professional Education," "Professional Practice," and "Architectural Art," were well selected, as embracing the theory and progress of architecture, as well as its practice.

It was hardly to be expected that any immediate practical result should follow upon the discussion of "Professional Education" and "Architectural Art," but with "Professional Practice" it was otherwise, as its importance entirely depended upon some resolution being passed settling the points debated, or relegating them to the further examination of a Committee,

wide, with a height of 60 ft. to the ridge of the roof, and will seat about 1,000 persons. The cost of the building is about 7,000*l.*, and funds are needed to complete the work.

Disney, near Welwyn.—The parish church has been re-opened after a restoration. The total cost of the restoration (including the stained glass and the carved oak pulpit) was about 1,200*l.* The architect was Mr. Henry Curzon, of Lincoln's-Inn-Fields; and the builder, Mr. Robinson Cornish, of North Walsham, Norfolk. Messrs. Clayton & Bell executed the stained glass of the west and east windows and window on the south side of the chancel.

Brixton.—A new church, which is to accommodate 1,000 persons, will be erected in Lambeth-road, Brixton, from the designs of Mr. E. C. Robins, of Southampton-street, Strand.

Reading.—The church of All Saints, Reading, which was consecrated in 1885 by the late Bishop Wilberforce, has just been completed, with the exception of a tower and spire near the north porch, and it has been re-opened. The church in its unfinished state accommodated 500 persons. Accommodation is now provided for 200 more. The design of Mr. St. Aubyn, the architect, has been carried out, the church being extended to the westward, and finished with a Galilee porch, or narthex, which is the north, south, and west porches combined,—an arrangement which was found to prevent draughts, while the temporary Galilee porch was standing. Above this porch is a wheel-window, which forms part of a memorial of the late Bishop. In the centre of the window is the dove, and surrounding it are cherubim, then a circle of angels with censers, and then cherubim having six wings each. The design has been carried out by Messrs. Clayton & Bell. The dimensions of the church are now:—Nave, 54 ft. high, 22 ft. wide, and 78 ft. long; aisles, 14 ft. wide, and 14 ft. high to the wall-plate; chancel, 44 ft. high, 22 ft. wide, and 36 ft. long; transept, 17 ft. high, 18 ft. wide, and 19 ft. long; and the total accommodation is 700. The Wilberforce memorial is estimated to cost—125*l.* for the window, 300*l.* for the font, and 135*l.* for the decorations, which are to include figures in the arcade, and a subject over the font. A considerable sum is still required for these objects, as well as about 360*l.* on the building account. The works have been executed by Messrs. Wheeler, Brothers. The ornamental brasswork has been carried out by Mr. Leaver, of Maidenhead.

Longford.—St. Thomas's Church, Longford, has been consecrated by the Bishop of Worcester. The site of the church is in a prominent position on the main road between Coventry and Nuneaton, and about three miles from Coventry. The building is in the Gothic style, of the early type. It comprises nave, with aisle, chancel, organ-chamber, and vestry, on the north side, facing Hurst-lane. There is a tower, with spire, at the north-west angle of the building, the lower portion of which forms the porch. The church is built of red brick, the internal fittings being of half-coloured pressed bricks, obtained from Nuneaton; the stone dressings to the doorways, nave arcade, and in the window tracery, &c., being executed partly in Attleborough and partly in Box-ground Bath stone. The roof is open-timbered, and covered with brindle-coloured plain tiles. There is accommodation in the building for upwards of 300 persons. It is a chapel of ease to the old parish church of St. Laurence, and is in the parish of Foleshill. It was designed by Mr. J. Cotton, architect, Birmingham, under whose superintendence it was built by Mr. W. Nelson, contractor, Dudley. The total cost of the building, including the purchase of the site, architect's commission, gas, bell, &c., amounts to about 2,860*l.*

Madingley.—The small church, situate in the park at Madingley, has been re-opened, after undergoing a reparation. New roofs have been placed on the nave, aisle, and chancel; a portion of the aisle wall has been re-built; the stone-work inside has been cleaned, the plastering renewed, and new floors put over the whole area. The old pew system has been abolished. The cost of the restoration will be between 800*l.* and 900*l.* for the church, the work done to the chancel involving an expenditure of about 500*l.* The architect of the church portion was Mr. J. Morley, Cambridge; the builder, Mr. Warboys, of Comberton; and the stonemason, Mr. Tomson, of Cambridge. For the chancel portion, the architect was Mr. E. Christian, of London; the builder, Mr. Brown, of Lynn.

Benington.—The Church of All Saints, Benington, has been re-opened for Divine

service. The whole of the interior has been cleared of its old pews, west gallery, &c., and re-seated with open benches in deal, and newly floored with tile, &c., throughout. The walls have been cleansed of their plaster and pointed, and all the masonry restored; one bay of the nave roof has been entirely renewed, and it is hoped the remainder, with those of the aisles, may speedily follow. The Decorated porch has been partly re-built and re-roofed with oak, the whole of the windows have been restored and re-glazed, and a new heating apparatus has been fixed by Mr. Barton, of Boston. The alteration in the chancel is, however, the most marked. Here a low and flat roof has given place to an open timbered one of the original pitch, the windows restored, the walls cleaned and pointed, new stalls and fitting generally, and a floor of encaustic tiles has been put down. The works are yet in a very incomplete state. The contractors are Messrs. White & Wood of Alford. The architect employed is Mr. Jas. Fowler, of Louth. The entire cost of the work has been about 1,850*l.* Of this sum 580*l.* have been expended on the chancel, 1,250*l.* on the nave, and 70*l.* on the organ.

DISSENTING CHURCH-BUILDING NEWS.

Chapelton, Leeds.—The foundation-stone of a Wesleyan chapel has been laid in Chapelton. The rapid and increasing growth of that suburb, which vies with Headingley in villas and other middle-class residences, has caused a demand for sittings in the existing Wesleyan chapel which its capacity could not meet, and rendered it necessary that more accommodation should be provided. A plot of ground in the centre of the village having been obtained, and designs furnished by Mr. C. O. Ellison, of Liverpool, the chapel is now in course of erection. The building will be in the Gothic style, but freely treated. Seats will be provided for about 1,000 persons, and advantage is taken of the fall in the land to get a large lecture-room under the chapel, together with a minister's vestry, lavatory, heating apparatus, &c., all of which can be readily entered from the level of the street at the back, and will be well lighted. Three entrances will be provided from the Chapelton-road and one from the street behind. The body of the chapel will be divided into four aisles, with a series of small pews down the sides, and larger ones in the centre. A portion of the small ones are to be set aside for the free use of the poor, but without any difference either in their comfort or style. Galleries, as light as possible in appearance, will be fixed on three sides, the seats to be of the same class as those below. Seats will be specially provided for children, and the stairs made so easy and spacious as to be in all respects suitable for them and old people. Internally the chapel will be divided into five bays, ornamental iron columns supporting both the galleries and the roof. The chancel effect will be secured as much as possible, although the space which should be set apart for the purpose will be occupied by the orchestra. There will be a moulded chancel arch, with polished marble shafts, carved caps, corbels, &c., the jambs being carried down to the chapel floor. Behind this will be a semi-circular apse of large size, with traceried window filled in with stained glass. The orchestra will be kept to the lowest possible level,—about 4 ft. or 5 ft. above the chapel floor,—and the front will be of pitch-pine work to match the gallery-front, and have ornamental perforated panels, crimson cloth behind, and moulded cornices. An organ, designed for the chapel, will be erected so that the stained-glass window behind will be seen over its decorated pipes. The fittings throughout are to be of pitch-pine, varnished. At the end opposite the pulpit will be a five-light window with tracery,—the whole filled in with cathedral glass. The exterior is to be built of best local stone, with "Parpoint," or rough-faced walling, and dressings tooled or polished. The front consists of a large central gable, nearly occupied by the five-light window just alluded to. To the left will be one of the gallery staircases. On the other side will be a tower and spire, rising 150 ft., a staircase to gallery forming a semicircular feature at its base, with roof, &c. A door corresponding with that on the left side will front the tower. Over this will be a traceried window, and in the upper part of the tower four recessed cusped openings, filled in with cut-slate louvres, and finished above with circular tracery under the gables at the feet of the spire. The tower

buttresses are worked into octagons above the chapel, and terminate in turrets at the angles of the tower, each having eight circular shafts of red stone, with carved caps, traceried heads, &c. The spire will be octagonal. The contractors are as follows:—Charles Myers, Wm. Shires & Son, J. E. Bedford, J. F. Pollard, and J. Senior, all of the neighbourhood. When the new chapel has been erected it is intended to convert the old one into schools and vestries. The cost of the site and building will be about 9,000*l.*, and already a large number of subscriptions, including 1,000*l.* from Mr. Jackson and 100*l.* from his wife, have been received.

Nottingham.—The foundation-stone of a new Baptist Chapel, to be known as Exeter-hall, has been laid by the Mayor on the unoccupied ground between Shakespeare-street and the Peacock Inn. It is to be Italian in character and treatment, the fronts facing Mansfield-road and Peachey-street. The foundations of the hall (now complete) comprise huge stores of cellars in connexion with a suite of shops, school premises, tea-room, vestries, &c., on the ground-floor above, which encircle the lower flat or arena of the hall proper and complete the offices of the ground plan. The remaining space of the edifice will be devoted entirely to the hall, consisting of three stories of gallery, describing the form of the horse-shoe, and rising amphitheatrically, tier above tier, the first gallery having seven rows of seats, the second five, and the third three, while the outer tier of the stalls on each story is bounded with ample continuous passage space, offering free ingress and egress round the building, from and to the three staircase-towers, occupying the principal angles. The style of the elevation is Lombardo-Venetian, in brick and stone; the two principal entrances form Corinthian portals, embracing a suite of shops. It is said the whole complete is to cost about 4,000*l.*

Books Received.

Décorations Intérieures Peintes, Salons, Salles à Manger, &c. Par M. CÉSAR DALY, Architecte du Gouvernement. Parts 1 and 2. Paris: Ducher & Co., 51, Rue des Ecoles. 1874. UNLESS we are mistaken, the mere mention in a dozen lines of this publication will obtain for M. Daly a number of subscribers in England. The work is a continuation of his previous series of the Private Architecture of the Nineteenth Century, and represents the coloured decorations executed in private houses by the best firms in Paris, either under the directions of architects or not as the case may be. Each of the parts now before us contains twelve large plates showing the walls, ceilings, doors, and so on, of the various apartments which are to be found in a superior residence in Paris, and would suffice to set up as a decorator any clever ordinary painter who might become possessed of them. The illustrations are executed in an admirable manner, as all works under the direction of M. Daly are, and we warmly recommend "*Décorations Intérieures Peintes*" to such of our readers as are interested in that direction.

Technical Training: Being a Suggestive Sketch of a National System of Industrial Instruction founded on a General Diffusion of Practical Science among the People. By THOMAS TWining, one of the Vice-Presidents of the Society of Arts. London: Macmillan & Co. 1874.

For at least a quarter of a century, we should think, Mr. Twining has been earnestly at work on this and kindred subjects; and, indeed, in 1851 he published "*Notes on the Organisation of an Industrial College for Artizans*"; and even now the organisation of such an industrial College constitutes a chief feature of the work under notice. Mr. Twining therefore is a veteran pioneer on the subject of technical instruction, and what he says in the elaborate and matured work which he now issues well merits the best consideration of all leaders in this movement. He has avoided discussing what is no longer disputed; but, on the other hand, he has spared no pains in sifting, classifying, and elaborating into a homogeneous system the various means by which Industrial Improvement, founded on Science, may best be carried into actual effect.

His plan is to show, in the first chapter, the necessity for a Central Technical University; to

sketch, in the second, the leading features of its organisation and functions; to state, in the third, certain facts serving as groundwork to a system of instruction detailed in the fourth; to analyse, in the fifth, the educational requirements of our various industries; and to endeavour, in the sixth, to arrive at legitimate conclusions as to the measures to be adopted.

The immense amount of thought and labour expended upon this work cannot better or more readily be seen than by a glance over "Section 3. Trades connected with the Construction, Decoration, and Furnishing of Dwellings," which the author ranks first in the order of industrial occupations; and in respect to which section he alludes to the feeling of confusion with which he began the consideration of so vast and comprehensive a subject, out of which, however, he has evolved no little order, the whole forming what may be called a treatise on educational requirements or technical instruction in building operations.

VARIORUM.

THE July number of the *Quarterly* begins with an interesting paper, chatty and full of knowledge, on the Isle of Wight,—the leader of the "laughing train" of "little isles on every side."

"Wight, who checks the westering tide."

We quote a short passage which catalogues the churches:—

"The churches of the Isle of Wight, though often eminently picturesque, both in position and outline, are not remarkable for architectural beauty. In fact, it was too remote to be reached by more than the fringe of the waves of architectural progress; while a constant dread of the hostile descents of the French and their frequent ravages kept the inhabitants in too depressed a condition to have either the means or the heart for the erection of costly buildings. They are usually long low buildings, without clerestory, and very often without chancel-arch, frequently consisting of two equal aisles or bodies, with no constructional mark to distinguish them, or to define the site of the parochial altar. The best example of this arrangement is the church of Godshill, one of the largest and finest in the island. The towers are mostly low and square, but that of Canabrooke is a good work of the Perpendicular period, recalling in its outline the plainer Somersetshire examples. The same model has been followed at Godshill, Chale, and Gutscombe, but, picturesque as they are, even these cannot be called good works of art. Fragments of Norman work linger here and there. The best example is the tiny church of Taverland, the lovely of landscape-painters, its groups with the gables of the Jacobean manor-house beneath its shawing elms,—where the south door and chancel-arch are good specimens of the barbaric richness of the style. Wootton, Northwood, and Shalfleet also have Norman doors, and the last-named church the huge stump of an ill-used Norman tower. The best architectural works in the island, at Calbourne, Shalfleet, and Arreth, belong to the Early English period. The later styles present nothing which needs comment, though there is hardly one of the island churches which is not worth turning aside to see. Most of them are charmingly placed, very frequently, as at Godshill, Newchurch, and Motteston, crowning an almost precipitous eminence, and are picturesque with the picturesqueness of a building which has grown into its present form by gradual additions, fused by time into one harmonious whole. The church of St. Lawrence, in the Tudor style, has a wide celebrity, from its diminutive size. Its claim, however, to be the finest church in England was, even before the enlargement, contested by some of the churches of the Lake District, and cannot now, small as it is, be sustained."

—Some good earnest writing makes the July number of the *Penn Monthly* very acceptable.

Miscellaneous.

Aquarium and Winter Garden for London.

The Royal Aquarium and Summer and Winter Garden Society is announced, with a capital of 200,000*l.* in 40,000 shares of 5*l.* each, the object being to provide in the heart of London an aquarium and summer and winter garden, and in connexion therewith to afford facilities generally for the promotion and encouragement of artistic, scientific, and musical tastes. A freehold site, it is stated, has been procured, facing the Houses of Parliament and Westminster Abbey. It is proposed that the centre or main transept of the building shall be constructed principally of glass, forming a conservatory and promenade surrounded by galleries, in which concerts will be held every afternoon and evening, and special concerts every Saturday. In connexion with the main building it is intended to have rooms for private concerts, the delivery of lectures, &c., while the hall will be so arranged as to be adapted for the purposes of meetings: conversations, and reading and writing rooms, as well as a library, will be opened for the use of visitors. We alluded to this scheme some time ago.

* Before its enlargement, the dimensions of St. Lawrence Church were 20 ft. long by 12 ft. broad, and 6 ft. high to the eaves.

Fall of a Flat.—On Wednesday last, Mr. Payne concluded, at St. Bartholomew's Hospital, an inquiry into the death of Mr. Richard Noble, the clerk of the works employed by the Monolithic Fireproof and Sanitary Construction Company, who was killed by the falling of the flat roof of an experimental shop erected on the open ground formerly the New Bunhill-fields Burial-ground. The district surveyor said that the building had been erected by licence of the Metropolitan Board of Works. The construction had been going on for some time. Witness addressed a letter to the company in May last, calling their attention to the unsatisfactory way in which the work was being done. The building was constructed as follows:—Outside walls of concrete, inclosing a space of 50 ft. by 37 ft. The roof was flat, and formed of slight iron girders resting upon the walls. These girders were interlaced with iron wires, and upon this was poured concrete, which was left to harden into one solid mass. This was kept in position by boards laid beneath the girders, and propped up by wooden struts until such time as the concrete became a solid and self-supporting slab. Witness inspected the roof at different times, and thought it not strong enough, and warned the men from time to time. The whole affair was under the control of deceased, and it being a trial of a patent, witness did not interfere so much as he might otherwise have done. He warned deceased himself about the building. Last saw the building at the end of June, when the roof was complete and left to harden, and all the uprights were then in proper position, but there were two or three cracks in the roof, which he pointed out to the man in charge of the premises, at the same time saying, "Unless you are very careful you will have a disaster." The coroner having summed up, the jury deliberated, and eventually returned a verdict of Accidental Death, adding a rider to the effect that deceased was to blame for the accident.

Shaftesbury Park.—The Shaftesbury Park estate, which comprises forty acres of freehold land, in the parish of St. Mary, Battersea, situate at Lavender-hill, near Clapham Junction Station, has been opened in the presence of Mr. Disraeli, Earl Granville, Earl Manservants, the Earl of Shaftesbury, and many persons interested in the project. A large portion of the estate is laid out for building purposes; some of the principal roads being completed, and others are being formed. It is the intention of the directors to erect 1,200 houses on this estate, together with schools, lecture-hall, baths, &c., and three acres of land in the centre will be appropriated to recreation and pleasure grounds; and a site for co-operative stores. They also propose eventually to build a railway station on the property. The houses are built in four classes, containing five, six, seven, and eight rooms respectively (the latter including a bath-room), at the weekly rental of 5*s.* 9*d.*, 6*s.* 9*d.*, and 8*s.*, and the best class 26*l.* per annum, which sums, except the best class, include rates and taxes; but if the tenant is buying the house, the rates and taxes and ground-rent have to be paid by him in addition to the purchase-money. The purchase price of the houses ranges from 150*l.* to 310*l.*, on a lease of 99 years, subject to an annual ground-rent of 2*l.* 12*s.*, 3*l.* 5*s.*, 3*l.* 12*s.*, and 4*l.* 4*s.*, according to the class of house. We should be glad to have more precise particulars.

Fireproof Construction at Chicago.—A test of a fireproof ceiling, the invention of Mr. James John, a contractor and builder, of Chicago, was made on the vacant lot on the corner of La Salle and Quincy streets; and the local *Tribune* says of this test:—

"For this purpose a small brick building, 12 ft. 6 in. by 12 ft. 6 in., and 11 ft. high, with two windows and a door, had been erected, and six wagon-loads of barrel-staves placed in it. The match was applied at three o'clock, and a lively fire was soon kindled and under full headway. It burned for two hours, and when it was cooled down sufficiently for an examination, the beams and joists were found intact. The main object was to show that a brick building, with ordinary wooden joists in the floor, protected by patent concrete air-chambers, in case of fire in a pile of combustible merchandise, would not burn through from one floor to another, nor injure inseparably the structure. The floors are constructed in the ordinary way, with wooden joists, and the spaces between the joists are filled with hollow boxes of plaster of Paris, surrounded by concrete, and the surface of the ceiling is plastered on single parallel strands of wire. The cost, as compared with iron beams, is about one-half. The patent consists mainly in the application of the concrete to wooden joists. The building will be partially torn down to-day, for the purpose of giving interested persons an opportunity of examining the joists and ceilings. The fire commissioners, fire marshals, and other officials were present, and made many expressions of approval of the new invention."

Sale of Property at Gloucester.—An important sale of house property in Gloucester, and of building and other land near the city, has taken place in the Masonic Hall, at the Bell Hotel there. The sale was held by the direction of the Ecclesiastical Commissioners for England. The competition was spirited, and most of the lots were disposed of, the total proceeds amounting to over 17,000*l.* Mr. J. B. Hamman became the purchaser, at 150*l.*, of lot 6*a*,—a piece of building-ground, containing 2*ac.* 2*ar.*, adjoining the New Inn, at Longford. Lot 11, the house for many years used as the Magdalen Asylum, St. Mary's-square, with a frontage of 40 ft. and a depth of 159 ft., was bought by Mr. B. Jordan for 400*l.* The Sheephouse Farm, and building estate of nearly 200 acres, extending from the Gloucester and Berkeley Canal at Hempsted Bridge to the Gloucester and Stroud road, was offered. A 40-foot road has recently been constructed through the estate. Lot 1, a piece of building land, having a frontage to the Bristol road of 400 ft., and containing about 7*ac.* 2*ar.* 16*p.*, was sold to Mr. James Bretherton for 1,200*l.*, who also purchased, at 1,400*l.* lot 2, adjoining, of about similar size, and having a frontage of 400 ft. to the Bristol-road, and a frontage of 700 ft. to the new road. Lot 5, 16*ac.* 0*r.* 22*p.* of land on the north side of and having an extensive frontage to the new road, was bought by Mr. Reece Thomas for 1,800*l.*

West-end Dust-bins.—The medical officer of health for Marylebone, Dr. Whitmore, has issued his monthly report as to the health and sanitary condition of his district. After stating that the deaths during the month of June were equivalent to an annual death-rate of 21·97 per thousand of population, being about three per thousand in excess of all London for the same period, the doctor presents a startling picture of West-end dust-bins, and points to the fact that the more aristocratic the neighbourhoods the worse they are. Complaints of the abominable effluvia arising from them are continually made to him; and, strange to say, the disgustingly offensive ones belong to large houses and mansions situated in our most aristocratic streets and thoroughfares. The inspectors have carefully examined many of these, and have found in them large quantities of vegetable refuse in a state of putrefactive fermentation, stinking animal matter, composed of stock meat used in making soup, remnants of poultry, &c., together with crab and lobster shells, periwinkles, sardines, lobster, and oyster tins, some only half empty, and dead kittens. No vegetable or animal matter should under any circumstance be thrown into the dust-bin. The family greengrocer, as Dr. Whitmore remarks, will willingly take away the vegetable refuse, or it can be burned, and there are always at hand destitute poor persons who would thankfully accept the remnants of food.

Liverpool Architects at Cholmondeley and Malpas.—The annual excursion of the Liverpool Architectural and Archaeological Society is called a success. The members of the society and friends met at the Lime-street station at seven o'clock, and journeyed *via* Chester to Broxtown station, where an omnibus was in waiting to convey the party to Cholmondeley Castle, where the party were received by Mr. Hignett, his lordship's agent, and under his guidance were shown round the mansion. The wonders of the castle exhausted, a pleasant stroll through the beautifully-wooded park brought the party to the ancient chapel. A pleasant drive between banks richly green with fern and overshadowed by trees, whose leaf-laden branches swept in the faces of the outsiders as they were borne past, brought the party to Malpas, the ancient church of which pretty little village had been selected as the *Ultima Thule* of the excursionists. A curious old crypt was explored by the more adventurous of the party,—without any great discovery being made, however. After an inspection of all portions of the edifice, the party adjourned to the Red Lion Hotel, where an excellent dinner had been provided by Mr. Hlope. The party afterwards drove to Broxtown station, en route for Liverpool.

Working Men's Dwellings Bill.—This Bill as amended has been read a third time and passed in the House of Lords. A long-lease system from corporations has been introduced into it in place of selling the land in fee. Lord Shaftesbury said the Bill was intended to give to the working men the power of leaving the crowded cities, and living in their own houses in the suburbs.

Volfolk and Norwich Archaeological Society.—This society has had an excursion in Fakenham district. The president (the Very Rev. the Dean of Norwich), the secretaries, and a goodly number of members were present. The day was a delightful one, the rain falling a few minutes early in the morning, serving only to purify the atmosphere. The first station from the starting place, Fakenham, was Tofts parish, where, to look at a fine old late Norman font. Weasenham St. Peter's the party found the vicar carrying out at his own cost approaching the vicarage. Weasenham All Saints was the place visited. At Great Massingham the vicar, Mr. and the Lady Arnold invited the company to partake of refreshment at the rectory. At Massingham Church presented not many signs of interest. Harpley Church was the station. East Rudham Church, recently greatly part rebuilt, was then visited. A luncheon at Cranmer Hall (Sir Willoughby Jones joined the party at Harpley), and a brief visit to the restored fabric of Sculthorpe Church, brought to a close one of the most agreeable excursions ever undertaken by the society.

bursting of a Canal.—The bank of a new lock of the Monkland Canal, above Milnbank, (Messrs. Adams & Son's), in the north-east of Glasgow, recently burst by the pressure of the water, a flood of which poured an opening 20 ft. wide through the beach, and into the valley of the Molendinar, or rivulet, emerging from a culvert in its side, a mile distant, and sweeping away at point some goods in a tanyard. The goods and works were strewn about, and left in most places from 6 in. to 2 ft. deep in mud and debris. Tons of coal were carried round a house in the works, and the machinery as well as the house seriously damaged. The workmen's houses in the neighbourhood were flooded to the depth of 1 ft. or 3 ft. No personal injury was sustained, but the damage to property is estimated from 50,000l. to 100,000l. Upwards of 300 tons will be thrown idle for a few months in consequence of the damage done to Messrs. Adams' works. A large body of men are employed repairing the damage to the canal.

Royal Archaeological Institute.—The annual congress of the Royal Archaeological Institute was opened at the Town-hall, Ripon, Wednesday, under the presidency of the Mayor of Ripon. The proceedings commenced with the reception of the Institute by the Mayor and Corporation of Ripon at the Town-hall, in the presence of a very large assemblage. An address was read by the town clerk welcoming the Institute, and presented to Lord Talbot de Malahide, the president of the Institute, who accepted the Mayor and Corporation for the hearty welcome. His lordship then placed the Marquis of Ripon in the presidential chair for the meeting, and the Bishop of Ripon, on behalf of himself, the Dean and chapter, and the clergy, tendered a hearty welcome to the Institute. By invitation the Mayor and Corporation the members of the Institute, to the number of 100, partook of lunch in a large marquee, and the party adjourned to the cathedral, where the architecture, &c., were described by Sir John Scott, who has been recently engaged in restoration.

Flying Bridge.—A flying or rolling bridge has been established communication between the town of St. Servan and St. Malo, separated by the Mal River Rance. For almost four hours, in the day, it is possible to cross over the estuary by descending steps on one side and climbing again on the other; but the road is not pleasant, and M. Leroy, town engineer to St. Malo, and architect to St. Servan, has had constructed a flying bridge, consisting of a platform supported on wheels, to run on rails laid on the bottom of the river. The platform is supplied with accommodation for horses at either side. It is level with the quay at each side, so that it is quite easy; and it is worked by means of the tide with perfect safety. It is essentially the same invention with that noticed in our columns as claimed by a Frenchman to be original, and proposed by him on an enormous scale, for crossing the English Channel. He has since admitted its identity with M. Leroy's invention.

No less than fifteen fires happened in the metropolis in the course of Thursday in

The Patent Museum.—In reply to Mr. Mundella, Mr. Dierdani said he was fully convinced that not only the Patent Museum, but several other public departments, were very much inconvenienced by want of space, and insufficient accommodation. The subject was in the hands of the First Commissioner of Works, and would receive his careful consideration.—Mr. E. Reed asked the First Commissioner of Works whether, as the Commissioners had for the future abandoned annual International Exhibitions at South Kensington, the Government would be willing to give early and favourable consideration to the proposal to transfer the Patent-office Museum from its present place to the southern block and adjacent portions of the Exhibition buildings. Lord H. Lennox said it was already his intention to submit a scheme which, if it met with the approval of her Majesty's Government, would be the means of offering more accommodation for the Patent-office Museum.

The Proposed New Slaughter-houses. The Court of Common Council having resumed the adjourned debate on the report of the Cattle Markets Committee upon the reference to obtain plans and estimates for the construction of additional slaughter-houses at the Metropolitan Cattle Market, and recommending that the committee should be authorised to construct, from time to time, as may be required, twenty additional slaughter-houses upon ground on the east side of the market, at an expense not exceeding the sum of 25,000l., delivered in on the 21st May last, and then read, adjourned, and ordered to be printed; the court discussed several restrictive amendments, which were rejected, and finally the original motion was carried; and it was resolved that it be referred to the Coal, Corn, and Finance Committee to consider and report as to how the necessary funds are to be raised.

International Exhibitions.—In view of the announcement that it is not intended to continue the present series of Annual International Exhibitions at South Kensington, the Council of the Society of Arts have come to the following resolution:—That the Society of Arts having taken an active part in originating the Great Exhibition of the Works of all Nations in 1851, and having raised the guarantee fund of 450,000l., which enabled the Exhibition of 1862 to be carried into effect, it is the opinion of the Council that arrangements should be made for a Conference, about the end of October, to consider the desirability of holding International Exhibitions in this country, and what form, if any, they should take, and to invite the expression of the opinions of competent persons upon the subject, and further to consider the question of holding Provincial Exhibitions.

The Margate Aquarium Company is announced, with a capital of 50,000l., in 5,000 shares of 10l. each, of which 4,000l. are now offered as a first issue for subscription. The company has acquired from the Marquis of Conyngham a lease for 99 years of the foreshore, extending from near the Pier Hotel to the Fort Point, and thence to the Second Point, comprising a frontage of 730 ft. to the sea, at a rental of 50l. per annum. The land, comprising an area of 10,000 square yards, is to be reclaimed by the erection of a sea-wall, and the establishment is to comprise an extensive aquarium, ponds for lung-breathing aquatic animals, covered gardens and ferneries, a large hall for concerts, balls, &c., a bazaar, reading and refreshment rooms, swimming and private baths, and covered and open-air promenades,—thus rendering the plan sufficiently comprehensive to meet the tastes of all parties.

Death of an Architect in the City.—An accident has occurred near Finsbury-square, by which Mr. Thomas Seward, an architect and surveyor, of Paul-street, Finsbury, lost his life. A new block of warehouses has just been erected in Short-street, Finsbury, one of which is used by Messrs. Cleghorn & Co., artificial florists; and the roof having got somewhat out of order, the deceased mounted to the top of the house to see what repairs were required. About three o'clock a crash was heard at the back of the house, and it was then ascertained that the deceased gentleman was lying in the area shockingly mangled. He was promptly conveyed to St. Bartholomew's Hospital, but died shortly after admission.

The Grocers' Company's Competition.—Designs for the Middle-class Schools, proposed to be built by the Grocers' Company, on Hackney-down, have been sent in.

Battersea Bridge.—Sir C. Dilke asked the Chief Commissioner of Works whether the subject of freeing from toll the Government bridge leading to Battersea Park was under the consideration of the Office of Works, either as standing by itself or in connexion with any scheme of the Metropolitan Board for freeing other metropolitan bridges; and whether the promise of the Office of Works to plant the vacant space within Battersea Park, on the west side of that park, was to be carried out. Lord H. Lennox said there were difficulties in the way of freeing the bridge from toll, but he hoped they would not prove insuperable. The vacant space in Battersea Park would be planted out in the autumn, and provision had been made in the estimates to carry out the work.

Association of Municipal and Sanitary Engineers.—A meeting of the Lancashire and Cheshire Branch will be held at the Municipal Offices, Barrow-in-Furness, on the 7th of August. Mr. Jacob will read a history of the rise and progress of Barrow-in-Furness, and the docks, shipbuilding yards, and other objects of interest will be visited.—The members of the Home Counties District will hold a meeting on Wednesday, the 12th of August, at Tottenham, and will visit the sewage works in the Lea Valley, and also inspect the Alexandra Palace. After the inspection of the building, the business of the district will be taken, with a discussion on the day's work, and short papers will be read.

Essays on Thrift.—The judges appointed to award the prizes offered by Sir Joseph Whitworth for essays on the above subject have reported to the Council of the Society of Arts that there is no essay of sufficient merit to be entitled to the full prize offered, but that the essay with the motto "*Labor omnia vincit*" has very considerable merit, and is fairly entitled to recognition by the Society. The Council have, under these circumstances, and with the assent of Sir Joseph Whitworth, awarded 50l. to the author of that essay, Mr. Joseph Mason, of Fairview, The Holt, Birkenhead.

Value of Property in Paris.—The house known as No. 1, Rue Balzac, with garden and frontage of 73 ft. to the Champs Elysees, has just been sold by Messrs. Sprent & Phipps, of the Rue de Rivoli, for the sum of 32,000l. the superficial area of the land being about 5,400 ft. This price does not seem to indicate any very material depreciation (since the war) of the value of property in the French capital.—*Court Journal.*

Opening of West Ham Park.—The Lord Mayor, accompanied by the Lady Mayoress and several members of the Corporation, have visited Stratford in state and opened West Ham Park as a public recreation-ground. The park was purchased of Mr. John Gurney for 25,000l., that gentleman and the Corporation of London each contributing 10,000l. towards that amount, and the remainder being got by local subscriptions.

The Charles Knight Memorial.—A meeting of the subscribers to the fund for raising a memorial to Mr. Charles Knight was held on Wednesday, at which it was resolved that the form of commemoration should be that of one or more scholarships in connexion with the school of the Stationers' Company, and a bronze statue to be erected in the town of Windsor, where Mr. Knight was born.

Cradley.—A campanile or bell tower for a peal of bells, the gift of a lady to the church, is about to be erected at a cost of upwards of 1,000l., in connexion with the parish church at Cradley, near Stourbridge, Worcestershire. The work will be executed under the designs of Mr. John Cotton, architect, of Birmingham.

The Proposed Tunnel between France and England.—The French Minister of Public Works has received the report of the Commission appointed to examine the proposal for constructing a tunnel between France and England. The report is favourable to the "annexation."

The Deaf and Dumb Asylum.—On Wednesday the ceremony of laying the foundation stone of a branch establishment of the Asylum for Deaf and Dumb Children took place at Margate.

Great Amwell.—The foundation-stone of the new parish schools has been laid by the daughter of the Lord of the Manor (Captain Brown, of Hailey).

TENDERS

For building the South Metropolitan Temperance Hall, Blackfriars-road. Mr. J. H. Swan, architect:—	
Hill, Higge, & Hill.....	£10,700 0
King & Son.....	10,240 0
Lucas, Brothers.....	9,666 0
Elkington.....	9,660 0
Bider & Son.....	8,579 0
Cooke & Green.....	8,576 0
Deards.....	8,068 0

For Central Bank of London, Stamford-street. Architect, Mr. Nash. Quantities taken out by Messrs. Franklin & Andrews:—

Hill, Higge, & Hill.....	£5,493 0
Jarrett.....	5,319 0
Gannon & Son.....	5,312 0
Oliver.....	5,279 0
Cooke & Greene.....	5,181 0
Coleman.....	5,169 0
Deards.....	5,158 0
Dickenson.....	5,150 0
Trolope.....	5,149 0
Brown & Robinson.....	5,103 0
Kilby.....	5,083 0
Downs & Co.....	5,060 0
Simpson & Son.....	5,030 0
Rider & Son.....	4,988 0

For putting-shed, apple-room, storey, kitchen-garden, walls, and inclosures, for Mr. J. W. Dent, Mr. T. Dinwiddie, architect:—

Rider & Son.....	£1,128 0
Nightingale.....	1,097 0
Downs & Co. (accepted).....	1,080 0

For pulling down and re-building the White Hart, New Cross-road, for Messrs. Combe & Co., and fixtures and fittings to same, for Mr. Southcott. Mr. Henry B. Cotton, architect. Quantities by Mr. A. J. Gate:—

House. Fittings, &c.	
Batley.....	£3,600 0
Holloway.....	3,437 0
Patrick.....	3,388 0
Mills.....	3,290 0
Foxley.....	3,273 0
Newman & Mann.....	3,258 0
Hyde.....	3,248 0
Williams & Son.....	3,184 0
Toms.....	3,108 0
McLachlan (accepted).....	3,086 0

For the erection of schools at Lady Barn, Fallowfield, near Manchester. Messrs. Price & Linklater, architects:—

Credland.....	£1,041 12 0
Wilson.....	1,438 10 0
Herd.....	1,390 0 0
Warburton.....	1,314 0 0
Holt (accepted).....	1,285 0 0
Haynes.....	1,248 0 0

For villa residence on Magdalen Chantry Estate, Hastings, for Mr. W. B. Eagles, Messrs. Jeffrey & Skiller, architects:—

House. Wall.	
Howell.....	£3,839 0 0
Vidler.....	2,829 0 0
Rodda.....	2,730 0 0
Hughes.....	2,725 0 0

For two houses, Norman-road East, St. Leonard's-on-Sea, for Mr. B. H. W. Tree. Messrs. Hunter & Crisford, architects:—

Womersley.....	£3,317 0 0
Vidler.....	3,284 0 0
Howell.....	2,862 0 0
Parks.....	2,797 0 0
Wood.....	2,050 0 0

For alterations, &c., to No. 23, Great Tower-street, London, for Mr. Thomas Stevenson. Messrs. William Gosling & Son, architects. Quantities supplied:—

Ferry.....	£473 0 0
Vickers.....	431 0 0
Stephenson.....	419 0 0
Sawyer.....	391 0 0
Warr.....	364 0 0
Greaves.....	340 0 0
Stead.....	336 0 0
Staines & Son.....	328 0 0
Johnston.....	307 0 0
Baby (accepted).....	298 10 0
Stamp & Co.....	297 0 0
Cumming & Co.....	290 0 0
Horse.....	253 0 0
Pearce.....	273 0 0
Hunt.....	210 0 0

For new clerestory walls, new roof, and general repairs, to the Church of St. Mary, Brinkley, near Newmarket. Mr. Frederick Thomson, architect:—

Mason & Son (accepted).....	£405 0 0
-----------------------------	----------

For repairs of church, and decoration of chancel, St. Luke's, Chelsea. Messrs. Goldie & Child, architects:—

Fittman & Culbertson (accepted).....	£405 0 0
--------------------------------------	----------

For decoration of Christ Church, Chilton-street, St. Pancras, and repairs, &c., of schools. Messrs. Newman & Billings, architects:—

Fittman & Culbertson (accepted).....	£403 0 0
--------------------------------------	----------

For paragon for the Rev. J. W. Harte, in connexion with St. Mark's Church, Victoria Park. Mr. John Wimble, architect. Quantities supplied:—

Falkner.....	£2,965 0 0
Williams.....	2,887 0 0
Dove, Brothers.....	2,837 0 0
Lawrence.....	2,794 0 0
Newman & Mann.....	2,788 0 0
Bangs & Co.....	2,760 0 0
Turner & Son.....	2,690 0 0
Stoner.....	2,573 0 0

For the erection of a vestry-hall and offices for the parish of St. Sepulchre, Middlesex. Mr. Lewis H. Isaacs, architect. Quantities by Mr. L. C. Riddett:—

Hill, Higge, & Hill.....	£2,569 0 0
Roberts.....	2,368 0 0
Bishop.....	2,365 0 0
Rayes & Range.....	2,109 0 0
Kilby.....	2,192 0 0
Lister.....	2,073 10 0
Wall, Brothers.....	1,963 0 0
High.....	1,822 0 0
Elkington.....	1,988 0 0

For public hall and offices at Hackney. Mr. Henry St. John Ingram, architect. Quantities supplied by Mr. Hollands:—

Merritt & Ashby.....	£5,993 0 0
Cooke & Green.....	5,456 0 0
Kilby.....	5,411 0 0
Waldram & Co.....	5,320 0 0
Wilson, Brothers.....	5,249 0 0

For sewers for the vestry of St. Leonard's, Shoreditch. Mr. G. C. Perrett, Surveyor (Messrs. Waterlow paying £200 towards the cost):—

Rendall.....	£268 0 0
Marshall.....	720 0 0
Wood.....	739 0 0
Waldram & Co.....	874 0 0
Wainwright.....	650 0 0
Keeble.....	593 0 0
Pearson.....	549 0 0
Harris.....	538 0 0
Barnes & Gardiner.....	520 0 0
Wall, Brothers.....	320 0 0

For certain additions and alterations to the museum and library, Queen's-road, Bristol. Mr. S. Colman, architect. Quantities by Mr. A. Deane:—

Brook & Bruce.....	£4193 0 0
Rogton.....	6,168 0 0
Church & Phillips.....	6,150 0 0
Eastbrook & Son.....	5,985 0 0
Davis & Son.....	5,175 0 0
Veals.....	5,800 0 0
Wilkins & Son.....	5,750 0 0
Baker & Son.....	5,700 0 0
Howell.....	5,637 0 0
Kraus.....	5,550 0 0
Diment.....	5,399 0 0
Bryant.....	5,147 0 0
Cowlin & Sons (accepted).....	4,850 0 0
Summerville.....	4,657 0 0

For schools to accommodate 750 children for the Bristol School Board. Mr. Stuart Colman, architect. Quantities by Mr. A. Deane:—

Schools. Boundaries and Playgrounds.	
Davis & Son.....	£3,345 0 0
Diment.....	3,319 0 0
Bryant.....	3,211 0 0
Eastbrook & Son.....	3,176 0 0
Walters & Crick.....	3,040 0 0
Summerville.....	2,838 0 0
Kraus.....	2,818 0 0
Cowlin & Sons (accepted).....	2,907 0 0
Beaven & Son.....	2,838 0 0

For the erection of Christ Church Vicarage, South Hackney. Messrs. Henry Jarvis & Son, architects:—

Falkner.....	£5,597 0 0
Tarrant.....	2,600 0 0
Lawrence.....	2,494 0 0
Downes.....	2,482 0 0
Emery.....	2,472 0 0
Hearle.....	2,475 0 0
Stevenson.....	2,462 0 0
Shepherd.....	2,413 0 0

TO CORRESPONDENTS.

For the erection of the new building portion of the hospital erected by Professor Donaldson, p. 636, note, should read:—"Fencing entirely, that is, people should be more moved to the reverence of the house of God, if all others that were glorious and glittering with gold and precious stones."

"Exhaustive" (we did not print the letter last week stating that the consideration of the design for St. Paul's was postponed, simply because we had given, a week before, the information, it contained)—J. W. R. (any drawings sent shall have attention, and they shall be returned)—A. J. G. A. & H. P. & B. (Class Room)—R. V. R. R. D.—H. R. P. & L. J. P. H. H. J. R. G. J. P.—Mr. C.—S. F. S.—D. W. W.—G. & Son.—A. R. B. O. R. B. L. C. R.—W. & Co.—R. B. O.—The Law of Nations Business (in type).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

Note. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

Situations (Situations)	
Wanted. Vacant.	
Six lines about fifty words or under. 2s. 6d.	6s. 6d.
Each additional line (about ten words). 6s. 6d.	6s. 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to retail in any part of the United Kingdom at the rate of 12s. per annum, payable in advance.

Halfpenny stamps accepted for amounts under 5s. Any larger sums to be remitted by Money Order, payable at the Post Office, or by Bank of England, W.C. to DOUGLAS FOURDRIN.

Advertisements cannot be received for the current week's issue later than THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for the MONIALS left at the Office in reply to Advertisements, and strongly recommends that COPIES ONLY should be sent.

NOTICE.—All communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent Garden. All communications should be addressed to the Editor, and NOT to the "Publisher."

Bath Stone of best quality. RANDALL, SAUNDERS, & CO. (Limited). Quarries and Stone Merchants.

List of Prices at the Quarries and Depots. Also cost of transit to any part of the Kingdom, application to Bath Stone Office, Corsham, Wilts. [Adv.]

Whitland Abbey Green Slates.—The Quarries are now fully opened out, and producing Slates in all sizes, and in any quantity; sound, and of choice green tint. Can be executed without a day's delay—samples and further particulars, apply to MANAGER, at the Quarries, Narberth, R.S.O. [Adv.]

Asphalte. Soyssel, Patent Metallic Lava and White Asphaltes.

M. S T O D A R T & C O Office: No. 90, Cannon-street, E.C.—[Adv.]

Patent Selenitic Cement, with double usual sand, is much stronger than ordinary Portland Cement, and of choice green tint. Excellent substitute for Portland Cement. Concrete at less than half its price.—6 W. Belvedere-road, Lambeth, S.E. [Adv.]

Bills of Quantities, Specifications, Lithographed by ROBT. J. COOK & HAMMOCK, 29, Charing-cross, S.W., with accuracy, promptness, Plans and Drawings Traced, or Lithographed.—[Adv.]

MICHELMORE & REA Manufacturers of COLLINGES PATENT HINGE LEVER, SCREW, & BARREL BOLTS, and IMPROVED GATE FITTINGS of every Description. 36A, BOROUGH ROAD, LONDON, S.W.

Discount to Builders. Illustrated sheet on application.

IMPERIAL FIRE INSURANCE COMPANY. Established 1803. 1, Old Broad-street, E.C. 4. 17, Pall-mall, S.W. Capital, 1,000,000. Paid up and 700,000. R. COZENS SMITH, General Manager.

PERFECT DAYLIGHT. WHY BURN GAS? CHAPPUIS' REFLECTOR IMPROVE NATURAL DAYLIGHT AND SUPERSEDE GAS P. E. CHAPPUIS, PATENTEE AND MANUFACTURER No. 69, FLEET STREET, LONDON.

The Builder.

VOL. XXXII.—No. 1643.

Charing-cross.

NORTHUMBERLAND HOUSE is about to disappear: a roadway will be opened to the Thames, and once more this important part of London will change its aspect. Charing-cross is as much the heart of the West End as the Bank is of the City, and every year the congestion of both is increased; for although the circumference of London continually enlarges, its centre remains stationary. That true Londoner, Dr. Johnson, was very partial to Fleet-street, but he was obliged to acknowledge that "the full tide of human existence is at Charing-cross."

This crowded centre of London life was once a village of the smallest dimensions, and existed long before the Eleanor Cross, to which it owes part of its name. In the middle of the thirteenth century there were two religious foundations at Charing, one being a hospital and convent of St. Mary Rouncival, which stood on the site of Northumberland House, and the other a hermitage, with a chapel dedicated to St. Catherine, which belonged to the see of Llandaff. In the year 1262 William de la Mare, Bishop of Llandaff, had leave from the king to lodge in the cloister of his hermitage during whenever he came to London. This hermitage was probably situated near the west end of the present National Gallery, for in 1821 ruins were discovered at the corner of Whitcomb-street (formerly Hedge-lane), and human bones were dug up among the ruins, so that it seems very probable that these were the remains of the old cloister and its burial-ground. It was supposed by some that they were the ruins of the Eleanor Cross, but others believed them to be of greater antiquity than this. We do not know for certain where the body of Queen Eleanor rested when her funeral procession passed at Charing, but most probably it was at Mary's Hospital. The stone cross, erected by Edward I. in honour of his beloved wife, stood in a commanding position near where the statue of Charles I. now stands, for 350 years. It was the handsomest of the series, and was completed in 1291, but was not completed until 1297. Stow reports that there was once a madhouse in this neighbourhood, "but it was said some time a king of England, not liking a kind of people to remain so near his house, caused them to be removed farther off, to them without Bishop-gate, of London, and that hospital the said hospital by Charing-cross doth yet remain."

The Southern Plan of London in the Bodleian Library (1543) shows Charing-cross as open ground, with a few buildings round about, such as the Royal Mews to the north, St. Martin's Church to the east, St. Mary's Hospital to the west, and Whitehall to the west. In Agas's plan, and the houses leading to the river, the Strand, and Spring-gardens are all seen. St. Martin's-lane has a few houses at the south end, and to the north it is through a country lane. Excited men are figured in the highway,

which diverges into Hedge-lane, and the lane afterwards known as the Haymarket, both of which lanes lead up to the "Way to Redings," or the Piccadilly of to-day. On March 26, 1598, Francis Newell was examined at Standfordbury, co. Bedford, when he stated that he "had been hired by Edward Hatton, a miller, who keepeth the mill in the field near Charing-cross." The cross was pulled down in 1647 by order of the House of Commons, and, according to Lilly, the astrologer, part of the stones were used to pave Whitehall, and some were converted into knife-halts. In the "Percy Reliques" there is a ballad on the "Downfall of Charing-cross," which commences,—

"Undone, undone the lawyers are,
They wander about the towns,
Nor can find the way to Westminster,
Now Charing-cross is down:
At the end of the Strand, they make a stand,
Swearing they are at a loss,
And, chaffing, say, that's not the way,—
They must go by Charing-cross."

The site of the old cross was made use of as a place of execution, and several of the regicides were put to death there. Pepys went, on October 13th, 1660, to see Major-General Harrison hanged, drawn, and quartered; and he wrote in his diary, "Thus it was my chance to see the king beheaded at Whitehall, and to see the first blood shed in revenge for the king at Charing-cross." A few days after this Thomas Scott, Gregory Clement, John Jones, Robert Scrope, and John Carew were executed on the same spot. Cromwell's body was dug up, and his head was put on a pike and exposed at Charing-cross. This head is said to have been disposed of, and after passing through several hands it was offered for sale a few years ago to Mr. R. G. Russell, sometime M.P. for Thirsk, who was a lineal descendant of Oliver, through his daughter Lady Rich. This use of Charing-cross was, however, no novelty, for on the 7th of January, 1612, John Selman was executed there for a felony committed at Whitehall Chapel on Christmas Day. The pillory was also set up at Charing-cross, and James Nailor, a quaker, Titus Oates, and Edmund Curll were all pilloried at this place. As it is a central position it has been usual to read proclamations here; and Pope alludes to this practice when he writes,—

"Where all that passers infer nos,
May be proclaim'd a Charing-cross."

The earliest public appearance of Punch in England was at Charing-cross, and in the overscore's books of St. Martin's-in-the-Fields there are entries of payments made in 1666, 1667, and 1668, by "Punchinello, ye Italian popet player, for his booth at Charing-cross," and by "Mons. Devone, for his play-house." In an old ballad (Harl. MS., 7315), written in consequence of the delay in setting up King Charles's statue, the site upon which it was to be erected is referred to, as the place where Punch's pranks were once performed:—

"What can the misty be why Charing Crosse
These five months continue still blinded with boards?
Deare Wheeler, impart, wee are all at a losse,
Unless Punchinello is to be restor'd."

The equestrian statue of Charles I., by Hubert Le Sueur, was cast in 1633, in a spot of ground near St. Paul's Church, Covent-garden, for Lord Treasurer Weston, afterwards Earl of Portland. In Carpenter's "Memoirs of Van Dyck" there is a copy of an undated memorandum to a scrivener to prepare a draft of an agreement between the Lord Treasurer and Le Sueur, "for the casting of a horse in brasse, bigger than a great horse by a foot; and the figure of his Majesty King Charles proportionable, full six foot." Weston intended to set up the statue in his gardens at Roehampton, and agreed that, "for the full finishing the same in copper, and setting it in the place where it is to stand, the summe of six hundred pounds," should be paid to Le Sueur. In consequence of the political troubles of the times, little care was taken of the statue when

it was finished, and the Parliament ordered it to be sold and broken to pieces. John Rivett, a brazier (apposite name), living near Holborn, bought the statue, but instead of destroying it he buried it underground, and produced some fragments of old brass in token of obedience. There is a popular tradition that Rivett made a large number of handles of knives and forks in brass, which he sold as portions of the broken statue. They were bought with great eagerness by the loyalists, from affection to their king, and by the Commonwealth people as a mark of triumph over their adversaries. Immediately after the Restoration, the Earl of Portland, on his discovery of the statue, appealed to the House of Lords for an order that it might be delivered to him. Rivett, the brazier, however, refused to pay any attention to the order, and the House took further proceedings, but he continued to prove refractory. It was not until 1674 that the statue was set up in its present position, when, according to Strype, it was presented to the king by Rivett. The beautiful stone pedestal was the work of Grinling Gibbons. On April 14, 1810, the sword, buckler, and straps fell from the statue, and were picked up by one Moxon, a porter at the Golden Cross Hotel. They were fired in their places again; but when the Queen went to the City to open the Royal Exchange, the sword (which was a real rapier of the seventeenth century) was stolen, and a modern substitute had to be attached to the figure.

There are two historical anecdotes connected with Charing-cross, which, although well known, ought to be noticed here. In Charles II.'s reign the coach of Sir Edward Seymour, the proud Speaker, broke down at this place, and he at once ordered the first gentleman's coach to be stopped, so that he might be conveyed in proper style to the House of Commons. When the proprietor complained, he told him that it was more proper for him to walk the streets than the Speaker, and left him without further apology. About seventy years after this incident the poor old Scotch rebel, Lord Balmerino, when returning to the Tower after his trial, stopped the coach at Charing-cross in order to buy "honey-blobs," as the Scotch call gooseberries. Among the celebrated residents at Charing-cross must be included the dwellers in Northumberland House, of whom we gave some notice a short while ago. Sir Harry Vane the younger lived next door to Northumberland House, and the great Isaac Barrow died in "mean lodgings at a sadler's near Charing-cross; an old, low, ill-built house, which he had used for several years." Rhodes, the bookseller, who had been formerly wardrobe-keeper at the Blackfriars Theatre, and in 1659 opened the Cockpit Theatre in Drury-lane, lived "at the Ship at Charing-cross." Hartshorne-lane, at the end of which Sir Edmund Berry Godfrey had a house, from which he walked to his wood wharf, and where Ben Jonson lived as a child with his mother and her second husband, a master bricklayer, was rebuilt, and is now called Northumberland-street. Its earliest name was Christopher-alley. In Dodsley's "London and its Environs," 1761, is the following entry:—"Hartshorne-lane in the Strand, lately by Northumberland House, leading down from the Strand to the water-side, but it is now demolished, and a handsome street building in its room, which, it is said, will be called Northumberland-street, from the present Earl of Northumberland to whom it belongs."

Scotland-yard, although it leads into Whitehall, strictly belongs to Charing-cross. It takes its name from the palace in which the kings of Scotland lodged when they came to do homage to the kings of England. Margaret, widow of James V. and sister of Henry VIII., resided here for some time after the death of her husband. Scotland-yard was long the official residence of the surveyors of the works to the Crown. Inigo

Jones lived here, so did Sir John Denham, and so did Sir Christopher Wren. Sir John Vanbrugh designed and built himself a house here with some of the ruins of Whitehall. The Queen's Treasury belonging to Queen Caroline, consort of George II, was in Scotland-yard. This place formerly possessed the privileges and immunities of a royal palace, and in consequence three-fourths of the inhabitants were in a state of insolvency. It is now the head-quarters of the metropolitan police, and its name has become a synonym for official order.

Hungerford House was formerly one of the aristocratic mansions on the Thames, and belonged to the noble family of Hungerford, of Farleigh Castle, in Wiltshire. The last of the race was Sir Edward Hungerford, surnamed the Spendthrift, who squandered an immense inheritance, and then determined to convert his London house into a market. A royal charter was granted to him for the purpose in 1681, and this fact was recorded by an inscription on a tablet under a niche in the front of the building, containing the bust of a man in a wig, usually supposed to be Sir E. Hungerford, but which was probably a likeness of Charles II. The upper floor was used for a schoolroom of St. Martin's, and was subsequently engaged by a congregation of French Protestants. The market was never successful (Styrie says, "it was bank'd at the first"), and in 1824 it was reduced to a very low state. The first suggestion for a revival of the market originated with Sir T. Tyrwhitt in June, 1824, and a model of the proposed buildings, designed by the late Mr. Chas. Fowler, was submitted to George IV. in 1825. The scheme remained in abeyance for a time, but was revived in 1829. In 1831 the corner stone of the Dolphin tavern was laid, and the market was proceeded with under the direction of the architect. The new place was no more successful than its predecessor, partly on account of the opposition of its rival, Billingsgate, and in one half-year the proprietors lost 36,000*l.* by the fish-market alone. It struggled on in a half-alive sort of way until the South Eastern Railway Company bought it up for their station. The name of Hungerford has now been annihilated, and the station, with a reproduction of the old cross as a sign, is called instead, Charing-cross. Old Hungerford Stairs and Causeway were one of the most frequented of the landing places on the Thames, and previously to the erection of Waterloo Bridge there was the ordinary ferry to the King's Arms opposite and to the Watergate of Cupar's Gardens.

The King's Mews, which stood on the site of the present National Gallery, was originally used for keeping the royal falcons,—it is said, as early as the reign of Richard II. In the reigns of Edward VI. and Mary, the Mews was rebuilt as stables for the royal horses, and thus the word that originally meant a place for confining hawks while they were mewing or moulting, has come to be applied to stabling. The Mews was rebuilt by Kent in 1732, and remained till 1830, when it was pulled down. Before the place was destroyed, Mr. Cross's menagerie was exhibited here after he had left Exeter Change, and before he went to the Surrey Zoological Gardens. Next to the Mews was the Swan, a celebrated old tavern, which has an interest for us on account of the anecdote told by Aubrey of Ben Jonson. Once when the poet was in the king's presence, he rolled off the following grace:—

"Our King and Queen, the Lord God bless,
The Pope, and the Lady Beese;
And God bless every living thing
That lives and breathes and lives the King.
God bless the council of estate,
And Buckingham, the fortunate,
God bless them all, and keep them safe,
And God bless me, and God bless Ralph."

The king was anxious to know who Ralph was, and Ben told him it was "the drawer at the Swanne Tavern, by Charing-crosse, who drew him good Canarie." This joke was profitable to the poet, for the king was liberal enough to give him 100*l.* People pay better for being amused than instructed.

The old church of St. Martin-in-the-Fields was built in the reign of Henry VIII., and Henry Prince of Wales added a chancel to it in 1607. In September, 1721, this building was pulled down, and the present church, designed by Gibbs, was commenced. The old parish whipping-post is preserved in the vaults. The great Francis Bacon was baptised in St. Martin's Church, and the celebrated men who have been buried here are very numerous, as Hilliard, Vansomer, Lanier, Dobson, and Laguerre, among painters; Stone and Roubiliac, among

sculptors; Sir Theodore Mayerne and John Hunter, among medical men; Sir John Davis, Stanley (the editor of *Æschylus*), Sir John Bickenhead, Farquhar, and James Smith, among literary men; Nell Gwynne, Lacy, and Charles Bannister, among actors, and Secretary Coventry, the Hon. Robert Boyle, and Athenian Stuart. On the south side of the church, under the pump-pavement, was what was called the Watermen's Churchyard. J. T. Smith mentions this in his "Book for a Rainy Day," and a waterman told him he could point out "the spot where fifty of us have been buried." In immediate neighbourhood to the church was formerly a rookery of obscure alleys called the Bermudas, and a paved alley called Porridge Island. This last was noted for its cooks' shops, to one of which Holcroft, the dramatist, was a constant visitor. The Golden-cross, Charing-cross, was formerly a celebrated coach-office. To the west of it was the house of David Pollock, his Majesty's saddler. Mr. Pollock had four sons, all of whom were distinguished men. One, Sir David Pollock, was Chief Justice of Bombay; another, Sir Frederick, was Lord Chief Baron of the Exchequer; and a third was Sir George, the Indian General, who forced the Khyber Pass in 1842. Pollock's foreman, Peter Laurie, became Sir Peter, and Lord Mayor of London; and Wilde, an attorney's clerk, who was in the habit of dropping in to chat with the men, became, first, Sir Thomas, then Lord Chancellor and Lord Cranworth: certainly a remarkable story as to a group of men starting under difficulties. William Jerdan (of the *Literary Gazette*) had struggled with them at the commencement of his career, and at one time was as eminent and prosperous as any. When evil days came, his early friends remained staunch to him.

The open space of Charing-cross has been somewhat curtailed by the building of Cockspur-street and of the sides of Trafalgar-square, but otherwise it remains much the same size as it was when St. Martin's Church was in the fields, and the mill stood on the nearest bit of rising ground. It has been the fashion to speak of this place as the finest site in Europe since Sir Robert Peel used the term. The position is unquestionably a fine one; but it is only a site, and to make it into a noble place, much will have to be done. With a new building for the National Gallery, and a wide street leading to the Embankment, with newly-built entrances to the Strand and Whitehall, and an opening into the Park at Spring-gardens, Charing-cross, would, indeed, become the finest part of London.

HISTORICAL MONUMENTS IN FRANCE.*

INTERNATIONAL EXHIBITION.

Of kindred character to the church of St. Nectaire is the "Monument sépulcral du Chambon" in the same district, and equally well drawn by the same hand. The natural tinting of the masonry is most beautiful in this small circular building; and exceedingly curious is the setting on of the angular porch in a manner completely out of all relation to the centre, or to any axis of the main building. The world-famous "Abbaye du Mont St. Michel," of which we gave a drawing on the 18th ult., is illustrated here by no less than thirteen large drawings, showing every face in complete detail, with plans and sections, all in its existing condition, with one sheet of details of "urgent" restoration of parts which are in a serious state of decay. The architect is M. Corroyer. The drawings of the chapel of the château at Vincennes, one of the five works we mentioned on which so much is being spent, include a pen-and-ink perspective rather in the style of English drawing, in which the deep massive buttresses, against which great part of the arch-mould of the window is stopped, serve to correct the rather thin and over-wrought appearance which the large traceried windows present in the elevations. The design, which is Geometric Gothic, with all its elaboration, has not the refinement and excellence, by any means, of the best English Gothic of that period. Another thing that strikes one is, that if the perspective really represents, as stated, "*l'état actuel*," what need for "restoration" at all? The architecture in this drawing (which is only a small portion, certainly, of the whole) appears very complete, and in excellent preservation. The architect is M. Sauvageot. The Salle Synodale de Sens, restored by M. Viollet-le-Duc, presents the remarkable and un-

usual aspect of a very rich and fine window arcade of the thirteenth century, in the upper portion (with conoid windows within deep niches and arches) on a ground story of absolutely plain masonry, only irregularly pierced with square grained windows. The façade to the court is a noteworthy piece of plain but effective treatment; short circular angle turrets on heavy square angle buttresses, complete the characteristic appearance of this very interesting structure.

Perhaps the most interesting portion of the drawings, however, is that which illustrates civil and military architecture. The civil architecture here illustrated consists mainly of the châteaux of the first period of the Renaissance, so peculiar to France, and in which the Gothic feeling for outline and picturesque grouping almost entirely preserved along with the classical detail. The manner in which the interesting buildings are being treated by the Restoration Commission is best exemplified in the drawings of the Château de Cléry (a rather early building, however, of the fifteenth century), which the existing state can be compared favourably with the restoration. The main roof, which in the old building is a plain tiled one, appears to have sagged a good deal, is stored, and ornamented with a cresting,—a questionable proceeding, somewhat spoiling the feeling of the building. The roof of the circular angle-turret is raised, and an open stage belfry formed in it, and two oriel windows inserted in the longer façade; but whether the data for these we do not see; there is no trace of them in the original drawing. The châte is in red brick, with stone dressings. It seems to be one of the restorer's duties in many these cases to raise the roofs, which we suspect to have been done in some cases with relation to modern feeling than ancient precedent. Another very interesting restoration is that of the Palais Granville, at Lisieux, M. Berard. This is a most interesting house of the sixteenth century; the exterior design engaged columns, and windows with a peculiar finish at the top like the bed mouldings of a pediment, with the corona, &c., removed; courtyard section presents on the ground story arcade of three centred arches. The roof in the case has been restored, from a brown tiled rather wavy at the ridge, to a two-pitched design of grey and orange tiles in a large square pattern. The large drawing of a part of the main elevation, on one of the screens, is perfect masterpiece of "get-up" in an architectural drawing; the grey-tinted masonry appears as if one could almost feel its texture. The Château de Blois, of which there is a fine section drawing by the late F. Duban, is remarkable for its semi-octagon open staircase, with richly-carved balustrades, carried on flat-headed arches, brought boldly up against the high square angle piers. There is plenty more interest among these châteaux, but we cannot stay to remark here on the fortunate choice of site made for most of them in regard to effect, so that there is almost always a high and level for the architect to deal with,—an arrangement which almost ensures an interesting design. There was little thought of mere effect, probably, when such sites were chosen; and the châteaux which have now lost all trace of actual "castle," as we understand the word, doubt supplanted other more warlike structures placed on such sites to dominate the country as the villages below. In the specimens here illustrated of *architecture militaire*, one cannot but observe, on comparing one with another, the prevalence of the arrangement of a château (in the more modern sense) on an elevated platform out of danger, while the castellated turrets and towers which defend it range with the domestic building at the top, but plant their feet secure at the base of the hill, as sentinels against the lower world. This is grandly carried out in the Château d'Amboise, where the dwelling portion consists of two sides of a square, the angle missing near the edge of a precipice, where adjoins a mighty circular tower, which rises from the base. There is something grand in this combination architecturally; and historically, how significant is it, how indicative of self-luxury in the *salon* maintained by high-handed oppression from the castle! We know no other of buildings of which what may be termed the social physiognomy is more marked as unmistakable than these armed châteaux. Of the larger species of fortified castle we have here elaborate drawings of a most picturesque and powerful group, the Château

* See p. 629, ante.

of the fourteenth and fifteenth centuries. The whole place as it was, and as it is to be under the restoration of M. Darcy, is completely shown, the restoration consisting in making good the occasional breaches of the walls, rebuilding the upper part of the St. Laurent Tower, and the other the multifarious towers and turrets of the conical roofs of the same proportionate. The group forming the "château" the entrance, with its immense flanking towers with a corbelled-out pent-roof, over the back roof in the rear, is as grand and imposing a pile as ever delighted the eye of a beholder. The walls are apparently constructed of brick. The drawings of the restoration of the Château de Pierrefonds by M. Viollet-le-Duc, of which a good deal has been said lately, are; they are executed in a very neat, light line, with slight tinting for the roofs, &c. in principle of connexion with the plain by ascending to the level of the main building again illustrated here; one remarks the effect of the rapid battering of the lower of the towers, which, so far as appearance is concerned, and gives these great features a pepper-box look. M. Viollet-le-Duc also gives two views of the old fortified city of Besançon, each showing the appearance before and after he took it in hand. Here, again, the restoration, in addition to touching up decayed points in the masonry, seems to consist largely in putting what we may call "the face" of the same size or proportion on all the walls. This seems to be a very vital point in each idea of castle restoration; we may fairly doubt whether these buildings at Besançon of their active existence, so to speak, and this regularity of appearance. In the case of architecture we are speaking of is included a change and a restoration of the town and bridge (the scene, if we remember right, of a sharp fight in the Peninsular war), the tower presents the singular feature of a dragon upper story on a cylindrical lower face of the octagon flush with the tower and the angles projecting, with flat and no corbelling. The mural paintings given here are almost all commemorative drawings, *fac similes* of existing state of the paintings: the success of which the appearance and surface of the painting has been imitated in the drawing. The old paintings of the thirteenth century from the church of St. Quiriac exhibit some beautifully bold and decorative work of almost Greek refinement. The figure subjects are very faulty in drawing, but show true perception of the composition; the figures are outlined in reddish-brown lines. Simple and naive as the paintings are, they are far superior as paintings to the later work of the palace of Fontainebleau, with its perspectives and pink and blue tints. The painting by Simone Martini, from Notre Dame at Avignon, should be looked at, as a very grand specimen of type of work: the Saviour, clad in deep red drapery, is seated in the centre, and figures, of much beauty of colour and pose, surround him on either side. But the most striking pieces of coloured decoration shown are the mosaics, mostly very ancient and of a decorative in character. A beautiful floor pattern comes from Bielle, once the site of a Roman juridical court, and where of baths and temples have been found. The site of this is composed of a thick wreath of white and green. The mosaics of the Abbey Church of Sordes (twelfth century) are beautiful, presenting both pavements and decorations of conventional foliage of harmonious tints; but the most remarkable is the mosaic from the church of St. Aur-Loire, brought there from Italy in the thirteenth century, and probably itself of the twelfth century. The catalogue notes say, "It is composed of most rare marbles, jasper, porphyry, and serpentine. It is placed on an inclined plane. The work is very remarkable." The pavement on this is of most beautiful type, and both to design and colour. The whole of the mosaic designs are drawn in such a manner to represent perfectly the effect of the actual, every little cube of the mosaic being separately, and the white edges of the mosaic indicated; another instance of the care and fidelity with which our Continental artists undertake work of this description.

We have dwelt at some length on these drawings, feeling that so important a national work as this, which has been carried out hitherto, as far as we can judge, with so much ability and conscientiousness in the main, ought to receive due recognition; and that the spirit in which it has been entered upon is as honourable to the Government (or Governments) undertaking it as the execution of the work is creditable, on the whole, to the ability of the architects of France. The comparative neglect of her architectural monuments during two centuries is being compensated for as far as possible, and the exhibition of the "Commission des Monuments Historiques" is a fitting commentary on the text, in the essay we have before quoted from—"*Il était donné à notre époque de comprendre que conserver ces édifices qui racontent la gloire du pays, c'était faire revivre son passé au profit de son présent et de son avenir.*"

Early readers of the *Builder* know of the Commission and its works, but a fresh generation has arisen since then.

THE ARCHÆOLOGICAL INSTITUTE AT RIPON.

The true interest of Ripon, and of the country within reach of the visitors, lies in the ecclesiastical foundations, so numerous and so important throughout all this part of Yorkshire. Ripon itself,—or rather the site on which the city now stands,—was first colonised by certain Scottish monks from Melrose, among whom Cuthbert, the future saint of Lindisfarne and Durham, acted as "hosteller," until, after the Council of Whitby in 664, they resigned the place to St. Wilfrid, by whom two monasteries were erected, one of which was on the site of the existing cathedral. This cathedral, of much later date, ranging from Early English to Perpendicular, but containing, nevertheless, a crypt which is believed to be the work of Wilfrid, is the chief point of attraction at Ripon.

The cathedral was in the hands of Sir G. G. Scott from 1862 to 1873, when it was formally reopened after a complete restoration. This was not unneeded, and the church is now one of great interest, and, in parts, of great beauty. The archaeologists have been led round it by Sir Gilbert Scott himself, as we noted last week in briefly speaking of the opening proceedings.

Sir Gilbert expressed regret that he had not prepared himself more thoroughly for the task imposed upon him. What he proposed to do, he said, was merely to act as showman to the building, and introduce to those who were not already acquainted with the edifice certain architectural details which they might not find out without such aid. The architecture of the church in its earlier form was chiefly interesting, he remarked, from its being an early specimen of the great transition from the Romanesque or round-arched style, which prevailed for so many centuries, to the pointed-arched style, to which we owed the beauties of most of our cathedral buildings, a style which was generally supposed to have been brought from France by the architect who rebuilt Canterbury Cathedral about 1120, but which he believed to have been introduced simultaneously in both countries. Sir Gilbert then proceeded to point out in the nave, transept, and centre tower the portions of the old buildings yet extant.

At the close of the lecture the visitors were taken into the library, where a short paper on its principal contents was read by the Rev. J. T. Fowler, followed by illustrations of ancient music recently discovered there, rendered by the cathedral choir. Maison de Dieu, an ancient asylum for eight poor women, supposed to have been founded by one of the family of the Nevilles; the Hospital of St. Mary Magdalene, founded by Archbishop Thurstan, for the relief of all lepers in Richmondshire; and Ailey Hill, in the residence grounds, were afterwards visited.

The inaugural address of the Marquis of Ripon, the president of the meeting, was delivered in the Riding-school, in Park-street. The room, which is capable of accommodating between 300 and 400 persons, was crowded. His Lordship, in course of his address, assured the members that the Yorkshire archaeologists were always glad when the antiquities of Yorkshire proved sufficiently attractive to induce learned and distinguished societies like the present to come amongst them, and to render what aid they were able in the investigations

which the larger society in the United Kingdom and the Yorkshire society, on the more limited area of the county, were engaged. Having welcomed them to Yorkshire, his lordship expressed his personal gratification that Ripon had been selected as the centre of their operations. He disclaimed any intention of even attempting to give an historical or archaeological lecture, and attributed his position in a considerable degree to his connexion with Ripon and his ownership of Fountains Abbey, that magnificent ruin which he held to be a priceless possession. He yielded to no man in his desire to preserve everything which might be of use in throwing light on the history of the past. Speaking of the objects which would be visited during the week, he said that a more important group, or one of more varied interest, could not be found than existed within the district. He next referred to the examples in that locality of the British, Roman, and English periods of archaeology, instancing particularly the traces of earthworks supposed to be of British origin in that neighbourhood. At Thornborough there was a remarkable series, the special characteristics of which he pointed out, and remarked that it would be interesting to have the period of these remains approximately ascertained. The Roman remains at Castle Dyke, and the excavations made by the Rev. W. C. Lukis were next referred to, and the discovery of Roman appearances near Clothesholme. Ripon was not so far from the site of the ancient Isurium, now Aldborough, as to have remained unaffected by that important station, and papers bearing on all these matters would be of great interest to the members. He suggested the compilation of a work bearing on all these earthworks, whether single or detached, and also a collection of accurate drawings of all inscribed and carved stones which exist in what was known as Northumbria. Having referred to other local antiquities, and to the importance of preserving ancient monuments, he said that he relied more upon a healthy public opinion than upon legislative measures for accomplishing this object.

Referring to the abbey, the Marquis said he had only to remind them that they had fun of the most interesting Cistercian houses to visit, and he could not but think that an opportunity which he believed to be unattainable elsewhere in England was now afforded for such an examination of their architectural remains as might solve many vexed questions as to the uses to which the different apartments of these fabrics were originally put.

The business of the sections commenced on Wednesday morning (July 22nd), at ten o'clock, in the Riding School, the Rev. W. Stubbs, Regius Professor of Modern History, Oxford, presiding in the earlier portion of the proceedings; and the Marquis of Ripon subsequently. There was only a small attendance at the beginning of the meeting, but the company gradually increased, and the reading of the second paper on the list, that by Mr. Edmund Sharpe, M.A., "On Monastic Buildings of the Cistercian Order,"—a part of which we give in our present issue,—a large assembly listened, ladies composing a great part of the audience. Mr. Hallstone read a paper on "Ripon College."

The chief feature of Wednesday's proceedings was the excursion to Markfield Hall and Fountains Abbey, and great interest was evinced in this part of the programme. The weather was bright and cheerful. On arrival at Markfield, an old crenellated mansion in the possession of Lord Granley, the party was conducted around by Mr. J. H. Parker, who entered into a description of some of the chief portions. In the course of his remarks he stated that he understood that an order had been given for the conversion of the hall into a farmhouse, and the alterations that would be made in consequence would destroy the character of the building. Sir Gilbert Scott moved that the society present a respectful remonstrance to Lord Granley against those intended alterations. The society, useful as it was, lost half its usefulness if it passed over acts of vandalism of that kind. Mr. Clark said he could not think that Lord Granley was the man to allow such acts of vandalism as had been described, if he knew of it. He quite approved of the protest being made, and agreed with what Sir Gilbert Scott had moved. Mr. F. Barber suggested that no time should be lost in making the protest, because an order had been already given which, if carried out, would alter the character of a part of the building. Resuming the journey,

the party soon reached Fountains Abbey, and at once repaired to the cloisters, or, as Mr. E. Sharpe now contends it should be called, the *domus conversorum*, where an excellent luncheon had been provided through the kindness of the Marquis of Ripon. It was this portion of the abbey buildings which Mr. Sharpe maintains was used as the day-room of the *conversi*, or those members of the order who "prayed little and worked much."

Immediately after luncheon they were conducted through the abbey ruins by Mr. Sharpe. Sir Gilbert Scott remarked, apropos of some one's anxiety as to the time of day, that as they were then in the most glorious place in Great Britain, or thereabouts, he advised them to set at nought all appointments with coachmen and carriages. The suggestion was received with much laughter and applause. In the course of his remarks Mr. Sharpe said that they had in Fountains Abbey one of the most remarkable examples of the earlier part of that transitional period of architecture which took place when, after long subjection to Norman influence in their erections, Englishmen began for the first time to throw off the trammels of Norman influence in designing their buildings. At the time to which he referred, viz., 1140, it was perfectly certain to him that there sprang up a school of indigenous English builders, who asserted their own ideas for the time in regard to their buildings. After pointing out the peculiarities of the transitional period, Mr. Sharpe made a comparison between Fountains Abbey and Fontenay Abbey in France, and showed how in some respects they resembled each other. He next pointed out the grand features of the tower, built in the fifteenth century, and also referred to the six altars which had recently been uncovered through the investigations made by the Marquis of Ripon.

The party was subsequently taken into the cloisters or the *domus conversorum*, and then walked through the grounds to the water-gate, and there re-entering the conveyances, proceeded back to Ripon.

Thursday was entirely occupied in an excursion to Richmond, and the examination of a few of the many objects of interest in the neighbourhood of that ancient town. These objects included Easby Abbey and Church and Richmond Castle and Church, some other places mentioned in the programme having to be omitted in consequence of the want of time. The party was conveyed by special train from Ripon to Easby Gate.

At the meeting of the Council of the Institute it was decided to hold next year's meeting at Canterbury.

In the evening, a *conversazione* was held in the Mechanics' Institute, in a room of which building there had been collected for the occasion a large number of ancient manuscripts, many of them beautifully illuminated, specimens of antique weapons, and other articles of interest to the members. These had been contributed by gentlemen of the neighbourhood, and by other members of the Institute. There was a large attendance of the visitors, among them being the Marquis of Ripon and party, Lord Talbot de Malahide, the President to the Institute, and others. A display of fireworks was given in the drill-field in honour of the visit of the Institute to the town.

At half-past nine the Marchioness of Ripon entertained the Institute and a large party of the surrounding gentry at Studley Royal. The grounds and gardens were illuminated for the occasion. The band of the Ripon Rifle Volunteers was in attendance.

On Friday the sections met in the Riding-school. There was only a small attendance. Lord Talbot de Malahide occupied the chair, and read a memoir of the late Mr. Albert Way, their founder, who for so many years—he might say to the last moment of his existence—took a lively interest in their success, and contributed much to the reputation which, without vanity, he might assume that they had acquired among the literary and antiquarian societies of Europe. As to Mr. Way's private history, this was not a fitting opportunity for entering into it. During many years previously to his death, he had been in a very infirm state of health. He died in Cannes on the 22nd of March, at the age of 68.

Lord Houghton proposed the vote of thanks which was given to Lord Talbot de Malahide for his interesting paper.

Professor Stubbs read a paper on "The History and Constitution of the Liberty of Ripon"; and Mr. E. Sewell (Ilkley) read a paper on "Some ancient Sepulchral Remains discovered

at Ilkley on the 8th of May last," of which remains we have already given some particulars.

An excursion was then made, having for its object the examination of the Roman remains at Castle Dykes, Thornborough, Tanfield, Well, Snape, and a visit to Bedale. The party consisted of nearly 200 persons. At Castle Dykes they found that considerable excavations had been made, in the inspection of which, and in the interesting description given by the Rev. J. C. Lukis, rector of Watb, of the discoveries made, about three-quarters of an hour were spent, and Mr. Lewis read a paper on "Castle Dykes."

The party then proceeded to Tanfield, where the church was visited, and the Marmion monuments were described by Mr. Bloxam, and the peculiarities of the structure pointed out, particularly some recesses in the wall. The gatehouse was also inspected, and Mr. G. T. Clark, from a variety of indications, said he had come to the conclusion that the Marmion barons had at one time a castle there.

Snape Castle was next visited, and then the party drove to Clifton Castle, four miles from Bedale, where they were entertained at luncheon by Mr. Puleine, they having first seen through a portion of the buildings, and admired the grand view which is obtained from the front of the castle, with the rocky bed of the Ure right below, and a well-wooded and picturesque country stretching away for miles.

Owing to pressure of time the proposed visits to Thornborough and Well were not made. Driving on to Bedale the party examined the church, and then the most of them returned to Ripon by special train. Others remained to resume their investigations next morning.

On Saturday, there were no sectional meetings, but the members of the Institute visited the halls and strongholds of the Scropes and the Nevilles. They trod the land of the lords of the Northern Marshes, and sojourned amidst the cloisters of Jervaulx.

The programme was fully carried out, though in a somewhat hurried manner. They were treading on historic ground, for "in the space of 300 years, between 1330 and 1630, the house of Scrope produced two Earls, twenty Barons, one Lord Chancellor, four Treasurers, two Chief Justices, one Archbishop, two Bishops, five Knights of the Garter, and numerous Bannerets." The second Speaker of the English Parliament was a Scrope, and another was amongst the Judges of Charles I. They had seen some of their memorials at Easby, and now they were at their ancestral home, Bolton Castle. It is a bleak spot, and the ruins are gaunt enough for the proverbial "cruel baron" of the Middle Ages.

The structure was explained by Mr. Clark. It dates from the time of Edward III., and was eighteen years in building. Here Mary Queen of Scots was confined for a short time, and Colonel Scrope defended it during the Civil Wars. A subsequent governor, Colonel Claytor, held it until forced to eat his horses, and then capitulated. The castle was then dismantled, and the ruins alone remain.

Wensley Church is remarkable for its old carved woodwork of the Scrope screen taken from Easby Abbey. The church is full of heraldic insignia, and its brasses and monuments were described by Mr. Bloxam. The Saxon stone marked "Donfrid," which has been so often engraved, was minutely examined.

The great attraction of the day was Middleham, long the seat of the Nevilles and the home of the king-maker. It was the favourite residence of Richard III. Mr. Clark gave an eloquent exposition of its history and fortification. The Norman keep still exists in the centre of the later and massive work. The remains of the hall and chapel excited much attention and admiration. Within the walls luncheon was served, but the party had been treated so hospitably on every previous day that they thought the catering of the committee not up to the mark. Time did not permit of a thorough examination of the ruins, for the party was to meet Mr. Edmund Sharpe at Jervaulx, and have a further illustration of the manners, habits, and home of the Cistercians.

There is but little more than a ground-plan of Jervaulx Abbey to be seen, but, thanks to the Marquis of Ailesbury, what remains is well kept, and its sepulchral memorials are of great interest. Here is buried before the high altar Elizabeth Fitzhugh, the daughter of the Marmions of Tanfield. The abbey was founded by the Earl of Richmond in 1156, and its architectural remains partake of the pure Early English character. It was in its

glory in 1537, and the dissolution destroyed it utterly. The last abbot was hanged, and his signature may yet be traced in the Tower of London. It was not until the commencement of the century that the site of the abbey was recognised, so utterly was it destroyed. The party wandered through the chapter-house and kitchen, observing the perfect arrangements of the old monks, whose water supply still remains. Mr. Sharpe was, of course, at home in pointing out the site of the various buildings and offices. Ripon was reached at late hour.

On Sunday morning, in consequence of the visit of the Institute to the city, the Rifle Volunteers attended Divine service at Ripon Cathedral. The mayor and corporation also attended in their official robes. The sermon was preached by the Rev. the Dean, who recommended the archaeologists to study the history of the Jew. In the afternoon a sermon was preached by the Rev. H. D. C. Nunn, vicar, from Isaiah xli. 9.—"Remember the former things of old."

On Monday the members and visitors left the Ripon Station by special train for Croxall, on arriving at which place they were conveyed by carriages to Byland Abbey, thence to Rievaulx Abbey, and on to Helmsley, where a halt was made for luncheon. Mr. Clark explained the chief points of interest, and after leaving Helmsley the party proceeded to Gilling, and then returned to Ripon by special train. In the evening there was a *conversazione* in the Museum when the objects of special interest were explained.

On Tuesday, the proceedings were brought to a satisfactory close, and everybody thanked everybody.

BRICK AND MARBLE IN THE MIDDLE AGES.

THE work published a good while ago under the above title, containing Mr. Street's impressions and criticisms of architecture in the north of Italy, is now re-issued in a second edition, forming a somewhat larger but still handy volume,* after undergoing considerable revision and additions at the hands of its author. Mr. Street has not, he tells us, found it necessary to alter his previous conclusions, so far as general principles are concerned, based on the study of Italian architecture; but in revising what he had previously written, he found himself obliged to make many alterations and additions, sometimes in relation to towns not visited on his first journey; sometimes in reference to buildings either not described, or insufficiently described before. This has involved the re-writing of much of the book, though with the endeavour to interfere as little as possible with the general tone and character of its contents.

In its original form this work probably estimated the interest, among English architects, in that combination of brick with marble veneered or particoloured designs which has so largely characterised the architecture of Mediaeval Italy, and the avowed interest which gave rise in great measure to the fancy for chequered and "stripy" brickwork in England, which critics have stigmatised by various contemptuous epithets. We cannot say that the influence of this form of Italian architecture on our own modern practice has been in the main for good. We have imitated mostly the less refined, certainly the less costly forms of it; we have got the brick without the marble, for the most part. That the process of marble veneering has not been employed here, at least not in the extensive and wholesale manner in which it is found in Italy, is a matter for congratulation; it is not in the highest sense an architectural form of treatment; it has more of the essence of cabinet work than architecture, and at best is only suited in expression to a climate of mild weather and bright suns. But the adoption of brick and marble in combination might have been very well used here, and has been almost neglected, except in so far as the employment of marble shafts goes. We have instead of this in our modern brick architecture, either very raw and crude combinations of strangely coloured brick, or we have "stone dressings," in which a dead sandstone surface offers no contrast to the texture of the brick, but rather adds dullness to the whole. Part of the charm of brick and marble combinations consists in the contrast of

* Brick and Marble in the Middle Ages: Notes of Towns in the North of Italy. By George Edmund Street, R.A. Second edition, with numerous illustrations. London: John Murray.

ure—the smooth bard marble with the rough
it—and in the delicate tints obtainable from
marble. We have a good deal of the material
in reach, but it has not been made the most
even where expense was no obstacle to any
or fancy of an architect. The Northern
itect is like the refractory sons of the
op in Browning's poem; he refuses the
ble, and will give us only stone.* We have
h need of more cheerful and less grim and
-holding materials in the architecture of
rains and smoke-stained towns.

Independently of these more practical
conditions, the interest of a comparative study
Italian, with Northern Medieval architecture,
very great, even to those who feel less of
live interest in the style *per se*. The peculiar
ation between the conditions under which
architect worked, and the results he pro-
d, in the North and in the South, is very
ely brought out in the book before us. It
ts out how the Northern Medieval architect
veloped his style away from the reach of the
ains of Classic architecture, and with no
edents to divert his aim from the one style
he was engaged in almost unconsciously
ecting, without, practically, the knowledge
ny other. The Italian was otherwise situated.
orked in a country with a great past, the
itectural monuments of which were every-
e around him. And these architectural
ments belonged to a school of constructive
gn, totally opposed to that which was domi-
n in Europe in the Middle Ages. They were
monuments and representatives of the great
l system, which had died out with the
ne and fall of the Roman Empire. The new
atural form was that of the arch in its
ely, which had only been half accepted by
h. It was a one-sided and architecturally
egotic manner, but was now to be carried to
almost development by the Goth, whose
ence was to become predominant through-
Europe. But in the midst of this per-
sion of the arched style, there lingered
taly a constant tendency to a revival
or return to, the antique forms, the
ains of which were so plentiful, and
consequence was not only the existence
and there of groups of artists, influenced
me one building of antiquity, which they
ired, and were desirous of re-producing, in
ost features, in their new work; but a
ral obstacle everywhere to the frank
pance of the arched style as a
m of balanced and buttressed construc-
on.

The old Classic principle of repose
asserted itself in the Medieval art of Italy.
Buttress was never made a feature in the
gn, except in the old Classic pilaster-like
y, the arch was largely used, its pointed
was more or less adopted, though with
tation, but its external constructive expres-
sion was shirked, and the obvious aim was to
oin the Gothic arched construction with
Classic immobility of design and expression;
this was not the conscious aim, it was the
onscious result of conflicting tastes and
tations.

They ignored, as much as possible, the clear exhibition
the pointed arch, and even when they did use it, not
quently introduced it in such a way as to show their
apt for it as a feature of construction; employing
en only for ornament, and never hesitating to con-
it in so faulty a manner, that it required to be held
her with iron rods from the very first day of its erec-
tion. This fault they often found it absolutely necessary
omit, because they scarcely ever brought themselves
to the use of the buttress; and this reluctance was
markable proof of their Classic sympathies. . . .
architects, then, in never resorting to the buttress,
and their feeling that a state of perfect rest was the
allowable state for a perfect building, and they pre-
ferred almost always to use the arch for its beauty alone,
specially not for its constructional value.

From this use of the arch without the buttress
think, Mr. Street, one beauty, the use of
frequent trefoiled arches so common in Italy,
which he regards as having their origin
tempt to balance the arch by weighting it
ards. As so much depended on these tre-
foiled arches, "no pains were spared in bringing
out the outline into the very purest form. To this
owe the absolute perfection which charac-
terises some of the trefoiled arches in Early
an work." Whether or no this may be
aching a little too much constructive import.

* There, leave me, there—
I have staid'd me with ingratitude
Death—ye wish it—God, ye wish it! Stone—
stone, a-crumble! Clammy squares which sweat—
the corpse they keep were oozing through—
no more spots to delight the world!"
(From "Men and Women": "The bishop orders
his tomb in St. Praxed's church.")

ance to the trefoiled arch, there can be no doubt
that to the half-hearted use of the arch referred to,
as well as to the lingering of certain remi-
niscences of Classic art, is mainly due the want
of unity of design and of entirely satisfactory
character in the buildings of Medieval Italy as
compared with the best of Northern Gothic.
"You may go to a great English cathedral and
find that, from every point of view, inside and
outside, every feature is well proportioned to its
place, and beautiful in itself, whilst the *total*
ensemble is also perfect in proportion and mass.
This can never be said of Italian work. It never
produced anything perfect both in detail and in
mass, and one always finds it necessary to make
excuses for even the best works, such as one
never finds necessary, or allows oneself to think
of making, for English works. There is some-
thing really absurd in comparing even the best
of the Italian churches with such cathedrals as
those of Canterbury and Lincoln, so superior
are the latter from almost every point of view."

We take the above extracts from the concluding
chapter, in which the merits and defects of
Italian Gothic buildings are summed up very
comprehensively. Among other reminiscences
of Classic design with which the Italian architect
was haunted was the cornice, which was de-
veloped to an extent and with a richness never
found in true Gothic work, and the heavy lines
of which not only cap the walls horizontally, but
are carried up gables and returned round
buttresses. Many of these cornices (often
brick) are very fine, and not without great effect
architecturally; but it is obvious that they
clash with the verticality of design which is pre-
dominant in true Gothic. The mouldings of the
Italian architect are what we should call poor
and slight in effect, partly the result of a bright
climate where deep cutting is not required to
create shadows; and partly that fre-
quent dealing with marble leads to a love for
plain surfaces and sharp angles rather than for
deep hollows and rounded angles. The traces
of Classic influence on the plan, through the
basilica form, are everywhere in Italian churches,
which thus lack the multiplied outline and
internal intricacy of the Northern cathedral; the
latter quality being again interfered with by the
wide spacing of the points of support by the
Italian architect, who thus removed all appear-
ance of mystery, and even destroyed completely
the apparent scale of many of the largest struc-
tures in this manner.* Among peculiarities
due to Classic influence, our author points out
with much commendation the constant use of
the detached shaft, and especially its use in
couples placed one behind another, so as to
ensure lightness in the front view and yet give
a full and varied perspective, with ample
apparent strength. We quote the following
very just remarks in regard to the respective
merits of shafts and continuous mouldings:—

"So long as the influence of Lombard and Romanesque
art is visible in French, German and English Gothic,
long the detached shaft was used, and just in proportion
as in course of time that influence decreased, so
did the frequency of its use decrease. Our fourteenth
and fifteenth century buildings present nothing in its
place but combinations of mouldings, in themselves
very beautiful, but by no means so beautiful as to re-
concile us to the loss of that which they so entirely
supplemented. One consequence of their introduction,
to the exclusion of the detached shaft, was, that the
art of sculpture deteriorated just in proportion as the
art of moulding was developed. There is no place in
which architectural sculpture can be more fittingly
displayed than in the capital of a column. It is the most
convenient, and at the same time the most conspicuous
position for it. It is, too, the most important feature
in every design in which the detached column is used.
The gathering together of all the arch mouldings into
one above the capital, in order that their force may be
collected before being transmitted to the ground, leads
naturally to the laying of a special emphasis on this
point above all others, and it is one of the strongest
among the many reasons in favour of the earliest Gothic
and against the latter varieties of the style, that in the
former the use of shafts involved the use of forcible
and elaborately cut capitals, so that this point might be
most distinctly marked; whilst in the latter, by the dis-
use of the shaft and the constant practice of carrying
the mouldings of the arch down to the ground without
any interruption, it was made as little as possible."

The partiality of the Italian architects for
detached shafts is further illustrated, we may
observe, by the peculiar form of porch, consist-
ing of a canopy supported by shafts generally
resting on the backs of animals, which is found
so frequently in Italian work. One of these,
that of S. Maria Maggiore, Bergamo, forms the
frontispiece to the present volume, and is a very
good specimen of this elegant type of design,

* The author particularly mentions the great five-aisled
church of S. Petronio at Bologna, as an instance of the
loss of apparent scale through the wide spacing of the
piers, so inferior to the multiplied perspective of the Gothic
cathedral.

with which, however, great fault may doubtless
be found if we take it from the stand-point of
exact criticism. But there are many such
features in architecture, which it would be il-
l-judged to imitate, yet which in their original
form and locality are full of an interest partly
artistic, partly archaeological; we sketch them
with a kindly feeling towards the workmen
who invented such pretty fancies, and feel
satisfied, on the whole, that there should be
be "incorrect" as well as "correct" archi-
tectural design in the world, and that artistic
invention should never have moved for long
in one fixed path, however satisfactory it might be
to the judgment. Among other uses of the
shaft in Italy, Mr. Street alludes to the cloister
of S. Gregorio, Venice, where the shafts support
the woodwork in a very picturesque fashion
without any arches; in fact, a reminiscence on
a small scale of Classic construction, only that
the lintel is wood instead of stone. There is
among the drawings of French châteaux in the
International Exhibition a similar construction,
with admirable effect, in the formation of a
recessed gallery under the eaves of the roof,
which are carried by shafts in pairs at some
distance from one another, supporting what we
should now call a "trimmer" at the extremity
of the rafters. Constructively, no doubt, wood
upon stone shafts is not altogether workman-
like; and we may note this as another instance
of that want of homogeneous character in con-
struction and design from which arises much
both of the interest and the defects of Medieval
Italian architecture.

We shall return to the subject.

NEW THEATRE, MARGATE.

AFTER nearly 100 years' wear (1787) the old
theatre in Margate has given place to a new
building, of which Mr. J. T. Robinson is the
architect.

With a large frontage in Addington-street,
the present Margate Theatre is constructed
somewhat on the pattern of the London Vande-
ville, and is about the size of the Strand Theatre.
It will hold nearly 2,000 persons, and the ap-
proaches are convenient, and have had their
safety officially certified by the Hon. Spencer
Ponsonby as the representative of the Lord
Chamberlain. The contractors were Messrs.
Paramor & Son, of Margate; and the theatre
has been decorated in white and gold by Messrs.
Pashley & Co., of London. The proprietor, Mr.
Robert Fort, has wisely retained as directress
Miss Sarah Thorne, with whose name the drama
in Margate has been so long honourably iden-
tified, and he has secured for his new establish-
ment a good working company. The programme
of the opening night comprised Mr. Craven's
three-act drama, "Coals of Fire," with Miss
Sarah Thorne as the speculator's daughter,
Ellen Roland; and the farce of "The Widow's
Victim."

THE LIVERPOOL LANDING-STAGES.

A GREAT calamity has fallen on Liverpool. The
new landing-stages, scarcely completed, have
been destroyed by fire. The two stages, including
the new piece connecting them, measure about
2,100 ft., and the total loss is estimated at nearly
a quarter of a million sterling.

It is universally admitted by all who have any-
thing to do with the stages that the conflagration
originated in the carelessness of one or another
of the men who were engaged connecting the gas-
pipes with the new portion of the stage. There are,
nevertheless, two accounts of how the fire actually
occurred; one being that as the plumbers were
making a new joint, one of them lighted a match
to try it, the result of which was that the gas
from the main was ignited, the flame being
immediately communicated to the wood of the
stage. The other account of the origin of the
fire is that a plug which had been temporarily
put in to stop a pipe suddenly gave way whilst
the plumber was moving about with his light,
and in consequence of the strength of the jet
of escaping gas the flame was so great that it
immediately communicated itself to the wood of
the stage. Be this as it may, there is little
doubt but that the catastrophe originated with
the plumbers.

It seems that the timbers had all been
creosoted, for protection against the action of
water, and this made them an easy prey to the
action of fire. Strangers will scarcely appreciate
the serious nature of the loss. The injury to

the transaction of business will be most grave, as the line of stone pier at the edge of the river is only accessible by steamers at certain states of the tide, and then has only awkward flights of steps to land at. This "stage" was the sole and grand embarkation-place for all the river ferry-steamers and all the principal steamers to near ports (Isle of Man, Dublin, &c.). Communication between Birkenhead and Liverpool will be practically stopped for the time, and must proceed for a long time under great inconvenience and restriction. The stages were reached chiefly, by iron cellular bridges from the dock-wall. These are still resting on the pontoons, and may be available again. Liverpool is much agitated.

THE NEW VESTRY-HALL DIFFICULTY AT KENSINGTON.

The Kensington Vestry appear to be in a disagreeable and uncertain position as to the erection of a new vestry-hall, or an enlargement of the building in which the business is at present transacted. Some time ago a resolution to adopt the latter course was decided upon, and tenders were sent in; but it subsequently appeared, according to the opinion of counsel, that it was very doubtful whether the present hall belonged to the vestry or the church authorities, or whether it could be used legally for other than strictly ecclesiastical purposes, and the subject of providing more convenient premises for vestry purposes and the general use of the parish has for some time remained in abeyance. At the meeting of the vestry last week the subject was revived, when Mr. Cunningham Glen, in moving a resolution to the effect that the vestry purchase a site, and erect a new vestry-hall forthwith, stated that the vestry met in the present building simply on sufferance. As an amendment to this, Lieut.-Col. Crossman moved that in order to meet the requirements of the vestry, a sum not exceeding 6,000l. be expended upon alterations or additions to the existing building, in which the work of the vestry is now carried on.* Considerable discussion followed, in the course of which Mr. Daniels strongly urged the erection of a new vestry-hall, observing that no matter what money was spent on the present building, the bugbear would always exist that the ratepayers were restricted to certain uses. Mr. Gibbons was of the same opinion, remarking that the vestry had no right to expend money on a building which had no right to exist. Mr. Freeman said the hall was the joint property of the ecclesiastical party and the parish party, and neither could take away the other's rights in the building. He suggested that the present hall might be converted into offices, and a portion of the adjoining ground procured to build a hall for all purposes. Col. Crossman's amendment was ultimately lost by a large majority, and a resolution was passed to the effect that the vestry purchase a site for the erection of a new vestry-hall suitable for all purposes.

BUILDERS' BENEVOLENT INSTITUTION.

The twenty-seventh annual meeting of this Institution was held yesterday (Thursday) afternoon, at Willis's Rooms, St. James's, the president, Mr. Thos. Robinson (Cubitt & Co.), in the chair. The secretary, Mr. A. G. Harris, read the annual report, which, after thanking the subscribers and friends for their continued support to the Institution, stated that the directors have purchased the sum of 893l. 4s. 2d. stock, Three per Cent. Consols, 722l. 14s. 3d. for the Relief Fund, and 170l. 9s. 11d. for the Building Fund, making a total of 17,529l. 14s. 2d. stock, viz., 13,988l. 13s. 9d. for the Relief Fund, and 3,541l. 0s. 5d. for the Building Fund. The directors have received notice that the late Mr. William Todd, of Wellington-road, St. John's-wood, has bequeathed the sum of 500l. to the funds of the charity. The number of pensioners elected during the past year is four, and the number of pensioners deceased during the same period is three. The ball, which took place in January last, under the superintendence of Mr. J. T. Bolding, was a great success, and realised a profit of 69l. 4s. 6d. to the Institution. The report concluded by stating that the directors are taking active steps to increase the subscriptions to the Institution among the various branches of the building trades, and that Mr. George Dines had consented to become president of the Institution for the ensuing year. The balance-sheet showed the total receipts during the year

* He said it was a question of spending 30,000l. or 3,000l.

to be 2,841l. 12s., and the total expenditure 2,455l. 16s. 11d., leaving a balance in hand of 385l. 15s. 1d. On the motion of Mr. George Plucknett, seconded by Mr. Thomas Stirling, it was resolved that the report and balance-sheet be adopted and printed. Resolutions of thanks were then passed to the patrons, to the president for the past year (Mr. Thomas Robinson), to the vice-presidents, to the trustees, to the treasurer (Mr. George Plucknett), to the directors, to the secretary and stewards for the annual ball, to the honorary auditors, and to the honorary solicitors, for their services during the past year. Mr. George Plucknett was re-elected treasurer, and the retiring directors, with the exception of Mr. J. E. Lawford, were re-elected; Messrs. Charles Russell and W. J. Mitchell being elected new directors. The honorary auditors, Messrs. S. H. Head and J. H. Hunter, were also re-elected; and on the motion of Mr. Plucknett, seconded by Mr. T. G. Smith, Mr. George Dines was elected president of the Institution for the year ensuing. A vote of thanks to the chairman concluded the proceedings.

WAR CONTRACTS IN GERMANY.

THE German Government are making great exertions to complete their military preparations. Out of seventy-four contracts advertised in one week, nineteen are for military objects (forts and such like), and fourteen are for civil purposes ostensibly, but really for military ends.

The question is, how long can the country bear the strain? Everything is nearly double the price that it would cost in England; and workmen, owing to the competition for them, get daily more outrageous in their ideas, and more careless in their work.

Not only is there a most abnormal demand for workmen, but the Government, on the other hand, by keeping more than half a million of the best of its subjects under lock and key in the different barracks, make wages higher even than one could expect from such an exaggerated demand for labour. Things are getting so bad, that people ask if this "German unity" fit which they have sung and fought, is, after all, quite worth the trouble they took for it.

PICTURES IN THE NATIONAL GALLERY.

On the supplementary vote of 10,395l. in the Commons for salaries and expenses of the National Gallery, and in reply to Mr. Hankey, the Prime Minister said the House voted 10,000l. a year for the purchase of pictures, and this sum was expended according to the judgment of the director of the National Gallery, who had the great advantage of consulting the trustees of that institution, but he had the power of purchasing on his own responsibility. Some three, four, or five years ago the National Gallery purchased the collection of the late Sir R. Peel for 75,000l. It was a very valuable collection. The Government who made that purchase made an arrangement which he did not approve of at the time, and which he much regretted. They mortgaged the 10,000l. a year until the 75,000l. should be paid off, and the consequence was that of late years the trustees of the National Gallery and their director had rarely made purchases for the nation, if any, and they could only make a purchase by coming to Parliament. If they came to the Government for funds the Prime Minister became responsible for saying whether the purchase should be made or not. There was a collection—that of Mr. Barker—which came to the hammer. It was well known to the curious in art, and an opportunity was thus afforded to the nation of purchasing specimens of art of rare character which would probably never be afforded to them again. Under these circumstances, the director felt the responsibility of such an opportunity being lost to the country. Of course the Government took every possible opportunity of making themselves acquainted with the circumstances of the case, and came to the resolution that it was their duty to undertake the responsibility of purchasing a certain number of the pictures for the country. One of these pictures was by Pietro Della Francesca; it was purchased for a considerable sum, and with the advice and full consent of the director. There were attacks in the public journals deprecating the picture, saying that it was a picture of no value, and that it was an entirely new painting. But since these attacks, a memorandum had been furnished to the Government by a most accomplished lady, which was made by Sir O.

Eastlake in 1861 in Italy. When he was in Italy this picture was offered to him for sale and he intended to purchase it, and thought had purchased it. He pursued his journey, and when he returned to Florence he claimed the picture, but he found that Mr. Barker had purchased it in the meantime, the owner having parted with it for a higher price. All whose opinions should weigh with him looked upon it as one of the most exquisite specimens of one of the rarest artists and as an immense addition to our works, costing 2,400l.; but they must consider whether they purchased whether it was a first-rate work of art, and not so much what they must give for it. It was purchased in the strife of competition. He believed that those purchases were wisely made, and he trusted that the committee would sanction them.

The vote was then agreed to.

PHYSICAL COMMOTIONS.

THERE have been more thunderstorms of unusually violent description, both in England and in Scotland. A waterspout was seen recently on the east coast of England, and the houses, and as many people, have been destroyed by a waterspout at Eureka, in Nevada. There has been a great storm and flood in Pennsylvania. At Pittsburg, immense buildings were hurled down from the hills into the streets; bridges were swept away, 125 persons drowned, and depots, streets, and railroads overflowed. Allegheny City, the loss of life has been still appalling: fifty-five dead bodies were recovered, and many more were missing; in all 200 are said to have been lost. The flood was in many places 20 ft. deep. There has been a violent storm in Austria. Fifty houses destroyed, and as many vineyards; several persons and many cattle were drowned. An earthquake has occurred at Vienna.

PUBLIC WORKS AND BUILDINGS ABROAD.

INFORMATION upon this subject will not be interesting to the readers of this journal; to a volume of Foreign Office Reports, which has just made their appearance, we are indebted for some valuable facts in connexion with public operations and public works generally in foreign cities. Thus we learn from Havre that at many years' discussion of various schemes, the plan, it has finally been decided to build a central part of the town, at a little distance from the Sous Préfecture, an Exchange work of the commerce of Havre. The merchants there at present appear to be exposed to inclemency of the weather, through not having a proper Exchange building in which to transact their business; and thus the new structure will be of no inconsiderable benefit to them. The law courts are also to be erected in the same quarter of the town. What is described as a "financial crisis" has prevented the completion of the alterations and improvements which were projected at the Hôtel Frascati in Havre; the improvements which have been carried out are said to be of a very attractive character. Havre possesses great advantages as a watering-place, but the local authorities are not very enterprising; and it is mentioned that the withe of the taste and energy shown as in the decoration of the French watering-places would soon take its place amongst the most elegant. A new English church has also been erected, and presents, architecturally speaking, a very satisfactory appearance. For its thorough completion, however, funds are needed. The ways have also been laid down over a considerable portion of the streets of Havre, and although they are as yet somewhat of a novelty, it is believed that they will be worked satisfactorily. Nothing worthy of note has occurred of late regard to the port or its approaches, although Rouen is still anxious to obtain the sanction of the Government for the embankment of the River Seine down to Honfleur, while Havre is naturally opposed to the plan, from a point which is shared by many engineers and others, that the result would be to change the action of the tides and currents, and seriously endanger the existence of the port. The works for the enlargement of the entrance to the harbour, and completing the quay of the large Bassin de l'Est, are being actively carried out, while many other improvements, we understand, are contemplated from the Charente Inférieure (France), we learn that railway construction is being carried

with enterprise in that locality. Amongst newly-contemplated lines the most important has to *Marseilles*, which has given rise to a great deal of agitation, the more especially as it is proposed to construct it with a bridge at or near *Rochefort*, which might have affected the value of the land of that district. From *Cherbourg* we learn that a proposal has been made to construct a large basin in the roadstead, which Transatlantic steamers might enter at all times; but there is a difficulty as to funds. It appears that it would be a more feasible plan, the cost comparatively inconsiderable, to lay out a pier along which steamers of beyond average tonnage could lie, and disembark passengers and goods. Local engineers favour the project. The small port of *Barfleur* is also to be improved, and the works will commence early. With regard to *Nice*, it is interesting to note that building operations are still carried on actively there, and new houses and villas are continually being added to the large number already existing. As may be imagined, this is the building trade very active. Generally speaking, however, with regard to public works in that district, nothing has been effected to save the enlargement and continuance of public roads, on which a certain sum is annually expended. Relative to *St. Malo*, we learn that the local authorities have recently ordered several of the streets, and repaired the sewers and gutters. They have, too, carried out several other improvements of a public character. The town of *Caen* has been brought out, and furnishes the public with a safe and expeditious mode of crossing to and from between *Caen* and *St. Servan*. In place of descending and ascending stairs, in order to cross in a boat, a passenger, for the same fare (id.), walks on a platform, railed round, and on a level with the quay. The conductor blows a horn when the platform, which is borne aloft on iron pillars, of 9½ metres in height, with a granite base, which rests on wheels running on rails, is drawn to the other side by chains attached to a steam-engine of 15 horse power.

From *Bremen* we get some interesting information as to the public works. Important amongst the undertakings there being carried out is the building of a large central railway station, thus to be used by the various lines running into the city. The construction of this building has lately commenced, but two or three months must elapse before it will be completed and ready for opening. A large and handsome school, intended for the use of the higher class, has also been erected; and the construction of several other public edifices, for more suitable localities for the post-office, the law courts, and the offices of the other authorities, is contemplated. In consequence, however, of the somewhat depressed state of the finances, these projects will only be gradually carried into execution. New city waterworks, constructed by an English company, have been opened, and now supply the town with water from the *River Weser*; and it is also planned that the construction of a third stone bridge across the *Weser*, which is being carried out, when finished, connect more directly the central or business part of the town on each bank of the river; at the same time, the construction of a new wide thoroughfare leading from this bridge to the new central railway station is being carried out. Another important project, and one of long standing, is that of connecting the three principal rivers of *North Germany*, viz., the *Rhine*, the *Elbe*, and the *Weser*, by a canal; and this project has been brought forward. It is said that the *Prussian Government* is inclined to lend its assistance towards the realisation of the project. It will doubtless be some time before it is fully carried into execution. The construction of railways is a matter upon which much expense is expended in this part of *Germany*. Last year only two new lines of railways were opened, by means of which *Bremen* has been brought into more immediate connexion with *Berlin* on the one side, and *Cologne* on the other. One of these lines is the railway from *Worms* to *Onsabrück*, which forms a section of the so-called *Paris-Hamburg railway*. The importance of a direct line of railway from *Paris* to *Hamburg* is sufficiently apparent. From *Cuxhaven* we learn that important harbour works are being executed there, but that severe storms and high tides have not only damaged the temporary works necessary for the enclosing of so large an area from

the sea. The coffer-dam and sea-bank required for this inclosure will be upwards of 3,000 ft. long, and it is expected that they will be shortly completed. The contractor has commenced the inner dock, which will communicate with the outer harbour by a lock 400 ft. long by 70 ft. wide. There is also to be a complete dry-dock establishment, and generally it is intended to make *Cuxhaven* a port suitable to the requirements of the age. Experiments have also been made to lay out foundations for a large new fort on *Gebbeard*, in the entrance of the *Elbe*. It is believed that the work will be carried out. From *Lübeck* we learn that some time ago it was proposed to sell the *Lübeck railways* to the *Hamburg-Berlin Railway Company*, but this proposal seems to have fallen through. A new line—the *Lübeck-Eutin Railway*—has been opened, and has enjoyed a good traffic. It further stated that public opinion in *Germany* occupies itself more and more with the construction of a united system of canals for that country. A Central Union which has been formed states the length of the projected canals at 354 German miles, with an estimate of the cost of about 250,000 dollars, or 37,500 £. But, at any rate, it is stated that a canal from the *Rhine* to the *Elbe* is to be carried into execution. A canal from the *Trave* to the *Elbe*, in order to connect *Lübeck* with the interior of *Germany*, has been proposed by the *Branch Canal Union* of that city; it is probable, however, that a long time must elapse ere the idea assumes the practical stage, and is really carried into effect.

It will be interesting to shortly consider next the public works of *Greece*. From *Syria* we learn that the harbour still remains in an unsatisfactory condition, and the supineness of the authorities is such that no attempt has been made to carry out long-talked-of improvements. A contract entered into for lighting the town with gas has not yet been carried out, although the time fixed for its completion has long since expired. A submarine cable between *Syria* and *Scio* has been laid, thus bringing the former place into direct communication with *Smyrna* and *Syria*.

The public works of *Russia* next require attention. A matter of interest to our readers is the construction of a Central Prison for *South Russia*, now being built in the citadel of the town of *Kherson*, on the site of former vast Admiralty premises. It is stated that the necessity for this prison has been greatly felt, and that in its erection every care has been taken to make it thoroughly suitable for the purpose to which it will be devoted. It is to contain all the improvements which have been introduced of late years, and will no doubt be a very fine building. A new line of railway has also been opened from *Nicolaïeff* to *Znamenska*, there joining the main line to *Kharkow* on one side, and that to *Elizabethgrube* on the other, which places *Nicolaïeff* in easy communication with all *Russia*, and indeed all Europe. The passenger trains to and from *St. Petersburg* take precisely seventy hours, and the distance between *Nicolaïeff* and *London* can be accomplished in five days. The stations on this new branch line, which is 152 miles in length, have been built with every care, in order that no accommodation for the passengers may be lacking. The line, a single one, is substantially constructed, and reflects great credit upon the memory of the contractor, the late *Baron Ungemstemberg*. From *Poland* we note that of late there has been an improvement in the building trade of several of the large towns, and building operations have been actively carried forward. This is attributed in great measure to the extravagant rise of house-rent, though partially to other circumstances. One consequence is that the brick trade of *Warsaw*, which has been stagnant for several years, has recently received great stimulus, and much is being done in that industry. It is satisfactory to receive such news as to building from *Poland*. As to public works in *Spain* we also get some information. With regard to the *Baleares Islands*, we note that the most important of the works yet undertaken there is the construction of a railway across *Majorca* from *Palma* to *Loia* and *Aloudia*, which is progressing satisfactorily. The preliminary works as far as *Loia* are now reported to be in a forward state, and this part of the line will be shortly opened for traffic, an engineer lately sent to *England* for the purpose having contracted for the necessary locomotives and rolling stock. The works for the prolongation of the mole at *Palma*, and cleansing the harbour, have been lately offered for contract, but it is considered probable that

these operations will at best proceed slowly, and in the present state of the finances must extend over many years. Five years are even allowed for the termination of this part of the work by the terms of the contract, so that it will be seen it is not intended to carry out the work with much rapidity. There is, however, a great want of a secure harbour at *Palma*.

From *Messina* we learn that there have been carried out there of late considerable improvements, especially as to paving some of the streets, drainage, &c. The paving of the *Marina* has been at length completed, and it is now a good broad thoroughfare more than a mile in length, with a footpath on each side. It is all paved with "lava," and gas has been added on both sides of the streets. A large new building is in course of construction at *Messina*, on the *Plain of Terranova*, for a custom-house, and it is hoped that this structure, which will be on rather an extensive scale, will be brought to completion in the course of two years. A new church is also being constructed in the street, *St. Gioacchino*, capable of containing about 500 people. The construction of this building, it is estimated, will cost about 40,000 *lives*. With regard to public works in *Venice* we learn that the works of excavation to deepen and improve the harbour at *Venice* and the channel leading to the sea, at *Malamocco* are gradually progressing towards completion. Proposed improvements to the arsenal are also in a fair way of being thoroughly carried out. The question of railway construction, too, is receiving a fair share of consideration in that locality, and some important projects are being carried out.

Road making in *Turkey* is a matter which has long occupied a good deal of attention. We are glad to learn that considerable activity has been shown in forwarding the completion of the road between *Serajevo* and *Mortar*. Two intelligent Polish engineers have had the control of the works, and so far have carried them out most satisfactorily. The funds allowed by the department of public works at *Constantinople* to cover the cost of road-making in the province of *Bosna Serai* during the past year did not amount to more than 4,000 £, and consequently no other works of the kind, except that mentioned above, have been attempted. Great diligence, however, has been displayed by the engineers in the survey of the country with a view to the railway which is to run through *Bosna Serai* to the capital in connexion with the *South Austrian* and *Hungarian* lines. This line will be about 400 miles in length, a good portion of which is of easy construction, though some parts present considerable engineering difficulty. Between *Prepoli* and *Mitrovitz* the route chosen is so enclosed with precipices that within a distance of eight miles below *Koza* about twenty tunnels will have to be bored. The line will doubtless be a most expensive one, and will present, in many places, a continual succession of bridges and tunnels.

THE LAW ON NOXIOUS BUSINESSES.

By the Building Act of 1844—a measure passed by Parliament during the predominance of a Conservative majority—certain trades, the conduct of which in the midst of a dense population was held to be necessarily injurious to the public health, were allowed a period of grace extending over thirty years, and expiring in the course of the ensuing month. To the operation of that enactment vestries and sanitarians have for years past looked hopefully forward, as to a new charter of health. Of its necessity the pages of the *Builder* have repeatedly borne testimony, and those who still have any lingering doubts of the equity of the suppressions intended by Mr. Taylor, in framing its clauses and schedules, would find them speedily removed by the noisome effluvia which literally poison the atmosphere in some parts of *Battersea*, *Bermondsey*, *East London*, *Islington*, *Lambeth*, *St. George-the-Martyr*, and *St. Saviour*, and even in the aristocratic suburb of *Kensington*. It was, of course, possible that some mistakes of classification were made in 1844, which later knowledge should be utilised to repair. The fell-mongers of *Bermondsey* may be instanced as pursuing an industry which the general effect of evidence collected last year tends to show is innocuous. Relief has been sought, however, for but one trade—that of the slaughterers of cattle for human food,—and the ground taken by its advocates was less than nuisance was not necessary and inevitable, than that its con-

ductors had been taken by surprise; their inclusion in Michael Angelo Taylor's Act being, so far as they were affected, quite recently discovered, while there was not time for them to meet satisfactorily the exigency of vastly-changed conditions. The Select Committee that inquired into the subject in the session of 1873 agreed upon a report which proposed a compromise, very greatly favouring the slaughterers. It was suggested that while not prohibiting all existing slaughter-houses, Parliament should encourage the erection of abattoirs, which, under the direction of the City corporation were already gradually engrossing the business of killing, and that premises licensed to private persons should be placed under direct and effectual sanitary supervision and uniform regulation, with a view to the prevention of needless cruelty to the animals slaughtered, and to the suppression of the sale of unsound and diseased meat. These recommendations would be, as the medical officers of health almost unanimously agreed, most wretchedly inefficient for the purposes of sanitary amendment. It was useless attempting to regulate a trade carried on at uncertain hours in 1,700 licensed premises. Inspection worthy of the same would require an army of inspectors, every one of them competent (as few sanitary inspectors are) to determine the fitness of flesh-meat for consumption. Moreover, the nature of the calling was such as to call for stringent regulations, not of the business only, but also of the premises in which it is conducted. Attention should be paid to floors and walls; to ventilation, light, and drainage; to the arrangements for collecting refuse and offal; to the provision of suitable access, separate lairs, and numerous other details which are systematically neglected in even the best of private slaughter-houses. Upon these heads the medical officers of health have spoken out clearly, wisely, and persistently. Dr. Dudfield, in Kensington; Dr. Conway Evans, in the Strand District; Dr. Hardwicke, in Paddington; Mr. Liddle, in White-chapel; Dr. Letheby, in the City; Dr. Tidy, in Islington; and the associated health officers of the Wandsworth district, have especially condemned, with an emphasis warranted by the facts they describe, the existing violations of decency and humanity. Upon structural details Dr. Dudfield is recognised as a high authority, and the particulars he has from time to time brought to the knowledge of the justices in annual licensing sessions furnish a startling commentary upon the specious explanations by which it has been sought to whitewash the practices of the trade. Nor are these gentlemen unsupported by other and weighty evidence from independent sources. The medical department of the Local Government Board could supply strong corroborative testimony as to the unsatisfactory conditions of the London trade, and the immense superiority and economy,—no slight benefit to the poor,—of the abattoirs in leading provincial cities; and we are much mistaken if a larger series of prominent facts be not readily accessible in the Home Office itself.

With these allegations unanswered,—nay, scarcely disputed,—by the professional advocates retained by the butchers, the public might reasonably have expected the Government, one of whose titles to electoral support was based upon a distinct pledge to legislate in the interests of health and sanitation, to give at least as patient and considerate hearing to the representations of the medical officers, as to the wishes of the proprietors of nuisances. The plea of the butchers that the prohibitive clauses of the Building Act came suddenly upon them (though controverted by several of the medical officers, who have annually for six, twelve, or eighteen years, drawn attention to them), if it be admitted to possess any weight in the discussion of the question, can only justify a temporary postponement of impending doom. Whether the time should be deferred for one or five years might be made to depend upon a demand for fuller investigation, or acceptance of the principle of 1844 as final, with an enlargement of grace. The Select Committee of 1873 skimmed over the surface of the subject, and strove to make matters pleasant for the trades condemned; but not one of its members ventured to propose a complete reversal of the conclusions arrived at by Parliament thirty years ago, as expressed in the Act which was then passed. In it wise,—is it just,—can it be expedient, then, for the Government of to-day to ignore the deliberate judgment of a former Conservative majority, to unsettle the beneficial legislation of the last

generation, and to place the health and comfort of the masses at the mercy of one or two trades? It is difficult to conceive upon what principle the Bill of the Government is founded. Certainly it is not in consonance with the Select Committee's report, which did not contemplate the arrogant absurdity of substituting the inspectorial control of the Metropolitan Board of Works—a body which has no medical officer to advise it on sanitary matters—for that of the vestries and district boards. Such a proviso can mean nothing less than that perfunctory discharge of public duty which lags far behind every necessity for vigorous action. Nuisances will be very sure to be tenderly cared for, as though they were meant to abide long in our midst, when they are left to oversight on occasions few and far between as angels' visits.

The worst feature of the Slaughter-houses Bill remains, however, to be noticed. No pretence of surprise is made by the tallow-melters; no attempt has been made by them to disguise the offensiveness of the vapours given off by the melting fat in their factories. The business appears in the view of the Government to be an unredemptable nuisance, for it is condemned by a clause which prohibits the creation of any new works of the kind. The fat which bans the aspirations of would-be tallow-melters, nevertheless converts the trade into a vast monopoly, with unlimited capacities of growth and extension; perpetuating in full odour an already lucrative pursuit, which will become every year increasingly costly to remove from close proximity to our homes. With all earnestness, we would press for a reconsideration of the subjects dealt with by the Government in this measure. There is yet time to prevent irreparable injury to life and health,—to save existing interests without undue sacrifice,—by passing a temporary measure, deferring for one year the operation of the Act of 1844. By such a course, Parliament would be spared the gratuitous scandal of carrying, with indecent haste, a measure which all who are competent to advise upon it pronounce ill-judged and inimical to the public weal.

ON STEEL BARS FOR BELLS.

CORRESPONDENTS, who have made, of late, inquiries respecting steel bars in place of bells, may gather from the following such information as can be found in the libraries of the British Museum and patent offices, as well as from other sources. It will be seen that a steel-bar bell *per se* has not as yet been patented, although some modifications may answer the same purpose. In some parts of Ireland, the priests of remote and poor Catholic chapels, have adopted steel bars to summon their flock; and the village smith is the bell-founder, and it is surprising that engineers have not followed the example of the priests, and called in some intelligent son of Vulcan, who could either have devised a plan of his own or copied one from his apprenticeship. As it would require drawings to fully explain the principles of producing sounds or notes from steel bars, the easiest way for those who require a practical knowledge, is to purchase at a toy-shop a metal harmonium. In this musical instrument, according to the price, from 1s. 8d. to 6s. 6d., the whole of the bell notes may be struck, and the mechanism is fully exposed. A metal tuning-fork to be got at a music seller's, will also afford suggestions. Some recent American correspondents, if they be in the backwoods, may make a tremendously noisy bell by poisoning a fair sized tree over the top rail of a gate, and striking the end raised off the round with a bar. Some woods will not sound so strong as others; but when a tree is lopped, if a watch be placed at the thick end, and a person place his ear at the thin end, the tick of the watch may be distinctly heard: that tree will "boom" as loud as a "lion's roar."

On the 28th of July, 1873, a provisional specification only was granted to Ferdinand Rablitz, of South Hackney, and James Dixon Mackenzie, of South Kensington, for new or improved bells or bar-bells, and apparatus connected therewith. This invention consists of sounding instruments made from bars of steel or other metal compositions of a straight or curved form producing musical notes or sounds. These bars are made of any suitable weight and dimensions, according to the power of sound desired. They are intended to be a substitute for ordinary cast bells for use in churches or other places, and are suspended and carried in or on frames perpendicularly, or otherwise—the sounds being

produced from them by concussion with mallet or other mechanical contrivances, worked either by manual or other mechanical agency. Each bar is struck by a mallet or mallets, motion is communicated to the arms of mallets by cords or other suitable attachments to the outer end of the arms, and passing down the tower or other place where the bars are fitted. The inventors of the above note have perfected the patent, any one is now at liberty to carry out the design.

In 1867, provisional specification only was granted to Benjamin Farmer and Thomas Barforth, of Barrow-in-Furness, for improvements in the manufacture of steel bells, and mount the same. From an ingot of Bessemer or other cast steel is forged a form similar to that of a bell, but with a hole at the top, and having by hammering with tools of suitable shape brought the bell approximately to the form desired, it is turned in a lathe, and two small holes bored through it on opposite sides close to the top. The steel is then hardened by heat, and cooling it more or less suddenly. The bell is suspended for use on a knife-edged support passing through the two side-holes, and this is supported by a loop passing down through a larger hole at the top of the bell, and to this also the clapper is hung. In some cases inventors form for use as bells rings or hoops, rolling ingots of Bessemer or other cast steel, and then hardening them. The rings or hoops are supported on a girder passing through it. On the girder there is for each ring or hoop a conical projection, the apex of which is lodged in a slight recess in the interior of the ring or hoop, and in the centre of its width. The hammer strike upwards against the undersides of rings or hoops. Handles may be conveniently employed to work the hammers. The rings or hoops may be bent to any desired form, or bars may be substituted for the rings or hoops. The patent of the above is void for non-fulfilment.

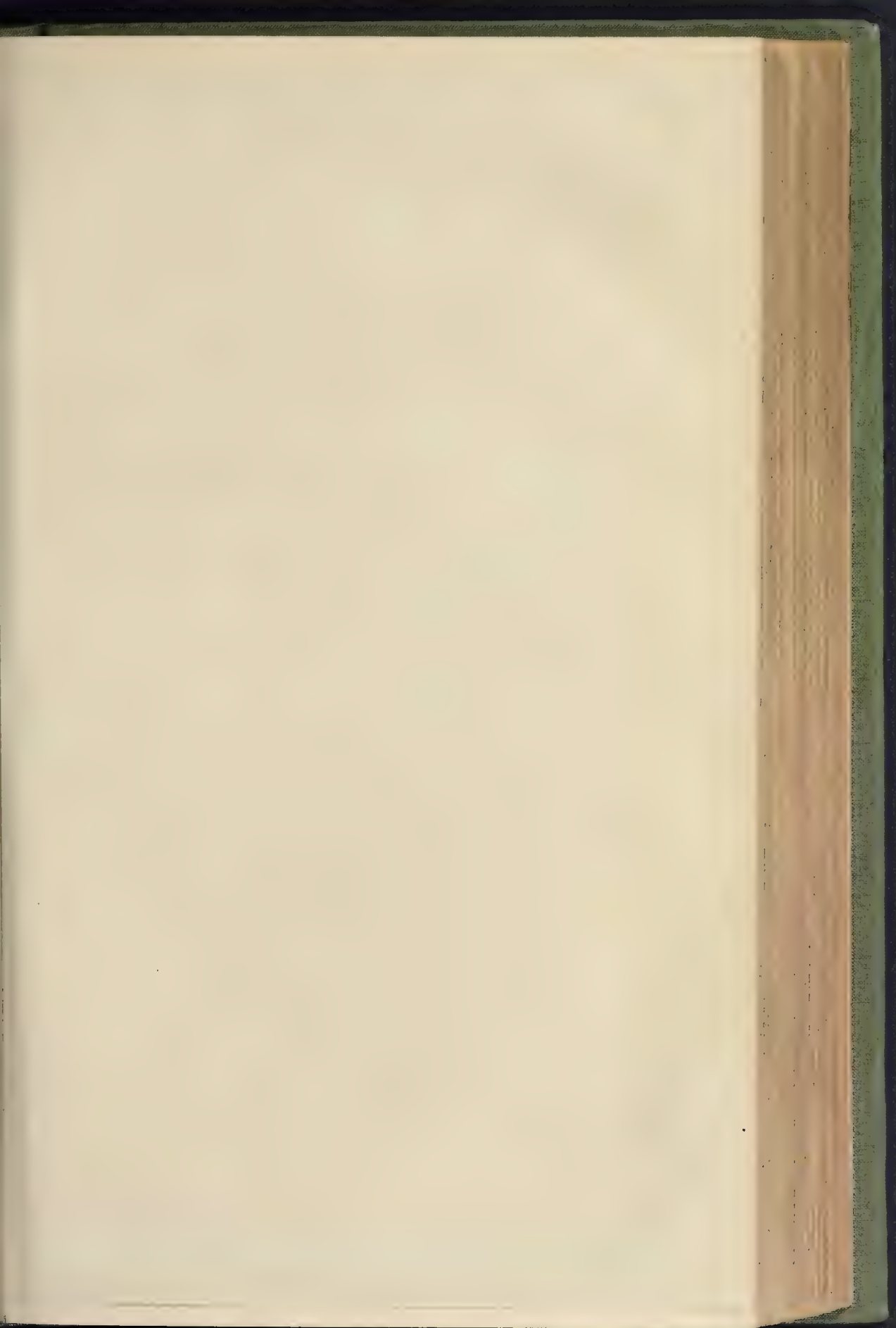
A chemist, Mr. Peter Spence, of Pendleton, Lancashire, in 1859, proposed to repair metal injured by cracking or fractures, by uniting separated parts with new metal of similar position. In carrying out this method, the inventor removed a portion of the metal on one side of the bell so as to form a channel; he heated the other side by a fire, heated iron bars, or other means, but not to the point of fusion; after which he applied a strip of metal to the channel, and melted therein, means of a blowpipe, for which purpose he used hydrogen gas and air, or oxygen. It might be worth trying the above experiment on the future in Big Ben.

Messrs. Mears, bell-founders, have introduced gongs in place of bells; but Mr. Hunt, of Lancashire, in 1859, who had some experience in this direction, having fixed one up in St. John's Chapel, Fimlico-road, states that gongs are rather more expensive than bells; they do, however, occupy so much space as a peal of bells. The pro-cathedral at Kensington is fitted up with a set. A gong is in the shape of an inverted saucer, and the note of the one at Fimlico is much complained of by those near to the chapel, although the architect believes it may be remedied, and will be as far as the remainder of the gongs are put up.

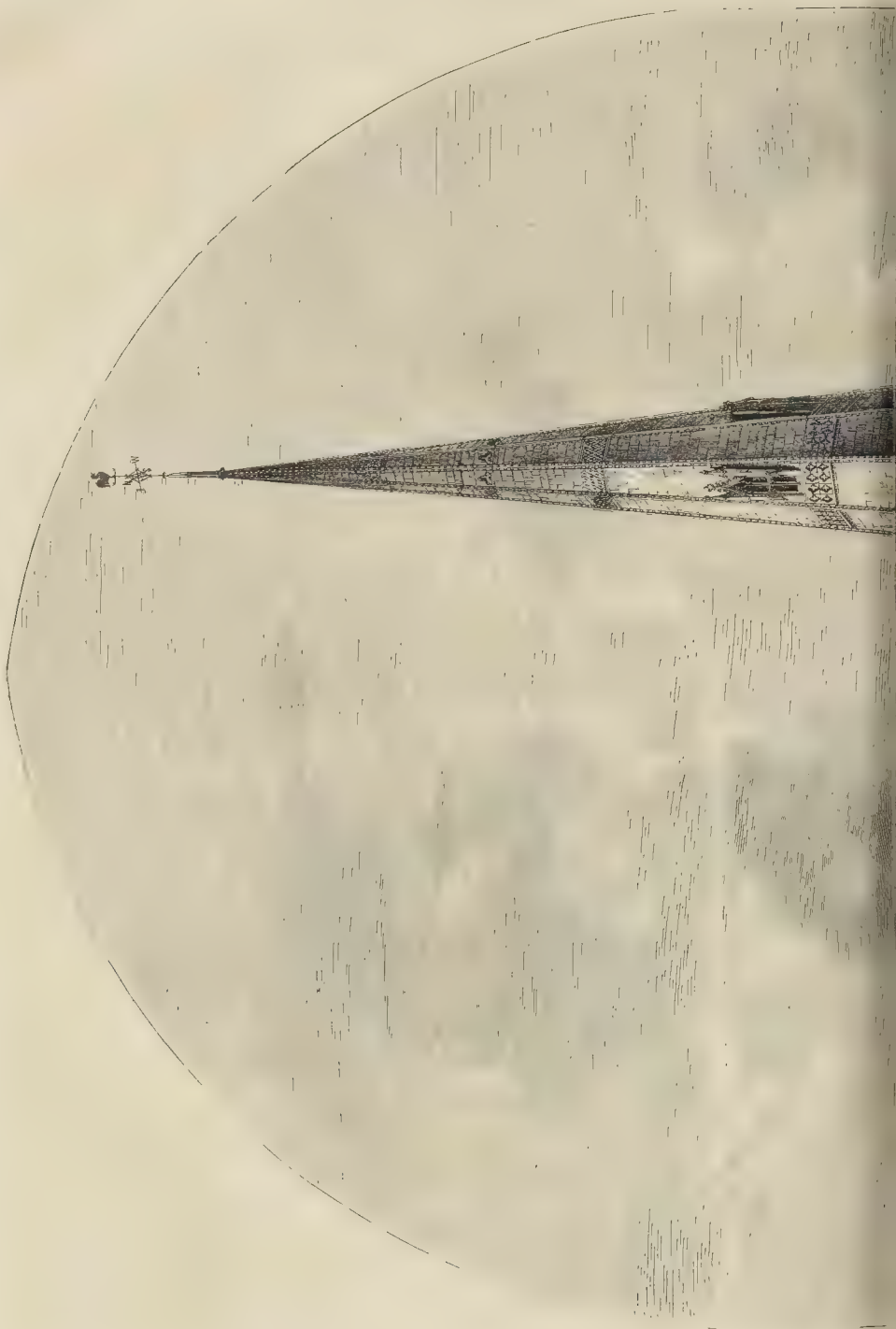
THE CHURCH OF ST. MARY REDCLIFF, BRISTOL.

APPROPOS of the intended visit to Bristol of the British Archaeological Association, next week, we give a view of the Church of St. Mary Redcliff as it now appears, with its completed spire. The view is taken from the north-west, and shows prominently the remarkable north porch, a fine example of the Decorated style, and the north transept, which is in Perpendicular style. We have before now given the church in our pages, but will repeat a particular in our next, in connection with the proceedings of the Association in Bristol.

Through the exertions of the vicar, Venerable Archdeacon Randall; Mr. C. Bowles Hare and Mr. Mervyn King, the churchwardens; and an active committee, several things, like the churchwardens, sons of those who commenced the work years ago, arrangements have been made for the decoration of the vaultings and the pavement of the nave and aisle at present in a very bad state. As our readers know, Mr. Godwin is the architect; and Mr. J. is the resident clerk of the works and carver.



THE RUINER, AUG. 1, 1874.





THE CHURCH OF ST. MARY REDCLIFF, BRISTOL.—As RESTORED, UNDER THE DIRECTION OF MR. GEORGE GODWIN, ARCHITECT.

FROM SCOTLAND.

Public Improvements in Glasgow.—The City Improvement Trustees have just entered on another stage of their operations, the results of which it may be stated will be highly satisfactory in a sanitary and architectural point of view. It is intended in the first instance to be a direct entrance to St. Andrew's-square in London-street. The undertaking will be a comparatively costly one, especially considering the short length of the projected thoroughfare; but it is anticipated that the advantages to be gained will more than compensate for the outlay. A space of about 100 yards is being raised to a height of from 5 ft. to 30 ft., in order to be a mean level between the two points sought to be connected. The new thoroughfare will fully relieve the pressure of traffic on Saltmarket, and will enable passengers along London-street and Gallowgate to obtain a view of the fine old church of St. Andrew, which, it is stated, is at present undergoing renovation in an expected cost of about 2,000l. It is also proposed to form two new streets in the same wide district of the city,—one to run from Great Milton-street to Gallowgate, and the other from Great Hamilton-street to King-street. In forming the first of these new thoroughfares any of the tumble-down fever dens, which have been so long a disgrace to the city, will be removed, and a free current will be allowed for air from the extensive open space known as Green.

Opening of New Waterworks at Coupar Angus.—The opening of the new waterworks, and the turning on of the water to supply the burgh, were the occasion of a holiday in Coupar Angus the 11th ult. No place could have been more situated for water than that district has been hitherto. The only available sources of supply were wells, pronounced by a high authority to be unfit for human consumption, and a burn or brook, which, besides being the main drain of the locality for miles, was the common sewer of the town. The source of new supply is from several springs on the side of Pitour, which are guided by leading pipes to a service reservoir situated close to the ideas turnpike. The reservoir is not only a handsome structure, roofed over, but contains, when full, about 55,000 tons of water. This the springs fill in about ten hours, affording about three days' supply. The pressure is equally satisfactory. The week the water was allowed to run through pipes at full pressure, and it is satisfactory to learn that the pipes and joints did not show leak. Mr. Lamond, the engineer, and Messrs. Paterson & McKnight, the contractors, are to be congratulated on the successful completion of the work. The undertaking, after making allowance for contingencies, will cost nearly 4,000l.

Building Operations at Paisley.—The building trade in this flourishing town at present is in a very flourishing state. At present, Messrs. Foulds, Gilmore, & Co. are constructing an extensive starch works on burgh lands in Caledonian-road, at an estimated cost of about 100l. Messrs. Andrew Wallace & Sons, are also erecting new works in Abbey-street. In addition to the new tenements being erected for the working-classes in Caledonian-street, by Mr. Cook, of Renfrew, villas for the upper classes are being extensively built in the town. Noticeable among these latter is a very villa to be commenced at Caliside for Mr. L. Paterson, manufacturer. Mr. Hutcheson prepared the plans, and the estimated cost thereof about 5,000l.

Burgh Buildings at Dunoon.—The above buildings, which have been in course of erection some months at the junction of Argyll-street with the New-road, have just been formally opened up by the authorities of this fashionable watering-place. Whilst affording improved facilities for the transaction of public business, new edifices will be an important ornament to the architecture. The style is Gothic, with red gables to the south and west. The lower division is a handsome meeting-room for the burgh commissioners, accommodation for the burgh clerk and collector, and a house for the hallier. The floor above is divided into a large and well-ventilated hall, 73 ft. 6 in. by 6 in. 6 in., capable of accommodating 500 persons; retiring-rooms, and a smaller hall for committee meetings, &c. A platform is placed at the southern end of the large hall, and one of the windows to the rear is filled with stained glass, the work of Messrs. W. & J. Kier, of Glasgow. It is expected that 4,000l. will cover

the entire cost of the buildings, the plans of which were prepared by Mr. R. A. Bryden, architect, Glasgow.

New Bank at Johnstone.—The new premises erected for the Royal Bank are now completed. The building faces the public square in the centre of the town, and with a well-designed front elevation, three stories in height, is an ornament to the burgh, and also very convenient for business. The street-floor has a large telling-room, with agents' and writing chambers. A special feature is the strong room, built entirely of hewn stone. The upper floors are appropriated as the private residence of the agent.

The Dundee Water Bill.—Opposition withdrawn.—It was originally agreed that the above Bill should be heard before the Earl of Devon's committee last week, but the promoters announced that an arrangement had been made, and consequently the Bill was referred to Lord Redesdale as an unopposed measure. The Water Commissioners have agreed to pay the sum of 500l. to Miss Catherine Laird, and in consideration of that sum the opposition is withdrawn. Mr. Marshall, advocate, Edinburgh, is appointed sole arbiter to value the land proposed to be taken. The sum of 500l. is thus saved in this particular alone, and the proposed arrangement also does away with an expensive arbitration under the Lands Clauses Act, which would have swallowed up an additional 2,000l. The clauses of the Bill remain unaltered.

Art and Commerce.—At the last meeting of the Dundee Chamber of Commerce the president (Mr. James Christie) called attention to the gratifying fact that the chamber was possessed of a small gallery of marble sculpture, which had cost nothing from their funds except for the granite pedestals on which the specimens stood in the exchange. The sculpture which was the gift of various gentlemen, comprised busts of the late Prince Consort, the Right Hon. Fox Maule Ramsay, Earl of Dalhousie, the late Sir Robert Peel, Baron Panmure, and Charles J. Fox. The busts were valuable, being the works of Nolletkens, Steell, and Hutchison.

THE NEW GUILDHALL, PLYMOUTH.

This fine pile of buildings, of which we gave a view some time ago, is to be opened with *clat* by the Prince of Wales on the 14th instant. Great preparations are being made for this event, and a large Masonic demonstration will take place on the occasion. About 1,500 brethren, it is anticipated will take part in the ceremony.

The new buildings are arranged in two blocks, with a wide open space between. At one end of this stands St. Andrew's Church, with its massive granite-buttressed tower, erected in the fifteenth century. Thus the church and the new guildhall form three sides of a quadrangle; and it is intended that the fourth shall be occupied by a structure that shall in no wise discredit its neighbours. The guildhall buildings are in the Early Pointed style. The wings are treated in broad and simple masses, leading up to central features of striking richness and dignity. The chief building material is the blue-grey local limestone or marble, the plinths being granite, and the dressings of Portland stone. Polished serpentine and granite and the fine-grained Mansfield sandstone are also introduced in portions of the exterior.

The northern block contains in the centre the council-chamber, and on each side, on two floors, suites of offices. The council-chamber is a handsome and spacious room, fitted with galleries for the public, and lighted by four large windows filled with glass by Fouracre, of Stonehouse. Each window contains a medallion portrait, respectively of Queen Victoria, Queen Elizabeth, Sir Francis Drake (once mayor of and member for Plymouth), and Sir Walter Raleigh. The roof is panelled in pitch-pine, and all the fittings are of the same wood, whilst the mayor's chair is canopied. The walls are partially draped with hangings, and a series of portraits belonging to the corporation, including a full length of Prince Albert, will be suspended above. Adjoining the council-chamber is the mayor's parlour, where hang an original portrait of Drake and portraits of Charles II. and Queen Anne. The offices, the communication between which is by wide tiled corridors, are lofty and large, and the woodwork throughout polished pitch-pine. There are separate suites for the town clerk, borough treasurer, borough surveyor, and their respective staffs; and in the upper story are the offices

of the school-boards and the meeting-room of the Plymouth Chamber of Commerce, the oldest in the United Kingdom, over which the Earl of Morley presides, as did his father and grandfather before him. The chief external features of this block are the great central gable of the council-chamber, which is surmounted by a life-size statue of Drake, and angle-tower terminating each wing 100 ft. high.

The leading feature of the southern block is the great hall, which runs lengthwise to the Guildhall-yard, and the side elevation of which, therefore, fronts upon it. On the west of the great hall are a couple of law courts, arranged in convenient fashion. At the extreme south-west angle rises the great tower. It is nearly 200 ft. high.

Each gable is surmounted by a life-size statue, among them being that of Edward I., Edward the Black Prince (both specially connected with Plymouth), and the Prince of Wales. Elsewhere are sculptures of the Queen, Sir John Hawkins, the friend and companion of Drake, who was a native of the town, Froisher, and other eminent Elizabethan worthies; whilst shields bearing the arms of distinguished personages of the West contribute their quota to the general effect.

The great hall is 146 ft. in length. It is divided into a nave and aisles, the latter being narrow, tiled, and chiefly intended for passages, though they greatly increase the amount of the accommodation. The nave itself is 58 ft. wide, and the aisles open into it by two arcs of seven arches each, the massive pillars supporting which are single stones of polished Cornish granite from the quarries of the Messrs. Freeman. The roof is open and boarded, with carved trusses. At one end of the hall is an orchestra, and at the other a ladies' gallery. The hall has seven separate doorways. A prominent townsman, Mr. W. F. Moore, with other members of his family, have given a window representing the English captains engaged in their game of bowls on the Plymouth Hoe at the moment that the news of the approach of the Armada was brought to them. Other windows now in hand (likewise gifts) represent the departure of the Pilgrim Fathers from Plymouth, and proceedings at Plympton Priory in 1440 in connexion with the town's first charter. Other subjects to be illustrated are the siege of Plymouth by Charles I., which lasted nearly four years, but was ineffectual; the landing of Catherine of Aragon at Plymouth; the death of Blake as he entered Plymouth Sound; Drake bringing in the last that yet supplies Plymouth with water; Charles II. touching for the evil in St. Andrew's Church; the proclamation of William III. in the Guildhall, Plymouth, being the first town to declare for that monarch; and the mythical event with which the history of that town begins, the combat of Corinthus, the companion of Brute the Trojan, and the giant Gorgonagor on the Hoe.

The architects are Messrs. Norman & Hine, of Plymouth, the former gentleman being this year Mayor of the sister town of Devonport. The contractors are Messrs. Call & Pettick, also of Plymouth. The sculpture has been executed by Mr. Trevenen, Mr. Harry Hems, and Mr. Boulton. Mr. John Adams has been the clerk of works since the commencement of the work. Mr. Tarring was the foreman during the earlier part. He was, however, unfortunately killed by the fall of a wall, and since then his place has been filled by Mr. Wise.

PROPORTION IN INTELLECTUAL EDUCATION.

In the *Builder* of the 11th of July the writer endeavoured to show that the object of physical education should be a proportioned development,—a development not only proportioned in itself, but to the intellect,—such a development, in fact, as Phidias would have represented if he had been required to embody the ideal of manly beauty. The educational and æsthetic ideals are the same; and any departure from these central, average, or moral forms is a departure from the right and the beautiful, from perfection mentally and physically.

The very self-same principle of apportioning or adjusting the various constituents of the physique is equally applicable to the apportioning or adjusting of the intellectual faculties: the beauty of the mind as of the body inheres in just proportion.

The confused and erroneous notions which exist on the whole subject of education mislead us in our exertions in the cause of intellectual as of physical education. We would develop the soul as the body into the similitude of the exaggerated Farnese Hercules; but as educators generally attempt to accomplish this gigantesque development both of mind and body at the same time, their intentions, from the very limitations of nature, are frustrated; for we can only get Herculean development and work out of mind and body by either the temporary or permanent subordination of one or the other.

True intellectual education, then, primarily consists in duly apportioning the vital power between brain and body, and secondarily in apportioning the mental share of vitality proportionately between the several faculties of the mind; on the same principle as we have previously enunciated, viz., the greatest health and strength to the greatest number, i.e., by equable distribution.

English judgment is as a rule gross. Magnitude, quantity, and profusion impress the nation more than proportion, quality, and sufficiency. This weakness even extends to education. English youth must know a great deal, or appear to know a great deal; so cram away, ye professors and teachers, *coach! grind! cram!* The world at large, that is to say the English world at large, seems to think it of very little importance whether the youth of England understand what they learn or not, so that they seem to know. It cannot discern that this weakness is letting England drift into the rear, and that the mastery and lead in the van of nations is to that people which really understands the principles of things. This alone is the kind of knowledge, the knowledge which is power; not spurious, second-hand information and volubility. There are times when it is culpable to be reticent of truth, and that is now. For there is a nation, a thinking nation, a nation which understands things by principle,—Germany, who, if she have the power to enforce peace, will materially affect not only our commerce, but the commerce of Europe; and the only way to maintain our position will be by a right system of education,—a system of education which shall give to every faculty its full and masterful power, a symmetrical education.

But how are we to overcome this ingrained predisposition to admire quantity before quality? To prevent the modern craze for a great number of subjects in the curriculum of education, that everlasting cry for more, for more and more top-hammer to the understanding? How are we to convince people that the understanding would be enlarged if Englishmen only knew less? Only by pointing out that the greatest poets, painters, sculptors, philosophers, statesmen, and commanders existed before science, teaching, and technical education were thought of. The native powers of the mind, untrained, untampered with, are, I firmly believe, infinitely preferable to those overlaid and burdened with too much knowledge. The modern notion of a "higher education" is really begotting a lower education,—is clouding and stultifying the understanding. Our would-be instructors, by their zeal for quantity, are weakening instead of adding to our strength. Another fact, too, may serve to mitigate the desire for quantity before quality,—the fact that the faculties of the mind are really and essentially far fewer than supposed, or than phrenology would lead us to believe; they are three, viz., Observation, Memory, and Reason. What subject is there that these three faculties are not competent to grapple with? If we only have a care that they are perfectly constituted, we need have no fear for the future of England; but if, instead of directing our attention to perfecting these, we will insist on cramming the facts of fifty sciences into a youth's head, he, and ultimately the nation, will come to grief; for it is not the quantity of information, but the perfection of the understanding, the perfection of the mind as an instrument of thought, which makes men and nations great.

It is a very curious fact that the mind and body convert their food into strength by analogous processes. Each has its receptive, assimilating, and digestive powers. These are, in respect to mental assimilation, observation, memory, and reason; and cramming the mind, as the stomach, prevents healthy action and assimilation, gives rise to indigestion and a variety of deplorable symptoms. But still we talk, and talk, and fancy, whilst we are committing ourselves to all kinds of absurdities, that we are

doing the right thing, and that instead of being the laughing-stock we are the admiration of the world. We cannot perceive that our great position among nations was gained before the word *technical* had obsolete inscribed against it in our dictionaries.

To make men intellectually effective we have to convince ourselves that the essential faculties of the mind are few, and that these must be duly proportioned, in order that neither may override or exclude the proper exercise of the other. There must be a beauty of proportion in the constituents of the mind as in the limbs of the body. When this exists sound knowledge is the result, and from this again proceeds good and lasting work in philosophy, literature, and art. This is the kind of education which gives unity of thought and action to a nation, as it eventually will do to the world. Without this educational reform, divisions and sects will increase; for every one, as at present instructed, is likely to build on different foundations.

The science of proportion is the master science,—is that central science, the mastery of which enables men to trace the system of Nature, and to act, direct, and govern according to the wisdom of the Creator. W. C. T.

SHOWING WHEN GRATINGS WILL NOT VENTILATE SEWERS.

SIR,—I see the doctor who has been down to Cambridge to report on the cause of the outbreak of typhoid believes it to be from the water, as the sewers have air-gratings. If that is his opinion he has stopped short in understanding the matter at all. For instance, we all know that hot air while hot will ascend, be it either pure or impure, with this difference, that the specific gravity of the impure gas being the heaviest, if the sewer is at 60 degrees temperature and the atmosphere is at 70, all the gratings in the world will not ventilate the sewer, but reverse the temperatures, and the ventilation of the sewer will be efficient. We can see the ventilation going on fast enough in the winter by the steaming, but in the summer it is far from regular. When the temperature of the atmosphere is reduced by a storm, then ventilation of the sewer may be relieved not only by the flow of water, but the air temperature falling many degrees. That being the case I would suggest that at certain distances there should be carried up with new buildings a blind shaft near the chimney shafts, and on the top a reversed cowl directed by a vane to always face and catch the wind, and its pressure would drive the air down into the sewer, even the hotter air, which would help to raise the temperature; it would also dilute the impure gas and reduce the danger in the sewer. Another fashionable method of heating the air at the basement of buildings is to warm and ventilate it, having at the top a heated section. If the colleges are heated that way after the heats of summer concentrating the impure gases, the sections to ventilate the colleges rise in the impurities, scattering them all over the building, poisoning the most susceptible. The greatest wonder is that they are not a thousand times more injured. Statistics prove that sewer fever is more prevalent in the autumn than at any other time of the year. M. TOSSELL.

STEAM CULTIVATION BY A NORFOLK FARMER.

IN a paper read by Mr. T. Rose, of Melton Magna, who had prepared it at Mr. Lumbe's request at the recent audit of Mr. Lumbe, he says:—

"The cultivation of land by steam-power is approved, allowed, and practised by the leading agriculturists of our day; therefore, I think those who have had no practical experience ought to watch carefully its results, and pause awhile before they unhesitatingly condemn it. Last year at this time I feared we should have to encounter great difficulties in regard to manual labour. I now say again I can see difficulties looming in the future; and what other power have we to fly to but steam? It is not many years since our crops were threshed by the old wooden flail, that system is now entirely exploded, as is being the case with the wooden plough. After the flail, came the horse-power threshing-machine. Last has now made way for the steam-engine. Many of us here present doubtless have heard our fathers condemn the use of steam power for threshing, as being both dangerous and expensive; but who among us here would like to go back to the old system, and hang half-a-dozen horses on to a horse-power threshing-machine to thresh 30 or 60 combine of corn per day, when we can now thresh by steam as much as 100 or 125 combine? Why, in these days it is not practicable; and so in a few years

will the steam-plough occupy the place of the horse. There are many reasons why steam cultivation is at present more extensively practised. One is the supposed costliness of the method, which I admit has been increased by the late great rise in the price of coal and labour; but, as my friend, Mr. Fowler, says, we must not be deterred from our great work by the addition of a few pence per day to our labourers' wages, nor by a few shillings per day to the price of our coal."

After giving the results of his use, by hiring of Fowler's engine tackle in digging up his wheat stubbles, and in steam ploughing of land generally, Mr. Rose adds:—

"I will conclude by giving you the estimated quantity of work that can be done on mix-soil land per day, also on sand."

1st. Digging 10 in. deep, the engines will consume three-quarters of a ton of coal each per day, and will do about eight acres.

2nd. Digging 12 in. deep, seven acres per day, consuming one ton of coal each.

3rd. Digging 18 in. deep, five acres per day, consuming one ton of coal each.

Cultivating about 15 in. or 16 in. deep, three-quarters of a ton of coal each engine, doing from sixteen to eighteen acres per day.

All my calculations are made exclusive of one man and two horses for carting coals and water."

OPENING OF ST. JAMES'S WHOLESALE MARKETS, BRADFORD.

THE New Wholesale Vegetable, Fruit, and Fish Markets, which have been recently erected near the Fair Ground, Leeds-road, Bradford, have been formally opened. The buildings have been erected on ground belonging to the Corporation and lying between the St. James's Slaughterhouse and the Great Northern Goods Station. Approaches to the markets are provided from all sides by Hammerton-street, Tew-street, at Graham-street, and in addition to this railway sidings have been constructed from the Great Northern lines to accommodate the vegetable, fruit, cattle, and fish producing districts of the country. The buildings, which have been erected in a plain manner, form a main street running east and west, and a shorter one at right angles to the main street and at the west end of it. On the south side of the main street—that nearest the railway—are placed sixteen whole sale potato, fruit, and fish shops and warehouses arranged in two blocks. These are each 42 ft. long by 24 ft. wide, and two stories in height. The latter dimension, 24 ft., is the length of the frontage which the shop presents to the street. The lower or ground floor is divided into a front shop, and a warehouse or store-room behind, and from the sloping character of the ground, the latter room is partly underground, and is lined with double walls, so as to ensure the goods against either damp or frost. The upper floor is also intended to provide storing accommodation, and ten of the warehouses are fitted with turntables from which sidings run into the upper room direct from the railway. Trap-doors open into the shops below. On the opposite side of the main street, and also extending down both sides of the shorter street, are the fruit-warehouses, twenty-two in number. These are two stories in height. The fish-market is located at the eastern end, and consists of ten shops and warehouses. The floors are of Wilkinson's patent granite concrete, to exclude damp and vermin. The footway in front of the shops to the distance of about 8 ft. is covered by a projecting roof. The street is of great width. The market gardeners' stands afford accommodation for thirty-four large wagons, and are arranged in blocks of four, with plenty of space all round each block. Spacious staircases for the conveyance of goods from the level of the railway to the market are placed, and flights of steps from the market to the still lower level of Carroll-street and the abattoirs. At the angle formed by the two streets is the clock tower, near which are located the offices of the market superintendent. For this tower a clock of four dials is in course of construction by Mr. Potts, of Leeds. The cost of the markets, exclusive of the gates and the paving of the streets, will be about 15,000. The works have been designed by and carried out under the superintendence of Messrs. Lockwood & Mawson, the architects, who have embodied in the plans many practical suggestions made by Mr. Bradbury, the market superintendent. Mr. Wilson has been clerk of the works. It is proposed, at some future time, to construct sidings and cattle pens, by means of which cattle may be discharged from the railway trucks direct into the market ground. Land has also been reserved at the east end of the markets in order that extensions may be afterwards made if the accommodation afforded by the present buildings should be found to be insufficient.

these wholesale markets, along with the new retail butchers' and fish market now being erected in Rawson-place, and covered market in Kirkstead Daley-street, will, when the whole of the scheme is fully completed, form a series of buildings for market purposes such as few provincial towns can boast of.

THE MONASTIC BUILDINGS OF THE CISTERCIAN ORDER.*

ONE of the most remarkable movements ever recorded in Church history, but one that has scarcely received the notice which it deserves in modern writers, was that which was commenced by a few Benedictine monks in the east of France, at the close of the eleventh century, suggested by the laxity of manners which had prevailed in monastic institutions, and scandalised by the ostentatiousness and extravagance displayed in the buildings, decoration, ministrations, and services of the Church, three monks of the Abbey of Molesme, desirous of following a purer mode of life, and of adopting a simpler and purer form of worship, separated themselves from the community to which they belonged, and founded, in the year 1098, in a fertile place in Burgundy, a new convent and new order of monks. Such was the commencement of the great Cistercian reformation, which rapidly overspreading the whole of Christendom, in a wonderfully short space of time, covered the face of Europe with its ruins, no less than 350 abbeys of this order having been founded, erected, and abundantly endowed within the first century of its existence. No country did this reformation and the simple earnestness of its promoters meet with more favour and readier acceptance than in England. Landowners and nobles vied with one another in offering sites for their convents, in giving them to raise their abbey-church and other domestic buildings, and in amply endowing them when completed; witness the numerous remains of this order in Great Britain, which still survive the disastrous effects of subsequent reformation, due to similar causes, and the destructive ruthlessness of which swept away much that was noble and admirable, as well as much that was corrupt and degenerate. Among the larger monasteries of this order founded in England, of which the remains still exist, and which comprise the most important monastic ruins in the country, the following may be named:—Fountains, Furness, Kirkstall, Bury, Byland, Jervaulx, Calder, Whalley, Tintern, Newstead, Beaulieu, Croxden, and others. Again and again has the same thing happened. We see it in the outbreak of the monasticism in the early ages of the Church, and their wholesale destruction of images and statues, as well as in the subsequent separation of the Greek and Latin Churches, due to the same causes. We have it again in the protests and secession of the Cistercians in the eleventh century, and in the action of Wycliffe and his followers in the fourteenth. We see it later in the German reformation of the fifteenth century, in the suppression and destruction of monasteries under Henry VIII., and in the critical havoc of the great Rebellion. In the frequent recurrence of the same causes and same effects, from time to time, in the history of the Church, we recognise, in the first, the natural proneness of human nature to that which captivates the eye and pleases the senses, the constantly increasing tendency to ornate devices, to surface decoration, to a sensualism, to pictures and images, and ultimately to ostentatious observances and saint-worship; and we see in the second, the sure result of that revulsion of feeling which suddenly arises when the end point in this downward progress of mental servility is arrived at. Of these different movements in the latter direction, not one was unheeded and carried out with so much ability and gentleness of spirit as that of the Cistercians. Content to protest and dissent, they proved the sincerity of their professions by the sanctity of their lives, and by the reality of their self-denial, rather than by aggressive attacks on the system which they condemned. No document, however, either of ancient or modern times is the use of colour and gilding on walls and windows, of gold and silver in ornaments and utensils, of pictures and images, of ostentatious practices, and saint worship, so emphatically denounced as it is in the Charta

Caritatis of the Cistercians, the code of laws which, adopted in the earliest days of the foundation of the order, and subsequently enlarged and confirmed under the auspices of St. Bernard himself, remained the rule of life of all the monasteries of the order. The manly independence which characterises this early protest or charter is sufficiently remarkable, when we consider the circumstances and the times in which its authors lived. Without throwing off their allegiance to the Church, they acknowledged no authority, in the administration of their affairs, or the government of their own monasteries, but that of the head of their order. They forbade, indeed, their members to go to Rome, unless accompanied by a bishop of the Cistercian order. They prohibited prostration in their churches, and any abject position of the body whilst praying. They abolished saint-worship, and permitted their churches to be dedicated only to the Blessed Virgin. They tolerated no images, or pictures even, of saints; nor, indeed, the representation of the human form on their walls, or in their windows; nor even the crucifix itself; permitting only a painted wooden cross. This order is further supplemented, and their opposition to all approach to sensuousness, either in their service or ritual, is further illustrated, by a comprehensive order passed at the General Chapter of 1213; and again by two remarkable injunctions relating to bell-ringing and singing, occurring, the first, in the same general order of 1213, and the second in the second edition of the Charta Caritatis of 1134. Their objections to polychrome, and to richness of ornamentation of every description, arising evidently from the extent to which the abuse of this species of decoration on the walls, and in the vestments and utensils of the Church, had been carried, are emphatically conveyed in their various prohibitions on this head, which descend even to the clasps of their books, and the lettering of their manuscripts. Lastly, we have the following remarkable order in regard to stained glass:—*Cap. lxxxii.* "Vitrea alba fiant, et sine crucibus, et picturis." Strong colour is to the eye what strong drink is to the palate; and we gather from the strength of the prescribed remedy in this case what must have been the extent of the disease at the time when these rules were drawn up; nothing short of total abstinence having been considered by the Cistercians of that day, as by the temperance societies of our own time, to be likely to be effectual. But although the Cistercians were reformers, to the verge even of Puritanism, in the treatment of their wall surfaces, their carved work, their utensils, their vestments, and their windows, they were, in all that concerned their buildings, in the higher and nobler attributes of form and outline, real artists in the true sense of the word; they instituted, in fact, a school of architecture, which, for vigour and boldness of design, for excellence of proportion, as well as for the elegance and purity of treatment of all its subordinate details, is unsurpassed by that of any age or country; and I think you will be disposed to agree with me, after we have visited the three or four examples that we hope to see in the course of the week, that a careful study of their numerous excellencies by architects of the present day, could not fail to exercise a beneficial effect on modern designs, by checking exuberance of ornamentation, and by the cultivation of a purer taste, delighting rather in form and outline than in colour and surface decoration. And it is in order to enable you properly to utilise this opportunity that this preliminary lecture is given; my business here this morning being twofold, namely,—1st To explain to you the rules and regulations in regard to the buildings of the Cistercians, upon which the special school of Mediæval architecture is based; to furnish you, in fact, with the key which shall enable you to read aright those ruinous groups of conventual remains; and, secondly, to draw your attention to those peculiarities and excellencies of style and design which characterise the works of these men, of which we shall see in the course of the week such admirable examples. Now, in doing this, I shall have, I fear, to a certain extent, to travel over ground which has already been trodden by me in my lectures to the Yorkshire Archaeological Society, at Kirkstall, and at Fountains in 1871 and 1872. I must, therefore, crave the indulgence of such members of that society as are at present here to-day whilst I make this very necessary preliminary explanation to those who were not present on those occasions, and who probably

hear for the first time of Cistercian architecture as a special phase of the architecture of the Middle Ages; and who, no doubt, constitute by far the larger portion of my present audience. It is more than forty years ago, when travelling abroad in 1832, as one of the Travelling Bachelors of Arts of the University of Cambridge, that I was first struck with certain peculiarities, which I observed in the remains of the monasteries of the Cistercian order of monks, which led me to believe that they must have followed certain rules of their own as well in the plan of their conventual buildings as in the design of their churches. Further observations confirmed these impressions. I became interested in the matter, and so arranged my journeys as to enable me, during the three years that I was absent, to visit nearly the whole of the principal Cistercian abbeys in France and Germany. I have subsequently had opportunities of examining several in France, that I did not previously visit, and the remains of nearly the whole of the English monasteries of that order, six of the abbey-churches of which are illustrated in the work which I published in 1846, entitled "Architectural Parallels." The conclusions to which this study of the works of the Cistercians brought me, led me to examine, somewhat carefully, the chronicles which give the earliest account of the rules and history of the order; and I found, as I expected, sufficient reason for concluding and asserting that the Cistercians followed certain rules of their own in regard to their buildings, which distinguish them, for at least the first 200 years of the existence of the order, from those of all other religious bodies of that time. The three principal monastic orders of the Middle Ages were,—1, the Benedictine; 2, the Præmonstratensian; and 3, the Cistercian. Of these three orders the Cistercian, which was an offshoot from the Benedictine, was the latest. The order arose in the west of France, at the close of the eleventh century, and was instituted by three monks of the Abbey of Molesme, in Burgundy, who, grieving over the general laxity and want of discipline that prevailed in the Benedictine abbeys, and more especially in the one to which they were attached, after several fruitless efforts to reform and correct it, quitted their convent, and retiring to a desert and secluded spot in the diocese of Chalons, established there, with the favour and under the protection of Otho, Duke of Burgundy, in the year of our Lord, 1098, the Convent of Cîteaux, where they lived after a new and stricter rule, founded upon that of the order of St. Benedict. Great, however, as became in a short time the reputation for sanctity of these early founders of the order, and favoured as were their efforts, not only in the establishment of Cîteaux, but also of several dependent abbeys, it is to the great St. Bernard that the extensive renown and rapid increase of this order is to be attributed. He appears to have entered the Abbey of Cîteaux in the year 1112, and to have been sent with twelve monks to occupy the new Abbey of Clairvaux, as its abbot, in the year 1119. He was one of the greatest luminaries of the Church. His zeal, his piety, and his learning were such as to obtain for his particular order, to which, as one of its earliest votaries, he was devotedly attached, the greatest favour and support. During his lifetime a very large number of Cistercian monasteries were founded, built, and endowed. The order continued to be exceedingly popular and prosperous until the end of the thirteenth century, when the same laxity which had corrupted the other orders began also to affect the Cistercians, and we find them ultimately departing from the precepts of their founders, not only in regard to external forms, but also in their discipline,—a departure as apparent in the style of their buildings as in their mode of life. A considerable number of the abbey churches of this order remain at the present day, and although subsequent extension and alterations have in many cases swept away the original structures, still a large portion of those that are left are the early buildings of the twelfth and thirteenth centuries, and belong to the period when the whole of the rules of the order were fully enforced. In France they are the most abundant, in Germany many valuable examples still exist, and in England they are to be reckoned amongst the most interesting of our monastic remains. I need hardly add, that in all three countries they are chiefly in a state of ruin, except where they have been devoted, as occurs in some few cases, to some secular purpose. Their ruinous condition, however, increases

From a paper by Mr. Edmund Sharpe, read at the Congress of the Archaeological Institute.

rather than otherwise, the interest usually taken in them, and certainly adds very considerably to their picturesque effect, and to the facility with which their mode of construction can be studied. I have already spoken of the large number of the abbays of this order, but it was not until the year 1128, that is to say, thirty years after the foundation of Cîteaux, that they began to increase with any degree of rapidity, and this increase was probably due as well to the great and increasing reputation for sanctity that the monks of this order had acquired, as to the rising reputation and influence of St. Bernard, who had then been nine years abbot of Clervaux. Within 200 years of that date, no less than 1,200 abbays were founded, erected, endowed, and added to the order; and the entire number of dependencies possessed by the abbot of Cîteaux shortly before the Reformation is stated to have been 3,200. Now, of those 1,200 monasteries, I do not know one the general plan of which is not in accordance with that of all the rest; nor a single church which does not bear in its details the impress of its Cistercian origin. This remark, limited as it is to the monasteries that were erected during the first two centuries of the existence of the order, applies, of course, only to the general disposition of the monastic buildings and to the general character of their architecture; variations occur, as a matter of course, as well in the one as in the other, due to local or other causes, but they are mostly of slight importance, and are, in fact, of the nature of those exceptions which tend rather to prove the general rule than to invalidate it. Of these peculiarities some are the result of positive directions contained in the statutes of the order already referred to, whilst some appear to be matters of habit and practice, as strictly observed, however, as if they were enjoined by the written rules of the order. I will refer to them indifferently, and in the order in which they present themselves most conveniently for the rapid survey which we can only now take of them. The buildings of the Cistercians were always laid out according to one normal plan. Whether the abbey was of the largest or of the smallest type, this model was rarely, if ever, departed from. Variations occur in the comparative size and ornamentation of the different buildings of an abbey, but never in their disposition. This uniformity of procedure has enabled me to show upon a typical plan,—such as the one placed in the middle of this screen,—a true representation of the whole of the normal buildings that surround the cloister quadrangle of a Cistercian monastery of the twelfth century. This model plan is the concrete result of the aggregate plans of the whole of the Cistercian abbays that I know, some twenty of which, prepared from my own measurements, are exhibited on this wall, no single one of which is at the present day in a complete condition. Now, in studying the views of any Cistercian abbey that we visit, the model plan, which I have had reduced and printed by photography, and a copy of which has, I believe, been placed in the hands of every member present, presents a convenient mode of determining at once which of its original buildings remain, and which have been destroyed, which are built according to the normal plan, and which exhibit departures from it. It is thus that we shall use it in our visits to Fountains, Rievaulx, Jervaulx, and Byland. I will now, therefore, proceed to point out upon this model plan the relative position and the respective use of each of those buildings that usually surround the four sides of the cloister quadrangle of a Cistercian convent. The first thing that strikes us on approaching one of the abbays of the Cistercians is the nature of its site. They appear to have invariably selected remote situations, at a distance from towns, generally in a valley, and often in the narrowest part of the valley, with a view apparently to complete retirement and seclusion. In France and Germany this appears to have been the almost invariable custom of the Cistercians. In England situations of this kind were, perhaps, more difficult to meet with; still, I know of no single instance, in this country even, in which this general practice has been departed from, or the valley deserted for the high land. We turn, then, with interest to our chronicles to ascertain whether a practice, which appears to have been so universally followed, was enjoined by any specific rule; and we find, on consulting the statutes of the General Chapter of 1134, the following instructions, which form the subject of the first chapter of these institutes as given in the *Monasticum Cisterciense*, p. 216:—

"Cap. I.—Quo in loco sunt construenda conobia. In civitatibus, in castellis, aut villis, nulla nostra construenda sunt conobia sed in locis a conversatione hominum remotis."

THE LONDON STREET TRAMWAYS COMPANY v. THE NEWINGTON VESTRY.

A DISPUTE has arisen between the London Tramways Company and the Newington Vestry on the question of paving the streets through which the Tramway Company's lines pass, and in threatening the Tramway Company with legal proceedings, the Vestry go so far as to challenge the powers of the Board of Trade. The Tramway Company are about to lay down new lines along Great Dover-street, and the Vestry desire them to adopt wood pavement, which the Company decline to do, but intend to use granite cubes, and rely for so doing upon the powers which they have obtained from the Board of Trade. The Newington Vestry, at their last meeting, directed their clerk to serve a notice upon the Company informing them that Chancery proceedings would be taken against them if they proceeded to lay down granite cubes in connexion with the tramways in Great Dover-street, as sanctioned by the Board of Trade; and the clerk was also directed to advise the Board of Trade that the Vestry did not admit the powers they had assumed under the Metropolitan Tramways Orders Confirmation Act of 1873. This last-named decision of the Vestry would seem to be taking high ground. If it should turn out that the Board of Trade have not overstepped their powers, the ratemakers of Newington will not regard with much favour the step which the Vestry have taken.

CHOKED SEWERS.

At the meeting of the Poplar Board of Works last week, a discussion relative to the late storm incidentally brought to light that the public sewers are constantly choked up by dead animals getting into them. The surveyor brought up a report which showed that the effects of the recent storm had been to inundate the Isle of Dogs and other parts of Poplar; and he stated that his impression as to the cause of the overflow was that the sewers would not carry off the storm waters; whereupon Mr. Cook, of the Metropolitan Board of Works, said the subject had been before the Board, when the engineer brought up a report on the subject to the effect that owing to entrails, corks, &c., that came floating down the sewers, it was necessary to keep them three parts full in order that the pumps should not be choked, and that on the day of the storm all the eight pumps were at full work, but could not cope with the immense fall of rain. It appeared that on the day of the storm no less than 85 million gallons were pumped up out of the sewers. He stated that no one would imagine the great quantity of material that floated down the sewers, and added as a proof that on Whit Monday Mr. Runtz was at the Abbey Mills, when he saw three tons of entrails, and seven dead pigs, taken out of the fifth-hoist as one morning's catch alone. It ultimately transpired that Sir Joseph Bazalgette, the engineer to the Metropolitan Board, has under his consideration some means by which a recurrence of such overflows as that at the Isle of Dogs and Poplar may be prevented.

ARCHITECTURAL ASSOCIATION.

FIFTH ANNUAL EXCURSION.

MR. EDMUND SHARP has very successfully, as some of our readers know, planned and guided excursions of members of the Architectural Association for the last four years; several of the most interesting districts in England having been visited under his direction. This year it has been determined to break fresh ground, and carry a party of our younger architects through a part of the North of France, probably the first expedition of the kind as yet undertaken by such a collection of English students on the Continent. The number will be about fifty; and the disposal of the time will be in the main similar to that heretofore in the excursions in our own country. A selection of buildings of the best class has been made in order to show the distinctive characteristics of the Mediæval architecture of Paris and the district to the north and north-east. A good deal of ground seems likely to be got over in the fortnight to

be devoted to the study of these structures in company. The party will meet in Paris on August 17th, and continue together till August 29th. At Paris St. Germain des Près, La Sainte Chapelle, Notre Dame, and the Chapel at Vincennes will be visited. Among the other larger buildings are the Abbey Church of St. Denis, Sens Cathedral, Beauvais Cathedral, Leu d'Esserent, the Abbey of Maubuisson, Chartres, Soissons, Laon, Rheims, Chalons-Evreux, and Rouen Cathedrals, also St. Ouen and St. Maclou at Rouen. Over thirty parishes, churches in villages and towns also appear in the list. Part of the journey will be a real country excursion made in carriages to place somewhat out of the ordinary routes—where churches of especial interest are to be found—on a smaller scale, but of kindred nature to that of the better known larger buildings. With good weather and good spirits and such good leadership a very successful addition may be expected to the list of Association excursions. The year's work of the younger society would now be judged very incomplete without such a pleasant and useful term of exploration as the third and fourth weeks of this month are likely to afford the members. We envy those of the party, fresh, eager, and hopeful, who are going over this interesting ground for the first time. Make the most of it, good friends; you come but once.

DEWSBURY, BATLEY, AND BIRSTAL TRAMWAYS.

ON Monday, the 20th July, Colonel Hutchinson inspected that portion of the above tramway extending between Dewsbury and Batley which is now completed, being a length of about one mile three furlongs, single line, with fly sidings or passing places. Owing to the extremely awkward cross section of the roadway, it has been found necessary to lower the surface almost throughout in constructing the tramway the road authorities having agreed to alter the side paving. Some portions of this side paving being still unaltered, the inspector stipulated that he could only report favourably on the undertaking of the authorities to complete such portions before the day of opening the tramway. This has been accomplished, and on Saturday last the ceremony of opening took place. The line, which is ultimately to be extended to Birstal, is being rapidly laid towards Carlinghew which will form the present terminus. Kincaid patent chairs are used in the formation of the tramway and rails, about forty pounds to the yard, and where any defect in the foundation is met with, a layer of tar concrete, 6 in. thick, is put down. The construction is being carried out under the superintendence of Mr. Malcol Patterson, C.E., by Messrs. Speight & Sons, Leeds.

GROSVENOR CLUB.

THERE is no difficulty for *bona fide* working men to become members; in fact, the committee have never refused to elect any mechanic provided he was respectable, and we have room to present for additional members.

The club is not in connexion with the Working Men's Club and Institute Union, nor are all the trustees members of the same. The trustees were nominated by the Duke of Westminster, and are quite independent of the above Society.

S. W. GRAFF, Chairman.

GAS.

A NEW company, called "The Antogen Fuel Gas Company (Limited)," is being got up, with a capital of £4,000, in 11, shares for supplying mansions, stations, and dwellings, with self-acting, self-regulating apparatus for the manufacture of gas without coal. In fact, although we find no account of the *modus operandi*, nor even any explicit description of the materials, either in the prospectus, the advertisements, or other announcements as to it, there seems to be little doubt but that it is one of those modifications of the conversion of paraffine or other hydro-carbonaceous oils (spirits into vapour for use as gas, of which various forms have been recently spoken of. The "cost of process will not exceed 3s. 6d. per 1,000 cubic feet," it is said, but surely it is not meant that the process of its manufacture will cost so much, even if

ing the "raw material for the manufacture," is said to be "unlimited." The raw material is to be sold by the company as well as apparatus.

to hear, anew, from America, of the conversion of sewage into gas. A Mr. Bray, who is the invention, is at present in America. Still spoken of as solving at once the two-fold problem of consuming sewage and saving coal. The apparatus of Mr. John West, manager of Maidstone Gas-works, for charging and discharging retorts simultaneously in 50 seconds, will spoken of as a decided improvement in making.

A TALE OF A SPRING LATCH.

Mr. KELK, cashier to the building firm of Fry & Co., Middleton, Hartlepool, has hitherto reasons to deplore the fixing of a spring latch that opened only outside.

He recently married, he had invited a party of friends to his house, and his young wife in anxiety to get rid of the hot air, ventured upstairs, and entering a small closet with a latch, she entered to open it, when the door of air closed the door. In vain she called to the servants, although she could hear the door-bell ring and her visitors enter; and she suspected that the imprisoned lady was on the roof of the house, all the other parts of the dwelling and grounds were searched. One visitor suggested that there might be an oak chest with a secret spring, and this gave clue to the closet, and when at last found, Mr. Kelk was seriously ill and hysterical. An epileptic fit followed, and the shock more than the nervous system could bear, death shortly put an end to the poor lady's sufferings. The said affair has not prospered the unhappy husband, but cast a gloom around the whole town.

PROPOSED NEW CITY FRUIT AND VEGETABLE MARKET.

—In the communication which Mr. Knightley has addressed to you on this subject he omits to state that the premium, as well as the first, was awarded to a plan for a one-story market, the shoe-lane frontage utilised for building purposes in exactly the same way as proposed by me.

It may be accepted as conclusive testimony that, in the opinion of the judges, this type of design was better adapted to meet the requirements of the case than any other.

I am perfectly willing to publish my design, provided the Corporation of London, whose exclusive property it may become, offer no objection thereto. In any case, however, the Corporation will have to find necessary materials for the publication; as, owing to the short period at which I entered into the competition, the consequent haste in which the design was prepared, I am unable to make any copies prior to sending the design to Guildhall.

Lewis H. Isaac,

MONUMENTAL.

Memorial of the fourth Earl of Aberdeen.—The Corporation of Westminster having granted the necessary permission, a memorial bust of the late Earl of Aberdeen has been placed in the west aisle of Westminster Abbey, near that of Sir George Wallis Lewis. The bust is in marble, and is supported on a bronze bracket, and is said to be a faithful representation of the deceased statesman. The sculptor is Mr. Matthew Noble. The following is the inscription on the bust:—"George Gordon, fourth Earl of Aberdeen, K.T., K.G., died January 28, 1874; died December 14, 1874. Ambassador, Secretary of State, Prime Minister."

Restoration of the Marjoribanks.—Workmen have been actively engaged in erecting the necessary scaffolding for raising the statue of the late Chas. Marjoribanks, formerly of Berwickshire, to replace that destroyed by lightning in July last year. The work of restoration was done by a border sculptor, Mr. James, of Darnick. The statue consists of large blocks of stone, procured from some Newton quarry, and weighing nearly 10 tons. The work of raising the statue to the top of the column, a height of upwards of 70 ft., was done by Messrs. Noble & Brown, and it was done in position without accident. A lightning conductor will be placed on the column.

Monument to David Allan, the Painter.—Mr. J. J. Alison, R.S.A., of Edinburgh, has produced a monument about to be erected to David Allan, a famous painter of Scottish art. The idea of the monument occurred some time ago to

certain members of the Royal Scottish Academy. The monument consists of a simple monolith of Biny freestone, resting on a moulded base of the same material. In the upper part of the slab is an oval panel, into which is inserted a marble medallion of the artist, executed from a head of Tassie's, helped out by portraits in the possession of the Academy.

The Wilson Monument.—A meeting of the subscribers to the Alexander Wilson monument has been held in Paisley. It was stated that the monument was now nearly ready, and it was agreed to erect it in the burial-ground of the ancient Abbey at Paisley, in a spot where, consequent on the recent improvements in that neighbourhood, it will be easily observed. The monument will be of bronze, with granite pedestal, and will cost 6000, or 7000.

Unveiling a Memorial at Staleybridge.—The ceremony of unveiling a monument, which has just been erected in Stamford Park, Staleybridge, to the memory of the late Jephro Tinker, a distinguished local botanist and entomologist, has been performed by Mr. Thomas Harrison, M.A., J.P., president of the Staleybridge Naturalists' Society. The monument is about 12 ft. in height, with panels containing suitable inscriptions. It has been designed and executed by Mr. Alfred Wilde, sculptor, Staleybridge, and the cost, about 800, has been defrayed, partly by public subscription, and the remainder by the exhibition of a large collection of curiosities gathered by the deceased, and which will probably be placed in a museum to be opened shortly in Stamford Park.

CHURCH-BUILDING NEWS.

Bristol.—The new district church of St. Mary the Virgin, Tyndall's Park, which is to supersede the present iron church, is now completed as far as the second pier of the nave from the east, and it was to be consecrated on the 30th ult. The foundation-stone was laid on the 23rd of November, 1870, and from that time to the present the work has been progressing, at times slowly, owing to financial difficulties in the way, until something like two-thirds of the building are now ready to be used for divine service. When quite finished, the church will consist of a chancel, 39 ft. long, 24 ft. wide, and 53 ft. high to the apex of the roof, and will be lighted by a large and richly-traceried window of five lights, 15 ft. wide and 25 ft. high, filled with painted glass by Wailes. North and south transepts, each 21 ft. 6 in. long by 18 ft. wide, project from the chancel, into which they open by arches springing from clustered shafts of serpentine, bearing carved caps, and between these shafts will be richly-wrought iron grilles or screens. The windows in each transept will have four lights, and be placed in the gables. The north transept is intended for the organ, and the south will be fitted with seats. The chancel arch is 22 ft. wide and 35 ft. high, the jambs of which are shafted with polished red Dartmoor granite. There are also western arches from the transepts to the nave aisles, each 11 ft. wide and 14 ft. high. The nave will be 84 ft. long and 26 ft. wide, with an arcade of four arches, 22 ft. high and 20 ft. wide on each side, springing from circular shafts, with moulded bases and enriched caps. The arch mould is of two orders, and labelled. The arcades support a clearstory, with three-light windows over the apex of each arch. The height of the nave to the tie-beam is 40 ft., and to the apex of the roof 64 ft. The steeple will occupy the north-west angle of the church, and will communicate by a large door with the west end of the north aisle. This steeple, when completed, will be 200 ft. high. The roofs are all of high pitch and open, the nave and chancel having tie-beams; all are covered with Staffordshire tiles, with ornamental ridge tiles, manufactured by Cooper, of Maidenhead. The ironwork has been executed by Leaver, of Maidenhead. The total cost of the church was estimated at about 11,000. Up to the present time something like 8,500, have been expended on the building, but this does not include a number of valuable gifts. Mr. Diment, contractor, has presented a pulpit.

Liverpool.—The new church dedicated to St. Philemon, and situate in Windsor-street, Toxteth Park, has been opened for the first time for divine service. The new church consists of a nave, chancel, transept, and a side aisle, which is separated from the nave by five arches, supported by red stone columns, with carved caps and moulded bases. Adjoining the chancel on

the west side is a spacious organ-chamber, and on the opposite side there is a vestry, having a private entrance from Dorrit-street. There is also a small gallery, constructed to seat about 150 persons. Beneath the church, accommodation is to be provided for a schoolroom. The architecture of the building is plain Gothic. The walls are of brick, relieved by stone dressings and window tracery. The church, which has cost about 5,000, will accommodate 800 persons exclusive of the choir. It was erected from designs furnished by Messrs. Culshaw and Summers; the builder being Mr. John Corkhill, of Liverpool.

Built.—The corner-stone of the new church (St. Mary's) was laid on June 18th. Mr. J. Norton, of London, is the architect, and Mr. J. Diment, of Bristol, contractor. The estimated cost of the present part is 3,000.

VARIORUM.

"The Civil Service Handbook of English Literature," by H. A. Dobson (Lockwood & Co.), is a capital little book. To give a good idea of the Rise and Progress of English Literature in the space of some 200 pages was not an easy task; but Mr. Dobson has got over it very satisfactorily, and a careful study of his little volume will supply with many the want of early reading.

"Practical Instructions on Enamel Painting on Glass, China, and Tiles," by Henry Jas. Snell, though mainly a trade-book (published by Brodie & Middleton), may be recommended as a useful introduction to the arts of which it treats. Ladies, for example, who desire to try what they can do in china-painting may find the half-crown it costs a good investment.

A correspondent asks us how he can make an Aeolian harp. By an odd coincidence we find the following particulars in the new number of "Cassell's Household Guide":—"An instrument of the kind about to be described seems to be of very ancient origin, but was re-introduced during the last century. The Aeolian harp produces a very pleasing, melodious sound, especially in the open air, and is not difficult to construct. A long, narrow box, the length of a window, or the position in which it is to be placed, is the first requisite; it must be made of thin deal, 4 in. deep and 5 in. in width. At the extremities of the top glue two pieces of oak about 1 in. high and 1 in. thick, for bridges to which the strings are to be fixed; within the box, at each end, glue two pieces of beech-wood, about 1 in. square and the width of the box. Into one of the bridges fix seven pegs, such as are used for piano-strings; into the other bridge fasten the same number of small brass pins; and to these pins fix one end of the strings, made of small catgut, and twist the other end of the strings round the pegs; then tune them in unison. Place over the top of the strings a thin board, supported by four pegs, and about 3 in. from the sounding-board, to procure a free passage for the wind. The harp should be exposed to the wind at a partly open window; to increase the draught of air, the door, or an opposite window in the room, should be opened. The strings, in a current of air, sound in unison; and with the increasing or decreasing force of the current the melody changes into pleasing, soft, low sounds and diatonic scales, which unite and occasionally form very delightful musical tones. If the harp can be placed in a suitable position, so as to receive a sufficient draught of air, in a grotto, or romantically-situated arbour, or hidden in some shady nook near a waterfall, the effect of its sweet sounds is very charming."—The August part of the *Sunday at Home* contains a memoir of Livingstone, by his father-in-law, Dr. Moffat, with autographs, and copy of the portrait considered the best by the family. —The *Sanitary Record*, speaking of the Sanitary Laws Amendment Bill, says:—"For one year more those who are occupied in sanitary work must make up their minds to tolerate the confused jumble of legislation to which the new Bill makes another contribution. For one year more the inhabitants of hundreds of villages and of thousands of houses must manage as they best can to exist without any water that is fit to drink, although a few simple clauses would remove the difficulties which now stand in the way of their obtaining it. For one year more unwilling sanitary authorities will be allowed to neglect their plainest duties, provided they can manage to steer clear of the Court of Chancery, or are brave enough to defy the 'bottled thunder' of the Local Government Board. It is true that

a rod in pickle is provided for them by one of the clauses of the new Bill, which empowers the central authority to enforce the requirements of the law by calling in the coercive powers of the Court of Queen's Bench. But we fear that unless the Local Government Board has resolved to show much more activity in putting pressure on the sanitary authorities under its jurisdiction than it has hitherto done, the rod in question will only be laid aside in the lavender in which other similar weapons of offence repose."—*Symonds's Monthly Meteorological Magazine*, No. 102, Vol. IX. July, 1874. Stanford, Charing-cross. This magazine contains, in the number under notice, an interesting article on "The Water Supply of North-Western Europe during the Summer of 1874." It includes translations of two papers by the most able men in France on such subjects, as Mr. Symonds says. One of these papers is titled "Probable Diminution of the Yield of Spring Water in the Basin of the Seine, in the Summer and Autumn of 1874." By MM. E. Belgrand and G. Lemoine"; and the other is the "Probable Decrease of Discharge of Spring Water in the South-West of France in the Summer and Autumn of 1874." By Professor V. Raulin." Mr. Symonds agrees with these gentlemen, and treats of the yield of water in this country in a similar point of view. There is reason, he thinks, to believe that in the eastern part of England the supply of water in wells, ponds, and streams will be very deficient, though not quite to the same extent as in North-Eastern France.—"Sulphur in Iceland." By C. Carter Blake. London: Spon. 1874." The author of this pamphlet points attention to the fact that a plentiful supply of sulphur can be had for this country, from a shorter distance, and at a smaller cost, than from the Mediterranean, and that the Danish Government have granted to Mr. Lock, an Englishman, a lease of the Government Sulphur Springs or Solfataras, banks or fields, and quarries in the Thinga Syssel in the north and east of Iceland. The author estimates the cost of Sicilian sulphur at 5s. 17s. 4d. per ton, that of Spanish sulphur at 4s. 11s., and that of Icelandic sulphur at 3s. — "The Asphore, and its Application to the Mining Industry." By L. Denayrouse, Queen-street, Cannon-street, City. Of the breathing apparatus for foul air, as in mines, or for work under water, and its utility, here described, we have before spoken. It is said to have already been practically useful in France and Germany.

Miscellaneous.

Castlereagh Clock-tower, Machynlleth.—The foundation-stone of a clock-tower to commemorate the birthday and coming of age of Lord Castlereagh has been laid in Machynlleth, on the site where the old town-hall lately stood. The site is the gift of Sir W. W. Wynn. The clock-tower will consist of a plinth course with steps, surrounded by an ornamental railing. On the platform is to be placed a fountain. The lower story will be a square, 13 ft. 2 in. square, having open arches on the four sides, and buttresses at an angle of 55 sustaining each corner. The arches, with polished angle columns and carved caps, will be crowned by crocketed canopies and small figures holding bannerets. These figures will rest on each corner of the springing of the shaft or body of the tower, which is to be of Tremadoc stone, splayed at the angles, and will have a rampant course of Mansfield red stone on each side, with foliated loop-hole windows at distances all the way up. The shaft or body of the tower will rise from the groined ceiling of the arcade, and will be terminated by four enriched faces, with angled turrets. The tower will be roofed by means of a stone-crocketed spirelet, terminated by a large iron vane. The dials will be framed in ornamental ironwork. The whole height of the tower will be 78 ft. from the base to the top of the vane, and 48 ft. to the centre of the dials. The architect is Mr. Henry Kennedy, of Bangor and London; and the contractor is Mr. Edward Edwards, builder, Machynlleth. An illuminated clock, with three faces, is to be placed in the tower, and will be given by Lady Edwards.

Drinking Fountain at St. Clement Danes.—On Wednesday, at a meeting of the rector, churchwardens, and others connected with the parish of St. Clement Danes, in the Strand, a granite drinking-fountain, which had been erected at the entire cost of Mr. Joseph Bond, was presented as a gift to the parish.

Historic Ground.—At the Ship Hotel, Greenwich, a special jury was summoned to assess the value of a piece of land, about six acres in extent, the property of Mr. W. J. Evelyn, the defendants being the East London Railway Company. The plaintiff claimed 52,000l. It appeared that the ground had been in the family's possession since the sixteenth century, and was remarkable for its being the place where Sir Walter Raleigh doffed his mantle for Queen Elizabeth to walk upon, and traditionally the rendezvous much frequented by Peter the Great. It originally belonged to John Evelyn, the celebrated author, and now in its entirety produced a rental of 17,385l. per annum. The property has been laid out for building and other purposes, and the value of land in Deptford had increased in a marvellous manner, there being scarcely a house vacant. In 1873, the Board of Trade appointed a surveyor to value the land, and the amount of his valuation was 16,957l. 10s. This sum the claimant thought much too small, and set up a claim for 52,000l., agreeing, however, to lessen it if the company would erect a station on the proposed site. They refused to do this, and under the 85th section of the Lands Clauses Act compulsorily took possession of the land, paying into court the sum of 17,000l. to cover all demands. After the jury had viewed the property, a short consultation between the parties ensued, whereupon it was agreed to take a verdict by consent for 17,000l.

Runcorn Rural District.—A report by Mr. A. Greenwood, the surveyor and inspector of nuisances, on the water supply of the district of the Runcorn rural sanitary authority, gives an appalling idea of the state of this district. At Frodsham township there is a well, one of a number of similar ones, built in a ditch, and "with sewage from a drain running into it," but in the morning, say the cottagers, it is "decent tea-water," and they wait till morning, and use it then, when they have no time to go a quarter of a mile to the nearest supply of somewhat better water. At Overton (and elsewhere) a market-gardener washes his vegetables, before sending them to market, in a sewage-pond into which his closet, and those from a dozen other houses, empty their liquids. When this "filthy sink" is not used, water must be fetched from a mile's distance. The Runcorn water-mains run through Halton, but out of 168 houses only forty have any supply of water except from a muddy well at a distance. At Buck Oak about twenty cottages have no water at hand except about a pint at a time from a hole in a rock, and even a deficient supply at some distance. At Norton they get their water supply by stealing it. The Runcorn sanitary authority have liberally raised the salaries of their three medical officers of health from 20l. a year each to 25l.; but still, strange to say, the Government are not satisfied.

The Worcester Model Dwellings Association.—The twentieth annual general meeting of this Association has been held in the local Guildhall. Mr. G. W. Hastings presided. The report stated that there has been a loss to the Association from void houses during the last twelve months of 67l. 12s. 9d., being an excess of 4l. 1s. 10d. on the loss from that cause in the previous year. With these unsatisfactory results before them the reporters add that they see no prospect of an improvement. The chairman said the working classes preferred nowadays to breathe purer air and get the advantage of a small garden attached to their premises. This was not a matter for regret, as it doubtless improved their health and morals. Mr. Webb introduced the question of winding up the Association, observing that he had long been of opinion that the utility for such an association had culminated, and that such a society was no longer necessary, when they considered the number of respectable houses which had been built outside the city since the Association was started, to ensure good dwellings for the labouring classes. The want which was felt twenty years ago no longer existed, and he thought the time had come when the Association should be wound up. A committee was appointed to consider and report.

New Parish Church for Newington.—The foundation stone of a new church for St. Mary's, Newington, was laid on Wednesday last by Lord Hatherley in the Kennington Park-road. The cost of the new building exclusive of the tower and spire, will not be less than 15,000l. Mr. Fowler, of Louth, is the architect. We shall publish a view and plan before long.

The Sanitary Condition of Northamptonshire.—From a report by Mr. Haviland, the Medical Officer of Health, lengthened extract from which are given in the local papers, it appears that although during the last decennial period the rate of mortality in the county has been considerably lowered, there is still much room for improvement. In some districts typhoid has prevailed to a lamentable extent the result for the most part of improper sanitary arrangements, such as want of a proper supply of pure water, the prevalence of cesspools, &c. the want of a regular system of scavenging and of improved dwellings. Northampton itself, from its exceptional position, ought to be one of the most healthy of towns; but Mr. Haviland is of opinion that "nothing of a satisfactory character will be effected until the Urban Authority shall take upon itself the duties which now devolve on the Improvement Commissioners." Rural Sanitary Authorities must have greater powers conferred on them equivalent to those now enjoyed by the Urban. The Medical Officer likewise called attention to the necessity of something being done to prevent the frequent overflowing of the rivers and their tributaries in the eastern districts, which are now the cause of much disease and mortality.

A Green Paint.—The *Journal of Horticulture* recommends the following as a cheap and durable green paint:—Half a pound of black paint with half a pound of yellow ochre (Oxford ochre, by preference) ground into it, and well stirred together. These will make a paint of a olive-green, varying in colour according to the quality of the yellow ochre; but a little more either of the black or yellow, may be added to produce either a deep ivy-green or a lighter shade, up to the palest acacia-leaf. When the colour required is arrived at, a pennyworth of patent driers is to be added. This paint may be kept for a considerable time in a cool place, and with two or three inches of water over it. When required for using, take a small quantity into a pipkin and thin with equal parts of raw linseed oil and turpentine. On no account should boiled oil be used, as this causes the paint to dry on the surface while it remains soft within, and renders it very liable to blister when exposed to the sun. One coat of this paint will be found to cover very fairly, but it is always best to lay on the first coat very thickly, and let it become thoroughly dry and hard before completing with a second coat.

Alterations and Improvements in Salford Town-hall.—The alterations and improvements in the Salford Town-hall, commenced some eighteen months since, and rendered necessary by the great insufficiency of accommodation for the police department, are rapidly approaching completion. A commodious new court-room has been erected. It measures 60 ft. by 28 ft., exclusive of the bench for the magistrates. Galleries have been erected, and it is calculated that accommodation will be provided for about 300 of the public. A police parade-room, 60 ft. long by 28 ft., has been made. The floor of this room is suitable for the parading of police. Eight commodious new cells have been built, together with a debtors' cell, a search-room, and a police waiting-room. The works have been carried on under the superintendence of Mr. T. B. Pattison, general clerk of works to the corporation, acting according to the directions of the borough engineer, Mr. A. Fowler. The contract has been executed by Mr. W. Southern, of Salford, at a cost of about 6,000l.

"A Trap for the Surveyor."—The St. George's (Hanover-square) Surveyor does not take in good part our report under this heading. He says:—

"Your correspondent chooses to represent me as saying that the men I was sure 'did not do three days' work a week; in fact, it was pretty much the same all over the London parishes.' He has however forgotten to inform your readers that my remarks applied exclusively to the labour of the *sewerers* employed by this parish, a subject which was just then under consideration by the committee, and on which it happened to be my duty to report. Those who know anything of the class of men to whom my remarks applied, will not I think be disposed to question their accuracy. As regards the work or workmen of the other London parishes I expressed no opinion. I had not the experience to enable me to form one, and under such circumstances to have used the language attributed to me by your correspondent, would have been an unwarrantable assumption upon my part, and a reflection upon the efficiency of the surveyors of the various districts in the metropolis."

One thing the surveyor may be quite as sure that there was no "malice" in the notice—the process pressed or implied!

North Oxfordshire Archaeological Society.—The society has had its yearly excursion, leaving for Thame, where the members were met by Rev. Mr. Greenall, who conducted them through the church and the prebendal and grammar school premises. At Chinnor, the Rev. William Musgrave took them through a church, which is constructed of flint, and is divided within by sixteen large oil paintings by James Thornhill. The drawbridge of the castle of Sherburn was (by the kindness of the Earl of Maclesfield) lowered to admit the party, who were conducted through the dining-rooms and libraries. Watlington was the next point, where the Town-hall is more than ornamental, and the church roofless restoration. At Cowley, on the return journey, owing to the defective filling of a drain, the horses drawing the drag fell, but the passengers received no injury.

Crystal Palace School of Art, Science, and Literature.—The annual award of medals and certificates to successful students in the various departments of this school, which have been very numerous during the past session, was made on Friday last week. Mr. Louis Haghe and Mr. G. Hine officiated as judges of the water-colour paintings (Mr. Edward A. Goodall, junr.), and awarded the silver medal to Miss Bates, of Harcourt-villa, Upper Norwood; certificate of merit to Miss B. Whitworth, the Knowle, Dulwich-wood Park. Miss Bates obtained commendation. Mr. T. Woolner, junr., and Mr. T. Thornycroft were judges of modelling in clay. Mr. W. R. Shenton, junr., Miss Kate Green, of Enmore Park, Upper Norwood, gained the silver medal; and a certificate was given to Miss Helena Toulon, Regent.

Metropolitan Board of Works.—At the usual weekly meeting, a report was brought from the Works Committee, proposing that the approach from Charing-cross to Victoria Embankment should be 90 ft. Mr. G. Hine moved as an amendment, that it be 80 ft. The amendment was lost by 22 to 8. Thereupon the members rose to propose that the road should be 10 ft., if necessary, and urged that it would be better to wait until the ground was cleared, and then deciding what really should be the width. The question was included by moving that the question be sent back to the committee to consider. The amendment was lost by 22 to 6. A letter was read stating that Mr. Foley, R.A., had inspected the proposed site for the statue of the late Mr. Stuart Mill upon the Victoria Embankment near the Temple, and approved of it.

Teaching in Art and Science.—In his report on the inspection of the Science and Art Schools, Mr. Bartlett calls attention to the extremely unsatisfactory results of scientific training in many classes. He refers to the teachers' questions seem often enough, but "a brief and simple cross-examination of the pupils shows that there is a want of thoroughness in the instruction; the knowledge gained is shallow and unintelligent." He is certificated for several subjects are deficient. Mr. Bartlett asserts, to consider the value of instruction in this or that subject, their chief object too often being to pass many scholars as possible by mere cramming. The inspector recommends the formation of a committee in each town, to look after the quality of the scientific instruction.

Kenham, Devon.—The church of this parish, which is situate by the sea coast, was repaired last week by the bishop of the diocese, the Bishop of Exeter, after undergoing a thorough repair, including new open-timbered roof, some new windows, new massive open benches in the nave and transepts, and stalls for the singers in the choir (organ placed in the north transept), floor, &c. This church bears date 1421, and was originally consecrated in honour of St. Michael, by Bishop Lacey. The works have been carried out under the direction of Mr. Thomas Stone, of Dartmouth, architect and diocesan surveyor, and have been executed by Bragg, late of Exeter; Webber, of Plymouth; Chinnock, of Kenham; and Luscombe, of Torquay.

Aquarium for Scarborough.—A plan having been accepted for the execution of an aquarium at Scarborough at about 70,000l., the operations will be commenced as soon as the site can be cleared; and the works will be prosecuted in order to the whole completed in time for the season of 1876.

The Architectural and Archaeological Society of Durham and Northumberland. The second meeting of this society for the season has been held at Romald-kirk. The members mustered at Barnard Castle to the number of 320. On their way to the place of meeting, they drove through Cotherstone, "famed," as one of the party observed, "for pretty girls and cheeses." On the road they viewed a couple of resting-stones, once used for resting coffins on while on the way to Romald-kirk churchyard. Arrived at Romald-kirk, the Rev. J. F. Hodgson read an interesting paper on the history and architecture of Romald-kirk Church. The party intended a visit to Startforth, but were prevented by want of time.

Church Restoration at Hughtenden.—Divine service has been performed for the last time in the curious manor church which stands in the private park near Hughtenden House, the seat of Mr. Disraeli. A restoration on a scale so extensive as to involve the demolition of almost the entire edifice has been planned, and a faculty has been obtained from the archbishop. The work is to be carried out under the direction of Mr. Blomfield, architect. The estimated cost of the works in hand will be 5,000l., 3,000l. of which have been already collected. The time required for the rebuilding will be nearly two years, and in the meanwhile service will be performed in a wooden erection in Mr. Disraeli's grounds.

Ornamenting Glass.—Mr. W. Sutherland, of Manchester, has patented some improvements in painting, gilding, silvering, and ornamenting the surface of glass, and protecting the same from injury. The plate of glass is first ground on one side and the design traced upon it. The colours, paints, and metals are then applied with varnish or size, and the glass is then put in a stove to dry and harden; other colours or metals are then applied and hardened in the same way. The ornamental glass may be secured to slabs of cement or other substance. Another part of the invention consists in the application of the transfer process used in porcelain to ground glass.

Success of the New Baths and Wash-houses at Paddington.—It is gratifying to find that the new baths and wash-houses at Paddington, which were recently opened to the public, promise to be a success. At the meeting of the Paddington vestry held last week, it was stated that there had been as many as 3,000 bathers in one day, without any hitch occurring in the arrangements, and that during the past six weeks the income was 1,164l., and the profit about 600l. A motion to borrow an additional sum not exceeding 6,000l. for the completion of the baths and wash-houses, was unanimously carried.

Bronze Castings.—Amongst other castings recently in progress at the foundry of Messrs. Cox & Sons are mentioned.—From models by Mr. Thos. Thornycroft, four statues for the Park-lane drinking-fountain,—three of these have been exhibited in the Royal Academy, 1874; the colossal equestrian statue of the late Lord Mayo,—the sketch model exhibited at the Royal Academy, 1874. From models by Mr. Matthew Noble, the colossal statue of Cromwell, the four panels for the Derby Memorial, and the four panels for the Leicester Memorial. From a model by Mr. T. A. Raemackers, the statue of the late Earl of Clancarty.

Improvements at St. Mark's Church, Kennington.—During the last two years several improvements have been made in St. Mark's Church, Kennington, commonly known as "Kennington Church," and still further improvements are about to be effected, at an estimated cost of 1,200l., which will bring up the amount expended upon alterations and improvements in the interior of the church to about 3,200l. The late Mr. Teulon designed the alterations which have already been effected, and the plans for those about to be carried out have been prepared under the direction of Mr. Foster.

A Portrait.—Messrs. Hogarth have published a portrait of the Right Honourable the Baroness Burdett-Coutts, from the original picture in the possession of the Baroness, painted by Mr. James R. Swinton. It has been well engraved in mezzotint by Mr. George Zobel, and will doubtless be coveted by those who desire a memorial of this excellent lady.

Lincoln.—Building operations continue in full force in Lincoln, the movement, as regards the better class of residences, being conspicuously marked above-hill. On Saturday last the chief corner-stone was laid by the owner of a house building in James-street, on a site where it is said a church dedicated to All Saints once stood; some very old houses have been removed, and it is perhaps the first instance on record of an old residence pulled down and a new one erected in its vicinity. The architects are Messrs. Drury & Mortimer, and the builder is Mr. George Morgan, all of Lincoln.

An Ancient Fortification.—A discovery was recently made on Lord Zetland's estate near Willance Leap, Swaledale, and within a few miles of the town of Richmond. It consists of the remains of an extensive Roman or Danish camp, the foundations of the enclosing wall having been unmistakably traced for an area of 65 yards by 50 yards. The site is not far distant from the River Swale, in a field immediately underneath the Scar, and a little to the east of the well-known Willance Leap. The remains clearly indicate a wall of considerable dimensions and strength, and are of undoubted antiquity.

Public Fire Alarm.—At Rochdale a new apparatus has been fixed for giving alarm in case of fire. It causes three 75-lb. hammers to act on a large tenor bell in the clock-tower of the town-hall. The machine, it is said, can be immediately set in motion by pulling a lever at the police-station, and can be stopped instantly. For the sake of the peaceful slumbers of the Rochdale people, and the safety of their property, it is to be hoped the three 75-lb. hammers will not often be set in motion by night.

Protection and Redress for Railway Travellers.—A meeting has been held in the Law Institution, the Duke of Manchester in the chair,—for the purpose of launching the Railway Travellers' Protection Society, of which his Grace is president. Among those present were—the Bishop of Gloucester and Bristol, Sir Alexander John Arbuthnot, K.C.S.I., Sir John Murray, bart., Mr. Raphael Brandon, and others. Appropriate resolutions were unanimously passed.

Proposed Great Telescope.—Mr. Jas. Lick, of San Francisco, has bestowed upon the State of California, by deed, a series of splendid gifts, amounting in the whole to 2,000,000 dol. The most remarkable of the donations is one of 700,000 dol. for the purpose of erecting and endowing an astronomical observatory, and equipping it with "a powerful telescope, superior to, and more powerful than, any telescope ever yet made."

Road Locomotives.—If steam cultivation is to be more general in England, more of the counties must follow the example of Bedfordshire in strengthening the county bridges for the transit of road locomotives. At the Bedfordshire quarter sessions the surveyor reported upon twenty-three county bridges, which have been put in a satisfactory state of repair, and equal to carrying ordinary traction engines.

Evesham Drainage.—An Engineer writes:—Can any of your readers inform me whether the appointment of engineer for the drainage of Evesham, for which applications were sent in last January, has yet been made?

The Royal Gold Medal.—The Council of the Institute of Architects propose to recommend to the members in August next that the Royal Gold Medal be awarded to Mr. Street.

The Mint Site.—It is said that the Government has abandoned for this session the proposal to remove the site of the Mint from Tower-hill.

TENDERS

For additions to the Sunday School Union, for the committee. Mr. J. E. Saunders, architect. Quantities supplied.—

Sewell & Son.....	£4,310 0 0
Young.....	4,300 0 0
Teellipe.....	4,290 0 0
Pritchard.....	4,077 0 0
Brass.....	4,065 0 0
Colls & Son.....	3,995 0 0
Bowles.....	3,970 0 0
Little.....	3,933 0 0
Scrivenor & White.....	3,923 0 0
Meredale.....	3,882 0 0
Merritt & Ashby.....	3,877 0 0
Perry.....	3,811 0 0
Tarrant.....	3,760 0 0

For new workhouse buildings, Chester. Messrs. W. Perkin & Sons, architects:—	
Rodgers	£ 4,000 0 0
Whitely	38,000 0 0
Horsman	37,321 0 0
Boothman & Broomhead	33,979 0 0
Ford	32,538 13 7
Thurton	32,750 0 0
Ray	32,580 0 0
Gribble	30,900 0 0
Roberts	30,366 0 0
Weatherley & Rymor	30,310 0 0
Ridal	30,257 12 8
Tomlinson	29,857 0 0
Cabbutt & Son	29,570 0 0
Farrimond & Co.	29,400 0 0
Dyer	29,040 0 0
Hughes	28,960 0 0
Andrews	28,749 0 0

For new church of St. Paul, Clerkenwell. Mr. Ewan Christian, architect. Quantities by Messrs. Goodman & Vinal:—

Emor	£7,124 0 0
Pritchard	6,945 0 0
Bras	6,777 0 0
Dove, Brothers	6,375 0 0
Jackson & Shaw	6,327 0 0
Longmire & Burge	6,200 0 0
Manley & Rogers	6,389 0 0
Downs & Co.	5,850 0 0

For alterations and additions to No. 40, Portland-place, and for new house on portion of back land. Mr. George Truefit, architect:—

Stanley Bird (accepted)	£9,433 0 0
-------------------------------	------------

For alterations and additions to No. 27, Moorgate-street, for Mr. A. R. Wormald. Mr. P. C. Dyer, architect. Quantities by Mr. Henry Wm. Broune:—

Gould & Brand	£2,997 0 0
Perkins	983 0 0
Ward	900 0 0

For alterations and additions to the Black Lion, Baywater, for Mr. Gill. Mr. W. E. Williams, architect. Quantities supplied:—

Mann	£2,939 0 0
Bowles	797 0 0
Anley	711 0 0

For new High School, Haydon-place, Guildford. Messrs. E. W. Lewis & Son, architects:—

Charlton	708 3 0
West	394 0 0
Burdett	527 13 6
Ewayne, jun. (accepted) ..	485 10 0
Ewayne (withdrawn)	461 13 0

For enlargement of the Vicarage-house, Stokenchurch, Oxon. Mr. Arthur Vernon, architect:—

Spicer	£223 0 0
Byred (accepted)	210 0 0

For tramway depot, North-end, Portsmouth. Messrs. Davis & Emanuel, architects. Quantities supplied (on appointment by the builders) by Mr. J. Glenn:—

Morey, jun.	£2,250 0 0
Larcom	2,138 0 0
Burbridge	2,015 0 0
Ward	1,953 0 0
Copper	1,868 0 0
Quick	1,860 0 0
Bramble, Brothers	1,808 0 0
W. B. & C. Light (accepted) ..	1,790 0 0

For repairs and painting at the Coopers' Almshouses, Oxon. Mr. G. B. Williams, architect:—

Hayward & Son (accepted)	£268 0 0
--------------------------------	----------

For decorations to the Freemasons' Tavern, Great Queen-street:—

Hayward & Son (accepted)	£197 17 0
--------------------------------	-----------

For painting and sundry works at the London establishment of Christ's Hospital, Mr. S. Benton, architect. Quantities supplied:—

Shaw	£212 0 0
Pittman & Guthbertson	898 0 0
Patman & Potheringham	897 0 0
Morby	873 0 0
Hayward & Son (accepted)	325 0 0

For rebuilding new dining-room to Montpelier Hotel, Newgate-street. Mr. John Vincy, architect:—

Hyde	£364 0 0
Hayward & Son	686 0 0
Godden	659 0 0
Pitcher & Son (accepted)	654 0 0

For alterations and additions at 79, Tulse-hill, S.W. Mr. Frederick Thomson, architect:—

Maxwell, Brothers	£267 0 0
Howard	600 0 0
White (accepted)	432 0 0

For works at West House, Clapham, for Mr. S. W. Cavston. Messrs. E. Habershon & Brock, architects:—

Scrivener & White	£1,965 0 0
Sharpping & Cole	1,923 0 0
Carter & Son	1,490 0 0
McLachlan	1,498 0 0
Manley & Rogers	1,470 0 0

For the German church, Dalston, for the trustees. Messrs. E. Habershon & Brock, architects:—

Lawrence	£4,819 0 0
Carter & Son	4,798 0 0
Sharpping & Cole	4,797 0 0
Browne & Robinson	4,699 0 0
Manley & Rogers	4,550 0 0
Scrivener & White	4,493 0 0
Newman & Mann	4,186 0 0

For alterations and repairs to 8, Crosby-square, City, for Mr. P. Davies. Mr. Charles Reilly, architect:—

Norton	£268 10 0
Watson	490 13 0
Harrison	423 0 0
Staines & Son	364 0 0
Greenwood & Son	352 0 0
Heaps (accepted)	352 0 0

For parsonage house, Dalston, for the Rev. Dr. Walbaum. Messrs. E. Habershon & Brock, architects:—

Lawrence	£3,281 0 0
Sharpping & Cole	3,211 0 0
Browne & Robinson	3,198 0 0
Newman & Mann	2,998 0 0
Scrivener & White	2,960 0 0
Carter & Son	2,920 0 0
Manley & Rogers	2,857 0 0
Waldran & Co.	2,549 0 0

For the erection of stables at Old Ford, for Messrs. Allan (revised estimate):—

Blackmore & Morley (accepted) ..	£297 0 0
----------------------------------	----------

For a new farmhouse at Fulbourn, near Cambridge. Mr. T. F. Filly, architect. Quantities supplied:—

Redding & Son	£2,505 0 0
Saint	2,397 0 0
Harle	2,349 0 0
Glascock (accepted)	2,230 0 0

For works at No. 8, Grosvenor-place, Commercial-road, Linthouse, for Messrs. Haddock & Selby. Mr. William Mundy, architect:—

Ennot	£244 0 0
Mart	720 0 0
Heale	885 0 0
Stamp & Bowles	879 0 0
Forrest	875 0 0
Blackmore & Morley (accepted) ..	645 0 0

TO CORRESPONDENTS.

"Early Art-work of the Golden Age," invariably postponed. "One of the ill-used" says:—"In a case of complete non-attendance at a great branch of confidence for a bond to appoint a sub-committee to ask the opinion of a set of the complete 72 before arriving at a decision?" and wants to know "what course should we take for the credit of the Profession." Certainly this does not sound very well; but all he can do is "to grin and bear it"; with a determination to make inquiries before he comes again. A word to our correspondent personally: an architect who writes a letter with two pieces of bad grammar in it does not do advance "the credit of the Profession." We speak with good intention only. H. D. M. (we willingly believe our correspondent's statement)—J. T. D. (perhaps) came too late.—T. K. W. (possibly) leading 2 ft. by 8 ft. is certainly not included by the term "window cills."—Semper Fidelis (next week).—Asphalte (next week).—Veritas (perhaps) as an assertion is of no value. We will insert letters willingly with signatures.—R. A. C. (possibly) should be sent.—R. A. L. & Son.—G. T. P. & Son.—Mr. H. A. G.—Mr. P. T. L.—Rev. H. F. W. D. J.—R. D. H. W. B. K. & Co.—S. G.—T. A. M.—S. W. G.—J. G.—P. F. T.—Rev. J. C. B.—R. G. G. & Co.—O. S. H. & Son.—J. M.—J. T. R. H. & B.—R. W.—T. A. M.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

Note: The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

	Situations	Situations
	Wanted.	Vacant.
Six lines (about fifty words) or under ..	2s. 6d.	4s. 6d.
Each additional line (about ten words) ..	6d.	6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to residents in any part of the United Kingdom at the rate of 12s. per annum, *Postage in advance*.

Halfpenny stamps accepted for amounts under 5s. Any larger sum should be remitted by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to DOUGLAS FOUBERTER.

Advertisements cannot be received for the current week's issue later than **THREE o'clock p.m. on THURSDAY.**

The Publisher cannot be responsible for TESTIMONIALS left at the Office in reply to Advertisements, and strongly recommends that COPIES ONLY should be sent.

NOTICE.—All communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent Garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher."

Bills of Quantities, Specifications, &c., Lithographed by ROBT. J. COOK & HAMMOND, 29, Charing-cross, S.W., with accuracy and promptness. Plans and Drawings Copied, Traced, or Lithographed.—[ADVT.]

T. TRELOAR & SONS,

SUPERIOR

COCOA-NUT

FIBRE

MATTING

AND

MATS.

Manufacturers and Warehousemen,

69, LUDGATE HILL, E.C.

GOOD

FLOOR

CLOTH.

KAMPTULIC

CORK

CARPET.

Bath Stone of best quality.

RANDELL, SAUNDERS, & CO. (Limited)

Quarriesmen and Stone Merchants.

List of Prices at the Quarries and Depots

also cost of transit to any part of the Kingdom,

application to

Bath Stone Office, Corsham, Wilts. [ADVT.]

Whitland Abbey Green Slates.—The

Quarries are now fully opened out, and

producing Slates in all sizes, and in any

quantity: sound, and of choice green tint. Ord-

can be executed without a day's delay.—

samples and further particulars, apply to

MANAGER, at the Quarries, Narberth-ro-

S.O. [ADVT.]

Asphalte.

Seyssel, Patent Metallic Lava and

White Asphaltes.

M. S T O D A R T & C O.

Office:

No. 90, Cannon-street, E.C.—[ADVT.]

Patent Selenitic Cement, with double

usual sand, is much stronger than ordinary mort-

Plastering finished in much less time at less co-

Excellent substitute for Portland cement

Concrete at less than half its price.—6 White

Belvedere-road, Lambeth, S.E. [ADVT.]

J. L. BACON & CO.

MANUFACTURERS OF

IMPROVED HOT-WATER

APPARATUS,

FOR WARMING AND VENTILATING

Private Houses, Churches, Schools, Hospitals,

Manufactories, Greenhouses, &c.

OFFICES AND SHOW-ROOMS:—

476, NEW OXFORD STREET, LONDON, W.

From FARRINGTON ROAD.

Publishers of a Pamphlet on "Hot-Water Heating."

MICHELMORE & REAL

Manufacturers of

CHARLES COLLINGS' PATENT

COLLINGS' PATENT HINGE

LEVER, SCREW, & BARREL BOLTS

and IMPROVED GATE FITTINGS of every Description

36A, BOROUGH ROAD

LONDON, S.E.

Discount to Builders.

Illustrated Sheet on application.

SOCIAL SCIENCE CONGRESS, GLASGOW, 8th October 1874.

President, The Right Hon. Lord MONCKMERE (Lord of the Treasury).

Vice-Presidents, The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Right Hon. Lord MONCKMERE (Lord of the Treasury).

The Builder.

VOL. XXXII.—No. 1644.



The Early Art-Work of the Goldsmith.

Our recent remarks upon ancient art-work in metal (p. 281, *ante*) we exhausted the space at our command before we had by any means exhausted the subject that we desired to illustrate. And the considerations which led to the use of the expression "lost word," which has a special

significance to many of our readers, were amongst those which we were thus compelled to refer to a future opportunity.*

Our correspondent has remarked with justice that the word *plata* is Spanish for silver. *Plata de color blanco hermoso y de un lustre vivo* is the definition given by the *Diccionario de la Lengua Castellana*, por la Academia Española. But the term *plata* in the same language, means "in short"; the *plata*, in each case, as in the Latin *plata*, corresponding Italian *piazza*, and the Greek *πλάτῃ*, and *πλάτος*, being from the same source from which come not only our words "plate" and "place," but the earlier importance of "flat." Such a term is by no means inapplicable to precious metals, or indeed metals at all, as we have not only plates of metal, but plates of glass, but wooden platters, China plates. With the French, the use of the name of a vessel of this kind to denote its contents has led to the further transmutation of the original sense, as a *plat* no longer means an earthenware dish, but the special plate of the cook's art sent to table. All these etymological ramblings, however, interesting as they may be to philological students, have nothing to do with the fact that gold plate, with our goldsmiths, and in the correct use of the term, means silver-gilt; and that a plated service is a service of silververed copper. The probability of the town of Sheffield, less than half a century ago, depended as much upon the special manufacture of Sheffield plate, or articles such as handsticks, made of silververed copper, as upon its more ancient industry in "Sheffield plates."

The Rabbinical writers enumerate seven species of gold, referred to in the Bible. An illustration, however, of each word thus cited, is that in discussing them we should be chiefly involved in disputes as to language, and employed in elucidation of ancient art work, we should not ask our readers to follow us on a barren ground. It is evident, however, while we can find little to show that any difference in the quality of the precious metal is recognised as characteristic of its origin, or source of importation, gold was treated in various modes in ancient times than is now the case. Beaten gold is frequently mentioned

by ancient writers. With us, this phrase merely applies to gold leaf, of which wonderfully attenuated form of the metal so much use is now made in ornamental work. But the beaten gold of the time of Solomon, and long before his date, was gold plate wrought by the hammer, as silver and copper now are by the worker in *repoussé*. Besides this, we find reference to gold wire, drawn out so delicately as to be used in needlework or embroidery. Gold dust is also mentioned; in old times, probably as now, being a form in which the metal was collected by barbarous tribes. Then gold is spoken of as cast, or poured out. This, probably, is the most ancient mode of employing the metal. That the expression is not misunderstood is shown by the fact that amongst the invaluable objects discovered by Schliemann was a beaker of cast gold; the remainder of the golden objects being wrought. Lastly, the reference to *auri*, "golden shekels," and *darconoth*, or *darics*, imply the practice of stamping gold. That gold was beaten, by the time of Herod, to a tenuity not much less than that of our present leaf gold, is shown by the references made by Josephus to the use of wax, in applying the gold to the woodwork of the Temple.

It is probable that the small coins of Persian origin, known by the name of *Daric*, are among the most ancient specimens of gold-work, with exception of some of the Egyptian articles of personal ornament, that we can now identify as to date. These coins are of an archaic style, as remarked by Mr. Madden. The diameter is about $\frac{1}{2}$ in. The original weight we make to be 128 grains Troy. On the reverse is an irregular incused stamp; on the obverse a crowned figure, kneeling on one knee, holding a bow in one hand, and an arrow, or spear, in the other. Coins of the same type exist also of the weight of 256 grains Troy. This coin may be regarded as carrying back our specimens of this portion of the work of the ancient goldsmith to a date about two centuries earlier than those of the beautiful silver coin of Lysimachus, which we before described. We must remember that we are here comparing Hellenic with non-Hellenic art. But in all that we now know of the art of Greece, the rapidity of development is a characteristic as striking as is the excellence so rapidly attained. Grecian art did not, indeed, spring to life, like Pallas, full-grown and armed. But its growth, if contrasted with the slow progress made by art in Egypt during a period of nearly three thousand years, was so rapid as, at all events by comparison, to justify such a representation. Thus the Eginetan coins, with a tortoise on the obverse, and an incused square on the reverse, while they exhibit a feeling which is absent in the Persian and Lydian money, are still proofs that the art of the coiner, when they were produced, was, in Greece, in its early infancy. As far as the evidence goes at present, this infancy may be attributed to the middle of the eighth century before Christ.

Mr. Madden ventures upon the unfortunate assertion ("History of Jewish Coinage," p. 14), "The use of coined money in Palestine cannot have existed till after the taking of Samaria by the Assyrians, B.C. 721." We will not quarrel with the date, as it is that ordinarily attributed to the fall of Samaria; although it is ten years earlier than the recently-discovered Assyrian canon shows to have been the case. But it is not a question of years, or even of centuries; for Hebrew literature, with one consent, carries back the use of coined money in Palestine to a period before the Exodus. The separation of the second title is an institution of Moses. It is distinctly specified in the Pentateuch; and is the subject of a special treatise or *codex* of the Talmud. It is held by the doctors of the law that the express words of the Book of Deuteronomy (xiv. 25) prohibit the exchange of the second title for any money that is not *sigmata*,

stamped, or coined. We are not about to urge that it should be accepted as an article of faith, though it is written in the Targum on the Book of Exodus, that the pattern of a golden dinar, or *aurus*, was showed to Moses in Mount Sinai, in the form of a fiery coin; but at least we must take it to be nearer the truth, as a poetic statement, than the idea that the Assyrian invader introduced coined money into the Holy Land. A thousand and seven hundred pieces of gold are mentioned as the weight of the 15,000 pairs of earrings taken by Gideon (Jud. viii. 26); and the servant of Abraham presented the Syrian beauty whom he wooed and won for his master's son, not only with "a necklet [*nasam*] of gold, of a beka [that is to say, 50 carats, or 160 grains Troy] in weight," but also with (Gen. xxiv. 22) a pair of bracelets of ten pieces of gold by weight. These are only two out of more numerous examples of that reference to pieces of gold, counted by tale, in the earliest books of the Old Testament, which would be quite unintelligible in the absence of an admitted form and weight of the elements of a mercantile currency. In the same way 20 pieces of silver (Gen. xxxvii. 28) were paid by the Ishmaelites for Joseph; and the two words at the end of the 16th verse of Genesis xliii., which are translated in the Authorised Version, "current money with the merchant," although it is difficult to render them with absolute fidelity, certainly imply the existence at that time of a definite mercantile currency. If this were merely an indication of weight and of purity, stamped, in any way, on a piece of silver, of not more than two-thirds of a Troy ounce in weight, it yet, to all intents and purposes, constituted coined money. The fact that successive depreciations of the currency have reduced what was formerly a pound Troy of silver to less than four ounces,—a fact that has so obscured the historic identity of English money as to have given rise to the famous question of Sir Robert Peel, "What is a pound?"—should not lead us to be blind to the fact, that the expression of measure of value by definite equivalents of weight was the first step taken when trade passed beyond the limits of barter.

The field of inquiry on which we have entered is so wide, and so full of incident, that we must restrict it by omitting the consideration of those several schools of ancient metal-work which may deserve, each in itself, a separate chronicle. Thus Egyptian goldsmiths' work, which is illustrated by very exquisite specimens, some of which are figured in the beautiful book of M. Priese d'Avesnes, we leave aside for the present. The Greek coinage, and that of Rome, republican and imperial, again, form the subjects of special studies. Nor do we here open up the general question of numismatic art, which forms a great literary speciality, apart from metal-work proper. We are looking, for the moment, at the specimens of non-Hellenic art, which show how, from a period that every new discovery throws back into more remote antiquity, artists of Asian or African blood wrought with a skill that is not now surpassed, and with a prodigality in the use of gold as a material that is now quite unapproached. It is a remarkable coincidence, as bearing on this part of the question, that the same year has made us acquainted with the existence of productions of the living craft of the goldsmith, of no contemptible merit, among the half-naked savages of Central Africa, and of female ornaments, comprising tiaras, necklets, armlets, earrings, chains, rings, buttons, and studs exhumed in the Troad, from under successive layers of *débris*, of which the thickness, according to ordinary analogy, should betoken the flight of some 2,700 years. Among the objects now on view at South Kensington are to be found specimens of barbaric work in gold that show how the noble metal has proved a means of education in the very infancy of art.

* As to the "Lost Word," see pp. 302, 400, *ante*.

Bearing on this inquiry, with a view to trace what may be recovered as historic landmarks in the tradition of the goldsmith's art, we call attention to a small group of silver and copper coins, the real significance of which we think has been strongly overlooked. M. F. de Saulcy, in his "*Recherches sur la Numismatique Judaïque*," figures several coins (cf. plate xiii. figs. 6, 7; plate xiv., figs. 1c, 2, 3), of which he says that the legend is "*absolutely illegible*"; seeming as if the letters which compose it had been thrown at hazard over the field of the piece. The learned writer has failed to add that in this irregularity, no less than in the form of the letters, is to be found the sign of extreme antiquity; the restriction of the legend to its present position of a regular circle round the outer part of the disc, being one of the improvements very gradually introduced in the modelling of coin. On some of these pieces no name of prince or pontiff has been indicated, although the letters said to be illegible, in some instances, plainly to be resolved into the words "Money," "Prince," "Israel." But in some specimens of the group is to be traced, either irregularly encircling an *Enochos*, or pouring vessel, or in lines on either side of a seven-branched palm, the legend "Eleazar, the Priest." Mr. Madden has figured four of these pieces from the *Revue Numismatique*, and specimens exist in the British Museum. He has given the legend as "Eleazar, the High Priest"; but it is important to give the exact words. The word *High*, which is found usually connected with the title of the Pontiff, both in literature and on the coins of the Asamonean priests, is *not* on these coins of Eleazar. This fact has a strong bearing on their identification.

Another point of great interest, as an indication of the date of this ancient specimen of art work, is the use of the letter *vau*, in the silver coins, in the word *cohen*, or *cohen*, priest. This is a more antique form than that which occurs on the coins of the Maccabees. Again, on one of the copper pieces, the legend is written in the Greek manner, that is to say, as we write in English, instead of the Hebrew arrangement, from right to left.

Only one high priest of the name of Eleazar ever ruled in Jerusalem. The son of Aaron, the second of the line of pontiffs, bore the title while the Holy City was yet in the hands of the Phœnicians. During the reign of the Idumean dynasty, when the dignity of the high priesthood had been destroyed, and the nominal pontiff merely discharged the necessary religious functions during the good pleasure of the king, or of the Roman president of Syria, the name of Eleazar twice occurs in the ignominious roll. But the Jews, like all ancient people, attached extreme importance to the regal right of coinage. This is not matter of inference, but of unusually positive literary evidence. Eleazar, the son of Boethus, for a short time acted as high priest in the last year of the ethnarchate of Archelaus, who appointed him, and who was not a prince with whom any liberties were to be taken; and Eleazar, the son of Annas, was appointed for a year only, by the Roman Procurator, Valerius Gratus. It is quite inconsistent with all that we know of the respect entertained by the Jews for the right of coinage, no less than with the jealous supervision of the Roman Procurators, to imagine that either of these brief occupants of the office of high priest should have dared to issue his own coin. The existence, moreover, of several types of the same coin, both in silver and in copper, denotes the possession of sovereign power for some time by the pontiff whose name they bear. The coins of Archelaus are not dated, but we have as many distinct types as his reign contained years; and for the very year in which Eleazar, the son of Annas, performed the sacred functions of the high priesthood, there exists a coin of the Procurator, Valerius Gratus.

But Eleazar, the son of Onias, who was acting high priest on the death of his brother, Simeon the Just, was a splendid and enlightened ruler. He received from Ptolemy II., king of Egypt, that magnificent golden tripod which we recently described, together with other offerings, and a request to let the king know in what he could please him. That such a sovereign pontiff had his own coinage cannot be questioned. The use of the single word, priest, notwithstanding the dignity and power of Eleazar, is in accordance with the oral law, which does not attribute the title "high" to the priest who is not representative, or hereditary, as well as acting. Even the peculiarity of the left to right inscription of the

Synod is consistent with the liberal character of the pontiff, who authorised the first translation of the law, the Greek tongue. To the epigraphic peculiarities, which are very striking, we have alluded. All these things considered, we can find no ground for hesitation in attributing the curious coins in question to this splendid pontiff, and thus to the first third of the third century before Christ.

The artistic handling of these little coins, none of which are in very good condition, is chiefly notable for the naturalistic spirit which it displays. The bunch of grapes, with stem, tendrils, and leaf, is not reduced to conventional symmetry, but is forcibly and naturally rendered. The same may be said of the palm-tree, the slight stiffness apparent in which is rather due to wear than to original execution. Simple but elegant forms of *enochos*, or pitcher, with an outline that might be taken for Greek, except as to the spout or lip, which is better adapted for pouring than is the case in the most similar Grecian types, also occur on these coins; a point of great interest, as indicating the shape and mode of workmanship of the golden pitchers, or vials, produced by the goldsmiths of so early a date. We can arrive at the size of the vessel represented on the coins from acquaintance with the quantities of wine that were used for different descriptions of sacrifice. Seven different standard measures were kept in the temple for the apportioning of the proper quantities of wine, of oil, and of water, required, on different occasions, by the ritual. It is probable that the very numerous sacred vessels of the Temple were arranged in sizes, corresponding to these portions. It is certain that there must have been vessels capable of holding the largest quantity required. In the former case we should find the vessels vary from one holding twelve cubic inches, to one of twelve times that capacity. The larger size, being a fraction over a half-gallon vessel, must certainly have existed. A golden *enochos* of that capacity must have been a very splendid specimen of the art of the goldsmith, which, as applied to any object of that material and of that magnitude, has certainly been long unexercised. Our readers will remember that the large golden candelabrum, found with the treasure of Troy by Dr. Schliemann, which weighed twenty ounces, was cast, though fitted with attached handles. As far as we can depend on our reading of the silver memorial of the Priest Eleazar, the vase represented is of beaten work.

The representation of an object on a coin of known date, affords a limit of antiquity in a downward, but not in an upward, sense. We are made aware that the object represented must have been known to the artist, but we have no indication whatever, from the representation, of how old it may have been in his days. Thus while, from the description of the historian, we know what the Alexandrine goldsmiths of the third century B.C. could produce, we are ignorant to how remote a date the origin of the vessels represented on the coins of the time may be. In Greek art we can, with some degree of certitude, fix an ascending as well as a descending limit for type. But in Palestine we are told by the sacred historians that the golden vessels made by Solomon, and even some of the earlier apparatus of the Tabernacle, were carried to Babylon in the sixth century before Christ, and were restored to Jerusalem in the reign of Darius Hystaspes. Thus we reach back to the account of a piece of goldsmith's work, described minutely by Maimonides, and with unusual detail in the Pentateuch itself, which may be considered the most ancient non-Egyptian article of the kind of which we have any clear account, without any prejudice to the as yet undetermined antiquity of Dr. Schliemann's magnificent discoveries.

This was the seven-branched candlestick of gold, made by direction of Moses in the year 1540 B.C. Maimonides gives a careful description. He does not indicate the sources of his knowledge, but he is so faithful and accurate, wherever it is possible to verify his statements, that the wider the erudition of his reader, the more implicitly is he disposed to rely on any statements of this great author, for the verification of which no present sources of information are open.

This candelabrum was of beaten gold, and of the weight of a cicar, which we make to be 18.5 lb. Troy, or, to use a more familiar dimension, 222 ounces,—eleven times the weight of Dr. Schliemann's heaviest object. Its height was 48 in.,—a dimension consistent with that considerable weight, which is that of between

10 and 11 square feet of a plate of gold of third the thickness of a sovereign.

This noble piece of goldsmith's work consists of stem, branches, and ornamental enlargements standing on a triple foot. The plain stem, both of stem and of branches, was unadorned; word "reeds," which is used in the Heb. being translated "pipes" in Zech. iv. enrichments were of three kinds, viz.—Scyphus translated "bowls" in the Authorized Version, which Maimonides describes as being in the form of the mortar of the apothecary,—narrow be and wide above; pomegranates, the "knops" the A. V., which were egg-shaped; and flowers, which were hemispherical, like half-open roses. Maimonides says that there were flowers, twelve pomegranates, and twenty roses. The account in the Pentateuch gives a sum of forty-two; but in this number a cap for the central shaft, under its lamp, is wanted. Josephus states the number of spheres, i.e. pomegranates, and other cups at 70. If passage is not corrupted, he must have taken description from a later candelabrum than made by Bezaleel and Aholiab. But Joseph for the benefit of his Gentile readers, adds astrological allusions which it would have been more to his credit to omit; as they evince ignorance of the rules of astrological science the one hand, while, on the other, to the orthodox Jewish view, they savour strongly of idolatry.

The outer pair of branches sprang from central shaft at the height of 9 palms, or 24 from the under side of the foot, the shaft plain, with a scyphus, at 5 palms from the large foot, and a pomegranate under branches. The second and third pair of branches spring from the stem at intervals of 2 palms apart, consisting of plain stem and enrichment. Above the last division the stem rose plain 2 palms, and terminated in a series of scyphus, pomegranates, and flowers comprising a height of 3 palms, and crowned by the central lamp. The six branches all rose to this level. The golden lamps that stood on this branching were movable, and of such a size as to contain one gill and a third of oil apiece. From persistency of type which characterises the terra-cotta lamps which have been dug up Jerusalem of almost exactly the same shape that with which we are familiar in Etruscan tombs, there is good reason to conclude that description of butter-boat form, supporting wick at one end, was that given to the lamps.

STATUARY AND MORALS IN THE STATES.

We in the Old World are a people governed by habit. We are slaves to preconceived ideas on politics or religion, or social regulations, (worse than all) on art. It is with the latter subject that these columns are mainly concerned, and it is with some degree of humiliation, account of the moral and philosophical condition of our countrymen, that we feel compelled to touch upon the subject indicated in the above heading, and to endeavour to lead them to more due consideration of "the fitness of things." The exhibition season is just over, despite the boasted advance of "the social nineteenth century" (as a preacher of the *Sabbath School* once put it),—despite our self-landmark a people among the most virtuous and eminent in the world, objecting to war (except against savages), and keeping a theatrical censor, "everything proper about us,"—notwithstanding all this, the notorious fact remains that the entire-room of the Royal Academy has again been open, and that there and elsewhere, during season, crowds of persons, without distinction of age or sex, have promenade in midst of those representations of the human form, more or less undisguised, which habit to our absurd respect for the example of the heathen civilised sculptors of Pagan Greece have led to tolerate, and that without apparently thought of the low standard of moral feeling which they were thereby evincing and countenancing. It is therefore with a refreshing belief in the ultimate prevalence of virtue, though with a blush for our own country, that we receive the record of a great purifying influence which has arisen in regard to statues in the United States, and which, destined, perhaps, to lead the way to the adoption of the nobler and purer art of the future. The particulars of this movement, as far as they have reached us, we feel bound to make known for the enlightenment of the art-critics and

ic of this "effete" and (we fear we must) immoral nation.

the account we refer to reaches us in the form of a small pamphlet, bearing the title of "Narcissus Scrapbook," sent, we fear with good aim, by the person who has given occasion for this noble outburst of moral feeling, the end of which* he is not ashamed to publish at the expense of his own character. The event has transformed the mere thriving whaling-boat of New Bedford, Massachusetts, into the hub of modern art, occurred towards the end of last year, though the merely legal results ending on the event are, as far as we hear, unfulfilled, while to the moral and artistic imagination can scarcely place a

Among the inhabitants of this respectable town (we know not if his presence there is endured) one Mr. Haseltine, who up to the mentioned appears to have been received as a respectable householder, and to have exhibited in his outward manner of life that as a libertine at heart. He kept, however, "pure," in which he dealt in "works of art," and when we add (and to our confusion it) that he was local secretary of an Art-Union, those who know what art is in this country will not feel much surprised at the development of his real character. In the hour for himself, but a noble one for the mission and career of the city which he insulted, this person placed in his window, other models of the licentious art of antiquity, a plaster statuette of a Narcissus, about high. The figure is one well known to those who have been led them to the study of art, and at the risk of shocking any of our Atlantic readers (our English ones, alas! beyond that), we may hint that the figure dated to date from a period previous even to the rough idea of costume which an English artist, Mr. Marks, had the audacity to depict as a background to his recent picture "the latest fashion." But the offender miscalculated both the character and the value of the virtuous population of New Bedford. Works less obtrusively offensive had been permitted to remain unmolested in his window; but there is a limit to the widest of hearts. The appearance of Narcissus in his window was the signal for a general feeling of hearts. We need scarcely say that of our towns such an exhibition would excite notice, except from some one and foolish enough to be an intending visitor. But it speaks volumes for the moral and elevation of New Bedford, that this too liberal Greek youth undid his beauties to the day, than the notice of the official mind of the town was drawn to the first instance, by the younger population assembled before the window doubtless to witness their reprobation of the offending statue. The city marshal directed forthwith the removal of "those things" from the window, and a benevolent policeman suggested, in addition, the draping or clothing of the statue. The statue was at first removed, but afterwards, in defiance of official disapproval, it was placed, it was averred purposely, in such a position as to point his finger at a statue of the Virgin known in our less scrupulous part of the world as the "Venus of Milo." This was the city marshal forthwith took notice of the ill-regulated "classic," and he himself *vi et armis*. The offender, who specially denies having purposely placed the statue so as to have the bad manners of a lady, and laughs at the charge; who could accept the word of a person of such violations of all the rules of morality? Unabashed at his fault, Haseltine proceeded with an action of trover (Narcissus, not now carried off by a nymph, and descent) by a policeman. After being in court, Mr. Haseltine was admitted to be guilty of a direct and intentional attempt to debase and corrupt the population of New Bedford. The statue accordingly was confiscated. It is satisfactory to add that the sanctity of the law was not polluted by the presence of the statue, which was placed obscurely in an empty room, where jury and witnesses went to "view the body." The result of

an appeal to a higher court was that the jury could not agree; eight first, and then nine, being against Narcissus, and three finally being found base enough to patronise him. There our advice as to the legal state of the question unfortunately ends, and we are still left in doubt whether the law of the Northern States is sufficiently advanced to furnish the requisite machinery for carrying out the very advanced ideas prevalent there.

To many respectable persons in and beyond the State in which this artistic and moral *émouvé* has been raised, the subject, however, is less of a joke than most English readers of any education would be disposed to think. We hear that the case of the Narcissus of New Bedford (which a satirical American journal re-christened *Narcissusville*) has caused more or less interest and strife of opinions over an area of more than 1,000 miles. Mr. Haseltine received many letters, newspaper articles, and other protests in his defence against what most of the best educated persons brought into contact with it, even in America, seem to have considered a supremely ludicrous affair, so far as the prosecution was concerned. We do not believe such an outcry or such a prosecution would for a moment have been possible in England. But in the course of the proceedings, of which we have a report, are considerations raised which would seem to some persons on both sides of the Atlantic as worth consideration, and which it is both wiser and in better taste, perhaps, to meet with reason rather than mere derision. Those who speak in good faith on any subject, though without much understanding, may have a right to be answered in the same spirit. The long "decision" on the case by Judge Borden is evidently well and seriously considered, and, as a piece of logical argument, is on the whole consistent, if only we admit the premises. The judges summed up against the owner of the statue, and laid especial stress on the fact that he knew very well that the youthful population gathered round his window by this (in New Bedford) unwonted exhibition were not "studying art," but were drawn there by (to say the best) a vulgar curiosity of no elevating kind; and that, in spite of this the plaintiff, after first withdrawing the work in obedience to the official command, the next day replaced it persistently. Mr. Haseltine's explanation is a most natural one: he "put the Narcissus out of the window temporarily as a concession to the ignorant and vicious taste of a certain class of people, and replaced it because he thought he ought not to make such a concession." We cannot suppose there is a person of thought and refinement who would not completely sympathise with the feeling expressed; who would not feel that there was something degrading in thus "giving in" to a vulgar sentiment. On the other hand, there is the unquestionable fact that many things in art which are pleasing to persons of educated minds are completely misunderstood by those whose feelings are vulgar and uncultivated; and that they become to these persons occasions of dislike and offence, or of a vulgar, or even vicious, curiosity, according as the moral sense of such persons (as distinct from artistic sense) is lofty or low. In this light, the matter is really one of education, and we most cordially agree with some remarks passed by the judge as to certain deficiencies in the ordinary education of boys and girls, which it is not, however, our place to deal with. The judge added, "If the knowledge and love of high art cannot be inculcated without the exhibition of nude human forms, let us at least so change the character of our system of education, that culture in one direction shall not necessarily lead to abasement in another."

We cannot consider such a remark superfluous or absurd; but, at the same time, the Judge was at sea here, as he was, indeed, throughout his charge in regard to the nature and objects of art. It is not that a love of high art cannot be taught without the exhibition of nude human forms;—that is not the way to put it at all: it is that the highest art deals with essentials, and not with accidentals; and the principle applies no more specially to sculpture or painting than to any other form of art, in its particular kind. The drama shows (or should show) naked human character and feeling, stripped of its veil of conventionalities; in the same way, sculpture shows us the essential nobility of the human figure stripped of its accidental disguises, which for a mechanical reason also the sculptor who has any feeling for his art would rather dispense with, inasmuch as they are not suited for execution with chisel and marble, nor worth the trouble,

while the delicate contours of the pure form are.

The whole philosophy of the nude in art lies in this,—that our conventional notions of propriety and decorum are merely conventional, though desirable or even necessary for the carrying on of society, which itself exists by convention, by agreement on certain usages. Minds that are so narrow and ill educated as to rest entirely in these conventions, and mistake them for realities, are shocked at anything which is contrary to their conventional ideas: minds sufficiently broad and cultured to see beyond the conventionalities, gladly recognise in art a means of escape from these into pure nature, an entry into a world where these small and limited notions of a conventional morality are unknown and unnecessary. Such persons will never be shocked at anything in which there is not an intention of shocking them. We speak advisedly on the subject; and though we believe there is not a class of human beings in the world so refined and dignified in mind and feeling as the best of our countrymen, we have never found a well-educated and intellectual English lady betray any distaste for a fine work of art because it expressed nature in truth and reality. "Oh!" the objectors say, "we know all that; but what are we to do with those who do not look at such things in the same way? Are they to be scandalised, or worse?" Well, in the first place, educate them better; which is very desirable on other grounds besides the comprehension of art. And above all, do not pretend to be ashamed of your own taste for fear of being misunderstood; that is really a want of honesty, moral and artistic both. Haydon, when lecturing on art, boldly told his audience, "Unless you learn to get over all idea of impropriety in looking at the human form, a love of the highest art will never be rooted in you." And why? Because the human form (idealised, perhaps, more or less), is the finest medium we have for the expression of feeling in painting or sculpture. When Haydon said this, he was, to his great pleasure, loudly applauded, and his comment was, "I always said the middle classes were sound." That is it; we want to get out of that unsound, half-and-half morality which is only based on convention, and to get to the higher and wider morality of which art is really the greatest exponent. The less educated classes only partially understand this at present; but we believe they have much more capacity for understanding it than is commonly supposed, if they had a fair chance. Of course, if people are brought up in a fixed idea that certain things are indecorous, and are suddenly shown something which conflicts with all their acquired notions, they will be shocked by it. But that is rather a reason for reforming and widening our system of education, than for removing and doing away with things perfectly harmless in themselves, because some uneducated people misunderstand them. Then a further argument was used by the Judge in the case we refer to, and a perfectly consistent one for a lawyer to use,—"Where are we to draw the line? If we admit this Narcissus statue, how can we prevent the exhibition of statues no more nude than this, but evidently done with a gross purpose?" We do not believe the line can be drawn by the law; but we take this as one out of other reasons, that this is not a style of subject for the law to meddle with. It comes under the same kind of category as what are called sumptuary laws, in so far as these apply to dress. A little while ago a fashion of evening dress for ladies came in (adopted by many, no doubt, without thinking of it at all) which was with reason objected to as in bad taste and inconsistent with modern manners. But who would have dreamed of making a law against it? Public opinion was expressed through various channels, and the fashion soon changed. So with books: there are books by eminent authors, books with much good in them, which might more reasonably be prohibited than any statue, and are at least just as liable to be misused by ignorant or vulgar readers. But what would be said if it were proposed to pass a law to prohibit the sale of "Tom Jones" or "Clarissa Harlowe?"

To revert to our original topic, we can see no genuine excuse whatever for efforts to put any restriction on the study of the nude in art; since such efforts, if successful, would simply rob us of the greatest and most refined medium of expression in plastic art. And if our remarks reach any of those who have taken the adverse part in the singular controversy we have referred to, we recommend to their consideration the answer once made by a lady (we forget who at this

Narcissus Scrap-book: Containing an Account of the case of the nude Statuette by the City Marshal of New Bedford, the Trial of the Owner, his Suit against the City Marshal, and the Verdict of the Jury, with Comments of the Press; with Trial in the Court. Edited by C. Haseltine, E. Anthony, New Bedford.

moment) in response to a complaint from one of a party met in a celebrated picture-gallery, as to the indecency of a certain painting,—"The indecency was in the remark."

CORMAC'S CHAPEL, CASHEL.

THE monograph of the ancient chapel at Cashel, for which Mr. Arthur Hill, B.E., received a silver medal from the Institute of Architects, has been published by subscription; the volume, a thin folio, containing a short description (from the pen of the author) of the drawings, photographs of the latter, and two photographic views of the building as existing, taken especially by Mr. Hudson, of Killarney.

The chapel, dating from 1127, is interesting to those especially who are studying Early Gothic architecture, as an instance of the peculiar character assumed by buildings of that date, in which we trace the first budding of the Gothic style from a manner of treatment still largely recalling Roman traditions. The Cormac Chapel is barrel-vaulted in the nave, with vaulting ribs of square section at right angles to the axis, and springing from large heavy wall shafts, which in spacing are quite independent of the wall-arcade which forms the lower portion of the internal design. Despite the weight and pronounced design of these rectangular ribs, the exterior shows no buttresses beyond the early flat pilaster-like form familiar in architecture of this period nearly all over Europe. The nook-shafts and zig-zag mouldings of the principal doorway belong to the school of British "transitional" architecture, a relationship further emphasised by the forms of the scalloped capitals of the vaulting shafts. The mouldings are what we should call in England "early transitional" in character, with peculiarities of their own which distinguish them from English work. We should have been glad to have seen larger details of the piers of the nave wall-arcade, the treatment of which is most peculiar, and is scarcely adequately illustrated in the drawings. A peculiarity in the roofing is the fact that the space between the upper surface of the vault and the high-pitched roof, now a single lofty chamber, was originally divided into two floors by joists (probably) resting on corbels, which still remain in the walls. The lighting of the lower of the two compartments by narrow windows, showing externally in the slope of the roof, after the manner of a modern "skylight," is a peculiarity worth notice. The upper roof is itself a species of barrel-vault, but pointed instead of round; an early instance of the use of the pointed arch for constructive purposes (in a position where a round one would have endangered the abutment), before any use of it by preference as an ornamental form. The boldness with which this heavy stone roof is set, without buttresses, "at a level of 50 ft. from the ground, and upon a structure little more than half that width," is, as Mr. Hill observes, very remarkable. In one point of view, however, this may have actually contributed to the stability of the structure, for the upper roof, from its lofty angle, the thickness of its base, and comparative lightness of the crown, would, after the mortar was once well set, have practically exercised an almost entirely vertical pressure, and may thus have acted as a kind of counterforce to the thrust of the lower circular roof.

The arcade of wall shafts without arches, immediately under the eaves on the south side, recalls incidents of the Romanesque of the South of France, in Auvergne and elsewhere; while the square straight south tower, with its successive stages of the same width, seems to claim kindred with some forerunner of the Italian Campanile. Altogether, this is about as suggestive a bit of Romanesque work as is to be found in the British Islands, and curiously illustrates the ambiguous and incoherent character of the phase of architecture from which Gothic was ultimately to be developed, but from which, at the stage which this building represents, more than one other development might as reasonably have been looked for.

The plan of the chapel is as peculiar as its design, in the unsymmetrical placing of the chancel to the south of the centre axis, and the irregular angle which it forms with the cathedral, owing to the subsequent effort at what was deemed a truer orientation in the planning of the latter.

The drawings are carefully and accurately got up, without any over-refinement of execution,

and the restoration of the various features in geometrical elevation conveys very clearly the architectural worth of the building when new; while the photographs, showing its actual condition, furnish means for comparing this with the restoration offered. An appendix to the volume gives a large-scale drawing of the singular sculpture over the north porch. The monograph will be of value as a record, and as preserving, before it is too late, the salient features of a structure of no little historical as well as architectural interest.

CHRISTOPHER WREN'S CHURCHES.

ST. ANTHOLIN'S (DEMOLISHING).

No one, we think, can look on that old map by Ralph Agas, or bird's-eye view of London, as it once was, in good Queen Elizabeth's day, without a feeling of utter surprise at the total change in the look of the City which has come to pass since the map was drawn. London to-day would not and could not be recognised by the men and women who lived in it as it then was; and most surely the Londoner of to-day, if by art or magic taken into the Fleet-street of the old time, would never recognise it. Even London as Wren saw it when he was building St. Paul's would be a *terra incognita* nowadays; and Christopher Wren himself, if suddenly appearing in St. Paul's churchyard, would perchance hardly know where he was, and might well wonder at the transformations going on when actually convinced of his real whereabouts! And if this be so, what may he be supposed to feel at the past, and what is more, the contemplated destruction of his own well-built and well-considered churches. And more than all, what would be his consternation at the bare idea of the pulling down of his famous "monument" itself? Surely it is past all power of imagination! Some such thoughts as these must strike not a few of those who now follow Wren in his line of work, and should they desire to test the reality and earnestness of their feelings, they have but to peep into the Church of St. Antholin, at the corner of Budget-row and Queen Victoria-street, now in course of rapid demolition. It is well worth the glancing at before it passes away for ever. It may teach many lessons to those who are willing and able to learn.

This church of St. Antholin we happen to know well, and can but contrast the appearance of it now, in its state of ruin, with the look of it when in "service." It could not, it must be confessed, boast of very much of a congregation; sometimes, indeed, the "two or three" even could hardly be got together: so there is some excuse for "improving" it away, and building a warehouse or a smart shop on its site, or for the mere widening of the roadway in the front of it. We could but contrast it, too, with its probable look in the time of its architect, and when it first had its congregation of London citizens, in those old-fashioned and quaint days when the said citizen of London town was content to live in the City, as well as to do business in it. A strange state of things enough, and nowadays hardly to be imagined. Puritanical days, too, and before any could dream even of what Time and the inevitable would bring about in the way of change. But it is with the present aspect of things that we must need concern ourselves, and we can but contemplate this rapid disappearance of City churches, and Wren's churches, with something like dismay. Looking into this now ruined church but yesterday, and seeing nothing but bare walls, naked columns, earth and rubbish covered floor, and broken windows, we could not but think of what would happen if but such a building as this were to be met with in some outlandish place, and how ripe speculation would be as to its precise significance. How careful and accurate drawings would be made of it, and how "papers" would be read at learned and artistic societies about it, and maybe a folio volume published, and certainly no end of lamentation made over it, if in danger of pulling down, or certain of destruction. And it is really worth a little lamenting over. It never looked better than it now does, for the blacked walls compel the narrow oval upper windows to do their work, and in these few bright days, happily, the blue of the sky does show itself, and this it now does better than into a darkened building such as this. The monuments and tombstones, it may be mentioned, once on the walls, are pulled down ready for removal elsewhere, to some suburban cemetery possibly, so that the ruin of the church is

complete. Poor Wren, it is almost a wonder that his ghost does not haunt the place to protest, for as an interior it is one of his happier thoughts. On plan it is octagonal, and the columns,—for it consists of a central nave and surrounding aisle,—support the domical roof. It held, too, some fine carving of the Gibbon school, in the pew-ends, and other places, and these pews and church furniture were of dark coloured oak, real and solid-looking work. The outside we need not speak, for the spire of the church is so conspicuous that all must have noted it. Otherwise all is plain enough outside. Wren worked evidently for the interior, leaving the exterior a good deal to chance; the house round it pressing so closely upon it, before the formation of the new Queen Victoria-street "opened it out," and perhaps doomed it to destruction. It may serve to show too, if we fully looked at, how subtle are the changes which take place in architecture as time and circumstances change, for surely nothing can be more unlike the present fashion of street architectural arrangements than this church with its surroundings.

All Wren's churches, besides this of St. Antholin's, are in some way or other remarkable, and are well worth attentive study and looking at in detail. Some few of them are singular examples of design and inventive architectural skill, and ingenuity of planning. We need allude only to the famous *chef-d'œuvre* as it is thought by many, superior in idea to Paul's itself—St. Stephen's, Walbrook. A remarkable instance of how much can be done in a small and even inconvenient spot of ground hemmed in with houses, and almost buried. Would, indeed, be difficult to imagine a better specimen of architecture than this is. It is well compare, as a specimen of Renaissance Italian, with the Gothic Temple Church. Glorious bits of architecture, but not a little marred some ways, both of them, by modern restorations and manufactured art additions and paint, wash, and varnish too, for honest woodwork, be hidden as effectually by varnish as good stone-work by whitewash. The architect of the Temple Church must have been a master of his craft. Wren was of his, and the day may yet come when the effort will be made to bring back to these churches to the state in which they were left by their architect designers. Stephen's notably so. This may be open to some doubt, very many may think; but go into a ruined church of St. Antholin, and see it as was put together; and this can now be done, many,—very many,—doubts, architectural artistic, will be removed from the minds of those who will make an effort to see things as they really are. It is wonderful how much of real poetry of architecture there is even yet remaining in modernised London.

And in looking, too, at these churches Wren's, may not a useful lesson be learnt as to the changes which take place, almost before we know it, in architectural planning, and in arrangement of sacred structures,—as opinions and "theologies," and tastes alter, and change from age to age? Before Wren's day, and before the Great Fire of London destroyed so many of the City churches, they were all, as we know Gothic in plan and detail, and in *idea*, indeed "old churches," as the expressive term is. The Fire and Wren changed not only the architectural style, but the arrangement and plan as well. Witness, for example, the famous Gothic church at the foot of Lombard Bridge, St. Mary's, Southwark, and compare with St. James's, Piccadilly,—quite a typical instance of Wren's plan of a Renaissance church a gallery being an all-important feature of and a good one too, for in nothing was Wren more successful than in the arrangement planning of a church gallery. It seems as if that this gallery idea should be now almost wholly abandoned as an architectural thought; for, as apart from use, a picturesque and architecturally ideas, it can hardly be so effective. How effective it may be seen in the great pictures of Paul Veronese, where the elevated gallery above a crowded ground in his pictured crowds all that can well be imagined. Surely it is a great art mistake to utterly ignore them. Inigo Jones, too, it may be noted, does not dealing with a building originally intended for a church or chapel, knew well and artistically the value of a gallery; and in the "Banquet Room," now the Chapel Royal, Whitehall, he right well shown it. Nothing can well be better or better proportioned to the rest of this apartment. It is not too wide, nor does it

far into the room, and thus destroy its proportions. In Wren's churches, as we said, these galleries are notable features in, and worth study. We would here in passing, though it is not Wren's own work, name the series of St. George's Church, Hanover-square, eight sumptuous examples of gallery planning, fitting-up and arrangement. They show that can be done in the way of luxurious contrasting somewhat pleasantly, it must be confessed, with the positive discomfort, and bodily pain, to be met with in some, not a few, places we could name, where the room for the congregation are most surely as void of comfort, or even possibility of bodily ease, as well can be. They seem almost contrived of them for producing bodily pain. Is it not got by this? A useful hint may here be a place, for which, if it produces any local effect, we shall be blessed by not a single and earnest people. The chairs in St. Paul's, tied together in couples, are certainly, their sharp, knife-like backs, models of success. If poor human nature, always weak, be made better through bodily discomfort, here in St. Paul's is the place to test the use or no of the matter! Wren's "pews" are as "comfortable," at any rate.

And here it is, though we have missed a good deal but just glanced at the matter, that the great occurs, interesting to architects at least—can nothing be done,—is it possible or not to do anything,—to save any of these remains at days, and other men's work? Can we do whatever be done with them? Can they be "adapted" in any way? or, is a church as a church, or nothing? The mere ground which this special church of St. Anthony's is, of course, valuable. As sheer cash it counts so much: of that there can be no doubt; even this consideration, only, would not have named this church to total oblivion. A thing else was needed, and that something that its use was gone. It must needs, as we were, have been shut up, and left to time, and either to do their certain work on it. All the things tumbled into dust in time, it but one. It often struck us what a magnificent room it would have made, and surely there was something in this. Why should schoolrooms, only for boys and girls, be always as they are so poor and thin, and void of all archaical expression? Children are not, as is only supposed, so dead to art impressions as they may think. A fine room, as a school, must needs make on the youthful mind the most and most lasting impression; and that impression should be a noble one if possible. Any of those condemned churches then, and which are not a few of them waiting in trembling expectation of their doom, be thus,—if in no way,—utilised, and thus saved from extinction? Even so; there would, even then, be something of the temple in them, and "pieces" would still be part, an integral part, of the purpose. Surely it is one way out of a difficulty, applicable here and there at points. We would urge it upon the notice of the great City of London powers that be.

Mrs. MARY REDCLIFF, BRISTOL.

BRITISH ARCHEOLOGICAL ASSOCIATION.

The Bristol Congress has opened with great grand promise, and we will give some particulars hereafter. The first visit paid was to the church of St. Mary Redcliffe, where a very large party assembled, and were conducted over by Mr. Godwin.

On some preliminary remarks the speaker said, "I do not intend, on the present occasion, to attempt to give you a minute history of the church, and to reconcile the various differences of opinion of it which exist. I will tell you briefly, something of what has been said of it, and then show you how the church appears out or contradicts those statements. I, often related and long accepted, tells that Simon de Burton, having to meet Sir John's Neville at a tourney on St. Mary's hill, in the year 1285, made a vow, according to the custom of those days, that if he conquered he there build a church to our Lady; and being successful, he did build a goodly church, which was dedicated to the Virgin Mary, the Bishop of Chichester on Christmas-day. The year in which he commenced to build was said to be 1293 or '94. Then the history went on that, in 1376, William Canynge took the body of Redcliffe Church from the

cross-aisle downwards, and so the church was finished as it is now." We do not hear of this first William Canynge after 1396, the date of his will. In 1442, as we are told, the second William Canynge, with the help of others of the worshipful town of Bristol, kept masons and workmen to edifice, repayre, cover, and glaze the church of Redcliffe. He did so much, indeed, and in so exquisite a manner, according to the received account, that he came to be considered the founder of the church. In 1445 a storm threw down the spire, which did great damage at the west end of the church, but Canynge set this all right again. He died in 1476. Looking to the church itself, we find it consists of an outer and inner north porch, a tower, nave with aisles, south porch, transepts with double aisles (a most rare occurrence), rooms for residence, and lady chapel. A number of years ago I gave some particulars of the church on the occasion of a visit by the Archeological Institute (printed in their Bristol volume), and, desiring to treat existing opinions with respect, said as to the inner porch and lower part of the tower, that they might be earlier than the time of Simon de Burton—certainly were not later. Speaking, however, with less deference and more precision now, I have not the least doubt that they were built long before Simon de Burton is said to have commenced the work. The year 1250, by which time Salisbury Cathedral was finished, is later than I should be inclined to date them,—1240 is probably nearer the right time. Nor is it likely that a porch was built without a church, and pieces of Early English masonry worked up in the walls of the present church, and brought to light during our works, confirm to some extent this opinion. It is clear, therefore, that the story, so far as it credits Simon de Burton with the commencement of the church, is incorrect. Nevertheless, he may have done good work there, and the misstatement may be only verbal. The tower, when carried up just above the range of niches, was roofed over. The evidence of this is obvious inside; but the work probably went on again before the close of the century, when the Early Decorated style was growing into shape. At Wells and elsewhere good work in the Decorated style had been done by 1300. The south porch, the south transept, and much of the lower part of the rest of the church belong to the same style, and the north porch is an exquisite specimen of it. The tower is as fine a thing of its kind as can anywhere be found. The remainder of the church, including the great clearstory, or ovystory, as William Wyreestre calls it in his curious Itinerary (1478), is of the Perpendicular period, and may belong to the time of the second Canynge, or may be earlier. The contention lately has been that the Canynges did not do so much for the church as Barrett and other writers have asserted; at any rate, that they did it only in conjunction with other citizens. They were representative men, and were possibly credited with the works of lesser men, doing much themselves, nevertheless. All the jokes of a certain period in French history were attributed to Tallyrand; and, to go further back, I have a dim recollection of an ancient proverb which says, many hundreds of rills went to make the river of Homer." Mr. Godwin next proceeded to point out some of the leading features of the church, such as the north porch, the "treasury," where Chatterton found or imitated deeds that had mystified the history of Bristol ever since; the bosses, the groining, &c. He then passed on to the monuments, and said,—"Glancing very briefly at some of the monuments, the earliest in the church, probably the oldest in Bristol, is a recumbent figure of a cross-legged knight in chain-mail, and which I suppose cannot be older than quite the commencement of the thirteenth century (ascribed to the second Robert of Berkeley). There is also a slab, very little later, found under the north porch, and there is a stone marked 'Johannes Lamington,' found under St. Spirit's, close to the church, when taken down in 1766. Lamington lived in 1393. There are also the monuments of the Medes,—about 1475. The canopied altar tomb at the end of the south transept has been ordinarily called Canynge's Monument. It bore two effigies, male and female, evidently not originally intended for that position. In 1852 we discovered in the south wall of the nave two sepulchral recesses, the ornamentation of which had been chopped off and destroyed, to allow wooden panelling to be put up when the church was re-pewed at the com-

mencement of the eighteenth century, and these recesses precisely agreed in length with the two effigies, and now contain them. The canopied tomb is a poor, coarse work of more recent date than that of the effigies, and could not have been executed in Canynge's time. Dallaway (Antiquities of Bristol, p. 207) quotes a document in which Canynge speaks of 'the monument which he erected for himself and wife, soon after her death, "in loco quam construi et feci in parte australi ejusdem ecclesie," meaning (adds Dallaway) the southern transept.' This, however, is by no means certain. 'In the southern part of this church' would just as well apply to the sepulchral recesses in the south wall as to the transept. Anyhow, I feel quite sure that the tomb, or place he had constructed, was not the canopied altar-tomb of which we are speaking. The effigy of a man in priest's robes, south transept, is also ascribed to Canynge, in the belief that it recorded him as Dean of Westbury (late in life he entered the Church, 1467), and its presence in Redcliff Church was accounted for, there being one effigy of him there already, by the story that it was brought here from Westbury College, when the college was burned down in 1643. When, however, we find that this second monument is mentioned by Camden as being in the church long before the college was burned, the story, of course, goes for nothing. There is another altar-tomb with recumbent effigy, commonly said to be that of Canynge's purse-bearer, but without any authority. There are three fine brasses in the church, viz., those of Sir John Ilyn, 1439, in the lady chapel; John Jay, and Johanna his wife, 1480, in the chancel; and near it one to John Brook, and Johanna his wife, 1522. The wife of John Jay was the sister of William Wyreestre; the father of John Brook, we know, occupied, in 1500, Canynge's House, which still remains in Redcliff-street,—a fact which brings him and us closer together. Amongst the more modern monuments is one (west end) to Sir William Penn, died 1670, father of the proprietor of Pennsylvania. Citizens of the United States sometimes travel from London expressly to see it—as I happen to know. A tablet to Mrs. Fortune Little bears an epitaph written by Hannah More, who was born in Bristol." Afterwards, Mr. Godwin referred to the restoration of the church, and the ruinous condition in which the structure appeared when the work of restoration was commenced. Ground was piled round to the church to a considerable height, and the outer shell was simply a mass of honey-combed stone. Alderman Proctor, Mr. E. P. King, Mr. W. P. King, Mr. S. V. Hare, and others, formed themselves into a committee, and that committee, which now consisted of their sons rather than themselves, still went on. The funds obtained were comparatively small, and came from a few individuals, who, however, pressed forward, and when there were no funds forthcoming they would be indebted to Alderman Proctor, their treasurer; and now, thanks to them and to Mr. Merryn King, Mr. C. B. Hare, and the vicar, the Von. Archdeacon Randall, the progress had been very satisfactory. It had long been the dream of certain Redcliff men to put up a spire; but the report of well-informed persons had told them that the tower was not strong enough to bear it, and this belief prevailed for some time. By duly thinking it over, however, and cautiously strengthening the foundations, and enlarging the tower at the foot, they would see the spire was there safe and sound, and he hoped it would remain there for many hundred years. But that spire had a memorable incident connected with it. When the capstone was laid in 1872 the wife of the Mayor, Mrs. Proctor Baker, was brave enough to ascend in a very risky lift to help to lay the capstone. He fancied there were few similar ascents made by a lady. He would mention as to the west door, which has been quite recently finished, that it was restored after a fashion some years ago, all the mouldings having been cut away and altered. By a curious accident, William Wyreestre had recorded in his Itinerary a technical description of the mouldings forming the doorway, as given to him by Norton, the master of the works; and from this, with the aid of the published comments on it by Professor Willis, they had brought it back, so far as they knew, to its original form,—a curious, probably unique, incident. He must not forget to mention the name of Mr. W. Rice, the enthusiastic clerk of the works, who was almost the Quasimodo of the place. He knew every stone in the church. Mr. Godwin mentioned some of the modern glass met with in the edifice, and said that they had a general

scheme in this direction, which all who contributed must follow.

At the conclusion of the discourse, Mr. J. R. Planché, *Somerset Herald*, made some remarks on prominent objects in the church, and agreed with Mr. Godwin in the early period ascribed to the crossed effigy in the transept.

The party proceeded to the Infant Schoolroom, in Ship-lane, where a luncheon, provided by the Vestry of Redcliff, awaited them. Mr. Mervyn King (churchwarden) took the chair, and Alderman Edwards the vice-chair.

The Temple Church, Canynge's House, and other parts of ancient Bristol were visited, Mr. Taylor and Mr. Nicholls acting as guides.

The inaugural dinner, given by the president, Mr. Kirkman Hodgson, M.P., at the Royal Hotel, was so numerously attended that the large room would not accommodate the whole of the guests. About thirty dined in an adjoining apartment. Amongst the speakers were the president, the Mayor of Bristol, Mr. R. N. Phillips, Prebendary Scarth, Mr. Gordon Hills, Mr. Edward Roberts, and Mr. Mervyn King.

ARCHÆOLOGICAL EXCURSIONS.

Yorkshire Archaeological and Topographical Association.—The members of this association paid a visit to York, in conjunction with the Royal Archaeological Institute. The Marquis of Ripon, Lord Talbot de Malahide, and other distinguished persons and members of the associations, were received in the ancient Guildhall of York by the Lord Mayor and several of the aldermen and members of the Corporation; and some complimentary speeches were made. A procession was next formed to the theatre of the Yorkshire Museum, which was crowded. The Marquis of Ripon presided, and an interesting address on the Fortifications of Ancient York was delivered by Mr. G. T. Clark, F.R.S.

The Institute Congress at Markenfield.—The Rev. W. C. Lukis, Rector of Wath, and hon. sec. of the Congress, writes to the *Yorkshire Post*, stating that no real change has taken place in the arrangements of the old structure, and none is contemplated.

Bucks Archaeological and Architectural Society. This Society enjoyed its annual excursion on the 21st of July, the route being through Wendover, Lee, St. Leonards, Cholesbury, Hawridge, to Chesham, and back to Aylesbury, by way of Great Missenden. The party included the Ven. Archdeacon Bickersteth, D.D., who ably filled the office of general *cicerone* at the various points of interest at which halts were made. After inspecting the churches at Wendover and Lee, the party halted for the purpose of examining Grimesdyke, or Grims Dyke, a remarkable fosse or trench which runs nearly east and west through this part of Bucks. The next church inspected was St. Leonards, after which Cholesbury church and camp were visited. The camp, which is one of the most perfect and interesting in England, had belonged to the Britons, Romans, Saxons, or the Danes; the Archdeacon, however, thought that from its oval shape it had most probably been constructed by the Danes. Chesham being arrived at, the church was inspected, and the party adjourned to the "Bury," the residence of Mr. William Lowndes, where the annual meeting of the Society was held, the Archdeacon occupying the chair. From a statement read by the secretary, the Rev. C. Lowndes, and the report of the committee, it appeared the society was in a flourishing condition. Officers were appointed for the ensuing year, and new members were admitted. Mr. Burgess then delivered an address, or rather a statement, upon the earthworks and other antiquities to be found upon the Chiltern Hills. Some conversation ensued upon this subject, and also upon the "White Leaf Cross" at Monk's Risborough, which Mr. Burgess thought commemorated some victory gained by the Saxons. It should not be omitted that before the annual meeting was held, Mr. William Lowndes entertained the party to a sumptuous luncheon. After the proceedings, the party started on their return journey, and, arriving at Great Missenden, inspected the Abbey Church, said to have been founded by Sir Thomas de Missenden, at the end of the thirteenth century. Great Missenden was the last place inspected, and another hour's drive through some of the most picturesque scenery in Buckinghamshire, brought the party back to Aylesbury, highly delighted with an agreeable and instructive day's recreation.

The Bedfordshire Architectural and Archaeological Society.—A number of members of this society paid a visit to Northampton and neighbourhood. They were met by several members of the Northampton Society, under whose guidance they first proceeded to inspect the museum. They then visited the Round Church of St. Sepulchre. Mr. S. Sharp, of Dallington, kindly conducted the party over the church, giving a history of the edifice, and indicating the various points of interest. The party thence proceeded to St. Peter's Church, afterwards visiting and examining the site of the castle. Mr. Sharp, in remarking upon the ruins of the castle, said all traces of it would soon be obliterated. The proposed new line of the London and North-Western Railway, which would diverge from the main line between Wolverton and Roade, and join the present line below the Castle Station, would come into Northampton somewhere about the present site of the Old Black Lion, where a large section would be built, and the ground occupied by the ruins of the castle would be required for the necessary buildings and sidings. The party appeared to be highly gratified by the various objects of interest they saw, more particularly by the old Norman church of St. Peter, all the interesting details of which were explained by Mr. Sharp and Sir Henry Dryden. The party next proceeded by omnibus to the Queen's Cross, and thence to Billing, where they were hospitably entertained at luncheon by Mr. V. D. Carey-Elwes. From the latter place, after paying a visit to the church, they went to Earl's Barton, where the venerable old Saxon church was the object of interest. The party then took train and returned to Bedford, highly pleased, apparently, with their excursion and the various objects of antiquity they had seen and examined. Amongst those who were of the party were Mr. Hurst, mayor of Bedford, and Miss Hurst; Col. Higgins, of Picot's-hill, Turvey; the Rev. Canon J. W. Haddock and Mr. James Wyatt, honorary secretaries of the society; Mr. E. Ransom, proprietor of the *Bedford Times*, and Mrs. Ransom; with a good many others.

THE PRIESTLEY STATUE AT BIRMINGHAM.

A STATUE of Dr. Priestley, the discoverer of oxygen, was unveiled by Professor Huxley, at Birmingham, on Saturday, the day being the centennial anniversary of the discovery. The site is one of the best in the town, being in the middle of the large open space between the Town-hall and the new Corporation buildings. The statue is of white marble, 8 ft. 6 in. high, and is mounted on a lofty pedestal. Mr. F. J. Williamson, of Esher, the sculptor, a pupil of Mr. Foley, has been successful in delineating the features of the great chemist. The doctor is represented in the act of making the experiment by which he discovered oxygen. Priestley stands as he stood in Lord Shelburne's garden at Bowood, on August 1st, 1774, when, by concentrating rays of the sun through a magnifying glass on certain chemicals, he evolved oxygen. The costume,—the wig, single-breasted coat, large buttons, white neckerchief, shirt and wrist ruffles, knee-breeches, and buckles on the shoes, are all carefully rendered. The features are calm and intent with interest in the experiment in progress.

At the site the ceremony consisted simply of the unveiling of the statue, after which the company adjourned to the Town-hall, which was well filled with an audience consisting of many of the principal citizens.

Professor Huxley, on the part of the subscribers, presented the statue to the town, and reviewed the career of Priestley, and the course of events which led to his leaving Birmingham for London, and the latter city for America. The speaker said he would show in a brief manner what was the value of Priestley's life's work to those who looked upon it from outside the region of the Unitarian denomination to which he belonged. Priestley was a man of almost endless energy and versatility. Few men ever had so many irons in the fire at one time; and although perhaps he did burn his fingers now and then, few men who had so many irons in the fire ever burned their fingers so little. He was a vigorous controversialist. In the midst of all those chemical, philosophical, and political sparks which were flying from his anvil, he was constantly raining a shower of blows on priest and bishop; and he was perfectly convinced that the good doctor, who was gentleness and amiability themselves, struck those blows with

the same entire absence of passion as the smith felt when he smote his iron; but if the iron could speak, it would probably take a different view of the matter. The party who Priestley attacked could speak, and did so with a loud voice. Priestley had been reproached: not confining himself to his philosophical work, his friends said to him—"Here you are, a man of science, capable of increasing knowledge any extent: why don't you confine yourself, that pursuit in which all men will honour, to reverence you, and in which you can certainly add to the sum of human knowledge a happiness, without awakening all these jealous and hatreds?" But he took it that Priest was of opinion that, before he was a man of science, he was a man in the first place, and citizen in the second. He entirely sympathized with Priestley.

THE NEW MANCHESTER CATHEDRAL SCHEME.

A PRIVATE meeting, convened by special circular, has been held at the Manchester Grammar School, for the purpose of considering what steps should be taken in regard to bringing before the Manchester people in a special form the proposal to build a new cathedral. The Bishop of Manchester occupied the chair, and some forty gentlemen were present, of whom one half were clergymen. In the course of long discussion much objection was raised against interference with the old church, and severals were suggested as being more appropriate. It was thought desirable that a committee should be appointed to consider the whole matter, the bishop nominated the whole of the gentlemen present, with power to add to their number. A committee, it is considered, will be able to reduce to intelligible form the various proposals that have been made public, and to discuss objections that may be raised as to the erection of a new edifice.

A correspondent of the *Manchester Courier* says:—"Writing with the light of the resolutions of Wednesday, I beg to suggest it would only be a graceful and becoming gift on the part of the corporation, should the committee resolve to build, if they were to offer the committee a suitable plot of land for a site on which to the foundations of our new cathedral. It is not to be forgotten that the Church of England after all, is the national church; and if successful architect's plans should prove as the public have been led to anticipate, the edifice as a whole should certainly tend to elevation of the people, spiritually and morally, and add materially to the beauty and splendour of the city."

The corporation will do well to recollect that when the seat of a diocese was first discussed, Manchester was preferred to Liverpool; and the latter place been selected instead of former, it is extremely doubtful whether city would have been left so long without a cathedral worthy of the name."

THE LIVERPOOL LANDING STAGE.

SUCH as it remains, the landing-stage is already again in use. By dint of commendable energy, Mr. Lyster, the dock engineer, got sufficient of the burnt stage planked over to give a frontage of 240 ft., and this was open to receive traffic at one o'clock on Friday.

The plumber with whom the fire originated, has, it is said, never been seen since he was rushing up the bridge frantically crying that the stage was on fire. It would appear that at the time the fire broke out he had a lighted underneath the stage, and resting on the pontoons, and it was in consequence of gas which was escaping from the main pipe which is about 2½ in. in diameter, coming in contact with the fire that the conflagration ensued. The amount of damage done to the stage has been variously estimated. At first it was down at a quarter of a million sterling, and the ironwork of the stage been all destroyed would have exceeded even that sum. Fortunately, however, most of the ironwork is comparatively uninjured, and will be available for use in re-construction of the stage; for, although some of the girders have been twisted a good deal, it will be possible to put most of them to rights again. Several of the pontoons, however, are useless, but, on the whole, they will require little work upon them. The total damage is estimated to be about 130,000*l.*; and it is computed that at the earliest the stage cannot be replaced within twelve months.

ARCHITECTURAL COLLEGES.

views which have long been propounded and discussed in the pages of the *Builder* as to the problems now pressing for solution in relation to our modern architecture met with a large amount of expression and recognition at the late Conference. It is well known to our readers that we have from time to time urged influences both from within and without the architectural profession must sooner or later be on the anxious consideration of certain questions, and that it would be found that of the most immediate and primary importance would be the best mode of dealing with overgrown, unwieldy, and disorganised condition of the profession itself. Timidity in dealing with this question is no longer permissible. Reserve, for which the motives have been doubt delicate and good, has prevailed too much; and the failure to speak out at the right time has had a great deal to do with the condition of things for which it is now no easy task to devise a remedy. Two points in relation to this were largely considered at the Conference, the necessity for demanding a specific amount of education and training in the proposed architect, and the bestowing of qualifying degrees or diplomas, which would carry with them a guarantee recognisable by the profession to the public at large as to the merit (to a certain extent) and status of their possessor; just as the various marks of distinction do in other learned professions. Anything which can be done to direct these objects would certainly be a step in the right direction, but it is still open to consideration what would be the best course to adopt in the nature of the case, and in the whole conditions now surrounding our modern architecture.

It is impossible to obtain a correct view of the subject without bearing in mind that nearly all the circumstances under which modern architecture has been fostered, not only bear very little analogy to, but rather stand in absolute contrast with, those which have existed in past modes of architectural progress and greatness. There has certainly never been anything answering to the architectural "profession," such as we now see it, though it is true the real architect had ever a distinct and recognised existence. Now it has been, and is, the danger of the modern system that it allows just such an amount of the scientific and artistic qualifications of the architect to be acquired by a vast number, who apparently come so near to much that is demanded of the architect, that it is difficult—and quite impossible to the general public—to draw the line between what after all, at the best, is only a certain amount of accomplished copyism, and that further stage which proclaims at once the living, creative mind of the genuine architect, which now, as ever, exists, and is to be found where the conditions are favourable for its recognition, and scope given for its exercise. This appears to us the vital point for consideration, and the one upon which all the questions as to true architectural progress must turn, including that *quæstio* of "style," which has been so much the crux of our modern architecture, and as to which, we think, no satisfactory solution will ever be reached till we have placed all that is concerned in the evolution of the best art on different bases than those now existing. If we turn to the past it will certainly be found that the "notes" of any true architectural system and style are, that it has been a growth, and the result of the combined efforts of many minds working out certain conditions of architectural art subject to a persistent adherence to the integrity of specific structural modes, and those subtle principles of proportion, light and shade, and, which climate and the character and utility of a building ever demand. In Greek art this is seen in its principles of direct downward and lateral thrust; and such a unity in its appeal to perspective and decorative effects that "individualism," however valuable in its way, seems almost to have been sunk in an agreement upon certain refined details which left little room for its display. The round arch and the column of the Romanesque, while not carried out to the same completeness, yet point to a like integrity of principle and aim; and the pointed arch with all its marvellous infinitude, reveals the consistency of its effort after certain definite effects, which those who have studied the most of its daring vaultings, graded mouldings, and every combination of flexible form and

varied decoration will feel to be a yet unfathomed source of wonder and admiration. We make this reference to the past chiefly to enforce the conviction that the highest order of mind, in scientific and artistic quality, was concerned in these great architectural achievements, and that the "village-mason" theory is about as ridiculous an outcome of any quest into art-history and principles as could well be imagined. The one conclusion we arrive at in regard to any dignified, consistent architectural progress is, that it must be the result of the combined effort of a certain class of minds of æsthetic character and of varying grades and powers, to be found at every epoch of advanced civilisation and culture, and who are as distinctly *the architects for the time being* as the musicians, poets, painters, &c., are the exponents of the age in which they live.

In such a heterogeneous age as the present, then, when all the ancient forms of art are at our feet, and when it is so easy to obtain certain picturesque, but chiefly imitative, results, it seems a far more important matter to inquire how we shall best discover and combine the contemporary architectural genius of the time, than merely to assent to the otherwise excellent proposition that certain examinations shall be gone through by the aspirant to architectural honours. It is evident that in the present extended form of the architectural profession, which comprises the good, the bad, and indifferent,—the two latter largely preponderating,—any attempt at a corrective could only operate very gradually, and as it were *beside* the present system of things, which it could neither hope to supplant nor suddenly revolutionise. The practical forms of the question are the "pupil system"; the suggested examinations by the Architectural Societies, and such degrees as they could offer; or the granting of degrees by the Universities, either upon their own foundation, or, as having affiliated to them the Architectural Association, which would be prepared to carry out a course of study and examinations over and above the opportunities which are at present confined to the pupil system. Now we are inclined to think—however great an improvement and advance it would be to hold out some definite honours and degrees—that this alone would not necessarily grapple with the real problem of securing to the country the cream of its architectural genius, or of supplying those conditions which, as we have seen, are the needed ones for the evolution of true architecture. It is unquestioned that the pupil system simply admits a crowd of youths to the profession of the architect who it cannot be assumed are necessarily, or even likely in the majority of cases, to possess those innate qualities which mark out the real architect, and that it is the flooding of the profession with these which is really most at the bottom of the abortive and abnormal results which our architecture presents. A series of examinations, desirable from motives of self-interest and distinction, while they would serve to bring out much sterling ability at present ill-equipped, would act equally as an incentive to the mediocrity, or worse, which had mistaken its vocation, but which, by a system of cramming, would, in all probability, be equal to the strain of the examinations, whose honours could not be formally denied them; and we should thus not only find ourselves in the same position as now in regard to factitious professors of architecture, but in a worse one, inasmuch as they would go forth accredited as the genuine article by such distinctions as they had been able to obtain. There can be little doubt that we have reached a time of crisis in the history of English architecture, and however true it may be that great progress has been made within a very brief period, and that we have had, and have, some architects amongst us, equal in native capacity to all but the highest which the past has exhibited; it is also true that the production of architecture amongst us has been so largely in wrong hands, and been so governed by adverse influences, that a degree of discredit has been industriously fastened upon the profession, and a dissatisfaction felt and expressed as to the whole results of our modern architecture, with here and there brilliant exceptions, which it becomes those whose duty it is to look more to the permanent interests of the art than to its ephemeral prospects, to do all in their power to remove. The shifting of the practice of architecture into the hands of the civil and military engineer and others is a "sign of the times," and points to that change in the whole system

upon which we have to depend for our architects and architecture, which we believe we have now reached the time for attempting. The public will naturally believe that an architect is an architect, wherever found,—be he engineer or what not,—and that the actual test is the erection of successful buildings; and there is truth in this, pointing to the fact that our present system is not comprehensive of or necessarily calculated to evoke the best architectural genius; or, in other words, that the profession, as at present constituted, both includes on the one hand much that encumbers, and on the other excludes much which would make for the progress of successful architecture.

Our simple belief, then, is that as yet our modern English architecture can scarcely be said to have had a fair chance; that its commitment into such multifarious hands has given us the large amount of indifferent and extraordinary productions, which have vitiated, rather than cultivated, the public taste; and that influences have been at work in the patronage upon which it necessarily depends, which have made it easy for ignorance and partiality to distribute its rewards with little or no reference to sterling excellence, however much it may have been supposed that the right thing was being done, and thus that much true art has been wasted, while an inferior quality has usurped the chief place; and the real architects amongst us have too often had to stand by out in the cold, and shrug our shoulders at the prodigious infatuation which showered down its favours in directions which in common honesty could not have won the candid suffrages of the profession at large.

We have long been of opinion (and by undesignated anticipation have often expressed the conclusions come to at the late Conference) that it has become imperatively necessary in some shape or form to oppose a barrier to the evils now so extensively felt and deplored, and that this in the first place must take the form of requiring of the architect a submission to educational, scientific, and æsthetic tests which would entitle him to some degree or diploma as a guarantee of his ability and status; and, that the adjudication upon desigment in in competition must not be left to the haphazard patronage which at present prevails. It is now some time since we went over the whole ground which has *ad interim* been occupied by the most active discussion of the points at issue, culminating at length in the Conference, which we were happy to find did not justify the saying of Goethe, that "the statement of every opinion immediately begat its opposite," to the extent which fine-art discussions usually do; but that on the contrary a unanimity prevailed up to a certain point which we cannot but regard as a happy augury that whatever practical steps are determined on will have the hearty concurrence and co-operation of the leading members of the profession. This is essential, for without this nothing can be done, and the present is an epoch in regard to the architect's career in which it has begun to be very keenly and rightly discerned that "union is strength." Though the modes proposed at the conference for meeting the present condition of things did not go the length of those we had previously propounded, we see no reason to vary our belief that the course most fitting for present adoption, and likely to be attended with the most valuable results, would be that which, after the most mature consideration, we had before expressed, and to which we would now again briefly allude.

As we have said, it would be both undesirable and unnecessary to disturb, in any way, any of the existing agencies which carry on our architecture in regard to architecture. But we believe that something very much more is wanted which would not be entirely met merely by the prescriptions of examinations and degrees in connexion with our present university system, or in any of the modes tentatively suggested at the Conference. It appears, then, to us, that in view of all the circumstances of the case, and the wholly unique conditions surrounding the growth of modern architecture, differing so largely from those prevailing in the past, and necessitating, as they do, a formal amount of professionalism, and a cultivation of the art by the means of the highest education, rather than the feeling our way practically in untried directions, that if we would avoid the defects of the system hitherto pursued we should strike the right path at once by establishing a national architectural college, or colleges, at convenient centres. The dignity and influence of the profession has been so

much impaired, the progress of our architecture so much impeded by the present system, which has given us, at the best, but a rarely satisfactory round of imitative revivals, that we are convinced we are on the wrong road, that a fresh point of departure must be sought, and that the factors of a truer and higher order of things will be found to lie in the devotion to architecture of those orders of minds only which find in it a source of loving and elevated thought and delight, and the combined working out by these in a loving, creative way of the architectural demands of the time. We cannot see in what way this can be successfully brought about but upon something of the collegiate system. The problems of a true architectural style are too vast and varied to be the heritage of one mind, and the attempt to work them out for the most part in isolation and rivalry has proved a conspicuous failure, even where real architectural genius has been employed. How much more so where even this has been a very uncertain quantity indeed, which has been precisely the case, and the danger of the system hitherto pursued, or rather allowed to grow up? The advantages of the collegiate system would be in at once bringing together the best minds in the profession according to their genius and speciality to occupy the position of instructors or professors, and as regards the students the immediate test that would be presented of the possession of at least some of the powers which are demanded of the architect. It is well known that there is nothing equal to the association of various minds in a common study and pursuit for stimulating innate power, and the interaction of quickening influences, as also for the sure means it affords for each mind finding its level and speciality. This very necessary order is now almost wholly wanting in the training of most of our architects, but by the course suggested it would come into full play; incompetence would naturally wither or die out, and merit in its various grades and characteristics would as naturally be gauged, and by the series of examinations, honours, degrees, &c., would as certainly attain its desired status and influence. Another great advantage which would accrue from the adoption of something of the collegiate system in regard to architecture would be in at once raising its study to a level where it could be calmly pursued for its own sake, freed from the dictates of commercial rivalry and competition, and those various winds of fashion and cliqueism from which now, if to live at all, it is inseparable. The arenas which such centres of art-instruction would afford for the steady pursuit of noble artistic aims, undisturbed by lower considerations, would be invaluable for the persistent investigation of those departments of mingled science and æsthetics, which are now so much wanting to our architecture; we refer to the submission of every design in all its parts, its mass, its mouldings, &c., to those optical and mathematical principles which should govern in every instance, and upon which all, as it were, depends for the grand or noble aspects of a building as a whole under the play of light or shade, and without which no amount of elaborate detail, or contrasted colour, &c., will ever redeem it from the want of a thoughtful message of beauty to us. Recent English architecture, while exhibiting an unusual amount of ornateness, has sinned perhaps more in its lamentable failures in perspective relationships and proportion than in any other respect. We might refer to some very painful instances of this, of quite recent date, and among important public buildings in the metropolis.

It is not the object or tendency of these remarks to discourage in any way the additional methods for securing a better order of things suggested at the late Conference; but having arrived at a time which obliges a very careful review of our past architectural system and progress, for which we could not have a better position than now, we are convinced that it is only by taking a higher view of the vocation of the architect, and adopting such means as shall tend to bring out and combine, for the sustained study of the art, all the resources of contemporary genius concerned in its production, that we can reasonably hope for a nobler future. It would be quite in analogy with similar movements now taking place,—e.g., in regard to music,—to act upon the belief that something of the collegiate system seems to offer the best, and perhaps the only possible modification applicable to the present state of things.

We have left ourselves but little space to

advert to one other question, viz., the necessity of our architects submitting their designs to the friendly scrutiny of their professional brethren. How many a building otherwise good has been spoiled by the presence or absence of some particular feature! Suggestions should be welcomed, and it should not be a matter of pride that our work should stand in need of them. Another question needing discussion regards the adjudication upon designs in competition, and the combating the influences which now make the decisions of competitions too often "a mockery, a delusion, and a snare." Both of these questions would necessarily assume a different bearing should it happen that our architectural system took the directions above urged; but there is no question that, under existing circumstances, there is great need of reform in the conduct of competitions. The placing of their decisions to some extent in the hands of the profession would, in itself, be a great gain, and save the country from the infliction of many an unsatisfactory and imperfectly designed building.

In regard to "style," "revivals," or the possibility of new national styles, much has yet doubtless to be said. The subjects are by no means exhausted, but it is easy to discern that the mode of viewing these at present would undergo the most material change if we felt that the study, the aim, the production of our architecture, were lifted up from their present divided, if not fallen, state, to the dignity we claim for it, and which we judge would be secured to a great extent by the means we have again tentatively advocated. We have already touched at some length in our current report of the proceedings of the Conference upon the so-called "Queen Anne Revival," and some other points, but have deemed it a suitable time to again raise—not as anything new to our pages—the whole question of what may be termed the system of our art-culture in regard to architecture and its bearing upon the future, if not the present, in any appreciable degree. In connexion with architectural colleges such as we suggest as foci of solid art learning and influence, we would again just allude to a recent suggestion of the probably important bearing which well organised art-congresses, on the model of those which have been found so successful in other departments of thought and inquiry, have. It is needless to point out what attractive programmes might be formed for such gatherings, and that their chief value would lie in their comprehensiveness of elements, not from purely professional quarters, but a wider sphere of art interest among the public at large, and thus an end be reached which is now very desirable,—the forming, as it were, an art instinct and atmosphere in the nation, which would be an excellent substitute for the blind dependence now placed upon what passes for art-criticism in the press, than which as at present exhibited nothing could seem more contradictory and partial, or more calculated to damage the true consistent interests of art.

IMPROVEMENTS AT GLASGOW HARBOUR.

Some interesting facts, in reference to the improvements at Glasgow Harbour came out at the last meeting of the Clyde Trust. The new works committee, at a meeting held on the 25th of June, had submitted to them a return as to the graving-docks at most of the ports in Great Britain, as prepared by the engineer, Mr. Deas. This return comprised details as to no less than 107 graving-docks, and showed that the Glasgow Dock, now being constructed, which is 22 ft. at spring-tides and 20 ft. at neap-tides, is 8 in. deeper on the sill at neap-tides than any other graving-dock in the kingdom, so far as can be ascertained. It also appeared from the minutes that there are only nine docks more than 10 in. deeper at spring-tides than the trustees' dock, even with the advantage of a greater difference in the tides. The question was whether the second dock to be constructed by the trustees should be of less depth than that shown by the Parliamentary plans, viz., 20 ft. at the ordinary spring-tides, and the committee were of opinion that, having one dock of such ample capacity as that now being constructed, it is unnecessary to make the second dock so deep as 20 ft. It was believed by the committee that the Messrs. Henderson's dock at the Kelvin, which is 18 ft. on the sill at spring-tides, has been found sufficient to admit any vessel that has ever required such accommodation in Glasgow Harbour, and it was accordingly agreed to recommend that the second dock should not be

of greater depth than 18 ft. at high water or spring tides. In the course of the discussion it was stated by a member of the trust that the new dock in course of construction could not take in any of the vessels that come into the Clyde; and it was not the fact that Messrs. Henderson's dock was capable of accommodating any vessel that came into the harbour. In answer to this, it was thought that whilst such cases were exceptional, it was at the same time the duty of the trust to meet the requirements of the trade, whether ship-owners or ship-builders. The details as to the length and breadth of the dock, it was stated, would again come before the committee.

Mr. Deas, the engineer, submitted his quarterly report to the trustees, in which he remarked that the river is at present in a worse state of pollution than it has been at any time since he became engineer to the trust, upwards of five years ago. At low water, all the way up from Dalmuir Works, it was emitting a highly offensive smell; and, when turned up at that state of tide by the screws or paddles of passing steamers was absolutely sickening.

ANCIENT HOUSES AT WEOBLEY, HEREFORDSHIRE.

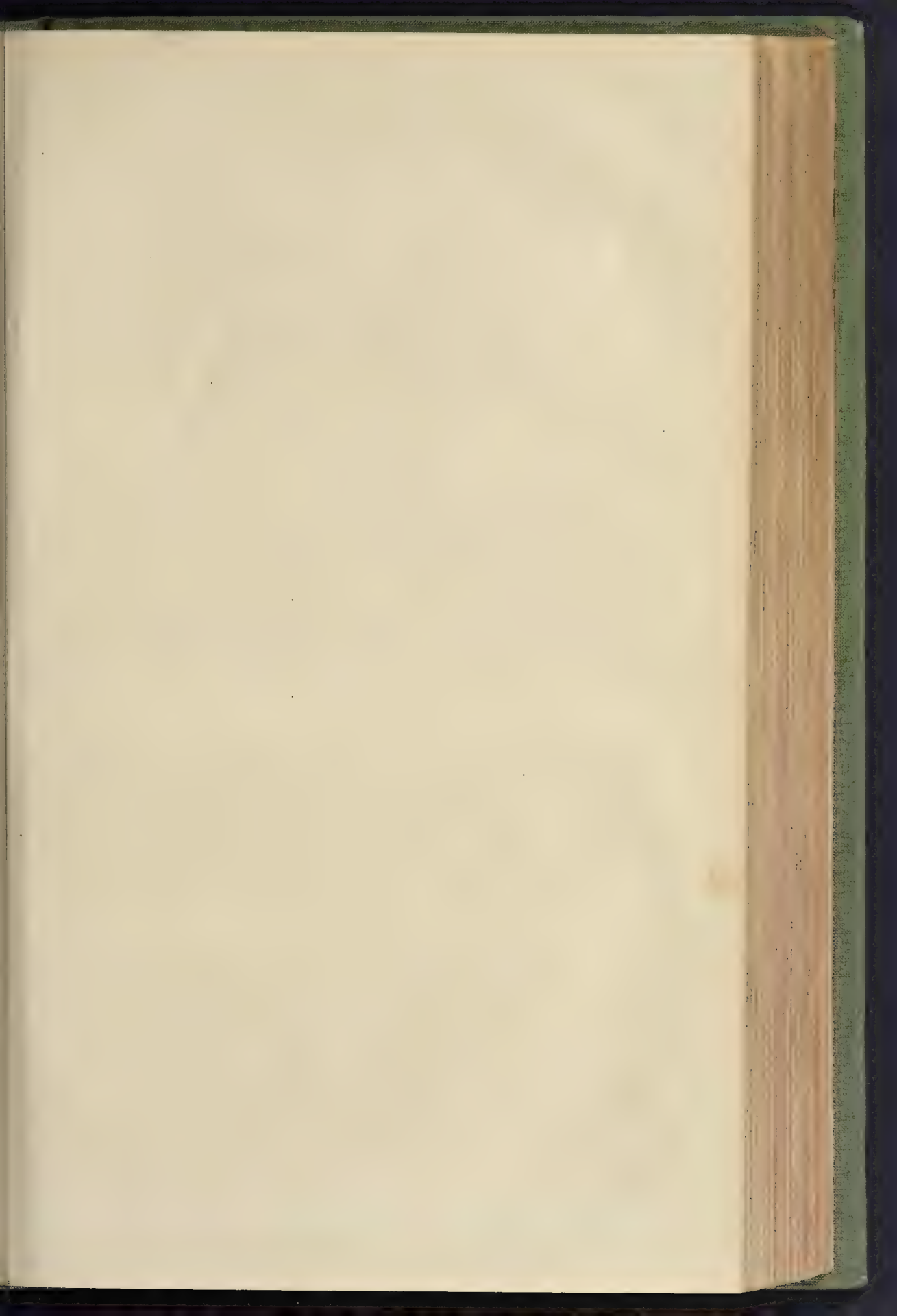
WEOBLEY is a small and very ancient town with a population of less than one thousand, at the apex of an imaginary triangle (to the west) between Hereford and Leominster. The place is inconveniently situated for trade, the nearest railway station being nine miles off; the streets are lifeless and grass-grown, and abound with small houses and remains of houses of very ancient date. Some of these structures are in the very last stage of dilapidation and ruin, and a few are tenanted. Here and there a window is seen little larger than one's palm, and doorways 5 ft. high, that one must stoop to enter. Some parts of the town irresistibly remind the spectator of the extraordinary pictures seen in very ancient illuminated MSS. The town is now fast being pulled down and modernised, so that shortly many of the ancient structures will no more. Already in the middle of the town a number of houses have been levelled with the ground and replaced by structures resembling those loved by the little jobbing builders of the outskirts of London. Nothing but a visit to the town can give an adequate idea of its very ancient aspect, the extreme smallness and ruinous state of its houses, and its evident antiquity.

Weobley is a small decayed market town, which formerly (like Leominster) had a considerable trade in wool. Before the Reform Act of 1832 it returned two members to Parliament, and when disfranchised had only seventy-five electors, who lived rent-free for their votes. It still abounds with many ancient timber houses, some of which are selected for our illustration, but in obedience to a custom which was followed here to some extent in olden (as well as modern) times, the old houses were pulled down on the death of their owners. The church is a really fine Early English building, with a lofty spire, and contains a full-length marble statue of Colonel John Birch, the celebrated Parliamentary General, who took Hereford and Goodrich Castle, and was Governor of Bath and Bristol. The Marquis of Bath is Lord of the Manor of Weobley, and in former times enjoyed the pocket borough of his family friend.

John Abell, the architect, who built the fine old wooden market-houses of Hereford and Leominster, is said to have built several of the more ornate of the Weobley houses, about 1610 to 1620. He certainly designed the Jacobean Manor House at the Ley, about 1½ mile from Weobley.

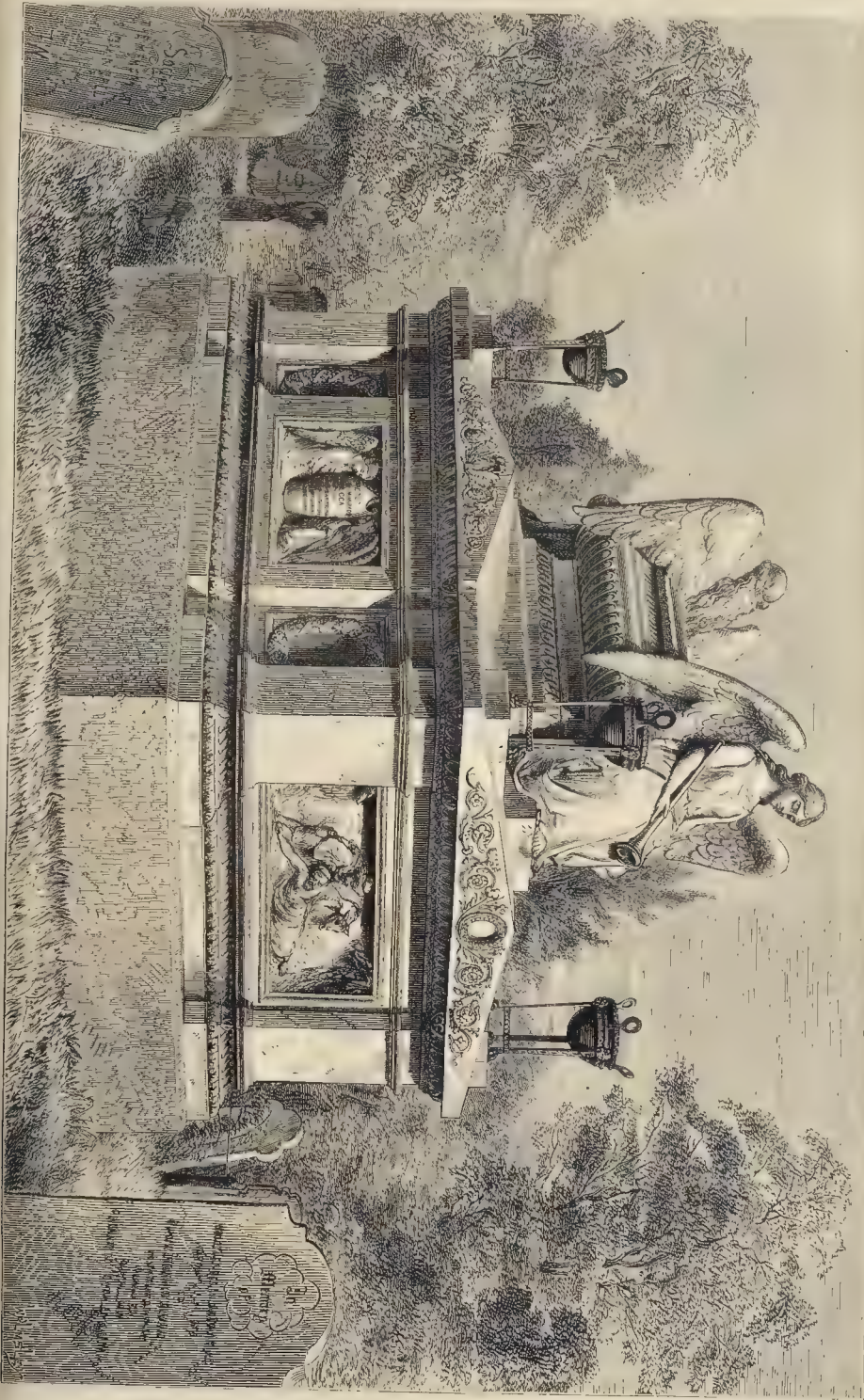
THE TOMB OF MRS. W. B. WATERLOW.

The tomb of Mrs. W. B. Waterlow, of which we give an engraving in our present number, is erected in Reigate churchyard. The plinth of the monument is executed in red granite, and the upper portion in Portland stone, the side panels being in Sicilian marble; the tripods at the angles of the tomb are of bronze. The sculpture of the two end panels represents the story of the Good Samaritan and the Sacrifice of Isaac, and are by Mr. Joseph Durham, A.R.A. The angels on the sarcophagus, which are life-size, together with the whole of the carving and masonry of the tomb, were executed by Mr. Ruddock, from the design of Mr. John Robinson, architect.



*High Street.*

ANCIENT HOUSES AT WEOBLEY, HEREFORDSHIRE.



THE TOMB OF MRS. W. B. WATKINSON, BELGATE CHURCHYARD.—MR. JOHN ROBINSON, ARCHTCT.

OUR PUBLIC MONUMENTS AND THEIR POSITION.

In order to carry out certain improvements in the City, it is contemplated, we learn, to remove the Monument to another site;—the Monument *par excellence*, one of the objects which excited the wonder and interest of our country cousins of past generations, the memorial of the Great Fire which destroyed so much of the City, a catastrophe which the short-sighted policy of our ancestors did not take advantage of, and hence the necessity the present generation feels under of remedying their oversight at an amount of trouble and expense which is enormous compared with what it would have cost them.

This proposition suggests a few observations. Inappropriateness of site is one of the chief causes of the failure of many of our monuments. In choosing a site for such, the one in which it is most easily seen is not always the best, but one in which it will combine with surrounding objects, composing and grouping with them in such a manner as to produce a harmonious sequence of lines, resulting in a picturesque effect gratifying to the æsthetic sense. Where such an effect is not studied the object appears out of place, and even although it be a good work of art, *per se*, much of its beauty is lost. Such is the case with the solitary Achilles in Hyde Park, a work of considerable artistic merit. Were it placed in such a position as the quadrangle of Burlington House, it would be seen to greater advantage, and it would give a character to the quadrangle not out of keeping with the individualities of the frequenters of the art galleries. But not only may a misplaced monument appear to disadvantage, it may even look absurd and ludicrous. The Wellington on horseback, erected upon an arch at Hyde Park-corner, is a conspicuous example of this: so ridiculous does it appear, that it is matter of surprise it should at all be tolerated, more especially in such a neighbourhood.

It is a great mistake to suppose that by placing a statue or group, it acquires greater importance than if associated with others. There are statues in quiet retired squares which are almost lost and unknown to the general public. The tendency seems now towards the production of numerous rather than important works of this kind, and it would be desirable in future that they should not be dispersed, but concentrated, and no finer position could be selected than the Thames Embankment. The impressive effect produced by the avenues of fountains leading to the temples in Egypt is well known, and here a similar effect might be produced.

Our public monuments, with a few exceptions, are unsatisfactory: they are not things of beauty, they are a joy to no one. An atmosphere of gloom, combined with rain or mist during three-fourths of the year, destroys the texture of even the most durable materials. Bronze is carbonised till it is hardly distinguishable from iron, and while assumes the appearance of stucco. If a pure and simple is what is wanted, the place for it is in some public hall; but a hall is required. Are we to go on perpetuating the blunder of destroying the interior of Westminster Abbey? Never was such a mistake committed as here. Masses of marble banners, rich in wind could move, clouds of the earthy, and scantly-draped amazons blowing in the right place here. Our diurnal predecessors knew better what was fit and proper and in artistic harmony with the building, as witness the most interesting series of monuments in Henry VII.'s Chapel: these do not seem intruders within the sacred precincts, they harmonise with the style of the building, they naturally into their respective positions. A statue or monument is intended for an exterior, the style of the building should be carefully considered; if architectural adjuncts are needed in the form of canopies, or otherwise, need not necessarily be of the exact style the building, for the details of some of the monuments in the chapel we have referred to are not Gothic, and yet they do not seem out of place. It all depends upon the spirit in which the work is done, and the possession by the artist of correct taste and knowledge. Above the architectural features of the building should not be interfered with, but the statue or group should be designed to fit into the position intended to occupy, and not the position up and altered to make way for the monument. Both building and monument will gain much a mode of procedure, for it is a mistake

to suppose that a work of art gains value by being imprudently thrust into notice: it will be out, although it need not necessarily be in an obscure position.

We have not now men of comprehensive genius like those of old, who practised, and were masters of each branch of art, who gave form to their conceptions in any variety of material, and to whom painting, sculpture, and architecture, were but different phases of the same power. When the architecture, the sculpture, and the painting of a building are the outcome of the same mind, the result is sure to be homogeneous; but when different men with various proclivities are engaged, each intent upon his own scheme, and showing small appreciation of the work of the others, a contrary effect is certain to be the result. A work of art to be of any value must bear the impress of creative power, and not be an effete reproduction of the ideas of a past era. The sculptor has doubtless much to contend with in the reproduction of the details of modern costume, but it cannot be considered a satisfactory solution of the difficulty to clothe a modern in the garb of antiquity. The figure of Huskisson at Liverpool, with Roman toga thrown back, showing a naked chest, and with feet incased in Hessian boots, is more apt to excite ridicule than to call forth admiration.

There is an effigy in Glasgow, representing a worthy of that city clad in frock coat with hat in hand (one of Christie's best), which is very provocative of laughter when on a wintry day he offers the spectator a handful of snow. Far better make the monument an architectural one, and if a likeness is wanted be content with a medallion in bronze or marble, than produce such scarecrows.

Again, although the costume may be one in which the individual appeared on some occasions when in life, it should not be chosen unless it is appropriate to his character as a man. To represent the late Prince Albert as a soldier seems to us to be a decided mistake, as he was emphatically a man of peace, and should be represented as such. A statue is seldom looked upon as a correct representation of the individual as he appeared when in life. Our statues differ very little from each other in conception, the description of one answers for that of the other. They are generally inanimate and unimpressive, and it is only when the sculptor departs from what are considered the correct canons of his art, when he seeks to express action rather than repose, that some interest attaches to his work. The works of Roubliao are remarkable examples of this class, and none have been subjected to severer criticism. A monument may be rendered interesting and picturesque if a statue forms the culminating figure of a group. The Nelson monument in the Exchange-square at Liverpool, although not without faults, forms a happy centre to a group of remarkable buildings; it is not a work to be coldly passed by as a matter of course, but arrests attention and excites interest.

Equestrian statues have always been popular: they afford great scope for the production of artistic effect, which may even be carried to the verge of sensationalism, as in the remarkable figure of Peter the Great at St. Petersburg, where the artist has placed the rider in a very free attitude, whilst the horse is rearing on the verge of a precipice. The impressiveness of this work is enhanced by the position in which it is placed at the end of a flat bridge, but its dimensions are apparently reduced by the vast area of the surrounding square, a peculiarity which is general in that city, and detracts from the dimensions of individual erections. The monument to Frederick the Great at Berlin is an example of a different mode of treatment, which is very effective, although in this instance the difference of scale between the principal figure and the surrounding groups is so great as not to produce the happiest result. The Albert Memorial, to be erected in Edinburgh, is to be of similar character to that at Berlin, the principal figure only being on horseback, and the accompanying figures not so subordinated. This monument has been long in hand, and its completion has been further delayed by a flaw in the casting of the horse.

No form of monument is less worthy of being imitated than the obelisk, it is certainly very graceful in outline, but it is unmeaning, and not capable of much variety of treatment; besides which it is only endurable when produced as a monolith, and the skill required would be better

employed in the production of some more original and attractive conception. Besides which, our cemeteries are crowded with obelisks in every variety of material and on various scales of proportion to such a degree as to vulgarise the form. The obelisk, the invention of the Egyptians, was appropriate to the nature of their country. A slender tapering object seen from afar over the vast level plains marked the position of a temple, just as a spire does that of a church. To place such an object on the summit of a hill, as has often been done, is absurd; the effect is meagre in the extreme, and adds nothing to the beauty of the scene. Indeed, as a general rule, the summit of a hill of any considerable altitude will be found a most difficult site to deal with. A monument so placed must be of considerable bulk, so as not to appear contemptible in the distance. The lines should be horizontal rather than vertical. It should appear to rest upon, rather than spring from, its high position. This the Greeks were well aware of; their temples were often so placed, and never appeared to greater advantage than in such situations. A group of buildings of an aspiring character may, indeed, be placed on a height with a happy effect, as in the example of Mont St. Michel, recently illustrated in our pages,* but when a solitary tower or spire without subsidiary appendages is so placed, it does not sufficiently carry out the lines of the acclivity. The Wallace monument, near Stirling, a huge tower placed on a wooded crag, is a most conspicuous object, but it is damaging to the beauty of the landscape. The column is capable of greater variety of treatment than the obelisk; but it is unmeaning when it supports nothing, and a statue perched at a great height is out of place. Monolithic columns of rich materials, such as the well-known pair at St. Mark's in Venice, are very effective if happily placed; they appear to great advantage when in pairs they form the terminal objects in an avenue or broad straight line of street. A triumphal arch is even more effective in such a position; but if placed at the side of a thoroughfare, it is not only unmeaning, but its beauty is lost. It is a form of monument affording great variety of treatment, and enhances greatly the architectural expression and dignity of a neighbourhood if judiciously placed. One of the most elegant modern structures of this description is that which forms the entrance to Hyde Park from Piccadilly; the Marble Arch at the other side of the park requires a group of horses placed on it to give it finish. The arch in the Place du Carrousel, Paris, is so finished; but it is ill placed and poor in design. Much better situated is the Arc de l'Étoile: it is grand when seen from afar, though clumsy and ponderous in detail. A few attempts have been made to design Gothic triumphal arches, but none of them so far have been successful; certainly not that erected at Dundee to commemorate the visit of her Majesty to that town: yet there is no reason why such should be the case; the mistake seems to be in following too rigidly the general outline of the classical prototype.

No more beautiful form of monument can be found than that of the Eleanor Cross; it is capable of a great variety of treatment, affords ample scope for the inventive powers of the designer, and may be erected to almost any scale, although when too much reduced it is apt to have a toy-like appearance. It may be made an effective object when seen at a distance, and an interesting one when closely approached. Sculpture and carving may be freely used along with the richest material. The Scott monument in Edinburgh is the largest example of this style of monument, and has been much admired. The Albert Memorial at Kensington, again, is a colossal shrine, a feature hitherto only produced on a small scale, and generally found in the interior of religious edifices. It is unsurpassed by any other monument in lavish richness of decoration, and the variety of the arts enlisted in its production.

The Brighton Aquarium Company.

Only on Monday last, says the local *Herald*, the directors announced that they were prepared to receive applications for debentures, to bear interest at the rate of 5½ per cent., to the extent of 10,000*l.*; and before three o'clock on Friday, the directors intimated "that the amount of debentures advertised has already been applied for." Aquariums are thus in the ascendant.

* Page 608, ante.

STATE OF BATTERSEA CEMETERY.

It appears from a special report which Dr. Oakman, the medical officer of health for West Battersea, has made to the Wandsworth Board of Works respecting the condition of the Battersea Cemetery, that the state in which it is now is highly unsatisfactory, and actually dangerous to the health of the inhabitants of the surrounding locality. He states in his report that in those portions of the cemetery called common ground the requirements of the law are not observed. He says that houses are within 25 ft. of open grave-ground, in which deep graves are dug, which remain open until sufficient corpses are forthcoming, and that this close proximity of houses, apart from the nature of the soil, makes the present state of the burial-ground bad. We give below the medical officer's description of the open graves in his own words, from which it will be perceived that the Burial Board are incurring a serious responsibility. "These open graves," he says, "are situate two in the common consecrated ground, and two in the common unconsecrated ground, and at the time of my visit were four in number. They were deep, far below the depth of drainage of the cemetery, which is 8 ft. in dense clay, and contained water, which could only get away by very slowly percolating in the direction of the slope of the cemetery. These graves are kept open until there are sufficient burials to fill them, and until recently, on my representing the matter to the Burial Board, 1 ft. of earth was left between each coffin, but now 2 ft. of earth are left. It may be a week, or perhaps a month, before such a grave is finally closed, during which time the bodies decompose, and the soil being of such a nature (clay) the gases given off are not absorbed, consequently they escape into the atmosphere. The stench from these open graves is very bad, and produced a visible effect on the surveyor as well as myself when inspecting. I may also mention that the clergy have complained to me of the very disagreeable duty it is to perform the funeral services near these graves; and when it is remembered that mourners, worn out with anxious attendance on their departed friends, or in a condition of health very susceptible to zymotic poison, stand on the borders of these graves, it will readily be seen that the emanations from the decomposing bodies must be dangerous in the extreme." He adds that the practice of deep, open, running graves is contrary to the regulations for conducting interments in burial-grounds provided under the Burial Acts.

OPENING THE NEW DOCK BASIN AT CARDIFF.

The opening of a new dock basin, upwards of 12½ acres in extent, recently, at Cardiff, is an event of vast importance in the history of the rapidly rising port in South Wales. The exceptional capacity of this basin for the loading and unloading of ships in connexion with the extensive Butte docks which have recently been constructed at Cardiff, may be inferred from the fact that its water area is larger, with two exceptions, than that of any of the twenty-seven Liverpool docks, and double the size of the two largest basins at the last-named port, the Canada and Huskisson docks at Liverpool (the two largest) containing a water area respectively of nearly eighteen and fourteen acres, whilst the only large basins in connexion with the Liverpool docks are those attached to the Canada and the Sandon dock, the former of which is nearly seven acres, and the latter six acres in extent.* It will, therefore, be seen that the port on the banks of the Taff is fast emulating its elder sister on the banks of the Mersey, and bids fair, at no distant day, to become one of the largest and busiest seaports on the western coast.

The new basin is in connexion with the East Butte dock, and it will afford accommodation to a larger class of steamers than have ever before been able to enter the Cardiff docks. In addition to this, owing to the great depth of water in the basin, and the lock by which it is approached, the vessels will be enabled to enter at an earlier and leave at a later state of the tide than is possible under the present system. The basin is entered from the river through a lock, 500 ft. in length, 80 ft. in width, and 45 ft. 6 in.

* The aggregate water area of the whole of the Liverpool basins being 15 acres and 3,388 yards.

in depth to the bottom of the sill. In the lock are placed enormous iron gates, which keep the water in the basin when the tide is out, and they are said to be the largest gates of the kind which have yet been erected, in proof of which it may be stated that each leaf weighs 150 tons. As evidence of their great strength, it should also be remarked that when the water is up to its full height in the basin, the total pressure sustained by the gates is equivalent to a weight of 1,200 tons. The dimensions of the basin are 1,000 ft. in length, and 500 ft. in width at each end, and 550 ft. in the middle, the sides being curved to this extent, the area, as we have already stated, being 12½ acres. The walls of the basin, as well as those of the lock through which it is approached, are of solid masonry, the stone having been obtained from the Pwll-y-pant quarries. The basin is intended to be worked as a tidal dock, and the depth of water at neap tides being 26 ft., whilst at spring tides it has an average depth of 36 ft., shows that there will be a sufficient depth of water for the largest class of vessels. Although an extensive and constantly increasing foreign trade in general merchandise is carried on at the port, the district around Cardiff renders the coal trade an essential feature, and in order to provide for this eight coal-tips have been erected on the quay around the margin of the basin. They are all of wrought iron, and worked by hydraulic machinery on the newest principles. Each tip has a power for tipping twenty ten-ton wagons per hour, which shows the great expedition with which vessels can be loaded with coal. In addition to the principal lock leading into the basin, to which reference has already been made, there is also a second lock, 360 ft. in length and 60 ft. in width, which serves to form a communication between the basin and the lower end of the East Dock. In the construction of the basin every precaution has been taken to ensure the strength and substantial character of the work, and in that portion more particularly against the action of the machinery works, as, for instance, the sills, quoins, and coping. The material used is Cornwall granite. At the upper end of the second lock just named, a wrought-iron swing-bridge is thrown across it. This is for the purpose of providing road and railway communication to the space between the east and south basins.*

In addition to the increased facilities which the new basin provides for the loading and discharging of vessels, it serves the double purpose of being the means of communication with a new graving-dock, which has been constructed immediately adjacent. The entrance to this new graving-dock is at the north-east corner of the basin, and is 60 ft. in width. The graving-dock itself is 690 ft. long, 74 ft. wide, and 26 ft. deep. The masonry and walls of the graving-dock are of great strength, and constructed of the same materials as the walls of the basin. The keel blocks in the graving-dock are laid down on Bradley's patent principle. A caisson, now in course of construction, closes the entrance from the basin. The caisson is being constructed by Messrs. Gunn & Co., of the Mount Stuart Graving-dock, Cardiff.

Mr. J. M'Connachie, the engineer to the docks, designed the whole of the works, which have been carried out, under his immediate superintendence, by artisans in the employ of the dock trustees themselves. The gates, swing-bridges, tips, capstans, and cranes were furnished and erected by Sir W. G. Armstrong & Co., of Newcastle-on-Tyne.

COMMITTEE ON AFFAIRS OF THE INSTITUTE OF ARCHITECTS.

Sir,—Information on this subject is desired in order that exaggerated notions may be prevented, for the appointment of a committee of inquiry can only be regarded as an extraordinary measure, and the actual object cannot be too soon or too clearly made known. The constitution of the Institute may be found imperfect, the executive ineffective, the council sluggish or overworked, some part of the organisation must be seriously out of gear to call for so abnormal a remedy. One feature of the proceeding provokes especial remark, and that is the source from which this new fund of wisdom is to be derived. Associates, although debarred from voting or taking part in the ordinary work

* In working the gates, swing bridges, cranes, tips, capstans, and everything in connexion with the locks and basin, the hydraulic principle has been adopted.

or management, are here admitted in the proportion of one to two, the committee being composed of eight fellows and four associates. It is further noticeable that three of the fellows are all the associates (making a numerical majority) are members of the Architectural Association. The minority includes two ex-presidents and one country member, a circumstance that will excuse paucity of attendance on their part, make the inequality practically greater.

A cursory reading of this will have afforded information, while they cannot but rest on certain disability as councillors, and of which they should hardly perhaps require to be reminded. The council may, at least, be asked state why matters strictly affecting the Institute should not be considered and determined by those who have its welfare exclusively at heart.

SEMPER FIDELI

THE "ILIAD" OF HOMER.

The recent discoveries in the Troad have proved true the "Iliad" of Homer, as far as descriptions of the vessels used by the Trojans or Greeks are concerned; but the truth of the historical part is not yet satisfactorily proved. A cursory reading of the "Iliad" would show that Homer represents his heroes as men in an advanced state of civilisation. With this statement the gold and silver vessels would appear correspond, as they are evidently the portions of a civilised age; but their mechanical appliances were simple, undoubtedly the work of a barbarous semi-barbarous people. It is said, however, these indicate a subsequent relapse of civilisation after the expulsion of the Dardanians here.

Some years ago discoveries were made in Scotland, consisting of flint arrow-heads, and other implements in stone. These served natives for warlike as well as for domestic purposes. This is called by historians, "The Stone Age." Bronze spear-heads, and swords of the same material, were also found. The called "The Age of Bronze." Perhaps it is inferred from this, that these axes, and stone, found in the Troad, served their possessors as warlike implements also.

But, perhaps, one of the greatest objects that can exist against the truthfulness of the "Iliad," is the relation of the actions of gods, the exalting of individual heroes. The scene laid on Mount Olympus, as often as among respective armies: gods and goddesses inter in every struggle, and to their aid the victor mainly ascribed. The Ægis plays a prominent part in the "Iliad." In the Second Book, the "king of men" "bade the clear-beralds to summon to the conflict the long-haired Greeks." Minerva was there urging them to war, (Iliad, ii. 446; see also Iliad, v. 18, vii. 203). On another occasion it was that Apollo to terrify the Greeks.

This much is certain, at least, about the history of Greece, that a passion for bold extraordinary expeditions was awakened in the hearts of the Hellenic tribes, and that these at first confined to their native land, but afterwards extended to foreign countries. On account of these, was terribly disorganised. It is probable that a desire to picture these to his countrymen may have actuated "Prince of Poets."

According to Scripture, Javan was the of the Greeks. "The sons of Japheth; and Magog, Madai and Javan. . . . a son of Javan; Elisha," = Ellas, i.e., Hellenic Greeks, &c. (Gen. x.). "Javan, Tubal Meshech, they were thy merchants: they are the persons of men and vessels of brass market" (Ezek. xxvii. 13). It is more than probable that a city belonging to some rude barbarous people was built there some before the foundation of Troy, if ever a place existed.

The explorer has discovered skins. Shown an article of clothing, but was also used as a shield, "advancing in battle in the front ranks" (Iliad, iii. 16). This was the remnant of an early, and at one time, very general custom of wearing armour (Iliad, iii. 18); armour (Iliad, iv. 495; v. 681, &c.); a shield pierced with golden nails" (Iliad, i. 245); their warlike weapons and badges of office. That gold was applied to various purposes shown by Iliad, viii. 41-52. There have

found vases corresponding to gold and silver vessels that were in the temple at Jerusalem. The Phœnicians spread themselves (long before the existence of historical records) over the whole of Western Asia, and were driven from thence by nomadic tribes, and out of Canaan by the Israelites; the similarity in the make of these vessels, at least affords a proof of the statement, that "Asia is the cradle of mankind."

According to Wolf and other critics, the "Iliad" is composed of legends collected and made into a poem by Homer (hence *Ὅμηρος* from *ὄμος*, "together," and *ἄω* "to join"); but about what particular city or nation these legends were in the original form we do not know. No doubt Homer altered them to suit himself and please his countrymen; yet there is good reason to suppose that Homer had some foundation for his two great poems, though, what that foundation was it would not be easy to determine. Three or perhaps four cities have been discovered by Dr. Schliemann. The siege of Troy is supposed to have taken place between 1194-1184 B.C.; Troy of Hellenic civilisation founded 700 B.C.; city apparently built by Lysimachus between 300-280 B.C. Homer lived about 855 years before Christ. "I am of opinion that Homer and Hesiod were born about 400 years before me and no more" (Her. b. i., c. 53). Perhaps the great fame of the destruction of Troy drew so many colonies to the place. Agamemnon was, it is said, the commander-in-chief of the Greeks against Troy. I would deduce the word from the 2nd aor. part. mid. of *ἀγω*, "I lead," viz., *ἡγαγόμενος*—*Ἀγαμέμνων*; Menelaus from *μῆνις λαός* (*Μενέλαος*), "the host of wrath," i.e., the army (levied) for the revenge of the abduction of Helen by Paris; Ulysses from *ὄδυσσος* (*Ὀδυσσεύς*), "a wayfarer"; his wanderings are the subject of the *Odyssey*. (Nestor was a "clear-toned speaker," i.e., "an orator," and an orator must be a "thinker." I would deduce *Νέστωρ* from *νόστος*; fut. *ν-ο-σῶ-μαι*, "I think." It was the wrath of Achilles that occasioned the woes of the Greeks. I would deduce *Ἀχιλλεύς* from *α* and *χόλος*, "wrath," "anger," &c., *α* intensifying the other word, "an extraordinary kind of wrath."

Permit me, in conclusion, to quote a passage from Dr. Liddell's "History of Rome." He says,—"The history of Rome, like that of all nations, begins with legendary tales. Such legends are not to be regarded as mere romances, that is, fictions invented to amuse" (Hist. Rome, vol. i.); and another from Goldsmith,—"Poets were the first who began to record the actions of their countrymen, and it is a part of their art to strike the imagination at the expense of probability. . . . it would be vain to give an historical air to accounts which were never meant to be transmitted as true" (Hist. Greece, vol. i.). Troy was destroyed about B.C. 1184; add to this 1873 years, and we have upwards of 3,000 years since Troy's destruction. These gold and silver vases have lain there, according to Dr. Schliemann, 3,000 years, unknown and unnoticed. We are not to translate *χάλκιος* in Homer by "copper" or "brass," or "metal in general," but by "*bronze*." This is a mixture of copper and tin, and is harder than either of which it is composed; whereas brass is a mixture of copper and zinc. *Σίδηρος* was a scarce in Homer's time that it was given only as prizes (see Lidd. and Scott's Greek—Eng. Lex., and Donnegan's ditto).

T. ALLEN MOORE.

SIR TITUS SALT'S STATUE AT BRADFORD.

THE ceremony of unveiling a marble statue of Sir Titus Salt, bart., of Saltaire, took place at Bradford on Saturday last, in the presence of a large assembly of spectators. The ceremony was performed by the Duke of Devonshire. A large number of gentlemen formed a procession, and accompanied his Grace to the site of the statue in front of the Town Hall.

The movement for the erection of a statue of Sir Titus Salt was originated four years ago. The general feeling was that the town, which owed so much to the business enterprise and munificence of one of its principal citizens, ought in some way to publicly acknowledge and commemorate his worth. In a very short time nearly 4,000 were raised. Amongst the subscribers were gentlemen in London, Manchester, Leeds, York, and Glasgow. The committee entrusted with the funds resolved to erect a marble statue of Sir Titus, and Mr. J. Adams-Acton, of

Marylebone-road, London, got the commission. The statue, which has been cut from a block of Carrara marble of unusual size, weighing not less than fourteen tons, is of colossal dimensions, being 7 ft. high, and represents Sir Titus, dressed in the ordinary costume, sitting in a dignified and characteristic attitude, the right arm resting on his chair, while in the left hand is held a scroll, on which is drawn the plan of Saltaire. The head of Sir Titus is well adapted for reproduction in sculpture, the largeness of the forehead and the amplitude of the head giving force and dignity to the countenance. The site chosen is in the very centre of the town and in the broadest part of the street to which the Town Hall presents an attractive façade. The statue rests on a pedestal, beneath a decorated Gothic canopy of stone, erected from the designs of Messrs. Lockwood & Mawson, of Bradford and London, architects, and in harmony with the statue and the surrounding buildings. The base of the canopy is 17 ft. square, and upon it rests the base of the statue, which cost 1,000l.; more than 1,500l. having been expended upon the canopy.

THE DEMOLITION OF TEMPLE BAR.

THIS structure, it appears, is about to settle its own question. Some time back it became necessary as a measure of precaution, to shore up the side archways, which, owing to a subsidence of the foundation, were considered to be in an unsafe condition. On Friday morning something wrong in the main archway attracted the attention of passers by, and much discussion arose amongst the bystanders as to the probability of the structure giving way altogether. It was evident that the southern half of the centre arch had shifted from its position, and there was a fissure near the keystone of the arch on the western side.

Many persons driving along Fleet-street showed a little pardonable hesitation in passing under the structure. It was officially inspected by Mr. Horace Jones, the City architect, Mr. Bull, the contractor for the Law Courts, the district surveyors of the adjacent parishes, and other gentlemen, and in result it was resolved to shore up the Bar, leaving room for the passage of two lines of vehicles. Meanwhile the vehicular traffic was stopped, and pedestrians were allowed to pass on the south side of the way only. Three stones were out of position, but the danger of the fall of the Bar was not then considered imminent. However, after a minute inspection Mr. Jones concluded that the Bar in its then condition was unsafe, and instructions were forwarded to Messrs. Browne & Robinson, the City builders, to shore up the middle arch. The following notice was issued:—"Traffic to go a walking pace through Temple Bar." The books belonging to Child's Bank, which were kept in the room over the Bar, were removed; and, at last, on Wednesday, from further signs of giving way, a large number of workmen were set to work to take down the gates. Previously to commencing the work, a frame-work of 9 in. square timber was placed under the arch, at the west side, and down by the side pillars which support it. The gates are of great weight, being studded in some parts with large iron rivets, and crossed with heavy 3-in. bar-iron running from the point at which the socket, serving as a hinge, fitted upon the iron pivot fixed in the wall. Although the first "hinge" was unloosed early in the morning, so heavy and unwieldy was the northern half of the gates that it was ten o'clock at night ere, by the aid of "jacks" and cranes, the ponderous piece of work was placed in such a position that it could be carted away. The demolition of Temple Bar has thus begun, and in a few days, no doubt, the work will be done.

PROPOSED IMPROVEMENT IN LAYING ASPHALTE.

Sir,—In reading over Mr. Lemon's suggestions as to laying asphalt, it appears to me open to certain objections.

In a report published in the *Builder* some time ago, asphalt was compared with different kinds of pitching, and one of the great advantages pointed to in favour of asphalt was its smoothness, and doing away with the unpleasantness of the disagreeable noise in the neighbourhood, created by the traffic passing over granite or other pitching. Now the noise and roughness com-

plained of is occasioned in a great measure by the multiplicity of joints in the pitching; and Mr. Lemon proposes to do away with the danger from slipping by assimilating the asphalt to other pitchings, and thus sacrificing the greater advantages of having a smooth, noiseless road for the purpose of getting rid of the danger of slipping.

Horses are shod in ice countries so as to be able to pass over the ice in perfect safety, and I should say it could easily be done so that they could pass over asphalt with equal safety. I am aware of the difficulty of making a horse's shoe so as to be capable of being used on slippery and other roads with equal advantage, but I think that with very little attention on the part of the shoer it might be done. There has been no improvement in horse-shoeing for many years, and I should think that, in the present age of improvements, something might be done in that direction, so as to make it more suitable to travel over the variety of roads now made use of in this country, and thus retain the great advantages we now enjoy from the use of asphalt to repair our streets.

We have no asphalt proper in use in our town (Carmarthen), but tar pavement for footwalks is very common, which very closely resembles asphalt, and it answers the purpose very well, and is much better liked by the inhabitants than pavement made with Irish flags, and when it becomes slippery after wet this is easily remedied by sprinkling a little dry spare gravel or ashes over it. Perhaps tar gravel would not do where the traffic is very great, but we have had some laid on our greatest thoroughfares six or seven years ago, and it appears quite perfect now.

R. BARRETT.

THE PRESERVATION OF WOOD.

ACCORDING to Hubert, in the *Comptes Rendus*, the best means of preserving wood exposed to wet, especially that used for railway sleepers, from destruction by rot, &c., is to drive thin iron nails, with broad flat heads, into it. If wood prepared in this manner is put into the ground, the nails naturally rust, and the rust spreads equally and permanently through the wood and protects it. The sleepers may also be preserved by winding iron wire round them. Hubert has kept in good condition wood which he had put into moist ground for nearly fifteen years.

NEW DUST DOCK ON THE THAMES FOR THE BERMONDSEY VESTRY.

THE Bermondsey Vestry, who have for some time past taken into their own hands the watering of the streets and the removal of the street sweepings, are about still further to facilitate their operations by the construction of a dust-dock on the margin of the Thames. For this purpose they have purchased a site adjacent to the Fore-and-Aft Dock, close to the East-lane Stairs, which was formerly used as a boat-building yard. The site is 73 ft. long by 39 ft. wide, containing an area of nearly 3,000 superficial feet, and a portion of this space is about to be formed into a small dock, where barges will receive the dust and sweepings within the parish, which will thence be conveyed down the Thames into the country. The preliminary work of excavating the ground down to the bottom of the intended dock has already been commenced, and is now in progress. The extreme depth to the bed of the foundations on which the dock-walls will be built is 25 ft. The walls will be set on a bed of concrete, and at the bottom are 6 ft. in width, narrowing to 2 ft. 3 in. on the ground-level. They will be backed with concrete, the face being of blue Staffordshire brick. In the construction of the dock a system for cleansing it is being adopted. This will be effected by the introduction of pipes at the back of the dock, something more than 1 ft. above the bottom, and communicating with the river. These pipes will be closed with valves, and when it is found necessary to cleanse the dock, the deposits at the bottom can be loosened by opening one of the valves, and allowing the water to run down. This will admit of the deposit being scraped and removed with considerable ease.

The cost of the construction of the dock and fittings will amount to about 5,000l. Messrs. Pierson & Co. are the contractors for the dock itself, their contract being 4,353l.; and Mr. Wilson is acting as manager and superintendent of the works.

THE PRESERVATION OF ARGILLACEOUS PAVING SLABS.

EXPERIMENTS have been made in Stuttgart for the preservation of stone slabs containing clay, which have been completely successful. Single slabs were taken up from a much worn pavement, dried, warmed, painted over with a coat of linseed-oil, and put in their places again. The result being favourable, three coats of the same oil were given to other slabs as they lay in the pavement. It was found that slabs so treated were less greasy (wore less) in moist or wet weather than others which had not been coated, and that they are free from dust in summer. By way of experiment, the residuum of a schist oil, manufactured at Reutlingen, very much cheaper than linseed oil, was also used. It may be added, that the coating, or rather impregnation, of pavement slabs, sandstone slabs for manufactories, &c., with hot tar, can also be highly recommended, where the black colour of the latter is not objected to.—Hess. Gewerbeblatt.

THE METROPOLITAN GAS QUESTION.

An important report was presented to the Metropolitan Board of Works at their last meeting from the Works and General Purposes Committee on the present state of the gas supply of the metropolis, and recommending that a Bill should be prepared and submitted to Parliament by the Board with a view of obtaining increased legislative powers to supply gas themselves to the consumers of the metropolis. The report was based on a resolution of the Board of the 26th of June last:—

"That in the face of the increasing price of gas in the metropolis, and of the fact brought to light by the recent inquiries before the Board of Trade, that the main inducements to economy and good management on the part of the gas companies have been taken away by existing enactments, and that practically to obtain a fixed rate of income the companies are permitted to tax the consumers to an unlimited extent, it is referred to the Works and General Purposes Committee to consider and report what steps should be taken either to afford an independent supply of gas to the metropolis or to initiate some legislative measures to protect the interests of the consumers."

The committee, after devoting much time and attention to the consideration of this important question, have arrived at the conclusion that it is the duty of the Board, in the interest of the public, to promote a measure for enabling the Board to provide an independent supply of gas to the metropolis, and they recommend that the solicitors be instructed to prepare a Bill to be introduced into the next session of Parliament.

Mr. Richardson (the chairman of the committee) moved the adoption of the recommendation. He considered that gas legislation had taken a course very hostile to the gas consumer, and their case, as it stood, was almost hopeless unless they had some new legislation. The great question that he felt in his own mind was whether a 10 per cent. dividend, guaranteed by Act of Parliament on the supply of gas, was a proper return for its manufacture or not. He was prepared to maintain it was not. Indeed, he was hardly prepared to say that an 8 per cent., or even a 6 per cent., dividend would be a proper return.

Mr. Fowler seconded the motion. He said it must be patent to every one who examined the proceedings that had been taken before the Board of Trade, and the remarks that had been made by Ministers of State, that they laid down this principle—that, provided the companies were prepared to make liberal and fair concessions, the Government would not interfere; but, on the contrary, if the companies would do nothing but demand their maximum dividend and the highest price they could, without allowing any control over their accounts, then they would let in third parties, that was to say, the public authorities, to compete with them (the gas companies) if they chose. It appeared that everything that had been done by that Board and others, hitherto, to bring about a more satisfactory state of things with regard to the supply of gas had only resulted in increasing the price of that article, and in fixing the manacles round their hands more firmly.

Mr. Newton said that this was a most difficult question to deal with, because the companies who were now charging so high a price for their gas, while they were administering their affairs so extravagantly, were acting under private Acts of Parliament, which gave them immense power, and with which it was most difficult to deal. They could not go to Parliament, and ask to deal with the

private rights of companies; they must bring forward a Bill to promote competition, and then they might succeed. He had come to the conclusion that nothing whatever, as matters stood, could prevent the price of gas being raised periodically, and that no effective protection was afforded by the commissioners appointed by the Board of Trade, trammelled as they were by Acts of Parliament. What he proposed was this: that they should go for their own Bill; but he did not see that if the companies should consent to agree to proper terms and restrictions, they should care to proceed with the Bill, which would give them a vast amount of trouble, and cost them a great deal of money. All they wanted was to see that the consumers were fairly dealt with. What he would suggest was this, that it should be made to the interest of the companies to supply gas at a low price, and that their dividends should be regulated by the price of the gas they supplied.

Mr. Freeman, Mr. Lloyd, Mr. H. L. Taylor, Mr. Rogers, and Mr. Savage also delivered a few remarks on the question, agreeing that they should not propose any compromise with the gas companies.

The motion was then unanimously carried, and the Board's solicitor was directed to prepare a Bill for introduction next session to enable the Board to provide an independent supply of gas for the metropolis.

WORKING MEN'S CLUB AND INSTITUTE UNION.

A NUMBER of working men belonging to clubs in connexion with this organisation have visited the Western Pumping-station of the great system of metropolitan drainage. They were accompanied by Mr. Hodgson Pratt, their president, and Mr. Hall, F.S.A., who, by means of diagrams, described to his audience how the drainage of a low-lying area of 2½ square miles at the west end of London will be received in wells at this station, which is in the Grosvenor-road, on the site of the Old Chelsea Waterworks, and thence pumped at the rate of 38,000 gallons per minute into the eastern intercepting sewer, and carried to Abbey Mills, where it will have again to be pumped into the conduit by which it will be conveyed to the outfall at Barking. The works are at present in process of erection, and will be finished probably in six months from the present time.

On Saturday Mr. Hodgson Pratt, with a number of members of the Union, visited the zoological galleries of the British Museum, where they were met by Professor Owen, who, in the course of an interesting perambulation, delivered in an easy colloquial style a brief account of some of the most striking objects in this portion of the great national collection. He began with the bones of *Elephas primigenius*, which led him by degrees into the glacial era, for such it must have been, when England, as we have ourselves urged, was, to use the Professor's own words, "much warmer in summer and colder in winter"; and those animals which ranged over the whole north of Europe and Asia were clad in a cloak of yellowish wool, 1 in. or 2 in. thick, hidden by a shock of long blackish hair, 1 ft. or 2 ft. in length." He told the well-known story of the discovery of the frozen body of one of the extinct elephants in the face of a cliff in Siberia, and referred to the fact that much of the existing demand for ivory was met by fossil tusks of the extinct species collected in the north of Asia.

On Monday, the Bank holiday, the Union made their sixth annual excursion to the Duke of Westminster's demesne at Cliveden-park, and which was a complete success.

THE IMPROVED INDUSTRIAL DWELLINGS COMPANY, LIMITED.

The directors of this company (which is provided over by Sir Sydney Waterlow, M.P.) have issued their twenty-second half-yearly report and statement of accounts to the 30th June, from which it appears that the expenditure on land and dwellings has reached 276,754. The number of dwellings completed is 1,392, and 353 more are in course of erection. Several important sites have been secured, which will enable the company to make during the next year or two, a very considerable addition to the accommodation already provided. The usual dividend of 5 per cent. is recommended to be paid after placing 1,500l. to the reserve fund,

which now amounts to 13,500l. We observe that premiums have been offered to architect for the best designs for covering a large estate in Goswell-road, leased from the Marquess of Northampton, and that the designs when received will be publicly exhibited. At a time when much attention is being given to the best means of providing house accommodation for the working classes, the exhibition of these designs can not fail to be very interesting.

The first annual dinner of the staff of officers and men employed by the company, took place at East Moulsey, near Hampton Court. The party, numbered upwards of seventy, and took dinner at the New Inn. Mr. James Moore, the secretary, in a brief address registered his inability, through ill health, to be present at the dinner. He said that the company's objects in taking to the erection of the improved dwellings, instead, as heretofore, of receiving contracts from builders, were the saving of builders' profits, and the ensuring of better work. He said no reason why the body of men present should not be employed by the Improved Industrial Dwellings Company for many years to come.

THE WEST END AND PIMLICO TRAFFIC.

LORD H. LENNOX, in reply to a question in the Commons, said a plan had been prepared to relieve this traffic. It would be in the nature of a road from Hamilton-place, across the Grosvenor Park, to Grosvenor-place, passing under Constitution-hill by means of a bridge, 16 ft. high over the proposed road, which would be 700 ft. length and 60 ft. in width, with an easy gradient of 1 in 60. The model would be placed in the library for inspection.

DRY ROT IN CHURCHES.

Sir,—Might I ask, through the medium of your wide circulated journal, whether any of your scientific readers could inform me as to the origin, nature, and treatment of this destructive and contagious disease in timber?

My church has been built for three years apparently of the best materials; and, within the last eight months, a number of fungi have sprung up in the seats, and within a gradual rotting of the flooring and pews has been observable.

The damage is at present confined to a limited space, but shows a marked tendency to spread.

* * The matter is discussed in some of our earlier volumes.

CLAIM FOR WAGES.

JAMES COLMAN, a builder, was summoned to Thames Police-court, on Tuesday, by five of his workmen.

Mr. Pelham, solicitor, appeared for the prosecution, and Mr. Charles Young, solicitor, for the defence. It appeared from the evidence of the complainants that they were in the receipt of 8d. per hour, but that if they were employed a short distance from town they would receive 6d. per hour. On the 18th, at six a.m., they were sent to some work at St. Vincent-street, and were engaged there till half-past twelve o'clock noon on Thursday the 23rd. It was stated to be a recognised rule in the trade to give an hour's notice. The foreman and the complainants gave an hour's notice to leave. The complainants subsequently left for some reason or other, but they stated they gave an hour's notice, but there were some discrepancies in their evidence as to the time they did so.

Mr. Lushington said it was admitted on both sides there was an hour's notice given, but it was clear the men had not done so until after the foreman had given notice. They had broken their contract, and he dismissed the summons.

BUILDER'S CHARGE FOR ESTIMATES AND QUANTITIES.

In the Cirencester County Court, the case James Yatman, reported at length in the *Wills Standard*, been tried.

Mr. W. H. James, of Cirencester, builder, and J. Wm. Hamilton Yatman, of Highgrove House, near Salisbury, for taking out quantities, and making a detailed estimate for some proposed buildings.

Mr. Elliot appeared for the plaintiff, and Mr. Forrest of Malmesbury, for the defendant.

Mr. Elliot, in opening the case, said the original claim was 62. 16s. 6d., but this was reduced to 50l., so to be tried in this Court. Mr. Yatman being desirous making some additions to his house, employed Mr. Thomas, clerk of Works, of Westbury, to make plans, specification, and Mr. James was asked to make a detailed estimate of the cost; for this purpose he had to make a schedule of quantities, to affix the prices, and to mount out the items. As a regular architect was employed, and as Mr. Thomas was in the employ of Mr. Holt, considerable delay took place in the completion of the plans, which were not all delivered to Mr. James at the time he was instructed to commence his estimate, which delay caused several journeys and many alterations in the quantities. The amount of the estimate being more than Mr. Yatman had anticipated, Mr. James suggested to have a new set of plans and specification, to abandon the first set. Subsequently the work tendered for by several builders in competition. James claimed 2½ per cent. on the amount of his

estimate, as well as his travelling expenses to Highgrove and Westbury on several occasions.

Mr. James and his witnesses having been examined, Mr. Forrest, on his behalf, did not object to pay a reasonable sum, but considered that an excessive and out of the way claim. He considered 25 per cent. was excessive, and also that the estimate was excessive. A sum of £250 would have been paid into Court by him from a mistake, and this sum he considered was ample for the services performed. After calling witnesses, he submitted that on the evidence he had adduced, the charge of 25 per cent. was excessive, and that a half per cent. was the outside price which ought to be charged, and he did not think this charge made by Mr. James was warranted.

Mr. Elliott said that the principal consideration in this action was that Mr. Yarnman employing an amateur architect, instead of a properly-qualified professional man, who would at once have made proper drawings and specifications, instead of which Mr. James had to give Mr. Yarnman the information which the architect should have supplied, and for doing which he was clearly entitled to remuneration. Mr. James said that that 25 per cent. was the customary charge by surveyors, and it was ridiculous to think that builders should not be paid for the same work the same amount.

The Judge, in summing up, remarked that Mr. Yarnman had very properly said that he was willing to pay what was asked, and the question was to determine that amount. He thought the balance of the evidence was in favour of 14 per cent. for quantities in the country, and half per cent. for pricing, making 3 per cent. There was a little doubt in his mind as to the travelling expenses, but as this was an exceptional case, he thought he would consider them as included in the per-centage, and therefore gave a verdict of £35, for plaintiff.

CASES UNDER THE METROPOLITAN BUILDING ACT.

DISTRICT SURVEYOR'S FEES.

At the Hammermith Police-court, before Mr. Ingham, on the 31st July, Mr. Knightly appeared in support of an adjourned summons against John Parish, the builder of the house in the back-road, for refusing to pay the District Surveyor's fees.

Mr. Cleland, solicitor, appeared for the defendant, and stated that the defendant was neither the builder, owner, nor tenant, and therefore not liable; and produced a witness who was the owner of the houses in question, and who stated that the defendant had carried out the work for his own pleasure.

Mr. Knightly here produced the written notice given by defendant before commencing the work, which was signed by him as the builder, and which described witness as the owner of the house. It was shown by Mr. Knightly that he had in every way acted as the builder throughout, and was therefore liable for the payment of the District Surveyor's fees, and although in the case of two of the houses the main buildings had been carried up and roofed in by another person, yet the back additions having been carried up and roofed in by defendant, who he finished the houses, he alone, therefore, was liable for payment of the full fees.

The plea was then set up that defendant, who was an itinerate painter, had been employed into giving the notice by the assistant to Mr. Knightly; and produced a witness who stated that this was improbable, as defendant wrote and spelt very well, and was able to judge of the nature of the notice. He thereupon made an order for the amount claimed, with 4s. costs.

COMPETITIONS.

The following letter, sent in reply to an invitation to compete, may be usefully published:—

Sir,—I have received your letter of the 22nd instant, by which you inform that the committee of— (who are strangers to me, and of whose names I am not aware) have done me the honour to invite me to submit designs in competition with five other architects for the proposed building. I do not gather from your letter that any payment is proposed to be made to the competitors.

I have to thank you to express my best thanks to the committee for their confidence, and as I am sure that their invitation was intended as a compliment, I feel it due to them to acknowledge it gratefully.

Considerable experience has led me, however, to the conviction that competition is one of the worst modes of obtaining good designs, and that it is bad for the employer, bad for the architects, and bad for art generally. It is bad for the employer, inasmuch as, among other reasons, it prevents that intimate communication of ideas with the architect during the preparation of the designs which is necessary to prevent future disappointment, and even to secure a correct understanding of what is ultimately proposed. This is one main reason why so many complaints are heard (when it is too late) that the competent use of the building has been sacrificed to more show considerations, such as it is the tendency of competitions to foster and develop.

It is bad for the architects, inasmuch as five men of eminence, to spend their time, labour, and money, and even money, as no architect can prepare competition designs without incurring considerable expense. Nothing of this kind is expected of other professions, but when advice is required, it is sought from those whose reputations, and works before the public, constitute a guarantee of efficiency. No one thinks of asking six eminent architects to design a house, to expect that the ability and taste of one among them may receive professional employment.

It is bad for art generally, as it leads to the preference of those who expect to get architectural design, and because it generally ends in disputes and heartburnings. The Government recently held two competitions, of first-class importance, the National Gallery and the new Law Courts. In neither of these have the promises made to the competitors (on the faith of which the designs were supplied) been carried out. In the latter case, the course of design was destroyed by the Government as "a gross breach of faith with the competing architects."

I entered these competitions by invitation, and contrary to my ordinary custom, believing that they would be free from many of the usual objections, and as I was honoured by the favourable notice of the Judges in both cases, I am the chief sufferer by the circumstances to which I have

adverted. My previous reluctance to engage in competitions has consequently been strengthened, and while fully appreciating the kind proposal of the Committee in the present case, and feeling it due to them to submit this explanation of my views, I regret that I am unable to accept their invitation.

(Signed) EDWARD M. BARRY.

ROBBERY BY BUILDERS' FOREMEN.

JOHN WOODGRAVE, aged 28, a foreman of works, residing at 71, Anerley-road, New-cross, and John Baxter, aged 41, a foreman painter, of 118, Great Suffolk-street, Borough, were charged, on remand, at Clerkenwell police-court, with stealing a large quantity of building materials from an unfinished school building in Eagle-court, St. John's-lane, Clerkenwell, the property of their employer, Mr. Wigmore, builder, of Bradfield House, St. John's, Fulham. The prosecutor is at present engaged in the erection of new schools for the London School Board at St. John's-lane, Clerkenwell. The prisoner Woodgrave was the foreman of the entire works, and Baxter was under him as the foreman of painters. The prosecutor, finding that he was losing a large quantity of materials, spoke to Woodgrave about it, but he said that he had no knowledge of anything having been lost. Mr. Wigmore placed the matter in the hands of James Hill, a detective of the G Division, who ascertained that Woodgrave had sold large quantities of timber as firewood, but when he asked him about it, he said that he had not sold any, whereupon he was taken into custody. The prisoner then gave an address at Zion-villas, Barking-road; but that address was found to be false. Hill continued his inquiries, and ascertaining that Woodgrave resided at New-cross, proceeded there, and in the back-yard of his premises found more than a wagon-load of valuable timber, as well as a large quantity of "cubes," "squares," "blocks," nails, screws, &c. The prisoner Baxter was next suspected of being concerned in the robbery, and upon the prosecutor asking to see the articles that had been given him as the value of himself and the men under him, he said he could not, as some of them had been stolen, but by whom he could not say. He went with Baxter to his residence, and there in a shed found some of the stolen timber, as well as other property, and upon asking him to account for its possession, he replied that it had been given to him by Woodgrave.

Mr. Ricketts said, that in addition to Woodgrave stealing the prosecutor's building materials, he had also robbed him of money, for he had overcharged the men's times, and had taken the surplus to his own use. The prosecutor, however, would be content with the case being settled here in preference to its going to the sessions if the prisoners pleaded "Guilty." The prisoners pleaded "Guilty." Woodgrave was sentenced to six months' hard labour, and Baxter to three months'.

WREN'S INTENTIONS IN RESPECT TO THE DECORATION OF ST. PAUL'S.

SIR,—I have just come into possession of a large and old engraving of the interior of St. Paul's. This plate may possibly be well known to architects. It is curious, inasmuch as neither paintings nor mosaics are foreshadowed in the dome, whereas figures of the prophets are adumbrated in the spandrels beneath. If the history of this plate were known, it might serve as one of the stepping-stones either to Wren's intentions or wishes respecting the decoration of the cathedral.

W. CAVE THOMAS.

THE DESTRUCTION OF DWELLINGS OF THE POOR.

The great grievance of the displacement of the poor from their dwellings to make room for railways and other public works is likely at last to receive some mitigation. Mr. Cross has brought forward resolutions, to which the House of Commons has heartily agreed, requiring that,—

"In the case of any Bill by which power is sought to take, in any city, town, or parish, fifteen houses or more, occupied either wholly or partially as tenants or lodgers, or persons belonging to the labouring classes, the promoters be required to deposit in the Private Bill Office, on or before the 31st day of December, a statement of the number (so far as they can be ascertained) of persons to be displaced, and whether any and what provision is made in the Bill for remedying the inconvenience likely to arise from such displacement, and that such statement be referred to the Committee on the Bill."

"In every Bill by which power is sought to take, in any city, town, or parish, fifteen houses or more occupied either wholly or partially as tenants or lodgers, by persons belonging to the labouring classes, a clause shall be inserted to enact that the company shall, not less than eight weeks before taking any such houses, make known their intention to take the same by placards, handbills, or other general notice placed in public view upon or within a reasonable distance from such houses, and that the company shall not take any such houses until they have obtained the certificate of a justice of the peace in England, and of the sheriff in Scotland, that it has been proved to his satisfaction that the company have made known their intention to take the same in manner required by this provision."

"In every such Bill a clause shall be inserted, if applicable, requiring the promoters to procure, within a time to be limited, sufficient accommodation for persons belonging to the labouring classes who will be displaced under the powers of the Bill."

"The committee upon every such Bill shall report specially to the House—1. Whether such a clause has been inserted in the Bill; and, if not, the grounds upon which the committee have decided it to be inapplicable. 2. The several circumstances affecting the displacement

of persons by the operation of the Bill, and the means by which other accommodation is to be provided for the persons to be removed. That these orders be standing orders of the House."

THE TRADES MOVEMENT.

A QUESTION affecting masons has been decided at Worship-street, London. A man summoned his master for wages due to him, the complainant having discharged himself at two o'clock on the 10th of June without any notice. The plaintiff declared that it was the custom of the trade for men to discharge themselves when they chose, being paid up to the time they worked, and eleven witnesses were called to support his statement. The magistrate considered the complainant had proved the custom was that of hiring from hour to hour as long as either party pleased. He made an order for the payment of the wages. At the Thames Court there has been another question as to the hour's notice, as a claim for wages, to which was elsewhere referred.

A crisis impends in the slate-trade of North Wales. The workmen engaged by Lord Penrhyn some time ago received notice from his lordship that if they joined the North Wales Quarrymen's Union he must close his quarries, which are the most extensive in the world. The men disregarded the monition, and, on the contrary, have, to the number of about 2,500, and nearly without exception, joined the union. A letter has been sent by them to Lord Penrhyn, requiring an advance of wages to 30s. per week for quarrymen, and 25s. per week for labourers, and an alteration of the present system, which restricts a party of men working the rock from making as much money as they might earn. Unless the demands are acceded to, the workmen have intimated to his lordship that they will discontinue work. A meeting was held at the quarries, and, awaiting Lord Penrhyn's reply, the quarries were temporarily deserted. Mr. John Francis, the chief agent at the quarries, has, it is said, given notice to the aged workmen and weathers engaged in them that they will not be required any longer. This treatment of the old people who had spent their lifetime at the works is universally condemned, and is likely to affect adversely the settlement of the rupture.

The *Labourers' Union Chronicle*, in an article on the abandonment of the labourers' lock-out, demands an uprising of the entire moral and, if necessary, physical force of the people of this country, to declare with voice of irresistible authority that the combination of landlord and farmer shall not prevail (while the combination of labourers, we suppose, shall).

Ten labourers have been convicted at the Suffolk Summer Assizes, of a conspiracy to intimidate non-unionists and their employer by threats of violence. They were ordered, on their own recognisances, to come up for sentence at a future time if called upon.

CHURCH-BUILDING NEWS.

Worlaby.—The church here has been re-opened for Divine service. The principal portions of the previous structure that have been utilised in the present church are the tower archway, the arcades—the side window and grotesque corbels in north aisle—and a few carved terminals to wood mouldings of windows. The church consists of a tower, nave, north and south aisles, vestry, and organ-chamber, with chancel divided from the nave by arched timber framing relieved by tracery. The south entrance is sheltered by an oak porch, crisped and moulded. The tower contains a peal of three bells (hung by Mr. George Ashton, of Worlaby), with a clock on the west side. The carting was done by the tenants. The walls are of chalk, quarried on the estate, faced outside with Kirlon Lindsey stone, the exposed faces on each side hammer-dressed. The wrought-stone is from Corsham-down. The tower is covered by a spire-shaped roof, with ornamental wrought-iron finial, and gilt vane; the lower story of the tower is used as a baptistery. The old church was in a dangerous and dilapidated condition, and in pulling down the walls plinths of two former churches were discovered at much lower levels. The vicar, having removed some of the whitewash, the inner surface of the walls was found to be profusely ornamented with diaper and scroll-work in distemper, the tints being faint red, ochre, slate, black, and primrose, interspersed with early English texts. He also discovered a full-sized

figure of "Death" on one side of the tower archway, and a winged figure on the other.

Earl Stotham.—Stonham Aspal church was restored and opened about a year ago, and now the sister church of Earl Stotham is undergoing like renovation and alteration. The church is to undergo a good deal of restoration, the rector, the Rev. J. Casley, proposing to spend 600*l.* on the chancel, while the work in the rest of the church will cost, it is estimated, 1,400*l.* or 1,500*l.* The nave-roof will be left as it is, and it is intended to put up carved oak-roofs over the nave and transepts, to correspond with it so as to carry the design through the entire edifice. The walls of the building, which are stuccoed, are in a dilapidated condition, especially in the north transept, and some parts will have to be taken down and rebuilt. In the interior the pews, which are high-backed, will be removed, and the church re-benched throughout. The estimated outlay is expected to cover also the warming of the church with a hot-water apparatus, and the paving with tiles by Messrs. Maw, of Staffordshire. The architects engaged in the work are Messrs. Cory & Ferguson, of Carlisle; Mr. Gibbons, of Stonham, is doing the woodwork; Mr. Godbold, Harleston, is the carver; the masonry and brickwork being carried out by Messrs. Wells, of Dickleburgh and Kemp, Stonham Aspal.

Dorking.—The foundation-stone of the new church of St. John the Evangelist, North Holmwood, has been laid by Lady Mary Legge. Mr. Robde Hawkins is the honorary architect. The new church, which is intended to provide accommodation for about 280 persons, will consist of a nave, chancel, vestry, and organ-chamber, tower, and a spire of oak shingle, with a porch under the tower. The building will be of brick, faced with flint, stone, and Bath stone dressings. The estimated cost is about 2,500*l.*, and Messrs. Goddard & Sons, of Farnham and Dorking, who have the contract, are expected to finish the work in about six months. It is hoped by that time the committee will be enabled to proceed with the building of a parsonage-house.

Malvern.—Emmanuel Church (Lady Huntingdon's), situated on the Ledbury-road, has been rebuilt and re-opened. Instead of a plain brick building, there now appears a stone edifice, surmounted by a lofty spire. The entire cost of the church was said to be nearly 3,000*l.* The stone carving was executed by Mr. H. H. Martyn, formerly of Worcester (firm of Martyn & Emus, sculptors, Cheltenham).

Borrowdale.—The Church of Borrowdale, the little whitewashed church in the valley of Stonethwaite, beneath the shadow of the rugged slopes of Garamara, and familiar to pedestrians who have tramped into Langdale by the Stake, has been re-opened for Divine service by the Bishop of Carlisle. The interior has been renovated. The old pews have been replaced by benches of modern make, three white stone double-light lancet windows, filled with cathedral glass, and decorated with stained borders, have been placed on each side; the roof timbers are disclosed to view and varnished, and a new chancel has been built of the slate of the district, lighted by three lancet windows, filled with stained glass, illustrative of incidents in the life of Christ; and this chancel is separated from the body of the church by a large pointed arch of stone. The cost of the alterations has been between 600*l.* and 650*l.*

Cleveland.—The foundation-stone of a new church has been laid at Faceby, in Cleveland. The new edifice, which is being built on the site of the old one, is to be of plain character, and will cost nearly 1,000*l.* The architect is Mr. Falkenbridge, of Whitby, and Mr. Barton, of the same place, is the contractor for the whole of the work.

Castleton.—The church here has lately undergone a restoration, the architects employed being Messrs. Stevens & Robinson, of Derby. The chancel-arch is a specimen of Norman architecture. It has been carefully scraped and painted. The east and south windows of the chancel have been restored in the Decorated style. The vestry is the eastern part of what appears to have been a north chapel, extending the whole length of the chancel, the western part of it being now thrown to the chancel again by an arch. This portion contains a library, the gift of a former vicar, and will afford accommodation for the organ, if at any time it is thought desirable to remove it from the western gallery. The chancel, though long, is narrow. The side windows of the nave have been restored in an inexpensive manner.

Cury (Cornwall).—The parish church of Cury, some six miles from Helston, has been formally opened by the bishop of the diocese, after having been restored. The edifice is one of the oldest in the county, and had fallen into a disreputable condition. The Rev. A. L. Cummings, the late vicar, and now rector of St. Paul's, Truro, raised the necessary funds mainly from amongst his friends, and acted as architect. The building, as it now stands, consists of a nave, continuous chancel, a south aisle or transept, a north aisle, western tower, and southern porch. The nave is divided from the north aisle by a range of seven bays. The church is of three different ages, the oldest part being late Norman. Of this there remains the south wall of the nave, containing the original doorway, which is curiously carved. The nave belongs to the fourteenth century, and the north aisle to the fifteenth. There is a hagiocope between the Bochym aisle and the chancel; there are also the remains of two wood-loft staircases, one on each side of the church. The work of restoration has been carried out entirely by the Rev. Mr. Cummings, assisted by the village mason, the village blacksmith, and the village glazier, at a cost of 900*l.* The whole of the north wall has been taken down and rebuilt; the roof of the north aisle has been repaired and braced inside, being enriched with carved oak bosses; the roof of the nave, chancel, and Bochym aisle has been re-constructed; the church re-seated and fitted; and every window re-glazed with cathedral glass. The expense attached to the restoration of the Bochym aisle was borne by Messrs. Richard & Sidney Davey, of Bochym; the whole of the glass used was given by Mr. A. Bell, of the firm of Clayton & Bell; Mr. W. Webster, of Blackheath, presented the carved bosses; and Mr. W. Copeland, the well-known manufacturer of pottery, contributed two porcelain commandment-tables and a new set of communion-plate. The Rev. Mr. Cummings painted the two windows which remain. One in the lower represents the four evangelists; the other, over the font, represents the infant Saviour and the Adoration of the Shepherds. In the Bochym aisle the window still continues to bear the Davey arms.

Withold (Cornwall).—The old church of Withold, six miles west of Bodmin, is undergoing alterations. The roofs have been covered with duchess Delabole slate, and the walls will be cleaned and pointed. The tower is in a good state of preservation, with a minaret on each corner. It is also intended that this shall undergo a renovation.

Sheffield.—A new church, which has just been built at Owlerton, and which is dedicated to St. John the Baptist, has been consecrated by the Archbishop of York. The church has been built in connexion with St. Philip's, the accommodation of which has been felt to be inadequate to the requirements of the parish. The building is of simple Early Gothic character. The plan has nave, and north and south aisles 70 ft. 6 in. long, chancel 24 ft. in length, with roomy vestry and south porch. The interior is 48 ft. high to the apex of the nave roof, which is open timbered. The total cost has been about 3,400*l.* Mr. J. B. Mitchell Withers, of Sheffield, is the architect. The church is constructed to seat about 600.

VARIORUM.

We get the following concerning "a yard measure," from the *World of Wonders* for August:—"Down to the year 1824, the standard yard of the country was a rod which had been deposited in the Court of Exchequer in the time of Elizabeth. All measures intended for general use were brought to be examined by an officer of the court, placed parallel with the standard, and stamped with certain marks if found to be correct. Their use for business purposes was thenceforth legal. By an Act of Parliament passed in 1824, this old standard was superseded by another, which had been constructed under the auspices of the Royal Society in 1760. The Act provided that 'The straight line or distance between the centres of the two points in the gold studs in the brass rod now in the custody of the Clerk of the House of Commons, shall be the original and genuine standard of a yard; and the same straight line, the brass lying at the temperature of 62° of Fahrenheit's thermometer, shall be the unit or only standard measure of extension.' The provision as to comparison with the thermometer was founded on the well-known fact of the extension or contraction of metals at different temperatures, and illustrates the nicety

with which all circumstances relating to the standard of measure are considered and adjusted. This standard was destroyed by the fire which consumed the Houses of Parliament in 1834, and a commission was appointed to replace it. It had previously been enacted that 'If at any time hereafter the imperial standard yard should be lost, or in any manner destroyed, defaced, or otherwise injured, it shall be restored by making under the directions of the Lords of the Treasury, a new standard yard, bearing the proportion to a pendulum, vibrating seconds of mean time, in the latitude of London, in a vacuum, at the level of the sea, as 36 in. to 391,393 in.' The labour of reconstruction in accordance with this enactment was commenced by the celebrated astronomer, Mr. F. Baily. He died in 1844, leaving his researches to be continued by Professor Sheepshanks; and on the death of the latter gentleman in 1855, the work was taken up and completed by the present Astronomer Royal, Mr. G. B. Airy. Nearly a quarter of a century thus elapsed between the destruction of the standard and the completion of another to succeed it. The new standard yard measure deposited in the House of Parliament, the authenticated copies of it at the Court of Exchequer, the Royal Mint, the Royal Society, and the Royal Observatory at Greenwich."—The *Quiver* gives us a few words about "Cashel elsewhere referred to:—"This is worth fighting for!" said Cromwell, as he looked across the Golden Vale of Tipperary, stretching away southward to the blue range of the Galtee mountains, and eastward reaching up its tributary Cashel of the Kings. Well might he say it little as Cromwell cared for the old historic and saintly memories of the towers that crowned rock; yet what he and his Ironsides thought worth fighting for, is at least worthy of being remembered. A great hill that stands alone and which (corresponding in shape to a gap the crest of the Devil's Bite range) is said to have been bitten out of that old Cashel, and dropped from it, a magnificent expanse of rich, undulating plain, embracing the Golden Vale and bounded by the distant hills of Waterford, Cork, and Limerick, as well as by own beautiful mountains of Galtee and Kynemolden. The lights and shadows that sweep over them fitfully like the change and chance of time,—a deep, suggestive stillness,—this latter reader imagines, and he has the setting of a scene which are so eloquent, ay, and a worthy setting. The royal residence of the ancient kings; Munster took its name from a stone which remains within the old cathedral's precincts called *Caiseal*, *Caisil*, or *Cashel*, 'the stone of tribute.' Here the subject chieftains came with their offerings and paid their homage. The modern town lies partly on a slope descending from the rock, and partly in a hollow; and the thirteen roads which radiate from it in all directions have been well compared to 'spokes of a wheel.' There is something very suggestive in the fact that the stout and solemn of the horses have never broken the impressive quietude of the place; no railway coming nearer than Gould's Cross, about five miles away."

"Permit me," writes a correspondent in *Gardener's Magazine*, "in this time of drought to say a word about draining the lawn. To note will, of course, only refer to cases in which drainage is essential. My lawns, three in number, are all on a low level, in close proximity to water, and the soil is so heavy that water did not readily escape from it. In dry seasons the earth cracks. In wet seasons it becomes water-logged that we dare not tread on the grass, unless we particularly wish for mud, which case we may have plenty of it; for the boggy ground then squeaks and groans as the pressure of the foot acts upon it, in consequence, I suppose, of the entanglement of air in the bit of the soil by its excessive absorption of water. You may think my lawns wretched, but, indeed, they are beautiful; and, barring extreme drought, or extreme wet, they give me great delight, and all who see them declare them perfect. At the present time, however, they are characterised by a fault that I think may properly form the subject of a note that may be useful to your readers. I long drought (we have had but little rain for six months) has brought out distinctly in six or seven brown bands the lines of the drain-pipes, and I dare say many lawns that have pipe-drains beneath them show the course of the drains in a similarly objectionable manner. The long streaks of brown will remain until the October rain wash them out, and thus for a considerable portion of the summer season my lawns are disfigured

by the very means that have been adopted to render them perfect. But what, it will be asked, is the kind of advice I would base upon this observation? Oh, clearly that lawns should not be drained at all, and I am quite satisfied that if they are as full of water as they will hold, and every way like a saturated sponge for weeks together, it does the grass no harm; whereas, if you lay down drains you ensure their disfigurement whenever we are favoured with a hot dry season. To say that lawns should not be drained is, of course, heterodox. Yes, it is heterodox; but I see the way out of the difficulty. Let all walks and borders that about on grass lawns be provided with roomy drains to take surplus water from the lawns; but not have a drain of any kind actually beneath the grass. This advice, it will be observed, is founded on experience, that I have had to pay for."

Miscellaneous.

The Rain-Storm Overflows from the Sewers.—At the last meeting of the Court of Common Council, Mr. Deputy Hore asked whether the Metropolitan Board of Works were taking any, and if any, what, steps to prevent the serious inundations after rain-storms, causing great destruction of property, pecuniary loss, and danger to the public health. Mr. Deputy Horeman Taylor, in reply, read a letter from Mr. Joseph W. Bazalgette, in which he said, "This Board has diminished the extent and frequency of floodings by carrying off through the intercepting sewers rainfall to the amount of quarter of an inch in depth spread over London in twenty-four hours. But on the 11th instant rain-fall in the East End of London amounted to an inch and a half in one hour, or 150 times more than our intercepting sewers and pumps could take. Such storms can only be carried off by what are termed 'the storm overflows,' which discharge by gravity into the river. These must be above the level of low water, and many of the basements connected with them are so deep that when the sewers are full the water flows back into them. This is the great cause of flooding." The subject is now under the consideration of the Works Committee.

Milner's Safes.—The prospectus has been issued of Milner's Safe Company (Limited), with a capital of 150,000l. in 15,000 10s. shares, 9,000 of which are now offered for subscription, and are already quoted, we observe, at 2½ premium, for the purpose of taking over the business of Messrs. Thos. Milner & Co., safe manufacturers, of Liverpool, Manchester, London, &c. The business has been established for nearly a century, and the recent change is stated to be necessitated by the declining health of the head of the firm, and the responsibility attached to a large trade. The plant, machinery, tools, materials, and goods, have been valued at 57,634l., and the sum to be paid for patents, goodwill, rights on existing contracts, &c., at 50,000l. The purchase-money is 155,452l., in addition to 2,268l., the cost price of the stock in the hands of the agents; and it is stated that the vendors will take in part payment of the purchase-money, 35,000l. in fully paid-up shares of the company, and 60,000l. in debentures at 6 per cent., redeemable over a period of thirty years on 1st June, 1879. More particulars as to this new form of a well-known old and prosperous business will be found in our advertising columns.

Accidents.—The roof of the back portion of a College Inn, at Rotherham, has fallen in, and one was in the attic at the time. Although a portion of the principal beam of the roof which broke went through the floor of the inn, very little damage was done. An accident has occurred at Manchester, in connection with one of the large water-pipes running through Market-street. A report resembling that of an explosion was heard, and a portion of a pavement at the end of Brown-street was lifted in all directions. The water main, it appeared, had given way, and the water reached considerably above the roofs of the buildings, and flooded the streets several inches deep. About an hour and a half elapsed before the stop-tap in the London-road district was turned off. In the meantime the streams of water had been playing in the Commercial Hotel, many of the windows of which were broken.

The Cost of School-Boards.—A return has been printed by order of the House of Commons with regard to the extent to which the rates have been called upon in School Board districts during the twelve months ended September 29th, 1873. It appears that in twenty-four parishes in England and Wales the current expenses of the School Boards involved a demand upon the local rates of 9d. and upwards in the pound. The rate varied from 1d. to 3d. in fifty out of the ninety-six boroughs which had issued precepts to the Town Councils; while the average, as far as non-municipal parishes are concerned, was somewhat higher. The highest rate of this latter kind is that of Belchford, in Lincolnshire, viz., 1s. 9d.; and in the case of boroughs, 7½d. at Chard. The average for our eight largest towns was 1½d., ranging from ¾d. at Salford to 3d. and 4d. at Bradford and Leeds, in which two latter districts considerable expense has been incurred in the provision of the necessary school accommodation. The rateable value of the metropolitan district is so great, being upwards of 20,000,000l. sterling, that the precepts issued by the board do not represent an annual rate of more than 9—10d.

Pollution of the River Lea.—A large and influential meeting of the inhabitants of Upper Clapton and of Hackney was held at the Manor-rooms, in that borough, last week. The chair was occupied by Major Gibbs, of Upper Clapton, who explained to the meeting that the condition of the river had become so unbearable that the present state of things should be brought prominently before the Local Government Board. With this object the present meeting had been convened. Three medical gentlemen addressed the meeting, and were unanimous in denouncing the present condition of the river, giving as their unqualified opinion that many cases of disease within their own recent experience were attributable to the unhealthy state of the stream. It was stated that the outlet of the Tottenham Sewage Works caused the water to be little better than an open sewer. A series of resolutions were unanimously agreed to, and a deputation formed to wait upon the Local Government Board.

Bursting of a Reservoir.—The American papers contain accounts of a disastrous flood which occurred on the 13th and 14th of July, in Western Massachusetts, caused by the bursting of the Middlefield Reservoir. The railroad bridge, the highway bridge, and two dwellings at the Middlefield station were destroyed. At Chester, four highway bridges, a barn, shop, and mill were swept away, and two railroad bridges partially destroyed. Every one of the six or seven bridges on the Boston and Albany Railroad between Middlefield and Huntington was either wholly or partially destroyed. The reservoir covered nearly 100 acres, and was built about thirty years ago. It was made by raising the main road from Middlefield centre to North Bocket, the hills on either side of the stream forming the sides. The dam gave way once before it was finished, but since its completion it has been regarded as safe. The total damage is estimated at \$350,000.

Racquet Courts for Manchester.—A meeting has been held in the Manchester Town-hall, for the purpose of promoting a scheme to build two closed racquet-courts in Manchester. Mr. H. C. Langton presided. Mr. V. R. Armitage said the scheme involved the purchase of 660 yards of land, which it was estimated would cost about 3,600l. The cost of the building of the courts would amount to 2,600l., and the total cost was estimated at about 6,500l. It was proposed to raise the money by shares of 3,000l. had already been promised, 1,000l. more might at once be bought. It was further suggested that the courts built might be let to a club. It was resolved that two racquet-courts and necessary offices should be erected within a radius of one mile from the Exchange, and 4,000l. be raised for the purchase of the land, and the remainder of the capital by mortgage and letting the courts to a club. The meeting appointed a committee to carry out the details of the scheme.

The Rivers Pollution Commission.—In the House of Commons Mr. Solater-Booth has stated, in reply to Mr. L. Playfair, that the Rivers Pollution Commission have made five valuable reports, and the sixth and final report, he was told, would soon be ready. When he obtained it he would have the recommendations of the Commissioners embodied in a Bill.

Derby School.—The foundation-stone of the new Royal Class-rooms, resolved upon in December, 1872, when the Prince and Princess of Wales visited the borough on their way to Chatsworth, has now been laid. When 3,500l. had been raised, the building was commenced, and the Duke of Devonshire, lord-lieutenant of the county, and chancellor of the University of Cambridge, was announced to lay the foundation-stone on the last anniversary of the royal visit, in December. Delays have occurred, however, and the Duke has only now laid the stone. The architects are Messrs. Thompson & Young; and the contractor, Mr. C. Humphreys, all of Derby. The memorial-stone is flanked on either side by the arms of the Prince of Wales and the Duke of Devonshire in bas-relief and proper heraldic colours, and bears an inscription.

Rainfall and Water Supply.—The rainfall for the past quarter was 4.2 in. at Greenwich, which was 1½ in. below the average of the corresponding period in 59 years. In the six months ending May the rainfall was only 4.49 in., and was 6.40 below the average. This remarkably small rainfall in these six months is without precedent, the nearest approach to it being in 1847 when the amount measured in the same period was 7.1 in. The importance of the circular sent by the Local Government Board to sanitary authorities in respect to the sufficiency of their water-supply is thus corroborated, as regards at least some part of the country, and so are the warnings of Professor Symonds as to the east of England, of which we have already spoken.

Opening of the Snow-hill Railway Station.—On Saturday the new low-level station at Snow-hill of the London, Chatham, and Dover Railway, was opened to the public. This station is in connexion with the Holborn Viaduct high-level terminus, which is approached from the new Snow-hill Station by a covered way and flights of steps on each side. It is reached by a wide staircase on the north side of the Viaduct, and is built upon strong iron girders carried in an oblique direction over and across the railway. The booking-offices are on a level with the landing at the foot of the upper staircase, and the railway level and station platforms are approached by a second flight of steps leading from the booking-offices.

Irish National Monuments.—Mr. M. Henry asked the Chief Secretary for Ireland whether it was the intention of the Board of Works in Ireland to carry on the repairs of the national monuments for which funds had been vested in them under the 25th and 26th sections of the Irish Church Act, without obtaining the assistance of an inspector specially skilled in the ancient architecture of Ireland. In reply, Sir M. H. Beach said the Board of Works in Ireland considered that their duties in reference to these monuments were confined to their preservation rather than their restoration. If any necessity should arise for them to have the advice of an archaeologist they would obtain it.

Art at Stirling.—The late Mr. Thomas Stewart Smith, artist, and a native of Stirling, recently bequeathed a sum of 20,000l. for the purpose of establishing an institution in that town for the promotion of the fine arts. It was his intention that during his life the institution should be established, and with that view he had collected a large number of paintings, valued at about 15,000l.; but his death prevented the carrying out of his design in its entirety. The building is in the Italian style of architecture, and it is picturesquely situated. The fine-art gallery is 105 ft. long, 43 ft. in breadth, and of proportionate height, the light being from the roof.

The Burlington House Colonnade.—In reply to Mr. B. Hope, in the Commons, Lord H. Lennox said it cost 850l. to remove this colonnade to Battersea Park, and it would cost between 2,000l. and 3,000l. to erect it. As the hon. member was the cause of the colonnade being removed to Battersea, he would ask him where he thought it ought to be placed, and where was the money to come from. Mr. Hope, in answer, gave notice to repeat the question next session.

Kensington Museum.—It is understood that the Kensington Exhibition Galleries are to be utilised very shortly, for the purpose of exhibiting the contents of the Indian Museum, the east side of the building having been let to the India Office at a rental of 2,500l. per annum.

The New Deaf and Dumb Institution, Tyndall's Park, Bristol.—This building is now all but completed. It is intended to accommodate between seventy and eighty children. Their new residence will form a pleasant contrast to the dingy premises in Park-row. The newly-built institution is situated at the end of the short roadway leading into the Park, opposite the Victoria-rooms. The building is Domestic Gothic in style, and it is built of new red sandstone, relieved with freestone, the roof being of slate, with ornamental tiles running along the ridge. The cost of the building will be about 7,500l. The builder is Mr. Gay, of Bristol. The architect is Mr. J. Bevan, of Bristol.

Bow-street Police-court.—In reply to Mr. R. Gurney, in the Commons, Lord H. Lennox said it was true that a sum of money was expended last year, under the sanction of Parliament, for the purchase of a site in Castle-street, Leicester-square. This year, however, owing to representations made by the Home Secretary, the Department had resolved to look out for a site in another part of London, which would be more convenient for carrying on the police duties of the metropolis.

The Lithographer.—We are informed that the *Printing Times*, hitherto published by Mr. Alfred Gadsby, at 18, Bourne-street, Fleet-street, is now incorporated with the *Lithographer*, and will in future be published by Messrs. Wyman & Sons, at 74, Great Queen-street, Lincoln's-inn-fields. The somewhat exclusive name of the *Lithographer* will be relinquished in favour of the comprehensive title of the *Printing Times*.

Guildhall, London.—On the motion of Mr. James Edmonstone, it has been resolved,—"That the architect be instructed to prepare and submit for the approval of the Court a complete design for the polychromatic decoration of one bay of the wall-surface and roof of the Guildhall, drawn to a large scale, so that the decoration done from time to time, when the hall is prepared for great occasions, shall be part of a well-considered whole, and not, as at present, a fragmentary effort."

Runcorn Parish Church struck by Lightning.—Runcorn has been visited by a violent thunderstorm, during which the parish church was struck by the lightning. The electric force struck the wall just above the roof of the south side aisle, knocked down a small portion of the stonework, broke some of the slates, and penetrated the roof, but little damage was done.

Metropolitan Improvements.—A new street is projected in St. Luke's, says the *Islington Times* and *Finsbury Advertiser*, to form a communication from Whitecross-street to Golden-lane. Two strips of land belonging to Messrs. Tabb & Lewis and Mr. Elkington, respectively, in London-passage, are to be acquired for the commencement of the thoroughfare, at a cost of 1,667l.

Improvements in the City of Bristol.—The town council of Bristol have decided to spend nearly 200,000l. in various street improvements, principally with the object of relieving the traffic in the over-crowded streets of the centre of the city. This sum will increase the indebtedness of the corporation to about a million and a quarter sterling.

Kensington Palace.—The south wing of Kensington Palace, formerly occupied by the late Duke of Sussex, and afterwards by the duke's widow, the late Duchess of Inverness, is undergoing repairs and alterations as the future residence of the Princess Louise and the Marquis of Lorne.

New Bridge at Maidstone.—A report by the local paving committee, presented to the local Board, states that the committee have "reason to hope that the Rochester Bridge Estates will, before long, be made available for a new bridge."

Frome Market.—The contract for New Market Buildings at Frome, Somerset, has been taken and the work commenced by Messrs. Browns. Mr. Stent, of Warminster, is the architect.

The Grocers' Company's School Competition.—The Grocers' Company, showing very little regard for public opinion in the management of their competition, have awarded the first premium to Mr. Theophilus Allen.

The Southborough Surveyorship.—Mr. Thomas Thompson, of Tunbridge-wells, has been elected by the local Board as their surveyor.

TENDERS

For police station, Bridge-lane, Bridge-street, Blackfriars, for the Honourable the Corporation of the City of London. Mr. Horace Jones, architect:—

Carter & Son	2,770 0 0
Kirk & Co.	10,400 0 0
Ashby & Son	20,180 0 0
Holland & Hannen	10,163 0 0
Leitch & Co.	9,738 0 0
Perry & Co.	9,876 0 0
Conder	9,970 0 0
Hart	9,958 0 0
Merritt & Ashby	9,957 0 0
Small	9,960 0 0
Hill, Higges, & Hill	9,934 0 0
Bracher & Son	9,789 0 0
Browne & Robinson	9,650 0 0

For new premises, High-street, St. Giles's, for Messrs. Nutter & Greenland. Mr. F. Beaton, architect. Quantities by Mr. W. S. Trevelyan:—

Patman & Fotheringham	25,475 0 0
Macey	5,083 0 0
Simpson & Baker	6,032 0 0
Kunsmunt	4,875 10 0
Newman & Mann	4,938 0 0
Bracher & Son	4,489 0 0
Martin	4,958 0 0
Coleman & Son	4,475 0 0
Small	3,975 0 0

For vestries, residence, choir, schools, &c., in Booth-land, Wells-street, Oxford-street, for the Vicar of St. Andrew's Church. Mr. E. C. Robins, architect. Quantities by Mr. Frederick Lee:—

Newman & Mann	24,880 0 0
Gregory	4,779 0 0
Kirk	5,500 0 0
Hobson	4,675 0 0
Fairchild	4,489 0 0
Crockett	4,880 0 0
Bangs & Co.	4,265 0 0

For new schools for the London School Board, at Gipsy Hill-road. Mr. E. R. Robson, architect. Quantities by Messrs. Gardner, Son, & Theobald:—

Fritchard	26,700 0 0
Newman & Mann	6,740 0 0
Sevels	6,550 0 0
Scrivenner & White	6,468 0 0
Niblett	6,468 0 0
Williams	6,450 0 0
Rick	6,248 0 0
Aitchison	6,245 0 0
Nightingale	6,212 0 0
Deacon	6,148 0 0

For rebuilding No. 8, Castle-street, for Mr. C. F. Kell. Mr. H. B. Cotton, architect. Quantities by Mr. McIntyre North:—

Woodward	24,400 0 0
Wagstaff	2,279 0 0
Newman & Mann	4,168 0 0
Brass	3,540 0 0
Patrick	3,880 0 0
McLachlan	3,794 0 0
Manley & Rogers	3,724 0 0
Toms	3,623 0 0

For new German church and house at Dalton, for the Trustees of the German Hospital. Messrs. Habersham & Brock, architects. Quantities supplied:—

Church.		House.	
Lawrence	24,810 0 0	£3,281 0 0	0 0
Sharpton & Cole	4,787 0 0	3,221 0 0	0 0
Brown & Robinson	4,689 0 0	3,193 0 0	0 0
Carter & Son	4,789 0 0	2,929 0 0	0 0
Scrivenner & White	4,483 0 0	2,983 0 0	0 0
Manley & Rogers	4,650 0 0	2,887 0 0	0 0
Newman & Mann	4,185 0 0	2,995 0 0	0 0

For alterations, Rathbone-place. Mr. T. C. Clarke, architect. Quantities by Mr. Barrett:—

Colls & Sons	23,828 0 0
Ashby & Son	5,834 0 0
Coleman	5,814 0 0
Conder	5,795 0 0
Brown & Robinson	5,770 0 0
Scrivenner & White	5,681 0 0
Newman & Mann	5,632 0 0
Macey	5,695 0 0
Patman & Fotheringham	5,524 0 0
Merritt & Ashby	5,330 0 0
Simpson	6,139 0 0

For alterations and additions to Shirley vicarage. J. Meggett, architect:—

Hardwick & Son (accepted)	2431 10 0
---------------------------	-----------

For the erection of a residence on the Blossom Estate, Solihull, for Mr. John Bonney. Mr. J. Meggett, architect:—

Lidley (accepted)	2621 0 0
-------------------	----------

For the erection of a new rolling-mill, Sheepcote, Birmingham. Mr. J. Meggett, architect. Quantities supplied:—

Toft (accepted)	2945 0 0
-----------------	----------

For farm house, cottages, and other buildings proposed to be erected at Salsley. Quantities by Mr. Meggett:—

Brooks (lowest tender)	21,500 0 0
------------------------	------------

For bonded stores and warehouse, for Messrs. L & Sons, exclusive of ironwork in girders and columns. Messrs. Whitley & Fry, architects. Quantities supplied by the architects:—

Shiff	22,309 0 0
Bourne	2,190 0 0
Wise	2,172 10 0
Mathews	2,160 0 0
Nightingale & Bushell	2,143 9 5
Richardson	1,690 17 11
Brooks & Slade	1,933 19 0
Reid	1,900 0 0
Adcock (accepted)	1,900 0 0
Ansoncomb	1,748 0 0

* Too late. † Accepted, but withdrawn.

For the erection of a new brewery, with offices, cellars, &c., for Messrs. Nash, Bedford. Mr. G. Scamell, 18, Great George-street, Westminster, architect. Quantities supplied by Messrs. Curtis & Son:—

Porter	26,178 0 0
Orchard	3,800 0 0
Porter	3,655 0 0
Carter	3,700 0 0
Day	3,369 10 0
Claridge	3,254 0 0
Porter (accepted)	3,254 0 0

For new wing, Turkish, and other baths, to Hydro-Establishment, Thrale House, Streatham, for Mr. J. Hestermann. Mr. W. H. Tyndall, architect:—

Gray	21,985 0 0
Bassett	1,750 0 0
High (accepted)	1,735 0 0

For new boarding-house and residence, at Mill Hill, the Rev. Mr. Harley. Mr. C. F. Hayward, architect. Quantities by Mr. Morris Evans:—

Roberts	28,523 0 0
Greenwood & Sons	6,298 0 0
Cooper	5,155 0 0
Stimpson & Co.	5,180 0 0

For new boys' and infants' schools, and alterations present girls' school, at All Saints', South Acton. Mr. Edward Monson, jun., architect:—

Jackson & Shaw	21,903 0 0
Cowland	1,698 0 0
Manley & Rogers	1,648 0 0
Temple & Forster	1,447 0 0
Nye	1,368 0 0
Henning & Sons	1,350 0 0
Simpson & Baker	1,301 0 0
Blick (accepted)	1,250 0 0

For alteration to shop in High-street, Acton, W. Edward Monson, jun., architect:—

Blick	2,206 0 0
Bydman	206 0 0
Simpson & Baker (accepted)	178 0 0

For alterations, additions, and repairs, at Havering Chapel, South Hampstead. Mr. W. Burnett, architect. Quantities supplied by Mr. G. G. Stanham:—

Adamson & Sons	21,841 0 0
Newman & Mann	1,910 0 0
Colls & Sons	1,893 0 0
Hockley	1,835 0 0
Parker	1,656 0 0
Saywell	1,400 0 0

TO CORRESPONDENTS.

W. H. W. J. D. C. R. M. F. W. S. J. M. R. W. T. C. N. W. M. C. W. T. W. H. L. H. D. W. C. H.

We are compelled to decline pointing out books and addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily publication.

Note. The responsibility of signed articles, and papers for public meetings, rests, of course, with the author.

PERFECT DAYLIGHT.
WHY BURN GAS?
CHAPPUIS' REFLECTOR
IMPROVE NATURAL DAYLIGHT AND SUPERSEDE GAS.
P. E. CHAPPUIS,
PATENTEE AND MANUFACTURER
No. 69, FLEET STREET, LONDON.

The Builder.

VOL. XXXII.—No. 1645.

Taylor and Cresy's Rome.—New Edition.



ANY there are in the architectural profession of the present day, who will look with indifference, if with no more decided feeling, upon the present republication of the work* which, a little more than half a century ago, furnished to the architectural student of the day the most comprehensive and careful views and details of those architectural remains, the knowledge of which, both in their general proportions and in detail, was, said the authors in their original preface, "absolutely necessary to be known by all those who would practise their profession with the hope of reputation." How many are now practising the said profession with no little reputation of one sort or another, with, at any rate, a very fair share of success, not only with-

out this definite and precise knowledge of Roman detail, but with a profound contempt for it, one cannot precisely estimate; but when, not very long since, the surviving representative of the joint authorship of the work read a paper at the Institute upon some of the more recent discoveries in Rome, there can be no doubt that he addressed an audience unanimous indeed in its personal respect and regard for an old fellow-labourer in the profession, but occupying many of them a very different stand in regard to the value or necessity to the modern architect of a detailed study of Roman remains. At the most, such a study would be to them only one of the means of making that acquaintance with all developments of architecture which should not be neglected; while to the authors of the book thus reproduced it was, as we have noticed, considered the great *sine qua non* in professional study. Had Mr. Taylor, whose long career came to a close not long after the occasion alluded to, survived for even another twelvemonth, he might, however, have been in the position of the man who, always keeping to one fashion in the cut of his coat, found himself, after many years of ostentatious eccentricity, suddenly in the fashion again one morning, through the old style having turned up again as the latest novelty. If we are not quite reached that, we have at any rate not to a late stage on the way. We have run the gamut of all the varieties of Gothic, and now we have the same school of architects who, a few years ago, would have piqued themselves on being Gothos, and nothing else, are beginning to pique themselves on their artistic taste and insight in referring to everything else the bastard style of the eighteenth century—the illegitimate offspring of bad Classic and debased Gothic. The taste is too indefinite in its object to have a very long or decisive reign; the progress from Gothic back again to the "refinements" of Classic is

likely to go on its course, and Taylor and Cresy's fine work on the old Roman edifices has been reissued just in time, it would seem, to afford the necessary assistance to the young student, who will soon be again required, even in the most devoted and "earnest" offices, to get up his "orders," and to study the correct and artistic delineation of the acanthus-leaf.

So long has the work before us been out of print, and so little have the existing copies been referred to, probably, in recent schemes of architectural education, that to the present generation of readers it may almost claim to be reviewed as a new work, and have its scope and value afresh pointed out: at all events, some attention to it will suggest points not unworthy of consideration. The labours of Messrs. Taylor and Cresy were devoted in a great measure to the elucidation of the ornament and detail of the edifices of Rome, which had at that time been but little illustrated in works dealing with the subject, even in a more expensive and elaborate style. The volume contains the very useful adjunct of a plan of the portion of Rome in which the majority of the buildings mentioned are situated, showing at a glance their relative extent and positions in regard to each other, and to the modern lines of route of the Eternal City; an appendage still more valuable when the work was first issued, when travelling was a far greater and more serious undertaking than it is in these days. Even at present, however, this plan, in connexion with the views and detail drawings, may give to not a few of our younger students especially their first comprehensive idea as to the actual value and extent of the chief remains of ancient Roman buildings, and render such titles as the "Arch of Titus," the "Temple of Jupiter Stator," or of "Mars Ultor," more like realities and less like ambiguous names than before. A glance at the (restored) lines of the great collection of *fora* (places, in modern French phrase) which occupied the ground north-east of the Capitol, conveys a better idea than any histories, of the stateliness and architectural extent and spaciousness of Rome under the Empire. Of the buildings which these diligent English architects of the last generation undertook to measure and illustrate, at an expense which was probably never repaid by anything which the limited sale of a work of this class could produce, the principal are the Colosseum; the three arches of Titus, Severus, and Constantine; the Pantheon; and the temples (or, in most cases, fragments of temples), named of Jupiter Stator (now called the Dioscuri), Jupiter Tonans, Saturn, Mars Ultor, Antoninus and Faustina, and some others. The double temple of "Venus and Rome," so remarkable in its plan and massive scale of masonry, and of which Mr. Clarence White gave so fine a view in a late exhibition of the Water-colour Society, appears in the general plan, but is not otherwise illustrated. Perhaps, after all, what is striking in this edifice is more for the artist than the architect. The whole of the buildings illustrated were completely drawn and measured with their own hands by the joint authors, who wisely trusted nothing to previously published measurements, and even surveyed the neighbourhood themselves to insure greater accuracy in the general plan. Such conscientious painstaking work as this, gone through from mere love of thoroughness and completeness, deserves recollection and recognition from this generation, both in credit to those who undertook it and as an example to those who would figure as their successors.

That peculiarly Roman feature, the triumphal arch, takes appropriately the first place among the illustrations; and it is not uninteresting to compare the five specimens of this class of design, in which architectural and ornamental art has full sway, untrammelled by practical necessities of any kind. The five alluded to

include (in addition to the three we named above) the so-called "Arch of the Goldsmiths" in Rome, and that of Trajan at Ancona. As compared with its rivals, the Arch of Titus may be said to assert its right, in the eyes of the architect, to the fame which it has obtained as a salient specimen of Roman design; though no doubt some part of the popular interest in it arises from its connexion with a portion of sacred history. It is designed and put together with a more truly architectural spirit than its more rich-looking and showy compeer, the Arch of Constantine. The disengaged columns in this latter, with the fluted pilasters in their rear, have a wonderfully rich and sumptuous effect, but they have no sufficient reason in the design, and are quite superabundant for the carrying of the comparatively small statues which occupy singly the platform above the capital of each column. In the Titus arch the engaged columns at the angles (restored from sufficient evidence,—the originals are gone long since) fill admirably the office of adding strength and substance to this point and removing the bareness of a sharp angle; and the inner half-columns complete the design and assist in carrying the cornice, without being obtrusive. These inner columns have afforded literary architects an opportunity of illustrating the story of the two sides of the shield; Serlio having affirmed them to have three-quarters projection, Desgodetz one-half: in fact, they, like the similar columns in the Trajan arch, are returned back a half-diameter on the side next the arch and considerably more on the side next the pier: in other words, the panel face of the pier is in the rear of the face of the arch. Probably the object of this arrangement was to give room for the angle column being brought well out from the masonry, yet without projecting beyond the line of the other column; the architect was thus enabled to place it with only about one-sixth of its surface "engaged." The fine and effective ornament of the soffit of the arch has been so often reproduced in modern work that one is apt to forget its ancient origin. The overloading of the members of the cornice, &c., with ornament, a common vice of Roman architecture, is not absent here; but, in fact, the Roman architect, with plenty of funds at his command, rarely knew where to stop in this respect. Another instance of this is afforded in the "Arch of the Goldsmiths," which, if the tradition of its building be the correct one, may be taken to have been a little outbreak of the pride of *præse* natural to a rich trade, who were determined to have their own private triumphal arch to do honour to the emperor (Septimius). If this be so, is it a curious coincidence, or really an evidence of trade taste, that this particular work, with its flat angle pilasters covered with enrichment, and its profusion of ornament elsewhere, should show so decidedly a character of design suggesting goldsmith's work? It certainly does so, and even reminds one, in feeling, of what has been called the *plateresque* style of Spain. In sculpture, as distinct from mere ornament, the Titus arch is the finest; for the bas-reliefs of Constantine, though more vivid and striking in action, do not attain their end nearly so well and artistically as the quiet professional groups of the Titus arch, and those of Septimius are much too scenic. As to the Goldsmiths' arch, the sculpture there is quite below par.

Every time one looks at a representation of the Pantheon, a fresh regret arises that an idea so noble and simple in itself should fail in effect so much as it does from deficiencies in carrying it out, or from being spoiled by subsequent mistreatment. Few things of the kind could be finer in effect than the portico; nothing more successful in the way of roofing has been done for a monumental building, whether we regard it externally or internally; but the bare masonry of the circular walls, with the ugly and appa-

* "The Architectural Antiquities of Rome; with one hundred and thirty Views and Measurements, taken in 1817, 1818, and 1819, by George Lidwell Taylor and Edward Cresy, Architects." A new edition, including more recent discoveries. London: Lockwood & Co.

rently purposeless arches built in them, is a fatal eyesore in the exterior; and the disproportion between the ponderous offered dome and the light and elegant order and attic which sustain it in the interior is always unsatisfactory. The details are many of them better than are generally recognised; at least, one does not hear much of them; the treatment of the architrave and frieze of the portico, with simple mouldings, is very forcible and good, and the cornice is not over-ornamented. On the other hand, some of the minor ornamental details, as the fluttering and be-ribboned festoon given by Taylor and Cresy, in plate 50, are in the worst and most vulgar taste. It cannot be supposed possible that the same architect who designed that solid and grandly-treated flat dome as a permanent roof to his building, also approved of or invented this flippery; but, in fact, the whole structure and composition of the building points to more than one, perhaps a variety of architects, and to changes at different periods of its existence; and, perhaps, there is no structure so generally written and spoken about and admired, of which the secret, so to speak, seems so difficult to get at.

Of the various temples figured in these volumes, there is not, as our readers are aware, one left intact, and of most of them but small remains exist. "Jupiter Stator" and "Jupiter Tonans" have their three columns apiece, balanced insecurely on blocks of masonry, the former trio held together by iron ties to aid them in retaining the perpendicular position. The temple of Vesta, at Rome, is in the best preservation, and has its circular colonnade complete, a fact which may be attributed chiefly to the intercolumniations having been fitted up with a wall, in which the columns have been preserved, and which is now removed, and the necessary fence provided by an iron railing. The cell of the temple, oddly enough, is much more ruined than the colonnade. It may, perhaps, be judged as a defect both in this and Tivoli temple, that a central cell, with a separate colonnade enclosing it, should be roofed by a single span roof in one slope, from the central apex to the eaves over the colonnade: a Greek or Gothic architect would certainly have broken the roof-line so as to indicate the quality of the substructure. The Tivoli temple, much more ruined than the Roman one, owes much of its charm to its supremely beautiful and picturesque situation; the effect evidently captivated the authors, who have given several views of the temple in combination with the landscape around. Ordinary critics of "the picturesque" would say that in such a situation, on the brow of a steep rock overhanging a waterfall, a sterner and more massive piece of architecture would be more in place; however that may be, the temple seems to fill its position exactly, and to be the one thing wanting to make the landscape complete. The theory of the picturesque, if there is one, as respectable Sir Uvedale Price thought, is very hard to reduce to any fixed rule. Probably association enters into the matter a good deal more than we are aware of. Looking at the views of the remains of an edifice, the ordinary name at least of which is such a household word in architecture as the "Jupiter Stator" Temple, it is curiously suggestive of the unity and sameness of treatment in Classic architecture, that these three dilapidated columns, discreetly measured and restored, should suffice, almost as well as the whole building, for an "example," and should have exercised so wide an influence on a large school of modern architects, who have copied and reproduced the fine capital of this temple over and over again, thanks almost entirely to Messrs. Taylor and Cresy, who took the trouble of bringing back these worn and broken capitals to their pristine completeness, for the benefit of their profession generally. The want of scale in this architecture is another remarkable point. The views give a general notion of size by comparison with other objects; but in, for instance, the drawing of the remains of the grand temple of "Mars Ultor" (plate 72: one of the finest and most effective in the book), it is only by comparison with the figures on the scaffolding, and perhaps the details of the campanile behind, that any notion is gained of the scale of the four great columns with their entablature, which rise from amid the roofs of meaner structures. In this want of scale Classic architecture is curiously contrasted with Gothic, which nearly always tells the tale of its own dimensions, independently of any external datum. This same Temple of Mars, an earlier work than most of those

given here (it was built under Augustus), shows more of Greek character, more simplicity and grandeur, than most of the later examples, after the less refined genius of the Roman had run riot, with his often ill-considered ornament, over the pure lines and surfaces of the Greek.

This Roman ornament in the mass, as largely and beautifully illustrated in the book we have been turning over, what is the ultimate verdict on it? Rich in general effect it is, undoubtedly, and with a power derived from its very redundancy and exuberance; our admiration is in a manner forced for this prodigal expenditure of labour on every part of a structure which can be ornamented. And yet we cannot but feel that it is a vulgar source of effect, this, of over-elaboration and encrusting every possible surface with carving. Less work and more thought would have produced more effect in most cases, so far as the distribution of the ornament is concerned. And the ornament itself is too often what may be termed "loud," wanting in quiet and finish; and where it is imitative it imitates neither natural things nor natural principles, as the Greek does, but artificial things. The Greek either sculptured the human form, and did it magnificently, or he used ornament expressing abstract qualities of beauty and proportion. But the Roman grossly imitated made-up garlands and sacrificing instruments, and other tools of the temple trade. The frieze ornament from "Jupiter Tonans" (figured in plate 58) is a flagrant instance. The capitals are superior to the rest in this respect; but it is just in the capitals that the Roman architect kept closest to the Greek. And the carved foliage of the other portions has mostly a bunched, flabby character infinitely inferior to Greek and to the finest period of Gothic carving. It is emphatically the decorative taste of people with more wealth than culture.

It is like coming "back to our early days" to look over a book in which Vitruvius is quoted over and over again as the final authority. How many of the students in our offices at present have looked into their Vitruvius, or been told to do so? Would they like a specimen of what they are delivered from? It is amusing to shake one's chains sometimes, when they are once well off. "For a taste," as Touchstone says: the way to make a Classic doorway—

If the Doric *entablature* is to be used, the height of the aperture being formed in the same manner as for the Doric, the breadth is determined by dividing the height into two and a half parts, of which one and a half part makes the breadth of the aperture at bottom. The contraction is the same as in the Doric. The thickness in the fronts of the entablatures is the fourteenth part of the height of the aperture: their cymatium is the sixth part of their thickness. The remainder, exclusive of the cymatium, is divided into twelve parts, three of which make the first course (the fascia) with its astragal, four the second, and five the third. These courses, with their astragals, extend all round. The hyperthrum is formed in the same manner as the Doric. The ancones or prothyrids are wrought on the right and left, and, exclusive of the leaf, descend as low as the bottom of the supercilium. The thickness of these in front is the third part of the thickness of the entablature; and at the bottom they are one-fourth thinner than at top. The doors are so framed that the cardinal scapi may be the twelfth part of the whole height of the aperture, &c., &c.

How do you like that, young Tee-Square?

The execution of the general views in Taylor and Cresy is in that old wood-engraving style, with a wavy line, and with very thick filling-in and shading, which looks heavy to eyes accustomed to the sparkle of modern engraving, but which has great merits of its own, and is really in a sense more artistic than the modern engraving, as it develops more the properties and handling peculiar to wood engraving, and in many portions of the plates is really worked according to what some acute critics have held to be the genuine method for wood-engraving, viz., cutting away for the lines and leaving black spaces, instead of sinking for the spaces and leaving the lines in relief. This, of course, involves a style of treatment where there are few white spaces, where the deep shadows are very strong, and the lights are given in line shading; but it is the true principle of wood-engraving, and might very well be resumed by able artists, at a saving of much mechanical labour now expended in producing pretty effects. Another thing suggested by the views in this work is,—the risk of trusting to perspective views and sketches in architectural representations. This is a very carefully got up book, yet the perspective views are some of them manifestly inaccurate, as compared with the geometrical drawings. Thus, in the remarks on the Arch of Constantine, attention is drawn to the unusual height of the pedestal, "more than a third of the order," which is correctly given in the geometrical

drawing, but in the view the base is shown much lower,—scarcely more than a third of the column. In the general survey the stations from which the various views were taken are carefully marked, we presume by measurement. But a glance shows that some of the objects could not from those points appear as they are presented. Thus, in plate 79, the three columns of "Jupiter Tonans" are shown at about equidistant spaces on the aperture, whereas, from the point marked on the survey, the two northern columns must have covered one another. In the view of the Arch of Septimius (plate 11) these same columns are shown to the left of the arch; but from the point the plan the arch must have hidden them. In plate 91 the three columns of Jupiter Stator, taken from the point indicated, must have been nearly "end on" to the spectator; they are shown at an angle of 45° to him; they could not appear so and retain their position in relation to the buildings forming the background. real accuracy is wanted in views, we should suggest that, nowadays at least, photographs should be taken, and drawings made or revised from them. It is singular, but we believe it is generally admitted that if a dozen competent people, with the best intentions, sketch the same group of buildings, no two of the sketches will be quite alike. We have known most odd discrepancies between practised sketchers, intended to give a genuine view of the same object.

The point in the second plate in this book is suggestive. It shows the west side of the Tivoli arch, supported on the south by a great buttress of masonry piled against and sloping outward from it, to keep the arch in its place. There is a sort of grim lesson here on truth of construction. The Romans adopted the arch for its without taking the trouble to find the true architectural expression for it. They kept columns when they should have found buttresses. And here, in one of their most famous works, the Gothic buttress has had to come to their aid at last to keep their arch from falling. There is a sort of moral in this, if one could apply it rightly.

We are very sorry our old friend did not see to the re-issue of his valuable book.

ARCHÆOLOGISTS IN BRISTOL.

THE Bristol Congress of the British Archaeological Association, referred to in our last, has come to an end. It has proved most satisfactory to all concerned. Much good work has been done, and much more hearty kindness enjoyed. A large number of antiquaries have been incited, and good feeling towards them has been incited, a chief object of such gatherings. It is a good thing for a city like Bristol, busy in amassing money, and occupied with material pursuits of to-day, to be taken back to the past, reminded of her history, and led to preserve those monuments of it and landmarks which exist.

We cannot attempt any continuous account of the whole proceedings; a mere list, which would interest no one, would occupy more space than we can devote to the subject. We must content ourselves with quotations from some of the papers read, and a note or two of the proceedings. The second day of meeting, Wednesday, the 5th inst., was devoted to a carriage excursion, including a number of churches and earthworks, some of the former little known and lasted twelve hours. Nevertheless, it was a fair gathering to hear some of the papers read in the evening. During the excursion, Mr. J. W. Grover read an instructive and agreeable paper on

Roman and Saxon Earthworks.

Mr. Grover explained that in the Roman works in Europe an earthen ramp was frequently found without a corresponding ditch, the material having been saved together promiscuously. In the more advanced times ditches form the banks, and as times go better or worse the number of banks and ditches multiplied. In a very advanced example, of Maiden Castle, near Dorchester, seven banks and alternating fosses occur. He then went to explain that it was a mistake to suppose that encampments could always be dated by the tracing, for many round and oval works were erected by the Romans, although the square form undoubtedly belonged to them especially. So, again, we found harp-shaped encampments amongst the oldest works, as well as among

those of the Danish invaders, to whom they were mostly ascribed. The earlier residences of the Anglo-Saxon chiefs consisted of timber buildings, surrounded by earthen ramparts. These were called "beorg," or "burgs," from the Saxon word meaning to defend; and generally they stood on the tops of high elevations. Our term "bury" is from this derivation, and such names as Cadbury, Abury, and Kingsbury show a Saxon occupation at least; but this does not necessarily imply a Saxon origin. The word "castr" in Welsh indicates a camp, as our word "Ochester" does in English. From "Castrum," the Roman word, in Welsh, we have Caer-Went, Caer-Leion, Caer-Cardoc, from Castrum Ventas, Castrum Legionis, Castrum Cardoc, &c. The adjunct "ham" is of Saxon derivation and corresponds to the German word "heim." It signifies a village, and was probably surrounded by "weallas," or entrenchments. The syllable "din," "den," or "don,"—so very common,—was, he believed, of British origin. We have it universally, as London, Croydon, Clevedon, and, following out the derivation of the names, some light was often shed on the era of a work. In the case of Cadbury it might be safely stated that it was a work which at one time formed the home of a Saxon chief; it was a "borough," or "bury." The prefix "cad" is probably from the Welsh "coed," and indicates a prior British origin, as he would explain. Mr. Grover then proceeded to describe the characteristics of Roman works, and the especial manner in which at that time covered their gateways—by minor ramparts and traverses. He then exhibited a plan of Cadbury camp, which has an area of 1/2 a. 28 p., with double ramparts varying from 10 ft. to 6 ft. high. He showed that 6,000 men could throw it up in twelve hours. It had, he thought, been executed by a race not earlier than the Roman period. He then proceeded to explain the military and strategic lines of this district of country are parallel here to the Bristol Channel—one being the ridge of hills reaching from Weston, through Clevedon, Cadbury, Portbury, and Pill, to Blaize Castle, and along a highway now known as Cribb's Causeway, to Cole Park, Thornbury, Titherington, &c. Along this line Mr. Grover gave particulars of a number of works. The other line of defence, more and, but parallel to the last in this district, as to be seen at Bitton, Dyrham, Sodbury, Badminton, Horton, &c. On this line there were a considerable number of earthworks, to which Mr. Grover referred, especially drawing attention to the Sodbury Camp—a fine example of a work of the Romans, in true Polybian fashion. This country appears to have formed a sort of *terra vedras* for some primeval Wellesley whose name has been lost in the annals of time. After giving some description of the relative positions and arrangements of ancient city ramparts and those of camps so called, Mr. Grover went to some considerations respecting the period when this country district was such camping-ground, and from the reasons he gave it would appear that the position of the camps indicate an advance of a Roman army from S.E. to N.W., and a corresponding falling back on the Bristol Channel by the defenders. This would point to a campaign of Anlus Plautinus, circa A.D. 43, wherein Titus and Vespasian distinguished themselves: the Britons being led by Caractacus and his brother Togodimnus. Cadbury Camp would consequently date from this period, and be a British work, afterwards occupied by a Saxon chief. In its immediate district are no less than only encampments, attesting the value our ancestors and others placed on the freehold ground. Mr. Grover proceeded to comment on the different state of things here nowadays, and contrasted the long period occupied by the Roman and Saxon invaders in making good their holding, that of the Normans, who, in a single field, in a day, effected a permanent conquest, which is not been reversed for 800 years. He then proceeded to the question of the stockades and sieges, with which all ancient earthworks are surrounded, and showed by illustrations and illustrated diagrams from Trejan's Column and from passages in Caesar, the various systems of fortification employed by barbarian races in a first century. They seem to have been very elaborate, and must have presented the appearance of a town in the Middle Ages, with their masonry towers and gateways, and the covered way, on the parapet, like that at Nuromberg &c. There was an amount of art and scientific skill employed which, looking at the rough earthworks which remain, we should hardly give credit to now. The various systems of construction

having been explained, Mr. Grover referred to a very interesting paper on the subject of Taunton Castle, by Mr. George T. Clark, of Dowlish, and to the subject of boundary dikes and the curious mounds or artificial mounds which are to be found in this county within the earthworks, and often form the pedestal on which Norman keeps have arisen.

Inartistic Heraldry.

At the first evening meeting, Mr. J. R. Planché opened the ball with a paper on the "Seals of Bristol," in which he found himself unable to agree with Dallaway's romantic story. Mr. Planché said he could not conclude the paper without expressing his regret that such supporters and crests should have been assigned by any King-of-Arms to such a grand old coat of arms as that which had for six centuries distinguished the city of Bristol. No record of the date when, or the officer by whom they were granted, had yet been discovered; and he could not believe that the name of Candown was in any way associated with them. The visitation of 1623, in which they appear for the first and only time in our records, was made by his deputies, and must have been in existence at that period. The unicorns might have been assumed in honour of King James I., and, but for their unpicturesque attitude, might be accepted for that reason, though otherwise not in the least applicable to the city; but the crest was designed in the worst possible style of heraldic composition.

Mr. Edward Leven, M.A., hon. sec., then read a valuable paper on "The Early Religious Houses of Somersetshire," and the Rev. Prebendary South followed with a paper on,—

The Roman Antiquities in the Mendip District.

He said that the range of hills of which he was about to treat, extending from the Bristol Channel to the confines of Wiltshire, a distance of about thirty-three miles, with a width varying from five to six miles, presented not only a variety of most beautiful scenery and interesting geological features, but also many remains of historical interest. These hills contained minerals, and along the Roman roads which ran along them were found the remains of ancient Roman villas and towns now extinct. Cremation appeared to have been general among the population of the Mendips; the barrows there did not present a single instance to the contrary. The barrows were either pre-Roman or the burial-places of others according to the Roman custom, and he mentioned some instances in proof of his assertion. The earthworks were numerous, and also the traces of early settlement, and the settlements were generally under the fortifications. They had been to one fortification, Cadbury, that day, and there was a second, which he described, near Yatton. The gentlemen gave some interesting particulars in reference to the mineralogy of the Mendips, and said the mines of Somerset must have been of very early date. This was shown from the lead found on the northern slope near the line at Blagdon. At that place was found the earliest pig of lead yet discovered with the Roman stamp upon it. It had the inscription of Claudius, and the date was the year 49. It was presented to the British Museum. Another was found on the southern slope of the Mendips, and lately one of the largest pigs ever found had been discovered at Charterhouse, with the Roman stamp upon it. The date was about 139.

Mr. Godwin, *apropos* of an observation made by the Prebendary, spoke of some vitrified forts they had seen in course of destruction during the day's excursion, and expressed a hope, notwithstanding the fate of Sir John Lubbock's Bill last session that another endeavour would be made to obtain State protection for the antiquities of the kingdom. He mentioned that in France, notwithstanding its present disjointed condition, a Commission had been just now issued with a view to obtain a complete registration of all the antiquities of the country.

Mr. Hodgson, M.P., the president, took up the same subject, and in a vigorous speech repeated the hope that had been expressed, and condemned the manner in which Sir John Lubbock's Bill had been met.

On Thursday one of the chief points was an examination of

Bristol Cathedral.

Here, after attending morning service, Mr. Gordon M. Hills delivered an address, and, conducting the members of the Association over the building, pointed out its many points of interest.

Mr. Hills observed that upon the spot upon which they were then assembled the prayers and praise of the devout had gone up to Heaven for 750 years, and he was sure that it must have touched them all, as the service went on, to hear the saw and the hammer at work outside, evidencing as it did that by the piety and devotion of men now living there was being erected a building in which would be carried on the same devout feelings, and in which religion might be raised up, perhaps, for 750 years longer. By way of introduction, Mr. Hills proceeded to speak of the monastic world, or of the ecclesiastical world, as they might call it, which existed at the time the cathedral was founded. At that time the Benedictine order was almost the only order of monks known, the other great order which subsequently divided the monastic world with them, the Augustines, having then been little heard of; in truth, at the time that building was founded the Augustine order itself was not founded. They had, it was true, been spoken of for years before, even for centuries; but it was only some time after, a hundred years after the foundation of that monastery, that the Pope compelled all canons to submit to the Augustinian rule. The foundation of the church was laid by Robert Fitzharding about the year 1140, but the date varied a year or two, according to different authorities. It was said, and commonly received, that the church was opened for service in the year 1148, but he ventured to think that that date wanted a great deal of consideration before being accepted. Mr. Hills stated that he had visited Berkeley Castle, and by the permission of Lord Fitzharding had consulted the ancient documents of the monastery, and he quoted several circumstances which he had there discovered, and which had led him to doubt the authenticity of the date which was generally accepted as the date of consecration. The original building was of a simple character, and Norman throughout. Portions of it still remained; the south wall of the transept was principally of Norman date, and at the north end, too, were also remains of Norman work. The question had often arisen as to whether the church had ever been completed; whether, as well as a choir, it had a nave. That, he thought, could not be doubted, for outside there were the remains of the old nave. When the nave disappeared it was difficult to fix with any exactitude, but Abbot Newland told them that it began from 1136 to 1142. He referred to the interest always taken in the cathedral by the house of Berkeley, and said no one could possibly read the history of that cathedral without reading the history of the lords of Berkeley. After further dilating upon the early history of the church, Mr. Hills conducted his party to the east end, and directed their attention to the fine east window. An examination of some of the coats of arms led to the conclusion that the glass which filled the upper part was of the year 1320. Attention was also directed to the cresting on the top of the cornice over the altar, which was described as being very interesting and full of information, almost every alternate panel bearing the arms of some person, and there was evidence that the screen was erected in the time of Abbot Newland, and before 1512; and to the remarkable character of the rocesses in the walls, in which were placed the effigies of past bishops. The stall work on either side of the choir was evidently the work of Abbot Elliot—1515 to 1526—for it bore his initials and his arms. The construction of the vaulting of the aisles was singular in its character, the roofing of the aisles being carried to the same height as that of the nave, which gave it an originality and loftiness of design, and stamped it as a piece of rare mechanical and mathematical skill. The chapter-house is a remarkably valuable specimen of Norman architecture.

A sumptuous luncheon, given by Mr. William Powell, the master, and the ancient Society of Merchant Venturers, in their hall, strengthened the visitors for further investigations in the city.

In the course of the excursion on Friday, a visit was paid to the little known ruins of

Keynsham Abbey.

Many local antiquaries, even, saw the ruins for the first time, and it is highly probable from what was then seen, and what transpired as to the character of the original building, that drawings will be made of some of the most interesting of the relics. Mr. G. R. Wright said the remains were discovered only about ten years ago. It was well known that the Abbey formerly stood upon or near the site, and the

ruins were brought to light in the excavations that were made for building some new villas. The first portion consisted of the lower part of a buttress, about 4 ft. high, and some fifteen or twenty yards of thick wall. The buttresses are finely carved, and contain numerous figures. About twenty yards farther on was a large piece of pavement of encaustic tiles, and when they were uncovered a stone slab was found among them, bearing an inscription, and dated the thirteenth century. There were also found on that spot portions of tabernacle work, which enclosed the shrine, and which were beautifully worked. This was shortly to be covered up, but he believed Mr. Irwin had made a plan of the Abbey. There was some account of it in the Bath Field Club proceedings, and Collinson, the antiquary, had given an account of Keynsham. The property, it appeared, came into the possession of the Chandos family, and the Duke of Chandos had a house near the spot. The house was founded by William of Gloucester, one of the Black Canons, in the year 1170, the time of Henry II., and he was buried there.

Mr. Taylor said that William Earl of Gloucester and Joseph Earl of Pembroke were buried there. It was also said that the Duke of Buckingham mentioned by Shakespeare made an oblation at the shrine.

Mr. Philipps said that in London and York a great many Roman pavements had been taken up, and put together again at great labour and expense, for preservation. It occurred to him whether they could not, in Bristol, in connection with the Museum or some other place, remove these and put them down, so as to make a floor. It could be done at comparatively little expense.

From Keynsham, the party proceeded by special train to Bath, where breaks were in waiting to convey them to the Manor-house, at Wrasell. Mr. Davis, of Bath, conducted the party over the place, which is a very fine specimen of a stone manor-house of the time of Edward IV., but great additions have been made by the ancient family of Longdown to the commencement of the last century. The house has a curious gateway, with a double entrance leading to rooms connected with a corridor opening into an inner court. The great points of interest, however, are the remains of the original hall, which still contains the ancient screen, and other objects of great interest. The lower parts of the hall, from the buttery to the pantry, are in their original state.

The Saxon Church at Bradford.

The party drove to Bradford-on-Avon, and visited the old church, where Prebendary Jones, vicar of the parish, pointed out all the objects of special interest. Mr. Jones then conducted the party to the Saxon Church, a building now attracting great attention in antiquarian circles, which we had the satisfaction of early recognizing many years ago. Mr. Jones stated that until recently a great portion of the building was almost buried with dirt, and he had had it excavated. A factory had been built up against the nave end, and the chancel had been occupied as a cottage, a set of chimneys having been built through the chancel arch. Above the body of the nave, which is very circumscribed in its dimensions, was a room which had up to recently been used as a schoolroom. The ownership of the property had become divided, and when they wished to convey the school they had to treat with five different parties. They only signed the deed of agreement last week.

Some little personal discussion ensued here, concerning which a letter from Prebendary Jones will be found in another part of our present issue.

The Customs of London and Bristol.

Amongst other matters at the evening meeting in Bristol, on return, Mr. R. N. Philipps, F.S.A., gave a curious account of the great similarity which existed between the customs of the cities of London and Bristol. In the early charters strong reference was made to the freedom and liberty of the citizens. At the siege of Calais by Edward III., whilst London furnished twenty-five ships and 662 men, Bristol sent twenty-two ships and 608 men. The size of some of the Bristol ships was considerable, for in 1449 one of William Canynghe's, called the *Mary and John*, was of 900 tons burthen. The election of mayor was similar in both cities from early times. Colston was as much at home in Whitechapel as in Bristol, and in 1709 he sent 20,000*l.* to help the starving poor of London. Canynghe also united London and Bristol in his

sympathies. He then noticed the way the salaries of the mayors of London and Bristol were obtained, the latter being from dues paid by each ship arriving in port, and the former by dues paid by each ship bringing corn into the port. There was a gallantry about Bristol, for 26*s.* for a mull for the mayor was provided. The chamberlain of Bristol formerly possessed the same powers as that of London, and there used to be two sheriffs as in London. The coroner and aldermen were similarly appointed. He then referred to various interesting old customs that prevailed in both cities, causing amusement by enumeration of the curious punishments that were formerly meted out to offenders. The duties enjoined upon the mayors and corporations were very similar, especially in the measuring of coal sold, to see that the weight was correct, and if it was found short the punishment was that the sacks should be burnt, and part of the coal given to the poor. To this day that right continued in the Corporation of London. The legal powers of the authorities of the two cities were very similar. The reason of the similarity between the customs, no doubt, was that these two cities were the two great centres of commerce and of manufacture, and also the two great ports of the kingdom, celebrated in the world for their wealth and enterprise.

The visit to

Thorbury,

On Saturday, was a great success. Mr. Edward Roberts, who throughout has worked most assiduously and successfully, described the castle. The bearings over the gateway all belong to the family of Stafford and Northampton, the Stafford knot being especially conspicuous. The label on the left side of the arch has been broken off. There is room for a portcullis, but none was built, as when this structure was reared the day for fortifying private residences had passed away. Having entered the inner court, the attention of the company was called to the date, 1514, on the chimneys, as testifying to the fact that it evidently took the workmen three years to arrive at that point. The original style of the chimneys is seen in the stack on the north side; but after the commencement of the building a brick system of construction had become popular, and this exemplifies a more elaborate mode of workmanship than is seen in the rough stone of an older date. Pugin has made a mistake in calling the portion of the structure on the south side the great hall, as it seems most probable this hall was opposite the gateway, and had been now utterly destroyed. Some idea of its size may be gathered from the fact that, in 1510, the duke's guests and household numbered upwards of 450 persons. The party ascended to the summit of the tower, whence may be seen a magnificent expanse—the Monmouthshire side of the Severn and the Forest of Dean in one direction; the Cotswolds towards the north and north-east; at the south and south-east the well-wooded country about Wickwar, Rangeworthy, and Almondsbury. The apartments of the castle were also explored, and then Mr. Wright, having given a blast on his horn, a gathering took place in a corner of the private garden that commanded the most picturesque view of the castle which could be obtained. Some wooden steps served as a rostrum for Mr. Roberts, and he having mounted them, or, as one of the party remarked, taken steps to describe the place, many interesting particulars were given by him. He produced an enlarged plan copied from the one given by Pugin, which, however, was not complete, and did not give an idea of what the building was. Mr. Roberts said that now Mr. Howard, the owner, had given them permission to see the castle, he hoped to be able to furnish such a plan as would illustrate what the buildings were in their entirety. Leland's account of Thorbury was quoted by Mr. Roberts, and the chronicler did not give the inhabitants the most flattering character. He said that the town nearly approached the shape of the letter Y, having first one long street, and then two horns growing out of it. Idleness much reigned there; but, as it appeared the duke encroached on the rights of the people by continual enclosures, it is not to be wondered that they lost heart, and dealt out those curses that Leland more than once refers to.

The short distance between the castle and the church was next accomplished; and when all had wandered about the interior, Mr. Roberts called attention to certain matters of interest. He said the sacred structure had been restored

about thirty years ago; and this task appeared to have been very carefully done, so that the building was not, as in too many cases, destroyed archaeologically. Before the present edifice there existed a Norman church; but except the wall of the north aisle and the north door, he could not point to any part which showed that origin; though the north door was certainly of the late part of the eleventh century or the very beginning of the twelfth. The south door showed a later period, and that it had been most carefully restored, and showed the mouldings of the thirteenth century. The church consisted of a rather large and wide nave, aisles, chancel, and two chantries. The altar pulpit had been accurately restored, and the pulpits seemed to abound in this part of the country. Leaving the interior, the party walked round the exterior, and Mr. Roberts observed of the tower that it was very much like a Somersetshire tower they had seen, and a magnificent parapet was about 16 ft. high. Similar parapets there were about three instances known in this part of the country, and he supposed they were most of them acquainted with the legend concerning these. Thornbury, Stephen's, Bristol, and Dundry were the three churches; and when the builder of them finished Dundry, he boasted that he had "done." The old joke raised a laugh, as many new ones had done before.

At the evening meeting some account was given of various

Unpublished Historical Documents in Bristol

Mr. W. De Gray Birch, after remarking that his observations would relate to several ancient and hitherto unpublished documents which had been liberally put before him by the gentlemen who were so fortunate as to possess them, explained what was meant by paleography, which was a science that dealt chiefly with the handwriting of ancient documents. A great change had taken place in it. The old science was very uncertain and unstable, but the paleographic school strove to be more exact and precise. The father of that new school was Sylvestre, whose works were edited by Frederick Madden, who might be justly considered the father of paleography. The science they originated, as might be said, now being intensified, and within the eighteen months the Paleographic Society had been formed, for the publication, by means of photography, of ancient deeds, &c., and it excited great interest among literary men. The reader then went on to observe that he would at that occasion refer to a small collection of ancient charters in the possession of the Old Library, the authorities of which had very kindly lent them that evening to the Congress. The first was a charter of the early part of the twelfth century; it was a grant by William Earl of Gloucester to the church of St. James in Bristol, giving them his body to be buried at that church, and also granting them a share of the receipts from a certain mill situated in Gloucestershire. Another very interesting one was one from Simon Sampson, Bishop of Worcester in 1097, and connected with the Abbey, Tewkesbury, which was very large and powerful, and had jurisdiction over St. Peter's, at Bristol. This was a grant giving to St. Peter certain possessions about the neighbourhood. In his examination of these documents he had found a large number of names of people connected with religious houses in Bristol, and had up to the present time been unknown to the corporation of Bristol to the priory of Witley. Mr. Birch particularised several of these, pointing out that the existence, about the year 1 of a monastic house on the bridge over the Avon was proved conclusively by these documents. From them also might be gathered a large list of constables of the castle; for, in every inspection he had met with the names of several, and sometimes the constable mentioned before the mayor of the city, adding that the former was a very important of indeed. The name of Worcester also occurred very frequently in these charters, which thought, were of very great, and almost absorbing, interest to the inhabitants of this city; he would recommend all those who wished to know anything of the history of their place to pay a visit to the library where they were deposited, and he was sure that Taylor would do all he could to assist them. That gentleman deserved very great credit

the way in which he had taken care of the comments. He next referred to some books which had been kindly placed before them by the authorities of St. Mary Redcliffe Church. They were three manuscripts relating to the parish, which had been rescued from their impending fate of destruction chiefly by the care of Mr. S. V. Hare, who had very properly had them bound by perhaps the only man in England who could bind manuscripts as they ought to be. After describing the contents of the first book, which was one of accounts, the reader said that in one place was mentioned the price of the book itself, namely twenty shillings, showing the value of paper at the time. There were also in it pages of scribbling in the handwriting of the unfortunate Chatterton. The other two they were shown his room, and many other places associated with his memory, and where they had the actual autograph of his hand, which was imitations of the old handwriting of the book. Those imitations appeared to him to overshadow the wondrous forgeries which took all people by surprise, and for a long time puzzled the learned and literary of the day. They were imitations of a poor kind of writing, and words of Latin written over and over again, as if he was endeavouring to imitate a copy,—as if schoolboy was trying to imitate what he did not understand. The next book included memoranda relating to the same church, and contained what was probably a list of tenants of Canynge's property, as well as an inventory of the church property. The third book also related to Canynge, in 1458. That collection of books was the very greatest interest, and the reader expressed a wish that other gentlemen would follow the example which had been set them by Mr. Hare, in preserving things relating to ancient parish affairs. Mr. Birch here exhibited to the Congress Chatterton's pocket-book,—the actual pocket-book, he said, which Chatterton possessed, which contained scribbles and notes, and which was found in the room in which he died. They would notice upon it the stain from a bottle that held the poison by which he destroyed himself, and the potency of the draught as pretty well indicated by the hole it had made in the book itself. That book was undoubtedly one of the most valuable literary relics connected with Bristol, and they were indebted to Mr. Hare for securing it, and not allowing it to pass out of the city.

Early History of Bristol.

Mr. John Taylor, librarian of the Bristol Museum and Library, read a paper on the "Earliest Appearances of Bristol in History." With respect to the Roman occupation of the city, he admitted that the materials of his evidence were somewhat scanty. Though Caesar wrote, one of the twenty-eight Roman cities, as interpreted by Henry of Huntingdon (A.D. 1154) to mean Bristol, few tangible relics of Roman settlement had been found. Coins of various Roman emperors had been dug up on Kingsdown and on St. Michael's-hill, in Bell-ine, Broad-street, and recently on the site of the new nave of the cathedral. A pig of lead with a Roman inscription had been found in the end of the Frome, Wade-street. Except for the evidence supplied by these facts, the argument for the Roman foundation of Bristol seemed to be wanting in support, and he did not, therefore, strongly contend for so early an origin. It is object at this point of his subject was rather to show that 1051 A.D., assigned by Mr. Freeman as the earliest year Bristol was to be found in history, is later than is required by existing data for the beginning of the place. The numerous Bristol coins extant of Danish mintage were alone sufficient to indicate here a centre of population in the time of the Danes. Mr. Ruding, the eminent numismatologist, states that there are four or five varieties of a penny of Canute. Harold I. and Harebucunt, sons of Canute, likewise had mints at Bristol, as had also Edward the Confessor and Harold II. The type of the obverse of one of Harold II.'s Bristol coins was copied by William the Conqueror. In speaking of the Danish invasion, Mr. Worrell remarks that in southern England the repulsed Anglo-Saxons concentrated the remnants of their strength. A great number of influential men were, indeed, also settled here, either in the country or, with a view to commerce, in the principal towns on the coast, such as Winchester, Exeter, and Bristol. But out of London the Saxons scarcely formed at that time any really strong and united power in the south of England.

The predominating people were the Anglo-Saxons, and in general the old Saxon characteristics had been preserved. If the authority of Polydore Vergil (A.D. 1525) is to be accepted, Edmund Ironside, being proclaimed king by the citizens of London in A.D. 1016, advanced against the Danes settled in the West, and, assaulting Gloucester and Bristol, then held by them, forced those who were left in garrison to come forth to hand-strokes, slew many, and brought the rest to submission and "to plight pledges of their faith." The evidence derived from the ancient romance of "Merlin" will not perhaps be received as history, but the story in so early a poem (A.D. 1230) of the Danes landing at Bristol shows some tradition of fact, or at least indicates the importance of the place at the time when the elements of the romance were being crystallised into their ultimate forms, if not when they were held in solution. The incident as therein related (which has not hitherto been quoted) is to the effect that in Denmark were two stout Saracens (Saxons) of King Hengist's kindred, one being the son of Hengist's brother, and the other of his sister. These heroes were respectively named Sir Gamor and Sir Malador. They were great lords in their own land, one holding two duchies and the other three. When they heard how Hengist was slain in England, they gathered a numerous host to avenge his destruction. A great battle was fought, in which 3,031 Christian men were slain, and of the Saracens only five escaped alive. On the whole, we may safely conclude that Bristol was demonstrably a habitation and a name before A.D. 1051. Bristol Castle is not mentioned in Domesday Book, but appears first in history in connexion with Geoffrey, Bishop of Contance. Like some feudal tower such as he himself might have erected, that has outlasted town and village, and still stands a conspicuous object in the landscape, the figure of this haughty baron-priest lifts his head in the historic page above the level of the invading host who came over with the Conqueror. He was a nephew to Tancred, the hero of Tasso's classic romance. We find him at Bristol in the year 1088, in company with Robert Mowbray "the peace-breaker," his nephew, a huge dark-complexioned, harsh, proud, and melancholy man, who rarely smiled when speaking. These had combined with Odo, Bishop of Bayeux, against William Rufus, in favour of Robert, Earl of Normandy. The plot was concerted during Lent, and when Easter came they marched forth and plundered and burnt the lands of the Crown, and harried the estates of those who stood loyal to the king.

On Monday the members left Bristol at 9.30 a.m., for Worle station, and on alighting proceeded direct to Woodspring Priory—the main objects of interest connected with which were ably pointed out by Mr. T. Blashill, the fine mouldings of the tower especially attracting notice. On arriving at St. Kew's Steps, at Kewstoke, the Rev. Probandary Search took the lead as a guide, and gave a most interesting description of the surroundings. On attaining the summit and passing through the various enclosures which, as explained, were formerly used for protecting cattle in times of siege, the explorers came to the stronghold of the camp, after passing seven distinct ramparts. The thickness of the wall, which was said to have ranged from 10 ft. to 100 ft., having been pointed out—some of which still remains, whilst other portions have fallen over and become mere ruins,—the platforms used by the slingers for the protection of the camp next attracted the observation of the explorers; and, in verification of the assumption of the use for which such platforms were employed, there still remains a quantity of round stones that had evidently been provided as the ammunition of the then defenders of this part of the coast. The pit dwellings of the ancient inhabitants of Worlebury Hill were next inspected: in one three skeletons had been found. Probandary Search expressed a hope that in the progress of building in Weston-super-Mare the ancient remains in the immediate neighbourhood should not share a similar fate to those on the other side of the Avon, old ramparts and objects of interest to the antiquary being there levelled to the ground to form approaches to modern investments and speculations. Upon the return of the archaeologists to Bristol they were entertained at dinner by the Mayor.

We must omit many things said and done, and hasten on to the end. At the closing evening meeting,

The High Sheriff, Mr. T. T. Walton, proposed a

vote to the distinguished visitors, which was ably seconded at some length by a Hindu gentleman from Madras, who had sedulously attended all the meetings. Mr. G. M. Mills responded, and in earnest words, thanked the Mayor and officers of the Corporation, the Master and Society of the Merchant Venturers, the indefatigable local secretary, Mr. Reynolds, the gentleman who had helped them by opening the Museum and Commercial-rooms, as well as those who had contributed so largely to the *débat* of the meetings by reading papers, and by other help. Mr. Roberts read a letter relating to the amalgamation of the Society with the Institute, and expressed his opinion that there was work enough and room enough for the two, and that the President should be requested to express that as the opinion of the meeting to the President of the sister Society.

We cannot quite coincide in this opinion, and hope that the proposition will be quietly considered by the Council when they meet in London. The time for union seems to us to have arrived.

TEMPLE BAR.

THE last survivor of the City bars and gates cannot long remain in its present condition as an obstruction in the midst of the most congested thoroughfare in London, and soon Temple Bar must be added to the list of old structures which have been swept away. The question of its destruction has been continually cropping up for many years past, and now it appears that the structure itself has settled the question, for the cracks that have lately shown themselves, and are due to the subsidence of the foundation caused by the extensive clearance for the New Law Courts cannot be overlooked, and the timber supports that have been set up during the last few days can only be considered as temporary expedients to prevent it from tumbling down with dangerous precipitancy. In March, 1868, the Bar was reported to be in an unsafe condition, and sixteen years previously a proposal to renovate it was defeated in the Common Council, and a counter proposal to remove it altogether gained considerable support. There are several interesting associations connected with Temple Bar, so that every one must feel some little regret at its disappearance; but if the destruction of this last external mark of the distinction between the City and the West End helps on the long-required consolidation of the metropolis as a whole all London will be gainers. It has been proposed to remove the stones and to rebuild them in some other position, but this would be a proceeding of doubtful utility, because the structure is not beautiful, and the interest connected with it, such as it is, depends entirely upon its original situation. Transplanted relics are not usually much respected, unless they are peculiarly fitted for their new positions.

The present building which we know to be two hundred years old, but we have no record of the time when a bar was first placed here to divide the town from the shire, or the freedom of the City of London from the Liberty of the City of Westminster. For many years there were only posts, rails, and a chain across the road, but in course of time a timber structure was erected, which according to old views was rather handsome in its appearance. It had three arches, and was decorated with Corinthian columns and coats of arms. This was taken down after the Great Fire, not however before Inigo Jones had designed a triumphal arch, and Sir Balchazar Gerbier a handsome gate to supersede it. The present Bar was ordered by Charles II., who promised money to carry on the works, but did not fulfil his promise. It was erected from the designs of Sir Christopher Wren, in the years 1670, 1671, and 1672 during the mayoralties of Sir Samuel Starling, Sir Richard Ford, and Sir George Waterman. The four statues, viz. Queen Elizabeth and James I. on the east side, and Charles I. and Charles II. on the west side, are all by John Bushnell, a well-known sculptor of his day, who received 480*l.* for them. The figure of the Queen has been supposed by some to be intended for Anne of Denmark, but the features are so weather-worn that it would be impossible to decide the question by the present appearance. The total cost of the building, including the money paid to Bushnell, was 1,397*l.* 10*s.*

One of the earliest notices of Temple Bar is in an Ordinance of Edward III. (1353) for a tax to repair the highway between Temple Bar and the gate of the Abbey at Westminster, and since

then many historical occurrences have successively taken place by the old posts and rails, and under the wooden archway, and Wren's Portland stone building. The Bar has taken its part in most national rejoicings and sorrowings. It has been gorgeously decorated for coronations and royal weddings and dressed with sable hangings for state funerals. We have every reason for believing that this barrier existed when the body of the popular Queen Eleanor, followed by her sorrowing husband (Edward I.), was borne amid universal mourning to Westminster Abbey. Most of our sovereigns and their consorts have at some period of their reigns passed this way in state. One of the earliest instances on record of the decoration of the old Bar occurred at the coronation of Edward VI., when fourteen flags floated from its roof, and it was newly painted with battlements and buttresses and hung with arras. The ceremony of closing the gates against the sovereign, and the delivery of the sword by the Lord Mayor, can be traced back to a considerable antiquity. Stow gives the following account in his "Annales" of the procession of Queen Elizabeth to St. Paul's when she went to return thanks for the defeat of the Spanish Armada:—"Over the gate of the Temple Bar were placed the waiters of the cite, and at the same Bar the Lord Mayor and his brethren the aldermen in scarlet, received and welcomed her Majesty to her City and Chamber, delivering to her hands the sceptre [sword], which, after certain speeches had been made, her Highness redelivered to the Mayor, and he again taking his horse bare the same before her." Cromwell dined in state in the City in 1649 when the Mayor delivered up the sword to the Speaker "as he used to do the King." Queen Anne passed through Temple Bar on her way to St. Paul's to give thanks for Marlborough's victories, as did George III. when he gave thanks after his recovery from the worst of all diseases,—that of the mind. Queen Victoria has frequently given the citizens an opportunity of shutting their gates, for upon no other occasion than a royal visit are they closed. The Bar has been hung with mourning black for the funerals of Nelson and Wellington, and has been made gay with brilliant hangings at the rejoicings after the marriages of the Prince and Princess of Wales and of the Duke and Duchess of Edinburgh. It has, in fact, not yet lost entirely the holiday brightness that was given to it on the occasion of the Thanksgiving for the Prince of Wales's recovery. The stone is not black, and the gates are not so grimed with dirt as they used to be. It was a favourite practice of our forefathers to set up the heads of rebels in some public place "to encourage the others," and Old London Bridge was at one time the favoured spot for this exhibition. Here the heads of Wallace, Jack Cade, Sir Thomas More, and Bishop Fisher of Rochester were placed, and in the year 1593 Hentzner counted above thirty heads upon the gatehouses of the bridge. After the Restoration the heads of some of the regicides and of Vennor, the Fifth-Monarchy man, were exhibited here; but soon after the erection of the new Temple Bar this gate obtained the distinction of becoming the "City Golgotha," and the ghastly sight of human heads rotting in the sun was witnessed by Londoners with much unconcern for a century. In Dodsley's "London and its Environs," 1761, there is a plate of the Bar, with three heads on pikes rising from the roof; and we read, "since the erection of this gate it has been particularly distinguished by having the heads of such as have been executed for high treason placed upon it." The first head set up was that of Sir Thomas Armstrong, who was hanged for complicity in the Rye House Plot, in 1683; but it is reported that Henry VIII. once threatened that if a certain Bill in which he took interest did not pass the House of Commons he would fix the heads of several of the refractory M.P.s upon the top of Temple Bar. The next victims of judicial cruelty whose mangled remains were exhibited here were Jacobites, who were found guilty of an attempt to assassinate William III. Sir John Friend and Sir William Perkins were drawn in a sledge from Newgate to Tyburn, on the 3rd of April, 1796, where they were hanged and quartered. The quarters of Sir William Perkins and Sir John Friend were placed, together with the head of the former, upon Temple Bar. Friend's head was set up on Aldgate, on account, it is supposed, of that gate being nearer his brewery on Tower-hill. Evelyn refers to the horrible scene in his "Diary":—"A dismal sight, which many visited, I think there never was such a Temple

Bar till now, except once, in time of King Charles II., viz., Sir Thomas Armstrong." The Jacobite risings in 1715 were the cause of two more heads,—those of Joseph Sullivan and Colonel Henry Oxburg,—being placed above the bar. Eight years afterwards the head of Christopher Lyster, a young barrister, who plotted for the Pretender, was placed there too, and in that position it remained for upwards of thirty years, when at last, on a stormy night, it was blown down into the Strand. "The rising of '45," which was crushed out at Culloden, brought many brave men to the scaffold, but only Colonel Townley and Captain George Fletcher had their heads exhibited upon Temple Bar, and they were the last to be placed there. The revolting sight was greatly to the taste of the brutalised mob, who gathered round the arch in large numbers for several weeks. Walpole, in a letter to Montague (Aug. 16, 1746), writes,—"I have been this morning at the Tower, and passed under the new heads at Temple Bar, where people make a trade of letting spying-glasses at a halfpenny a look." The scene is more pleasingly brought before us in the well-known anecdote of Johnson, the point of which lies in the fact that the old doctor was himself a Jacobite. "I remember being on one occasion with Goldsmith in Westminster Abbey: while we surveyed the Poets' Corner, I said to him from Ovid,—

'Forsitan et nostrum nomen misceretur istis!'

When we got to Temple Bar, he stopped me, pointed to the heads upon it, and slyly whispered me,—

'Forsitan et nostrum nomen misceretur istis!'

In 1766 the two heads they had looked at still remained upon the Bar, and in January of that year a man was observed to watch his opportunity of discharging musket-balls from a steel cross-bow at them. On March 31st, 1772, one of the heads fell down, and shortly afterwards the other was dislodged by a high wind. Temple Bar was now untenanted, but one of the spikes remained in its elevated position until the beginning of the present century. It is necessary to mention here what might not be gathered from the usual description of "human remains bleaching in the sun," that the heads and quarters that were exposed upon the Bar were previously boiled in pitch. We have as yet only spoken of the exterior, but there is also an interior, lighted by a window on each side of the building, just above the centre arch. The use of this room is reserved by the City authorities, but it is rented by Messrs. Child, the bankers, who used it until now as a receptacle for their ledgers and cash-books. When the Bar is away, and the New Laws Courts rise on the north side of the Strand, Messrs. Child will have to rebuild the mean house where they have so long done business, and which was honoured by Dickens's description in "The Tale of Two Cities"—"a miserable little shop with two little counters, where the oldest of men made your cheque shake as if the wind rustled it, while they examined the signature by the dingiest of windows, which were always under a shower-bath of mud from Fleet-street, and which were made dingier by their own iron bars and the heavy shadow of Temple Bar." Child's is one of the oldest banking-houses in London, Messrs. Blanchard & Child at the Marygold (a sign still retained by the firm), being, in 1677, among the fifty-eight goldsmiths who kept "running cashes." Charles II., Dryden, and Lord Keeper Guilford banked here, and Francis Child managed the lottery of Prince Rupert's jewels. It is not always easy to explain the reason of our affection for old and ugly relics, but we respect them because they have existed so much longer than ourselves, and because they help to connect us with the past. If we stand with our back to St. Clement's Church, where Dr. Johnson was wont to worship, and look towards Temple Bar and the old houses on the south side of the Strand, it does not require a very vivid imagination to forget the cabs and omnibuses around us, and picture to ourselves Johnson and Goldsmith standing in the unpaved street, and looking up at the heads that rise from the summit of the Bar; but when all antiquity is swept away, and new houses have arisen upon both sides of the street, the present only will be before us, and imagination will find it less easy to conjure up the past.

Masonic Hall.—The Freemasons of Sheffield intend to erect a new Masonic hall, at a cost of about 10,000l.

FAIR WEAR AND TEAR.

THE much-disputed point as to what in law constitutes "fair wear and tear" in tenements, at the last sittings of the Bloomsbury County Court obtained a judgment in the case of Allison v. North, where the plaintiff claimed 19l. 7s. for dilapidations of the tenement 29, Clarendon-road, Baywater.

The judge, Mr. G. L. Russell, observed, that evidence on the part of the plaintiff was that his tenement was held by the defendant upon a three years' agreement, which contained clauses to the effect that the house to be kept in proper repair, and left in the same state at the end of the term, "fair wear and tear" excepted; also that the garden was to be kept in proper order, left so, "fair wear and tear" excepted; and the question was, whether the covenants of the lease had been fulfilled. The defendant entered on the occupation of the house in the year 1871, and left at Lady-day last; and when tenancy commenced the house was not a new one, but had been properly painted and decorated. The defendant did not make anything about making a complaint to the plaintiff after he entered the house, about its not being properly prepared and decorated, and said he spent about 8l. to make it tenable. When the defendant let the house a surveyor was called in by the plaintiff, who reported the result of his survey in writing, and set out the cost of work necessary to be done at 17l. Upon the plaintiff wrote to the defendant, and told him that he should want 15l. to make all the repairs good, according to his agreement. The defendant then employed another surveyor to go over the house, to see what was required to put everything into proper repair, and upon the surveyor's report the defendant wrote back to the plaintiff, stating that 2l. was sufficient to do the repairs. The defendant then wrote to the plaintiff, and said that he was willing to do the repairs, but that he would not do more than 2l. This offer was rejected, but plaintiff suggested arbitrators, which defendant refused. He (the judge) was sorry that, because an arbitrator could do more justice than a judge sitting in court. Surveyors' appraisals had been called on both sides, and, as usual, had differed widely in their statements. He was, however, of opinion from the evidence that the plaintiff asked too little to the plaintiff. It was important to know the value of the premises at the time of the agreement, and under a three years' agreement. The provision that the premises should be left in the same state as at the time of the agreement, was a promise of necessity to premises from the wear of three years, and which no tenant could be called upon to make. The fixtures would be required to be put up against the walls of the rooms,—say for the hanging up of pictures, for such no charge could be made, for it was only reasonable wear; but if the paper of the rooms was sold from the tenant, and the tenant would become liable, because it was sold where it came in contact with things in the room, then it was, in law, "reasonable wear." If also when paper was torn, it was mended or patched up with paper, then the tenant would become liable, because it would not accord with the other paper on the wall, one being new and the other being soiled. It applied to him that some damage had been done to the house, and the defendant was liable. But as regards the garden, the defendant said there was no garden when he went in, but a mere waste piece of ground, and he did not take that evidence into account, because it was running counter to the agreement. The defendant, therefore, was responsible for the keeping of that in proper repair. He thought the plaintiff was entitled to 11l. 10s. Verdict for 11l. 10s., with costs, accordingly.

CRYSTAL PALACE ENGINEERING SCHOOL.

THE fifth term of the School of Practical Engineering, opened at the Crystal Palace in the beginning of 1873, came to a close on Saturday last, when certificates were awarded to the successful students: Messrs. Henry Law, M.I.E.E., and W. H. Stanger, A.I.C.E., conducted the examination.

Mr. Jabez Church, President of the Society of Engineers, presided in the lecture-theatre, presented the certificates. He felt it honoured, he said, in having been requested to take the part assigned to him in the day's proceedings. It was in itself an honour to be associated with the noble profession of engineering, and especially to be able in any way to help to encourage their younger brethren, to whom the world had to look for future works. There was great need for such an institution as this, as was conclusively shown by the rapid progress of the school had made, from 15 students at opening, increasing to 20, 30, and 35, until it had reached to 43 in the term now closed.

Mr. F. K. J. Shenton, superintendent of the School of Art, Science, and Literature, of the Examiners' report, from which it appears that twenty-two of the students had obtained sufficient number of marks for lecture question to entitle them to go in for examination upon the subject of "Railways: their Construction and Appliances." Sixteen of these twenty-two students received certificates for lecture question their marks ranging from 201 to 100; 21 the highest number obtainable.

The certificates first presented were in the Civil Engineering Section, for general survey, and the preparation of plans and estimated Parliament. The order of merit was found to be as follows:—Percy W. Britton, first; W. Michels, second; H. C. Dent, third; A.

ortham, fourth; and Joseph Hampton, fifth. The names of these five gentlemen do not appear in any of the other four groups, for each of which they have already obtained certificates in former terms. Mr. Britton, who has received all the honours the school can confer, is on this occasion awarded a special prize. Mr. Wilson, principal of the school, for the sketch of the engine. He was received with great applause by his fellow students, as also Mr. W. H. B. Green, who seemed very anxious to have achieved a "double first"; namely, marks for lecture questions, 201, and 10 in the fitting-shop; E. Green was second marks, and second in the fitting-shop; H. Turner, third for marks, and first in the term-shop; H. J. Saunders, fifth for marks, and first in drawing-office. The other double certificates were Messrs. C. S. Smith, marks and fitting; F. Maurice, marks and drawing; L. Kinder, marks and pattern-making; H. Wilson, marks and patterns; W. H. Mar, the same; A. Saubergue, marks and patterns; R. J. Glanville, marks and patterns; G. Marston, the same; C. J. Swears, marks and fitting; A. E. Needham, marks and fitting; and M. Harding, marks and patterns. Mr. W. Rees has a certificate for lecture questions—155 marks; Messrs. H. S. Fitzald, A. W. N. Lewis, J. B. Cowdy, and G. E. Cranham had certificates for drawing; F. Fitzbort and C. Cummins for pattern-making; J. T. Bickford, F. W. Blanco, and H. de Troqui, for work in the fitting-shop. Mr. W. B. Green, it should be mentioned, was awarded special prize for a paper on locomotives.

In closing their report, the Examiners express, in strong terms, their appreciation of the course of instruction, both practical and theoretical, given to the students, and state especially that they consider that the more advanced course in Civil Engineering class, will be very valuable as preparatory study for those who propose to enter that profession. They state their opinion to be "the general state of proficiency of the students does very great credit to the principal, J. W. Wilson."

The Chairman expressed his pleasure in giving such a gratifying report. From private conversation with the Examiners, he learned that he was scrupulously given their great satisfaction. The Examiners had accomplished marvellous triumphs in the last half-century, but they had great difficulties, such as the Channel tunnel, and others, before them, and genius had ample scope. He reminded his young friends that engineering is a serious responsibility as well as its sources, and one of these responsibilities, that more thought given to it now than in past times, was the direction of the expenditure of large amounts of capital entrusted to them in a way as to prove remunerative. He commended the school peculiarly fortunate in having such an efficient practical man for a principal as Mr. Wilson had proved himself to be; they had only of theorists. He hoped his young friends would follow worthily in the footsteps of those who had gone before them. He moved that the best thanks be given to the Examiners for their faithful and valuable services. The motion is seconded by Mr. David Ogilvy, one of the speakers, and passed with great acclamation on the part of the students.

Mr. Law acknowledged the vote for himself and his colleague. They had spent eight hours in the discharge of their duties with great pleasure to themselves. He did not quite think that England was about to be ruined for want of technical education, the natural aptitude and "tuck" of Englishmen would carry them through. It might be thought that the terms of this school were too short to be of any use, but he considered that even short as they were, they would be found of immense value and importance in the future. He might take that opportunity of saying that a former student of the school was in charge of his own office.

A vote of thanks was passed to Mr. J. W. Wilson, the Principal, who said that he felt that the best thanks were due to the Examiners for the great trouble and pains they had taken; and also to the Science and Art Committee for the cordial support they had uniformly given.

Engineering students might be considered very ungrateful and intractable, but his lads were not; they had worked very well indeed with the dynamometer at 90° in the shade. He did not wish to talk "shop," but would urge them to perseverance, and amongst other things to the cultivation of free-hand drawing, the importance of which could scarcely be overrated. "Feg

away" might not seem an elegant motto, but it was a good one for an engineer. He might add to Mr. Law's statement that one of their students had been taken by a large firm in Manchester at a reduction of 100 gs. in the premium, and another of their students had been taken by an eminent firm without any premium at all.

Thanks to the chairman concluded the proceedings.

From correspondence and inquiries, it is believed that at least fifty students will be entered for next term, which commences on Monday, the 7th proximo.

PROJECTED RAILWAY OPERATIONS IN GLASGOW.

SOME of the railway companies whose lines run into or across the city of Glasgow are, as it were, just now entering into rivalry with each other in the magnitude of their projected operations for increasing their accommodation. To begin with the Caledonian, it may be stated that the preliminary arrangements for carrying out their scheme of extension are all but complete, and as most of the property required for the erection of the new Central Station in Gordon-street has already been purchased, operations are to be commenced forthwith. The railway is to come out of the Hamilton Line near the Langside-road, whence it will pass under the Pollockshaws-road, and to underneath Eglinton-street, into the old Govan Poorhouse ground, where a station is to be erected. As the line from Pollockshaws-road southwards will be by means of a tunnel 16 ft. under the surface, the block of buildings there will have to be taken down and rebuilt. The old poorhouse has been acquired from the Tramway Company for the sum of 38,000*l.*, being a profit to the former of 17,000*l.* It is proposed to remove the whole of the buildings, more particularly as the new station here will of necessity be under the level of the street. As this will supersede the old Main-street Station, passengers from the Hamilton and Motherwell districts will be set down nearer to the centre of the city. From the site of the old poorhouse the line will run down the west side of Eglinton-street towards the existing Bridge-street Station, where it will cross the Clyde by means of a viaduct close to the Jamaica Bridge, and pass at an ample height over the great thoroughfares of Excecielaw and Argyle-street into Alston-street, which will be shut up, and the property on either side acquired for the purpose of forming the central terminal station, which is to occupy the ground between Argyle-street and Gordon-street. The company are negotiating for the purchase of the property between the Govan Poor-house and the river, and have already secured the most important,—the Port Eglinton Spinning Mill. With respect to the gradient on the proposed line, it falls in order to get under Pollockshaws-road and Eglinton-street; then begins to rise till it is level at Cook-street. It still rises to get over the river, and gradually falls towards Gordon-street. It is difficult to predict with any amount of certainty when these extensive works will be completed, but as at least three years will be required for the construction of the bridge over the Clyde, four years must elapse before Gordon-street Station will be ready. The whole of the Caledonian passenger traffic, with the exception of the north, will be worked from the new station.

Coming next to the Union Railway, it may be stated that various properties in the line of the proposed extension of the station from Dunlop-street to St. Enoch's-square have now been secured by the directors, after prolonged negotiations, and at an immense outlay, the buildings being situate in the very heart of the city. Operations for carrying the scheme of extension into effect will, therefore, be entered on at once. In the preparation of the plans regard has been paid not merely to present, but future, requirements; and it is anticipated that when completed this new railway terminus will be one of the handsomest and most commodious in the United Kingdom. The principal entrance will be from St. Enoch's-square, on the eastern side of which it is proposed to erect a splendid range of offices in the Gothic style; the northern wing, extending eastwards to Dunlop-street, and a carriage-way running its entire length. The railway being on a high level, the platforms will be reached by an elegant terraced carriage-way, which will start from the north-west corner of the square, near Argyle-street, and by a series

of broad staircases rising from the square, and being in the centre of the frontage. There will be six platforms, varying in length from 600 ft. to 900 ft., with a lofty iron and glass roof, the length of which will be 500 ft. Various conveniences needed for the comfort of the public will be on this floor, including spacious booking-hall, waiting-rooms for the different classes of passengers, ladies' retiring-rooms, a large restaurant, with dining-hall, police-room, telegraph office, book-stall, &c. On the south, where the arrival platforms will be placed, space will be reserved for the cab-stand, and the road will descend by an easy gradient to Howard-street. On the second floor of the front buildings the officials of the company will be accommodated, the remainder of the building being taken up by the Board-room, with secretary's and general manager's offices attached. These will occupy the most western division. The wing, which extends to Dunlop-street, will be appropriated chiefly to the subordinate officials. It is proposed to form a restaurant, having connexion with one on the platform, in the front division of the basement-flat. There will be several shops in the northern part, and the latest suggestion is that the southern portion should contain swimming, Turkish, and other baths. The extension is being carried out in accordance with an arrangement made with the Glasgow and South-Western Railway. It is anticipated that the new portion will be available for traffic within two years.

With regard to the North British Railway, the directors have long admitted the necessity of providing additional accommodation at the Queen-street Station, but the subject has been considered by them in a more striking light since the communication to them by the magistrates of Glasgow. Before anything can be done in the way of extension, it is felt that the goods department will have to be transferred from Queen-street. It is stated, however, that no action will be taken until the Eight-hill branch is completed. Even should the goods department be removed, the accommodation will still be limited, so long as the mouth of the tunnel is so contracted as to admit of only two sets of rails. A plan is suggested, though it is not yet matured, for replacing the mouth of the existing tunnel by a girder bridge, so that six or eight sets of rails might stretch from the bottom of the station to a considerable distance up the tunnel. It is not thought probable that the North British directors will seriously consider the proposal for an underground railway from Slatecross line to Queen-street, nor yet another plan which has been suggested by "private parties," of connecting Queen-street and College Stations. The carrying out of the latter scheme would cost a million of money.

ARCHITECTURAL EDUCATION IN JAPAN, AND PROGRESS OF THE COUNTRY.

HER Majesty's Secretary of Legation, Mr. Watson, has just published a long report upon the educational system of Japan, and from this we glean some information with regard to the study of architectural, building, and engineering matters in that country. The government of Japan being a departmental one, there is a minister for each department, and all these departments employ a certain number of foreigners for educational purposes. The principal one is the "Kobusho," or Department of Public Works, which comprises the following sub-departments, viz., railways, telegraphs, light-houses, mines, surveys, engineering, and mechanical. It is mentioned that at the Survey Department there are twenty-one Japanese students, and at the Engineering thirty. There is a large engineering college in connexion with the Department of Public Works, the principal of which is Mr. Henry Dyer, C.E., M.A., B.Sc., University of Glasgow. At this college the course of training is fixed to extend over six years. During the first four years it is provided that six months of each year will be spent in the practice of the particular branch which the student may select, while the last two years of the course will be spent wholly in practical work. It is the aim of the college to train students in the following branches of technical education;—architecture, civil engineering, mechanical engineering, telegraphy, mining, metallurgy, and practical chemistry; and the student's whole course of training may be thus divided:—1, the general and scientific course; 2, the technical course; and, 3, the practical course

The first course forms the foundation of the technical applications, and is common to all the special divisions into which the students are separated. As to the technical course, each student will be required to attend the special technical course for that branch of engineering, which will be select. This course includes architecture—viz., the study of surveying, strength of materials, geology, architecture and building construction, freehand drawing, &c.; civil engineering, higher mathematics, higher natural philosophy, mechanical engineering, &c. The progress of the students, it is stated, will be tested by periodical examinations, and by assigning values to drawings, reports, &c., executed by them at college, as well as to work done by them in the summer in connexion with the Department of Public Works. At the end of the second year, a general examination will be held on all the subjects of the scientific course, and at the end of the fourth year an examination will be held in the technical course. Each student who attains the prescribed qualifying standard will receive the diploma of "Licentiate of Engineering" (L.E.), and will be appointed assistant in that branch of the Public Works Department which he has selected. At the end of the sixth year a final examination will be held, in which the student's knowledge of the works he has been engaged in, and those of a similar nature, will be tested; and he will also be required to send in complete drawings, specifications, &c., of a work on a prescribed subject. Having passed a satisfactory examination, each student will receive the diploma of "Master of Engineering" (M.E.), and will be appointed engineer to the Board of Public Works. So that the educational system of the college may be thoroughly complete, there is every opportunity afforded the student for practical study. There is a physical laboratory, a chemical laboratory, workshop, and a technical museum, in the architectural department of which are models of the various methods employed in building construction, together with examples of the different styles of architecture. With regard to drawing, it is pointed out that during the first two years the student will be taught the principles of geometrical drawing, and its application to elementary examples in general construction. This course will comprise architectural drawing,—viz., details and construction of roofs, floors, &c.; general details of buildings, architectural design, principles of ornament suitable to the different styles of building, and leading features of the various historical styles of ornament. For engineering drawing the study will be of working drawings of general engineering works, such as foundations, earthworks, walls, framing, wood, stone, girder, tubular, and suspension bridges, general railway works in their various details, harbours, lighthouses, docks, canals, &c. With regard to those students who select to make architecture their special branch of study, the course comprises,—a description and review of the different styles of architecture, materials used in construction, manufacture of bricks, tiles, drain-pipes, &c., composition of mortars, cements, and concrete, different methods of putting in foundations, cost of excavations in different soils, construction of walls of brick, marble, &c., construction of timber and iron roofs, floors, &c., arches of brick, timber, stone, calculation of the strength of girders, practical examples in modern architecture, details of specifications and contracts. The course of "general construction" is also very complete, and likely to turn out the student thoroughly proficient. The course of "special construction" embraces roads,—selection of route, survey, earthworks, arrangement of gradients, construction of roads, drainage, &c., railways, selection of route and arrangement of curves and gradients, different systems of haulage, arrangement of termini and stations, canals, choice of route, classification of canals, arrangement of levels, locks, &c., construction of aqueducts, tunnels, masonry, excavations, sinking shafts and driving roadway, subaqueous tunnels; harbours, docks, and bridges will also be most thoroughly studied.

In the second part of his report, Mr. Watson devotes some space to the consideration of the progress achieved of late in Japan. Amongst the most prominent indications of such progress is the introduction of steam power, and it is mentioned by Mr. Watson that there is now a line of railway, eighteen miles in length, in operation between Yedo and Yokohama, and the average number of persons who travel upon it each day is about 4,000. Another line about

twenty-three miles in length, will be opened in the course of a short time, which will connect Higo with Osaka; and the preliminary surveys have been undertaken for the continuance of this line to Kioto. The line already in operation, it is satisfactory to hear, has been worked with complete success, its advantages being thoroughly appreciated by the Japanese of all classes. As proofs of progress in other respects, it is mentioned that steam vessels now ply in the Japanese waters in many directions; that the use of wheeled conveyances has become of late much more general; that telegraphs have been introduced, though not with the same success as railways; that foreign machinery has been imported to a certain extent; that a system of lighthouses has been established under European direction, which is being extended along the entire circuit of the coasts; that quays have here and there been constructed; and that lock hospitals have been introduced in several of the Treaty ports. Considering these indications of progress generally, it would certainly appear as though Japan means to go ahead.

PUBLIC WORKS IN INDIA.

THE appointment of a Member of Council who shall be responsible to the Viceroy for all Indian Public Works may seem highly satisfactory to the Houses of Lords and Commons; and to those who are enabled to form any conception of the size of the country and the magnitude of the task involved in dotting the face of British India with all kinds of building and engineering works the appointment is certainly a tiny step in the right direction. Henceforth, there will be at least one responsible official in the Indian Department of Public Works—the P. W. D., or Public Works Department, as it has been too long designated by both rulers and ruled in the country itself.

But what public servant will accept a post of almost unprecedented difficulty and certain danger? He must be versed, if not tried, in Indian politics; he must have not only confidence in himself, but confidence in those for whom he is in duty bound to hold himself responsible. There is only one man living who can accept the position with grace, or even approach it without fear of being accused of temerity; and this man is Major-General Strachey, R.E., who, during the late Lord Mayo's administration, was Secretary to the Government of India in the Department of Public Works. This gallant officer's courage in the face of inimical facts has been tested before a Parliamentary Commission specially convened to elicit information concerning the appalling waste of Indian public money by engineering officials, the absolute failure and official condemnation of some public works, and the early deterioration of others. It was before this Commission that General Strachey, with becoming irascibility, made his declaration that the Department of Public Works was "the best managed Department in India." Of course this little speech was a joke, otherwise it would have been a severe reflection upon, if not defamation of, the whole administration of the Peninsula; and the joke was continued only the other day by a personage no less exalted than the Marquis of Salisbury in his good-humoured address to the students of the Engineering College at Cooper's-hill. Lord Salisbury's anecdote of the gentleman connected with the Indian Civil Service—probably Sir George Campbell,—who had not the heart to look upon youths each representing an eventual expenditure of one million sterling, and who consequently stayed away, is eminently amusing. It was equally funny when the Indian Secretary of State bantered the engineers, both military and civil, for their loose notions of a signed estimate. It was natural for the audience aforesaid to applaud when Lord Salisbury reminded them that the work of the engineer was always a source of satisfaction to himself, since the usefulness of a bridge or a railway could never be doubted; but the European inhabitants of India, who have sometimes to be paddled across rivers in native canoes because the bridges have tumbled down, or to encamp on the open plain under the burning sun or continued rain, because the European barracks have been condemned as unsafe and unfit for habitation, may, perhaps, look at the matter in a different light, and with feelings of a diametrically opposite nature. The natives for whose ostensible benefit all these engineering works are done, and paid

for with their own money, may also x the joke as a practical one; and they not unlikely to have some reasonable d whether the millions of money to be diab upon canals and other works for the s averting the consequences of chronic f could not be more safely invested else than in the hazardous labours of the Indian engineer. We who know some of the difficulties attendant upon estimating cost of European buildings, and the unfavourable circumstances which often arise to swell expenditure in spite of the most conscientious architect or most indefatigable builder, are expected to feel compunction in criticising engineers placed in positions of far greater difficulty, often distant in a distant country from their colleagues, and, indeed, professional of any description,—surrounded by native men, whose language they barely understand, and whom they dare not trust either in word or deed. Nevertheless, much as we are disposed to admit the perplexities which thwart the intentions of officials in India, we cannot deem them irremediable. We try to imagine the of commotion which would arise in this country if a tenth of the failures or blunders in Indian engineering works could occur in England; and hundredth part of the money known to have been wasted at Saugor, were squandered by the Government even in an obscure Irish village. Imagine a building erected with public money, costing 5,000l., in County Antrim, to be condemned as useless and dangerous a year after its completion! Yet, in India, a similar effort of imagination is unnecessary. At Saugor, in the Central Provinces, where there is a Chief Commissioner and a complete hierarchy of officials, departments, barracks were built at a cost of 166,000l. The time spent in their erection was four years and a half. In little more than a year after their completion they were condemned as dangerous and useless by a committee specially appointed for the purpose by the Government of India; and the disgraceful story revealed to the public in an extra supplement to the *Gazette* towards the close of 1872. This was worse than the many other similar tales of mismanagement and incompetency of which the public had been already informed was the reason that it attracted attention and aroused disgust even amongst apathetic Anglo-Indians. An intimate acquaintance with the facts of the scandal, and the results of the Government's censure upon the officers concerned in it, has led us to doubt whether the appointment of a Works Member of Council will ameliorate the condition of the Department itself, or, if it do anything else than increase the actual complexity caused to Lord Northbrook by the number of his councillors.

The organisation of the Department of Public Works is admirable,—upon paper. As in Bombay, or Madras, or in the Central Provinces, there is a Chief Engineer, whose business is general; there are Superintending Engineers who each control a Circle; each Circle is divided into Divisions; and an Executive Engineer is in charge of each Division. Each Executive Engineer has an Assistant Engineer under him as sub-engineers, foremen, native clerks, men, &c. Now, the story of the Saugor barracks shows all these functionaries thought deceiving each other during the progress of the work, and gallantly shielding each other from the failure of the same. One black engineer, the flock, however, betrayed them; and the Executive Engineer, did not enter upon the duties of his Division until the completion of the barracks. A captain of the Royal Engineers in charge from the beginning to the end of the work, and upon him necessarily rested responsibility for their failure. His defence was most naïve, gentlemanlike, and modest. He did not know that his work was faulty; he had had little experience in building and less instruction. His superiors had approved of much that he had done at the barracks; he consequently thought that it must be all right, and so continued blindly to do wrong, defended himself in polished language, after the same fashion as his overseer, a gallant general in the corps, who shouted "Bedad, sir, I thought I was doing it first-rate. I had only just from Roorkee,* and not much I knew of building, and no one told me I was going wrong." during the period of the works, there were

* An Engineering College in the North-West Provinces where this man had served for twelve months, after having been seven years in the army. He was originally labourer.

Chief Engineers in charge of the Central Provinces,—the first a colonel in the Royal Engineers, and the next a civil engineer of high standing and experience. The Superintending Engineer of the Jubbalpore Circle was responsible for the Government buildings at Saugor. He paid three visits to the barracks in question, and wrote one report about them. He also was man of high reputation, and his printed report owed the works to be most satisfactory and creditable to the Executive Engineer in charge of them. The first Chief Engineer only inspected the barracks once during the two years and four months while they were being built; but his successor identified himself with their failure in a way which goes far to prove the almost total impossibility of establishing individual responsibility amongst a body of men held together by such *esprit de corps* as are the Indian engineers. When the new Executive Engineer arrived, he reported the barracks to be insecure, and said that the walls were cracking; also, that after using his fingers and a walking-stick, he could bury his arm in some of the rubble work. The Chief Engineer answered his official report in the following words:—"Mr. — has the honour to inform you that he disapproves of your picking holes in the Saugor Barracks without orders." At the same time, and during a long time afterwards, maintained that the barracks were sound" and well built; that the black sheep who had been picking holes was wrong, and the only person to blame; but this gentleman, Mr. Fitzmaurice, turned out to be right, and the Saugor barracks were evacuated soon after they had been reported up as a precaution against immediate action. These buildings were erected not by contract with builders, native or European, but by the department itself. The soil upon which they were built was good; and had the simplest precautions been taken, the foundations might have been rendered secure, and even perfect. That sixteen lacs of rupees were squandered to no purpose upon them is due mainly to the systematic abuse of a really workable system; and the persons who should have suffered censure are the Superintending Engineer of the Central Provinces at that time, and the Secretary to Government in the Department located at Calcutta,—not the unfortunate captain of engineers, who was deprived of his appointment and incapacitated from holding any other in the Department of Public Works. That this has been felt probably accounts for the fact of the officer in question having been lately re-appointed to a post in the Punjab, under the engineer-in-chief of that Province. Now the secretary to whom we have just alluded was General Strachey, who has been named, with some show of probability, as the first Public Works Member of Council at Calcutta. If we thought that his or any one else's appointment to the post were the prelude to a complete reform of the present mode of working the Department, and heralded an investigation into the duties of the different grades of officers, we would wait with folded arms for a desired result; but we fear, on the contrary, that the creation of the appointment will be deemed by the Indian Government sufficient to keep the press and the public quiet for some years at least. The most fitting person to do the deed, *i.e.*, reform the Department of Public Works, is Mr. Ayrton; for very disagreeable work will have to be accomplished before any palpable good can be effected in what Anglo-Indians confidently assert to be the worst managed Department in India.

The avowed difficulty throughout India,—though less in Bombay and Madras than elsewhere,—is to obtain proper working drawings and properly studied designs. Some of the drawings made for public buildings in Bengal are reported to be ludicrously inadequate, even though signed, as is the custom, by officers of all grades, both civil and military. This, at least, can be remedied; but the question of fixing responsibility is a harder one to answer. The Ministerial appointments in India, if we may so term them, are held for five years only, and buildings sometimes take longer than that time to complete. Half a dozen different Executive Engineers have been known to be employed successively in the erection of one building; and be it remembered, this officer performs the functions of the English builder. He also, in conjunction with his Assistant Engineer and some native draughtsmen, makes the design; and thus builder and architect are rolled into one functionary. Such a *mélange*, in England at least, usually results in the builder getting the best of it, to the detriment of the client. Now, the

client in India is "Government" acting for the people; and public money is often not expended with the same scrupulousness as are private funds. If the Executive Engineer is to be the builder,—and this is his logical position,—then his master, the Superintending Engineer, should be the architect, and all designs should emanate from his office. The Superintending Engineer, who is the head of a Circle, has, let us say, half a dozen Executive Engineers under him, and each one of these latter may be engaged upon one, or even two, large buildings. If the former have a proper staff in his office he can prepare designs for a dozen buildings; and, in spite of what has been officially, and even professionally, said to the contrary, the working drawings and full-size detail drawings ought to be made by him who makes the design,—not by the builder who carries it out. To do this, the Superintending Engineer must be educated as an architect as well as an engineer, and he should rise to his elevated position, not by seniority or routine, but by merit,—though who, alas! shall decide if he has any, or even recognise it when he has? It is not, however, beauty in design that is required in India. The question of Gothic or Classic architecture may be shelved as far as that country goes for a number of years yet. Sensible work-a-day designs, carefully drawn to a large scale, with the building parts put together according to the recognised principles of construction, are alone necessary. The tendency, in Bengal at least, is to under-rate the value of good drawing, and, with unequalled arguments in favour of the "practical," to discard theories of construction. Every new building should be built upon paper by competent hands and heads before the Executive Engineer be permitted to commence the works; and the superintendence of such works should devolve upon him who designed them,—upon whom obviously the responsibility of constructive failure or success should be made to fall. The Superintending Engineer's office would thus assimilate to that of a professional architect; and to do this effectually a staff of European assistants,—good practical draughtsmen,—ought to be attached to each Circle, at least in the large cities. This is nowhere more required than in Calcutta, where the natives, unpossessed of any valuable indigenous examples, have come to look upon architecture as an exploded, unpractical, and useless art; to regard modern buildings as hereditary occupation for Europeans who have been unable to find employment in Europe, and intended to endure for the space of an administration, which, unless death intervenes, lasts five years.

THE NEW ALEXANDRA PALACE.

The first building erected at Muswell-hill was burnt down on the 9th of June, 1873, and the second is now finished, as regards the material work, the first brick having been laid on the 10th of October, 1873. The last touches are now being given by the decorators.

The new building stands on the same spot as the old one did, and is of the same length and breadth, but the enclosed area is much larger, it covering $\frac{7}{8}$ acres, for while the first may be described as a long and comparatively narrow nave intersected by three transepts projecting considerably at both façades, the second building is a complete parallelogram; the amount of additional space thus obtained is very large.

As in the old building, the great hall forms the central transept, but in place of a dome it has a semicircular and very lofty roof supported on four rows of columns, and thus a great hall is obtained 386 ft. long by 184 ft. wide, with parallel sides, in which is a series of doors, and when necessary it can be shut off entirely from the rest of the building.

The central span of the roof is 85 ft., and light is obtained by two broad belts of white glass with ruby borders running the whole length of the roof, and by a series of lunettes forming a clearstory filled in with ornamental coloured glass; as also are the circular windows of the gables at each end. The central portion of the roof between the glazed belts and those between the latter and lunettes including the spandrels are decorated with bright Cinque-cento paintings of the Italian school. Right and left of the great hall are two courts, one of which is roofed with glass, and the other open to the air; these inclosed gardens are each 210 ft. long, 140 ft. wide. On each side of these courts are corridors of the same length, those on one side being for picture-galleries, and those on the other to

be decorated with sculpture, objects of art, climbing plants, and flowers.

Beyond these courts, and between them and the eastern and western entrances are two large conservatories surmounted by glass domes, one intended for a permanent show of plants, the other for horticultural and floral exhibitions. In order to give the greatest possible freedom of movement to large masses of visitors and also to ensure the ventilation, the partition walls of all the parts we have mentioned are filled in with glazed doors, which fold into recesses, so that when open the entire central portion of the building is free from end to end. At the north end of the great hall is the grand orchestra, seating 1,150 performers, with organ by Willis. A large concert-room is provided at the north-west side of the building which will hold 2,700 persons sitting, and on the north-east side, in a corresponding position, a complete theatre of about the same capacity as the concert-room. Both are provided with all necessary dressing-rooms for artists, and every other accommodation requisite.

The whole building is warmed with hot water, the apparatus being supplied by Mr. Phipson, C.E.

On the right and left of the western entrance are a small theatre for special purposes, and a lecture and reading room, 60 ft. by 40 ft. The above forms the whole of the exhibition building proper, which is provided with tea, coffee, and refreshment bars variously placed, and also buffets and retiring rooms in convenient situations.

On the north side of the building there is no upper floor, the theatre and concert-room occupying the whole space.

The south front is devoted entirely to the hotel department, which occupies the two floors and the basement, and is on an exceptionally large scale. To the west of the great hall are large first-class dining and ante-rooms, and on the eastern side a grand coffee-room, luncheon and grille room. On the one pair the western end contains a great banquetting-hall, 200 ft. by 50 ft., and on the corresponding side private dining-rooms of various sizes.

The services and other rooms on both floors, and the kitchens, store-rooms, cellars, and offices on the basement, are almost innumerable and of large dimensions. The whole of the rooms on the ground-floor open into a covered colonnade, and those on the upper floor into arcades as seen on the accompanying view which gives the general effect of the building without the necessity for any description. It may be mentioned, however, that the end of the great hall and the corner towers project 10 ft. beyond the rest of the façade, and the arcades are 10 ft. deep.

The window openings on the terraces are 20 ft. high, and down to the floor-line the lower sashes are hung: the top part opens for ventilation while the centre portions are immovable. On the top of the four towers are water reservoirs containing 16,000 gallons each, and at the angles of the central hall are four other reservoirs of 7,000 gallons each, the whole supplied by steam-pumps from the New River Company's reservoirs.

Completely surrounded by its own park the building is accessible on every side, and the railway being carried beneath the terrace, stairs on each side of the great hall lead from the platform of the station into the Palace. The company's board-room, and the offices of the manager, clerks, and assistants are on the two floors on each side of the eastern entrance. A post and telegraph office will be formed to the left of the south entrance, and a covered carriage-way at the eastern entrance.

The material used for the façades of the building are white Huntingdon and dark-coloured yellow bricks, the mouldings and ornaments being of Portland cement. The corner towers are surmounted with decorated Mansard roofs and metal finials, and are 180 ft. high from the ground-floor. The extreme length of the new Palace is 897 ft. 6 in. and it is 386 ft. wide. The architect of the building is Mr. John Johnson, of Buckingham-street, Strand; the contractors are Messrs. Kelk & Lucas; and Mr. Clements is clerk of the works. The decorations are being executed by Mr. Schmidt and his assistants.

For those who rejoice in statistics we are able to record that 15,000,000 of bricks have been used, and 8,000 tons of lime. The wrought-iron, 764 tons, was supplied by Messrs. Handyside, of Derby; the cast-iron, 1,354 tons, by the Staveley Works, Staffordshire.

1. South terrace.
2. North terrace.
3. East (enclosed carriage) entrance.
4. Carriage drive.
5. Outside lobby.
6. Inside lobby.
7. Grand central hall, 386 ft. by 184 ft. 6 in.
8. Great orchestra organ over the tower.

11. Billiard-room.
12. Concert-room corridor.
13. Concert-room, 115 ft. by 66 ft. 7 in.
14. Vestibule.
15. Acting room.
16. Theatrical corridor.
17. Stage, 52 ft. deep.
18. Artists' entrance.
19. Artists' gallery, 50 ft. wide each.
20. Open court.

23. Open area.
24. Open colonnade, 99 ft. wide each.
25. Concessions, 20 ft. by 10 ft. 4 in.
26. Concessions, 20 ft. by 10 ft. 4 in.
27. Reception office.
28. Secretary's office.
29. Secretary's office.
30. Clerk's office.
31. Women's refreshment-room.
32. Porter.

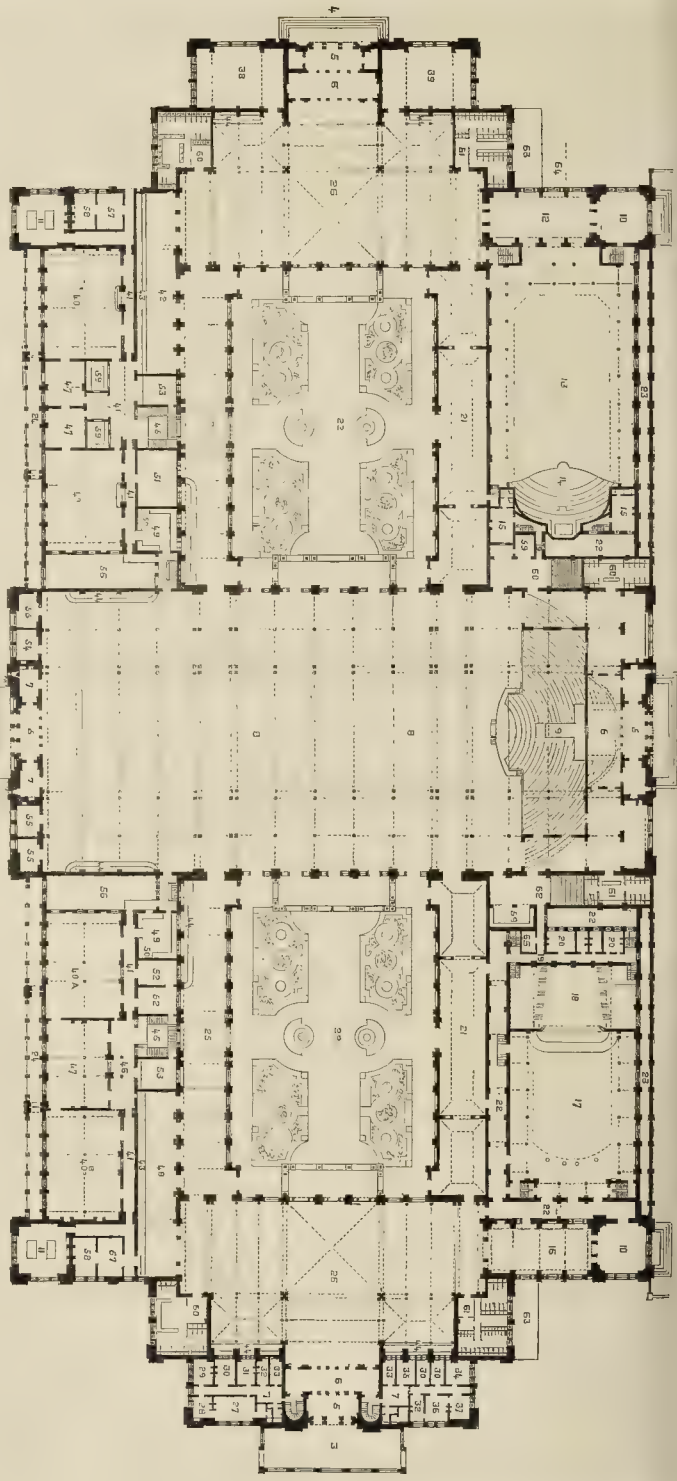
34. First superintendent.
35. Second superintendent.
36. Manager's office.
37. Library and reading-room, 60 ft. by 15 ft. 10 in.
38. Theatre for special purposes, 60 ft. by 15 ft. 10 in.
39. First-class banquet-room, 73 ft. by 15 ft. 10 in.
40. First-class banquet-room, 67 ft. by 15 ft. 10 in.
41. First-class banquet-room, 67 ft. by 15 ft. 10 in.

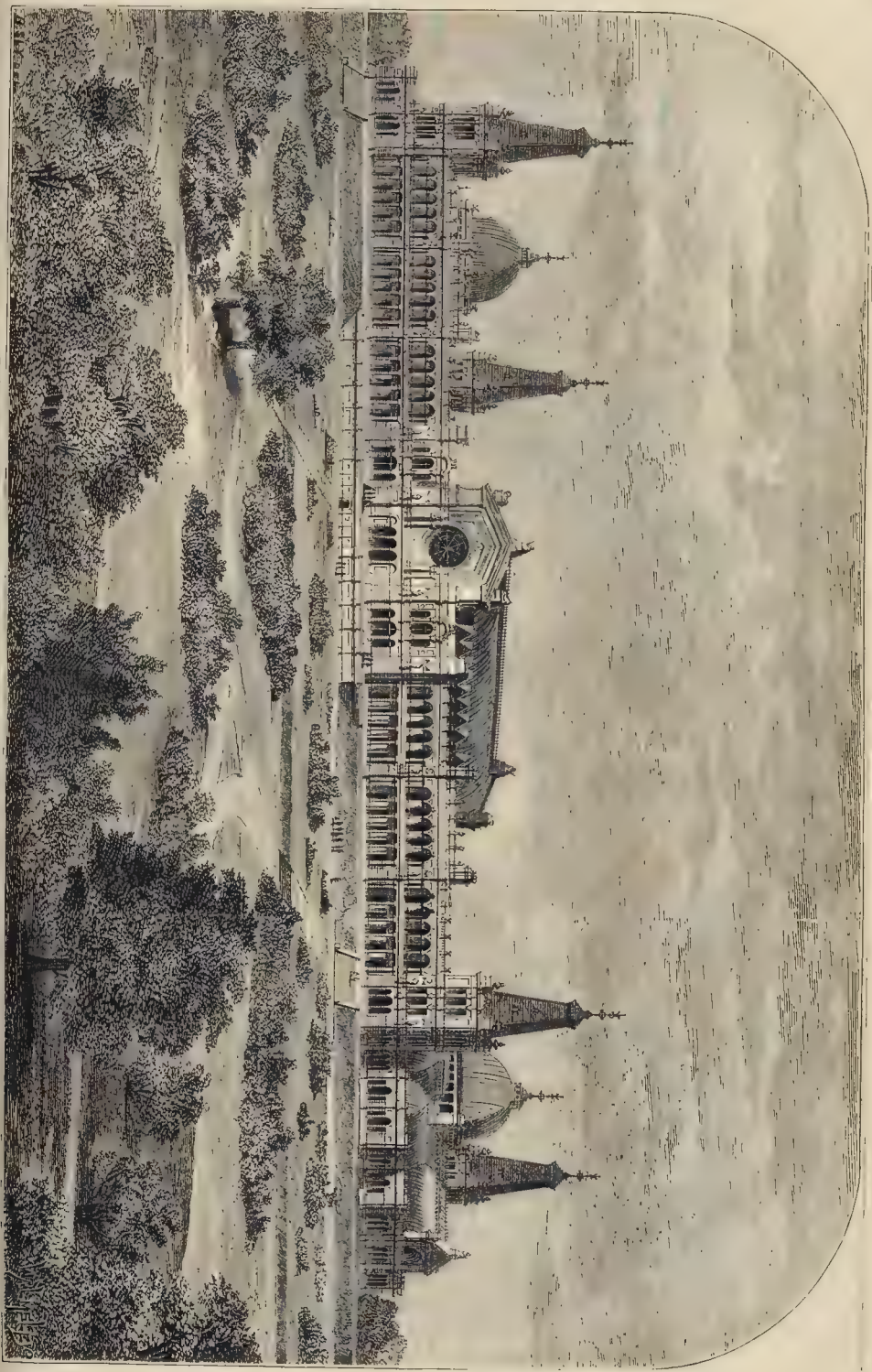
40. Grille and cold meats room, 70 ft. by 15 ft. 10 in.
41. Grille and cold meats room, 70 ft. by 15 ft. 10 in.
42. Refreshment-bar.
43. Buffet, cold buffet.
44. Vestibule.
45. Vestibule.
46. Vestibule.
47. Vestibule.
48. Vestibule.
49. Vestibule.
50. Vestibule.
51. Vestibule.

62. Messrs. Hertram and Roberts' offices.
63. Telegraph and post-office.
64. Office.
65. Office.
66. Office.
67. Office.
68. Office.
69. Office.
70. Office.
71. Office.
72. Office.
73. Office.
74. Office.
75. Office.
76. Office.
77. Office.
78. Office.
79. Office.
80. Office.
81. Office.
82. Office.
83. Office.
84. Office.
85. Office.
86. Office.
87. Office.
88. Office.
89. Office.
90. Office.
91. Office.
92. Office.
93. Office.
94. Office.
95. Office.
96. Office.
97. Office.
98. Office.
99. Office.
100. Office.

THE NEW ALEXANDRA PALACE.—Plan.

Scale of Feet
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000





THE NEW ALEXANDRA PALACE, MUSWELL HILL.—MR. JOHN JOHNSON, ARCHT.

DWELLINGS OF

THE SPANISH ARTIZANS AND SLAVES IN THE WEST INDIES.

Porto Rico, an island of the Greater Antilles, affords a very fair example of the condition of the Spanish industrial classes in the West Indies, and although their condition cannot command the same degree of attention as that of the same classes in countries of greater importance, there are many circumstances which have a peculiar interest, particularly the unusual proportion of whites to coloured people, and the fact of the production of the island being the largest in the tropical world for its extent, and at the same time the number of slaves employed in it proportionately the smallest. There is, we may premise, no inducement for the British artisan or labourer to seek for employment here. The labourer working in the fields would perish in less than three months, and the mechanic would be disgusted with the discomfort and impurity of the dwellings, and little disposed to compete against extremely zealous natives for a daily wage equal to that which he gets at home. The Creole artisan is, however, contented with his condition. He earns about 4s. a day, and although rent is high and clothing dear, he contrives to appear on Sundays and Saint days hearty and brisk, resplendent in a black cloth coat, white waistcoat and trousers, red or blue cravat, chimney-pot hat, gilt watch and chain, and an assortment of spurious jewelry. He lives on such food as yams, plantains, rice, with an occasional piece of dried beef or salt fish, flavoured with oil or garlic, and his favourite tipple is a dram of new rum.

In town the artisan lives in a single room about 10 ft. square, destitute of windows or aperture except the door leading from the *patio* or court of some large house, in which hot uncomfortable den he is pleased to dwell, rather than exert himself to procure better accommodation. The space in which the population of the city is massed being less than half a mile square, the houses are naturally crowded together. Some are three stories high, and all are built strongly of brick and mortar. They are all on the same plan,—an oblong square, in the centre of which is an open court. Around these courts are the dwellings of the industrial classes, which are no better than cellars 3 ft. to 10 ft. square, paved with stone, having one door, and no other means of ventilation. There are as many as eight or ten of these abodes in a large house, and they all lead into the court, where is the well supplied by rain-water from the roof of the house, which is flat for the purpose. This serves also for a promenade in the evening, and notwithstanding that it contains the water supply, is rendered foul by rejected cigar-ends, the spitting of Spaniards, and the dung of cats, dogs, &c. Near the well in the court is the *aseo*, so near that its contents must percolate into the drinking-water, yet it is rarely emptied.

In these damp, sunless courts, into which the rooms of the working classes open, about thirty people live, there being an average of five persons to each room. There they eat, drink, sleep, wash occasionally, and cook, and the smells arising from these operations,—the fumes of garlic and catnip oil, and the disgusting odour of the cesspool,—would render an English artisan's life miserable. "I watched," says a resident, "one old lady who combined economy in water with cleanliness of person: every day she came into the court with a tumbler of water and a piece of stick, with this she cleaned her teeth, discharging the water into her hand and washed her face with it." Yet, strange to say, this foul-smelling, overcrowded, air-poisoned capital of Porto Rico is one of the most healthy places in the world. Here all hygienic laws seem to be defied. The cemetery at times is not opened for eight days.

The houses of slaves upon an estate are very different from those in town. They are like large lead boxes of about 8 ft. square fixed upon a large raised about 2 ft. from the ground. Each has a door, and sometimes a small window; in it the slave and his family live. There are estates, however, where the slaves live in barracks or quarters, which are only boxes of larger size, into one of which all the men are put at night and all the women in the other, and locked in. In these cases little or no regard is paid to decency, cleanliness, or ventilation; filth reigns supreme within and without.

The free labourer is, if anything, worse off than the slave as regards habitation. He

pitches it anywhere that he can get permission to do so. It is usually built of poles instead of planks, filled in with cocoa-nut leaves, and is often situated in low, unhealthy positions. It is generally raised higher from the ground than the slaves; but it is in such a wretched condition being unprotected from the heavy tropical rains, and violent winds, and the great vicissitudes of temperature prevalent here, that the free man and his family are often in a deplorable state. The wretched shod during a storm is something worse than the open-air torrents of dirty water coming through the decomposed leaves of the roof and horizontal douches blown through the sides. In this shed the family take shelter, and sit shivering with age, looking the very picture of misery until the storm has abated. They might, of course, build better habitations, but they say that upon the slightest provocation the estate-owner causes them to be burned, and drives the inmates off the property.

The slave men and women and freemen upon a sugar estate are employed in planting, cutting, grinding, and cleaning the cane. They work during crop time twenty out of twenty-four hours. For a mechanic the hours of labour are about ten,—that is to say, from sunrise to sunset. The quality of work executed by them is rough, but strong. This is needful here considering the frequency of earthquakes. Yet the houses, so strongly have they been erected, have withstood them all. On the edge of a precipitous hill stands the Casa Plancia, which was built 300 years ago by Ponce de Leon, and which is still in excellent preservation. It is pointed out with pardonable pride as a proof of the great strength and durability of native workmanship.

METALS IN HOMER.

THE range of metallic knowledge shown by Homer is very restricted, and some points are almost unintelligible.

Thus, there is no specific word for metal in general but *χαλκός*. *Μεταλλου* occurs thrice in the "Iliad," and twice in the "Odyssey." It is not in any way applied to metals or to mining, being strictly confined to its primitive meaning, "to search out," a something similar to our word "prospecting," and whence the search for metals below ground, called mining. It is clearly known that surface-fouled metals alone were at first used, and, very probably, meteoric iron before they became acquainted with native ores.

Modern travellers show that Asiatics still work the scattered ore found loose among the soil at Unich Kaléh, anciently Chalybes in Pontus, the very cradle of the steel manufacture.

Some writers fancy that Homer mentions the mixed metal called *electrum*. This is a fallacy; for *ήλεκτρον* should be rendered "amber." The word occurs thrice in the "Odyssey"; in the "Iliad" we have only *ήλεκτρον*, "the sun."

Μολύβδος occurs twice in the "Iliad," and the writer well knew the properties of lead. I do not find it in the "Odyssey."

Κιάδος is a very obscure word; it occurs fifteen times in the "Iliad," six times in the "Odyssey." Its modern equivalent would be *cyanite*, which is a silicate of alumina; *κιάδος* was known to Theophrastus as *lapis lavuli*. In Homer it probably means a lacquered or enamelled metal. Some writers render it as steel, but that word does not suit all passages; and steel, if at all known, was an equivalent for iron.

Κασσίτερος for tin occurs ten times in the "Iliad"; I do not find it at all in the "Odyssey." *Σίδηρος*, iron, occurs twenty-three times in the "Iliad," twenty-four times in the "Odyssey." Homer speaks of iron in the mass, and it was used freely for agricultural, household, and domestic implements; in some passages it might very properly be rendered "steel," which, however, is merely a subsidiary distinction, for steel is iron.

The common word after all,—the term in general use,—is *χαλκός*; in different forms it appears 173 times in the "Iliad," 66 times in the "Odyssey." It cannot be denied that the primitive meaning of *χαλκός* is "copper"; the weapons known to Homer's heroes were certainly manufactured out of copper: copper with alloy, but chiefly of copper. We talk of a bronze age, but Homer did not know the word, nor had he any proper equivalent for it; to him the material was copper, and it is very doubtful if he could distinguish the distinctive ingredients. In fact, it would be to him a mystery of Hephestos; Greeks called copper, bronze, and brass alike by the name of *χαλκός*; and even now, when we

disinter a metal weapon of antiquity, it needs a competent analysis to prove its quality.

Copper was abundant, very accessible, and easily worked; it was *par excellence* the metal of pre-historic antiquity, and I infer that when the poet meant to designate any article of metal, without specifying its character, the word *χαλκός* was inevitably resorted to.

There is a fine Greek helmet, with other accessories, in the Tower armoury; I fancy it is attributed to about 400 B.C., and when I saw it last its coppery tinge was unmistakable. I do not know if it has been analysed.

In this we make no account of gold and silver; both were abundant; but I stop with the materials available for warlike weapons. A. H.

THE DECAY OF STONE IN BUILDINGS.

SIR,—The letter of "Pro Bono Publico," in your issue of July 18th, page 612, I read with great interest. The subject of which it treats demands the attention of all who are interested in the erection and preservation of buildings in which stone is more or less used. I quite agree with your correspondent that the various attempts to arrest the decay of stone have hitherto been of little or no avail, and that the true cause of our stone buildings so soon crumbling to dust lies in the very first operation in the process of building, viz., in the preparing of the stones by the masons. The evil is, undoubtedly, done in the masons' shop. "Pro Bono Publico" attributes the decay to the use of heavy hammers and mallets, and wide chisels, by the masons, and intimates that by employing such heavy tools faces of the stone so treated are for some depth pounded to a fine powder. Now after having myself carefully studied the matter for years, I would suggest another circumstance which I believe to be the real cause of decay. Nearly all stones, as we all know, have a face and a bed, or, in other words, a right and a wrong way of the grain, and the first thing a mason should do after putting a stone on his banker is to examine it and satisfy himself which is the bed of the stone, and then work it accordingly, i.e., work it so that when it is fixed in the building it will be laid on its natural bed, or in the same position in which it was found in the quarry. Now this is the root of the matter. A stone that is not laid on its natural bed will most assuredly decay. If we look at some stone buildings but recently erected fast hastening to decay (and there are not a few of them), we may observe that one stone has perished and requires to be cut out and replaced by another, while probably the one next to it is as good as when first placed in the building. Both stones are from the same quarry; perhaps both cut out of the same block. How is this to be accounted for? In nearly every instance because the one has been laid on its natural bed, while the other has not. The working of stones where the bed is made to take the place of the face is assuredly the chief cause of the lamentable state of dilapidation observable in some stone buildings but recently erected. (I can assign no other sufficient cause where good stone is used.) Proper care and precautions furnish an easy remedy. Almost the first thing that meets the eye in looking over the specification an architect has prepared for the builder is, "that all stone is to be of the best quality, and to be laid on its natural bed." But is this clause strictly adhered to? It ought to be; why is it not? For various reasons. Sometimes to save stone, sometimes to save labour, but principally from carelessness on the part of the mason. The bed of some stones is very difficult to detect in the first instance, and when worked much more so. In all dubious cases the question should be decided by the architect through his clerk of works. If an experienced practical mason, he will at once detect it. I say select the most durable stone that can be obtained; let it be an inflexible rule that every stone shall be laid on its natural bed. We may then hope that our stone structures will be sound, substantial, and permanent. T. G.

Wenlock. — Messrs. Laxelles & Co. have almost finished the rebuilding of Lord Wenlock's Shropshire residence. It is built from a design by Mr. Shaw, and is in the Tudor style. The management of the building has been entrusted to Mr. Wallace. On Saturday, the 1st inst., an entertainment was given to the workmen and their friends. Mr. Thomas Instone took the chair; Mr. Wallace being vice-chairman.

THE ARCHÆOLOGICAL ASSOCIATION AND THE SAXON CHURCH AT BRAD- FORD-ON-AVON.

SIR,—Kindly allow me to make a few comments on certain statements volunteered by Mr. C. E. Davis, when he brought his company to see our Saxon church. I will make no remark on the bad taste of his personal attack on me; there were not a few who designated it by harsher names, and only seemed too anxious not to be in any way identified with it.

Taking his own dates, though my own recollections are not quite in harmony with his, I beg to reassert distinctly that two years before the time at which he commenced his reckoning, I had pointed out the church to my worthy parishioner, Mr. George Marks, while we were standing together on Torz, the highest part of our town. He well recollects the circumstance, and is willing to testify to it. We came down from the hill together and examined the building, which I then pronounced to be an ancient church.

Mr. Davis pointed out with exact precision, though memory is proverbially treacherous, the very spot from which he saw the Saxon church when the light gleamed upon him, and twitted me with not having observed it before. Wiser men than he or myself had been familiar for years with Bradford, but, unlike him, we none of us had the faculty of seeing through the obstructing buildings which, till lately, were standing, and obscured the little church on the south side, to which he pointed.

Again he asked why, if I knew of this church, I did not speak of it. In reply, I say I did, in a paper read before the Wiltshire Archaeological Society in August, 1857, and printed in the *Bath Chronicle*.

He asks, further, why, as I acted as *cicerone* to the archaeologists in August, 1857, I did not point out this ancient church. My reply is, that again his memory is treacherous. For special reasons I did not act in any such capacity; and, even if I had, my services would have been needless, as a heavy rain prevented them visiting the various objects of interest in the town, many of them remaining in the church, the organist playing for their edification several pieces on the organ.

I do not recollect the presence of Mr. Davis at the said archaeological meeting in 1857, nor does his name appear in a tolerably long list of those who were present. My words about the Saxon church seem, in any case, to have been unnoticed by him. At all events, they were heard by Mr. George Godwin, who at once went to see it with his own eyes, and in the *Builder*, for August 22nd, 1857, a decisive opinion was given as to the building in question being pre-Norman.

Mr. Davis further mentioned that the architectural details, in my account of the Saxon church, were taken from a manuscript sent by him to me, in September, 1857. So I have again and again stated myself. I have always acknowledged my obligation to him.

At the meeting of the Archaeological Institute at Bath, in 1858, when my esteemed friend, Mr. E. A. Freeman, claimed for me the discovery of this ancient church, Mr. Davis replied (I quote from the *Bath Chronicle* of July 28th, 1858),—"He thought he was entitled to take to himself the credit of discovering these remains. Mr. Jones drew his attention to the arcade, and he worked out the plan of the church."

I am not in the habit of using words in a non-natural sense, and therefore, by "discovering," I mean the *first finding* of the church, and not the "working out" after it had been found. That Mr. Davis helped me to interpret the church, I have always acknowledged; but even here he was not the first in the field, as Mr. Godwin had anticipated him.

W. H. JONES, M.A., F.S.A.,
Prebendary of Salisbury and Vicar of
Bradford-on-Avon.

SAVE THE STONES.

SIR,—The scrapings off suburban roads are largely intermixed with useful stones, granite, flints, &c. They are shovelled into carts. Loss of material and cartage of fresh metal make it a serious item in road repairing.

Let there be a declining screen, with a side shoot; the fine dust would fall through into the cart, the stones on to the road. No additional labour would be required; the screen would pay for itself in a few days.

R. T.

THE GROWTH OF MIDDLESBROUGH.

THERE is perhaps no locality in the United Kingdom which has expanded and increased in population with such rapidity, and to the same extent as Middlesbrough, and it appears that the rate of increase continues at the present time, upwards of 1,000 houses having been erected during this year, whilst whole streets of other new dwellings are at the present moment in progress. Besides these several additional blast furnaces are also in course of erection. The total estimated production of pig iron manufactured in Great Britain is about 6,000,000 tons per annum, and of this one-third is said to be manufactured in Middlesbrough alone, to produce which about 140 blast furnaces, and 1,000 puddling furnaces are at work in the district, and the number is constantly increasing. As an evidence of the extraordinary rise and increase of the town, it may be stated that in the year 1830, when Messrs. Joseph & Edward Pease, and the other members of the Society of Friends associated with them, purchased 500 acres of land, and commenced the building of the town, the then village on the south bank of the Tees contained only 130 inhabitants, the chief dwellings in the place being four farm-houses. In 1841 the population had risen to 5,709, increased in 1851 to 7,893. But it was not until 1854 that the expansion of the town began with such extraordinary and unprecedented strides, when the iron manufacture was first developed. It was during this year that the first shipment of pig iron was made, and the iron stone rock, 16 ft. in thickness, being shortly afterwards found in the district, blast furnaces rose rapidly around the mines, and in 1861, the population had increased to 18,273, having considerably more than doubled itself during the ten years from 1851. In the next decade, from 1861 to 1871, the population had again much more than doubled itself, being 39,234, whilst it has been ascertained that its population during the present year 1874 is upwards of 44,000, and that it is now increasing at the rate of 5,000 annually. It may be further stated that the area included within the municipal borough is 2,100 acres, and that about one half of this is already built upon, whilst, as we have already intimated, new houses are in course of erection at the rate of 1,000 yearly. From being a small and obscure village or hamlet, Middlesbrough has, in a comparatively brief period, become one of the most important manufacturing centres in England, possessing its royal exchange, town hall, free library, public park, and other public buildings and places of resort. It has also a large dock, constructed at an outlay of more than 250,000l., together with a steam ferry, and other marine conveniences, and has been constituted a separate and independent port. It is also incorporated, having its mayor and town council; and finally it has, within the last few years, been raised to the dignity of a Parliamentary borough, Mr. Bolckow, who was the first to establish iron works in the locality, being its first and present representative. Middlesbrough has not inaptly been termed the "Iron Metropolis" of England.

THE ROTHESAY AQUARIUM.

FOR the last few weeks workmen have been engaged preparing the site at the old battery, Rothesay, for the aquarium, and excavating for the reservoirs, which are to be situated beneath the building. As the plans have now been prepared and approved of by the directors, it is expected that in a month or so active building operations will commence. The building, when finished, will have sixteen large show-tanks for containing the larger specimens of marine and fresh-water animals, and twenty small tanks for the smaller specimens. The former are to be ranged along each side of a large corridor running east and west, which forms the main access of the building, and measures 90 ft. by 15 ft., as well as in the passages leading from it. The smaller tanks are to be placed on shelves in two side-rooms, each 24 ft. by 22 ft., and entering off the large hall in the centre of the building. These tanks altogether will contain about 23,000 gallons of sea-water and 9,000 gallons of fresh water, and the water will be made constantly to circulate between them and the reservoirs beneath by means of water-engines and pumps. At the same time atmospheric air will be made to enter to free the water from impurities, and to keep it in a fit state for the support of animal life. There is to be a probationary tank-room and

reservoir, with seven tanks for putting specimens into as they are brought to the aquarium, and before they are put into the show-tanks. There is also to be in the front centre of the building a large room, which will be suitable for a *conversazione* or concert-room, measuring 45 ft. by 28 ft., and off this there is a small refreshment-room. The elevation to the sea will have a frontage of 102 ft. in length and 22 ft. in height, with rusticated basement and corner and open balustrade, and have in the centre a tower projecting from the main line of front and rising a few feet higher, surmounted by a dome. It is expected the building will be opened to the public about a year hence.

THE NEW OFFICES FOR THE LEWISHAM BOARD OF WORKS.

THE Lewisham Board of Works are about to erect new offices for the transaction of the business of the Board, the present offices, in Grove-place, being very inconvenient, and not affording accommodation for the members of the Board, and the foundation-stone of the new building, the site of which was purchased from the parish by the Board for 1,050l., and which is situated at Carford, has been laid. The building, in the Gothic style of architecture, will consist of Board-room, 46 ft. by 30 ft., with a vaulted wooden ceiling; also two committee-rooms, besides clerk's and assistant clerk's rooms, and other offices. The roof will be covered with tiles, and the building will be surmounted by an ornamental tower and clock. The contract price for the building is 9,784l., and the estimated total cost, including the land and furnishing, is 12,000l. Mr. Elkington is the architect, and Messrs. Hill, Higgs, & Hill, are the contractors.

MONUMENTAL.

The Iceland Millenary.—In commemoration of the thousandth anniversary of the colonisation of Iceland, which was celebrated on the 7th inst. the Municipal Council of Copenhagen has voted a grant of 6,000 rigsdalers for a statue to be erected at Reykjavik of the celebrated sculptor Thorwaldsen, who was of Icelandic descent.

Monument to Carolan in St. Patrick's Cathedral.—A monument has been erected in St. Patrick's Cathedral to the memory of Carolan, the great Irish bard, whose compositions are said to be world famous. Mr. Hogan, the sculptor and son of the Cork artist, executed the work in Rome. It is now being erected under the personal superintendence of Mr. Hogan. The material for accomplishing this work were bequeathed by the late Lady Morgan, who held the genius Carolan in high estimation. For some reason the realisation of her wish had to be postponed.

The Brook Memorial at Enderby.—A tribute has been paid to the memory of the late Mr. Chas. Brook, of Enderby Hall, at Enderby, the unveiling of a memorial statue, subscribed for by the inhabitants of the village and district. The design was gratuitously supplied by Mr. J. B. Everard, architect, Leicester, and has been nearly carried out in detail. The column, which is erected on the green in the enclosure immediately in front of the National schools, has been erected by Messrs. Thrall & Vann, stone-masons, Leicester. The sculptor was Mr. Hesse, of York, the sculptor of the Leicester Clock Tower. It consists first of a square base of Bowl Hill stone, on which rise two octagonal steps of the same material. Above is a similar base of Westmoreland Shap granite "axed" from which rises a polished granite "drum" with moulded cap, bearing in front a simple inscription. On the top of this is a cluster of four columns of white Sicilian marble, in front of which is a full-faced medallion of the gentleman, cut out of the solid. These columns are capped with conventional foliage, filled with a series of flowers, intended to typify the virtues of the deceased. The whole is surmounted by another symbolical representation in white marble, consisting of an angel representing "Charity" protecting two figures, the "Sick" and the "Untaught." The base is enclosed four iron railings, with swing spiked chain. The height of the whole structure is about 15 ft.

Sheffield.—A new workhouse is to be erected at Sheffield, at a cost of from 80,000l. to 100,000l. The present union is not large enough to accommodate the paupers.

THE ARCHITECTURAL ASSOCIATION
EXCURSION TO FRANCE.

On Monday next the excursion party will commence their work. Some of our readers will feel an interest in reading the official sanction and noticing the assistance, offered by the authorities in France to this unique expedition. We therefore give (in the original) the document which evidently bears all the marks of much goodwill towards the excellent conductor of the excursion, and the young English architects who will travel under his guidance:—

"Paris, le 29 Juillet, 1874.
Monsieur,—Vous avez bien voulu réclamer l'intervention de mon Administration à l'occasion d'une excursion en France que vous proposez de faire en France, avec un certain nombre de membres de l'Architectural Association d'Angleterre, pour visiter nos monuments architecturaux dans les départements du Centre et du Nord. J'ai l'honneur de vous informer que j'ai donné avis de ce projet d'excursion à MM. les Préfets de l'Oise, de Seine et Oise, de la Seine Inférieure, d'Eure et Loir, de Eure, de l'Aisne, et de la Marne, en les invitant à présenter les autorités locales de chacune des villes qui devaient être visitées par votre Société.

Si vous désirez que les architectes ou conservateurs de quelques monuments puissent être mis à votre disposition, vous suffirait d'annoncer le jour de votre visite au préfet de la ville qui vous envoie. Ces fonctionnaires seront heureux, je n'en doute pas, de prêter leur concours aux membres de l'Architectural Association de Londres. Agréez, Monsieur, l'assurance de ma considération à son distingué.

LE MINISTRE DE L'INTERIEUR.

Pour le Ministre: CHAUDAT LATOUCHE.

Le Préfet de Police, chargé de la Direction générale de la Sécrétie publique, Monsieur EDMOND SHARPE, à Lancaster, Angleterre."

PURIFICATION OF SEWAGE.

The first general half-yearly meeting of the Lancing and Utilisation of Sewage Company (limited) has been held at the Victoria Hotel, Leeds; Mr. Horsfall in the chair. In the chairman's report he stated that,—

"Since the last meeting of the shareholders the directors had been able to materially strengthen the position of the company, by arranging terms for the purchase of Messrs. Menden and Collins's letters patent for purifying sewage. The experiments at Knotrop in treating upwaste of twelve millions of gallons of the Leeds sewage had been successfully carried out, under the management of Mr. Goodall, and to the satisfaction of several deputations of sanitary authorities in various parts of the country, the company's process is in work at several mills, and so on at the Corporation works at Bolton, Lancashire. The directors having agreed with the Sewage Committee the borough of Leeds to open the new works at Knotrop, and to treat the whole of the Leeds sewage, amounting to about 7,000,000 gallons per day, for a period of three months, they hope to have the system in full operation there during the present month."

The chairman concluded by congratulating the company upon the success of the recent experiments in dealing with some of the worst sewage the kingdom. It had not only been thoroughly and economically purified, but the work had been carried out without creating the least smell or nuisance of any kind. After an analysis of a sample of effluent water from Bolton Corporation, Mr. Voelcker pronounced it to be the most successfully treated sewage that had been submitted to him.

EXHIBITION OF THE ART-UNION PRIZES.

The private view of this exhibition took place the gallery of the Institute of Water Colours, Monday, and, considering the yearly increasing facility of finding good pictures in the public galleries unsold, the general character of the works in this collection speaks well for the judgment of those who have acquired the right of selecting for themselves something from the Royal Academy, or other gallery, which will be sold by the Art-Union. There are some landscapes by Percy, De Breaux, Cameron, Stanton, Adams, and others, worthy of a place in any collection of modern art. G. Stanfield, Angers, has a good deal of his father's feeling; but the extreme hardness of outline militates somewhat against aerial perspective. "Checkmate" by Vinter, is solidly painted—the roughness of costume perhaps a little exaggerated. Mr. Copple's "Hush thee, my Baby," will be better than time has somewhat subdued the, at present, rather too rich, colors. There are some charming little bits which show that good work can be got at even so low a price as 10*l.*—no doubt many of them very useful stepping-stones for young beginners in art. Not improbably also any of the works here seen will be the first steps leading to a taste for buying, and, perhaps, suit in the possession of a valuable investment, which a collection of pictures judiciously purchased now most undoubtedly is.

In the small room at the end of the gallery is

placed a very clever copy in oil, by Mr. Arthur Stocks, of Maclise's half-painting in the Palace of Westminster,—"Wellington and Blucher meeting after Waterloo." This great work gave Mr. Maclise six years of incessant labour. The number of figures, both of men and horses,—the infinite detail in the various uniforms, weapons, musical instruments, and ornaments,—for all of which the artist, at the cost of much search, collected a large store of sketches,—give evidence of an amount of study and persevering diligence which we do not often see bestowed on one work in the present day.

In the gallery will be found a proof of the plate engraved by Mr. Stock, R.A., from the above picture, which plate, in the words of the Society's last report, "is no less excellent in its own department than the original. The skillful laying in of the lines, the bold and smooth sweep of the graver, producing a roundness and solidity of effect, a most striking contrast of light and shade, which leave nothing to be desired. The Council have every reason to believe that this truly national work, commemorating one of the great triumphs of British arms, a work which every subscriber will feel proud of having on his wall, will induce a very large subscription for the coming year. To do justice to this important work, the Council did not hesitate in paying the engraver the large sum of 3,150*l.*"

LABELLING AN EX-SURVEYOR.

At the Stafford Assizes, Mr. Wm. Malkin, of Chadwell, near Leek, and formerly surveyor of highways for that township, brought an action to recover damages for injury to his character by the publication of libellous letters in the *Leek Times* by Mr. Robert Platt, late of Chadwell. The alleged libellous letters contained the following:—"I hear on good authority, but will not vouch for its correctness, that our old surveyor (Mr. Malkin) so clings to his old selfish notions that he is now spending public money near his own house in alterations;" and the following:—"When these very loose, mean, paltry, low, shabby, disgraceful, base, and unmanly acts, try to reign so predominant over the public good, I cannot refrain from bringing them to light."

Oh, if I had the power
To crush my native foe,
I would not hurt one hair,
Because 'twould hurt him so.
I do not wish him harm,
If he would hold his peace;
But when he would the public grieve,
I can but try to make him cease."

Mr. Huddell, the counsel for the plaintiff, said the defendant had held the plaintiff up to contempt and ridicule, besides attributing to him improper acts. The plaintiff required a full apology.

The reply to the charge was that though the letters complained of were disagreeable they were substantially true. These letters charged Mr. Malkin, not with anything that could reflect upon his character or honour, but with one-sided expenditure of the public funds.

The defendant was examined. He said he bore no ill-will to Mr. Malkin, and that the letters were inserted for the public good. The "poetry" was his own.

His lordship, in summing up, said that the defendant used a number of epithets which the learned counsel for the defence said were very expressive of what was a fact. That would be for the jury to decide.

The jury almost immediately found a verdict for the plaintiff; damages 50*l.*

THE COST OF A REREDOS.

EARP V. ROYDS.

THIS case was tried at Salford Hundred Summer Assizes. The plaintiff is a sculptor, and the defendant a gentleman residing in Falinge, near Rochdale. The action was for work done. In 1868 a movement was started for the erection of a new church in Falinge, the cost to be defrayed by public subscription, and a committee having been formed, Mr. Gilbert, the clergyman of the parish, called on Mr. Medland Taylor, an architect in Manchester, and spoke to him about the preparation of the plans. Nothing further was done until 1869, when the defendant announced his intention to build the church at his own expense, and present it to the district. Mr. Taylor then prepared the plans, and after he had submitted them to the defendant, and discussed them with him, the defendant said he was willing to spend 100*l.* on a pulpit, and about 300*l.* on a reredos. Mr. Taylor made a drawing of a reredos, and asked the plaintiff for an estimate of the cost. The plaintiff gave him an estimate for 300*l.*, and Mr. Taylor having submitted the plan and estimate to the defendant and obtained his approval of them, the order for the reredos was given to the plaintiff, who executed it. The defendant subsequently took the building of the church into his own hands, and had it carried on by builders; but when the plaintiff sent in his account for the reredos the defendant refused to pay it, saying that he had not given the order.

Mr. Medland Taylor, the architect, was examined, and stated that the defendant had approved of the plan of the reredos in question, and had authorised him to get it made. On cross-examination by Mr. Addison, he said the defendant had never told him that it would not do. He gave some directions with regard to the subject of the sculpture, of which witness made a memorandum, and with that exception the plan was approved of by him.

Mr. Albert T. Earp, the defendant, was examined, and stated that he had not approved of the plan of the reredos, nor authorised any order being given for it. On the contrary, when Mr. Taylor showed him the plan, he said it was a marble chimney-piece, and he would not have such a thing if it was given to him. He said if he put up anything of a reredos it should have upon it the Lord's Prayer, the Ten Commandments, and the Creed.

Cross-examined by Mr. Henshall: You objected to it

because it was not Protestant enough. Show me the part that is not sufficiently Protestant.

Witness: I will show you nothing of the kind. I objected to the whole thing. I wanted the four tables and nothing else.

The jury returned a verdict for the plaintiff for 200*l.* and Mr. Earp to keep the reredos.

BUILDERS' TENDERS.

JAMES V. YATMAN.

SIR,—This case, which was got up for the purpose of getting a clearly-defined principle as to compensation for unnecessary trouble given to builders, disclosed what I trust is an anomaly in competitions. When a limited number of persons agree to compete for a job, it is always on the implied condition that they know with whom they compete; that the tenders are all opened at the same time (generally in the presence of the competitors), the amounts at once declared, and the lowest tender (if any) accepted. In this case, Messrs. Jones & Allen, of Gloucester, and myself, although totally unknown to each other, happened to adopt precisely the same course. We were both invited to tender, both wrote to Mr. Thomas to know the names of those asked to compete, both received a similar reply that the competition was limited to Mr. John Daymand, of London, and ourselves (three in all). After the tenders were opened we each of us received somewhat similar letters, with a list of figures, headed:—

Highest Tenders:—	
Daymand, London	£1,989 0 0
W. H. James	1,813 10 0
Estcourt	1,698 0 0
Jones & Allen	1,698 0 0

We again both of us naturally wrote to know the names of the competitors, and were furnished as follows:—John Daymand, London; W. H. James, Cirencester; A. Estcourt, Gloucester; Jones & Allen, Gloucester. Messrs. Jones & Allen were in addition informed that Mr. Estcourt was accepted, and that Mr. Biggs, of London, had sent an estimate, which was not included, from being too late.

Mr. Jones smelt a rat, and although his tender was 1,698*l.* instead of 1,697*l.*, as the sequence of figures and names made it appear, had reason to believe that his tender was the lowest, and sent in a claim of 45*l.* 1*s.* 6*d.* for preparing his estimate. He was offered 20*l.*, which from the difficulty he foresaw in proving what he believed were the facts, he accepted as a compromise. At the trial Mr. Estcourt honestly produced his tender, and proclaimed the amount to be 1,752*l.* The list of tenders should therefore have been:—

Daymand, London	£1,989 0 0
W. H. James	1,813 10 0
Estcourt	1,752 0 0
Jones & Allen	1,698 0 0

The last three I know to be correct, but as to the first we have no evidence except that of Mr. Thomas, as no such name appears in the Directory.

Some animus was created towards me from my being obliged to explain to Mr. Yatman that the first set of plans were in many places manifestly incorrect, the amount of foundation unnecessary, the design of the roofs absurd, unscientific, and weak, and the construction of a conservatory as shown utterly impracticable. Mr. Yatman candidly admitted the truth of my remarks, and Mr. Thomas virtually acknowledged them by at once altering or abandoning the matters alluded to. The plans I speak of were not sent by any builder but myself, and are perhaps now destroyed, I, however, have copies.

W. HENRY JAMES.

THE SURREY ARCHÆOLOGICAL
SOCIETY.

THE annual excursion of this Society was held on the 5th inst., under the presidency of Mr. W. Wainwright, J.P. The members and their friends assembled at the Woking Railway Station at 11 a.m., where from twenty to thirty vehicles were in waiting, and conveyed them to Woking Church, which was described by Mr. Ralph Nevill, F.S.A. The essayist commenced by giving the earliest known accounts of the edifice. The present building may be chiefly designated Early English. The tower, screen, and piscinas in the south aisle he should date from 1330 to 1350. The font and chancel walls were Early English. The company then dispersed to examine the windows, brasses, font, and other details referred to by the essayist; the massive doors at the west end, and the quaint wrought-iron hinges on the same, particularly attracted attention. These hinges are referred to in "Parker's Glossary." *Apophyses* of the hinges, Parker says:—"No hinges of earlier date than the Norman style can be referred to, and they are not often met with so old; they are to be found on the inner west door at Woking Church, Surrey, and at Compton, Berks. At this period they have not, in general, much scrollwork attached to them, and the turns are often very stiff; the principal branches at the head of the hinge frequently represent the letter 'C.'" A short walk brought the members and visitors to the site of the Old Hall, at Park Farm, where a descriptive paper was read to them by Mr. Godwin Austen. The ancient manorial residence of Woking, now a farm, was a royal manor from the time of King Edward the Confessor to that of Richard Cour de Lion, who gave it away.

At Pyrford, Mr. T. Graham Jackson, M.A., made some interesting remarks on the church, which has recently undergone restoration, and during this process the remains of some wall-

paintings were discovered beneath the many coatings of whitewash, and which they had done their best to preserve.

Mr. J. G. Waller then made a few observations on the remains of the wall-paintings, and regretted the scarcity of them would not enable him to give any clue as to the meaning of the original design.

At Hoe-place, Mr. Godwin Austen gave a sketch of the history of the mansion in connexion with that of Woking Palace and Park. The painted staircase and chamber, which he also described, and said were of the same period as the paintings at the Hampton Court Palace, and probably painted by the same artists, afforded much pleasure to the visitors.

A collation, most hospitably provided by the president, Mr. William Wainwright, made all happy.

THE MARGATE DRAINAGE.

At the meeting of the council on Tuesday, Sir Joseph Bazalgette's report on the drainage plans was read. Sir Joseph entered at some length into the merits of two of the schemes, — those signed "Economy" and "C. E." — but suggested certain alterations in both schemes. He expressed the opinion that the drainage would cost 35,000*l.* The report was referred to the committee to report upon. The Council have since declined, without some further explanation, to accept the award of Sir Joseph Bazalgette, the referee. They complain that the 6th "condition" of the competition issued to the competing engineers appears to be wholly lost sight of by the referee; and the local *Gazette* remarks that the first clause of the "requirements" as to providing a complete plan for the drainage of the whole of the borough appears to be lost sight of in the first plan selected for premiation; and that the referee gives the first premium to the gravitation scheme of "Economy," which does not fulfil, according to the opinion of the referee, the principal condition of the competition in reference to the estimated cost, and if carried out according to the scheme submitted, would have proved a failure affecting the prosperity and finances of the town. Our local contemporary, however, remarks that it should not be forgotten that it is the award of a gentleman of the highest eminence in his profession, far above the influence of any personal consideration, and as such it would no doubt be agreeably accepted by the competitors. Sir Joseph, in his report, states that this locality is not favourable to irrigation; but the *Gazette* reminds the Council that,—

"The author of the plan 'C.E.' introduced as part of his scheme, 'irrigation' in a form which entirely obviated the nuisance of ordinary sewage farms. He intended to pump the sewage from a point in the Dane over the hills to the outfall at Pottery Bay. By this plan the pipes passing through the elevated agricultural district of N. R. 10.000 would be easily available for irrigating the land at any season of the year, thus required by the farmer, and at other times when not so required it could be discharged into the sea. The determination of the Council to discharge the whole of the sewage into the sea after the plans were received has doubtless made it necessary for 'C.E.' to modify this part of his scheme, and which as a matter of course would reduce very considerably his original estimate for pumping."

THE NEW MUNICIPAL BUILDINGS, LEICESTER.

The public ceremony of laying the memorial stone of the new municipal buildings in course of erection in Horsefair-street, Leicester, has been performed by the mayor, Mr. W. Kempson, on the last Bank Holiday, but the whole line of route, says the local *Advertiser*, was conspicuous for its scarce show of flags. The route of the procession was, however, crowded with a large body of spectators, who seemed to take evident interest in the proceedings.

The architect, Mr. F. J. Hames, a young townsman now resident in London, who was formerly a pupil of Mr. Millican, in his design for the municipal buildings, has endeavoured to produce a design which can be fully carried out for the 50,000*l.* decided upon by the town council, and one traditional in character rather than strictly in adherence to style; yet traces will be seen of work of the time of Queen Anne and the Hôtel de Ville of France. A clock-tower will be placed over the municipal entrance, and will be visible from Gallowtree-gate, and in a position useful to surrounding streets. The law department of the structure will be provided with two courts, judges' retiring-room, barristers' retiring-room,

barristers' consultation-room, magistrates' retiring-room, grand jury retiring-room, petty jury retiring-room, clerks' room, witness room, male and female witnesses' room, witness gallery, public hall, and two entrances, the one for the public in the centre of the new street, and the other called the law offices for judges, magistrates, and counsel. It is said the arrangements for the Bar, jury, reporters, witnesses, the public, and the dock have been planned from an inspection of the most convenient law courts of England, while the courts are well lighted, ventilated, and heated.

Passing on to the Municipal Department, the principal entrance will be from the corner of Horsefair-street and the new street; and a councillors' entrance will be provided in Bowling-green-street. In this section of the buildings will be placed the Mayor's private room, the Mayor's parlour, councillors' cloak-room, council-chamber, committee-room, town-clerk's office, strong-room, town-clerk's general office, School Board rooms, borough surveyor's offices, accountants' offices, attorney's room, pay-room, labourers' waiting-room, hall-porter's office, hall-keeper's room, kitchen, and a number of spare rooms and offices.

In the Police Department, the entrance will be from Bishop-street, and the section will be allotted to the head constable's house, charge office on ground floor, inspectors' room, muster room, stores, drying-closet, cells, parade-ground of 760 square yards, with spacious drill-sheds next Bowling-green-street, fire-offices, heating chamber, &c.

Hydrants are to be placed in all the principal corridors to be ready in case of fire; and the three departments are thoroughly connected in the most direct manner by corridors. The main entrance is from the new street which is to be formed between Bishop-street and Horsefair-street, and which the building will front. Mr. W. Brass, of London, has contracted for the buildings, at an estimated cost of 31,285*l.*, with the addition of 650*l.* for Ketton stone.

KENT ARCHAEOLOGICAL SOCIETY.

The members of the Kent Archaeological Society met at Folkestone. The proceedings of the opening day were, in every respect, attended by complete success. The greater part of the meeting was gone through in the open air upon the site of some ancient remains, or in the neighbourhood of some old Norman church, and the weather was everything that could be desired. The proceedings opened by the inspection of a temporary museum in one of the rooms at the Town Hall. Around the walls were a number of rubbings from monumental brasses. The museum also contained a fresco from the choir of Rochester Cathedral of the fourteenth century, a number of casts from seals, Roman altars, tiles and vases, a number of manuscript and old English books, curious jugs and candlesticks in ancient ware, old engravings, tapestries, &c. A short preliminary meeting was held under the presidency of Earl Amherst, and a move was then made to the carriages, some twenty in number. The company, which numbered about 150, included Earl Amherst, Sir Walter Stirling, Sir Walter James, the Rev. Canon Scott-Robertson (hon. secretary), and a number of other clergymen and gentlemen, together with several ladies. The party proceeded by way of the Canterbury-road to the Ancient British Camp, commonly called Caesar's Camp. Arrived at the top of the hill, Mr. W. J. Jeaffreson read an interesting paper on the subject of the camp.

The party then proceeded to Paddlesworth Church, and afterwards to Folkestone Church, where a paper by the Rev. Scott-Robertson, the hon. sec., relating to the history of the edifice was read by the vicar, the Rev. M. Woodward. Dinner was taken at the Town-hall, Lord Amherst, presiding, and there was a meeting in the evening in the Council Chamber, the mayor presiding. Canon Jenkins read a paper of Gossip from the Municipal Records of Folkestone, which was followed by others.

On the next day the party went to Horton Priory, which was described by Mr. C. Bailey, F.R.I.B.A.

Progress was thence made to Elham Church, which was described by the vicar, the Rev. Walker Wodehouse. The remarkable discoveries at Lyminge Church recently made by Canon Jenkins, and fully described by him in "Archaeo-

logia Cantiana" (vol. iv.), were next inspected under his able guidance. From Lyminge the Society proceeded to Monks Horton Park, an other partook of the hospitality of Major Kirkpatrick. Subsequently a visit was made to the Norman church of Brabourne, the architect of which Sir G. Gilbert Scott described. The history of the Scott family, whose tombs form a feature of this church, were also described by Mr. J. R. Scott. Upon returning to Westerhanger station, the interesting remains of Westerhanger Castle were inspected, and this brought the annual meeting of the Society to a successful termination.

VARIORUM.

"THE Land Improver's Pocket Book," by John Ewart (Lockwood & Son), contains a small space a large number of formulae, tables and memoranda useful to land-agents and agricultural engineers. — Professor Gramscrit writes in the *Art Journal*, concerning Italian mosaics:—"Towards the end of the seventeenth century the Roman class of mosaic, that is, with small pieces of coloured paste, was introduced by P. P. Christofori, who established a school in Rome, for the use of which he created 10,000 various shades, which enabled him to imitate the most delicate tints of the original pictures. From this school emanated the best mosaic pictures which adorn the altar of St. Peter at Rome. Nearer our time there was a similar school formed by Professor Giacomo Raffaelli, at Milan, who himself executed the exquisite copy of Leonardo da Vinci's 'Le Supper,' of the size of the original. Hitherto, with the exception of the works in *opale alexandrinum*, which were composed of small bits of hard stones such as serpentine and porphyry, used along with white marble, and of which an endless variety of charming patterns is found on the floors of the Roman basilicas and at Venice, human figures predominated; but there existed that other kind of mosaic which is almost exclusively used for pieces of furniture, such as tables, cabinets, and in smaller objects of jewelry: this is the Florentine mosaic, composed of precious stones and pearls, of which kind our collection preserves fine specimens. This mosaic differs from the ancient and modern Roman one in so far as here the flowers, fruits, birds, &c., are not composed of small pins of coloured glass or paste, but of most carefully selected precious stones, each one forming a whole portion of the picture; these are set in black marble, and joined in so close a manner that it is difficult to find where the pieces meet. This kind of work was in great use in India during the seventeenth century, and it was supposed that it was of Indian invention; but the fact is, that the Emperor Mogul Akbar had invited Florentine mosaicists to exercise their art in his service." — Mr. E. Billie Clark, C.E., says, in *Public Health*:—"We hope the day is not far distant when in our national schools health will form a subject to be treated, just as geography and grammar are now. The universities, and a few of the higher-class colleges, have their professors of public health; but in what profession these gentlemen have been educated we know not. The medical schools of the day do not give the necessary qualifications for such positions. There is a vast deal of special knowledge required by those that obtained by a course at a hospital, to which we shall hereafter refer; but, possess the qualifications these gentlemen may, it is a great accomplished fact to see them taking positions with the teachers of mathematics and political economy. Amongst the other signs of the times, showing that the legislation on the question has produced a marked effect, is the tone taken by the press throughout the country, which is daily following in the steps of the two sanitary pioneers, the *Lancet* and the *Builder*. The medical profession, particularly has advocated the prevention as being equally important subject as the cure of disease, showing a self-sacrificing honesty and humanity that cannot be too highly praised. Altogether, the results of the Health Acts up to this date have been as good, if not better, than was expected; but, so far, they have been but experimentally; the time has now arrived when the whole of the Acts must be consolidated into general statute. The long experience of 40 years has shown that the existing regulations are unwieldy, and carried out with an immense amount of dilution, more especially in the country towns."

Miscellaneous.

Fire-proof Wood.—Some experiments of an interesting nature have been made at Godstone with the Rev. Dr. Jones's patent for rendering wood incombustible. The experiments took place in the grounds of Mr. Jarvis, at the Priory. Dr. Jones renders wood unflammable, and also impervious to dry rot and decay, by subjecting it to a "pickling" process in a solution of tungstate of soda and water of the specific gravity of 1.2. The tungstate produces in the process a thin chloride of lime as will pay all working expenses. As instances of the inflammable nature of preserved wood were mentioned the ending stage at Liverpool recently burnt down, and Sir Joseph Gabriel's preserved wood warehouse, which was destroyed by fire. The tungstate of soda is proved, it is said, to render soft woods, such as white and yellow pine, as hard as oak or teak, and also restore wood to its original condition of durability that has been affected by dry rot. The visitors were shown a piece of restored oak taken from the Lord Clyde, an ironed that was built some years ago of unseasoned timber, and which had become soft and useless, having been treated with Dr. Jones's patent, it now said to be as hard and durable as ever. The experiments made were three in number, and the tests were severe. A chest containing parchment document had been treated by the process, and was thrown into the flames when to their height, and was taken out some time afterwards, charred outside, but practically unharmed in any other respect. The wax seals containing the document were intact. A paper packet containing about two ounces of gunpowder, was put at the bottom of a Government gunpowder bag, and a sheet of brown paper, impregnated with the tungstate, was pasted over it, and dried. The keg, which was open at the top, was turned upside down, and surrounded by savings, which were lighted. A fire of petroleum and shavings was kept burning on the top about a quarter of an hour without producing the slightest effect on the keg. The gunpowder as then taken out and exploded. Some years ago, we think, ballet dresses and curtains were rendered incombustible by tungstate of soda.

The Cracking of Stove-backs.—At the National Association of Stove Manufacturers, held at Albany, U.S., Mr. W. Keep, of Troy, read a paper, in which he pointed out as a cause the cracking of stove-grates, that iron poured to a mould, on changing from a liquid to a solid state, becomes a mass of crystals, and that the lines about which the crystals assemble are perpendicular to the surfaces of the casting. In making patterns for whatever kind of castings, the greatest care should be taken to avoid all angles, whatever size or shape, for every change of forming its corresponding lines of weakness. If rivets are necessary, the larger they are the better. Many of the catastrophes which result from the falling of bridges, or of buildings, might be avoided if this matter had received proper consideration. On the other hand, subsequent setting or strain may crystallise iron. The arrival of many iron-masted vessels at Melbourne with broken masts is a remarkable circumstance which appears to be exciting some interest at present. This frequent breakage is attributed by Mr. W. T. Dove, of the Yarra Iron Shipbuilding and Boiler Works, to crystallisation from heating and strain of the masts, which are bound at the deck; and the great lever power above, with the working of the ship, causes a continual jar and vibration in the mast, so that in time the iron becomes crystallised, and eventually breaks. It suggests as a remedy that a flanged ring in two halves should be bolted round the mast, one above the deck, and the other below, with a lining or lining of indiarubber, so as to allow the mast to have a little play, and prevent the straining of the mast when wedged tight.

Ecclesiastical Ruins in Ireland.—In reply to Lord Carlingford, Earl Beauchamp said he considered that the duty of preserving these ruins required a large amount of architectural skill. He thought that it was best the buildings should simply be preserved in their integrity, and the duty of preserving them could be best discharged by a surveyor; but if anything should arise rendering it necessary to call in the assistance of any person the Board of Works could seek the best advice that could be obtained. Lord Carlingford said he wished to avoid the appointment of an architect, preferring an archaeologist.

Metropolitan Gas Supply.—A public meeting of ratepayers and residents in Lambeth has been held in the Vestry-hall, Kennington-road, under the auspices of the South London Gas Consumers' Protection Society, to consider a plan the Society had recently submitted to the Board of Trade for securing an equitable and substantial redress of gas-consumers' grievances. Mr. F. Fowler, of the Metropolitan Board of Works, was called to the chair, and, in opening the proceedings, he referred to the fact that the cost of the gas supply of the metropolis was 2,500,000*l.* sterling, or an eighth of its total saleable value. How to solve this gas problem had become one of the questions of the day, and he hoped meetings of this description would help to discover the solution. Mr. N. Earle, the author of the plan, entered into a long explanation of its principle and details. If there were a proper supervising tribunal, he said, such as he proposed, gas would be laid on at 3*s.* to 3*s.* 6*d.*, or even less, per thousand, without at all endangering dividends. Mr. Taunton moved, and Mr. Kirby seconded, a resolution to the effect that "Inasmuch as the meeting was of opinion that it was not desirable for the Government to purchase the works of the gas companies, nor for the local authorities to become gas-consumers, it thought the plan now proposed, and which had recently been submitted to the President of the Board of Trade, was calculated equitably and fairly to remove the grievances complained of."

To this an amendment was interposed as follows:—

"That, while thanking the Society for bringing this important subject before the inhabitants of Lambeth, this meeting, after hearing the details of the plan presented to the Board of Trade, is of opinion the action of the Metropolitan Board of Works on the question is worthy of approval and support."

The Chairman explained the position the Board of Works had taken up. The Board wished to see an arrangement come to by which the 10 per cent. monopoly should cease, a price and dividend should be agreed upon, and the latter should only be allowed to rise as the former fell. If some such settlement as that could not be agreed upon, there was no other alternative but for the Board to take the gas supply into its own hands. Upon a show of hands, the amendment was carried.

Brighouse.—The Bishop of Ripon has consecrated the new cemetery at Brighouse. The cemetery is situated in Lightcliffe-road, and contains an area of about nine acres. The frontage towards the road is enclosed with a stone wall, and light ornamental wrought-iron railing. The entrance, which is about the centre of the frontage, is formed with stone piers, and gates to match the railings. From the entrance a gravelled road, 18*ft.* wide, leads past the lodge to the chapels, and thence to the opposite end of the ground, where it is joined by subsidiary walks, as also at other points, especially near the chapels. There are beds filled with shrubs, trees, and plants. The boundaries are formed on all sides of stone walls. The buildings include a lodge and the chapels. The former is situated on the left-hand side of the entrance, and is a plain building in the Domestic Gothic style of architecture. It contains a board-room. The chapels are placed at the summit of a natural eminence in the midst of the cemetery, and form a simple group of buildings in the Early Decorated style. They are connected by a tower and spire with an archway thereunder. The laying out of the grounds and the planting have been designed by Mr. William Gay, of Bradford, surveyor and landscape gardener; and have been carried out by Mr. Lister Kershaw, of Brighouse, nurseryman and gardener. The whole of the buildings and boundary-walls were designed by Mr. F. Bartram Payton, of Bradford, architect and surveyor, and, with the exception of the woodwork, have been carried out under his superintendence. The total cost, including the price of the land and all incidental expenses, is little more than 7,000*l.*

London and County Banking Company. The report just now adopted at the half-yearly general meeting says that, "after paying interest to customers and all charges, allowing for rebate, and making provision for bad and doubtful debts, the net profits amount to 125,830*l.* 16*s.* 1*d.* This sum, added to 23,917*l.* 13*s.* 3*d.* brought forward from the last account, produces a total of 149,748*l.* 9*s.* 4*d.* They have declared a dividend for the half-year at the rate of 20 per cent. per annum, which will absorb 120,000*l.*, and after reserving 468*l.* 15*s.* to meet interest accrued on new shares, there remains a balance of 29,749*l.* 14*s.* 4*d.* to be carried forward to profit and loss new account."

Hampstead Parish Church.—The trustees of this church have received a petition from gentlemen resident in, or acquainted with, the suburb of Hampstead, who state that they have learned with regret that it is proposed to destroy the tower and the east end of the parish church. "The church in question," they add, "is the only public building of any antiquity which Hampstead possesses, and we should seriously deplore the removal of so well-known a monument of the past. Apart from the question of the intrinsic merits of rival styles of architecture, this building derives a special benefit from its intimate association with the peculiar charm of the locality, and from its position as the central feature of a street of old buildings of great and characteristic interest. Such a group of English architecture of its period is almost unique in or about London, and the proposal to destroy or to transform its principal ornament will be condemned by every man of taste. Whatever may be the practical conditions which have suggested this scheme, there are obviously many plans by which the requirements of the parish may be met which do not involve an outrage upon the familiar sentiment and aspect of a well-known locality."

The Kirkintilloch and Lenzie Waterworks.—These waterworks have been opened. The works in connection with the scheme include the construction of a fire-clay aqueduct, the diversion of hill streams, and the formation of inlet wells for receiving these and the water of the Woodburn, a storage tank of 180,000 gallons effective capacity, and valve well. An impounding reservoir and filter-beds have been dispensed with meanwhile. The Drumrain water is said to be very pure. That from Corriebrunn is reckoned inferior to it. The supply is regulated in the valve well, and is conveyed in an 8-in. main to Kirkintilloch, and thence to Lenzie by a 6-in. pipe, the total length of pipes laid exceeding ten miles. Pillar and wall wells are placed throughout Kirkintilloch in convenient positions. In Lenzie, the supply will be from service-pipes. The cost of the scheme complete is about 2*l.* per head for a population of 7,000. The whole of the works have been designed by and carried out under the instructions of Messrs. Storry & Smith, C.E., Glasgow; the contractors being Messrs. D. Y. Stewart & Co. and Mr. J. A. King.

Laying the Foundation-stone of the new Metropolitan Sick Asylum.—The ceremony of laying the foundation-stone of the new asylum for the Central London Sick Asylum District, on the site of the old Strand Union in Cleveland-street, has been performed by Sir S. H. Waterlow, bart., the Chairman of the Central London Sick Asylum Board, in the presence of the members of that body, the county magistracy, and others. The Local Government Board having, in the face of strong opposition on the part of the parishes forming the district, determined on appropriating the site of the old Strand Union Workhouse in Cleveland-street as a supplementary asylum to that of the Highgate Infirmary, the managers were called upon to find space for 272 beds. It was at first supposed that this would entail a cost of 12,000*l.*; but the contract for the buildings about to be erected has reached 16,000*l.* They are to consist of two large wings of three stories, without ornamentation, but they are to be fitted up in every respect with modern hospital requisites upon precisely similar plans to those of the Highgate Infirmary.

London and Middlesex Archaeological Association.—On Tuesday last the London and Middlesex Archaeological Association, made an excursion by special steamer up the river, and held a general meeting in Fulham Palace, the Right Rev. the Bishop of London, the patron of the society, in the chair. The meeting was held in the hall of the palace, which, as an inscription over the chimney-piece states, was erected, as well as the adjoining courtyard, by Bishop Fitzjames, in the reign of Henry VII., on the site of the old palace, which was as old as the Conquest. It was used as a hall by Bishop Bonner and Bishop Ridley during the struggles of the Reformation, and retained its original proportions till it was altered by Bishop Sherlock in the reign of George II. Bishop Howley, in the reign of George IV., changed it into a private unconsecrated chapel, but it was restored to its original purposes as a hall on the erection, by Bishop Tait, now the Archbishop of Canterbury, of a new chapel of more suitable dimensions. Several papers were read.

New Act on Slaughter-houses.—An Act of Parliament, passed in the last day of the session, has just been issued to regulate and otherwise deal with slaughter-houses and other businesses in the metropolis. If any person establishes anew the business of a blood-boiler, bone-boiler, manure manufacturer, tallow-melter, or knacker, he is to incur a penalty not exceeding 50*l.*; and if any person carries on the same a like penalty for every day. If any person establishes anew without the consent of the local authority, the business of a fellmonger, tripe-boiler, or slaughterer of cattle, or any other business which the local authority may declare by order confirmed by the Local Government Board to be "offensive," he, as well as the person carrying it on, to be liable to similar penalties. Bye-laws are to be made and legal proceedings taken in Courts of Summary Jurisdiction. The law is amended as to renewal of licences for slaughter-houses in the metropolis. Notice must be given of such applications, as also of objections. A business is to be deemed to be established anew if removal to other premises, or discontinued for nine months, but not of a rebuilding in the same area. The Act is now in force.

Proposed Sea Baths on Brighton Beach. At the quarterly meeting of the Town Council, the Works Committee brought up a special report upon an application made by Mr. John Gurr, of London, for the consent of the Council to a Company to erect sea-baths upon the beach between the Chain Pier and Grafton-street, where the public could bathe in safety and comfort in any weather, and at all seasons. A part of the proposal is to form a terrace on the crown of the baths, supplied with seats and thrown open to the public; the water for the baths themselves to be changed daily, and the temperature regulated according to the season. The proposed company asked the Corporation to grant the site at such a rental, and with as few restrictions, as would make it possible to carry out their views. The Borough Surveyor (Mr. P. C. Lockwood) reported that the plan was a practicable one, but recommended that the council should retain the option of purchasing the works within four or five years; and that a limit should be fixed to the charges upon the scale provided by the Baths and Wash-houses Act. Conditionally the concession was granted.

The Ruins in Iona.—The condition of these interesting ruins has for some time past been engaging the attention of the Duke of Argyll. Last year, on the invitation of his Grace, Mr. R. Anderson, architect, Edinburgh, visited the island, and, after careful examination, drew up a report, in which he offered various suggestions for the repair and partial restoration of the buildings. On digging into the mounds at the foot of the walls, Mr. Anderson found several relics of ancient sculpture, and characteristic features of the old cathedral. He recommended the mounds to be opened up, clearing the ground and recovering materials to employ in making good defects in the cathedral walls. It seems that repairs are specially required in the west gable and in the chapter-house; the vault is thrusting out the walls. As to the cloisters, Mr. Anderson believes that a great deal of the original stonework could be recovered from the rubbish heaps. The foundations in various places require to be underpinned. Mr. Anderson has received from the Duke a general commission to commence operations.

The Charing-cross Improvement.—The first disputed claim for compensation for freehold property required by the Board of Works, for the new approach to the Victoria Embankment, was tried before a jury at the Guildhall, Westminster, on Saturday last. The premises in question consisted of the freehold house, known as No. 1, Charing-cross, adjoining Northumberland House, occupying a ground area of about 240 superficial feet, let on lease to Mr. Box at 140*l.* a year. Messrs. Fuller of Bucklebury, had sent in a claim to the Board on behalf of Mr. Bird, the freeholder, for 5,000*l.*, exclusive of the usual per-centage allowed for compulsory sale, and in consequence of the Board only offering 3,500*l.* for the same, the case had to be contested. There were numerous witnesses called on both sides. Mr. Clark and Mr. Glasier supported Messrs. Fuller's figures; but Mr. Abbott, Mr. Driver, and others being considerably below them, the jury returned a verdict for 4,400*l.*, being at the rate of nearly 22*l.* per foot, after allowing the tenant's interest in the lease.

Metropolitan Board of Works.—At the last weekly meeting of the Metropolitan Board of Works, Colonel Sir J. M. Hogg, M.P., in the chair, on the report of the finance committee complaint was expressed at the extravagance of professional charges in the Parliamentary, architectural, and engineering departments, and these high charges were said to be attributable to the heads of the different departments. The committee submitted a report by the solicitor explanatory of his reasons for recommending payment of the accounts of the counsel engaged before the committee of the House of Commons on the Metropolitan Buildings and Management Bill. Mr. Roche said, that after a careful examination of the fees of counsel, he believed that the fees paid to such eminent counsel by private persons would far exceed the amount they were asked to pass. The charge that such high fees were attributable to the chiefs of departments was entirely without foundation. This view was taken by several other members, and after some further remarks the report was adopted.

Public Analysts.—An influential meeting of public analysts from different parts of England has been held in the Cannon-street Hotel, Professor Redwood in the chair. After the chairman had passed a few remarks on the objects of the analysts, and the motives for calling the meeting, the following among other resolutions was agreed to:—"That we analysts have carefully considered the report of the Select Committee of the House of Commons on the Adulteration Act, and are of opinion that it is desirable to take this report into joint consideration, and to suggest amendments in the present Act with a view to impending legislation next session." The proposed reference of disputed cases to Somerset House Laboratory, or to any body of persons whose decision is to be considered final, was objected to, as also compulsory examination of public analysts at South Kensington or elsewhere. Other resolutions were agreed to. A Society of Analysts is contemplated.

Mineral Oils for Lighthouses.—Captain Doty, whose exertions in endeavouring to induce the Trinity Corporation to substitute mineral oil for colza, with his burners, are well known, has printed a letter to the secretary of the Harbour Department of the Board of Trade on the subject, with a preliminary circular on the subject of the Trinity Corporation,—its scientific advisers, and the interests of maritime commerce. According to M. Reynaud, Inspector-General of Ports et Chaussées, and Conductor of the Light-house Service of France, the amount of light sent out upon the horizon by Captain Doty's burners with mineral oil in place of colza is increased 45 per cent. That the Trinity Corporation cannot see it does not by any means imply that it is not the fact. Every one knows that mineral oil is cheaper than colza; and much attention has been given to burners by more than one inventor of late years.

Mr. and Mrs. S. C. Hall.—In September next will occur the fiftieth wedding-day of those well-known writers, and last week a meeting of some of their friends was held to consider as to the best means of marking the event by some suitable testimonial. A preliminary committee was appointed, with power to add to their numbers, and it was resolved to invite subscriptions. Some of Mrs. Hall's books are known wherever the English language is spoken. Mr. Hall has edited the *Art Journal* for thirty-six years, with great advantage to the public, and together they have produced more than 200 volumes. Lord Shaftesbury, Mr. Theodore Martin, Col. Radcliffe, Mr. Durham, A.R.A., Mr. Cordy Jefferson, Mr. Justin McCarthy, Mr. Halswell, and many others have already expressed their willingness to assist, and Mr. F. Griffin, of No. 1, Kensington Palace Gardens, who has accepted the office of treasurer, will gladly receive additional names. We cordially wish success to the endeavour.

Margate.—The question of the water supply was commenced upon by the mayor and others, at a meeting of the Council on Tuesday last, the general opinion being that the determination of the water company to cut off the supply from 10 p.m. to 5.30 a.m. was to be deplored, and it was resolved that the company should be written to upon the matter. The question of the construction of an aquarium by the Margate Aquarium Company again came up in the shape of a report from the Road and Building Committee, recommending the council to request the Board of Trade not to sanction the carrying out of the works until they know whether they would interfere with the rights of the burgesses.

The Pictures in the Palace of Westminster.—In reply to Mr. Errington, Lord Lennox said that the efflorescence on the magnificent frescoes of Maclise of the meeting Wellington and Blucher has unhappily spread over the whole face of the picture. More than a year ago Mr. Richmond stated that by a delicate treatment he could remove the efflorescence without injury to the rest of the picture. His opinion, however, was contradicted by other artists as eminent as Mr. Richmond, and matter was allowed to drop. He would only request the hon. member to call at the Royal Gallery, and he would see for himself most painfully that the efflorescence has not been removed. Sir then it appears to have been done.

A Liverpool Music Hall Burnt Down. Last week a fire was discovered in the back part of Rogers's supper-rooms, Lime-street, Liverpool. A reel and several fire-engines were quickly on the spot, but owing to a stiff breeze blowing at the time, the flames quickly spread to the adjoining premises, which are used as an Oxford Music-hall. Great fear was entertained that the fire might extend to the extensive picture emporium of Messrs. Rosenberg on the one hand, and the premises of Messrs. Forrest, decorated on the other. After an hour's steady working, however, the fire was got well under command, and restricted to the two blocks in which it had its origin, but these were thoroughly gutted. The Oxford, we believe, was advertised for sale and uninsured.

Sale of the Alexandra Theatre.—The Alexandra Theatre, situated in Park-street, Camden-town, and which was built and opened more than two years ago, has been sold at auction at the Mart, Tokenhouse-yard, by Messrs. Furber, Price, & Furber. The property is leased, held under three different leases, for an unexpired term of thirty-three years, at an annual ground-rent of 15*l.* The auctioneer, in introducing the property, referred to the layout which had only been recently incurred for the construction of the building, stating that it had cost upwards of 20,000*l.* The bidding commenced with an offer of 8,000*l.*, followed by another offer of 8,500*l.*, and they rapidly rose to advances of 500*l.* each bid until the property stood at 11,000*l.*, when the biddings slackened. The property was ultimately knocked down at 11,900*l.*

Building Accident.—On Monday Mr. Carl held an inquest at St. Thomas's Hospital on the body of William Vigers, aged twenty-seven, a carpenter, who was killed on Friday last by a mass of brickwork falling upon him at Sir Robert Burnett's new distillery, at Vauxhall. The deceased, and other men, were preparing to take away the struts from some arches, when the boards fell sideways, and one end striking an arch, knocked out some bricks, and five men fell, crushing the deceased to death, and more or less injuring the other workmen, two of them seriously. Deceased, it appeared, was in a hurry to get to some other work, and apparently out of temper. Evidently he did not know anything about the way in which struts should be removed. A verdict of "Accidental death" was returned.

Macclesfield School of Art.—At the last meeting of the Town Council a letter received from Mr. Ford, Master of the School of Art, was read, in which Mr. Ford called attention to the fact that eighteen volumes of Indian designs, were deposited in a small room in the Town Hall. They had been sent by the Government with the object of benefiting the textile industry of the town. Very few of the inhabitants, however, ever saw them. Mr. Ford suggested that if the designs were at the School of Art, they would be of vast utility. He therefore asked the Mayor to grant the loan of a volume at a time for three or four weeks for the use of the school. He would himself be responsible for the volume so lent. The request was granted.

Sheerness.—A third edition of the "Guide to Sheerness-on-Sea and the Isle of Sheppy" has been issued. Sheerness, we believe, is one of the healthiest of English watering-places, but it appears to be a want of house accommodation, a somewhat better class than six-roomed cottages; and a better hotel is wanted. There said to be a good field here for profitable investment in lodging-house property, and several other improvements are projected by the "Improvements Association" in the locality, especially a promenade pier and an esplanade.

Newcastle-upon-Tyne Improved Industrial Dwellings Company.—The fourth annual report of this company says that the fits for the year amount to 2411. 19s. 2d., and directors recommend a dividend of 5 per cent. on the paid-up capital of the company. The building affords accommodation to forty-five families, and the annual rate of mortality during the past four years has not exceeded that per 1,000, being little more than a fourth the general death-rate of the town over the same period. The directors have had under consideration the desirability of extending their present block of buildings, but they feel, from increased cost of construction, estimated at ten per cent., they would not be justified in recommending any extension at present.

Whitby.—Sir George Elliot, bart., M.P., is expected to visit Whitby in September, and Messrs. Armfield & Bottomley, and Mr. E. H. Hales, architects, have prepared comprehensive plans for his approval, embodying his scheme of improvements on the West Cliff. The scheme comprises a carriage-road and sea-wall at the top of the cliff, which will be a convenient drive promenade for invalids, and also afford a direct approach to the beach; subscription boudoir-rooms, containing concert-hall, refreshment-rooms, &c.; open and covered promenades, and summer-houses, grottoes, and other sheltered places; and ornamental gardens and walks, with flights of steps to the beach.

The School of Art, Royal Dublin Society.—Robert Edwin Lyne, head master of the school of Art, Royal Dublin Society, evidently grateful pupils. They have just now presented to him an address on the occasion of his having completed the tenth year of his labours as head master of the school, expressing the high appreciation they entertain of the services which he has rendered to art education in Ireland, and of the many advances which they have enjoyed as his pupils. "It is highly gratifying to us to have to record the high reputation which our schools have achieved, and it must be a high satisfaction to you to remember that your efforts have so materially conducted to this result."

Wallasey Free Grammar School.—The errors of this endowment for middle-class education, of which the scheme has lately received the sanction of Parliament, having decided to erect new schools to accommodate boys, divided into seniors and juniors, in accordance with the plans of the leading architects of Liverpool. Seven responded to the invitation, the plans have been on exhibition at the school-room of the Wallasey Local Board. The errors have selected those prepared by Mr. Telford Reade, C.E., architect, of Liverpool, who have appointed him to carry out the work. Reade's plans are so arranged that they can eventually be extended to accommodate a total of 100 boys.

The Improvements at Blackfriars Bridge.—In order of the City Corporation, Messrs. Wren, Bart., and Freeman have commenced some alterations and improvements on Blackfriars Bridge. It appears that the lamps along the bridge are placed on the extreme edge of the pavement and channel. In consequence of this, the vibration caused by heavily-laden vehicles acts powerfully as to completely loosen their hold, and obviate this state of things the present korb channel are being removed, and an additional foot's breadth added to the footway on each side of the bridge. This, it is ascertained, entirely prevent the recurrence of similar accidents in the future.

Dublin Tramways.—The half-yearly report of the Dublin Tramways Company states that gross receipts from all sources amount to 781. 18s. 2d., and after paying all working expenses there remains a net profit of 151. 16s. 1d. Out of this it is proposed to pay a dividend at the rate of 44 per cent. per annum, free of income-tax, being 4s. per share, to carry the balance of 745l. 16s. 1d. to the reserve fund, with 39l. 11s. 8d., to the reserve fund for the past half-year, will amount to 3,572l. 10s. 9d.

The Proposed Mortuary in Shoreditch.—The Vestry, on the recommendation of its Committee, has appointed Mr. Robert Walker to prepare a plan and estimate for a mortuary to be erected in the parish churchyard, the plan estimate to be approved by the Vestry, and design by the Vicar.

The Exeter Reredos.—Archdeacon Freeman, during the course of his sermon at Exeter on Sunday, made reference to the decision of Sir R. Phillimore in the case of the Exeter Cathedral reredos. The decision, he said, showed that Christian art may still be consecrated to the glory of God and the edification of man, and that the guardians of other fabrics throughout the land had not been guilty of idolatry when they set up in a reverent spirit sculptured memorials of glorious events such as the Transfiguration and Ascension of Christ.

White Lead.—Messrs. B. C. Molloy, of the Temple, and D. G. Fitzgerald, of Brixton, have patented some improvements in the manufacture of white lead. The essential features of this invention consist in the production of what is known as white lead, carbonate of lead, or basic carbonate of lead, by effecting the decomposition of chloride and of oxychloride of lead by means of an earthy carbonate, or by means of an earthy carbonate in conjunction with an alkaline earth, or the hydrate of the same.

The Throat and Ear Hospital.—The Central London Throat and Ear Hospital is of such service to the poorer members of the musical and dramatic professions, that, in addition to the aid of Sir Michael Costa and Sir Julius Benedict, who were some time since elected vice-presidents, it has recently received the support of the Marquis de Caux (Madame Adeline Fatti), and of Mlle. Tietjens, both of whom have consented to be lady-patronesses. Since the hospital was opened in the spring, upwards of 1,000 patients have been treated.

Busts by Mr. Durham, A.R.A.—A memorial bust of the late Dr. John Murray, by Mr. J. Durham, has just been placed in the museum of Middlesex Hospital, the result of a subscription by medical friends. The same sculptor is also engaged upon a bust of the late Charles Knight, to be presented to the National Portrait Gallery by his grandson. Also one of the late Rev. J. Barlow for presentation to the Royal Institution by Mr. Justice Grove.

A Sewage Farm for Westbury-on-Trym, in the Clifton Union.—A meeting has been held in the vestry-hall at Westbury-on-Trym, at which a resolution approving of a sewage farm for Westbury was passed. The matter came before the meeting in the shape of a request from the rural sanitary authority of the Clifton Union, "that the county part of the parish of Westbury-on-Trym be consulted as to the disposal of the sewage."

The Peabody Museum at Yale, U.S.—The new Peabody Museum at Yale, United States, which is to replace the original building instituted by George Peabody, has been commenced. The museum will be unusually large—almost a college in itself—will be 350 ft. long and 130 ft. high in some parts, not including the towers, while the building is to be massive and thoroughly fireproof.

Monastery at Highgate.—At St. Joseph's Retreat, Highgate, a monastery to accommodate forty Passionist brethren is about to be erected. The building, of which Mr. Tasker, of Furnival's Inn, is the architect, will stand on the terrace, which is situated at a great elevation over London. The style of architecture will be Italian.

The Fire at the Liverpool Landing-stage.—It is understood that the Mersey Dock Board proposes to hold the Liverpool Gas Company answerable for the destruction of the landing-stage, on the ground that the calamity arose from the carelessness of their workmen in permitting the gas to escape from the main pipe, while using a naked light for soldering.

Carlisle Cathedral.—Workmen are at present engaged in completing the reredos in Carlisle Cathedral by continuing the screens forward on each side to the width of one arch. These screens, of white stone enriched by grey marble mouldings and red marble pillars, consist of arcades similar in design to the screens at each end of the communion-table.

Bursting of a Reservoir.—The embankment of a reservoir in course of erection on Kilbride Hills, for the water supply of Dunoon, was burst by the overflow of Balgay Burn. Five thousand cubic yards of material and a quantity of plant were swept away. The loss to the contractors, Messrs. Baird, of Dundee, will be very heavy.

Restriction of the Manchester Water Supply.—In consequence of the drought, no water will be supplied at Manchester until further notice between six at night and six in the morning. Manchester is one of the towns which, under ordinary circumstances, has the benefit of constant supply.

Wood-working Machinery.—Messrs. Reynolds & Co. have received a silver medal at the Freston show for their imperial saw-bench and mortising machines. They have just now completed an order for the Indian Government.

TENDERS

For shops and offices, Queen Victoria-street. Mr. Lewis Solomon, architect. Quantities supplied by Mr. Henry F. Gritten:

Hill, Higge, & Hill	26,400	0	0
Oliver	6,348	0	0
Browne & Robinson	6,279	0	0
Newman & Mann	6,256	0	0
Carter	6,509	0	0
Stimpson	6,580	0	0
Longmire & Burge	6,589	0	0
Elkington (accepted)	6,590	0	0
Bracher & Son	4,680	0	0
* Clerical error for £5,580.			

For new premises of the Hearts of Oak Society. Mr. T. Chasfield Clarke, architect:—

Ashby & Sons	25,824	0	0
Colls & Sons	6,528	0	0
J. & P. Coleman	5,514	0	0
Corder	5,780	0	0
Browne & Robinson	6,760	0	0
Scriveners & White	5,589	0	0
Newman & Mann	6,532	0	0
Macey	5,550	0	0
Fatman & Fetheringham	5,370	0	0
Merritt & Ashby	5,530	0	0
Samuel Simpson	6,508	0	0

For residence for Mr. F. Stallard, Lewisham Hill. Mr. William Oakley, architect. Quantities supplied by Mr. Sidney Young:—

Crossley	24,468	0	0
Brass	4,348	0	0
Dover, Son & Co.	4,279	0	0
Colls & Son	4,232	0	0
Newman & Mann	4,238	0	0
Hayes & Ramage	4,184	0	0
G. B. & W. T. Gates	4,142	0	0

For new Infectious Hospital at the Milton Union Workhouse, next Sittingbourne. Mr. Benjamin Adkins, architect. Quantities supplied:—

Orley	22,984	0	0
Racolleff	2,935	16	4
Dover, Son & Co.	2,545	0	0
Waterson & Co.	4,420	0	0
Shrubsole	2,269	0	0
Adcock & Roll	2,244	0	0
Nyriat	2,193	0	0
Cornelius	2,148	5	0
Calund	2,140	0	0
Whiting Bros.	2,136	0	0
Sollitt (accepted)	2,081	0	0

For the erection of a house and stable, at West-hill, Wandsworth. Messrs. Lee, Bros., & Pains, architects. Quantities supplied:—

Adamson & Sons	23,497	0	0
Townsend	3,499	0	0
Parsons	3,475	0	0
Roberts	3,458	0	0

For repairs to No. 50, Bedford-square. Mr. Lewis Solomon, architect:—

Falmer	2,585	0	0
Willson	468	0	0
Cohen	390	0	0
Woods (accepted)	285	0	0

For Centenary Hall, Workmen's Dwellings, &c., Bethnal Green. Messrs. Habershon & Pite, architects:—

Hall.	Club.	Dwellings.
Allen & Son	£2,000	£210
Saby & Son	1,024	889
Roberts	1,046	888
Morgan	1,879	804
Woodward	1,870	785
Martin	1,875	835
Sharnum	1,845	799
Jerrard	1,824	798
Bangs & Co.	1,845	770
Ennor	1,823	768
Niblett & Son	1,787	757
Hunt	1,859	728
Boden	1,775	755
Webber	1,730	753
Leatherdale & Son	1,661	727
Small	1,635	702
Chivers	1,600	680
Stamps & Bowle	1,611	687
Waldron & Co.	1,577	683
High	1,520	500

For Christ Church, Freshwater, Isle of Wight. Messrs. Habershon & Pite, architects:—

Coker	£1,331	0	0
Bond	1,339	0	0
Newman & Son	1,515	0	0
Parsons	1,429	0	0
Barnes	1,472	0	0
Smith	1,370	0	0
Burkitt	1,365	0	0

For alterations and additions to St. George's Church, Battersea. Mr. Henry Stone, architect. Quantities supplied:—

Macey	£1,340	0	0
Dove Brothers	1,676	0	0
Gregory	1,763	0	0
Lathey, Brothers	1,730	0	0

The Builder.

VOL. XXXII.—No. 1646.



JULY, which is ordinarily one of the wettest months in the year, has been characterised, in the present season, by a long series of fine days, chequered by one or two local thunderstorms, of unusual fury. The failure of the ordinary summer supply of the springs and wells of the country is becoming apparent. Wells are sinking below their lowest recorded depths. Springs have disappeared. Brooks are changed into dry ditches. On the water-cranes of the Great Western Railway, at Reading, might be read a significant notice,—“Water very short. Engine-drivers not to take more than necessary, in order to reach next station.” “Water very short” may be taken as a general indication of the state of the country.

It is not surprising that, under such circumstances, the press should give expression to voices of alarm, of foreboding, or of counsel. “The Storage of Water” is a heading which may be expected to become more and more frequent. It may seem, at first, as if the rainfall was one of those matters which are, on the one hand, so vast in proportion, and on the other hand so capricious in distribution, that man can only look on in helpless expectancy, being altogether at the mercy of the elements. This view is, however, the very reverse of the truth.

The rainfall of the British Islands is usually spoken of as a definite average annual quantity. In point of fact, however, it varies not only from year to year, but from spot to spot, in an extraordinary degree. Thus in the year 1872 a fall of no less than 20 ft. of water (248.98 in.), was actually measured in the rain-gauge at the Sty Head Pass, in the district of the Westmoreland and Cumberland lakes. This fall, which is of tropical magnitude, is, indeed, so far as returns go, unique in Great Britain. But, in the same year, 138 in. of rain fell at Little Longdale, in the same district; 105.92 in. at Dartmoor Prison; 68.94 in. at Conistow; 150.21 in. at Beddgelert; and 143 in. at the Bridge of Orkay, in Scotland. During the same year the rainfall in the South Midland and South-Eastern counties of England ranged from 26 in. to 28 in.; being only the fifth part of the maximum fall above cited. The general rainfall of 1872, as far as it was actually gauged, was 36 per cent. above the usual average for the United Kingdom. In 1870, on the contrary, the fall was 18 per cent. below the average; making a difference of 54 per cent. between the water-supply of the two years in question. Even this great range does not express the variation in its highest terms. Over the district stretching from Ludlow to Hawesbury, the excess of the fall of rain in 1872 over the average varied from 61 to 86 per cent. Taking the returns of four different stations. On the other hand, we find that, in unusually dry years, the rainfall over portions of the water-

shed of the Thames valley has not exceeded 16 in.

Such, then, may be said to be the limits of the supply. The function of the engineer is to be prepared, on the one hand, to conduct to the sea, without damage to life or property, a mass of rain, which, if collected and unevaporated, would cover the wettest districts of England to a depth of from 10 ft. to 12 ft.; and, on the other hand, to economise an annual supply, which is only equal to four-fifths of the quantity which evaporates from the surface of a sheet of water within the twelve months.

A certain portion of this rainfall is actually converted into growing vegetable matter by the process of vegetation. But that quantity, which is ascertainable by chemistry, is but small in proportion to the total requirements of vegetation. We may tell how much water is bound up in the formed tissues of the plant; but we cannot tell how much has been absorbed by the roots, and again given forth by vegetable respiration, nor is this quantity one that is easy to ascertain. The growth of many plants depends as much, if not more, on the water contained as vapour in the air, as it does on that which is actually supplied to the roots. This is remarkably the case with the ferns. No amount of watering will enable the horticulturist to grow certain species of ferns in a dry air. On the other hand, in caves and grottoes where the direct supply of water to the roots is questionable, but where a damp air is prevalent, these lovely plants form a dense veil of green, and luxuriate with their tiny fronds.

We can tell, however, the effect of supplying water by artifice, when it is withheld by nature, to certain plants. Among these, the grasses are pre-eminent. The grasses do not require too much water, but they will greedily consume much. They will grow in a damp spot; but they will not grow, except at a great disadvantage, in a water-logged soil. On the loftiest hills of Cumberland and Westmoreland, fed by mountain rivulets, a fine grass grows, to no very great size, but so as to afford a most admirable food for the wandering sheep. In the water-logged valley of the Kennet, and in the damp clay soils of Pembrokeshire, sedges, reeds, and rushes, the Typhaceae, the Cyperaceae, and the Pinaceae, take the place of the true grasses; and the grass which grows amid such neighbours is harsh, rank, and undesirable.

But when water is so distributed, either by nature or by art, as to afford all that the grass plant can absorb during the time of forming its flower and seed, without allowing the roots to be permanently submerged, we obtain the highest possible amount of produce. Forty pounds per acre is quoted as the produce of irrigated farms. And in the case of sewage irrigation the question is yet unsolved how much of the benefit is due to the water alone.

It is thus evident that a rainfall of at least 20 in., being an amount equal to the average annual evaporation (from a wet surface), as far as our observations go, in this country, is necessary to supply our grasses, in a state of nature, or of unirrigated cultivation. They should be fed with at least as much water as they can respire, which we may roughly take as equal to that which the atmosphere would lift from a wet soil. This would be actually the case in the favourable condition of plants growing in mould of some 8 in. to 16 in. in depth, with an impermeable subsoil. Alter these conditions, and the demand for water will vary. If the surface soil be impervious, the rain will either lie in puddles on the surface, till evaporated by sun and wind; or will hasten down a sloping surface to the outfall, and escape to the sea, in the form of a wasted and unproductive torrent. When, on the other hand, the subsoil is pervious, the rain sinks through the strata until arrested by some impervious floor. The plants in that case

absorb only while the water is passing by their rootlets; that is to say, for a time not much longer than that occupied by the showers. And thus the earth is thirsty, and the crop parched. Enough rain for all the purposes of vegetation may have fallen, in each of the above-mentioned cases. But in neither of them have the plants derived the proper advantage. In the first case, the water was too hurriedly removed from the surface of the soil. In the latter, it too rapidly filtered through it. And as one or other of these conditions exist in the majority of cultivated soil, it becomes evident how much more rain is required by the farmer, than is actually used by the plant. Rain comes, with very rare exceptions, abundantly enough, if it were utilised, but not abundantly enough to be wasted.

Another, and by no means an unimportant, demand on the rainfall, is that of the animal world. As to this, we confine our calculations, in the first instance, to the human population. For this we must allow, not the mere supply for drinking, which is but a small amount, but enough for washing, cooking, and all the details of domestic procedure; for manufactures; and for the sanitary service of cities and towns. From 30 to 33 gallons per head per diem is the allowance now usually made in calculations of this kind. This allowance may be represented, with sufficient accuracy, by the allowance of 50 tons of water per head per annum to the population.

An inch of rainfall, on an acre of ground gives a quantity of 100 tons of water. Half an inch on an acre would, therefore, be the quantity necessary for the supply of each head of population for a year. The ratio between area and population in England is 1.51 acre per head of population; say an acre and a half per soul. A water supply of one-third of an inch over the surface of the country is therefore (evaporation and waste not being taken into account) all that is requisite for the wants of the human population, if it were all supplied according to urban requisites.

Mr. Symons's calculation of the average rainfall in England, from 1850 to 1859, is 33.04 in.; from 1860 to 1865 it is 34.97 in. The lowest supply noted is 18 per cent. below the average. Thus, 27.6 in. may be taken, approximately, as our minimum rainfall. Out of this we want 33 in. for drinking, washing, and all domestic and urban purposes. There remains 27.27 in. What becomes of it?

We may glance, for a moment, at another way of stating the problem. Taking the driest year, as before calculated, and taking a supply of the fixed quantity of 50 tons per head, the rainfall on an area of 90 square yards will suffice for an individual's consumption. (We are, of course, speaking of paper calculations, without reference to loss by evaporation.) On the roof of every building that covers an area of 27 ft. by 30 ft., falls, in the course of an exceptionally dry year, water enough for the consumption of an individual. Again, on the area of London, taken in round numbers at 78,000 acres, there fell, in the year 1872, 264 millions of tons of water; or a supply equal to the total consumption of the metropolis for between fourteen and fifteen months. And yet we are in want of water!

We thus come to the fact, that the adequacy of the rainfall in England, in the driest years of which we have any experience, to supply the wants of man and beast, including, on the one hand, all the demands of urban life, and, on the other hand, all the requirements of vegetation, is not matter of chance, caprice, or doubt. Two or three times all that is necessary, if due care were taken of the precious supply, falls in the very driest year. Of the dealing with this supply by works intended for irrigation, we have more than once spoken. We are now referring, not to large works, but to the appli-

cation of labour which is, more or less, at the command, not only of every farmer, but of every cottage gardener.

We see that on dry soils, such as are to be found at Warrington, at Hendon, in the valley of the Brent, and in numerous spots which will readily recur to our readers, the rain is wasted, in consequence of the impermeable nature of the soil. We are speaking of neglected spots, the water lies on the surface till it evaporates, or runs off, when slope suffices, in torrents; hardly any of it is absorbed by the plants. Rushes grow in the puddles, and the soil is alternately a swamp and a dry, baked, barren waste.

On the sands of Hampshire and Surrey, on the other hand, drought and barrenness arise from the very opposite reason. There the water runs too rapidly through the porous soil. It does not remain long enough within the reach of the roots of the plants to be utilised. It hastens on its subterranean journey to the sea.

The same is the case, to a great extent, with the chalk districts. On the high downs the water sinks through the chalk almost as rapidly as it does through sand. Thus, in the present summer, large districts of the Wiltshire chalk downs have been absolutely parched by the sun. In chalk valleys, on the other hand, where the water is retained by the outcrop or uplifting of impervious strata below the chalk, the latter substance is saturated, and all the evils of a waterlogged soil accrue.

Thus we can understand the rare fertility of the marls and loams which form the soil of the most fertile districts of England. By a judicious mixture of clays, sands, and limes, that mechanical condition of the soil may be attained which best applies the rainfall to the roots. In such a soil the water percolates slowly. The roots have time to drink. They are neither drowned nor starved. It is to the mechanical nature of the soil, its judicious adaptation to serve the purpose of a very slow filter, rather than to its chemical constitution, that extraordinary fertility is to be ascribed.

We think it almost certain that too much attention has been of late directed to the chemical, rather than to the mechanical, elements of soil. We know that the great bulk of vegetation is formed of matters which do not impoverish the soil, which supplies them rather as a channel, than as a source. Water, carbonic acid, and ammonia, are the constituents of protoplasm, or the raw material of organic matter. The small amounts of phosphates and silicates which are required in addition are usually to be found in adequate quantities. Yet it is in the supplies of phosphates—to an amount entirely out of proportion to the demand of vegetation—that the chief expense, in the direct effort to fertilise the soil, is now generally incurred by the farmer. We believe that, in most cases, it would be more remunerative to expend a given sum in labour than in manure.

Thus with regard to the great change which has recently been effected, by some farmers, in the rotation of crops, and which we have seen spoken of as "perpetual corn farming," some very important pieces of information have been incidentally brought to light. At Blonnet's Farm, near Sawbridgeworth, in Hertfordshire, Mr. John Prout has just had his eleventh annual sale of white corn from the same fields. The soil of these fields has been carefully analysed. The result is, the presence of enough of phosphoric acid to grow from 172 to 433 crops of wheat, grain, and straw; of enough sulphuric acid to grow from 50 to 500 crops; and of other minerals in larger quantities. Why then, on such a soil, does the farmer find it answer to apply guano or bone-dust? Because in so doing, he so levigates and tempers the soil, as to bring the rain more readily within the reach of the roots, and to retain it for a longer time, without absolute stagnation.

The same reason explains the free use of lime, in North and South Wales, on the slate and clay soils; where in many districts it is the only manure employed. About Rhaiader, for example, it is fetched for such long distances, and over such bad roads, that it was calculated some years ago that the farmers would have been gainers by making a railway at their own expense, if they had derived no further profit from the shares than the reduction of the price of lime in consequence of railway carriage.

This, again, explains the extraordinary fertility which, in some districts of Lancashire, has been attained by the dressing of the soil with the sand of the great estuary, known as Lan-

caster Sands. The *detritus* brought down by the Kent, the Daddon, and other rivers, may be rich in humus. But the levigation of the clay soil, by the admixture of sand, serves even more directly the mechanical requisites of the case than does the admixture of lime.

So, again, on poor chalk land, we sometimes see a dressing of burnt clay applied with good results. If our views are correct, the burning of the clay is an unnecessary expense,—all that is necessary is its comminution. Clay spread in small portions over chalk produces a mixture similar to that obtained by dressing clay soils with lime. Where the three ingredients—clay, sand, and lime—are all present, the most mechanically perfect, and also the most fertile soil, is formed.

Thus, in the application of lime, or of sand to clay soils; of clays to chalk; and of sea sand to either argillaceous or calcareous soils; we are acting on the same principle. In neither case is it the addition of fresh mineral ingredients which causes the increased fertility. The mineral elements required by the cereals and other crops are, for the most part, existent in ample quantities in almost every description of soil. It is the mechanical nature of the soil, or its adaptation to the purpose of a slow, but efficient, filter, that is the secret of success. And as, on the one hand, without care directed to this end, the rainfall is in a great measure wasted; so, on the other hand, with wise treatment of the soil the rainfall of England is ample for the need of the farmer, as well as for that of the sanitary reformer.

Again, it will be evident to our readers that the very same process which is necessary to the purification of water which has been once polluted by dangerous matter, is that on which the fertility of the country depends as regards the rainfall. Strain, filter, deodorise, burn,—do what we will with the grosser impurities carried from our cities, one essential requisite remains. Effluent water must percolate through the soil. This is a prime sanitary canon. It is one of those rules which have no exceptions, none, that is to say, if health and safety be regarded. Now, just as a careful study of the subject tends to the conclusion that that filtration must be continuous and active; that there must be no soaking, no soddening of the roots, no deposit of stagnant puddles, without great risk to health; so do we find that vegetable health requires the same thing. If stagnant water be bad for man, it is no less bad for crops. The more we provide for health, the more do we produce fertility. It is not a question of one advantage being set against another. It is not that we are called on to keep down the doctor's bill by an expenditure of labour which has no other result. We have the very opposite case to that of burning a candle at both ends. We have the filling a reservoir from two channels. As we study health, we study wealth; as we feed on plants, we shall feed and guard ourselves.

We are desirous that this view of the wisest mode of expending a given sum on land should be seriously regarded by our agricultural readers. In any case we believe that their experience will fully coincide with our views. What is the great effect of deep ploughing, of spade culture, of under drainage? In every instance it is the same. It is the converting of the soil into an efficient, but slow, filter. It is the production of a condition which will allow the soil, impervious when unbroken, to become pervious. It is to throw mechanical obstacles in the way of the too rapid filtration through highly-porous soil, by mixing it with a more retentive material. We are not undervaluing manures. On that important question we are offering but one suggestion. The constituents of all crops are known. The constituents of every soil may be chemically ascertained. A comparison of the two will tell any one what character and what amount of manure is required by any given soil for any required crop. We think that this simple sum will show a great amount of over-manuring, chemically regarded. But this is a question for each cultivator to settle for himself. One thing we hope we have made evident, and that is, that the incidental effect of manuring soil, which is produced by the levigation, pulverisation, and mechanical admixture of its elements, is of so great importance that it is highly probable that it may often have a more direct effect in stimulating vegetation than the chemical elements added in the process. Water alone supports much vegetable life. Water administered to the plant in the soil is the first requisite for fertility. Labour applied to the tempering of the soil will

allow an inch of rainfall to exert greater fertilising power than that of 10 in. of rain on neglected soil. The first demand, then, for the storage of water, is to be met by the plough, the spade, and the drain-tile. Labour, wisely applied, has an effect which is equivalent to the production of rainfall, almost at will.

BRICK AND MARBLE IN THE MIDDLE AGES.

In following out the points for contrast, comparison between Northern and Italian Gothic,* there can be no doubt that the most striking of all is in the treatment of the tower, that necessary adjunct of a church in the days of campanology. Readers will remember the point made of this in the vignette to Mr. Ruskin's early work, "The Stones of Venice," where the Italian campanile and the English tower are contrasted in a manner which indicates the advocate rather than the impartial critic. The Italian campanile in its typical form is a grand simplicity and unity of expression, and that it produces a great effect in proportion to its size and simplicity of ornamentation can hardly be questioned; and some modern Gothic practitioners have endeavoured to add the Italian method of treatment to towers with essentially Gothic detail. New effects may be procured by this means, but a criticism which should give the palm to the Italian tower as the best of our own would be one founded on desire for novelty rather than on a true judgment of their merits. The fault, however, of a considerable proportion of English towers certainly is their want of a predominating motif in design, and picturesqueness is sometimes attained at the expense of grandeur and appearance. We do not, think, however, that the present fashion of straight vertical towers with top-heavy upper stages, in such buildings as town-halls, &c., will be regarded with admiration by our successors. The impression conveyed by a study of these in conjunction with old Gothic examples would be, that the architects of the present generation had well introduced a clumsy and inelegant form of tower from abroad, instead of working out new results the far more truly architectural forms of their own country. Of this latter process the Victoria Tower remains an admirable and rare monument, and one superlative in dignity of effect to any Italian campanile.

The extensive employment of brick in the Gothic buildings of Italy is another peculiarity which has had its influence on recent English practice, in leading to more extensive attempts at brick ornamentation than were at all usual in this country until lately. This, if carried with judgment, is a move in the right direction for economical considerations will always command the use of brick to a great extent, and with questioning the superiority of stone for all the best purposes of the architect, a building which has to be for the most part in brick will often be more effective when finished entirely in that material than with the orthodox complement of "stone dressings." In studying the brickwork of Italy, for hints to this end, it is not, however, to be forgotten that in that country brick was used largely in imitating details which had in their original form been elaborated in stone, and thence borrowed by the brick-builders of Italy. No one would think of maintaining that cusping could have been invented a feature for brick architecture; and the mode of treating it in brick (specially illustrated in Street's volume) by setting the bricks as radiating voussoirs, and cutting and shaping them to the required curve, is essentially architectural, and by no means to be imitated. It is simply an ingenious way of producing brickwork forms which belong properly to ornamental masonry. There is plenty of scope for novelty and picturesque design in brick without going beyond the forms and sources of decoration to which this material naturally lends itself.

Of the places of architectural interest in Italy in a town in North Italy, such as that which chronic in the work which gives occasion for these remarks, none are of more enduring interest than Verona and Venice, an interest comparative as well as positive. If a salient instance were required of the effect of geographical position and commercial relations upon architecture one could not point to any more striking than displayed by these two towns, not much more

* See p. 642, ante.

man forty miles apart in precisely the same degree of latitude, in the one of which the architecture is essentially Northern, Gothic, in the other, as far as Italy ever attained this feeling, while in the other, despite Gothic forms of detail, the whole feeling and treatment of the architecture are breathes of Oriental fancy and sumptuousness. Architecture, like some natural growth, changes its colour, expands or contracts with the soil and the circumstances by which it is influenced. The same grand commercial site on the shore of the Adriatic which gave Venice the key to the stores of the "exhaustless East," which brought her into the great air of republican freedom and growth, gave to her architects the opportunity and temptation to experiment in forms of lavish and abnormal architectural splendour, while her neighbour Verona, the quiet borough of the Scaligers, remained in the more respectable beaten paths, both politically and architecturally. Which town is, in the latter point of view, of most value, may be contested; it may be correct to say that there is more for the northern architect to learn from Verona, more to admire and wonder at in Venice. The architecture of Verona is strictly architectural, that of Venice is to a great extent more picturesque than architectural. Verona affords a admirable exemplification of the treatment of material, brick and marble especially, on purely architectural principles, yet with sufficient regard to effect and variety. Of the result to be obtained from a simple and bold use of building materials, almost without actual "ornament," the famous tower of the Scaliger palace is a remarkable instance; and, on the other hand, the richness of detail is seen in such things as the varied marble inlay pavements, and the more flexible iron grille before the Piazza dei Signori. Then the details of the brick architecture of San Zenone and San Fermo furnish admirable examples of what may be called the common sense of architectural design, and yet with truly refined feeling and artistic effect. There is probably more here that is valuable for an architect to study than at Venice, where the picturesque is the predominant aim, and the sense whereby this is attained will not, in many cases, be too critical examination.

There is no room to say much now about St. Mark's, to which indeed a large space was devoted in our columns some time since; but we may quote the following description of the effect of an English architect, of the peculiar state of the pavement, on which others have commented:—

Of all the features of this grand church, that which to the gorgeous colour of the walls most attracted me to the wild beauty of the pavement. I know not what word to use which quite describes the effect it produces. It is throughout arranged in patterns common in the Opus Alexandrinum, but instead of being laid level even, it swells up and down so that its surface were the waves of the sea, on which those who embarked the ship of the church may kneel in prayer with safety, undulating surface serving only to remind them of the billows of the sea and the sea actually washing the walls of the streets and houses throughout their city. It is not supposed that this undulation is accidental, for it has been the consequence of a settlement of the ground on which the church stands, and the crypt and in the crypt, and some tokens of disruption in the pavement. And the corresponding example of Sts. Sofia, Compendio, where we have it on record that there was an emotional symbolism in just such a floor, is conclusive as the intention of the imitators here.*

Not quite, we think. If the builders of St. Mark's, in the very centre of the domination of unalloyed symbolism, intended such a metaphor for their floor, it by no means follows that the architects in the free, aspiring, commercial city of the Adriatic should have set great store by such far-fetched and absurd symbol. They might have imitated what struck them as a picturesque peculiarity in the Neo-Greek cathedral, without any other aim than a gorgeous effect. The passage we quote, and the tone in which it takes, in common with other remarks in the same book, is indicative of the over-sought and entirely artificial manner in which some architects among us, symbolism and classicalism are mingled with architecture, as if in two studies belonged to each other in some separable manner. We can only hope that no unregarding ecclesiastical architect will commence constructing churches with "wavy" floors, in order to realise among ourselves the important lessons thus to be derived. On architectural grounds there may be room for the consideration whether more variation in the levels of floors in is generally permitted in modern buildings should be a new source of effect. There are, however, very few structures built in which any such variation, either by slopes or steps, would not be a practical inconvenience; and probably

the final conclusion would be that for an interior there is nothing so fine or so suitable as an unbroken expanse of flat floor as the basis of the internal architecture.*

In comparing Verona and Venice, one can scarcely forget the vicinity of Vicenza, sacred to the memory of the now barely-honoured name of Palladio. The reputation of the great Renaissance designer will probably survive after a fashion, but more on the wings of fame and because of what has once been said about him, than on the merits of what he called buildings, but which were rather full-size models of buildings. More thought and more intellect may have gone to producing some of these than went to any of the now more admired structures of the other two towns we have been referring to; they form a striking warning of the consequences of neglecting the first desideratum of architecture, truth and durability of construction. There is a something singular in the geographical juxtaposition of Verona, Vicenza, and Venice, lying at the three corners of a not very large triangle of country, representatives respectively of real architectural building, of "school" designing, and of picturesque architecture of no rule or regulation at all. The fact that the latter has the most lively hold upon the interests of most people at present must not be made too decidedly an argument in favour of the more lasting interest of the "romantic" school; allowance has to be made for the historical associations of Venice, as well as for the fact that the romance side of artistic interest is predominant just now, in every branch of art and literature. "School" art, on the other hand, always has in it the seeds of decay; yet it is not improbable that the day would have come round when the unquestionable talent, not to say genius, applied to it by Palladio might have made Vicenza again a centre of interest to the architectural traveller. But the celebrated Renaissance architect destroyed his chance by forgetting the constructive basis of architecture, and contenting himself by getting up scenic buildings as fast as he could without considering their future. He did more, however, in the art of abstract design, than that it should be quite fair or allowable, even for the most virtuous Goth, to pass his memory over it with a sneer; though every candid critic must admit how inferior in interest and association are his artificial compositions to the sometimes less artistic, but genuine and durable erections which the Italian medieval architects, supplying the wants of their day with the materials nearest to hand, have left as illustrations of brick and marble in the middle ages.

CISTERCIAN ARCHITECTURE.

We printed three weeks ago a considerable portion of the paper on the above subject recently read by Mr. Sharpe, at the Ripon Congress of the Archaeological Institute (see p. 553, ante), embodying facts and conclusions, some of which had previously been laid before the architectural profession in the course of a paper contributed to the proceedings of the Institute of Architects during the session 1870-71. The various studies and investigations which Mr. Sharpe has given to a subject that he has fairly made his own are now to be collected in a systematic form in a new illustrated work* on Cistercian Architecture, the first two parts of which are published, and of which we presume the remainder is to follow shortly.

The peculiar ecclesiastical movement which, started at the close of the eleventh century, has left its records in some of the most extensive and impressive architectural works of the twelfth and thirteenth centuries, has been on several occasions dwelt upon and described in its main features by the author of the present work, in the course of various lectures, of which extracts have appeared in our columns, as well as in the letters "On Colour in Churches," first addressed to us, and since printed as a pamphlet. It is, therefore, unnecessary here to recapitulate the specialities of Cistercian rule which contri-

* Elmes, in his original design for St. George's Hall, Liverpool, made the experiment of a raised floor all round the great hall, a kind of continuous dais, with two or three steps down to the centre area. The effect, as we remember it, was to give rather the appearance of a seat in the middle of the area; and it was probably inconvenient, as we hear it has been some time since filled up with wooden flooring, so as to produce a uniform level.

+ "The Architecture of the Cistercians." By Edmund Sharpe, M.A., F.R.I.B.A. Part I.: General Plan. Part II.: The *Donus Conversorum*. London: E. & F. N. Spon. 1874.

buted to give much of the peculiar character of stern simplicity which belongs to their conventual buildings. Those who have not yet made any acquaintance with the history of the rise of the Cistercian movement will find it sketched in the opening chapter of the work before us; it is sufficient to observe here that the order appears to have dated its great increase in numbers and reputation from the foundation of the Abbey of Cîteaux, by St. Bernard, in 1119, and that within a little more than 200 years of that time no less than 1,200 abbots were founded, erected, endowed, and added to the Order. "Of these 1,200 monasteries," says our author, "I do not know one the general plan of which is not in accordance with that of all the rest, nor a single church which does not bear in its details the impress of its Cistercian origin."

This remarkable unity of plan and design in all these buildings, not forming conspicuous objects in towns, not grouped together in any way, "sed in locis a conversatione hominum remotis" (in the words of their own statutes), is an impressive instance of the intimate connexion between architecture and forms and theories of life, which has always existed where the architecture was the unfettered and natural expression of the real wants of its authors; which, even at present, amid our multifarious copyism, exists much more than some pessimist critics would have us believe. Nothing can better assist us to realise the power of the ascetic spirit in the middle ages than the existence of these extensive structures, all built by one law, and all following the melancholy prescription of their statute, and finding their foundations far up in silent valleys, in the least conspicuous and least frequented spots, where their inhabitants could carry on their formal and severe discipline of existence with the least possible temptation to break through it. In contemplating in imagination these hundreds of separate silent buildings, the scene of one of the most remarkable efforts that was ever made towards the abnegation of all the brighter human feelings, in the hope of gaining a superhuman happiness, even the architectural student is tempted for a moment to forget the architectural grandeur of these structures in the moral interest of the phase of life of which they are the chief witnesses and memorials. There is something intensely solemn, though mournful, in the ideal of life thus held up and practised by whole colonies of human beings centuries ago; an ideal which, with all its lofty claims and hopes, and doubtless its strivings and contentions of mind, has utterly faded into the past, and left us as memorials these deserted and ruined structures, which are sketched and measured by the modern architect as the only remnant amongst us of the great Cistercian movement which of any consequence to him or to any one now.

The style of the earlier and finest of these abbeys is of course the style of Early Gothic as its main features it was practised in the twelfth century over great part of Europe, with diversities of detail rather than of construction or of general effect. The Cistercian presents it intensified, as one may say, in its characteristics of massiveness and simplicity, but not otherwise with any noteworthy distinction in style from other edifices of the same period. It was rather a distinction of manner than of style, arising from the determination to avoid all appearance of show or luxurious decoration. Any representation of human figures or faces in the carving was forbidden explicitly by the rules of the order, and even decorative carving little resorted to; and thus results a manner of Early Gothic illustrating the degree of architectural effect which can be obtained by the use of moulding only as a source of decorative expression. Towers of any height were also forbidden: "Stone towers are not to be made for bells, nor wooden ones of immoderate height, which would be unbeseeming the simplicity of the order." Mr. Sharpe adds that "these wooden bell-turrets existed in most of the early French abbey churches of this order, over the crossing. There is a representation of such a turret so situated in an early engraving of the church at Cîteaux, before it was destroyed, and there is one still existing at Broubach with a small circular opening beneath it, in the apex of the western arch of the crossing, through which the roof descended to the floor of the nave." The bells also were under regulation, and there were never to be two sounded at a time: no "peal" was allowed, in other words. The windows were to have plain white glass, except where coloured glass had existed in an abbey built before the institution of the order, when

the coloured glass might be retained: there is in this last exception a spirit of reasonableness and an absence of fanaticism, which has not always characterised religious reforms, and from which some people even in our own days might take a hint. The general prohibition of stained glass in these abbeys has been frequently referred to of late, and was the main text of the letters "On Colour in Churches" before mentioned, in which some may have thought the example of the Cistercians in this respect was pressed a little further than most modern architects can be expected to follow it.

In regard to the disposition of the principal buildings forming a Cistercian abbey, the model plan given in this work furnishes a convenient memorandum of an arrangement to which all these groups of buildings conform, in its main features. Most of our readers will recollect the leading points of the Cistercian monastery plan; the church occupying the whole of the north side, the cloister court to the south of it; the chapter-house opening from the east walk, and the refectory from the south walk of the cloister; the frater, or day-room of the monks, opening from the south-east angle; and the long building, generally divided by a centre colonnade into two aisles, which forms the invariable completion of the block on the west side of the cloister, but extending commonly far beyond it southwards. It is of this last building that Mr. Sharpe especially treats in the second part of the present work; the chamber to which he had formerly attached the title of *hospitium*, or guest-room, but which recent researches have induced him to regard as the *domus conversorum*, or room of the "conventites" (so adopt the Shaksperian Anglicising of the word*), frequently alluded to in the chronicles of the monks. The *conversi* were lay brethren, subject to some extent to the religious brethren, and who were admitted to the shelter of the convent on engaging to adopt the Cistercian rule of life, and to do the necessary work of labourers on what was, in fact, a great economic farming estate. From what is related of the duties of this portion of the conventual body, who appear to have really had to undertake the greater part of the rougher daily labour of these great establishments, it is justifiable to assume that they may have frequently or generally surpassed its religious brethren in numbers, and the respective proportions, in size, of the frater and the western building, the day-rooms (according to this theory) of the religious and lay brethren respectively, are therefore in accordance with this idea. Moreover, the fact that both these apartments were in two stories, and both divided in the same manner by a central arcade, points to the conclusion that their areas were of a similar nature; the lower room in each case being the day-room, and the upper one the dormitory; which has long been assumed to be the case in regard to the apartment called the *frater*. On the whole the new explanation of the long west room is perhaps the most probable that has been offered; at the recent Ripon meeting of the Archeological Institute it was, in fact, generally taken that Mr. Sharpe had proved his case. We should only wish to ask what has become of the *hospitium*, which Mr. Sharpe admits more than once, is one of the most frequently mentioned buildings in ancient chronicles? Apparently the new theory removes it from the group surrounding the cloister, and places it among the outlying buildings within the abbey precincts, where, we are told, that both at Fountains and Furness there are buildings that might have served such a purpose. As Mr. Sharpe holds that the *hospitium* would be constructed in the same way, with a lower day-room and an upper dormitory, it seems to remain really a question as to whether the guests or the lay brethren would require most room, and to which the largest apartment was likely to be devoted. There is this to be added, however, that if the lay brethren took so regular a part in the daily work of the place, it may be natural to suppose that their room would be the one in most intimate connexion with the main buildings of the convent. On the other hand, it might be argued that the working population of the establishment, employed a great deal in outdoor labour, would be housed more apart, and in less close connexion with the religious service of the place: they were not, it is admitted, required to attend the same number of services as the religious brethren; and it might also be felt that

a place of honour should be given to the par-takers of the special hospitality or charity of the convent, and that their room should be in such proximity to the church as to enable them (including the sick, as they often did) to attend services with as little difficulty as possible. We do not say that Mr. Sharpe has not shown considerable reason for the change of nomenclature, but are inclined to think there is something to be said also for the *hospitium* theory, on the ground of convenience and suitability of plan.

Appended to the second part of the book are plans, sections, elevations, and interior perspectives of two or three of the most typical examples of the apartment under consideration: those of Vauclair, Furness, and Fountains being selected, of which the interior perspectives of the two latter are shown; Furness, of course, being in great measure a restoration. The well-known chamber at Fountains, often erroneously called a cloister, is a remarkably fine example of how much of really beautiful and elegant architectural effect may be obtained without the assistance of ornament, in the usual sense of the term, and by the simple mouldings preferred by the Cistercian architect. Our author calls attention to the admirable way in which the plan is arranged so as to afford light from both sides to the three principal buildings, the Frater, the Refectory, and the *Domus Conversorum*: this, however, is only true of the portion of the latter which projects before the line of the cloisters; and, in regard to that part even, we fear that if a modern architect sent in a plan for a building for a number of workmen, a factory, for instance, with no larger proportion of light than in these cases, he would be requested by the committee to reconsider his plans.

Indeed, we think our able archeological architect, in dwelling fondly on a favourite subject, has allowed his enthusiasm to carry him a little too far in his views as to the practical value to the modern architect of the study of the edifices of Cistercians. He asks, very reasonably, "Can we draw no instructive lesson for works of the present day, increasing as they continually are in importance and in the means devoted to them, from the existence of this noble school of architecture in the Cistercian remains of Great Britain and Continental Europe?" Unquestionably, in regard to the architectural treatment of buildings of a somewhat similar object, the lesson of simple yet architecturally effective planning, and of the superior effect of a style, masculine and severe in treatment, over one bedizened with ornament, is such that he who runs may read. But when we are invited to take lessons from the Cistercians in sanitary arrangements, we feel doubtful. The utilising of a natural stream to carry off the sewage, for instance, is just one of those proceedings which modern judgment and experience in such matters has condemned in toto. It would appear, at all events, that the monks might have made a better use of the water, had they been so minded, if one may judge by the highly characteristic little legend quoted by our author as illustrating the habits and tastes of those ascetics:—

"A cavalier of renown, who had entered the order of Cîteaux, had a friend equally renowned for his skill in arms, whom he exhorted to become a monk. The latter replied in a manner that evinced, in the eyes of the monk, great pusillanimity. 'Yes, my friend,' said he; 'I would willingly enter your order, but for one thing that I greatly fear.'—'What is that?' replied the monk.—'The vermin that all your garments,' rejoined the soldier.—'O courageous knight!' said the Cistercian, 'you, who in arms are inspired by the devil, do not fear the swords of the enemy, do you dread the weapons of this smaller militia that you encounter in the service of Jesus Christ?' The cavalier remained silent, and, ultimately convinced by his friend's exhortation and example, joined the order. It happened that, some time after, they met, for the first time, in the church of St. Pierre, at Cologne. 'Well,' said the older monk, 'do you still fear the vermin?' The new monk, understanding this allusion, replied, 'Ah! my friend, be sure of this, that if all the vermin of all the monks were united on my person, they could not by their persecution drive me out of the order.' The other, says the chronicler, greatly pleased with this answer, repeated it for the edification of his hearers wherever he went."

Nothing could be more characteristic of the strange *asceticism* of dirt and devotion which went to make Medieval saints than the above somewhat nasty record. But whether it tends to inspire us with much faith in the sanitary operations of gentlemen who boasted such a routine, may be reasonably questioned.

A singular result of the peculiarly practical view taken of property in the abbey lands, after the dissolution of the monasteries, is alluded to (p. 25, Part I.); the entire preservation, namely, of the outer fence wall of the convent property, while the buildings have been allowed to go to ruin. This result is no doubt due, as Mr. Sharpe

observes, "to the same cause which maintains and perpetuates the picturesque irregularity of our walls and fences, and which is connected with the testamentary identification of property and the nature of the legal tenure of land in this country; . . . for the arbitrary alienation and transfer by gift of the property of monasteries, at the time of their dissolution, though it supplied to its new owners a motive for the preservation of its boundaries, laid no obligation on them for the maintenance of buildings." The author, while admitting that this is very much altered now, laments that rough works of reparation that have been carried out in some instances have been under the strict attendance of ignorant persons, and that funds have been expended, "a portion of which, only, if properly applied, might have prevented the loss of valuable works. The instances which have fallen within my own observation of losses which have occurred in the abbey church of this country, since my illustrations of the same were published in 1846, are both numerous and serious." Those who are responsible for the preservation of these monuments of our architecture from further ruin, should take this consideration into due account, when they look at the matter from an economic and archeological point of view.

RUS IN URBE, AND THE DRAPERS' COMPANY.

Old London, if we may use that term, any correctness at all, is in course of such disappearance that we shall in the future be thankful for having, every now and then, an opportunity offered, recorded its said disappearance in detail. It is really a melancholy thought, and leads one to reflections, artistic and architectural, not in any wise hopeful. Works of the past disappear, and the future comes in time; how much mankind can be said to gain by progress, we hardly dare to contend. "Business," as it is termed in the City, and City doings we are about to give a little account of, are gradually and quickly devouring all this, even the very ground itself. There were, indeed, no streets at all were it possible any way to get from house to house, or office to office, without them. All the green spots in the City of London are disappearing, and brick and plaster houses, or box offices, we had better say, are growing to them, instead of grass and trees. The fact is, no help for it, that is certain. But the fact is now and then recorded with advancing showing how the old disappears in the new. Let us give an example of it, now actually going on in the very heart of the good, and a prosy, City, and in the very centre of its trade and traffic.

The Drapers' Company is, as many will recollect, one of venerable date, for the present site of the Drapers' Hall, in Throgmorton street, Thos. Cromwell's mansion once was. This site was purchased of Henry VIII. in 1534, but to whom, however, it became forfeited, the attainder of Thomas Cromwell, Earl of Essex. It was much damaged in the Great Fire of 1666, but was rebuilt. In 1774 it was considerably damaged by fire, but was repaired in the following year. It has since been repaired and the interior beautified in 1868-9, so that this quiet little spot has seen many changes, and perhaps more than enough, changes. The Hall is now about as fresh and new in appearance as it well can be. It may be noted, the ancient Hall of the Company stood in Swithin's-lane in 1402. The "Compre" existed by custom in the reign of Edward I. First incorporated by the 38th Edward III. successive charters were granted by Henry Edward IV., and confirmed by an "Inspection" of Elizabeth; again by James I., and Charles II. Articles too, and ordinances for good government of these worthy citizens, made by the Mayor and Aldermen, on March 9th of that year. Sir Nicholas Bacon, Lord Keeper; Sir Christopher Wray, Knt., Sir James Dyer, Knt., the Lord Chief Justice confirmed their bye-laws on November 16, 1576, so that we see how venerable the history of the Drapers' Company really is, and proud a thing to belong to so historic and venerable a guild. We need not describe the "coat of arms." The motto of it is,—"God only be Honour and Glory." Their *Patron* is the Holy Virgin Mary. Do the Company may ask, think enough of all these things

* "Till to him, I; out of these conventites There is much matter to be leaved!"
As You Like It.

at shall we say of the "Fees" of the multitude of charities? of the very first, to wit, wherein Thomas Howell, who died at Seville in 1540, who went to the Master and Wardens of the Company "12,000 ducats of gold"? The said company being required to buy with it, 400 ducats of rent yearly, for ever; this to be bestowed as a marriage portion upon maidens, being orphans of the donor's age, or blood, if they can be found; if not, 400 ducats are to be spent in marriage portions to "four poor maidens for ever." What the Company now-a-days do with these 400 ducats, and where do they find the "four maidens," and where are they? Many other titles there are, worth, perhaps, the looking little into. Loans, too, there are, and almshouses, formerly in the parish of St. Olave, and the Tower of London, but since removed to Tottenham. Then there is Queen Elizabeth's College, at Greenwich, under letters patent, for fifty poor persons; and Lady Assche's land in Chelsea, to build almshouses for seven poor persons; and almshouses at Stratford, Bow, for all poor people, and for the schoolmaster and clerk of his school. And, not to mention others, Mr. Lucas left no less than 700 pounds sterling for the building and endowing a hospital in county of Berks, or Surrey. Many others there are; and the goodly list shows how free are we with their worldly goods when their last duty indeed draw near. But once more. Lady Corney left by his will property to establish orphan schools in Lordsburg-lane, Tottenham; scholars to be of respectable parents, and members of the Church of England. This seems to have been the last act of the goodly Company, these schools were but opened in 1870. One more matter, not a little significant of things as they change, we must needs note. In the list of the Master and Wardens and Court Assistants of this goodly Company, all the names of abode given, without exception, are from and out of the City of London,—notable Tyburnia, Blackheath, and the West End,—have decayed these good and worthy London citizens from their City, forget it, if possible, in their hours of leisure! And, now, for an account of another change about to come over the belongings of the Drapers' Company. Their Hall, a new building, is, as we have seen in Throgmorton-street, and at the back of it, through the Hall, or down a narrow court at the end of it, there to be found a nearly square of right pleasant garden-ground, with grass, a fish-pond, and goodly trees, pleasant to sight, and contrasting happily with the surrounding bricks and new plaster, and staring new work. It is some 200 ft. square. It is a *locus in locum* even to practised Londoners, for we can know anything of it, or even of the fact of its existence. This plot of pleasant planted land in the brick and plaster desert has Capt. Gordon, of famous memory, on one side of it; adjoin-wall to the north; Bell-alley on another side, the west; and Austin Friars on the east. We have had opportunity of seeing this "Rus Urbe," and have dotted down a few notes on it, and its now certain fate. It has been determined, but a few days ago, to build nests of offices, as they are expressively termed, on it, that in a few months,—for they are not long out of such work in such a place,—this green and sweet spot will disappear, and "offices" only in the place of it.

But to a few details, and particulars of this large bit of ground. The Drapers' Company, as we have said, has a special sentiment about it, determined to sell or lease it for building purposes, whether for one, or several, or for many, and always in plots of ground like this, all surrounded by thickly-set houses; viz., the question of window lights, or openings, or easements in walls. Here there are many, 9 ft. being paid one firm for nine windows, overlooking the garden. Notice to close these lights has however now been given. Science, too, must needs count as well as nature, before the movement of the Drapers' Company; for it is expressly provided that the telegraphic wire which a great ding firm, the Messrs. Waterlow, have now a privilege of maintaining, and which is extended in air, and passes over the grounds of the buildings of the Company, and which they had at rent of 2s. 6d. a year, shall cease at the end of the time, due notice to remove the same being given in writing to do so. All the buildings are to be completed within twenty-four calendar months.*

The plot of land has been let we are told, for 15,000*l.* annua, on lease for eighty years.

It will, of course, be in the recollection of many that some talk there has already been for retaining this plot of pleasant garden-ground for the "recreation" of the public, and we could wish that this should be, could but the present aspect of the place be retained as it is, for it could hardly be bettered. There is about it just that balance of the artificial or garden-like laying-out of the ground, with a certain look of wildness, and neglect, if you will, which is suited to the spot. Dickens would have revelled in it, and peopled it with creations of his own; and going to it now as it is, any one with an imaginative faculty may do so too, and that right pleasantly and quaintly. We must not forget to mention that a right of way and passage, or narrow street, is to be made through this quiet bit of ground, from Throgmorton-street to London-wall, almost due north and south; of no moment when built upon, but altogether ruinous to the quiet of it as it is. Standing on this spot, and looking westward, a quaint bit of antique London may yet accidentally be got a glimpse of, for the houses in Bell-alley are somewhat of the oldest, and dilapidated, with huge dormer windows, and unimproved dull red tile roofs. But all these will go, it is quite sure and certain. Fate and business will needs have it so; as well as the spirit of "improvement," to take up the favourite and fashionable word. Improvement is a mighty word, and all-potent in the "City"; and the idea conveyed by it, true or false, does not stop at the word, for the wealth of the place, and the dreams of more and more of it, compel to action, and all and everything, however time-honoured, or even full of poetic power, vanishes before them. Improvement in the City means in brief the pulling down of the well-used and the putting up of the quite new. There is but little thought of their relative value, either artistically,—if the word has here any significance at all,—or in other ways; anticipated profit, even more than bare utility, dominating everywhere. All things go before it, both of nature and art. Gardens and green spots, and trees, and churches, and remains of the past,—all and every one of them disappear in turn. We may lament this, but we cannot help it. But more, perhaps, than all is the dismal, the thrice dismal, fact of these new and improved, and may be patented, details of house and office building, being for the most no improvements at all, either in artistic power, architectural skill and design, art workmanship, or even in what is expressed by the English word comfort, or in convenience, in as far as these are elements in the changes that are made. Accepting, therefore, for a moment, the necessity that may exist for the building over of this plot of green-covered ground, in the midst of the too-crowded City, and that no fraction of another earth within London-wall can be otherwise or better utilised than by its being covered thick and closely with "offices," why should not such houses be at least as "comfortable" as those built in the days of Inigo Jones and Christopher Wren? We speak from experience and actual eyesight, and trial of both, without exaggeration or prejudice, and must say that not only have we in this improved age not beaten Jones and Wren and their immediate followers in the art and mystery of house-building, but we have not as yet equalled them, with all our new appliances and scientific helps.

We here specially note this both as constructively and artistically viewed, and may be for guidance; for on this special spot there is a right good opportunity. London is yet,—in spite of all pullings down and removals of the so-called worn-out and out-of-date,—full every here and there of quaint spots and bits of architecture, and even of "poetic remembrances in dreary nooks and corners. Many of the antique streets are yet in existence, as far as the plans of them go; and the irregularity of house pulling down and improvement, necessitating differences in size and height in the houses which make up the crooked street, leave the idea of it as it was almost intact. They contrast as much as can be with the quite new and orthodox system, as seen in the outskirts of London, where the fresh streets, whether broad or narrow, are made up of long straight double rows of brick boxes, even in height and alike from end to end, without character, and without individuality or interest of any kind. So the old city of London, in spite of improvements, yet remains to a certain extent, and has in it a something to remind us of the mystic past, out of which it originally sprang, and before the patented engine cut out all things from the same model pattern. These City guilds,

as we think, should prize these memories, and should go a little, now and then, out of their way to cherish them. It is worth a little sacrifice to keep these, and the quaint "halls" of the great City companies may be looked on as centres from whence such influences may be expected and ought to come. It is now the Drapers' Company's turn.

FRENCH EXCURSION OF THE ARCHITECTURAL ASSOCIATION.

THE reunion of the steady excursionists of former years has taken place, and all gaps in their number are supplied plentifully with recruits, coming, it may be noted, from pretty well every district of the United Kingdom.

Mr. Edmund Sharpe, under whose guidance the whole of the Association excursions have been undertaken, has, as usual with him, a foretime, sketched out, in an introductory speech, the nomenclature he proposes to use in all his descriptions of buildings, noting also, of course, by the way, some principal points of distinction between English and French work of the same dates. Allowing for a much condensed form, the following is the substance of these preliminary explanations:—

The periods of French art from the earliest times to the Renaissance are:—I. Romanesque; II. Transitional; III. Lancet; IV. Geometrical; V. Early and Late Curvilinear; this being followed by the Renaissance. This nomenclature is, for convenience, made to follow that pursued on other occasions for the English styles. Names are really only means to an end. The end in this case is the easy comprehension by all of each other's meaning. Whether the names and the details they express are accepted fully for the future or not may be a future consideration.

I. *Romanesque*.—Nothing in French building corresponds exactly with English Saxon work. There are only the buildings of the time of Roman rule, and an earlier phase of our Norman work. This latter derives its characteristics apparently from the Roman remains, found in such considerable quantity near at hand. The possession of less skill on the part of the constructors made their work "a degraded Roman,"—or (following Dr. Whewell), "Romanesque." [A Greek influence is suggested by a member, through a Greek colony in Provence, who practised their art, as well known to them, and gave, e.g., to capitals the bevelled leaf edges, &c., not to be found in ordinary Roman work.]

Dates of period: after the Roman period,—a dark age, and barbarous designs and execution; about the year 800 some renaissance; thence to 1130 copies and adaptations of Roman work made with skill in the latter part of the period.

II. *Transitional*.—Pointed arches as arches of construction may be found about 1120; the pointed arch took strong hold in France in the latter half of the twelfth century. This work resembles in foliage, &c. (the Transitional volute, &c.), the Transitional work of England. Mouldings somewhat modified from the Romanesque, but not to the extent of English Transitional from Norman. Abacus of cap—square in section and square on plan. Dates of period: 1120 or 1130, to 1180.

III. *Lancet*.—Broad pointed lancet windows used in this period, though few remain,—having mostly been replaced by others at a later date. It might, perhaps, be termed a continuation of the Transitional period. The foliage wants the delicacy and elegance of English contemporary work; double rows of leaves round bells of caps (at Mantos just in true Transitional time) maintained till the end of this period. Mouldings have more relief than before,—pronounced quirk; but none of the infinite variety and rich groupings of English Lancet. Date of period: 1180 to 1230.

IV. *Geometrical*.—The grand period of French Medieval art. Has tracery of circles and circular arcs. Forty cathedrals stated to have been in course of erection in France at one time in this period. Foliage—both conventional and natural. The latter adopted and then dropped in England;—probably there are not twenty examples in England of the same kind as Southwell Chapter-house. With us thus tried and found wanting. In France the habit maintained itself longer. [Not a good habit.] Mouldings show little change from the previous period. [In Normandy is found some true Lancet work,—having English characteristics.] In France Geometrical work was in use earlier and later

than in England. Date of Period : 1225 or 1230 to 1820.

V. Curvilinear.—In this period tracery has the ooze or return curve. The later Curvilinear known as Flamboyant. Impossible to mark a date of general transition to those flame-like curved forms in tracery. The west front of Abbeville Cathedral is the grandest Curvilinear work in France; designed and executed throughout in the purest and best feeling and spirit. At Senlis is wonderful (extravagant) Curvilinear work,—with great ingenuity, fertility of invention and clever execution. Date of period: 1320 to say 1520 (Francis I. began to reign 1515).

The Archbishops and Bishops and the *Ministres des Cultes* have given authorisations, and used expressions of goodwill towards the conductor and the excursion party; and from the curés of the parish churches letters have been received which show—if any one wants convincing of the fact,—that in France, as in best parts of England, no little pride is felt in historic monuments. Perhaps a few sentences from the communication of the worthy priest of Auvers-sur-Oise may be read with some satisfaction for other reasons also:—

“*Accounté de la longue date à apprécier hautement la Nation Anglaise, son esprit sérieux, naturellement religieux, et plein d'admiration pour tant d'autres éminentes qualités qui nous manquent, hélas! je bénis Dieu à la pensée de me trouver bientôt en contact avec nombre de membres choisis de cette illustre nation, et me félicite qu'il me soit donné de leur être quelque peu agréable.*”

Our younger architects on tour,—thus constituted a very representative body,—have visited some of the many buildings of which they are to take stock: when a little further movement has been made the details of the progress will be chronicled.

Paris, August 18.

THE SOUTH-WESTERN RAILWAY COMPANY'S ARCHES IN LAMBETH.

The Lambeth Vestry are about to institute legal proceedings against the South-Western Railway Company in respect of their arches carrying the railway over several parts of Lambeth. The vestry complain that they have been unable to induce the company to make their arches water-tight, although some time ago the company gave an undertaking to remedy the evil complained of. This undertaking not having been complied with, the vestry at their meeting last week passed a resolution to the effect that as the railway company, after a year's notice, have neglected to prevent the percolation of water through their railway bridges, to the serious annoyance of the public, the clerk of the vestry be directed to take proceedings against them, according to Act of Parliament, for a nuisance.

OPENING OF FIVE SETS OF BOARD SCHOOLS IN SHEFFIELD.

The Walkley School was the first on the programme for the opening ceremony. It is built at the junction of Greaves-street and Walkley-road. The ground-floor gives accommodation to infants, in a spacious school-room, the plan of which is in the shape of the letter T, 54 ft. long and 41 ft. across the widest part; and there are also two class-rooms and a manager's room. There is, in connection with the girls' division, a kitchen, fitted up with cooking-range, lavatories and cloak-rooms are provided for the three divisions; and in separate parts of the building are lavatories, &c., for teachers. The boys and girls are on the upper floor, and each division has a school-room, with three class-rooms opening out of it. The ventilation of the various rooms is secured by an arrangement of inlet grates in the floors, direct from the external air, and outlet grates to extracting flues and chambers. Both inlets and outlets are under the regulation of the teacher to any degree. This system is being applied to the other schools in course of erection. The upper parts of the windows are hung as swing casements, are opened and closed with cords and pulleys, and are so arranged as to prevent down-draught. The staircases are all of stone, and both ends of each step rest on solid walls. There are no winding steps with pointed ends. The doors

inside the building have plate-glass in the panels, so that the head teacher can easily overlook the class-rooms and lobbies. All the rooms and passages are lined with boarding up to the window-sills, and above that height are plastered and tinted. The ceilings are plastered and have cornice mouldings, and, with the varnished timber-work of the roofs (which is displayed in the upper story), together with the abundance of light, present a cheerful appearance. The woodwork is all of varnished pitch pine, except the projecting moulding on the top of the boarding of the walls, which is of oak. In the playgrounds there are covered play-sheds and numerous offices. The walls are all built of stone, and the building occupies a prominent position, and simple ornamentation is introduced. The area of the site is 2,800 square yards, and the cost of, including a number of houses and other buildings which have been removed, was 900*l*. The contracts for building, fittings, and furniture amount to 5,600*l*. 10*s*. The area of the several rooms amount to 7,447 superficial feet, and the cubical contents of the rooms to 120,057 cubic feet. Accommodation is provided for 709 scholars. The contractors who have carried out the several works are:—For the masonry, Mr. J. Rodley; joinery, Mr. J. Spink; slating, Messrs. Ellis & Wetherill; plastering, Mr. A. Berriefford; plumbing, Mr. R. J. Walker; painting, Mr. Hepworth. The desks are arranged so as to seat the children in pairs, on the plan patented by Mr. J. F. Moss, the clerk to the Board. The gas-fitting has been carried out by the Sheffield Gas Company; and the fittings have been manufactured by Messrs. Brawn & Downing, of Birmingham, from the architects' designs. The stoves in all the class-rooms are by Messrs. Longden & Co., and the warming apparatus for the large rooms has been fitted up by Mr. R. R. Gibbs, of Liverpool, on the hot-water high pressure system known as “*Perkins's Patent*.” The carving has been executed by Mr. Harry Homs, of Sheffield and Exeter, under the immediate superintendence of the Board's architects, Messrs. Innocent & Brown, of Sheffield.

The Crookesmoor School is near to the vestry offices. The principal front is towards Oxford-street, which will be continued upwards from Uppertorpe, and will form an important thoroughfare. This building, like all the others, is entirely of stone. There seems to be an abundance of windows. The doors are wide, and easily accessible from the street. There are two gables in the centre of this front, which have ornamental tracery windows filled with geometric glazing. The chimneys are made to serve as extraction-shafts for ventilation, and their appearance is heightened by the use of red Berkshire ridge tiles and finials. The whole is surmounted by a timber bell-turret. The ventilation is simple in working, and (in theory at least) requires only the slightest attention on the part of the teachers. Thermometers are fixed in all the large rooms. The infants are again placed upon the ground-floor. The large school-room is T shaped, is 20 ft. wide in the narrowest part, 48 ft. in the widest, and 54 ft. long. There is, of course, a gallery in this room, and there are two class-rooms, one of which is provided with a gallery. There are a manager's room, kitchen, and teachers' lavatories at opposite ends of the building. The boys and girls are on the first floor, each having a schoolroom in the shape of an L and three spacious class-rooms. The yards have been asphalted by Messrs. Watson, and there are covered play-sheds for the health and comfort of the scholars. The style of work is very much like that seen at Walkley, and the same tradesmen have been employed upon the fittings. Mr. J. L. Dowling is the contractor for the mason's work; Mr. J. Robertson for the joiners' work; Messrs. Harrison & Chadwick for slating and plastering; Mr. W. Bissett for plumbing and glazing; and Mr. Hepworth for the painting. Mr. William Dickenson has been clerk of works on this school and the one first visited. The area of the site is 2,100 square yards net, and the cost of it, including the roads and their making, was 900*l*. The various contracts amount to 6,390*l*. The superficial area of the rooms amounts to 7,947 ft., and the cubical contents to 126,725 ft. Accommodation is provided for 779 scholars.

Lowfield School is built at the junction of Queen's-road with the Chesterfield turnpike-road. This school differs from the other schools in having all the rooms upon the ground-floor; the girls and the infants being in one block of buildings, and the boys in a detached building

fronting to the other road. One of the class-rooms in the girls' department, called a “*sewing-room*,” is circular in shape. It is planned to fit the circular junction of the two roads. The infants' school is 50 ft. by 25 ft., and over 20 high. It has two class-rooms. Each of the other departments has a large schoolroom and three class-rooms. The building is also of stone and of the same character as those already described. The buildings of the School Board are easily recognisable as parts of a set; although not like each other in planning or detail. The school is a one-story building, unlike the others in arrangement however. The site contains net area of 2,500 square yards, and was purchased for 1,437*l*. 17*s*., including all the charges for roads, &c. The contracts for the various works amount to 5,715*l*. The floor area of rooms amounts to 6,690 square feet, and the breathing space in the rooms is 118,272 cubic feet. The accommodation for 705 scholars. The mason's work has been executed by Mr. J. Robertson's work by Mr. H. Holmes; slaters' work by Messrs. Harrison & Chadwick; plastering, Mr. A. Berriefford; plumbing and glazing, Messrs. W. Bissett & Co.; the painting, Mr. J. Putterell; and the palisading by Messrs. Davis & Wilshaw.

The school at Attercliffe is situated in Baldy-street. The front is two stories high, the infirmary, as usual, placed on the ground-floor, and avoid steps. The play-grounds are spacious and well-arranged. Our previous descriptions apply to this school, so far as the general features are concerned. Mr. J. Milner is the contractor for the masonry, Mr. T. Bonington for the joinery, Messrs. Harrison & Chadwick for slating, Mr. Berriefford for plastering, Mr. R. J. Walker for plumbing and glazing, and Mr. J. Standall for painting. The area of the site is 2,000 square yards, and the cost was 941*l*. 7*s*. including roads and sewers. The building, fittings, furniture cost 5,424*l*. The area of rooms is 7,650 superficial feet, exclusive of passages, and the cubical contents of rooms 121,555 ft. Accommodation is provided for 731 scholars.

The Carbrook school stands on a site from the Tinsley-road. A large gable facing the road contains a pair of triplet windows on upper floor, and smaller windows beneath the whole being crowned by a stone belfry. The gable is flanked by wings, which contain light windows canopied by gables, and divided by buttresses from the central compartment. Internally the woodwork is of pitch-pine, the steps of stone, the walls part boarded and plastered, and the ceilings plastered and moulded. The boys and girls are on the upper floor, each having a school-room and three large class-rooms. The infants are on the ground floor, with spacious school-room and two class-rooms. Galleries, all needful fittings are provided, and there are lavatories, cloak-rooms, &c., as in the other schools. The store-rooms in the class-rooms were made by Messrs. Longden & Co., from special design of the architects. They make complete front, with stove and chimney for one piece. Mr. Gibbs fitted the warming apparatus for the large rooms and passages. Messrs. Brawn and Downing manufactured the fittings. Mr. Thomas Hopkinson, of Retford, was the contractor for the masons' and joiners' work; Messrs. Stanforth & Lee, for slating; Mr. C. Unwin, for plastering; Messrs. W. Bissett & Co., for plumbing and glazing; and Mr. Hepworth, for painting. The site contains 2,120 square yards net, and was purchased for 1,240*l*. The various contracts amount to 5,994*l*. The total area of rooms is 7,596 superficial feet, total cubical contents, or breathing-space, rooms, is 121,922 cubic feet; and the accommodation, upon the method of calculation of the Education Department, is for 731 scholars.

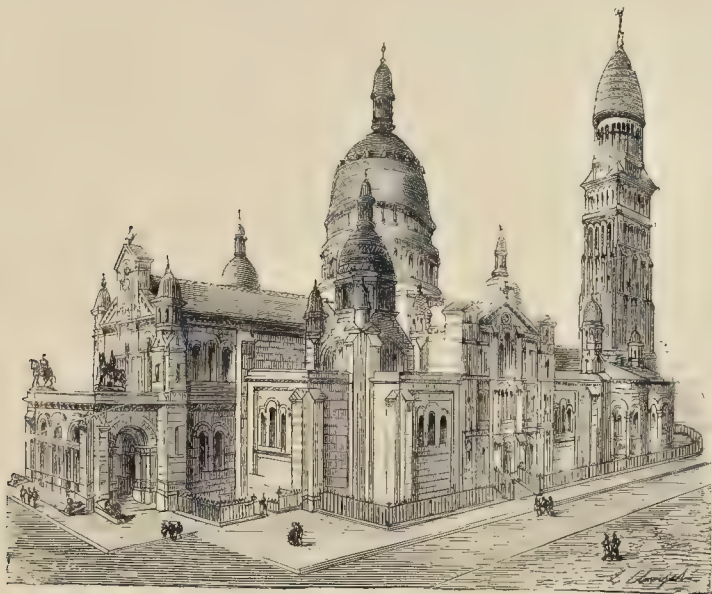
Messrs. Innocent & Brown have published an available volume, illustrations of these and several other schools erected under their direction for the Sheffield Board, and to which may find another opportunity to refer.

The Surveyorship of Fenzance.

G. H. Small, a son of the Gloucester engineer and surveyor, has been appointed borough engineer and surveyor to the corporation of Penzance. There were between fifty and sixty candidates for the appointment, which number was ultimately reduced to five, who underwent a strict examination, lasting several hours, after which Mr. Small was unanimously elected.

COMPETITION DESIGNS FOR THE CHURCH OF THE SACRED HEART,

*Intended to be built at Montmartre, Paris.**



By M. ABADIE.



By M. DAVIoud.



By M. MOYAUX.

COMPETITION DESIGNS FOR
THE CHURCH OF THE "SACRÉ CŒUR,"
PARIS.

It is proposed to build a large church on the hill of Montmartre, which will dominate Paris, and be seen far and near. The sum named for

its cost is 280,000l., including the decoration and furnishing, and certain residences. Premiums are offered for the best ten or twelve designs, which are to become the property of the authorities, who do not pledge themselves to employ the author of the best design or of any of the designs, but reserve to themselves the right to call in any person they please to amalgamate, if they so choose, the best points of

all the designs they reward. Two sets of English architects were foolish enough to waste their time in preparing designs, and, as a matter of course, are "no where" in the judges' list, if the published accounts be correct. The jury of selection includes a certain number of architects, who are doubtless doing what they believe to be right.

Seventy-five sets of designs have been sent in,

a

* See also p. 708.

from which the jury have selected. The whole have been exhibited for a few weeks in the Palais de l'Industrie, in the Champs Elysées.

We give engravings of sketches of seven of the designs, four of which,—namely, those by M. Abadie, M. Donillard, M. Davioud, and M. Moyaux,—are amongst the thirteen selected by the jury for reward.

THE POWER OF MODERN "MECHANISM": ITS INFLUENCE ON ART.

THE world has been told more than once, and with no little authority, that we are remarkable, if for anything in this age and in this country, for our most wonderful power of "mechanism." No one, who will think about it for a moment attentively and seriously, can possibly doubt the potency of the machine; for a visitor to any one of our famous manufactories, giving but a glance at what is going on in it, must feel assured that mechanism is gradually and certainly taking the place of the human element, which has hitherto been a part, and an essential part, of mundane work. It would be very difficult, indeed, to find in the nature of things a more foundationally suggestive subject of thought, as one more capable of influencing practice and practical life, than this of the ever-growing power of mechanism. The subject just now is more than usually interesting from the fact of its taking a somewhat leading part in the discussions of the various scientific bodies which meet for "conferences" at this season of the year. We might specially refer to the address delivered to the Mechanical Engineers by their President, wherein the "power of machinery" is made to be all but omnipotent, even as things are; but in the future promises to be absolute master, almost of men's thoughts; and when the whole human race shall combine its powers—powers which, when isolated, accomplish such marvels—is good, and its possible evil effects, may surpass even our dreams. A few thoughts, then, on "mechanism," as it progresses and promises to rule all things, even art itself, may have a special interest at the present moment, and may rouse a thinker here and there.

In the first place, to philosophise a little, it must be remembered that the time was when there was, in our present sense of the word, no "mechanism," no "engineering." Force, or power, to do heavy work, was got out of human strength. Huge bodies of men, as represented in the Egyptian drawings and sculptures, did the work of the world; and dug and brought up the materials from the earth, and moved them about afterwards. Lovers and ropes were all that were used to move the huge Colossi from the quarry to the temple, for which they were sculptured; and kings even do not seem to have disdained to look on, if not to "superintend" the moving of them. All the great and famous temples and public buildings of antiquity everywhere—for let us for the moment confine our attention to the mechanical force utilised in buildings—were put together, we are quite sure, without the aid of the steam-engine, that magic bit of mechanical engineering, which, but to name, is to explain the progress of modern society. In all antiquity there was most surely nothing like it, or in any way approximating to it. Yet, with all this deficiency of mechanism, did the antique times, and the men who lived in them, accomplish work which we nowadays strive our very utmost, in vain too, to rival, or even to imitate. Why is this? Is mechanism, which Mr. Bramwell so vaunted before the mechanical engineers, a thing to be regretted, or is it a thing misused, or is it indeed a something which we have yet to see into the true nature of; and to use, but not to over-use.

Tredgold, one of the founders of the age of mechanism, for this is not too strong a term to use here, said that, "Engineering is the art of directing the great sources of power in nature for the use and convenience of man." Accepting this broad definition, the president went on to prove, by a variety of proofs, drawn from every source around us, that we owe—to express the idea in one single word—"Civilisation" itself to the efforts of the mind and body of the mechanical engineer, and to the mechanism which he has created. Indeed, so triumphant is the result of his labours in these latter days, that it is no unreasonable boast to add that we may confine our thoughts on it to a very limited range of time, for in mechanical engineering, unlike the work of the poet or of the sculptor, or the

painter, or the architect, we have not to go back to past ages to find its triumphs. In fact, so little is to be gleaned from antiquity, that the president declares that he will not be tempted even by the great name of Archimedes to advert to ancient engineering; but will limit himself to the lives of those now present amongst us. Now, this is really to say a triumphant thing, and to mark the age in which we live with a mark which cannot be missed or mistaken—for what more can be said? Who else can make such a boast as this, and with so much of truth in it. But is it in truth, and in logical fact, the whole truth, and a thing so very much to be boasted of. Ought the age, the nineteenth century, to be so very proud of this absolute supremacy of mechanism. The machine doing all things, all but thinking for us, certainly communicating and recording our thoughts. Almost monopolising them. We are inclined to think, looking about us for a brief moment, that there is far more in the nature of things than this; and that even the conversion of a "tea-kettle into a locomotive" may be surpassed, at least as a matter of human interest and feeling.

It is, by way of illustration, not a little curious to note the distinction between the past and the present, in their mode of work, and in the character of the work produced, and in what is perhaps more, the mental impression made by the work after it is, by whatever means, brought into being. Of course, we all allow, without a word, that the more easily and cheaply necessities, of whatever kind, are brought into existence, and distributed, the better it must be for human nature generally; and did the machine but stop here, no one could say a word. But it so happens that the machine which does one thing so well, and so cheaply, and in such quantity, may be made, and is made, to do other work, and pretty nearly all work. The all-potent mechanism can, as the engineer boasts, manufacture nails and sweet biscuits, by the ton, and that it can do almost without touch of the human hand: all we have to do is to stand by and look at it at work. It is simply marvellous. But it can also,—and here it is that the artist has good reason, now-a-days, to tremble a little,—not only make bricks, and saw and plane timber, but it moulds them into "gracious forms," and, what is more, in every stage of the manufacture and making of the materials which form our garments, from the very coarsest to the very finest, it can, and does, do its entire and triumphant work. From the finest lace, says the president of the engineers, to the sole of the stoutest boot! Indeed, it is even so. It is no exaggerated boast. He stops here as a faithful mechanician is almost bound to do; but we may ask again, is this all pure gain? Is there nothing wanting? Is it a complete triumph, and a national success, when it is said, that the "machine" is driving the human being fairly out of the field, and doing all his work for him?

And while this is, as must be confessed, no exaggerated or enthusiastic statement, but a sober fact, that machinery, even now, is doing almost everything, more or less perfectly, which the human hand is less advanced days did sometimes so very well, it is not enough for the future of engineering aspirations; for we know, and no man certainly can deny its possibility, that within the next fifty years "great inventions will be made," and we are sure that any one, looking back to the condition of things in engineering science at the present time, and comparing it with that which he will then know, "will wonder how it was that the men of this day failed to make many a grand discovery which, at that time to him, will be as familiar as the steamboat or the locomotive, is now-a-days, to us!" We think we might even go further than this in mechanical prophesying, for what is there to hinder the production of everything about us, or which we see, or make use of, including even "gracious forms," as the president has it, but the putting of the machine to it. Art,—*fine art*,—for example, to take an extreme case; why, as it is, statues are all but the result of elaborate and ingenious machinery applied to the formless marble block. They may be, and are, multiplied almost indefinitely by aid of machinery. Pictures,—there are many who may not know it,—are copied, if not actually produced, both for export and import, by machine processes, the hand of man doing but little else than touch up and dovetail together discordant parts. A wonderful process, and ingenious enough. Of architecture we need but to name it, for where would the smart "ornamental moulding" of the shop be were it not for the all-

potent machine which produces it by the million. We do, indeed, owe, as we are reminded, dwellings, as well as our clothing, to the skill, labours and thoughtfulness of the mechanician engineer. It would be a right curious inquiry to go through, specification in hand, a quite modern and smartly-built modern dwelling-house, a noted accurately the details of work—the put and simple work,—by the hand of the workman and on the opposite page of our notebook, work done wholly by the power of machinery, by almost living mechanism. And then might go a little further with the said inquiry and afterwards quietly compare the final result when all is accomplished—the perfected modern house with a dwelling-house of the same sort built in a past age, and before any one of the modern mechanical appliances had any existence, and then note well, artistically and otherwise, the difference between them. How this change, as time goes on, and as they appear different minds, and how that which is looked at by one human intelligence, as a dead antiquity, and a something waiting to be improved away, like a City church, is regarded by another as good "precedent" to go by, to wonder at and even to try to copy, sometimes, by a through this power of mighty machinery.

But is this, and we ask it once more, a gain? Is it a good thing, and an advance on the old ways of work, to bring in the mighty machine whenever and wherever it can be brought in, and to discard at the same time the hand of man? Surely it cannot be so, for something must be lost by it; viz., that individuality of feeling which can only be impressed on Nature's materials by the intelligent hand of man! Such a structure as the Parthenon cannot be by any possibility, by any power of ingenious machinery, be produced. A mechanician's dead copy of it might be, there is no doubt quickly, and may be cheaply, produced, but a whole Classic spirit of the great original must needs be lost in the mechanical processes. Gothic work, it need hardly be said that it is its very essence opposed to this mechanical mode of production, and to that uniformity and sameness of detail which is the necessary result of it. The Doge's palace, to wit, could not be carved out by a machine, however potent, neither could a copy by machinery be made of it. As may not the like be said of every real and individualised work of art, however small and apparently insignificant? It is impossible to infuse soul, or life, or poetic power, into material forms by any power of machinery. The desired forms may be there, but the spirit is absent.

May we not, therefore, conclude that one, at not the least, of the problems of the future human nature will and must be, not how much the machine may be made to do, and how far it can be made to take the work from the human hand, but, most momentous thought, why must we stop? Where does the legitimate action of the machine really cease, and where must the hand of the workman and artist come in, and the engine cease its whirling? It is now how far the machine can be made to do things, including even the production of "gracious forms," in the future, but where is the ability, whether natural or acquired, to distinguish between the gracious form, as produced by machine, and the same form when the result of the hand, directed by the mind, of the artist workman. Then, and then only, will it be found out wherein the true and legitimate action of the wondrous modern "mechanism" lies; what it can do and ought to do, and what it cannot really do. A great problem for the future.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS.

A DISTRICT meeting of the Lancashire and Cheshire branch of the Municipal and Sanitary Engineers was held in the Mayor's Parlour, Municipal Buildings, Barrow, on the 7th. Mr. T. C. Thorburn, of Birkenhead, occupied the chair.

Mr. Jacob, borough surveyor, read a paper on the rise and progress of Barrow.

In reply to several queries, Mr. Jacob explained the formation of back streets of the town, and said that the reason they were made so wide was simply for the sake of ventilation. They had also reason to know that there was a great deal of overcrowding in the town, and as people persisted in keeping hen-coops, &c., in their yards, it was necessary for them to have plenty of room. They had got the power to have these back-

streets any size they liked, by a special Act of Parliament under which they had made bye-laws. Regarding the water-closet, they found no difficulty in having them made, and their only trouble was the occasional scarcity of water.

The Chairman said they were very much indebted to Mr. Jacob for the kind pains he had taken to prepare and read that document for the information of the members of the Association. He (the chairman) could remember Barrow when he was very like the representation of it on a plan which he saw of it as it was in 1849 on the walls of that room. He very well remembered a few cottages being the only buildings where Barrow now stood, and the old landing-stages where the iron ore was shipped. With the exception of one or two cases he did not know that Barrow had a parallel in England for rapid growth, and it certainly had greatly increased during the last decade, and its population was evidently increasing at a greater ratio still. Fiddlesbrough, he instanced, had risen with equal rapidity; there was another town in South Wales, and his own town, Birkenhead, had risen from a mere congregation of hovels around an old abbey to a town with a population of 100,000. He had known Barrow for thirty years; and, indeed, it was in this part of the country that he stretched his first chain. He could, therefore, look back with experience and satisfaction at its rapid rise, and he hoped the town would continue to prosper as it had done, and that he was sure it would receive the good wishes of every one present.

The members visited the docks, the ship-building yard, the Hematite Iron and Steel works, and afterwards proceeded to the Abbey, where they dined.

The fifth meeting of the District Committee for the Midlands will be held in St. Mary's Hall, Coventry, on Saturday, the 29th of August, 1874, to discuss the Coventry sewage works, and the water-closets, reservoirs, and pumping station (the Diamond Boring Company being engaged at the present time), and the fancy silk factory, will be inspected, and descriptive papers will be read.

THE OUTING OF THE SUSSEX ARCHEOLOGICAL SOCIETY.

On the 13th inst., the Sussex Archeological Society held their annual meeting, this time at Castle Goring, by the kind permission of Sir Percy Burrell, bart., M.P. The place of assembling was Lancing, where upwards of a hundred archaeologists, gentlemen and ladies, assembled, with umbrellas and mackintoshes, to keep off the rain, which fell most bountifully; and which, if it did no other good for them, certainly most effectually laid the dust. A goodly company of Worthing carriages, open and shut, took the visitors to the interesting churches of Sumping, Broadwater, West Tarring, and Upham. They also visited the fig gardens at Tarring, where many of the trees are supposed to have been planted by Thomas à Becket; and were to be seen the remains of his palace, now used as a school. They were also to have on the birthplace of John Selden, at Salvington, and the remains of Durrington Chapel; but owing to the rain, which still continued, they did not. Why they did not go to Lancing Church, which was so short a distance from the place of meeting, no one seemed to know. At Sumping, Broadwater, and West Tarring the Rev. W. Powell read interesting accounts of the churches from various books, with which he had provided himself; and the Rector of Upham, the Rev. A. Barwell, read a short paper on his church. Mr. Barwell said, in reference to the close way in which Sir Gilbert Scott had adhered to what he believed to be the original character of the church, that, in relation to the font, which was entirely new, from Sir Gilbert's own design, there was no doubt before; but, since the church had been repaired, the fragments of the old font had been covered buried in the churchyard, and on Sir Gilbert being put together they minutely corresponded with the font which had been made from Sir Gilbert's design! Sir Gilbert must certainly have been inspired on that occasion. Every one then went to Castle Goring, where Sir Percy and Lady Burrell very kindly received them, and invited them to wander all over the place to see their very interesting collection of china, foreign and English, old bronzes, pieces of old furniture, and excellent pictures.

Altogether it was a treat, and the writer was particularly struck with the way in which every piece of old china was set off to the best advantage,—not thrown together all higgledy piggledy, as is often the case; but whether in a cabinet, on a mantel-piece, or on the wall, everything was arranged with great taste.

The visitors next retired to a large tent in the grounds, where a capital dinner was provided. Sir Percy Burrell, in the chair. The usual toasts were proposed and responded to, and some capital speeches let off. A walk about the grounds, some coffee at the castle, and then all returned to their respective homes, well pleased with the day's excursion, although it was a damp one.

THE ESSEX ARCHEOLOGICAL SOCIETY.

On July 30th, and for the first time since its formation, this society held its annual general meeting and excursion on the western borders of Essex, the starting-point being Bishop Stortford, where, at the railway station, the local committee had provided a number of wagoettes and other suitable conveyances for the members and visitors, some of whom came from Maldon, Colchester, and other distant parts of the county. The day was fine, and with the interesting programme that had been sketched out, an agreeable afternoon was spent. A pleasant drive past the Bishop Stortford Local Board farm, and by Latchmore Bank, brought the party to their first halting-place,—Great Hallingbury Church, where they were welcomed by Mr. John Archer Houlton and the Rev. H. M. Oswald, the rector. The party then went to Barrington Hall, the seat of Mr. George Alan Lowndes, one of the chief promoters of the excursion, passing as they did so through Mr. Houlton's park, and a large portion of the forest, well stocked with deer, which also belongs to his demesne. Luncheon was partaken of at the Hall, in a spacious marquee. We understand it is against the rules of the society to allow any gentleman whose estate may be visited by the society to provide luncheon, but at the special request of Sir H. J. Selwin-Ibbetson, bart., M.P., and Mr. Lowndes, they were permitted to furnish the entertainment on the present occasion. Mr. Lowndes presided.

After luncheon, a council meeting was held, followed by the general annual meeting, which took place in the hall of Mr. Lowndes's mansion, under the presidency of Mr. J. W. Perry Watlington. Mr. King, the secretary, read the report, which stated that the Council announced the continued prosperity of the society. The number of members, including fourteen honorary associates, was now 204, being, however, two less than at the close of the previous year. The financial statement shows a balance of 188l. 8s. in favour of the society.

The Rev. B. Lodge called attention to the mural paintings discovered in Copford Church.

Mr. Lowndes then read a paper on "The History of Hatfield Broad Oak."

It was announced that the next meeting of the society would be held at Romford. Some articles of antiquity were exhibited. The company next proceeded to enjoy a quiet stroll across Mr. Lowndes's beautiful park to Hatfield town church, the chief features of which were pointed out and described by the Rev. O. W. Davys, rector of Wheathampstead, Herts. Some excavations had been made at the east end of this church, with the view of endeavouring to trace the foundations of the old priory church which formerly stood here, and the Rev. O. W. Davys now explained the objects and results of these investigations, and gave some very interesting information with reference to the leading features of the existing church. The old priory, which was built chiefly of timber, stood at the east end of the church.

When Hatfield Church had been thoroughly inspected,—the Rev. G. Burn was in attendance, giving information, and offering every facility for research,—the party walked to the conveyances, and the return journey was immediately commenced, time not allowing any further exploration. Bishop Stortford was safely reached in time for the train. The arrangements of the local committee were altogether good.

Cure of Raboes.—We shall be glad to hear of any further experiments in this direction by the use of wires.

WATER FOR WARWICK.

A good supply of pure water for Warwick is much needed. The present supply is obtained from the River Avon by pumping. The Avon, we must add (above the intake to the works), receives not only the sewage of Coventry, but of various towns and villages also.

A scheme is before the Town Council to supply water for this town by gravitation from the high lands of Hasleley, some four miles distant, but some of the ratepayers oppose. At the last meeting of the Town Council, the engineer of the Hasleley water scheme, Mr. E. Pritchard, C.E., reported that during the month ended the 31st ult., with a rainfall of only 0.89 in., 6,567,695 gallons of water had been registered as having passed over the lower sills of the brook, giving a daily average of 211,536 gallons. During the sixty-five days from the 8th of June to the 11th inst. inclusive, careful experiments had been made to ascertain the total available quantity of utilisable water, and the result was a daily average flow of 214,927 gallons. This result clearly and fully demonstrated the presence of spring water. Alderman Robins thought that these figures could not be too widely known. It was remarkable that, during a period when it had been repeatedly asserted the flow of the brook ceased altogether, there should be a daily average of 214,000 gallons.

It is to be hoped that vigorous steps will at once be taken to ensure the desired result.

SOCIETY OF ENGINEERS.

We are now at about the culmination of the season in which engineering societies have their meetings peripatetic and *al fresco*. On Tuesday in last week a large party of the members of the Society of Engineers and their friends, under the guidance of Mr. Perry F. Nursey, their active secretary, paid a visit of inspection, by permission of the proprietor, to the extensive rope manufactory of Mr. F. D. Frost, at Shadwell. Thence they proceeded to the Victoria Docks, and inspected the fine vessel of the English Channel Steamship Company, *Castalia*, just built from the designs of Capt. W. Dickey. The visit in each case excited lively interest, and imparted much pleasure to the party. A number of the members and Associates, and their friends, afterwards dined together at the Terminus Hotel, Cannon-street.

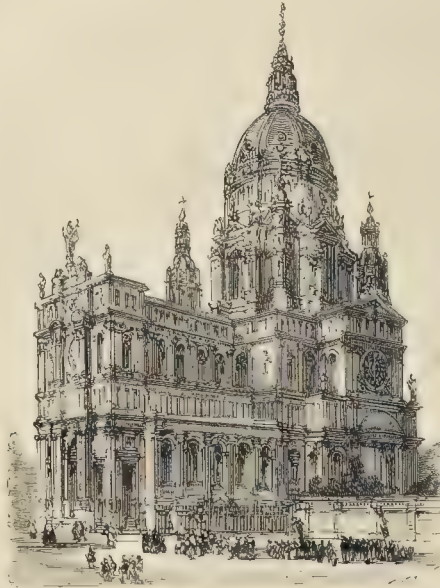
THE PEABODY BUILDINGS IN BERMONDSEY.

ABOUT three years ago the Peabody Trustees commenced the erection of several blocks of buildings for the industrial classes, similar in character to those which have been erected in Blackfriars-road, and other parts of the metropolis. When the buildings had been carried up to about half their intended height the works were suddenly suspended, and they have since remained in their unfinished condition. We understand that the stoppage of the works is owing to some dispute with the local authorities respecting a line of thoroughfare immediately adjacent to the site on which the buildings stand. East-lane, whereon the premises are being erected, is one of the worst parts of Bermondsey, and where houses for the working classes of a better sort, than those now existing, are much wanted.

A CLOTHIER'S WAREHOUSE IN BRISTOL.

Few things in Bristol surprised the members of the recent archaeological congress more than the improvement evident in the streets. No building is now erected there without some attempt at architectural effect. We have before now given illustrations of this in the shape of banks, insurance offices, and shops. The building, of which we give a view in our present number, is a warehouse in Quay-street, Bristol, in course of erection for Messrs. D. H. Walsh & Co., wholesale clothiers. It is built upon the site of an ancient dock, which formerly abutted upon the city walls. In the excavations quantities of planking and piling were cut through, the whole of which was covered with a deposit of mud by the tides of the Avon, which at one time appears to have passed over the site. The foundations were therefore unusually difficult. The site contains an area of nearly 200 square yards, and the warehouse consists of five floors and a cellar, with two main staircases, one of which is fireproof. The floors

COMPETITION DESIGNS FOR THE CHURCH OF THE SACRED HEART,

*Intended to be built at Montmartre, Paris.**

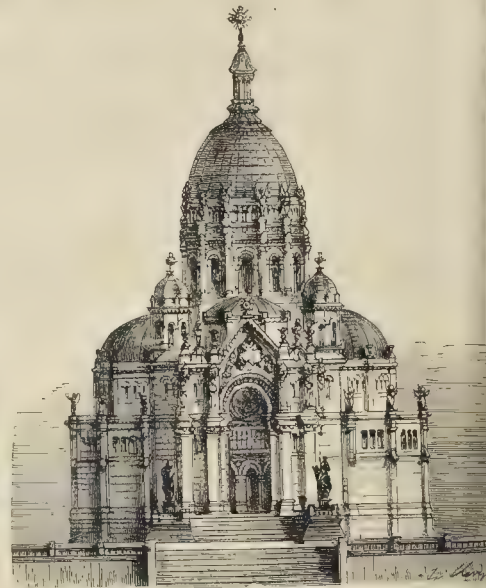
By M. CRÉPINET.



By M. MAGNÉ.



By M. DOUILLARD.



By M. DEVRÈZE.

[* See p. 705, ante.]

are supported by cast iron X columns, and Belgian rolled girders. The columns are upon a series of wedges, so arranged that the whole of them may be lowered in order that the floors be kept level, it being anticipated that unequal settlements may take place in consequence of the variable nature of the foundations.

The materials used in construction are bricks, red and white, with Bath stone dressings. The doorway is of red Mansfield stone, and the base course Stapleton grey sandstone. The roofs are

covered with slate. As a portion of this warehouse is used by workpeople, special care has been taken to ensure proper ventilation. This has been done by the erection at the back of the staircase of a rarifying shaft 5 ft. square. Through the centre is erected a cast-iron chimney, 50 ft. long and 18 in. diameter, into which the smoke of the hot-water circulating boiler and the goose stoves is conveyed. This shaft is arranged so as to be capable of removing about 2,000 cubic feet of air per minute from the

various rooms. The building is war throughout by hot-water circulation. There is a powerful hydraulic hoist, by Tannet, Wal & Co., of Leeds, which extends to all the floors, worked by the Bristol Waterworks' water, constant pressure of about 80 lb. to the inch. The cost of this building is expected to be at 5d. per foot cube, and every part is understood to be of the most substantial character. Henry Masters, Park-street, Bristol, is architect.



A CLOTHIERS' WAREHOUSE, QUAY STREET, BRISTOL.—MR. HENRY MASTERS, ARCHITECT.

PREHISTORIC BRISTOL.

This was the title of a paper read by Mr. Kerslake at the second evening meeting during his recent archaeological congress in Bristol.

Mr. Kerslake said:—Among the unwritten annals of the facts of long-past ages, the dedications of our churches all over the land seem to have been unduly disregarded. Every one of them is a tradition, and more; it is a tradition testified by a substantial monument, and the inscribed area of the subject parish confines a testimony to an indisputable locality not so certainly determined even by written records. Of long since our city government had resolved to demolish the central church of St. Werburgh in order to increase the accommodation at an ill-conceived omnibus station. This gave occasion to remind them that this church is a standing visible witness that Bristol was several centuries older than it had been allowed to be by an influential and much-read historian. What with the destructive scepticism of historical unitists and the constructive zeal of our Conservative corporation, the ancient Bristol,—both name and thing,—is in imminent peril of being sponged off from the face of the earth. It is much to be regretted that, among the standing committees of the various councils of ancient cities, there should not be one for archaeology. This dedication of St. Werburgh proved that the town in the midst of which it stood must have already existed while Britain was yet an independent kingdom, bounded to the south by our river Avon—St. Werburgh being the daughter of a king of that people. The name of another Bristol dedication is well remembered, although the church itself had undergone the fate from which it was hoped St. Werburgh had been permanently respected. An independent side-by-side testimony this dedication not only endorses that of St. Werburgh throughout its whole extent, but beyond all will, it is thought, be found to carry back to still earlier date the civilised occupation of the adjoining spot to which its name still adheres. This was the church of St. Ewen, which also stood formerly in the very centre of the city, at the corner of the four crossways, but the site of which is now covered by the council-house. Regarding this there formerly was at Gloucester at Hereford a church dedicated in the name of St. Owen, the reader observed that all three—Bristol, Gloucester, and Hereford—were the same patron saint, “St. Ewen,” being merely a local orthographical variation, and a correlative form, “Andoenus,” being common to the three. All the authors, proceeded Mr. Kerslake, who have hitherto attempted to appropriate the name to the saint commemorated have fixed it upon St. Owen, Archbishop of Ewen, who died A.D. 683. It is believed, however, that a closer view of the question will show it more likely to have been a saint who died and died in Britain at an earlier age, and it deserves particular notice that, although this dedication is so uncommon in England, it is believed only one example of this is known, yet that these three could be found together like a string of beads in each of the three chief English cities along the Welsh frontier. This will become still more remarkable by the addition of a fourth link to the chain, not so well known as the other three. Just within the mouth of the Wye, on the left or English shore, at the southern extremity of Offa's Dyke, at Beachley, is an ancient landing-place, called in the Ordnance Survey “Hewan's Rock.” The late Mr. Orme, however, who lived on the spot, called it “Ewen's Rock,” and quotes an inquiry by him of a survey in 1651, after the course of an old way which led up from it. It is thought, on my rate, that this little obsolete ferry station on the Welsh frontier cannot have had a Norman landing-place. It was probably a landing-place for Irish pilgrims towards shrines left behind them in their lost country. All this seems to make it very likely that any search after the home of the saint whose name remains with us would have the best chance if we should turn for it towards the west. In fact, we have on British ground the materials to account for the name without having to pretend to it out of Neustria or Scandinavia. In Cornwall, for instance, there are two dedications of St. Uuy or Euny, found by the late “Ewinnus.” But among the Cambric Britons are several who might put in a claim. Among the earliest British Christians was Owain, the grandson of Caractacus, who is said to have been a strenuous protector of his own faith. Then, again, later, there was the

famous Owain, the son of Maximus. He was not only reputed a saint, but was said to have been the earliest independent sovereign of Britain at the retreat of the Romans. His claim to these memorials of his name along this particular frontier derives a considerable amount of local probability from his having become the ancestor of the succeeding Princes of Gwent. But the person with whom we are here more likely to be concerned was St. Howyn or Hywyn, whose name is preserved in the dedication of the church at Aberdaron, situated at the most western point of Carnarvonshire. This last-mentioned personage is said to have been one of a large company of refugee saints who returned from Armorica to insular Britain with Saint Cadvan, A.D. 516. He first joined the famous congregation at Llantwit Major, Glamorgan, and afterwards retired to Bardsey, where he is said by some authors to have been a bishop. The Saint Howyn whom it has, therefore, been ventured to adopt as the parent of our dedication, is said to have died in the first half of the sixth century, so that his memory must have been still fresh, and his veneration probably at its highest point towards the end of that century, when the English conquest of the Severn Valley from the Britons was made, which has been so learnedly and ingeniously mapped by Dr. Guest. But that distinguished and lucid topographical interpreter of history has left it quite open to us to think that the Wye instead of the Severn then became the practical western boundary of the Anglo-Saxon people, and that then, or soon after, the string of Welsh dedications at Hereford, Gloucester, and Bristol may have been instituted; at any rate, their continuance thus intimately associated down to our own times may be accepted as a substantial witness of a very curious fact that, after the conquest of this district, there was what may be called a commercial colony of the Welsh nation, tolerated or established at each of the English frontier cities. There is another example of the dedication, St. Owen at Dublin, and, unlike our three English ones, the Dublin church is only partly demolished. This Irish dedication has been sometimes thought to be a later graft of our own St. Ewen, caused by the intimate intercourse that has existed in all ages between Bristol and Dublin. The expedition of Strongbow was planned and contracted, and probably largely recruited, at Bristol. There is also a St. Werburgh at Dublin. But a glance at the names of the churches contained within that part of the old city lying south of the Liffey, which is said to have been occupied by the English adventurers, shows almost a reproduction of those of Bristol itself. This distant St. Owen, as well as St. Werburgh, seems to be thus fully accounted for: which is our only concern with this very curious overflow of the materials of our inquiry. It seems, however, to indicate that the emigrants gathered themselves again into their own reconstituted parishes, so that those who had been neighbours in their old homes should continue so in their new one. The reader went on to observe that although the name of the saint was so lately as the fifteenth century still celebrated by the poets as one of the brightest in the Bardsey constellation, it was almost as scarce in the dedications over the Cambrian area as it had been found east of our border galaxy in England, and, by means of a particular description of the peculiarities of the Cambrian hagiological system, and the later Catholic influence upon it, he suggested that any of St. Howyn's dedications which may have been scattered beyond the conserving influence of his local memory had been absorbed among those known as St. John the Baptist and St. John the Evangelist. He argued that the existence of this dedication amongst us proves that Bristol not only had a continued existence from, probably, the end of the sixth century to certainly the beginning of the tenth, but also during that early existence, it held a very important standing as a centre of intercourse between different races and different nations. In common with Hereford, Gloucester, and Exeter, Bristol had within it a distinct relique of a remarkable municipal social condition which only existed during that period.

But then we were told that the name of Bristol was not found in any written records before the year 1051. So much the worse for the records. The preservation of such documents before that time has been very fortuitous and is very scattered. Such, however, as have come down to us have chiefly owed their survival to their having been the title-deeds or annals of religious congregations. If Bristol, instead of an independent secular commercial port, had

been an appendage to an Anglo-Saxon monastery its name might have come down to us in some cartulary. This has been the luck of some places only known to us as pleasant summer evening walks, such as Penpole, and, perhaps, Combe Dingle, which are mentioned by name as early as the ninth century. In conclusion, Mr. Kerslake argued that the name of the adjacent village of Brislington contained in its structure unmistakable evidence that it belonged to one of the very earliest shovels of Tontonic place names that fell upon this island, and yet that in it the name of Bristol was visibly reflected as pro-existent. When this ancient name Brislington was first used, Bristol, he said, not only already existed, but had an offshoot to which it then stood godfather. Rome was not built in a day, neither was Bristol a sudden growth of yesterday.

PROPOSED NEW DOCKS AT MILFORD.

THE project for making Milford a port for large sea-going ships is now being actively prosecuted. It is proposed by a company, established for the purpose, to construct a large dock having an area of about forty acres, together with quays, wharfs, warehouses, landing-stages, coal-tips, and railway sidings. It will, therefore, be seen that the contemplated works will be on a large scale, and, as a considerable depth of water is assured, it is stated that there will be every facility for the arrival and departure of the large American and other steamers now trading between Liverpool, London, Glasgow, and foreign ports. The proposal also includes the construction of two large graving-docks, one of which will be sufficiently spacious to admit the *Great Eastern* steam-ship, which has hitherto not been able to enter any dock in the country for the purposes of repair. There will also be a smaller dock, and a patent slip. The site of the proposed docks is to be acquired by closing an inlet of the sea at Milford. Provided Milford can be established as a port of departure for large foreign-going vessels, the Great Western Railway Company would doubtless be greatly benefited, and we, therefore, find that the directors of that company have shown their confidence in the project by subscribing to the amount of 50,000*l.* in shares, out of the sum of 250,000*l.*, which is the proposed capital of the company. It is also stated that the support of several of the largest steam-ship companies of London and Liverpool have been promised, and it is asserted that if the several companies now coaling at Southampton were to take their coal on board at Milford, being in close proximity to the South Wales coal-fields, the saving would be so large as to enable them greatly to increase their dividends. The promoters further make the remarkable statement that the proposed docks will not cost more than one-tenth the price of the cheapest docks in England. The probability, however, is that this is taking a too sanguine view of the undertaking.

METROPOLITAN HOUSE-BUILDING STATISTICS FOR 1873.

COLONEL HENDERSON, the Chief Commissioner of Police for the Metropolitan District, has just issued his report for 1873, and in reference to the building of new houses and street improvements within the metropolitan area, the report furnishes some interesting particulars. As regards new dwellings Colonel Henderson states that the number of new houses built during the year was 7,687, which he shows, by comparison, was considerably less than the number erected in 1872, as in the last-named year no less than 11,179 new houses were built. Concurrently with this increase of new dwellings, and a consequent increase of population, the Chief Commissioner states that during the year new police stations were built and opened at North Woolwich, Harrow-on-the-hill, Enfield, Putney, Heaton, Chislehurst, South Norwood, and R. dney-road, Newington; and as regards this portion of his report he remarks that the constant increase of houses and population is mainly in the suburban districts, which brings corresponding demands for additional stations and police assistance. He adds that the new streets and squares opened and places in charge of the police during the year, were 154 in number, and with one square covered 26 miles and 890 yards. This, he observes, is an increase on the previous year, when only 20 miles of new streets were opened; but on the other hand, he states that it is much below

the average of former years. With reference to fires, and the damage done by them to houses and other buildings and property, he says that during the year the police attended 573 fires, and that a total of 14,789 men were employed, some of them, as at the Pan-technion, for several consecutive days. Adverting to the Metropolitan and City Police Orphanage, the Colonel reports that a suitable building for it has been purchased at Twickenham, which is in course of being adapted as a permanent orphanage. A prominent feature in the report is the condition of common lodging-houses in the district. On this point the Commissioner, amongst other things, states, that during the past year 665 keepers of common lodging-houses had been served with notices to register their houses, and that 243 of these houses had been surveyed and measured to accommodate (if registered) 4,960 persons. A very large majority of these houses might, with comparatively small outlay, be rendered fit for registration, and 182 houses had been permanently registered, the accommodation provided in these houses being for 3,650 persons.

TO HEPHÆSTOS.

—Hædæd S.

SMITE the steel, O Smith!
Smite the steel till the senses reel
At the force of thy blows, O Smith!

Smite the steel, O Smith!
Till the sparks that fly shall dazzle the eye
In thy grimy cave, O Smith!

Weld the steel, O Smith!
Weld the steel for woe or for weal
As God above shall will, O Smith!

Weld the steel, O Smith!
Into helmet, and greave, and shield,
Fit for a mighty man to wield.

Forge the steel, O Smith!
Till the temper'd blade take its azure shade,
And the victor's sword is made.

Forge the steel, O Smith!
Till it may be sold for its weight in gold,
Tough as valiant hearts of old.

Grave the steel, O Smith!
The burnish'd bright, with pictures dight,
To stimulate heroic fight.

Grave the steel, O Smith!
And figure it o'er in cunning device:
Artist work beyond all price.

A. H.

THE NEW WAVERLEY STATION OF THE NORTH BRITISH RAILWAY.

THE extensive new station of the North British Railway at Edinburgh, called the Waverley terminus, which covers an area of between eight and nine acres, is now almost entirely completed, and ready for opening. The works include the erection of the new Waverley Bridge, as a necessary part of the station construction. This bridge, which is a very fine work, and an important public improvement, is 110 ft. wide, and is laid on five lattice girders with transoms between. The bridge provides a very useful additional communication between the Old and New Towns of Edinburgh. It has just been completed, and handed over to the Lord Provost and Town Council, by whom it will be maintained. The quantities of iron used in its construction consist of 484 tons in the main girders, 272 tons in the upper and lower transoms, 177 tons in the cast-iron columns and pillars, and 105 tons in miscellaneous wrought-iron work, making a total of upwards of 1,000 tons of iron used in the erection of the structure.

The station encloses an area of upwards of 1,000 ft. in length by 360 ft. in width, and contains twelve lines of rails, three wide platforms, a footway, and a carriage entrance to the station, with cabstands, and at the foot of the approach blocks of new buildings, appropriated on the ground-floor to a large booking-hall, waiting and refreshment rooms, rooms for lost and left luggage, and other accommodation required by the train service. The upper portions of the building provide accommodation for the general manager and his staff, and the secretary, accountant, engineer, and other chief officers, and their respective staffs. The station is situated between the North Bridge and the new Waverley

Bridge, and the whole of the area between these bridges will be covered in, the roofs being almost entirely of glass and iron. The roof is constructed on the lattice-girder principle, and dispenses with columns for support. The crown has transverse roofs, rising 2 ft. 8 in., supported by the lattice-girders and ties, and having wrought-iron girders between each cross-roof. The main girders are 10 ft. apart, and parlies are carried along the whole length as binders at the tops and at the feet of the rafters. In addition to the platforms and station accommodation above referred to, there are rails with side and end platforms, to the east of the North Bridge, for the traffic to Granton, Leith, Fife, and the north; whilst on the west side of the new Waverley Bridge there are also lines and platforms for the local traffic. The short-traffic platforms will also be roofed, and the continuous covered platforms will be upwards of 1,100 ft. in length, together with another short traffic platform on the east side of the booking-offices, 450 ft. long. The twelve lines in the central portion of the station converge to two lines at the mouth of the Mound Tunnel on the west, and to two lines at a point about as far distant from the North Bridge on the east as the Mound Tunnel is from the Waverley Bridge.

The south side of the station is devoted to goods traffic, and will have, in addition to abundant dock and shunting accommodation, four goods sheds, each having an office attached to it. The dimensions of the sheds are two of 150 ft. by 30 ft., one 180 ft. by 30 ft., and one 180 ft. by 20 ft. The works have been designed by Mr. Bell, the engineer of the company, and are being carried out by the company's workmen, under the superintendence of Mr. Bell, and his assistant, Mr. Learmont.

REMOVAL OF THE DOUBLE TRAMWAY LINES IN CAMBERWELL.

THE double lines of tramway in several of the narrow portions of the thoroughfares in Camberwell and Peckham having been found to be an inconvenience, as well as an injury to tradesmen and shopkeepers, the Tramway Company have been engaged during the last two or three weeks in removing the double line at various points, and substituting for them a single line in the centre of the road, with sidings to admit of the tramway-cars, travelling in opposite directions, to meet and pass each other.

In making those constructive alterations, the Tramway Company state that whilst they have done so in deference to the wishes of the tradesmen in the locality, who alleged that their business was prejudicially affected by the double line, the consequence will be unavoidable detentions in the traffic which have not hitherto been experienced.

MUSIC BY TELEGRAPH.

ABOUT two months ago, says an American paper, Mr. Elisha Gray, of Chicago, a gentleman well known in the electric telegraph world as a maker and inventor of some of the most valuable instruments now in use, conceived an idea which would be an extraordinary development of telegraphic science if he could only succeed in practically demonstrating it. Short as has been the lapse of time since he first began his experiments, he has succeeded, almost beyond his own anticipations, in perfecting an instrument which will convey sound by electricity over an unbroken current of extraordinary length,—that is, without the aid of automatic repeaters. In the ordinary transmission of messages over the telegraph wires to points at long distances, a message is generally repeated by automatic working instruments about every 500 miles, in order to renew the current of electricity. Mr. Gray has already transmitted sounds, which are distinctly audible at the receiving-point over an unbroken circuit of 2,400 miles. This is, more properly speaking, a discovery,—not an invention. The invention merely consists in adapting certain appliances to the discovery, for the purposes of its practical illustration. It is one of the greatest discoveries made since the early days of Morse. Such noted electricians as Mr. George Prescott say this discovery of Mr. Gray only goes to prove, what all electricians have long agreed upon, that we know little at present of the possibilities of the future of electric science. Mr. Chandler says that he regards it as the first step towards doing away with manipulating instruments altogether, and that he

believes that in time the operators will transmit the sound of their own voice over the wires, a talk with one another instead of telegraphically. The writer has seen this novel instrument at work, and has heard music played on a small melodeon, or piano-key-board transmitted through an unbroken circuit of 2,400 miles, and reproduced on a violin attached to the receiving end of the wire. Mr. Gray played "Hail, Columbia," "The Star-spangled Banner," "God save the Queen," "Yankee Doodle," and other well-known airs, and they were unmistakably repeated, note for note, on the violin, which lay on a table near at hand. Even an accidental false note was immediately detected on the violin. Mr. G. exhibited many other experiments with tin can small paper drums, &c., which were attached to the receiving end of the wire in the place of violin. The paper drum gave the musical sound just that peculiar buzzing twang which is produced by boys placing a piece of thin paper over a hair comb and then blowing on it. What this will all lead to, or where it will all end, is one of the most extraordinary problems of the day. The apparatus by means of which this extraordinary feat in telegraphy is accomplished has been named by Mr. Gray the telephone, or instrument designed for the purpose of transmitting sound to a distance. It consists of three general parts; first, the transmitting instrument; second, the conducting wire, running to a distant point; and third, the apparatus for receiving the sound at that distant point. The transmitting apparatus consists of a key-board having a number of electro-magnets corresponding with the number of keys on the board, to which are attached vibrating tongues or reeds, tuned to a musical scale. Any one of these tongues can be separately set in motion by depressing the key corresponding to it. Thus a tune may be played by manipulating the keys in the same way as those of an ordinary piano or melodeon. The music, produced entirely by electricity, of the notes is so distinctly audible in the next room, that, in spite of much talking, there is no difficulty in determining what tune the musician is playing. To this transmitting instrument the conducting wire is attached, the other end being attached to the receiving apparatus, which may be anything that is sonorous so long as it is in some degree a conductor of electricity. A violin with a thin strip of metal stretched between the strings at a point where the bridge of the instrument is ordinarily placed will, on receiving the sound transmitted through the conducting wire from the piano, give a tone very similar in quality to that of a violin. If then the metallic strip is electrically connected with a wire, say 500 or 1,000 miles long, which has its distant end properly connected with transmitting instrument, any one at the receiving end can distinctly hear, without the aid of electro-magnetism, the tune or air which is played 500 or 1,000 miles away from him, and properly manipulate the receiving apparatus. The length of the wire connecting the transmitting with the receiving apparatus may be one mile, 10,000 miles, provided that the isolation is sufficiently good to prevent the escape of the electric current before it reaches its destination. In fact, there seems no limit to the distance which sound, of any desired pitch, may be conveyed with from two to five cells of battery, all the conditions being proper. The quality of the tones depends upon the character of the receiving apparatus, which may be as simple as prepared as described above, a tin hoop, a foil paper heads stretched over it, after the fashion of a baby's rattle, a nickel five-piece, an old oyster-can, and a thousand other things. A sound, sufficiently loud to read telegraphic characters, made by interrupting the common telegraphic key, one sustained note, has been obtained, under favourable circumstances, at the receiving end of the wire without any more scientific sounding apparatus than that of a piece of common tissue paper. Aside from the intense interest which this discovery will naturally excite in the scientific world,—as to the causes which produce extraordinary electro-physiological phenomena, and the gratification it will afford to all lovers of the marvellous,—it is evident that, although practical uses to which it may be put cannot yet be recited, quite enough has been demonstrated to show that, from its basis, a new system of telegraphy, both for aerial and submarine lines, of a simple, rapid, and economical character, can be introduced. Mr. Gray has applied for patents of his invention in this country and all the countries of Europe.

THE CONDITION OF THE BATTERSEA CEMETERY.

In a recent number of the *Builder* we referred to the unsatisfactory state of Battersea Cemetery, as being dangerous to the health of the inhabitants of the district, in consequence of there being common graves kept open in immediate proximity to houses. These facts, which were stated in a report presented by Dr. Oakman, the medical officer for Wandsworth, caused an inquiry to be made by Dr. Holland, the Government inspector, who, after hearing evidence, expressed an opinion to the effect that these open graves were in violation of the Act of Parliament; and he added, that in future the Board would have to comply strictly with the Act. He also stated that, from evidence which had been laid before him, it was manifest that the cemetery could not much longer be available for funerals, as it was already almost full.

PLYMOUTH GUILDHALL OPENING.

The grand ceremonial of the opening of the Guildhall and Municipal Buildings at Plymouth on the 14th inst., by the Prince of Wales, was a thing to be remembered by the townsmen and visitors. It was a great success in all respects, and the reception of the Prince must have highly gratified him. On the day following the opening nearly 2,000 Freemasons in full costume received their Royal Brother. The chief decorations and illuminations were entrusted to Messrs. Deffries, by the Reception Committee. The designs were specially prepared for the occasion, and were, to a certain extent, novel.

The decoration and illumination of the clock tower were the chief feature; the decoration consisted of Venetian masts covered with blue cloth, and gilt fluted columns, and surmounted by gilt royal crowns and faced with shields representing the arms of the borough and Prince of Wales. From the Venetian masts to the clock tower were carried festoons of flags and floral decorations, and at the angles were placed specimens of statuary. The railway arch was decorated with care, upwards of thirty trophies, representing the arms of the borough and Prince of Wales being displayed together with hangings of drapery. The Club House was also decorated and illuminated by Messrs. Deffries. Throughout the line of route, the Prince of Wales's crystal plumes (illuminated at night), and trophies of flags, shields, ribbons, and mottoes were introduced on all the lamp-columns and Venetian masts as on the occasion of the Royal visit to the City of London on Thanksgiving day.

We have already described the buildings and given a view of them. The architects, as we have said, are Messrs. Norman & Hine, of Plymouth; and the contractors, Messrs. Call & Methick, also of Plymouth. Mr. Samuel Roach executed all the Portland and limestone dressings and slating, which amounted to nearly a third of the contract sum. The ironwork and plumbing were executed by Mr. P. J. Marshall, the plastering was by Mr. A. Lethbridge, painting by Mr. S. Moulton, sculpture by Mr. Trevenen and Mr. H. Moulton, of Cheltenham; capitals by Mr. H. Moulton, of Exeter. Among the sub-contractors there were also Messrs. Freeman & Co., of Exeter, for granite; Mr. Wells, for gas-fitting in the north block. The whole of the fittings in the offices were made in Plymouth; those of the council-chamber by Thomason, Birmingham; Mr. Whipple, gas-fitting in the south block; the bronze and other fittings being made by Skidmore & Co., and Richards, of Coventry; Mr. Thomas, of Cheltenham, subcontracted for painting and gilding; Mr. Fournace, Stonehouse, as decorator. Various fittings have likewise been supplied by Messrs. Stephenson, Brothers; Plineau, Brothers; Arnold & Co.; and other firms. The statue in stained glass have been Messrs. Meaton, Butler, & Baynes for the windows in the council-chamber and the Moore window; Messrs. Fournace & Watson, Stonehouse, for the windows generally in the large hall, with the Priory and Virgin windows, the Mayors' memorial windows, and others elsewhere.

The building contains 20,000 cubic yards of masonry; 20,000 cubic feet of granite, in plinths and steps; 60,000 cubic feet of Portland and granite, in door and window dressings, arches, and sittings (executed by Mr. Roach); and 100,000 superficial feet of slating with Delabole and Bangor slate, in bands, nailed with copper

The walls of the Guildhall are built of dark limestone, relieved by bands and quoins of light and red limestone; the plinths are of granite, and the chief dressings of Portland stone. The roofs are in bands of different coloured slate; and a similar chromatic effect has been produced in the tops of the Westwell-street angle towers, which are of wood, slated. Red Mansfield stone has been used in the large windows and elsewhere, but sparingly. The enclosing walls of the Guildhall-square terminate in columns, with shafts of polished red granite from Aberdeen, surmounted by carved capitals of Portland stone. The interior woodwork is almost throughout of pitch pine varnished, the jambs and lintels of the doorways being ornamented by quatrefoils of ebony. The council chamber and the whole of the municipal offices are furnished, chiefly in oak or pitch pine, from the designs and working drawings of the architects.

PORTLAND CEMENT.

SIR,—Will any of your correspondents assist me with (1) directions for using Portland cement for stucco and plastering purposes generally, proportions of sand, &c.; (2) for building in brickwork; (3) for concrete building? J. C.

THE LONDON FOREMEN ENGINEERS AT MR. PENN'S.

ON Saturday last, the members of the London Association of Foremen Engineers and Draughtsmen, with their families and friends, held their annual summer festival in the grounds of Mr. John Penn, C.E., F.R.S., of "The Cedars," Lee, Kent, kindly opened to them for the occasion. Mr. Joseph Newton, lately attached to the Royal Mint, the president of the Association, was managing director of the party.

Mr. Penn's gardens and pleasure-grounds are very charming, from the profusion they present of the wild flowers of the woods and fields; their fine collections of cultivated flowers and shrubs in great variety; the grassy undulations; and especially from the perfect forms and full maturity of the forest-trees of diverse kinds with which the park is adorned. It is somewhat detrimental to the charms of the demesne that it is twice intersected longitudinally by Belmont-hill-road, for the diversion of which we believe Mr. Penn obtained an Act of Parliament, and by the North Kent Railway; and laterally by "the lover's lane," a public footpath which separates the kitchen from the flower garden. The finest portions of the grounds, containing the venerable cedars, from which the park is named, are those immediately adjacent to Mr. Penn's mansion. The foremen engineers and their friends had unrestrained access to all parts of the estate.

The invitations were for three o'clock, and from that hour until about four the visitors continued to arrive, till upwards of 200 had assembled. A band of music, furnished by mechanical engineers from Messrs. Maudslay & Co.'s works, and ably led by Mr. Astell, had been engaged for the occasion, and by their excellent performances did much to enhance the pleasures of the party. A large marquee was provided near the Rose-garden, in which, about four o'clock, the members and their friends, who included a number of ladies, sat down to a cold collation. Mr. Newton, the president, explained that the original intention had been to hold their festival at the Alexandra Palace, but that, for some reason, had been found impracticable, and in their difficulty they had applied to one of their oldest, ablest, and best friends, Mr. John Penn, who had promptly and kindly placed his beautiful grounds at the disposal of the committee. As engineers, they must all feel proud that this beautiful estate had been honourably acquired by the three generations of Penns, of whom the first had passed away,—men who with their associates in the firm were a glory and an honour to the engineering profession. He concluded by asking the company to join with him in wishing "Health, happiness, and prosperity to Mr. John Penn, his family, and firm."

Mr. John Penn, jun., replied for his father, the family, and the firm, to whom he would gladly report the kind wishes that had been expressed concerning them. As for his father, he had been quite glad when he was asked to receive the members of the London Association of Foremen Engineers and Draughtsmen, with their families and friends; and there was

probably no company to which his father would give a more hearty welcome than the large and respectable assembly he had the honour of addressing. Mr. Penn was much applauded during the course of his address.

The officers of the Association present included, Messrs. Newton, president; D. Walker, secretary; Jones, treasurer; Gibbons, vice-president; and the Rev. Mr. Solly, chaplain. The members of the society present, and friends, included, among others, managers and principal foremen from Messrs. John Penn & Sons', Messrs. Maudslay & Co.'s, Messrs. Humphreys & Sons', Messrs. J. & J. Rennie's, Messrs. Hodley's, with a large number of foremen and draughtsmen from the north bank of the Thames, Woolwich, and, in a word, from the principal engineering establishments in or near London.

BOATS AT THE THAMES PIERS.

WE are glad to see that the self-sacrifice of the late Mr. C. Emery, an artist, who lost his life in endeavouring to save another from drowning, is not forgotten, a subscription being now proposed in his memory. When an accident of this kind happens, there seldom is a boat ready for the emergency. How strange it is that amid so much philanthropy, in the matter of accidents on the river no reform or improvement seems to be attempted. As far back as eight-and-twenty years ago, when old Westminster Bridge was in existence, we remember a similar event. A boy playing on the timbers at Gladdish's Wharf fell overboard, and Mr. John Bate, being at the time on board the *London Pride* steamer, jumped from her into the stream without stopping to take off any of his clothes, and swam to the rescue. The current, however, was too strong to enable him to reach the boy in time to save him, who sank within a yard of his pursuer. Almost exhausted, the latter found, on looking round, that no assistance was at hand, and he had, therefore, to swim for his own life across the strong current to reach the only part of the shore not occupied by coal-barges. The steamer could not wait; the boat at the pier was without paddles, and chained,—which appears to be the rule. All the thanks Mr. Bate received were of a negative kind. The coroner's jury even were unaware that any attempt had been made, and the bystanders on the bridge appeared to think it was sport! Now that improved piers are erected, a handy boat should always be in readiness,—not chained or fastened so that no one can use her, but for the piermen to cast off and use as part of their duty, to be performed with the utmost alacrity.

"LITTLE FISH ARE SWEET."

UNDER this head a correspondent writes as follows, and a second correspondent sends us a letter to precisely the same effect:—"Sir: An eminent London architect came from Manchester to Cambridge to make a survey of St. Edward's Church as to the restoration of the east wall of the north aisle and a new vestry: the sum to be expended is about 180l. (Cambridge possesses only nine local architects). A period of three weeks must elapse before he can give it his attention." It is not our province to dictate to architects, eminent or otherwise, what works they shall undertake and what refuse. Our correspondents, moreover, should recollect that clients have to be considered. If an architect refuse his assistance to a client in respect of a small matter, the aforesaid client is very likely to apply elsewhere when he needs aid in a large one.

ART MUST BE STUDIED.

WITH reference to the view, recently published by you, of a building now in progress, I cannot restrain myself from saying that engineers are not necessarily architects.

If art were an unimportant matter, we need not waste words about it, but it is not so. Again, without artists we shall never have art, and the sooner intelligent men study its realities the better it will be for us as a nation. We cannot trifle with it and yet retain our position in the world as a great or important people. Science and art may be said to be the opposite but yet connected poles of thought, the one depending upon the other, and unable to exist alone. One great use of art is to preserve the true balance of humility, of which every really great man has

much, and science also repays the obligation by levying the same tax. But when science, or its counterfeit, arrogates to itself a knowledge of the mysteries and sublimities of art, to which its nature is alien, then arise wide-spread discord and disaster, which, if left unchecked and unrebuked, must ultimately bring upon us national disgrace. The root of the evil lies in ignorance partly, but mostly in false and foolish pride. Get the axe well to work here, and we may hope for better things yet. The people have become rich, and this puzzling question of taste in matters of art is more trouble to them than ever; but if they will be wealthy, they must be wise also, and true wisdom ever looks it fully in the face, and does not shrink from facts.

If, however, we treat the whole affair as a good sort of joke merely, then all that can be written on art, though the pens were from angels' wings, must remain as so much waste paper.

VERITAS.

"WAKING THE DEAD AND KILLING THE LIVING."

THE editor of the *Irish Builder* makes obliging reference to some accounts given by us under this heading years ago of the evils produced by the custom of holding wakes,* and describes several abominable occurrences in connexion with wakes which show only too strikingly the necessity for further efforts to repress the unwholesome and most injurious practice. In one case about twenty-five persons had assembled in the drawing-room, and were merry-making, dancing and singing, according to the usual custom, when at about half-past ten o'clock the floor suddenly gave way, and the entire company as well as the furniture of the room, were tumbled to the basement story. The child's remains were recovered from the debris, and carried to an adjoining house, the lid of the coffin in which they were placed being broken by the fall. But few of those present at the wake escaped without more or less of injury—several were conveyed to Jervis-street Hospital, where one of them, a Mrs. Wade, died on Wednesday. The writer says, "Are our countrymen and women so utterly lost to shame as to look with complacency on such wild proceedings? Is it Christian? Is it Catholic or human that the room of death should be continually dedicated to such abominable carnivals of indecency and brutality? Cannot a Roman Catholic Cardinal Archbishop exercise his influence in putting down such infamies. On the score of health, if not on that of decency, the practice calls for abolition. We have known the only two rooms of an Irish cottage to be crammed chokefull of mourners—merry-makers, rather—the floors being the principal sitting accommodation for the majority, and even the bedside of the corpse being utilised by sitters. Bad whiskey, bad tobacco, bad manners, and bad air, being everywhere, the young children imbibing too readily the examples set before them by their parents or neighbours for future imitation. The seeds of disease are often contracted at wakes, and the sight has often been the stepping-stone or starting-point for young females to headlong immorality, the streets, and an early grave."

THE CITY WATER SUPPLY.

A REPORT has been issued to the members of the Common Council, by the Gas and Water Committee of that body, in answer to the question "whether any improvement can be suggested in the supply of water to the City of London in case of fire," and some other points referred to them. The report, after furnishing a statement of past legislation, refers to the present condition of the water supply of the City, which is received almost entirely from the New River Company. The company have now provision for a continuous daily delivery of more than 36,000,000 gallons, with a present daily demand of about 25,000,000 gallons; they also have a right to pump to any extent from the river Thames, below Blackfriars, for any service of a "non-domestic" kind, and can store about 150,000,000 gallons, all available for use in the City, where they have 78 miles of pipes, 25 miles of which are constantly under pressure. With regard to the water-supply required for the extinction of fire, Captain Shaw reported, that in the whole of the metropolis it had not been much in excess of 8,000,000 gallons, and that there had been no difficulty from any insufficiency of water-supply in the City, whatever occasional delay there might have been in obtaining the service. The committee are of opinion that the system of street-plugs and turncocks is not suitable to meet the sudden emergencies in cases of fire, and that it is absolutely essential for the protection of public property that a proper number of hydrants be fixed. The committee think it highly desirable that the Corporation should take the lead in establishing a system which there could be no doubt would be a most useful adjunct in preventing the extension of fires. If the court agreed with this, the committee asked that the report should be referred back to them to consider the means of carrying it out.

ACCIDENTS.

Explosion of the Staines Linoleum Factory.—It is necessary to granulate the cork used in the manufacture of linoleum, and it is ground in mills between stones till it becomes a fine powder. The grinding requires great care and attention, in order that gritty or foreign substances may not find their way among the powdered cork while the operation is being performed, as they are liable to cause an explosion. Two men were tending a grinding-mill, when the powdered cork suddenly exploded, the blast burning them seriously; the cloth around the mouth, worn to prevent the inhalation of dust, catching fire.

A Railway Station destroyed by Lightning.—The station buildings at Mortheo, on the new railway to Lifford, have been struck by lightning and set on fire. There was a dense fog at the time. Owing to this circumstance, the fire was not discovered until it reached a store of fog-signals, which exploded and awoke the station-master and his family, who were sleeping in the adjoining dwelling. The booking office, telegraphic office, porters' room, parcel-room, and waiting-room were destroyed, with all the papers and apparatus they contained.

Fall of a Platform.—A fatal accident has occurred at the fête of Aubervilliers, in the environs of Paris. During the afternoon a heavy shower of rain fell, and a crowd of people took refuge from it on a covered platform erected for a band of musicians. The structure was not built to bear such a weight, and presently fell in with a crash, casting about 400 persons pell-mell together, amidst the wreck of planks, posts, and rafters. A large number of persons received contusions more or less severe.

RAILWAY MATTERS.

Central Station, Manchester.—The negotiations between the Cheshire Lines Committee and the proprietors of the Free Trade Hall for the purchase of that building with a view to the erection on its site of a great central station have collapsed, as the railway company find, it seems, that the site which has already been cleared behind the hall will be sufficient to meet all their requirements. The work upon the line between Windmill-street and Cornbrook is making a satisfactory progress, considering the difficult operations which are involved in the demolition and removal of a great quantity of house and factory property. When the great viaduct which will carry the line to Windmill-street shall be completed, a temporary building, it is believed, will be erected pending the completion of the central station.

Subsidence on the Great Northern Line.—This line, which has for many years past been gradually sinking in places between Laisterdyke and Morley, still continues, as the *Yorkshire Post* states, to gradually subside. Consequently, the rails are raised and "packed" from time to time in order to retain a proper level, and at the stations, Laisterdyke, Dudley Hill, Birkenshaw and Tong, Drighlington and Adwalton, Gildersome, and Morley, more particularly, the height of the platforms is from time to time reduced in this way. At Dudley Hill, where only recently the platform was rebuilt, it is again getting lower, especially opposite the station-house, which is in a bad way from the same cause, and is even said to be unsafe to live in. Large cracks appear in the building at times, and these have to be wedged and stopped up as they occur. Passing trains shake off lime and plaster, and altogether the station is in a rather dilapidated condition. At the Birkenshaw and Tong station the platform still remains low, and is a cause of frequent complaint by travellers, as it is necessarily very inconvenient to get on and off the

trains. Here also the station-house is cracked and patched up, and the station-wall on the opposite side is much shaken, irregular, and unstable. At Drighlington and Gildersome the platforms are to some extent low from this cause, and in Morley the platform has just been raised. **Railway Collapses in America.**—A remarkable table is published in a recent number of the *New York Bulletin*. It is a catalogue of the American railway companies which within a very brief period have been compelled to admit their inability to pay the interest on their bonds. The companies number 74 in all, and the amount of bonds for which they are in default amount to 335,295,668 dol., or not far from 65,000,000. This is about 18 per cent. of the entire bonded debt of the railways of the United States.

IRRIGATION WORKS, INDIA.

SIR,—You were good enough, a year or two since, to insert a communication from me on the subject, in reference to some complaint which had previously appeared in your journal. I have pleasure in now calling your attention to the accompanying notice, which fully justifies and illustrates the remarks made by me on behalf of one who could not speak for himself, he having been then (as he is now) actively engaged under Government in the useful and important work above indicated, for helping forward the civilization and prosperity of our Eastern empire.

The *Ceylon Observer*, of June 18th last, contains the following:—

"The Ellawella Tank is approaching completion, and Mr. A. B. Cruse, the officer in charge of it, will soon take up the work of the Dengans Tank, to the value of which a sum of 2,500,000 has been wisely sanctioned by Government. Considering the ability of Mr. Cruse in the construction of the Haliella and Ellawella Tanks, we have no doubt whatever that the Dengans Tank, long before long, be reckoned among the best water reservoirs of this district. The respect in which Mr. Cruse is held by the Tamil Caste who have been employed under him is a sufficient guarantee that in the construction of the broken bond of the Dengans Tank, want of labour will not be any source of trouble or annoyance."

From other information supplied to me, I must here add that each of the tanks at Haliella and Ellawella was constructed at an outlay of about 6,000,000, and contains a surface 240 acres in extent, supplying water to irrigate 8,000 acres of land. Tamil coolies, to the number of 25,000 were imported into Ceylon by Mr. A. B. Cruse on his own responsibility, he having become acquainted with their superior fitness and faithfulness, as compared with Singalese natives, while conducting similar works in the Madras presidency.

An entertaining account is given in the *Ceylon Observer* of August 15th, 1873, of the Governor's tour through the Southern Province, including his boating excursion on Lake Haliella, among scenery which excited his Excellency's rapturous admiration.

T. CAUSEY.

BY BOAT TO HAMPTON COURT.

SIR,—Seeing that one of the Thames steam boat companies (I neither know nor care which they may put the saddle on the right horse to themselves) advertised boats to Hampton Court on Sunday and Monday, and, never having been that way, I tried the experiment on Monday, and may warn any one similarly inclined against doing so.

The statement that the boats are specially suited for the shallow part of the river (as the placards) is false; for they are on the well-known "Citizen" boats, built for the ordinary Thames traffic. Leaving London Bridge in one of these at ten, we found ourselves after a gradual slackening of speed for some time aground at half-past twelve below Kew Bridge where we remained till three. The tide having then crept up enough to lift the boat, we proceeded at quarter-speed, and by a process which seemed to consist chiefly in sliding and sampling along the bottom, varied by entire stoppages every now and then at the shallowest parts. Not getting to Richmond and finding it was a quarter past four, I thought enough had been done in glory, and walked down the banks again to Kew Bridge railway station, "and so home," as Pepys hath it.

The crew of the boat seemed to think it a matter of course, indeed a good joke, inviting us to "get out and walk," &c.; and as I had a book, and the day was fine, I was able to take the same view of the matter. But I doubt whether all the hundred or more passengers many of them respectable people of the humble

* Afterwards printed in "Another Blow for Life."

class, who had come out with families of small children, for perhaps a rather rare holiday, quite appreciated the joke; and as the captain and crew probably knew what was likely to happen, I think the whole thing rather like obtaining money on false pretences. I should observe, that the officials had the prudence and foresight to collect the fares before arriving at the "sticking-place."

By building two or three small steamboats on a special model, and dividing the passengers among them, it would be possible to make the river journey to Hampton Court a most pleasant excursion; but as it is managed now, people who are rash enough to go that way will find themselves, like your present correspondent,

TAKEN IN.

MESSRS. GOSTLING'S SHAFT, NORTHFLEET.

THE 220 ft. chimney-shaft at Messrs. Gostling's cement works, Northfleet, has just been rebuilt according (as we are told) to the original design. The special precautions which the accident of last year had shown to be indispensable, were taken to ensure that all the bricks should be wetted before being laid, and that none of the mortar or cement should be worked up again after being spoilt or "killed." The architect was Mr. Cubitt; the contractor for the labour was Mr. Blagburn; and Messrs. Gostling, as before, supplied their own materials.

LANDING STAGES.

Reading the account of the Liverpool floating stage being burst a short time ago, the thought struck me how easy it would be to contrive a series of sluices or coops, so as to submerge the stage below the water in case of another casualty of the same description. It would then only be a question of pumping out the pontoons to raise the stage again,—a much less formidable job than rebuilding, as at present.

W. BARNFORD.

HOSPITAL SATURDAY FUND.

Sir,—Hospital Saturday is now so far a *fait accompli* that you will pardon my addressing you to encourage you to persuade you not to withhold any longer your support to so great, good, and noble a cause. As one of our executive committee, and as one of the profession which the *British Medical Association* has frequently been "twitted" with the fact of your being against the movement, and of the great harm which has resulted therefrom, I believe the chief reason which caused you to condemn the movement was that it tended to encourage the working classes to absent themselves from places of worship; but this is not so I could easily show, but I should be taking up too much of your valuable space; sufficient for me to state that it has been proved by those fully competent to judge that six-sevenths of the working classes do not go to church on a Sunday. Why is it so, and how to make them attend church questions I shall leave others to determine. So far as I am concerned, I am content to know that such is the fact. That very large sums of money can be obtained readily and willingly from the working classes, if properly applied to, in aid of the hospitals and dispensaries, of the benefits of which they are the principal recipients, is also an acknowledged fact. During the last few months our committee have had considerable difficulty in overcoming prejudices in various quarters, but in none are we so anxious to be regarded as doing the proper thing as with you. Will you therefore, ask in the name of the committee, and in the name of common philanthropy, help us in our good work by stating that we wish to be represented in all the large building firms, manufacturers, &c.; that local committees are yet required in many districts; and that all who may apply at 45, Leicester-square, may receive collecting boxes, books, cards, and sheets, for the purpose of getting the weekly subscriptions from the men between this and the day of general collection,—viz., the 17th of October next.

FRANK E. THICKES.

SCHOOL-BOARD SCHOOLS.

London.—A new school, which has been erected by the School Board for London in Bell-street, Edgware-road, has been declared formally opened. The school is situate in the midst of a dense population, and is one of three sanctioned by the School Board, all of which are on sites on which no other schools formerly existed, and are within 100 yards of each other. It is for boys and girls, and the 116 of whom accommodation is provided. Lord Napier and Ettrick stated that the entire cost of the school was a little over 16,000*l.*, which was more than 20*l.* a head for each child, out of this large sum 10,000*l.* were paid for the site, taken under the compulsory powers of the Board, and the cost of the building itself was only 6,726*l.* This was a larger cost than that generally incurred in the erection of voluntary schools, but the schools of the Board were built on a different and better system, and had appliances and playgrounds attached, which very few of the voluntary schools had. The statistics showed that school accommodation was required

in the metropolis for 119,000 children. Up to the present time the School Board had actually constructed 59 schools, and tenders had been accepted for 50 more. When these were completed, accommodation would be provided for 87,000 children, leaving 32,000 still unprovided for.—Another Board school has been opened by Mr. E. H. Currie, vice-chairman of the Board. It is situated in the Wandsworth-road, cost 1,700*l.*, and will accommodate 1,087 children. Nine permanent schools have now been opened in the Lambeth district, accommodating 7,848 children.—In Aldenham-street, St. Pancras, a new Board School has also been formally opened, when a public meeting was held in the building, which was numerously attended. The school will accommodate 841 boys, 827 girls, and 948 infants, being 1,106 in all. The site cost 3,799*l.* 8*s.* 2*d.*, and the building 7,168*l.* 10*s.* 10*d.* This makes the sixty-first school that the Board has opened. The schools are roomy, light, and well ventilated, and thoroughly adapted to the requirements for which they are intended.—A new building has been erected by the London School Board for the parish of Clisswick, close upon the railway which runs through the district. It is a large and commodious structure, and has ample playgrounds. It will be ready for occupation in the course of a few weeks.

Leicester.—The new schools, erected by the Leicester School Board, to accommodate 943 children, at the corner of Slater-street, Frog Island, have been publicly opened by the Mayor, Mr. W. Kempton, in the presence of a considerable number of the working classes in the neighbourhood. The school is divided into four departments, the infants' and mixed departments being down-stairs, and the boys' and girls' departments upstairs. All the rooms are lofty and well ventilated, and are each supplied with two class-rooms. There will be accommodation in the infants' school for 243 children, in the mixed school for 217, in the girls' school for 227, and in the boys' school for 247. The schools stand on an area comprising 968 square yards. The architect has done the best he could with the small area at his disposal. The cost of the land was 1,300*l.* There were a lot of buildings on the site which had to be taken down. The schools are in the midst of a dense population. The total cost of the building will be in round numbers about 6,000*l.*, so that the cost of the schools will be 7,350*l.*, or an average of 7*l.* 15*s.* per child to be educated.

Shavington.—This Board has appointed Mr. T. Bower, of Nantwich, as their architect. Mr. Bower is also the architect to the Willaston Board. A new school for 140 children is wanted at Shavington.

CHURCH-BUILDING NEWS.

Reading.—St. John's Church tower and spire have been completed. The tower and spire have been erected at a cost of 2,500*l.*, from designs by the architect, Mr. W. Allen Dixon, of Kintish-town. The contractors were Messrs. Niblett & Son, of Hornsey-rise, and the clerk of the works Mr. E. Green. The height of the tower and spire is 152 ft., the tower being 66 ft. high. The tower, like the church, is built of Kentish rag; and the spire, which is octagonal, is of Bath stone and Mansfield columns. The spirelet windows are of Bath stone, perforated with quatrefoil, and the terminations of the buttresses are canopied and sloped with Mansfield shafts, and carved capitals, bosses, and finials. The openings of the belfry are fitted with galvanised corrugated iron louvres, and the arched below is of Mansfield and Bath stone. The style of the whole is French Gothic, of the sixteenth century. There is a cornice round the base of the spire, and the summit is crowned with a finial, above which is the vane, which also answers the purpose of a lightning conductor. There are two circles of Mansfield and Bath stone alternately, in the tower, for the dials of a clock, and space in the belfry for eight bells. The principal entrance to the church is by a doorway in the tower. Above the doors is the eagle of St. John, in the centre spandrel, and the arch is double-recessed with Mansfield columns, and crocketed and gabled, the whole terminating with a finial. The exterior of the church is now complete.

Sittingbourne.—The new church of All Saints' Mutton, has been consecrated by the Archbishop of Canterbury. The site was given by Mr. Smeed, who also gave 250 loads of flints and three large-loads of building-sand towards

the material required for building. The church is built of cut flint in straight courses, with Bath stone dressings. It comprises a chancel with circular apse, nave, with aisle and tower; it is in the Early English style of architecture. The tower is not finished, but it will eventually be surmounted by a spire, bringing the total height to 185 ft. The organ-loft is on the north side of the church, and behind it is the vestry, which is enclosed by the ancient roof-screen from the old church, which from its age is of archaeological interest. The seats are open benches for about 400 persons. The church is lighted by gas standards. It will be warmed by Parritt's patent stove or hot-air apparatus. The nave and north aisle are paved with Staffordshire tiles, and the chancel and sacristy with Godwin's tiles. The work has been carried out by Messrs. Adcock & Rees, of Dover; the architect being Mr. Burgess, of London. A new organ has been built for the church by Messrs. Lewis & Co., of Brixton.

Tunbridge Wells.—The foundation-stone of the proposed new church in Windmill Fields, Tunbridge Wells, intended as a thank-offering for the recovery of the Rev. Canon Hoare from recent serious illness, has been laid. The circumstances which have rendered the erection of the church necessary, says the *Kent Courier*, are as follows:—Windmill Fields is an suburb of Tunbridge Wells which of late years has gone on increasing in size until it has now a large population. Some fifteen years ago the Rev. Canon Hoare and the congregation of Trinity Church erected a school-room in the locality, in which service was held every Sunday evening; but this room became too small, and four or five years ago a larger room was added, and this room is not adequate for the accommodation of the congregation. The site of the proposed new church is on the St. Mary's Hill estate, at a point opposite the road leading to Hall's Hole. The building, which is to be constructed of native stone, with tiled roof and traceried windows, with Bath-stone dressings, is after the Decorative style of architecture, and the plans have been prepared by Mr. H. H. Cronk, architect, Tunbridge Wells. The extreme length of the new church will be 92 ft., the dimensions of the nave being 72 ft. by 32 ft., and the chancel 25 ft. by 17 ft., and, when finished, it is expected that it will seat about 450 persons. The design is such that aisles may be added on either side when they become necessary. Messrs. Williams & Oakley, builders, Tunbridge Wells, are the contractors.

Whitegate.—The church of Whitegate, Vale Royal, is being restored. The old church externally was a plain brick building, with a narrow square projection at the west end rising considerably above the level of the roof which did duty for a tower. Internally, the church was divided into nave and side aisles by means of wooden pillars, which, with the roof timbers, remain in the new building. In the rebuilding, externally, new millioned and traceried windows of stone will be inserted in the side walls of the body of the church; the old parapet walls will be removed, and projecting eaves, with a cove formed of cement underneath, provided instead. The roofs will be covered with brown tiles. In the new work it is intended to re-use as much as possible of the old walling, which is of bricks of a small size. On the south side there will be a new porch, of oak. The entrance from this into the church will be the old doorway, which will thus remain as a relic of the old work. Adjoining this, at the west end, is the vestry, which is new. The tower it is intended to pull down to about 3 ft. above the ridge of the main roof. This will be surmounted by a spire, constructed of wood and covered with oak shingles, terminated by a gilt weathercock. New windows will be inserted above the belfry floor, and at the west end an arched two-light traceried window will be put in. The chancel, which will be considerably longer than the old one, will be new. At the east end is a fire-light window, and two lights of similar design are placed at the sides. Open benches will be substituted for the old pews; these will be stained and varnished. The whole of the chancel fittings, as well as the new chancel arch, will be of oak. The windows will be glazed with cathedral tinted glass, and the heating will be by means of hot-air apparatus. The design of the new work is of a Late Gothic character; and the whole is being carried out by Mr. Richard Beckett, of Hartford, from the plans and under the superintendence of Mr. John Douglas, architect, Chester. The estimated cost of the work is 1,600*l.*

DISSENTING CHURCH-BUILDING NEWS.

South Cave (Hull).—A new Independent Chapel has been opened in this village. It has been erected on the site of the old one, which was the oldest in the East Riding of Yorkshire, and was quite unsuitable for the present congregation. It is in the Romanesque style of architecture, and is built with red bricks and dressings of Ancaster stone, black bricks being used in the arches and string-courses. The entrance doorway is the principal front, and is the main feature of the building, having moulded eaves, carved tympanum, and moulded stone label, terminating with a scroll under the gabled coping. The vestibule is lighted by windows on either side of the door, having moulded and sunk stone heads. The large centre window, lighting the gallery, is divided by a moulded shaft with carved cap and moulded base. The building is lighted on either side with eight semicircular-headed windows, with moulded transoms, the upper portion being made to open for ventilation. The accommodation provided is for 250 persons, in open benches, having framed and chamfered ends. The roof is open-timbered, the principals being chamfered and perforated, and resting on moulded stone corbels. The whole of the woodwork is slightly stained and varnished. The works have been carried out from the design, and under the superintendence, of Mr. Samuel Musgrave, architect, Hull; the contractors being Mr. Goodwill, builder; Mr. C. Brown, joiner; Mr. Cosens, plumber and glazier; all of South Cave; and Messrs. Thomas Smith & Co., slaters, of Hull. The heating apparatus was supplied by Messrs. Longbottom, of Leeds.

Dorchester.—The Wesleyans of Dorchester have commenced the erection of a chapel, which is to occupy a prominent site opposite the Post-office in South-street. The cost of the new structure will be about 3,000l.; Messrs. Davis & Son, builders, Dorchester, have taken the contract; and Mr. Allardyce, architect, has prepared the plans.

Hilton (Runcorn).—The foundation-stone of a new Wesleyan Chapel has been laid at Halton, in the Runcorn circuit. The site of the building is on Halton-hill. The premises will consist of a chapel, a meeting-house, vestry, and school-room; the dimensions of the former being 56 ft. by 36 ft., exclusive of chancel, and will accommodate 300 persons. At the end opposite to the entrance there will be a chancel with moulded arch, and carried on polished marble shaft, carved capitals, brackets, &c., and a traceried window, filled in with deep-coloured stained glass. The walls and ceiling of the chancel will be decorated. The organ-pipes, which will be seen from a side chamber both into the chancel and chapel, will be illuminated. The roof will be of high pitch, but a ceiling will be fixed about two-thirds up, having four sides, and formed into four bays by moulded principals, with carved ribs. The school-room behind the chapel will seat about 150 persons. The style of architecture is to be Early English. The main features of the front to the high road being a gable, having two three-light windows, separated by a central buttress, which supports, in conjunction with polished granite shafts, carved caps, &c., a stone belfry or turret on the top. The entire cost of the building will be about 3,000l. The work is being carried out by Mr. Holland, contractor, Chester. The architect is Mr. C. E. O. Ellison, of Liverpool.

Hornsea (Yorkshire).—The little church erected at the corner of New-road, Hornsea, by the Congregationalists, has been formally opened for Divine service. The church is built in an early style of Gothic architecture, and consists of nave and shallow transepts, tower, and spire. The tower and spire are at the south-west angle of the church, at the junction of Cliff-lane and New-road, and being on an elevated site, and rising to the height of 100 ft., it is a striking object for some distance around. The principal entrance is in the west front, through a porch, enclosed by wrought-iron gates leading into a vestibule lighted by three single-light windows, and paved with tiles in geometrical patterns; access may also be gained to the vestibule through the tower, in which is placed a stone staircase ascending to the gallery. The nave is lighted on each side by two two-light windows and a central window of three-lights, all having traceried heads. The transepts are 23 ft. wide and 7 ft. deep, opening into the nave by two arches; each transept being lighted by two two-light windows and a large geometrical traceried rose-

window. All the windows throughout the church are glazed with cathedral glass in geometrical patterns. Accommodation is provided for about 500 persons, the seats being open benches. The gallery front is panelled. The roof is in one span and open timbered; and sufficient ventilation is secured by perforated ventilators in the ceiling. The whole of the woodwork throughout is stained and varnished. The exterior of the building is faced with white stock bricks, and the arches are executed in red bricks. The gas-lighting is effected by means of coronas suspended from the roof, and by brackets from the nave walls, all in wrought ironwork of Medieval pattern. Attached to the east end of the church, and opening into it, is the school-room, 24 ft. by 18 ft., and contiguous to this is the minister's vestry, under which is a vault for the heating apparatus. The building has been erected by the following tradesmen, viz.:—Messrs. Hulse & Stephenson, bricklayers and plasterers; H. & W. K. Barr, joiners; James Barr, plumber, glazier, and painter; John Denton, mason, all of Hornsea; the ironwork was supplied by Messrs. King & Co., of Hull; and the slating executed by Messrs. Dawber, of Hull. Messrs. Thompson & Stather, of Hull, supplied the heating apparatus. The whole of the works have been carried out from the designs and under the personal superintendence of Mr. Samuel Musgrave, architect, Hull.

Books Received.

The Post-office Directory of the Building Trades. London: Kelly & Co. 1874.

THE new edition of this volume professes to give the name and address of every person in every trade and profession in any way connected with architecture and the building trades throughout England, Scotland, and Wales; and we may suppose, from its bulk and appearance, that it fairly does what it professes. Our readers do not require to be told of the magnitude and importance of the interests thus dealt with, and it cannot be doubted that by numerous classes this directory will be found exceedingly useful, "bringing before them collectively and prominently thousands of persons scattered over various districts of Great Britain, who could not otherwise be addressed."

Miscellaneous.

Excursion of Archaeological Section of Midland Institute.—Eighteen members of the section and nine ladies took part in an excursion to the Wye district. The road taken was that crossing the river by Welton Castle. Leaving this for a more careful examination at some future time, the members made their way to Goodrich Castle. From Goodrich they went on to Monmouth, where they stayed to examine the Gate House on the Welsh Bridge. The post-office officials had neglected to forward the Secretary's letter ordering luncheon, and a somewhat hungry party were disappointed for a time in getting refreshment. An excellent luncheon was, however, served by the proprietor of the Beaufort Arms, in the garden, in a very short time. A careful examination of Tintern Abbey was made. The *circumlocution* for the day gave a summarised account of its history, and afterwards conducted the members over the Abbey. An interesting discussion was raised as to the puzzling tablet which has recently been described as a map in stone of the Abbey estate, but the general opinion of those present was that this suggested origin of the stone was of much too speculative a character to be accepted. The suggestion which seemed to find most favour, was that the stone was one on which an outline of branches had been traced, which was intended to be filled in with foliage, and afterwards abandoned in an incomplete state. After luncheon, it was decided to prolong the excursion for a third day, and the party again broke up, some to walk over the Wyndcliff, others to visit the famous castle of Chepstow, before returning to Birmingham.

Survey of Brazil Coast.—Sir John Hawkshaw, C.E., has embarked for Brazil for the purpose of surveying a line of coast extending about 5,000 miles, beginning at Pernambuco, with the view of reporting upon eligible spots for the establishment of harbours, and for the construction of new railways.

Prizes for Hand Turning.—The Comparison of Turners of London, in continuation of the action in former years, propose to give, in 1874, their silver medal and the freedom of the company and of the City of London to any workman or apprentice in England who may send in the best specimens of hand-turning of the year. Last year the prizes were awarded for turning in ivory and stone; this year one of the materials to be used will be brass or gun metal. The chief medal and freedom will be adjudged to that object which the judges may decide to possess paramount merit as a specimen of pure turning, and the qualities which will be chiefly considered in awarding the prizes are:—(1) Truth and nicety of fitting. (2) Beauty of original design. In vases, tazans, and similar examples special regard should be given to beauty of form, by causing the lines to run freely into each other, so that where they meet there shall be no abruptness. (3) Accuracy of copying. The specimens may be copies of any known work, and may be either of the same size or reduced. (4) Originality, novelty, or special skill in any other particular, applied to this class of work. The specimens must be of moderate size; and it is recommended they should not exceed 3 ft. in any dimension. The judges of this year in metal will be the following:—Mr. S. Jackson, of Red Lion-street, E.C.; Mr. J. H. Evans, of Wardour-street, Soho; Mr. H. Porter, of Cary, 181, Strand.

Improvements at Salford Cattle Market. Alterations are about to be made in the internal arrangements of the Salford Cattle Market. Increased accommodation will be afforded for the show of cattle by the extension of the market on the north side, and by the re-construction for the reception of cattle, of a number of sheep pens near the slaughtering-houses; and the whole of the banking business, which is at present transacted in wooden huts erected on different parts of the yard, will be done in brick building, which will be placed near the centre of the market. The work of re-constructing the sheep-pens near the slaughtering-houses for the reception of cattle was commenced about six weeks ago. By this alteration the pens in which the Irish dealers show their cattle and sheep will extend from one end of the market to the other. A gateway will be specially erected in Cross-lane, in the style of the existing entrances. Mr. Thomas Lowe, of Cross-lane, Salford, is the contractor for the alterations, which will cost about 2,000l., and the plans have been prepared by the borough engineer, Mr. A. M. Fowler. The new building for the bank building is 46 ft. square, and it will be constructed of brick, with stone dressing. It will be one story high, and will be divided into seven different banking departments, each of which will be complete in itself. In connection with the new building, a telegraph office much larger than the present one in Cross-lane will be erected. It is estimated that the cost of the new buildings will be about 1,000l.

Death of Mr. Cosmo Innes.—The Professor of History in the Edinburgh University and one of the Principal Clerks of Session, expired suddenly at Killin while on an excursion, and in his usual health. In a letter dated Monday, he said, "We shall be home on Friday Saturday, I hope;" but on Friday he was more, and on Saturday his remains were conveyed to Edinburgh. On Thursday, Mr. Innes suddenly took ill, with apoplectic symptoms. He lingered till Friday evening, when he expired. This well-known and esteemed gentleman was born on the 9th of September, 1798, at the old manor-house of Durris, on Deeside. He was admitted to the bar in 1822, and in 1846 was elected to the Chair of History in Edinburgh University. The various courses of lectures given by him to a small but select band of students were graced by beauties of style and materially helped his efforts to interest his pupils in their subject matter. His personal friends and correspondents included Montalembert, Guizot, Thiers, and other Continental notabilities literary and political. He delighted in devoting his talents and energies almost exclusively to the illustration of the past of his native country. Mr. Innes's eldest son is Chancellor of the Exchequer in Borneo, and the younger an engineer in India.

Board Schools, Biggleswade.—The plan selected for these schools are by Mr. Thorpe Elworthy, of St. Leonards-on-Sea.

Bursting of Henbury Reservoirs.—This was the most important case heard at the Chancery Summer Assizes, and was an action brought by the surveyor of the county of Chester, Mr. Charles Nichols, to recover damages caused by the destruction of four of the county bridges in consequence of the bursting of some artificial reservoirs on the defendant's estate at Henbury, near Warrington, on the 18th of June, 1872. The day before any evidence was adduced for the defendant, intimating that they were satisfied that what took place was an accident, or *vis major*, and that there was no negligence in the construction of the works. The Judge said that there was still the further question whether there was such a downfall of rain as would amount to a *vis major*. He would enter a verdict for the plaintiff for the amount, with leave for the defendant to move to set it aside, if the court could be of opinion that there was such a downfall as to amount to a *vis major*. In his opinion he did not. The jury added they did not think that occurred could have been guarded against; but his lordship said that was different from saying that there was neglect, and the Clerk of the Records then formally entered the verdict for the plaintiff.

Clayton West.—The outbreak of typhoid fever in the village of Clayton West, near Huddersfield, to which attention was recently drawn, has been the subject of an official inquiry by Dr. Thorne, one of the Medical Inspectors of the Local Government Board, and only last week Dr. Thorne communicated the results of his inspection to a meeting called together by the Local Board of Health. The epidemic appears to have been of considerable severity, since it has already caused eleven deaths, which, at the usual rate of mortality, would represent sixty-six cases. The spreading of the fever was locally believed to have been due to the use of polluted water, but it has now been traced to the inhalation of specifically poisoned emanations from a drain into which the slop-water from a laundry, where the first patient's room was washed, had been cast. The means by which the polluted air was conveyed into the dwellings of the sufferers was through sink-pipes, which were connected with the drain in such a manner as to place the interior of the cottages in direct communication with the poisoned air.

Berkshire Archaeological and Architectural Society.—This society has made its second excursion of the season, this year Windsor was selected, previous permission having been obtained from the Lord Chamberlain and the Dean of Windsor to view the Castle, including many parts of archaeological and architectural interest not usually shown to visitors. The party numbered between forty and fifty, and the Reading per Great Western Railway shortly before one o'clock. On arriving at Windsor the excursionists were met by Mr. Seabrook (chief clerk to the Lord Chamberlain), and Mr. Howells (one of the works), who conducted them to the principal entrance-hall of the Castle. There Mr. Seabrook, the vice-president, read a paper, in which he pointed out the most interesting parts of the Castle, and gave a short history to within a hundred years of the present time. After visiting various parts of the buildings, the party returned to Reading about nine a.m.

The New Act on Dwellings for Working Men.—An Act of Parliament received the royal assent on the day of the prorogation, the object of which, as we have before said, is to facilitate the erection of dwellings for working men on land belonging to municipal corporations in England. It provides that where a corporation determines that land belonging to them shall be converted into sites for working men's dwellings, on obtaining the approval of the Treasury to the corporation making for that purpose grants for leases of 999 years or for less terms than the provisions mentioned in the Act are to apply. The costs and expenses are to be paid out of the borough rates. The forms in the schedule as to grants and leases show how the legal documents can be made. The Act is now in operation.

Manufacture of Portland Cement.—A public open-air meeting is to be held in the Victoria Grounds, Swanscombe, on (this) Saturday, Aug. 22, to test, as far as possible, the grounds on which legal proceedings are being taken against the manufacture of cement in this district. The question is serious.

All Hallows, Bromley.—The consecration of the new church of All Hallows, Bromley, Middlesex (about fifteen minutes' walk from Bow Station, North London Line), has taken place. The building, which is intended to seat 800 persons, has been erected by Mr. William Brassey, from designs by Mr. Ewan Christian, at a cost of about 7,500*l.*, portion of a special fund held by the Ecclesiastical Commissioners for that purpose. The building of the rector's house and large room adjoining the church, available for Sunday schools and kindred purposes, has been given by the Grocers' Company to the same hands. Cost of the house, 2,500*l.*; of the parish room, 1,000*l.* Mr. John Griffiths was clerk of the works, and Mr. Seagood the general foreman.

Street Watering with Sea-water at South Shields.—The borough surveyor has reported to the Improvement Committee of the borough of South Shields on the probable cost of street watering with sea-water. He suggests the highest part of Westoe as the site of the reservoir, and gives the cost of arrangement for watering the chief thoroughfares at 7,800*l.*, and the weekly cost at 4*l.* The flushing of a part of the sewers as well as the watering of the streets is included in the estimate. He admits the great superiority salt water possesses in a sanitary point of view, but contrasts unfavourably the cost by comparison with that of fresh water, which he states is only 20*l.* per annum for street watering, and 75*l.* for all purposes, including flushing sewers, watering streets, and supplying fountains and urinals.

The Practical Art Exhibition at Paris.—The Exhibition of Practical Art in the Champs Elysees promises well. This exhibition has been got up by "L'Union Centrale des Beaux Arts Appliqués à l'Industrie," and approximates nearer to South Kensington than any preceding one held in the same place. It is divided into three sections. The first group comprises modern works of art, intended for industrial reproduction and practical applications already made. Ceilings, mural decorations, curtains, and other articles of first-class upholstery, articles of vertu, including bronzes and ceramics, belong to this section. The second group chiefly consists in the drawings and models of pupils of the schools of design of Paris and the provincial towns. The third section is entirely retrospective.

Pneumatic Drainage.—Dr. Joyce, of Cranbrook, has read a paper on this subject, before the members of the Tunbridge Wells Farmers' Club. The chair was occupied by Mr. B. Wickham, president of the club. Dr. Joyce described the pneumatic or suction system of Captain Liernur, of which we have already spoken. After a discussion, Dr. Joyce, in reply to questions, said the system was a threefold one; it could be mixed with earth, it could be sold in barrels, in solution, or as a powder. There was now a company being formed by Mr. Adam Scott, of London, and as soon as they were formed they proposed to arrange for towns. He should suppose that a place like London would be split up into districts. There the main drainage scheme was a failure, and irrigation could not be universally adopted.

Alms-houses, Westerham.—One of the members of the Sisterhood of Mercy, established at Clewer, near Windsor, in connexion with the Church of England, inherited some time ago a considerable fortune. A rule of the society to which Miss Moreton, the sister in question, belongs, lays it down that all property coming into the possession of any member shall be expended in some religious or charitable scheme. Accordingly Miss Moreton decided to devote her wealth to the building of a set of alms-houses and the perpetual maintenance of the occupants. A cottage hospital was also to be founded. The completion of this charitable project has just been brought about. The site chosen for the alms-houses and hospital was at Westerham, the village where the donor resided prior to her assumption of the veil.

Working Men at St. Paul's.—On Saturday, last week, about seventy men visited St. Paul's Cathedral, and were received by the Rev. Canon Liddon, who kindly accompanied them over the building, and described its many objects of beauty and interest. The nave, transepts, choir, crypt, galleries, library, clock-tower, and even the remote hall were visited in turn, and in the trophy-room refreshments were provided for the party.

Wire Netting.—An American paper states that wire netting for plastering is being rapidly introduced to take the place of laths. It takes less labour to put on the walls; is more continuous, and will not burn. Coarse netting with 1-in. mesh, and made of strong wire, is found to answer best. For ornamental curious work it is especially valuable, for it can be bent in any desired form. Secured to iron studding in a brick building our greatest danger on account of fire would be removed. A still further application on this plan is to make round bags of wire resembling barrels, and to coat them inside and out with cement. When it hardens they resemble barrels. Filled with sand and sunk in rows and masses, they make excellent building materials for breakwaters.

New Survey and Valuation of Rugeley. A public meeting was held in the town-hall to consider the tenders given for a new survey and valuation list for the parish. The attendance was very limited. It was intimated that several tenders had been received, some for altering and correcting the old map and re-valuation for 250*l.*, and others for an entire new map, the size of the Government survey of 25 in. to the mile, and re-valuation for 400*l.* and 500*l.* After some conversation, it was resolved to adjourn the meeting to ascertain from the Union whether the Government Ordnance Survey Map, with the alterations of recent date and a re-valuation, would meet the requirements of the Act of Parliament. The custom of walking the boundary is to be observed.

Uncultivated Lands.—It is estimated by the Enclosure Commissioners that there are in England and Wales nearly 900,000 acres of commons which, judging from their moderate altitude and the character of the adjacent lands as shown upon the tithe maps, may be regarded as apparently suitable for ordinary cultivation. Much of this land has probably been left out of cultivation on account of some drawback—its inferior quality, its remoteness from the population, or its being more costly than the surrounding land to bring into a productive state. The Commissioners estimate that there are also in England and Wales nearly a million and a half acres of commons, apparently mountain land or otherwise unsuitable for cultivation.

Strike in the Building Trade at Pontefract.—Upwards of sixty bricklayers and labourers employed under the various master builders in Pontefract have left work, refusing to start unless the time for commencing work in future be at seven in the morning instead of six, as at present. The men held a meeting on a Friday evening, giving notice to the masters on the Saturday, thus allowing them no reasonable chance to procure other hands. The masters refuse to comply with the wish of the men, and the strike is therefore likely to continue, although the building trade in Pontefract was never better than at present, complete streets being in course of erection at the west end of the town.

Fall of a Building at Sheffield.—Messrs. Fenton, Brothers, silversmiths, Porter-street, having recently added to their premises a cottage and public-house adjoining, in adapting them to the purposes of their trade, a chimney-stack was erected near the centre, and upon it most of the flooring rafters and other works rested. The plan had been pursued of altering and occupying the upper part of the premises first, and then the contractor proceeded to dig out cellars around the base of the chimney. The recent rains had soaked into the foundations, and the stack gave way, and brought down the roof and floorings with it. The damage is roughly estimated at 500*l.*

The Delabole Slate Quarries.—The Cornwall Minerals Railway Company are about to extend their lines into the slate quarry district. The leading slate quarries of Cornwall are the Old and North Delabole. Both these properties have recently changed ownership, with the object of carrying on operations on more extended scales. About 100,000*l.*, or nearly, is said to have been the figure at which the Old Delabole quarry has changed hands. The North Delabole, which has been in operation about half a century, has been purchased by a limited liability company, who have commenced operations.

A New Temperance League Hall is about to be erected in Liverpool to accommodate 4,000 people. The architects are Messrs. F. E. Murray & G. H. Thomas.

Testimonial to Mr. John Gibson, Landscape Gardener.—It is proposed to present a testimonial to Mr. John Gibson, the originator of that style of garden embellishment which is called sub-tropical gardening, and for which Battersea Park, under his superintendence, became a familiar example. Mr. Gibson has for some months past been suffering from a severe attack of paralysis, and a principal object of this testimonial is to meet the manifold expenses which are incidental to a prolonged illness. A committee has been formed to give effect to the proposal, and Mr. H. J. Veitch is acting as hon. secretary.

Working Men's Institute, Henley.—The foundation-stone of the Working Men's Institute at Henley, has been laid by Mr. W. H. Smith, M.P. The building will consist of reading and coffee rooms, lecture-hall to seat 300 people, and accommodation for the hall-keeper. It is situated in a central part of the town, on a plot of land in Duke-street, and will cost 750*l.*, of which sum 500*l.* have already been subscribed. Amongst those present at the laying of the stone were the mayor (Mr. T. W. Jeston), Lord Camoys, Lieut.-Colonel Makins, M.P., and a large number of working men.

Opening of Smith Institute, Stirling.—The Smith Institute, Stirling, which includes within its walls a larger and a smaller picture gallery and two museums,—has been opened by Sir William Stirling-Maxwell, bart., M.P. From noon the day was generally observed as a holiday in the burgh. The opening ceremony took place in the large picture gallery. Among the paintings on the walls is one of the founder of the Institute, Mr. T. S. Smith, by his friend Mr. A. W. Cox, Nottingham, one of the trustees. Mr. Lessels is the architect of the Institute.

The Ryde School of Art Building.—The foundation-stone of a new building for the Ryde School of Art has been laid by the Crown Princess of Germany, in the presence of the Crown Prince and a large assemblage of the resident and visiting gentry of the Isle of Wight. This building is being erected in George-street, Ryde, and is to consist of a number of classrooms for study, with a public hall in the centre. For the occasion the street was decorated, and from the poles and planks of the building were flying the English and German standards.

St. Thomas's Hospital.—A statue of Her Majesty has been conveyed to St. Thomas's Hospital from the studio of Mr. Noble, who has been engaged upon it for a considerable time. Her Majesty is represented seated in a chair of state, with one foot resting upon an embroidered cushion. The statue, which is of white marble, will be placed temporarily just within the main entrance to the hospital, and is expected to be uncovered in the course of a few days.

The Church of St. James, Duke's-place.—Under a faculty from the Ecclesiastical Commissioners, and by virtue of the City Improvements Act, the demolition of the Church of St. James, Duke's-place, and the removal of the bodies, have been completed. The monuments, mural tablets, &c., have been removed to the Church of St. Catherine Cree, Leadenhall-street, to which church the parish of St. James is now affiliated.

Value of City Property.—Messrs. Harde, Vaughan, & Jenkinson, of Moorgate-street, have recently sold by private contract the freehold premises, 9 and 10, St. Mary-at-Hill, Eastcheap, and 27, Love-lane, in the rear and in connexion with the same, forming one block, and covering an area of about 3,600 square feet, for the sum of 15,250*l.*

The King's Palace at Kandy.—According to the *Athenaeum*, Mr. W. H. Gregory has, since he has been Governor of Ceylon, restored the King's Palace at Kandy, which is one of the finest things in the East. Some of our readers in India will perhaps tell us who was the architect employed, and how the work has been done.

Novel Tramway Cars.—The propulsion of tram-cars by steam has been already realised in Chicago. A boiler on the car is supplied with steam from a stationary boiler, and the charge is sufficient for a run of three miles, a speed of twenty miles an hour being attainable.

Hastings New Town Hall.—Discussion is going on in the local press as to the possibility of architects giving all that is asked for, for the sum named, 10,000*l.* Who are to examine and decide as to the best design?

TENDERS

For pipe sewer, man-holes, and lamp-hole, Harlech, Mr. Thomas Roberts, engineer:—
G. Williams £120 0 0
Morriss 115 0 0
Jones 115 0 0
Hughes 113 0 0
R. Williams (accepted) 84 0 0

For new warehouse, Snow-hill, for Mr. Bolton, Messrs. John Young & Son, architects, Quantities by Mr. A. L. Buzzard:—
Hill Higgs, & Hill £3,970 0 0
Hart 3,856 0 0
Ashby & Horner 3,848 0 0
Conder 3,796 0 0
Lawrence 3,760 0 0
Brass 3,670 0 0

For new infants' school, for the Llanerchva Upper School Board. Mr. E. A. Lansdowne, architect:—
Parfitt (accepted) £648 0 0

For alteration to shop and premises, for Mr. H. Comley, Commercial-street, Newport, Rhondda, Mr. E. A. Lansdowne, architect. Quantities not supplied:—
Prosser £538 0 0
J. Jones 525 0 0
J. Jones 521 0 0
Williams & Sons 509 0 0
J. Williams 507 0 0
Thomas 465 0 0
Miles 475 0 0
Wittaker 470 0 0
Linton (accepted) 462 0 0

For Beenhaim Court, Hants:—
Reading £7,340 0 0
L. H. & R. Roberts 6,897 0 0
Grooms & Co. 6,700 0 0
Crook 6,700 0 0
Wright, Brothers, & Goodchild 6,625 0 0
Elliot 6,428 13 0

For additions to the Laymer schools, Lower Edmonton Mr. E. Ellis, architect:—
Linnell & Sons £448 0 0
Field & Sons 420 0 0
Vard 419 0 0
Hunt 398 0 0

For stables, Sutton-street, Belvedere-road, Lambeth for Messrs. Eastwood & Co., limited, Mr. George Judgson, architect. Quantities supplied:—
Shepherd £800 0 0
Holmes 596 0 0
Sharpe & Co. 586 0 0

For converting No. 12, Union-street, Borough, into two shops and dwellin'-houses. Mr. J. R. Furniss, architect. Quantities supplied by Mr. H. Tovey:—
Hyde £697 0 0
Croaker 879 0 0
Harrison 860 0 0
Castle 815 0 0
Lambie 629 0 0
Bush (accepted) 698 0 0

For the erection of three warehouses, Milton-street, E.C. Mr. Coutts Stone, architect:—
Brass £15,083 0 0
Nightingale 14,731 0 0
Little 14,360 0 0
Mark 13,760 0 0
Downs & Sons 13,630 0 0
Lawrence 13,648 0 0
Sewell & Son 13,280 0 0
Bange & Co. 13,145 0 0
Kilby 13,137 0 0
Elkington 12,936 0 0
Crabb 12,750 0 0
Perry & Co. 12,553 0 0
Merritt & Ashby 12,131 0 0

For alterations and additions to No. 539, Kingland-road, for Mr. Evans. Mr. Hart, architect:—
Steele £369 0 0
Crabb 810 0 0
Hayworth 797 0 0

For the erection of engine and boiler-house and shaft, 130, Bunhill-row. Mr. H. J. Hammond, architect:—
Merritt & Ashby £1,025 0 0
Kent 1,015 0 0
Moreland & Nixon 988 0 0
Adamson & Son 897 0 0
Crabb 860 0 0
Hunt 811 0 0

For works to stables and alterations of washhouse, cottage, Willesden-green:—
Grooms (accepted) £2,180 0 0

For the construction of new sewers in Thistle and Thurlow-mews, Brompton, for the Vestry of St. Abbott, Kensington. Mr. James Broadbridge, surveyor:—

Thistle-grove. Thurlow-mews.
Harris £1,694 0 0 £164 0 0
Crockett 1,670 0 0 142 0 0
Mears 1,488 0 0 145 0 0
Wignmore 1,400 0 0 160 0 0
George 1,278 0 0 140 0 0
Felltham, Brothers, gross, £1,947.

For alterations, additions, and repairs at No. 7, end-road, St. John's Wood, for Mr. Christopher B. Mr. Wm. Ward, architect:—
Spencer £900 0 0
Benstead & Sons 765 0 0
Braid, Joking, & Co. 647 0 0
Garrod & Smith 647 0 0
Higgs (accepted) 695 0 0

The Church of St. John's, Horselydown.—Sir, I were supplied for your issue of last week with erroneous list of tenders for the above. I hope you will insert this, as it could not possibly be an error you will see by there being one left out, viz.:—
Phillips £594 0 0
Stephens 470 0 0
Brighton 465 0 0
Pitman & Cuthbertson 444 0 0
Mansfield 286 0 0
who sent an amended tender something below the above and was accepted; a fact which, together with the supplied to you, speaks for itself to at least
ONE OF THE CONTRACTORS.

TO CORRESPONDENTS.

J. R. (we do not propose to print the remainder of the paper to)—Bristolian (we do not pretend to give an account of all the proceedings of the British Archaeological Association in Bristol reports will doubtless appear in the "Transactions" of the Soc. F. E. T. F. C. C. G. R. A. H. T. A. B. J. D. H. W. C. H. F. J. C. C. J. I. G. R. W. M. O. W. H. D. S. J. R. G. H. M. A. H. V. G. M. V. R. E. F. J. W. F. J. R. D. T. J. H. J. C. G. W. F. G. C. C. H. R. M. H. W. T. A. T. B. R. E. A. I. H. R. (shall be the usual).

We are compelled to decline pointing out books and addresses.

All statements of facts, lists of tenders, &c. must be accepted by the name and address of the sender, not necessarily publication.

Note. The responsibility of signed articles, and papers, public meetings, revs, of course, with the authors.

CHARGES FOR ADVERTISEMENT.

Six lines (about fifty words) or under 2*s.* 6*d.*
Each additional line (about ten words), 6*d.*

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to all in any part of the United Kingdom at the rate of 1*s.* per copy in advance.
Half-yearly stamps accepted for amounts under 5*s.* Any larger amount may be remitted by Money Order, payable at Our Office, King-street, Covent-garden, W.C. to DOUGLAS FOURDRING.

Advertisements cannot be received for the current week's issue later than THREE o'clock on THURSDAY.

The Publisher cannot be responsible for communications left at the Office in reply to advertisements, and strongly recommends that ONLY should be sent.

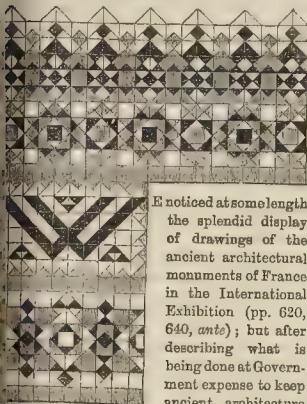
NOTICE.—All communications relating to Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent Garden. All communications should be addressed to "Editor," and NOT to the "Publisher."

PERFECT DAYLIGHT.
WHY BURN GAS?
CHAPPUIS' REFLECTOR.
IMPROVE NATURAL DAYLIGHT AND SUPERSEDE GAS.
P. E. CHAPPUIS,
PATENTEE AND MANUFACTURER
No. 69, FLEET STREET, LONDON.

The Builder.

VOL. XXXII.—No. 1647.

French Public Works: International Exhibition.



Noticed at some length the splendid display of drawings of the ancient architectural monuments of France in the International Exhibition (pp. 620, 640, ante); but after describing what is being done at Government expense to keep ancient architecture in repair across the

channel, there is room for a few words on the work, practical and artistic, which is tried out under official direction, and which is pretty extensively illustrated in the room adjoining the French Court, near the entrance in Exhibition-road.

The collection of drawings and models in this room, though at first sight rather a medley, is very systematically arranged. To begin with, there are maps of Paris, showing the old plan of twenty or thirty years ago, and the alterations in the way of new lines of thoroughfare and new buildings. Old Paris is further illustrated by histories and collections of photographs which are among the volumes displayed on the desks round the room. The basis thus laid for a systematic attack on that varied series of practical schemes included in France, under the general term of *Travaux Publics*.

The first department of work illustrated here is that of the *Voie Publique*, in that portion of studies comprised under the head of *Service Vial*. An elaborate partly sectional model of a bridge by which the Boulevard de Port Royal carried across the Rue de Louvaine, exhibits a construction of wrought-iron transverse girders carrying longitudinal cast-iron joists and brick piers on which the roadway is formed: with the attempt at ornament, the visible part of wrought-iron work is so treated as to produce a pleasing effect, a result which would be never attained by engineers, perhaps, if they thought only of the constructive treatment of the material, and did not attempt to engraft architectural details arbitrarily upon it. The same model, of part of the bridge in course of construction over the Seine at Suresnes, contains more of the conventional engineer's aesthetic appearance, in spite of the rampant piers on pedestals which flank it. The principle of this bridge is apparently in the same as that at Courbevoie, constructed in 1867 by the same eminent engineer (M. M. L. and), and of which a volume of views, plans, and calculations is on the table. Some observations in relation to this latter work are not without general interest. "It appears," says the report, "very nearly to which crosses the Thames opposite the monument-house at London, and consists of an assemblage of cast iron and wrought

iron, so distributed that each metal shall perform its work under the best conditions for its peculiar power of resistance." The semi-elliptic form of arch was adopted, as giving height enough at the springing to avoid obstructing the service of the towing-path (an integral matter apparently in Seine navigation), without necessitating a great rise at the crown: a form adopted in the Westminster Bridge also, as giving more play for the passage of the steamers. An essential distinction between the two works, however, is, that in the Courbevoie Bridge the iron arches, three in number, do not abut against the stone piers, which are only carried up to the springing-line, where the cast-iron haunches of the arched girders rest upon the top of the piers, and are tied down (*amarrees*) into them by great bolts going six metres deep into the masonry, and finally traversing a template of cast iron, which distributes the strain. The centre portions of the arch between each pier are formed of wrought iron, it is to be presumed, on a truss principle, as they are referred to as being (in part, at least) in tension, but the description is not quite as clear as might be. The cast-iron springings, where they adjoin each other on the piers, are firmly connected by an *intermédiaire* of cast-iron framing, to which each is bolted and riveted. "Thus the three great arches form one sole piece"; and, in fact, it is evident that the French engineer's bridge is really a great beam of compound construction, resting on piers, at certain points, but not abutting on them, and having, in fact, little of the arch about it save the form. We should have certainly preferred in such a case to have seen the external design of the bridge more indicative of its real construction, and not have seen the form of continuous and homogeneous arch given to what are, in fact, immense brackets. A more practical question is as to vibration in such a continuous bridge. In Westminster Bridge, where each arch is an isolated construction between solid abutments, the vibration on the two large centre arches, even from the passage of a light vehicle such as a Hansom cab, is very considerable; and we should imagine this would be intensified in a continuous iron construction such as that described; and that anything which multiplies the points of bolting and riveting does not tend to permanence. Indeed, in the model of the later Sarrems Bridge, we observe that on one half of the pier the *intermédiaire* is formed with masonry arched so as to leave a pier opposite each rib; the other portion is shown with iron framework as described in the Courbevoie Bridge. A photograph of the latter, taken underneath the bridge from the top of one of the piers, shows a remarkable perspective view of the arched girders.

Another bridge by the same engineer, that at Billancourt, of which a monography is given, exhibits "an attempt at some means of modifying the harsh aspect which is offered by a bridge on the principle of a straight beam, in comparison with an arched one." The bridge is, in fact, a lattice girder, but the soffit of the lower beam is in the form of an arch of slight rise; or, in other words, the beam is deepened as it approaches the piers, so that these are lower than they would be for a straight-lined girder. This is one advantage claimed in the report:—"This new form of arch, given to the lower part of the girder, justifies itself by the economy which results from the lowering of the piers. . . . This lowering of the piers permits also much saving in the embankments at the junction of the bridge with the shore, and in certain circumstances where the banks are bordered by mansions, this lowering would also have the economic result of reducing the indemnity to be paid to the proprietors of the houses, whose view would be less intercepted by the works than on the ordinary system." On grounds of

appearance it is maintained that this form of girder repeats agreeably the curved line formed by the bell-like shape (*forme ovale*) in this case given to the piers. We seldom hear even as much "aesthetic" as that expended on a bridge. A book containing small diagrams of all the bridges constructed for the "Service Vicinal," by M. Legrand, furnishes remarkable testimony to the energy and resources of the engineer to the department.

The *Travaux d'Architecture* include a good many of the recent ecclesiastical designs of Paris and elsewhere, which serve to show, among other things, how far more at home are the French architects in Classic, or something nearly related to it, than in Gothic architecture. The two or three Gothic churches exhibited here are in the extreme of "bride-cake" style, adorned with network of tracery and forests of pinnacle spikes; and in spite of the existence in France of so much of the finest early Gothic in the world, this late and florid work seems the only phase of the style to which the modern French architect turns, if he essays Gothic at all. Much use is made of hints and motives from early Gothic carving, but it is almost always by architects who are practicing a modernised Classic style, into the ornament of which they work something of the manner of early Gothic. Among the Classic churches here is the very successful composition of the *Église de la Trinité*, by M. Ballu, a drawing of which appeared in one of the last anniversaries of our Architectural Exhibition, previous to its decease; and which is represented here by many drawings and a model. The general composition of the front, with its picturesque lantern, ought to be an object of interest to the advocates of the new "free classic" school among us. The Church of St. Augustin, by M. Baltard, is a fine composition on a very peculiar plan: the aisle walls of the nave follow an oblique line on each side parallel to the boundary of the land at that point, so that the aisles, which at the east end of the nave are of about ordinary width in proportion, run down to nothing, and are merged in the main wall of the nave by the west entrance. The external effect is better than might have been expected; the eastern part of the plan expands into a square rather wider than the total of nave and aisles, and covered by a large dome with four angle cupolas based on octagons at the angles of the plan. The composition is a very striking one. M. Ballu's two churches of Romanesque Gothic type (St. Ambrose and St. Joseph) are not so successful as his more Classic work; they show want of feeling for the style; the latter is the best. M. Leguoux's *Notre Dame de Clignancourt* is interesting as reminding us rather, in character and treatment, of some of the plainer of Wren's churches; as a piece of suitable and unpretending design it is pleasing. Two Jewish synagogues, that in Rue de la Victoire, by M. Aldrophe, and that in the Rue des Tournelles, by M. Varcollier, seem to indicate that there is a recognised method of treating the "Temple Israélite" among the French architects; for the peculiar composition of the front, with a raised semicircular gable in the centre over a concentric circular window, is the same in both of them. The fine collection of drawings and photographs of the Church of St. Bernard de Montrouge, by M. Vaudremer, deserves a mention; the treatment of interior detail is admirable, and much of the exterior, but the tower is a failure. We far prefer, however, the almost heavy simplicity of such a building to the florid exuberance of M. Magne's Gothic church which hangs next to it.

Of the modern municipal buildings illustrated here there is not much that is remarkable. We are reminded by drawings and photographs that the Palais de Justice is in its main block a very successful translation of Greek architecture into French. The treatment of the windows is par-

ticularly good, and is as much borrowed from Gothic as Classic; yet there is nothing incongruous in the way the details are combined. The architects were Messrs. Duc, Domme, and Daumet. The prison, Rue de la Santé, by M. Vaudremer, may rival Newgate as a specimen of characteristic prison architecture; the radiating plan is adopted for the main part of the buildings. The *Mairies* of France, as illustrated here, do not show any high average of architectural interest; nor can the *Halles Centrales* be noted for anything worth calling architectural treatment in detail, though the general plan and arrangement may be excellent. The new buildings for the *Collège Chaptal*, by M. Train, are, however, of much more than average merit and interest; the style is not marked very strongly, but contains touches of Classic Italian, of Lombard, and of Gothic, combined, on the whole, successfully and harmoniously; the materials are brickwork (used chiefly in the lower portion of the walls in broad bands of two tints), and stone; the roof is tiled. The general effect is both original and satisfactory, and photographs of the details, on one of the turn-screens in the room, quite bear out what the drawings seem to indicate of their excellence. The other scholastic architecture here does not count for very much, except as regards the comparative systems of planning, which may be studied in one or two volumes containing many different plans of recent schools, and which may be suggestive to those much employed in school planning.

"Monographies" of four of the Paris theatres find place here; the *Châtelet*, *Lyrique*, *Vandœuvre*, and *Gaité*, accompanied by many drawings and views, and in the case of the *Vandœuvre* by a model in plaster. The admirable manner in which the entrance-hall at the angle has been treated by M. Magne, the architect of the *Vandœuvre* theatre, both in regard to plan and architectural effect, will be remembered by all who are acquainted with the building, and is worth the study of those who are not. The sculpture of the front is appropriate and well placed. In the way of theatrical decoration there are on one of the screens photographs from the decorative paintings of the *Gaité*, mostly by M. Jobbé-Duval, which are above the average of theatrical embellishments. The screens contain numerous photographs from paintings and sculpture executed for churches and public buildings, especially the former, giving some idea of the extent of employment which French artists find in works of this nature. An album of photographs from the wall and ceiling paintings of the *Galerie des Fêtes* at the *Leuvre*, by M. Lehmann, will give to some persons in England a new idea of the powers of that (as we know him in our exhibitions) rather hard and artificial painter. These numerous designs were all made against time, in the course of ten days, the whole having to be finished in ten months, for the opening. The artist, in exhibiting the photographs, thinks it well to record the circumstances under which the designs were made, as accounting for their improvised air. This is not too apparent, however; and the variety and general excellence of the designs thus hastily sketched out show a remarkable readiness and command of his powers on the part of the artist, as well as much variety of fancy.

Under the head of *Edifices Hospitaliers*, we find here working drawings of four large establishments of this class; the *Hôpital de Ménilmontant*; *Hôpital Maritime de Berck-sur-Mer*; *Asile d'Aliénés de Vaucluse*; and *Hospice des Incapables* at *Ivry*; the architects being M.M. Billon, Lavezari, Lebouteux, and Labronet, respectively. They have not soared beyond the merely utilitarian in design, perhaps were not allowed to do so; at any rate, our St. Thomas's Hospital, if not very remarkable in architectural treatment, is palatial in effect compared with any of these French edifices. The Hospital for Incapables is absolutely mean in appearance, and suggests nothing so much as a terrace of lodging houses at a watering-place, so far as the buildings are concerned; the approach and the courts seem to be well laid out; the latter are unusually extensive in proportion to the building, and each with a fountain in the centre. All the four establishments are laid out on the system first commenced in France, and urged into practice here in modern times by the *Builder*, of separate pavilions with open courts between, and connected by covered corridors or colonnades along the other two sides of the courts. In all of them the proportion of the court area to that of the buildings appears to be larger than in our great establishment at Westminster Bridge. The

lunatic asylum at Vaucluse, apparently very picturesquely situated, is better in point of architecture than the building at *Ivry*; its plain solid design and long red-tiled roofs look suitable and genuine, if rather dull. The Maritime Hospital shows more of characteristic treatment architecturally than the others, though in a simple enough way. If these are fair specimens of hospital architecture in France, we are, in our best works, beyond our neighbours in that style of building, and have learned the suitability of making hospitals less like barracks or prisons than these.

The six premiated designs for the restoration of the *Hôtel de Ville* of Paris are hung here; the approved design, by M.M. Ballu and Deperthes being shown in a large tinted elevation, the others by photographs. The approved design appears to us to keep, in the new portions, less to the feeling of the old building than that of M. Vaudremer (4th premium), in which the wings and the total effect have much more of the character of the original building; far more than in the 2nd premium either, where the wings are too much like modern Parisian architecture tacked on to the old centre. Of course, considerations of plan may have influenced the award; but in the selected design the antique flavour seems to be extracted from the building.

The drawings and models exemplifying the work of the *Direction des Eaux et Égouts* form an important part of this collection, and illustrate a class of work which is not carried out at present to nearly so great an extent in this country, though there is no saying what may become necessary and be achieved, if the water-consuming powers of our great towns go on increasing, as seems to be the case, faster than the supply from present resources. The work undertaken under this department includes very extensive operations in the "derivation" of the waters of streams into places where they are at present more wanted, occasionally into other streams which are too largely drawn upon. The "derivations" of the *Marne* and of the *Vanne* are largely illustrated here, by working drawings and photographs of the aqueducts and mills used in the distribution of the waters.

We have a model of the *usine électorale*, or mill for raising the waters of the *Marne* into the Canal de l'Ourcq, at *Tillardou*; and a larger model of the similar more extensive apparatus at *Saint-Maur*. The numerous aqueducts constructed for the waters of the *Vanne* Valley, are, some of them, very picturesque specimens of engineering work; especially the one in two stories of arcades at *Guy*. The photographs of these structures are very interesting, as showing the various aspects they may assume in a landscape; though it would have been quite possible to have made more of them, architecturally, than has been done. As far as the models (which are not working) explain themselves, it would seem that the *électro* mills are constructed on the principle of making the water raise itself, by acting on a large water-wheel, which in turn sets the pumps in motion. We have also in this department one or two beautifully executed models illustrating the apparatus for cleansing the drains. The *wagon à Vanne*, which on the card affixed is translated "wagon with water-gate," appears to be a wagon traversing the main sewers on rails, with a swing-gate to let down underneath it, and corresponding in curve with the bottom of the drain; no explanation is given of the *modus operandi*, but from the construction of the model we conclude that the "gate" is intended to act as a temporary dam while the portion of the channel immediately below is cleared of its *débris*, by throwing it into the wagon. There is another model of a boat with a swing-gate on the same principle, intended perhaps to operate in canals or in the very largest sewers, and with special apparatus for mooring it to each side so as to be completely stationary during the cleansing operations. If the invert of the Paris sewers are so regularly constructed as to be capable of being fitted with a movable dam in this way, practically watertight wherever applied, one must form a high idea of the prevalence of system even in these commonplace matters. Among the models here is also one showing a section of the two embankments of the *Seine* and of the *égout d'Alma* for passing the waters of the intercepting sewer from the left to the right bank, along the bed of the river. This is an admirably finished model, showing the arrangement of the quays, subways, &c., on each side of the river. Indeed the manner in which the models here are got up is remarkable for minute correctness. There is a

large one of a *Magasin de Mobilier Scolaire*, which every possible article of school furniture is shown exactly modelled and arranged in separate rooms and departments; and the model of a drawing school near it is equally minute and realistic in finish. If the specific use of such representations be questioned, they at events furnish evidence of the interest felt in their work by a people who are at such pains and expense to secure its effective illustration in a foreign exhibition.

The cards of description attached to the various classes and objects are printed most both in French and English; it might be interesting, as a small point, to know on which side of the Channel the translations into English were made; they afford evidence of the work of the schoolmaster somewhere. *Directe d'enseignement primaire* is rendered "Direct of the first teaching"; there would seem to be one direction in which it has not got yet *Direction des Eaux et Égouts* is "Direction of waters and sinks"; and *Usine électorale* *Eaux de la Marne* becomes "Mill rising the water of the Marne." This last variation induces us to think that these are French attempts at English, and that they furnish another to add to many instances of the inability of our otherwise brilliant neighbours to understand any language but their own.

AS TO THE CONSTRUCTION OF BILLIARD ROOMS.

THE attentive student of the drawings which appear in our pages of mansions and country seats will doubtless have observed that the billiard-room is now scarcely ever absent. The point of fact, it has become quite as great necessity as the conservatory. Nor can we wonder very much at this. The game, as have previously pointed out, combines all the requisites of an intellectual amusement with accompaniment of physical recreation; it having emerged from the exclusive association of gamblers and pickpockets, it has taken place along with chess and whist as a prime staple of our English indoor games.

If we were guided exclusively by etymological considerations, we should at once pronounce the game to be French. But Monfalcone, of the best of the French antiquaries, held it to be of Italian origin; although it is quite certain that it reached England through France, following well-known allusion to the game, Shakespeare, in "Antony and Cleopatra," unquestionably an anachronism:—

"Attendant.—The music, ho!
Cleopatra.—Let it alone: let us to billiards."

But it serves to show that the game was known in England when Shakespeare wrote; moreover, it supplies some evidence of the information in which it was held. Cuthbert Bellamy illustration (*vide his* "Book of Beauties of Cleopatra playing at billiards, dressed as Girl of the Period, and drawn with that degree of perspective with which we are familiar on the walls of the Egyptian tombs, might be great facility be modernised into a scene in the gardens of Paris, or the fields of Baden-Baden. Billiard-playing in the open air is, of course, purely Continental practice, and depends; Montesquieu would have told us, on the nature of the climate. In this less favoured country, is of necessity, and from the very nature of things, an indoor game. "Billiards," says C. Crawley, in his excellent treatise, "is never pleasantly played as in a country-house, where friends meet friends; and when a game goes as merrily in the morning as it does at night. He also very justly points out that where there are ladies in the house, you never need want of a good partner." "For I have also found that ladies made excellent billiard players—graceful, courteous, and invariably good-tempered!"

The use of the billiard-cue is, for indoor, "what the spade and the croquet mallet are to the garden and the lawn." There are cricket and football, racing, hunting, fishing, and forth open to gentlemen; while for ladies those, at all events, who are not of the "circular school,"—billiards and croquet are also the only games available that combine exercise with amusement. It is believed that as players walk about two miles round the table every hour, which of itself is no contemptible exercise. The use of the cue brings all the muscles of the chest and limbs into vigorous action; while the coincident calculation of exact dynamical ratios, and the estimate of

The intention of these excursions would of course be misunderstood if any one regarded them as mere parties of pleasure, set in motion by a mere desire to see the country, and those monuments that are matters of general curiosity, with the accompaniment of merry good fellowship. When a batch of excursionists have filled their sketch-books and note-books with studies and notes and measured drawings, and seized the fleeting moments to bring the cymagraph into

Strut, in his "Sports and Pastimes of the People of England" (vol. II., p. 361), tells us that in the beginning of the eighteenth century the billiard-table was square, with three pockets all on one side,—that is, one in each end and one midway between. In the centre of the table was a small arch of wood or iron, and at a little distance behind this a small upright cone, which was called the king.

play, a considerable quantity of solid food must have entered into their economy. But what could better express the purpose of this outing and its aspect to others than a sentence from *Le Moniteur de l'Oise* (Beauvais), in noticing,—as other local journals have done very prettily,—the doings of the party? "Il serait désirable de voir se vulgariser chez nous ces voyages qui sont à la fois un complément à l'instruction et une partie de plaisir."

The admirable sunshine, by none longed for more than by architects on the look-out for effects and the means of producing them, has never failed hitherto. In the gallery of *chefs-d'œuvre*, seen in rapid glances, by many for the first time, under such favourable conditions, the best qualities of the architecture have been forced home on the minds ready for new impressions and prone to analyse them. The transition from vigorous shadows, grandeur, and grace, at the west of Chartres, to the gloom inside, so well in accord with the virile majesty of that unique architecture, is but one instance among others that might be named, of some of the work that may be done by brilliant summer sunshine.

A deputation from the Comité Archéologique de Senlis, the Bishop's representative, and local and Government architects at Beauvais, the intelligent and well-wishing, and in many cases, architecturally well-disciplined curés of churches, all have spent time and energy, shown by their personal presence and the minuteness of their explanations, their anxious desire to be of service. Nor should the architect who has the control at Mantes be left without special mention, nor M. l'abbé Lebeurier, the author of careful notices on Evreux Cathedral, and the enthusiastic, eloquent, exponent of its history and its treasures of stained glass to an appreciative audience.

It may be of service to some student who wishes to give himself an architectural holiday, and a set task in the course of it, to note that the church of Champagne is now under repair. The fine tower—by far the finest in the valley of the Oise (a magnificent Transitional work)—with strength and energy in its outlines and details, is now covered with scaffolding, and, it is to be feared, will come out of these surroundings shorn of its antiquity, perhaps of its authenticity as a monument, and some of its beauty as a work of architectural design. Disappointing, for various reasons, to this party, it may be an opportunity for some one wishing for a near approach and measured drawings.

Some detailed notice of all the places visited will be given when the course is run to the end. Soissons, August 24.

NEW WINDOW IN THE GUILDHALL.

The easternmost window on the south side of the Guildhall has been newly filled with a stained-glass design, presented by Mr. Deputy Edward VI. on his way to the coronation at Westminster, passing Saddlers' Hall, Cheapside, on the 19th of February, 1847, and the master and wardens of the company, in their robes, occupying the front of the hall. A tolerably realistic representation of the old Cheapside architecture forms the background here, and is as successfully given as such a thing can be in stained glass; the horse,—the cognisance of the company,—is conspicuous on a signboard in the centre of the composition, and we may presume that the worthy donor is a member of the Worshipful Company of Saddlers. The lower part of the window shows Sir Henry Picard, knight and merchant vintner, of Gascoigne, who filled the office of Lord Mayor in 1355, receiving Edward III., of England, John of France, Magnus II. of Denmark, and the King of Cyprus, at Queenhithe, previously to entertaining them at the mansion in the Vintry, in 1368; in that is to say, it would, we believe, show all this, if it were not unfortunately almost entirely obscured by the statue of Pitt in front of the window, only the upper half of which, therefore, can be fully seen. The monumental effigies in the Guildhall were designed before stained glass for the side windows was thought of, and are not a little in the way of the glass-stainer's work; and they certainly do not gain in effect by being furnished with a background of strong colour.

The arms of the donor and of the Saddlers' Company find place in the design, which, as we learn from the daily papers, "has been generally admired," and which is certainly a satisfactory contrast to the extraordinary Apocalyptic

looking subject which in the next window furnishes a very incongruous background to the statue of Lord Mayor Beckford. The figures are drawn and composed with more care than is usual in stained glass, and the colour effect of the upper half is satisfactory on the whole, though it looks somewhat raw and pronounced beside the more subdued tones of the large east window adjoining. The lower portion, as far as we can see it, appears inferior in colour design at all events; the attempt to indicate the sea is as unfortunate as such attempts always must be in stained glass. The only one of the smaller windows in the Guildhall which shows anything like a genuine and satisfactory treatment of the stained glass, both as to colour and design, is the heraldic window opposite the new one (and also half hidden behind the statue of Chatham), containing the V and A cipher. This window is both harmonious in colour, and suitable in its treatment of conventional ornament without relief, to the conditions of stained glass; and is, therefore, entirely satisfactory as far as it goes: though, in comparing this with a window in which figures form the principal portion of the design, it is right to remember that figure-drawing, even moderately good, is a higher and more difficult branch of art than ornamental design. But whether it is possible to execute figure-subjects in a really satisfactory manner in stained glass is still an open question; and none of the present Guildhall windows will prove the affirmative.

The new window is the work of Mr. W. Ramsey, of Farrington-street, and is creditable to its designer, considered from the ordinary point of view of stained glass design; on the whole, indeed, rather above the average.

Coming out of the Guildhall, the reader who has not already noticed them may find in the passage to the City Library the fine collection of engravings from the works of Vouvrains, by Moirau, Cochin, and Mathieu, presented by Mr. Nissen, and hung in their present position since the reopening of the Library. They are worth attention.

FRANCE RUINED ON THE STAIRCASE.

The last paroxysm of that curious fever for reform that seized upon France at the end of the war, is a determined Parisian movement against staircases. A legion of social doctors are using very strong microscopes to discover the causes of the national degeneration, and this is the last explanation of Sedan that has been found—the Frenchman mounts too many staircases in his life. The exercise has weakened the race, and it is adduced in proof of this statement that the health is better, the stature higher, in those departments where the houses are composed at most of three stories. M. Fousagrives, a popular scientific writer, is one of the chief promoters of the movement, which is about to have an association, a committee, secretaries, officers, all the paraphernalia of a modern crusade. He has written three or four chapters on the subject, advocating the general adoption of mechanical lifts of a cheaper and simpler pattern than those actually working in many of the new houses in the western quarter of Paris, but giving some practical information concerning the danger and disadvantages of the ordinary Parisian staircase. His remarks are not uncalled for. Whoever is familiar with the interior of un-Hausmannised Paris must have retained some vivid recollections of the perilous ascents he has been compelled to undertake. Except in the most modern houses the staircase—which is practically the street in Paris—appears to have been an after-thought of the architects. The space has been grudgingly bestowed; and as for light, some of the most aristocratic hotels of the Saint-Germain quarter are pierced by a narrow shaft, in which it is difficult to read a letter at noon. In the best houses of the Boulevards, the escalier de service, or servants' staircase, is dark and narrow as a subterranean spiral, and by this way furniture, luggage, the heaviest and most cumbersome loads,—are introduced into the house. Consequently, scarcely a day passes without some accident happening to porters, water-carriers, or tradesmen. The movement of which M. Fousagrives is the head, has for object the generalisation of simple lifts, and the procuring of Governmental intervention in the matter of staircases. The crusaders desire that every landlord and builder be compelled to observe certain rules in the construction or alteration of

staircases. The landing-places should be spacious enough to admit of three or four steps being taken on their surface; the staircases should be lighted laterally, a vertical light in most French houses being only advantageous to the topmost flat. The height of each step should never exceed sixteen centimetres, the width should be of twenty-five at least. The length should never be less than one metre fifty. Metal and waxed wooden stairs should be carpeted. In the latter portion of his programme, M. Fousagrives quotes a curious observation of Louis Lavoisier, a medical writer and doctor to the King of 1678. Lavoisier considered that instead of a flat surface, or an outward incline, there should be in each step a gentle drop inwards, so that the ball of the foot be always lower than the heel. This lessens the tension on the posterior muscles of the leg. The same author advises that the edge of each step be of a lighter colour than the step itself.

THE BRITISH ASSOCIATION.

THE forty-fourth annual congress of the British Association for the Advancement of Science opened last week, on Wednesday evening, in Belfast, under the presidency of Professor Tyndall. Of the forty-three meetings which have taken place in connexion with the British Association, four have been held in Ireland. In 1855 the Association met in Dublin, under the presidency of Dr. Lloyd; in 1848 Cork had the privilege of doing honour to its members, and upon that occasion Lord Rosse presided; in 1832 the Association sat in Belfast, under the presidency of General Sabine; and in 1857 the Irish metropolis had the renewed honour of welcoming the Association, when Dr. Lyle again was president.

The President's address was delivered in the evening in the Ulster Hall, to a very large and fashionable audience, many of the ladies being in evening dress. The hall is capable of holding 2,000 persons, and was comfortably filled, and all its architectural features were set off by tropical displays of flags and folds of crimson cloth, the few in ensemble was of a brilliant description. Professor Tyndall claimed that religious theories, schemes, and systems, embracing notions of cosmogony, or which otherwise reached into the domain, must, in so far as they did so, submit to the control of science, and relinquish all thought of controlling it. Acting otherwise had proved disastrous in the past, and was simply fatal to-day. Every system which would escape the fate of an organism too rigid to adjust itself to its environment must be plastic to the extent that the growth of knowledge demanded. In closing, Professor Tyndall said he had touched on debatable questions, and gone over dangerous ground, partly with a view of telling his audience that through them the world, that as regards those questions, science claimed unrestricted right of search. It was not to the point to say that the views of Lucretius and Bruno, Darwin, and Spencer, were wrong. With that statement he should agree, deeming it indeed certain that those views would undergo modification. But the point was that, whether right or wrong, scientific men claimed freedom to discuss them. The ground which they covered was one made good through tribulation and anguish, inflicts, and endured in harder times than theirs, but resulting in the immortal victories which science had won for the human race.

Professor Tyndall, we may here observe, has raised himself to a first position in the scientific world. Like many other investigators and eminent men who have materially contributed to the well-being of mankind by their discoveries, he is indebted to his native talent and untiring industry for the distinction he has achieved. He was born, says the *Weekly Scotsman*, at Leighton Bridge in 1820; and at the school in his native place he first was initiated into the mysteries of mathematical knowledge. He early acquired great taste for controversial discussion, and was, with avidity such works as those of Tillotson and Chillingworth. In 1839 he joined a division of the Ordnance Survey, and subsequently for some years he was engaged in engineering work. Afterwards, he became a teacher in a Hamshire college, where he made the acquaintance of Frankland, who like himself subsequently rose to fame. Leaving England, Tyndall entered as a student at the University of Marburg, where he lived frugally, studied hard, and made great progress in the scientific studies which some time previously he had begun to pursue in

a most systematic manner. To Carlyle, Emerson, and Fichte, Dr. Tyndall has publicly expressed his indebtedness at this period. They made him a practical worker. Professor Knoblauch, whose researches on the subject of radiant heat had made his name well known in scientific circles, was then at Marburg; and Dr. Tyndall had then the pleasure of gaining his friendship. In 1849 they commenced a joint investigation of the entire subject of magnetic action, the results of which were afterwards published in the *Philosophical Magazine*. Returning to England, Dr. Tyndall became acquainted with Faraday, and in 1853 he was elected Professor of Natural Philosophy in the Royal Institution of Great Britain, and in that position continued to pursue his researches, giving to the world at intervals papers on "The Transmission of Heat through Organic Structures," "The Vibrations and Tones produced by the Contact of Bodies having different Temperatures," and "The Nature of the Force by which Bodies are repelled from the Poles of a Magnet." In 1856 he went with Professor Huxley to Switzerland to investigate as to the structure and motion of glaciers, and a joint paper was subsequently published on the subject. A new phase of his researches on radiant heat was disclosed in a volume which he published in 1862, entitled "Heat as a mode of Motion," and in it, as in subsequent papers and books, he unfolds the relation between radiant heat and gaseous forms of matter, as also the attitude of radiant heat in its relation to molecular structure. Dr. Tyndall's fame as a popular teacher and lecturer is also well known. He is a member of the Royal Society, and of many other British and foreign scientific institutions.

The sittings of the various sections commenced on Thursday morning, when four of them found accommodation within the walls of Queen's College, namely, those for mathematical and physical science, chemical science, biology (with subsections for zoology, anatomy, and anthropology), and mechanical science. Sections for economic science and statistics, and for geology, held their sittings in the Methodist College, and that for geography in the Presbyterian College. The weather continued fine, but the heat somewhat oppressive. Already nearly 2,000 tickets had been disposed of by the Association. The number of people attending the meeting was larger than was expected. It is perhaps not generally known that when town undertakes to receive the British Association it has to raise a fund which will cover the expenses connected with the meeting. The 11. subscriptions of the members and the 11. admission tickets issued to ladies and associates all go to make up the fund from which grants in aid of scientific researches are annually made. For the last twelve years the sums granted have never amounted to less than 1,000. each year, so that those who merely attend the meetings to hear the savants and get some information and amusement help on scientific work with their money. There is no doubt that desire for amusement attracts a very large number, and it is a frequent remark of *habitués* at the meetings that nowhere can more amusement be had for 11. than at a British Association meeting. Wherever the meeting is held all the places of interest in the town and neighbourhood are thrown open. Over 600 ladies this year had taken tickets at the opening, but the number of foreigners present was unusually small.

The section devoted to Economic Science and Statistics was presided over by Lord O'Hagan, the ex-Lord Chancellor of Ireland, the meetings being held in the Methodist College.

Dr. Grimsshaw read an interesting paper on "Sanitary Legislation and Organisation,—its Present State and Future Prospects." He argued that the present requirements were a codification, consolidation, and amendment of the existing sanitary laws, uniform authorities without clashing of jurisdiction, convenient areas of administration with easily workable sub-districts, complete executive organisation, constant supervision by the central authority, security for a certain amount of independence for the local authorities, and that all sanitary law should be, compulsory, except certain permissive powers granted to the central authority.

Among the other papers was one by Dr. McCormack, in reference to the reclamation of the Portine Marshes; another by Mr. Botley in reference to workmen's dwellings from a commercial standpoint; and a third, by Dr. R. Oton, on the teaching of hygiene in Government schools. The section-room was crowded

throughout the day by a distinguished and highly appreciative audience.

The Mechanical Section was opened by Professor J. Thomson, C.E., F.R.S.E., who delivered an address on the various subjects of mechanical science and practice. Commencing with railway engineering, he observed that one of the most important topics for consideration was that which related to the abatement of dangers in the conduct of the traffic. Quoting the statistics of railway accidents published by the Board of Trade, he showed that in the three years 1847, 1848, 1849, the proportion of the number killed to the number carried was one in 4,782,000; while in the single year 1873, the proportion was one in 11,381,000; and remarked that it was gratifying to observe that in spite of the increased risks naturally tending to arise through the increased traffic, the danger to the individual traveller was now less than half what it was twenty-six years ago. He then referred in detail to the improvements which had been made in watching, signalling, and otherwise arranging for the safety of trains; and to the progress which had taken place in steam navigation by the introduction of the screw-propeller, the compound-engine, steam jacketing of the cylinders, superheated steam and the surface condenser.

The general appearance of things on the first real working day enables those who can read the signs of the times from experience to make a forecast as to the remainder of the British Association meeting. The general opinion, so far as could be gathered, was that the Belfast year would be hereafter remembered rather for its pleasant serenity than for any exciting discussions or sensational papers. To those who regard the Association as a genuine instrument for the advancement of science, nothing could be more gratifying than the placid atmosphere of all the lectures, and the promise of continued placidity during the rest of the proceedings.

It is well known that large numbers who hold in their tickets the badge of science, roam from hall to hall in search, not of knowledge, but of something novel and lively. The old or rather well-known faces in each section appeared again as they have appeared regularly during these past ten years. But at Belfast the wanderers are in rather unwonted force, and the increase is caused by an unusual number of ladies. In the Botanic Gardens, close by the college, there was a grand flower show, with military music, sunshine, and premeditation.

The *soirée* in the evening, in the Ulster Hall, was a well-arranged affair, and a success in every way. The building was originally designed for a concert-hall, and for that purpose has been provided with an orchestra, in which as many as 500 performers have been seated at once. A spacious gallery runs round the two sides and ends, and 2,500 persons can be seated. Brilliantly lighted up, decorated with liberality, and filled with a fashionable company in evening toilettes, the scene was a lively one, and next day everybody congratulated everybody else upon it. It is not an easy thing to infuse into an entertainment like this a tinge of science. The result is too often that the blind leads the blind, and both fall into the ditch. The objects exhibited in the central hall were rather of mechanical interest. Perched high above the heads of the crowd there sat an old woman working a finely-made spinning-wheel, and she evidently felt the responsibility of her position, representing there, as she did, before the greatest intellects of the day, the important linen trade of the province of Ulster. In a side room there was a collection of flint and stone implements, hand-mills, bronze and wooden implements and weapons, and other Irish antiquities. Most of these relics were sent either by the Belfast Naturalist Field Club or the Royal Historical and Archaeological Society of Ireland; and of the Field Club it should be stated that on Wednesday morning it published a book of 820 pages, descriptive of the physical geography, geology, botany, zoology, and history of almost the entire province.

On Friday, in the Geological Section, held in the Methodist College, under the presidency of Professor Hall, among other proceedings, Mr. W. C. Roberts read a paper upon the columnar form of basalt, and stated that experiments in regard to ordinary fire-bricks showed that when expanded by heat they produced the same kind of formation as the basaltic columns which formed the peculiar features of the Giant's Causeway, Rathlin Island, and the Isle of Staffa.

Bees and flowers formed the subject of Sir John Lubbock's address on Friday, and the lecture was therefore in some respects a continuation from another point of view of a remarkable speech by Dr. Hooker on the relations between plants and insects. The audience was not so good as it might have been; for Miss Wallis had been playing at Mr. Warden's theatre, and there have been found some members of the Association who preferred the romantic adventures of Romeo and Juliet, of Melnotte and Pauline, to the sterner demands of scientific inquiry. Sir John's lecture was illustrated by a series of beautiful drawings, sketched by Miss Lubbock, of whom Professor Tyndall, in a few introductory observations, made the warmest mention. There has been scarcely a set address delivered at the meetings which has not largely quoted and adopted Darwin's investigations, and Sir John's formed no exception to this rule. It was Dr. Darwin who was the first to perceive not only that flowers are of importance to insects, but that insects are of importance to flowers. This theory was, roughly speaking, the text of the hon. baronet's sermon.

Three of the sections did not meet on Saturday, namely, Chemical Science, Mechanical Science, and Anatomy and Physiology. The rest had only brief sittings, and they were generally very thinly attended, owing to the greater attraction of several excursions into the country, provided by the Association.

The first excursion left the Ulster Railway Station by an early train for Dunganon, where cars were in waiting to convey the party to Coal Island, a distance of about four miles. At this place there are numbers of coal-pits in operation, also the works for the manufacture of bricks, tiles, and earthenware, from freestone. Several of these works were visited, and the party then proceeded to the works of the Tyrone Coal Mining Company, at Drumglass, about a mile and a half from Dunganon, where the coal-bed was examined, as well as some of the geological features of the district.

A large number of the members of the Association left the Ulster Hall at noon for Castle Espie, situated on the shore of Strangford Lough, about ten miles distant from Belfast. The object of the excursion was to pay a visit to the Castle Espie lime quarries and pottery works. The limestone belongs to the lower carboniferous series. It is close-grained and partly crystalline, and is of a fine red colour, owing to the presence of a small amount of ferruginous clay. It is rich in corals and other organic forms. The limestone lies under a deep bed of boulder clay, which is said to be well adapted for the manufacture of bricks, tiles, and common pottery ware. The surface of the limestone exhibits striae, the result of glacial action. After examining the works, the party visited a kiln worked on Hoffmann's principle, and had an opportunity of seeing some experiments to demonstrate the blasting powers of dynamite.

The excursion day proper, however, was Thursday this week, and for that day the Mayor of Belfast, Mr. Henderson, chartered an ocean steamer, in which to take a cargo of scientific ladies and gentlemen up Belfast Lough, along the coast to Fairhead, Giant's Causeway, and Rathlin Island,—an expedition munificently planned, and a treat seldom within reach of even Irish visitors to the north-eastern wonders of the island.

At Professor Odling's lecture to the working men on Saturday evening, not upon "Potash," as was previously announced, but on "Oxygen," Professor Tyndall, conscious of the hard things said of his inaugural address in Belfast, assured the audience that he was animated only by a most reverent desire to promote the highest truth. On Sunday there were denunciations thundered from some of the Belfast pulpits, it is said, upon the Professor and his materialism, and one of the churches was crowded to hear the Rev. Dr. Watts examine Professor Tyndall's address, as he had advertised his purpose of doing so. The same gentleman invited a congregation to another church on Monday, to hear his paper, which had been rejected by one of the sections, on "A Plea for Peace and Co-operation between Science and Theology."

A Tyndale Memorial.—The *Rock* says that a proposal has been made for the erection, at a cost of 10,000l., of a memorial in St. Paul's Cathedral, of William Tyndale, to whose efforts in the translation of the Bible Englishmen were so much indebted.

DEATH OF SIR W. FAIRBAIRN, BART.

This distinguished engineer has died at Moor Park, Farnham, the seat of his son-in-law, Mr. J. F. Bateman, after a short illness. The deceased baronet, who was one of the most eminent of the group of civil engineers who rose to distinction immediately after the first development of railway communication in England, was born at Kilsno in 1789. He was the son of a nursery gardener; but by dint of perseverance and ability he acquired a high commercial position at a comparatively early age. He appears to have settled at Manchester in 1817, without capital or connexion; but if we may trust the "English Cyclopædia," in partnership at first with a Mr. Lillie, in conjunction with whom his name rose to become one of the leading firms among the machine-makers of that city. At first he had an up-hill battle to fight, but by firmness and energy he conquered all difficulties, and rose steadily, if not rapidly, into an independent position. Mr. Fairbairn's establishment for the construction of locomotive engines and for similar purposes attained to large dimensions, and continues to hold a place as one of the most important works in Manchester. He early displayed strong scientific predilections. About 1850 he commenced some experiments in the building of iron vessels, which he brought to maturity in 1856. In 1855 he established extensive works at Millwall, on the Thames, afterwards occupied by Mr. Scott Russell, in whose yard the *Great Eastern* steamship was erected, and where, in the course of some fourteen years, he built upwards of 120 iron ships, some of which were above 2,000 tons burden. To facilitate the manufacture of these iron-sided ships, about the year 1839 he invented a machine for riveting boiler-plates by steam-power. From his experiments in iron shipbuilding, great results to the railway world arose. It is well known that Sir William Fairbairn claimed a considerable portion of the merit of the construction of the Britannia and Conway Tubular Bridges for carrying the Chester and Holyhead Railway over the Kiver Conway, and between Carnarvonshire and the Isle of Anglesea across the Menai Straits. We received many statements from him on the subject. He aided Stephenson with his practical knowledge in the erection of these bridges, and the engineering profession and the public at large are indebted to him for many important and successful experiments on the strength of iron, iron shipbuilding, the collapse of tubes, &c., and also for a series of papers to the Royal Society, for which he received the Royal medal. He was one of the founders and first members of the British Association, and on one occasion filled the President's chair. Sir William, who was created a baronet in October, 1869, has published several important works on subjects connected with his profession. He was a corresponding member of the National Institute of France and of the Royal Academy of Turin, and was a Chevalier of the Legion of Honour. He had attained the venerable age of eighty-five years. His brother, who established large and successful machine works at Leeds, was mayor of that town on the occasion of the opening of the town-hall there by the Queen in 1859, and was then knighted, but died shortly afterwards. The title devolves on the eldest son of the late baronet, Thomas, who was born in Manchester in 1823, and has distinguished himself by the interest he has taken in questions connected with art. He acted as one of the Royal Commissioners for the International Exhibitions of 1851 and 1862.

Sir William Fairbairn was a fellow of the Royal Society, an active or honorary member of almost every society connected with engineering science in this country, and of many foreign philosophical societies; and had received medals or other marks of recognition for his services to science from most of the crowned heads of Europe. He several times acted as president of the mechanical section of the British Association for the Advancement of Science; was a member of the jury of the mechanical department of the Great Exhibition of 1851, and acted as president of the jury of the corresponding section of the Exhibition of Industry at Paris in 1855. He was created a baronet at the recommendation of Mr. Gladstone in 1869. The greater part of Sir William Fairbairn's acknowledged publications appeared in the *Philosophical Transactions* of the Royal Society, in the Reports of the British Association, and in the *Transactions* of the Philosophical Society of Manchester, in which he filled the chair at Dalton. Some of his works,

however, were also published separately. Among his chief productions we may specify treatises on "Canal Navigation," on the "Strength and other Properties of Hot and Cold Blast Iron," on the "Strength of Locomotive Boilers," on the "Strength of Iron at Different Temperatures," on the "Effect of Repeated Melting upon the Strength of Cast Iron," on the "Iron Plates and Riveted Joints," on the "Application of Iron to Building Purposes in General," &c.

THE DESIGNS FOR THE CHURCH OF THE SACRÉ-CŒUR.

The jury chosen by the Archbishop of Paris to examine the plans for the construction of the new church of the Sacré-Cœur on Montmartre, has awarded the first premium of 12,000*fr.* to M. Abadie.* It does not, however, follow that this architect will erect the building, the Archbishop having reserved to himself the improper right to give the commission to any one he pleases, although not among the laureates of the jury.

A correspondent from Paris writes:—"The first prize has been awarded to M. Abadie, his plan being the most practicable of a collection of singularly wild and extravagant themes. The majority of the artists appear to have had chiefly in view the embodiment of their religious and political opinions in stone. Their designs affect the form of crosses, crowns, thurs, they make liberal use of statues—statues even of Jesus Christ—ornaments which Roman Catholicism has hitherto refrained from placing outside a chapel. The most original plan is, perhaps, that of the architect of the Vandœuvre Theatre. His is an edifice in the French Renaissance style. At each end of the façade is a tower; a flight of steps, with 'stations' for pilgrims, leads to the porch, and a broad gallery surrounds the interior."

WATERING PLACES AND SUMMER RESORTS.

The Registrar General's usual table of the mortality in the seaside and inland towns to which people resort for health in summer, is full of interest, and may be studied with advantage. Up to the date of the latest returns, June 30th, the forty-six places taken collectively experienced a low rate of mortality, and give evidences of salubrity probably not equalled, and, undoubtedly, not surpassed, in the rival Continental watering-places, which, for various reasons, neglect to supply corresponding information.

1. The following places stood first on the scale of salubrity:—Scarborough, Lowestoft, Ramsgate, Brighton, Worthing, Littlehampton, Bognor (notwithstanding three fatal cases of fever), Isle of Wight, Sidmouth, Torquay, Tenby, Beaumaris, Tunbridge Wells, Cheltenham, Malvern, Leamington, and Buxton. In all of these the mortality-rate was below 17 per 1,000, and zymotic disease, except in Bognor, was not very prevalent.

2. The following places stood second on the health-scale, the mortality-rate being 17, and below 20:—Herne Bay, Deal and Walmer, Dover, Hastings and St. Leonards, Eastbourne, Westonsuper-Mare, Aberystwith, Bangor, Rhyl, Bath, Clifton, Matlock, and Harrogate.

3. The following places occupy the lower third place in the health scale; their mortality rate was 20, and under 23. Whitby, Yarmouth (scarlet fever very prevalent), Southend, Margate, Folkestone, Weymouth (scarlet fever prevalent), Exmouth, Dawlish, Penzance, Ilfracombe, New Brighton.

4. The following places were the lowest in the scale of health; the mortality exceeded 23 in 1,000. They are, Lyme Regis, Dartmouth, Llandudno (diphtheria), Southport, and Blackpool and Fleetwood (measles).

The mortality of places fluctuates from accidental circumstances; and it may happen that places unhealthy in spring may be healthy in summer; but the general indications of the Table deserve attention, and the ten years rate will be a further guide to the judgment. There can be no doubt that while the sanitary arrangements of some watering-places are excellent, in others they are open to great improvement; and this is the case especially with those of the low third and fourth class. The description, by Dr. Gwynne Harries, of Margate, which should be one of the healthiest towns on the coast, is truly

deplorable; that was last year. Ilfracombe many ways charming, has recently suffered neglecting, as Margate has done, the warm voice of its medical men—at least, that is the Registrar General puts it.

GAS.

THE recent determination of the Metropolitan Board of Works to solicit Parliamentary power to enable it to compete with the existing gas companies, and to provide an independent supply of gas to the metropolis, has been speedily followed by public agitation in the matter. The establishment of rival gasworks under the management of the Metropolitan Board cannot fail, as the *Morning Post* remarks, most seriously to affect the position of the present gas companies, if not to render it absolutely untenable; there will probably be a loud outcry against interfering with vested interests. But the Act of Parliament upon which they rely will remain in force if competition be permitted, whether the companies are wise in time to consent to introduce the requisite changes in their administration, or whether they compel the Board to extreme measures, it is certain that the time has come when London must be enabled to procure as good and as cheap a supply of gas as is now enjoyed by many second-rate towns, not only in the provinces and on the Continent. Citizens must now see the true meaning of the crafty assurance that the fewer the gas establishments the cheaper could the gas be supplied.

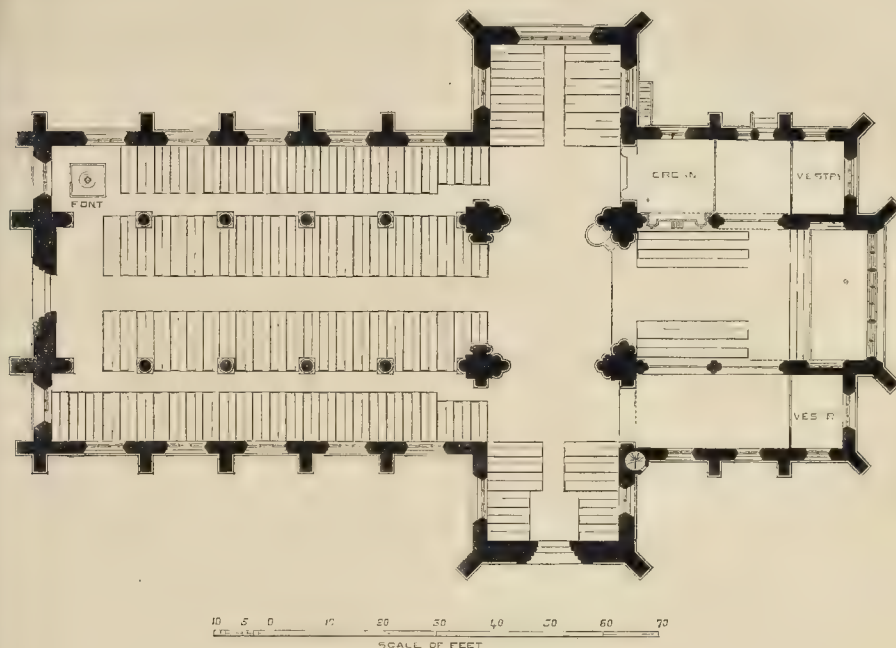
The London Street Tramways Company has specially adapted and fitted one of their new cars with a patent apparatus for lighting it with gas, and a number of scientific and practical men have witnessed the invention. Underneath the car is fitted a strong copper cylinder, 5 ft. in length, and about 10 in. or 12 in. in diameter, which the gas is forced by hydraulic or other means to a pressure of from 40lb. to 100lb. to the square inch, so that the supply is self-contained therein, and is liberated by means of a regulator of simple construction,—the main point of the invention. It consists of a receiving cylinder or case, furnished with a valve connected with a lever hinged at one end near the orifice through which the gas finds its inlet, and attached at the other to the centre of an india-rubber diaphragm, the whole being contained within a suitable air-tight casing, from which the gas is conveyed to the burners in the usual manner. This valve acts automatically, and as the gas flow through in a uniform current regulated to a pressure of 4-10ths of an inch water. The burner is an argand of improved structure, and the light burns steadily, without flicker. The car was fitted by Mr. Bristow, and runs from Euston-road to Nag's Head, Holloway. The cylinder, filled to 40lb. pressure, will last for five or six hours, but longer cylinders can be of course, made to last any length of time required.

NEW COTTAGE BUILDINGS FOR COLLIERIES IN YORKSHIRE.

COLLIERY extensions in Yorkshire are necessitating the erection of large numbers of cottages for the miners. The Pilley Colliery Company, whose works are situated near Sheffield, are sinking a new shaft, which will enable them to turn out the enormous quantity of 1,000 tons of coal per day. The new works will require the employment of an additional number of colliers for whose accommodation the Company are providing, by the erection of dwellings. There are about to build upwards of 100 new women's cottages, and are putting down machinery for the manufacture of bricks for the purpose. Messrs. Grayson, Lowwood, & Co., colliery proprietors, are also opening out a new mine at Lord Wharfedale's estate, near to the Deepdale Station of the Manchester and Sheffield Railway. This new mine will yield both coal and gannister. The firm are about to erect a number of cottages on the spot, and sixty of them are now in course of building.

Memorial Stained Glass.—The memorial to the Scottish artists, George Jameson, William Dyce, and John Phillip, is to take the form of a stained glass window, which will be placed in Oldmarch Cathedral, and will be executed by Mr. Collier, of London.

* See p. 706 ante, for sketch of his design.



ST. PAUL'S CHURCH, BURTON.—Plan.*

ST. PAUL'S CHURCH, BURTON.

Mr. M. T. BASS, M.P., has presented a handsome church to Burton. It was consecrated about three months ago. The foundations were commenced in the year 1865, but in consequence of a quicksand being unfortunately tapped, the whole area of the church had to be excavated and filled in with concrete; in some places, as for instance beneath the tower piers, to a depth of 17 ft. The general level of this bed of concrete is about 7 ft. below the surface of the ground, and the foundations for the walls and piers are built upon it and brought up to the surface in solid brickwork, averaging 4 ft. 6 in. in thickness for the walls, and 12 ft. in thickness for the tower piers. Another layer of concrete 1 in. thick forms the foundation for the cement and tile pavements. The foundations and the laying out of the roads surrounding the churchyard involved an outlay of over 6,000*l*. The church, which is built from the designs of Mr. James M. Teale, architect, of Doncaster, was commenced in earnest by Messrs. Critchlow & Ward, of Uttoxeter, the contractors, in August, 1870.

The general style of the church is Early Decorated, and it consists of nave and aisles, north and south transepts, and chancel and chancel aisles; it is cruciform on plan, with the tower in the centre at the crossing of the transepts. The total length is 144 ft. within the walls from west to east, and 88 ft. across the transepts from north to south. The nave consists of six bays, is 74 ft. in length and 52 ft. 6 in. in width including the aisles (the clear width between the arcading being 23 ft. 4 in.), and 30 ft. in height to the ridge. The roof of Stettin oak is framed with moulded arched principals, the spandrels being filled in with tracery, and is strengthened with heavy wood trusses between all the purlins, and is boarded in with V-jointed boards laid diagonally, covered on the exterior with Coggon's patent felt, and tiled with Staffordshire brindled tiles. The thrust of the roofs is counterbalanced by stone transverse semicircles or buttresses from the back of the nave arcade to the buttresses of the aisle walls on the exterior of the church. The roof principals are carried on clustered shafts projecting from the

nave arcade walls, and supported upon fluted corbels between the spandrels of the arches. The carving of the capitals to the circular shafts of the nave and the label terminations in the spandrels is arranged to represent the characteristic foliage, flowers, and fruit of the twelve months of the year. The clearstory throughout the church, excepting the chancel, is divided into groups of three-light windows, with heavy mullions and cusped heads. The west window consists of six lights, the arch of the west door cutting into the cill; and the tracery consists of a large wheel enclosing four smaller circles as the principal feature. The aisle windows are all of three lights and traceried. The transepts are each 29 ft. in length by 23 ft. 6 in. in width, and of the same height as the nave, with clearstory similar to the nave. The roofs are also similar to the nave, excepting that the arched ribs are omitted with the clustered shafts, the principals being carried on corbels. The north transept window is of five lights and traceried heads, as is also the south transept window, into the cill of which the gable of the south doorway cuts, as in the west window. There are also three-light windows on each side of every transept. At the crossing of the nave and transepts, and beneath the tower, is a large open space 30 ft. by 30 ft., spanned by four richly-moulded arches 40 ft. in height, supported upon large clustered piers, and carrying the tower. The capitals of these and of all the piers, label bosses, and terminations throughout the church are carved with flowers and fruit, interspersed with birds and animals. The symbols of the four Evangelists occupy the interior angles of the tower above the capitals. The tower is open to the church to a height of 60 ft., the lantern above the arches being lit by eight windows with raking cills; the ceiling of oak being plainly square-framed, supported on traceried brackets. The chancel, 40 ft. in length by 23 ft. 4 in. in width, has the roof of the same height as the others, but has also an interior roof or ceiling which reduces the height to 49 ft. above the chancel floor. This interior roof follows the outline of the head of the east window, and is constructed of English oak, moulded and panelled, and every panel filled in with tracery. The principal ribs are supported upon shafts of polished serpentine marble, with carved capitals and corbels. The clearstory windows are similar

to those in the triforium of Westminster Abbey. In the side walls within and above the altar-rail a richly-decorated blank window is introduced, below which, on the north side, is the credence-table, and the sedilia on the south side, both being carved. The reredos consists of an arcading of ten arches, superspanned by five larger arches, all the mouldings being enriched with carving; the spandrels diapered and surmounted by a gabled cornice with floral crockets and finials. The backs of the panels formed by the arches of the arcading are filled in with polished rouge royal marble, and the shafts of the columns supporting the arches are of polished green Galway marble. The base is of polished Hopton Wood stone. The spandrels of the lower arches of the reredos are occupied by medallions by Mr. Earp, of London, representing Our Saviour and the four Evangelists. The east window of seven lights is 34 ft. 6 in. high and 19 ft. 2 in. between the jambs, and consists in the tracery of a large wheel containing ten circles cinque-foiled, with a smaller circle in each side division. The window is richly moulded, and a band of carving, representing the vine, encircles the jambs and head in the interior. The whole of the windows in the chancel are encircled by a band of ballflower ornament. All the steps in the chancel are of polished Hopton Wood stone. The font, situated at the west end of the north aisle, is very massive, and is executed in polished red serpentine marble. The stone pulpit consists of a lower and upper arcading, circular on plan; the upper arcading being pierced and enriched with carved open canopies crocketed and with finials. The pulpit is surmounted by an elaborate cornice, and relieved in the arcading by green Galway polished marble shafts. The piercings of the upper arcade are closed in at the back by a drapery of crimson cloth. The lectern, placed at the south end of the chancel steps, consists of a massive carved oak eagle supported on a twisted shaft, enriched with ballflower in the mouldings, upon an octagonal base. The eagle was carved by Mr. S. Raddock, of London; the stand being worked at the church. The chancel stalls are of wainscot oak, with very richly carved ends, a double running-stom of ballflowers being introduced in all the mouldings on the edges, and large panels of flowers and foliage in the faces of the stall ends. The fronts of the

* See p. 728.

reading desks are of open tracery; the fronts of the stalls being of a similar design, but paneled. There are upwards of 270 carved cusps in these two fronts. The remainder of the seats throughout the church are of Stettin oak, with heavy moulded ends with carved paterae and panels of foliage in the principal aisles. They are comfortable in design, and placed 3 ft. apart in the clear, thus giving ample room. They are intended to accommodate 646 persons, and chairs have been provided for 180 additional, giving a total of 826 seats. It is the intention of Mr. Bass that the whole church should be free. The exterior of the church gives more the idea of solidity than of elaboration. The exterior walls are faced with Coxbech stone; each stone scapled in one direction, contrary to the usual custom hereabouts of scapling each stone in quarters, and with all quoins and other ashlar work in Ancaster stone. The tower in the centre is the chief feature, and is fine in design. It is 123 ft. in height to the top of the pinnacles. Immediately above the ridge line of the four roofs is an arreading deeply recessed, divided by clustered shafts with carved capitals, each alternate archway being pierced with a window giving light to the ringing-chamber. The carved canopies above are terminated by grotesques. The belfry stages consist of three massive windows on each face, with traceried heads, and filled in with thick glass louvres. The tower is finished with an open parapet and massive crocketed pinnacles 20 ft. in height, with a large gargoyle at each angle. The roof is covered with lead. The church is surrounded by a massive boundary-wall in Stanton stone, with large stone piers about every 10 ft., the intervals being filled with a strong and elaborate iron fencing, cast from the architect's designs by Messrs. Morgan, Macaulay, & Waide, of Rotherham. The gates (to match) are hung from large octagonal stone piers, with gabled capitals surmounted by lamps. The entrances are all paved with Yorkshire stone and Stanton curbs. The churchyard is turfed. Generally speaking, the whole of the foregoing work is executed in Coxbech and Ancaster stone; the whole of the interior being worked in Ancaster stone.

All that has been so far described has been executed (with the exceptions mentioned) by Messrs. Critchlow & Ward, with Mr. H. Kershaw and Mr. W. Gould as foremen; and the whole of the carving (excepting as aforesaid) by Mr. S. Tinkler, of Derby. The contracts carried out independently of the general contract are as follows:—The lighting, by Mr. R. Crosskey, of Lichfield, consists of a row of jets above the stringcourse immediately below the clearstory windows, and has a splendid effect when fully lit: it is arranged so that each section is independent of any other part. The heating, by Messrs. Stuart & Smith, of Sheffield, is accomplished by means of a large Gill stove in a vault under the north transept, which draws the air out of the church by three large downcast flues, and sends it back reheated by seven smaller ones: this has been in action daily for about six months, and has been of great assistance in drying the church. The bells, cast by Messrs. Taylor & Son, of Loughborough, according to a specification prepared by Sir Edmund Beckett, are in the key of F, and are considered of very fine tone; their total weight is 101 cwt. 1 qr. 7 lbs.—the tenor bell, 52 in. diameter, being 25 cwt. 3 qrs. 21 lbs., and the treble 6 cwt. 2 qrs. 4 lbs. The lightning conductor, fixed by Messrs. Gray & Son, of Limehouse, is very elaborate in principle, the chief idea being to put every piece of metal about the building and all the crosses and pinnacles (being the most elevated points) in electrical connexion with the earth, and to accomplish this copper bands are carried from the top of each cross, &c., along the top of the ridge tiles of the roof and connected with the main conductor, which consists of a large copper tube; small offsets connect all the spouting and leadwork in the same manner. The east window of stained glass, by Messrs. Hardman, of Birmingham: the life of Christ being the subject carried through the lights, with the twelve Apostles in the traceries above. The wrought-iron screens, by Messrs. Skidmore, of Coventry, from their own designs, are considered by the makers to be one of their best works. The tiling of the floors was designed, manufactured, and laid by Messrs. Minton, Hollins, & Co., of Stoke-upon-Trent. The organ was built by Messrs. Hill & Son, of London.

The whole of the building and its contents and foundations complete, as described above,

have cost the sum of about 36,000l., which is entirely borne by Mr. M. T. Bass, who will also endow the church with 400l. per annum, and has lately accepted tenders for the building of a parsonage adjacent to the church for 2,500l. The total sum expended at the completion of the parsonage and schools, with the building and endowment of the church, will probably reach 50,000l.

Mr. Reginald Churchill acted as clerk of the works throughout the whole construction above ground.

The engraved view we give has been produced by a process new to our pages, and of which we add a short description. It is but fair to say that whatever capability and promise the process may possess, the present example scarcely does justice to Mr. Teale's very good work.

THE GILLOT PROCESS OF ENGRAVING.

The process by means of which our illustration of St. Paul's Church, Burton, was produced, is much used in France, and is now being practised in this country by Messrs. Armagnac & Co.

The mode adopted is as follows:—The object to be engraved is drawn on stone in the ordinary way; from the stone an impression is taken on India paper and transferred to highly-polished plates of zinc or copper, according to requirements. When the design has been properly transferred to the metal plate, the latter is plunged into graduated baths of nitric acid for a certain length of time; the parts protected by a coating of ink resist the action of the acid which bites into the parts not so protected. It is claimed that this process, when executed skillfully, is a very satisfactory one; by its means designs of every description, no matter whether on stone or on transfer-paper, can be readily engraved in relief.

In France, this process has been applied to all kinds of illustrations,—commercial, mechanical, and artistic. It admits of great rapidity of execution; and the cost is called half that of wood-engraving.

BUILDING AND BUILDING WORKMEN IN OLD LONDON.

A HISTORY of the rise and progress of the building trade or trades, master-workmen, and journeymen, and the methods and materials used by them of old in the pursuit of their craft, would form a most interesting series of chapters. There are sufficient accessible historic materials to form such a volume, and diligent research would, no doubt, bring to light a number of curious examples of practice connected with the building trades, which, though widely differing from modern customs, yet would be found to bear, in part, a striking likeness. Were an archaeologist to drop upon the plan or original design upon paper of some old Mediaeval castle or abbey, how fondly would he scan its lines; and if by chance, in rummaging through some old musty MS. he unearthed the specification drafted by the ancient master-workman or architect, with his sign-manual appended, how overjoyed would he feel in the discovery. In hunting up some materials lately, a few matters attracted our notice in connexion with the early building trade of London and other parts of the empire. Some of these, and particularly those in our civic annals, are suggestive. Here is one:—

An Early Specification: 2 Edward, A.D. 1303. "Simon de Canterbury, carpenter, came before the mayor and aldermen on the Saturday next after the Feast of St. Martin the Bishop, in the second year of King Edward, son of King Edward, and acknowledged that he would make at his own proper charges, down to the locks, for William de Hanigton, peltreer (skinner), before the Feast of Easter next ensuing, a hall and a room with a chimney, and one solar (sun parlour) over the room and larder; also one oriole at the end of the hall, beyond the high bench (*sumum scannus*); and one step with an oriole, from the ground to the door of the hall aforesaid, outside of that hall; and two enclosures or cellars opposite to each other, beneath the hall, and one enclosure for a sewer, with two pipes leading to the said sewer, and one stable—in length (length omitted), between the said hall and the old kitchen, and twelve feet in width, with a solar above such stable, and a garret above the solar aforesaid; and at one end of such solar there is to be a kitchen

with a chimney, and there is to be an oriole between the said hall and the old chamber eight feet in width. And if he shall not do so then I admit, &c.

And the said William de Hanigton acknowledged that he was bound to pay to Simon de Canterbury, before the Feast of Easter next ensuing, the sum of 9l. 5s. 4d. sterling, half a hundred Eastern marten skins, fur for a woman's hood value five shillings, and a fur for a robe for him the said Simon," &c.

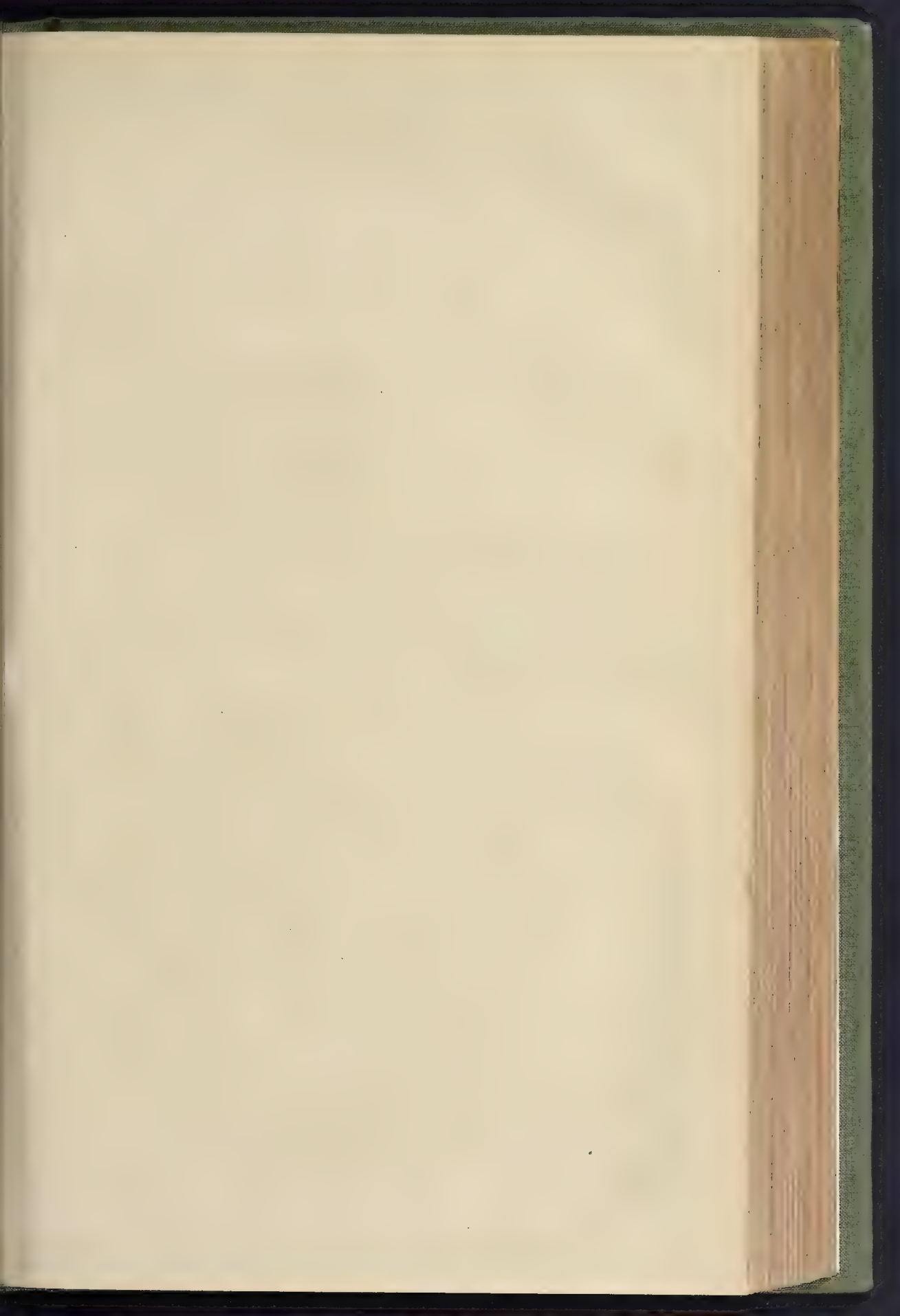
There are some terms used in the above specification rather difficult to explain. The word oriole, in the first instance, may perhaps be a recess, with a bay window, as explained in Mr. Riley's volume, "Memorials of London, and London Life," and in the other instance a porch and a room with a bay window. Parker's "Glossary" explains that in Mediaeval houses it was not an uncommon practice to arrange the domestic oratory so that the sacrament was at the whole height of the building, while there was an upper floor looking into it for the lord and his guests to attend to the service. The upper part especially received the name of oriole, and, again, any projecting portion of a room or building was termed an oriole, such as a penthouse, closet, bower, or private chamber, an upper story, or a gallery. Finally, the name became to be applied to a projecting window, which there was an altar, as also to the bay window of a hall for the sideboard; and we can use the term oriole-window. Speculating builders, in whose nostrils sanitary science stinks more than the nuisance they create, might take note with advantage of Simon de Canterbury's specification, wherein he provides one enclosure for a sewer, with two pipes leading to the sewer. The provision of the stable between the hall and the old kitchen, with the solar, an upper room, above the stable, was not, however, a sanitary one; but is not London at present dotted with mews under their lordships' noses, with sleeping-rooms, kitchens, sun parlours, and all above the horses' heads? Old Simon's plan, after all, was only a plan of alterations, and like a true master-workman, he provided as finished all "down to the locks," and the turning of the keys in the doors, according to the conditions and customs of the time imposed upon him.

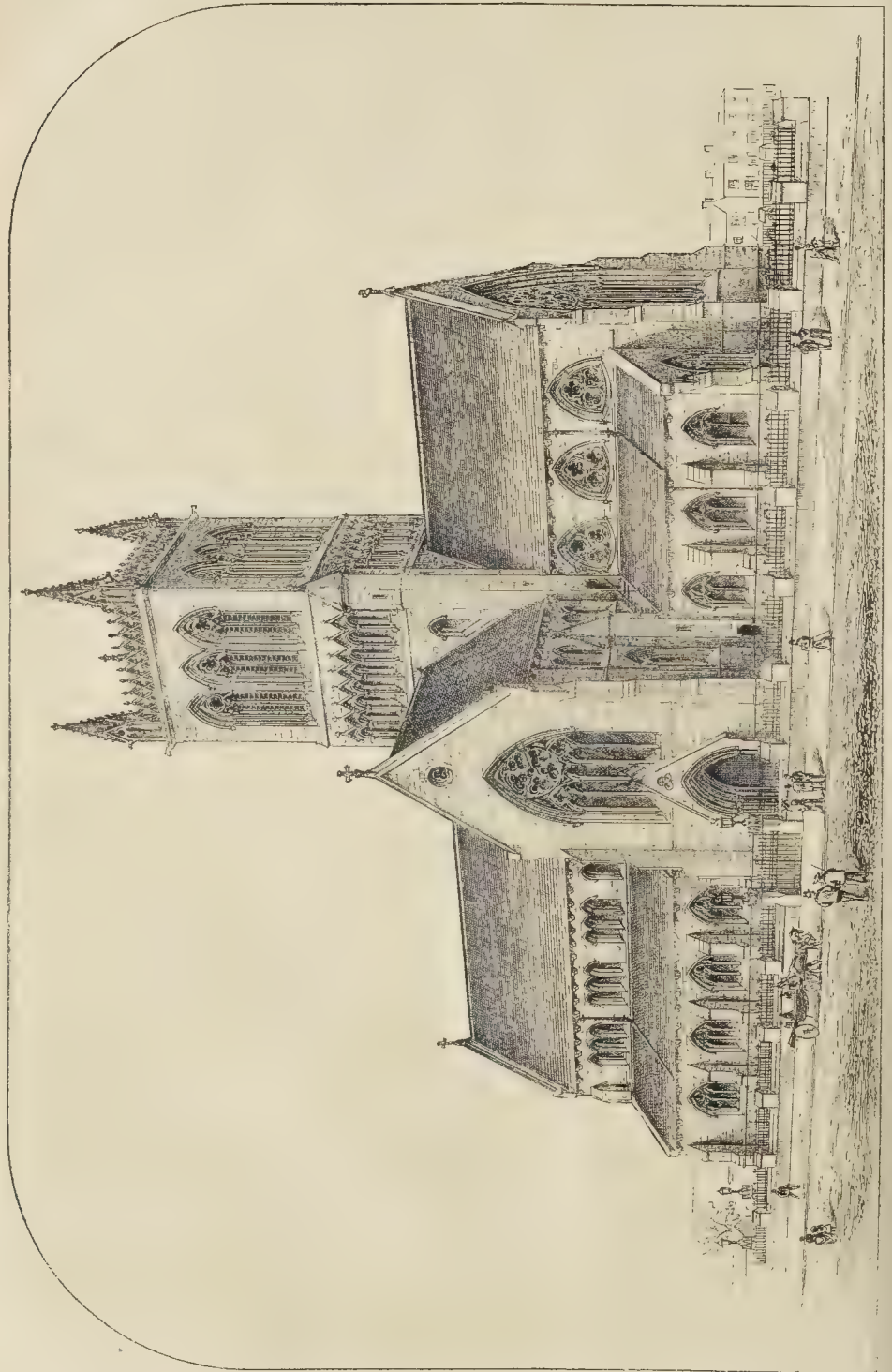
Early Painting: 12 Edward, A.D. 1288.—"On Friday, the eve of St. Botolph, in the twelfth year of the reign of King Edward, Nicholas Bacon, painter, acknowledged that he was bound to Hugh Motun (the then City Chamberlain) the sum of twenty shillings for cinople, vermillion, and canvas, varnish, and verdigris; the same to be paid to the same Hugh, or his certain attorney, ten shillings at the Feast of St. Bartholomew, and ten shillings at the Feast of St. Michael, without further delay."

It is thought that there is no earlier allusion to varnish painting upon canvas to be found in our City annals than the above. The cinople, or green colour of French heraldry, is believed to be the colour mentioned here. A passage in the *Liver Horn*, preserved at the Guildhall, temp. Edward II., contains "Rules as to painting of old and new saddles: It is provided that no one put any but good and pure colours upon gold or silver,—that is to say, good cynople, good green, good vermillion, or other colours, tempered with oil, and not brasil or indigo of Balda, or any other bad colour."

The brasil colour was a coarse red, and the indigo was of Bagdad. We are left in darkness as to the particular work on which these colours were employed by Nicholas Bacon or Bacon. In 1327, Edward III., affrays took place between the saddlers, painters, joiners, and lormers, in consequence of certain alleged encroachments upon one another's privileges, and an agreement had to be drawn up before the mayor, sheriffs, and aldermen, for the future guidance of these bodies. To their respective claims and work-manship we may allude on another occasion.

Early Plastering: 10 Edward II., A.D. 1317.—"On Thursday the Feast of St. Dunstan, in the tenth year of King Edward, son of King Edward came Adam le Plasterer, and acknowledged a certain writing to be his deed, the tenor of which is as follows:—'Know all men that I, Adam le Plasterer, citizen of London, am held bound to Sir John de Bretagne, Earl of Richmond, to find plaster of Paris at my own proper charges, good and sufficient without default, proper for the said hall of the said Earl; and also will competently, at my own proper charge plaster and complete the said hall, and will repair the walls of the same hall with





ST. PAUL'S CHURCH, BURTON.—MR. JAMES M. TEALE, ARCHT.

[See p. 725, cont.]



INLAND REVENUE OFFICES, MOUNT STREET, MANCHESTER.—MESSRS. PENNINGTON & BRIDGEN, ARCHITECTS.

he said plaster well and befittingly within and without; as also the towels (the louveres or loues) to the summit, in such manner as befits the pair of the hall aforesaid, and this I will do for twenty-four pounds sterling, which our Lord the Earl has paid to me beforehand faithfully to perform the which work within eight weeks from the day of the Holy Trinity next ensuing. I do bind myself and all my goods moveable and immovable, namely, my lands, houses, and tenements within the City of London being, to distress, in part of any bailiff of our Lord the King, &c., into whose handssoever the same may come for money, whereof, &c. Given at London on the Thursday next before the Feast of Michaelmas in the tenth year of the reign of King Edward, son of King Edward.

There is no mention in the above contract of anything but simple plastering; the word moulding or ornamentation does not occur. The hall referred to is supposed to be the residence of Sir John Breteigne, existing near St. Paul's. In a writing inquisition to be made as to a certain acre near Ivy-lane, and answer thereto, 5 Edward, A.D. 1312, occurs this passage: "Between the tenement of our well-beloved and trusty John de Breteigne, Earl of Richmond, on the one side, and the houses that belonged to Henry le Aleis, late citizen of the said city, on the other side, and in breadth between our highway high extends from Ivy-lane to Eldedenesne" (Old Dean's-lane, now Warwick-lane). John was a son of Beatrix, daughter of Henry III., and cousin of Edward II.

A Master-Mason of Works at St. Paul's: 6 Edward III., A.D. 1332.—"It was agreed by John Fulleneys, mayor, and the aldermen, on the Monday next after the Feast of the Translation of St. Thomas the Martyr, in the sixth year of the reign of King Edward, after the Conquest the Third, that Master William de Ramesey, who is master of the new works at the church of St. Paul, in London, and is especially and assiduously giving his whole attention to the service of the same church, shall not be placed any assizes, juries, or inquests, nor shall he be summoned by the sergeants of the mayor, or by the sergeants of the wards, to come upon any summons, special or common, to the Guildhall or elsewhere, so long as he shall be in service of the church aforesaid, unless his presence shall be especially required for any certain cause." The exemption of William de Ramesey as a mason-workman was quite judicious, but how any architects or master-workmen, clerks of works, or foremen can now claim a like exemption. Architects, engineers, and medical men are now summoned, and are expected to dance attendance at our police-courts on petty matters as well as particular matters, losing whole days of valuable time without the least compensation or reward to them. Serving upon juries is a terrible, but the sooner professional men in a lively kick against these summoning practices (less paid for their time), the better.

The above exemption of a master-mason at St. Paul's 542 years ago, may point a moral, perhaps Peter to pay Paul has since grown common.

The Wages of Building Workmen: 24 Edward III., A.D. 1350.—"To amend and redress the wrongs and grievances which the good folks of the city, rich and poor, have suffered or lived within the past year, by reason of masons, carpenters, plasterers, tilers, and all other of labourers, who like immeasurably more than they have been wont to take, by the will of Walter Turk, mayor, the aldermen, and the commonality of the city, the points underwritten are ordained to be held, and firmly observed for ever; that is to say:—In the first place, the masons, between the Feast of Easter and the Feast of St. Michael, shall take no more by the working day than 6d., without victuals or drink, from the Feast of St. Michael to Easter, for working day, 5d. And upon feast-days, when they do not work, they shall take nothing. And making or mending of their implements they shall take nothing. Also, that the carpenters shall take, for the same time, in the same manner, that the plasterers shall take the same as masons and carpenters take. Also, that the tilers shall take, for the working day, from the Feast of Easter to St. Michael, 5d.; and from St. Michael to Easter, 4d. Also, the labourers shall take, in the first half, 3d.; and in the other half, 3d. Also, the master-daubers [the layers-on of mud and straw to a framework] shall take, between the Feast of Easter and St. Michael, 5d.; and in the other half-year, 4d.; and their labourers are

to take the same as the labourers of the tilers. Also, that the sawyers shall take in the same manner as the masons and carpenters take. Also, that no one shall pay more to the workman aforesaid, on paying a fine to the commonality, without any release therefrom; and he who shall take more than the above shall go to prison for forty days."

These last regulations were rather hard "lines" for the building craftsmen of 1350. Some of the regulations in respect to other trades were quite as severe. We have seen that the workmen, for making or mending their implements, were allowed nothing. There was no "grinding money;" and we take it for granted that the master-daubers and plasterers and the masons had to get the carpenters to handle their hawks, floats, and hammers in their own time, the carpenters having to do the same when their own tools needed handling. It was ordained in this year that the thousand of tiles should be sold for 5s. at the very highest; and that the hundred of lime should be the same price. Workmen going out of the City to avoid working at the price laid down, were, if they were afterwards found in the City, imprisoned for a quarter of a year. Their chattels, if any, were forfeited, and if he did not find surety or make oath to abide by the regulations, he was made to forswear the City for ever. Notwithstanding these regulations, a number of workmen, three years after, withdrew from the work on which they were employed at the Palace of Westminster, and a royal mandate had to be issued by the king to compel their coming back. In 1356 a number of "regulations for the trade of masons" had to be drawn up at a congregation of the mayor and aldermen, owing to disputes between the light masons who were hewers, and the light masons and setters. A somewhat similar dispute cropped up a few years later in London. In the last-mentioned year (1356) workmen were committed to prison for having refused to be bound by their own regulations. Throughout the reign of Edward III. there were several disputes in the building trade, notes of which, and others anterior and subsequent, would make an interesting chapter.

INLAND REVENUE OFFICES, MANCHESTER.

The inconvenience, delay, and expense attending the transmission of deeds and documents of all kinds to and from Somerset House, from the extensive northern district, of which Manchester is the acknowledged centre, have induced the Commissioners of Inland Revenue to decide on establishing a branch stamping-office in that city, and we now give an illustration of the building which has been erected for that purpose, and which will also accommodate the Excise and Income-tax surveyors. It is in Mount-street, Manchester, centrally situated at the corner of Albert-square, close to the new town-hall. The area built upon is 440 square yards, and the site is bounded by Mount-street, Dickinson-street, and Chapel-street.

The building is seven stories in height. The three elevations are faced with Darley Dale stone. The roofs are slated, and the sub-basement is fireproof. The public-room, for the issue and distribution of stamps and reception of documents, and for the collection of Excise and other duties, is entered from the angle-door under the bay-window in Mount-street, and is a room 51 ft. long, 20 ft. wide, and 14 ft. high. A stone staircase leads to the upper floors, which are occupied by the surveyors of Income-tax and Excise and their clerks, and the office-keeper's apartments are on the third floor.

Separate entrances, exits, and loading-ways have been arranged so that portions of the vaulted sub-basement and the upper floors, not required immediately by the Board of Inland Revenue, may be let as offices, &c.

The style is fourteenth-century English Gothic, and the two-storied bay window is an important feature in the composition; round the base of it, in Mount-street, and over the entrance to the great public-room, are shields of the chief towns of the six northern counties, and the entrance itself is flanked by pedestals, and the entrance placed the lion and unicorn supports, with shields of the Royal arms. A statue (life-size) of the Queen will occupy the niche in the centre of the main gable. The staircases and landings are of stone, and the walls of the latter are tiled to a height of 5 ft. All the internal finishings are of plain and simple character, the woodwork and screens being stained and varnished.

The building has been erected from the designs, and under the superintendence, of Messrs. Pannington & Bridgen, architects, of Manchester and London; and Mr. William Southern, of Salford, is executing the works (there being no contract), from a schedule of prices. The sub-contractors are,—Mr. W. Healey for the brickwork; Mr. J. Kirkham, for masonry; Messrs. G. Harrison, Son, & Co., for plumbing and glazing; Mr. Barrow, for slating; Messrs. W. Hood & Co., for plastering and painting; Messrs. Lavers, Barrand, & Westlake, for stained glass; and Messrs. Williams & Milsom, for carving.

THE EARLY TRAINING OF ARCHITECTS.

"As the twig's bent the tree's inclined" may not be an inappropriate quotation to head the commencement of a few remarks upon architectural education.

For some time we have felt the importance of instituting some central and congenial culture-ground for the development and fostering care of rising talent connected with the architectural profession; but our insular and independent ideas upon most questions, and especially those relating to matters of feeling or taste, present very formidable objections to its realisation, which it must be our earnest endeavour to remove, or, at least, ventilate and discuss.

The present hap-hazard system of education is generally acknowledged to be deficient and unsatisfactory, and to suggest some practical remedy will need all our patient thought and consideration. We must not, however, despair of bringing about some happy consummation, that will facilitate the healthy growth and heart-felt appreciation of good art and architecture amongst us; once we succeed in convincing men that it is not a trifling question, or in stimulating a national love for such inquiries, we shall be one good step on our way.

Good and pure art springs from the earth by no miracle of nature, nor does it grow magically without roots, or in an uncongenial soil. We do not believe in genius growing where there is not long and tender nurture, or unaided by favouring circumstances and harmonious surroundings.

We cannot make the seed, but having discovered it, however insignificant or lowly it may appear at first, it is for us to take care that it is duly sheltered and tended. The atmosphere must be tempered to its requirements, but not of necessity, to an enervating warmth of exotic mildness; a bracing, keen, and searching air is often its best nurse.

To produce joy and beauty we must live with them, and early learn to take in their exhalations at the very pores. Inspiration is a fine name for restitution, or giving back what we have received.

Let us briefly, for the sake of comparison, sketch the early years of two young men destined for the architectural profession, and present, if we can, their distinct types; and this in a fair and good-humoured spirit, bearing in mind the different circumstances under which they are presented to us.

The first and most usual model is the young gentleman whose nature is considered poetical, if not largely endowed with scientific or artistic power. He must have a profession; fond mothers have decreed it, and sisters have decided it. Well, it seems hard that a quiet corner cannot be found for him in a merely technical or artistic craft where everything done is very arbitrary, and where there is little fear of actual mischief resulting. Such is the usual argument; behind the mysterious shelter of art he will be safe, and certainly respectable. A stool is found for him upon which he may sit for five or six years and gaze, if the window should happily be unobscured, which is seldom the case, upon a vista of sooty areas and chimney-pots, varied by daily adjournments to obscure shades where there is ever a charming display of the noblest art and the choicest vizards. The day's tracing, copying, and printing being brought to a close, our friend jumps gaily on a passing 'bus, and drinks in the invigorating air and scenery of Seven Dials and Tottenham-court-road, or, if fate is kinder, the sweetly-varied perspectives of Piccadilly are his own. Once a year there is an architectural excursion,—it may be on the Continent; but time being limited, and photographs cheap, the sketching and measuring resolve themselves into purchasing a few sun-prints, and, after much admiration, putting them carefully away into a portfolio. The period of education completed, friends are implored to stir on his behalf. Interest is successful and our architect is fairly

lunched. He has courteous and agreeable manners, with business habits, and his relatives, if not the public, are quite satisfied.

Our next model is, on the whole, a more satisfactory one, having defects, of course, though of a less vital kind. An old Mediæval town is the scene of his early experiences, and his way to an old-fashioned school when of tender years, is past some of the most interesting and ennobling remains of an intelligent and artistic age, and his eyes open, as it were, in their first twinkles, upon as favoured a little town as one would wish to see. It may be that his father is intimately connected with technical pursuits; perhaps he is a builder whose vanity sometimes whispers the magic title of architect,—though this by the way.

The son is eager and thoughtful beyond his years, and the promises of latent genius are flattering: this boy must be an architect and nothing else. His scholastic course has been simple, but sound; his own vernacular, with a few accomplishments, being the extent of the curriculum. National art is just at this time a watchword; a science and art school, thanks to Mr. Cole, is opportunely opened, where evening lessons are almost given away; prizes are won, and masters delighted. During the day he is timekeeper and clerk of the works on one or two of his father's contracts. He enters intimately into the secret marvels of the various trades, learns to lay a brick, tool and draft, render and set, mortise and tenon, or wipe a soldered joint; thus for a few years, early and late, he learns the stern and actual facts of building. After this he must, of course, enter an architect's office as improver for a short term. Here he is installed into the wonders of inkling in, ticking off, and colouring up, regarding the head assistant as an oracle. Stealthily and unasked he makes perspective views of his master's works, reads extensively such works as are within reach, and ignoring too frequently physical requirements, works enthusiastically, and burns the midnight oil. A praiseworthy but oftentimes delusive ambition ferments within him, and he must go to London to try his fortune. Here he soon finds an opening, and if he have but stamina his success in life is assured.

We cannot say that either of these models is quite satisfactory; the one has not sufficient experience of difficulty, and the other has too much. Practically, we may say that they answer somehow, and a process of selection works them into their allotted places in life; but it is our duty, and should be our desire, to help on, if we can, a better state of things. All this that we have outlined becomes indelibly stamped upon our art. Model No. 1 gives us insipidity; model No. 2 gives us eccentricity.

Where, then, have we hope for the future? Perhaps the obstacles are too formidable for the most sanguine. What can we do if there is no "way" on the ship? Can we steer a craft that is anchored? The demand for better things must come from an earnest and educated public, and men of intelligence must criticise fearlessly, not necessarily taking for granted that there is "occult sublimity" in work that does not yield them joy and delight. Nathaniel Hawthorne once said he did not believe in a work of art that gave you no pleasure; it was not art at all, at least, in his eyes. We have our standards even of taste and proportion, the key-note to which we must continually string our instruments is sounding for ever in monuments within easy reach, and these again are harmonized with the yet more lasting treasures of the natural world. If we do not jealously preserve these impressions, and examine or test our progress by repeated reference to their vibrations, they will pass away from us, and our ears will become dead and cold.

In some guarded treasure-house we must collect and store the true seed, or we shall have no harvest time to come; our great cities will destroy it utterly. Where, then, can we hope to garner and cherish our best and choicest inheritances? or must we depend solely upon private enterprise and good luck?

We would propose endowing a model nursery for the tuition and training of young men destined for the profession of architecture. Such a town as Canterbury would do well as a centre, being within easy reach of the metropolis and the Continent. A branch establishment could be instituted, say, in one of the most majestic vales of Carnarvonshire, corresponding with Scotland and Ireland. This National Architectural College would be a storehouse of art, to which colleges of engineering and other kindred societies could draw their supplies, and look up to with respect and confidence. Pupils would

be admitted for any term, as circumstances would dictate. Such an institution would be, in fact, an art-centre for Great Britain; and if fostered by the highest patronage, and supported by the unanimous voice of all who are sincere in their estimate of the value of, or necessity for, a higher standard of art, would supply a national want that is every day being forced stronger upon us.

We have good technical and engineering colleges; why not one for Architecture alone, where she can hold her rightful position as queen of the arts, and not be subordinate to the dictates of the more mechanical professions that have so long held us in their iron grasp? It is in itself a vast profession, and needs distinct guidance. In addition to the skill and ingenuity of the constructor, a yet higher power is required to call forth a work of art,—and one, let us say, not so easy of production. Individuals cannot successfully mature a national style; it must be the patient outcome of a society or college whose aims and hopes are based upon a mutual admiration and knowledge of their own national treasures, and who would, in all probability, cherish and preserve—perhaps develop and extend—standards of truth that all sensible men would respect.

In Mediæval days the Church was the protector of art; and a really good sponsor she proved herself to be. Now we must look for wider and more universal help, although she would ever be our best friend. We should desire to see the joys and refinements of art within the reach of all who desire a share of her boundless store; nor would we place a mystic seal upon so precious a casket. Religion can do without art, but the active intellects of men have decided to give her the best. Our standard must, of necessity, be regulated by deference to her, and its purity and vigour replenished from this fountain-head. Men will always have their praise petrified and perpetuated, whatever inward poverty abounds. Art is, then, a necessity; we cannot get on without it. It is for us to watch vigilantly that we do not hand down to posterity evidences of our ignorance and indifference.

Individual energy has done much, no doubt, in certain cases, to partly form a school of architecture; but we think these leading men would themselves admit that it has been a giant task and a feat of no ordinary kind, that has drawn forth applause, but left them sadly exhausted. This individuality of action must be a drawback to its continuance or universal adoption. Whilst men thirst for fame more than for the true sweetness that springs from the practice of art itself, they cannot hope for grand results. This may be a hard fact to face, but it is true. We are entering a period of our history differing from the past, and we hope to benefit from the mistakes of those before us, as well as inherit their valuable legacies. If the coming race have not the iron energy and endurance that has characterised its predecessor, it may yet possess a more exquisite inheritance in the grand consolations that the study and love of fine art afford. If quantity has been the characteristic of our fathers, let quality be the watchword of the sons. But we want to see a more widespread delight taken in abstract art, and a national college founded for its peculiar protection. As the people grow in discernment, they will demand something more than pretty pictures to gaze upon year by year. They will learn that stone and brick may be instinct with expression, and capable of the highest meanings.

But there is much to be done before we can ask the public to give us their better attention; and not the least important step is the foundation of a national college of architecture. Such an establishment would feed and invigorate the Royal Institute in London by supplies of fresh and unadulterated art, and few will, we think, deny the pressing need of some such centre.

L.

ENAMELS IN HOMER.

In dealing generally with the subject of "Metals in Homer," I had necessarily to bring the word *κίρανος* under consideration; it has never yet been satisfactorily explained. Lexicographers and translators deal with it in various ways, but all avoid committing themselves to a uniform and distinctive definition; I had ventured to suggest that it probably meant a lacquered or enamelled metal.*

Enamels are found among the very earliest

memorials of ancient Egypt, and we may be quite certain that an art practised among the Pharaohs would necessarily be known to the Phœnicians and might eventually reach the Greeks, even so early as the assumed date of Homer. I find some such view taken by Professor Gruner in the *Art Journal* for July. *κίρανος* means an enamelled metal it will enable us to appreciate certain of Homer's descriptions far better than hitherto.

The word *κίρανος* strictly imports some dark substance, varied to light blue or azure. In its remote origin it may possibly be traced to the verb *καίω* "to burn, to scorch," hence its primitive meaning of dusky, as if scorched or blackened in the smoke; compare the Sanscrit *kyāna* "smoke." The aspect of the question being limited to the assumed meaning of a color only, but we must travel further fully to understand the *κίρανος* of Homer.

It seems to me closely allied to *κίρανος*, a color of glass, from *κίω*, to hold or contain; allied, take it, to *κίω* or *κίω*, to pour, and, by extension, to melt, as glass is melted; so we may connect *κίρανος* with *κίω*, *κίρανος* with *κίω* (see Liddell and Scott), and finally with *κίω*.

This last I take to be new matter, and I propose to connect the substantive meaning of *κίρανος* with *κίω* from *κίω*, hence the Latin word *encaustic*,—a substance burned in an enamel. The Greek word *κίρανος* is treated to a later and base form of *κίω*, to pour or melt, it may be long post-Homeric, but it serves, partly of reasoning, to connect *κίρανος* with *κίω* (see *scholæ*), an enamel, derived from the verb *εχέω*, "to melt." A corrupted form of this word is *small*, which we apply to a brilliant blue derived from cobalt.

The metal known as cobalt is an essential of enamels, and it would certainly give the high azure colour required by the word *κίρανος*. Cobalt may have been known to Greeks, Phœnicians, and Egyptians, and lost again. This may be sustained by the analogy of *nikel*, allied metal sometimes found in ancient coins, and now re-introduced, quite recently. It appears to have been known to the Romans as *whitiron*.

The primitive idea of all lacquers, enamel, or glazing, is the application of a permanent smooth polished surface to a substance otherwise rough, or liable to rust, tarnish or decay, and all such processes are affected by means of a vitrification or firing in. The word *enamel* is thus traced to Greek, but the native Latin word, of similar import, is *smaltum*; there is a great diversity of opinion as to the precise really designated by these names. I make it to enforce the suggestion that *κίρανος*, as used by Homer, means enamels of different colours.

This I will exemplify by a short reference to two celebrated passages. 1. "Iliad," book xii line twenty-four, we have a description of a body armour, a cuirass or corselet worn by Agamemnon; it comprised gold, tin, and dark *κίρανος*, in strips or rows; it was contrast of colour, ornamented on the breast with three glittering dragons of *κίρανος*. It seems to me that only a process of enamelling will fitly reproduce the varied colours attributed to the mythical dragon. Further, we come to his shield, with twenty white bosses of tin, one of dark *κίρανος* in the centre, and a tin-headed dragon, again of *κίρανος*, i.e., of enamel. 2. In the "Odyssey," book vii, is a description of the palace of Alcinous; at line eighty-seven occurs the word *κίρανος*; it is involved in a great contrast of colours: bronze walls with a corner of *κίρανος*, golden doors and silver pillars. All enamel would here supply the blank better than any specific metal, thus realising the ideal lofty walls, lost in the azure vault of heaven.

A. I.

SAVAGES AND LEASES.

On the east coast of New Zealand, the Maori have formed a league having as its object the total suppression of land sales and the substitution of leases.

The idea originated from the fertile brain of a New Zealand chief's son, who was sent to London to be educated, and who read in the Temple became a limb of the law. The idea is ingenious one, for, instead of selling the land they lease it, the Maoris may look forward to becoming the landlords of a fertile and cultivated territory, with cities, towns, farmsteads and mines, and Maori chiefs will in time be rent-rolls capping those of the Dukes of Westminster, Cleveland, or Devonshire.

* See p. 691, ante.

THE NEW REGISTRATION ACT.

The New Registration Act, which comes into force next New Year's Day, is likely to do much good in a sanitary point of view.

It will compel the public to register their births and deaths on the one hand, and increase the facilities for doing so on the other.

The fine for not registering a birth within the first six weeks is increased to 40s., which fine will be again inflicted upon neglecting to comply with the provisions of the Act after due notice. The same fine is inflicted in case deaths are not registered within five days, or within fourteen, provided a written statement, together with a medical certificate of the cause of death, is forwarded within the shorter period.

After the 1st of January next year, births may be registered either by the parents, as at present, or, in their absence, by the occupier of the house, a person present at the birth, or the nurse.

In like manner deaths can be registered, not only by the nearest relatives present during the illness, but also by any relative in the district, any person present at the death, any inmate of the house, or the person causing the burial.

The registrars are to have known offices and fixed hours, and they are, in addition, to attend at the houses of the informants on receipt of a notice and a written application. The latter command will be no very great boon to country registrars, who may, in many instances, have to take a ten or twenty miles journey for a fee of 1s. The Act, in addition to these provisions for securing a complete registration, also deals with other matters connected with the subject, and in a sanitary view; and it forbids the insertion of the names of the putative fathers of illegitimate children without the man's consent.

TEMPLE BAR.

Sir,—Allow me to add a few notes to the article on Temple Bar, which appears in the *Builder* of August 15th, more especially as after our review of my "Memorials of Temple Bar," with some account of Fleet-street, which was published in your journal of March 12th, 1870, might have expected that my name would have been referred to.

Mr. Herbert, formerly librarian at Guildhall, discovered a deed dated 29 Edward I., 1301, wherein Temple Bar is first mentioned, and in the Corporation letter-book, E, 1315, it is again mentioned. At this date there was probably a chain, posts, or a rail across the street. The mention of Temple Bar as a building is in 1533, when "Sweet Anne Bullen" passed through it to her coronation.

My much lamented and respected friend, the town clerk, Mr. Woodthorpe, searched through the records for me, and found in 1554 his entry:—"1st Mary, 9th June. Item, it was agreed that Mr. Chamblin shortly after that the Prynce of Spayne shall have passyde through the cite, shall cause a good and substantial we payre of gates to be made and hanged up at Temple Barre"; and on the 23rd of October following, the Court resolved "that Mr. Chamblayne shall com'yt the custodye of the key of the new gates, now sett up at Temple Barre, to the cyties ten'nte dwellynge nyce unto the said gates, takinge nye the lesse espynge der with hym for the shuting and openynge the same gates at convenyente houres."—*Memorials*, p. 22.

Old Temple Bar was pulled down in 1669. The present one was erected and finished in 1722. The first entry which I could find in the Guildhall books is dated August 14th, 1669, giving compensation for a house adjoining the street.

Between that date and 1680 payments of a total of 1,397. 10s. (same as stated in your title) were made; the last payment being the sum of 90l. to John Bushnell, being the balance of 480l. paid to him "for 4 effigies in stone by an undertooke for Temple Barre." The architect of the new bar was Sir Christopher Wren. Sir John Jones had been consulted in 1636; and one of the masons employed on it was Joshua Marshall, master-mason to Charles II., and the river of the pedestal of the present statue of Charles I. at Charing-cross. All these facts were discovered after much research at Guildhall. As to the removal of Temple Bar, the Corporation was agitated so long ago as 1759! The question was actually then made provision for the lessees to quit possession at six months' notice. In 1849 occurred the great agitation by Alderman Pickett, and of the lottery of the houses

hereabouts, and at Snow-hill and Skinner-street, I have given an exhaustive description in my volume, pp. 33 and 34.

I could give other notes out of the 140 pages of my "Memorials," but your readers will find them pretty clearly stated in the friendly notice which appeared in the *Builder*, March 12th, 1870. I cannot, however, refrain from mentioning that the earliest notice I could find of Child's Bank is dated 1661, describing the loss of a gold watch, and stating that "Whoever brings it to the Marygold (a goldsmith's shop without Temple Bar) shall have five pounds, with hearty thanks." The term "without" Temple Bar alluded to the house on the Strand side of the Bar, probably the only portion then held by the founders of the present firm.

T. C. NOBLE.

CHURCH AT CLIFTON, NEAR MANCHESTER.

A new church was consecrated here on the 19th inst. by the Bishop of Manchester. The architect is Mr. Edward M. Barry, R.A. The plan has nave, aisles, transepts, chancel, and chancel aisle, and will accommodate about 500 persons. The principal entrance is by a south porch vaulted with stone. The exterior of the church is of stone, and the roofs are tiled. At present there is no tower or spire, and the bell is placed in a gabled *sanctus* turret over the chancel arch. The chancel has a semicircular termination on plan, with single-light windows disposed in a continuous arcade, with engaged columns having carved capitals. The window-arches groin into a semi-domical roof, which covers the sacristy. The style adopted is fourteenth-century Gothic, of the Geometrical type. The chancel is raised three steps above the body of the church, and separated from it by a wrought-iron low screen, enriched with gilding, on a base of stone. The pulpit is of Caen stone, deeply moulded and carved, and stands against the north pier of the chancel arch. The chancel seats are of oak, arranged stallwise, and the chancel floor is laid with encaustic tiles, the altar being raised several steps above the nave, and placed on a footpace with a marble margin. Mr. G. W. Booth, of Gosport, is the contractor, and the stone carving has been executed by Mr. T. Earp. The roof of the chancel and sacristy is decorated with sacred emblems on a blue ground. The nave roof is open timbered, with doubled rafters and counter-ceilings. The west end of the nave has three single-light windows, with a circular rose window above. The church is warmed by an apparatus constructed by Messrs. Haden, of Trowbridge. Mr. Wickham has acted as the clerk of works. The whole cost of building the church and forming the churchyard, about 7,500l., has been defrayed by the Hon. R. and Mrs. Cotton, who have also presented the site. Clifton is about six miles from Manchester, on the Bolton road.

CHURCH OF ST. JOHN THE EVANGELIST, FINSBURY PARK.

This church is situated in the parish of Hornsey at the junction of two intended roads, leading from Finsbury Park, near Stroud-green-lane, to the Green-lanes and Highbury, one of which will be a continuation of Queen's-road, Brownswood Park. The adjoining land is the property of the Ecclesiastical Commissioners, who have given the site and a small sum towards the fabric. The church is of Early Gothic design, and will present when completed a noticeable feature from Finsbury Park and the surrounding neighbourhood. It is a cross church, having a nave, choir, and transepts of equal height, the four great arches (intended hereafter to carry the central tower), being of the full height of the building. The church, as intended to be completed, comprises a nave with north and south aisles, transepts, chancel with north and south aisles, lofty eastern apse, a semi-circular western apse for the baptistery, and north and south porches at the west end. There are also entrances at the ends of the transepts. The nave, when completed, will be of four bays, the westernmost being architecturally marked out as a narthex, although of equal height with the remainder. At present, however, this narthex, with one other bay of the nave, and the western apse, are incomplete, the wall being left at a height of about 4 ft. or 5 ft. from the ground for want of funds. The central tower, also, which is intended to rise to a height of 175 ft. above the

floor of the church, is barely carried up to the ridge of the roof. The dimensions of the building, when complete, will be as under:—Length within the walls, 150 ft.; width of nave, 24 ft.; width of nave and aisles combined, 50 ft.; extreme breadth across the transepts outside the walls, 79 ft.; height from floor to ceiling, 53 ft. 6 in.; height from floor to ridge of roof, 62 ft. The accommodation when provided will be for 1,000 persons, and the number at present accommodated is 700, or thereabouts. Several stained-glass windows are gifts from various friends, and it is hoped that others will follow. The design of the church, at the Finsbury Park end, is marred by the unfinished appearance of the building. An ugly brick wall with three shapeless windows, together with the low roof, and small temporary bell-cot, where the lofty tower should be, call for some public benefactor to complete the design. The work, owing to the slow development of the neighbourhood, and the consequent lack of subscriptions, has taken some years to bring it to its present condition, and various builders have been occupied in the work. A great part of the fabric was raised by Messrs. Williams & Son, of Thornhill-square, and the flooring, seating, and finishings have been executed by Messrs. Bays & Ramage, of Charlton-place. Much of the work, however, has been done slowly, as funds came in, by men working under the immediate direction of the architect, Mr. F. Wallen, of Furnival's-inn.

M. VIOLLET LE DUC, ARCHITECT.

MR. CHARLES WETTERED has made a communication to the *Times* on the preservation and restoration of historical monuments in France, and at the close of it gives the following account of the accomplished architect under whose direction the chief restorations have been made:—"Individually, Viollet le Duc is an intellectual king among men, with personal attractions of dignity and grace befitting a descendant of the old noblesse. I have never seen a nobler head or a countenance more expressive of mental power. He comprises the seriousness and solidity of the English character with the *verve* and *esprit* of the French temperament. Most of us, I suppose, accept to the full Carlyle's helpful doctrine of hero worship—of loyal recognition of honoured chiefs in every leading sphere of human thought and action,—and here we have a notable living example of the hero as artist, as poet or seer, who speaks to us for our instruction and delight, not only in the printed volume, but in the still more fascinating language of form and colour. He approaches truth on its æsthetic side, and his doings are the record of its perception and embodiment in outward visible shape. The thousands who work under him, and catch some of his spirit, may well look up to such a man with sincere admiration and respect. One of his principal employes said to us with hearty enthusiasm, 'He knows everything, from astronomy and geology down to cookery, and it all comes like music from his lips.' In his numerous executed works, whether original or derivative, everything, as his friend Mr. Ruskin would say, 'is fitted for a place and subordinated to a purpose,' imparting to all he does that sense of satisfaction which we feel when contemplating the higher results of artistic unity and completeness. He is not less successful in the representation of ideal thought and sentiment than in the rendering of direct specific fact. He never repeats himself, and nothing can stale his infinite variety—from the delicate aerial lines, woven as if by fairy work, of the aspiring *flèche* which so gracefully crowns the cathedral of Notre Dame, to the grand simplicity and aptness of every detail in his own house at Paris.

In the course of our trip I learnt from my friend something of the daily routine of life and study by which this eminent man has been able to accomplish so much fine and enduring work, which perhaps may not be unprofitably recounted in an age of luxury and ease as a pattern for the guidance and well doing of others. He enters his studio at seven in the morning, where he is engaged till nine in getting in readiness the work that will be called for and preparing for his visitors, whom he receives from nine till ten, during which he takes his frugal breakfast standing. At this hour will be found awaiting the manuscript for the publisher, a pile of wood blocks for the engraver—who has only to follow and cut between the sharp lines of the finished drawings which cover them,—plans for the builder, designs for the sculptor and blacksmith, and cartoons for the decorator or glass painter—

every one of which is the product of his own hand. For each of his staff as he arrives, after his '*Voilà Monsieur, votre affaire*,' and verbal instructions, he has a kind word of friendly inquiry, encouragement, or advice. At ten his studio is closed and he works at his drawings without interruption until his dinner hour at six. At seven he retires to his library, where he is engaged with his literary pursuits till midnight. Thus, his daily life at home, is but little varied when away. He generally travels by night, often taking journeys of several hundred miles; for he visits every building upon which he is engaged once a month, making any special drawing required on the spot. He gives his instructions personally to the workmen, each of whom he notices in making his round of inspection. Though he has himself a perfect acquaintance with the technicalities of every craft, he does not disdain to consult their opinion, and he can, so we were assured by the men themselves, always teach something worth knowing belonging to the practical department of each. He will take the hammer and pincers of the plumber and show him how to beat or twist his lead to the required form, or the chisel from the sculptor, and with a few strokes gain for him the desired expression. He gives a perspective detail of every drawing however small, and his designs for sculpture and goldsmiths' work are drawn with photographic accuracy. His most accomplished sculptors say that it is impossible for them to render all the *fineness* of his delineations. And these beautiful sketches come from his hands by thousands; those forming the exquisite illustrations which adorn the published works would of themselves bear testimony to a life of rare industry and skill. But the most surprising thing of all is that he works entirely alone, unaided by clerks or assistants of any kind. As proof of his remarkable powers, here is an instance, the truth of which I can vouch for. By the cession of Nice and Savoy, France got possession of a considerable portion of the Alpine region. No maps other than the vague and most inaccurate existed of this new territory. At the request of the French Government, Viollet le Duc undertook to survey and map it. For this purpose he spent the months of July and August of last year among the mountains, and there, unaccompanied and unaided, during that short space of time, by means of his observations, sketches, and wonderful memory, he made himself so perfectly acquainted with the topography of the whole district, that, to use his own words, he knew the ground as well as if he had made it. Within another two months, after his return home, he had drawn to a large scale three accurate and beautiful maps of the French Alps:—A *carte à vue d'oiseau*, which shows the mountains, the snow, the glaciers, the rocks, and the very moraines, as they would appear to the eye from a balloon; a *carte géologique*, which exhibits the formation of the hills, even to the very crystallization of the rocks; and a *carte routière*, on which is faithfully delineated every track, stream, crevasse, chalet, or other object which can guide the tourist, who with this map in hand may find his way alone throughout the mountains. These maps, which have won the warm praise of members of the French Academy and other savans, will occupy two of the most expert engravers of Paris at least a score of months to execute in a form for publication worthy of the originals. This is not all. During the evenings of these two months spent in the mountains, he wrote and illustrated one of the most instructive of his smaller books, an English translation of which, I am happy to hear, is about to appear, entitled '*How to Build a House*.'

He is regarded as a high authority on the subject of modern—as well as of feudal—military engineering; and a treatise of his, now in the press, *L'Histoire d'une Forteresse*, which describes how a fort should be built, will doubtless contain much theoretical and practical information on that important branch of the science of war. During the siege of Paris no officer of the Engineers was more actively engaged or more skilfully contributed to the defence of the city.

In his construction generally, Viollet le Duc employs and combines the various modern materials with a scientific knowledge and artistic feeling unapproached by any one engineer or architect of our own day. He is becoming in France the veritable founder of a new School of Architecture. Though based on careful study and analysis of the ancient schools, it is not a mere revival or copy of what has been before, but a faithful expression of our present requirements and means. He brings into harmonious

conjunction those vital elements and immutable principles of art which guided alike the Greek of the time of Pericles and the masters of the Middle Ages. The more they are studied, the more I am convinced it will be seen and felt that the achievements of this celebrated Frenchman in the associated arts of Architecture, Sculpture, and Painting are not less remarkable for their catholicity of range than for the beauty of their design and mastery of execution."

THE TWICKENHAM CHURCH COMPETITION.

GREAT discontent is expressed as to the result. One correspondent writes:—

"The eleventh clause of the instructions to competing architects was as follows:—'That, in selecting the plans which may be adopted, the committee shall call in a consulting architect to advise with them.' This clause (if it means anything) must be construed to mean that the committee were to act in accordance with the consulting architect's judgment. Without this clause I am in a position to assert that two at least of the four architects invited to compete would have declined to submit plans. Far from following the advice of the consulting architect, the committee have actually selected for execution the design which that architect placed fourth in merit. If the matured judgment of an eminent consulting architect was to be ignored, *cui bono* wasting the subscribers' money in paying the fee for such examination of drawings? And why was it held out as a lure to the competing architects that the committee would be guided in their judgment by such architect's report?"

THE CEMENT WORKS AT SWANSCOMBE NEAR GRAVESEND.

ON Saturday last the men employed at these works made a demonstration in regard to proceedings now pending, in which Messrs. J. B. White & Brothers, of Galley-hill, have been indicted for causing a nuisance in the manufacture of cement. The complainant is Mr. S. C. Umfreville, of Ingress Abbey, situate about half a mile or more from Messrs. White's, at Galley-hill, and the complaint is that the smoke emitted from the cement shafts is very disagreeable and injurious to health. On the other hand, it is asserted that the smoke and fumes, though they may be disagreeable, have no pernicious effect, and that the men employed in the works are singularly healthy. Within the last few days it had been stated that the complainants would not be satisfied with Messrs. White experimenting and doing their best to mitigate the alleged nuisance from the smoke, but that they were bent upon closing the works. Messrs. White's men, numbering about 800, thus finding their means of livelihood in great measure at stake, resolved upon holding a demonstration, in which the men of the other cement manufacturers readily joined. The cement workers and their wives, numbering between 4,000 and 5,000 persons, marched in procession to the ground, with bands playing and flags flying. The Rev. T. H. Candy, rector, said he understood the object was to close the works, and that would be a great calamity to the parish. The death-rate had been steadily diminishing during the six years in which there had been connected with the place, while there had been a great increase in the population, which had doubled in little more than twenty years.

THE METROPOLITAN BOARD AND THE SEWAGE OF LONDON.

A VISIT has been paid to the farm where Mr. W. Hope utilises the sewage of Romford, in Essex, and at the luncheon, which followed, Mr. R. Rawlinson made some observations which, according to the *Metropolitan*, woke up the meeting. Mr. Rawlinson said he was sure Mr. Hope would agree with him that the results which they had seen that day were by no means the best that sewage could accomplish. The quantity of sewage was deficient, the quality was defective, and the land was of an inferior description. But taking the results with these qualifications, they had every reason to admire what they saw. With regard to the sewage of London, he hoped that before the Government found it necessary to put the Metropolitan Board into the grip of that powerful vice—the Court of Chancery—the members of that Board

would consider it their duty not to cast the sewage of London into the Thames, but to apply it to the land. The Metropolitan Board ought no longer to occupy the position of the dog in the manger—neither utilising the sewage themselves nor letting anybody else do it. With the aid of a proper and reasonable guarantee, Mr. Hope had assured him that the money required for utilising the sewage of London could be raised in a week. Why, then, was this not done? He could state as a positive fact that, owing to the discharge of the sewage into the river, the Thames was being silted up and seriously injured. The Thames Conservators were now taking this subject into consideration, and there was a strong probability that the Metropolitan Board of Works would be indicted. As certainly as this course was taken, so surely would the Metropolitan Board be compelled to keep the sewage of London out of the Thames. To utilise the sewage of the metropolis would require a space of from 80,000 to 60,000 acres, and he asked them to consider that the labour thus employed on that area would be increased fivefold up to tenfold. In times of depression instead of keeping able-bodied paupers in idleness, they should be set to work in preparing land for irrigation, so that waste labour should also be turned to account. He hoped that the Metropolitan Board would yet see its duty in this matter.

SCHOOL BOARD SCHOOLS.

Aberystwyth.—The new Board Schools of Aberystwyth were formally opened to the public on Tuesday, the 4th inst., by the chairman of the Board, Mr. Lewis Pugh Pugh. Accommodation is provided for 600 children; viz., 200 boys, 200 girls, and 200 infants, with separate playgrounds for the sexes. The boys and girls school-rooms are L-shaped, giving the teacher good control over the children. Each school has a class-room attached. All the rooms have windows on both sides, and are ventilated by means of perforated panels in the ceiling, communicating with troughs leading to the roof. Cold fresh air is supplied by means of hinged miss gratings in the doors, in addition to open windows. The boys' and girls' rooms are warmed by open ventilating fireplaces, but the infants' rooms are warmed by a hot-water apparatus, supplied by Messrs. Price & Co., London, as it was considered inadvisable to have open fireplaces in that department. The school desks are on the same principle as those adopted by the London School Board, viz., Moss's design for seating the children in pairs, and the arrangement is considered a great improvement upon the old system. The style of the building is Early Domestic Gothic, the materials being local rubble stone, with dressings, &c., of grey Doulton stone. The cost of the building, including lighting, warming, and fittings, is 3,900*l.*, exclusive of 550*l.*, the cost of additional concrete foundations, necessitated by the peculiar nature of the ground. The architects are Messrs. Szlamper & Aldwinckle, of London and Aberystwyth, whose designs were selected in a limited competition. Mr. Thos. Davies, of Aberystwyth, is the builder.

Bristol.—At the usual fortnightly meeting of the Board, Mr. W. Proctor Baker said the committee appointed to consider the purchase of a site for new schools at Bedminster reported that they had fixed upon a site off North-street, between Ashton-gate and Luckwell-lane. Mr. J. Thomas, the city surveyor, had reported on the land, and he said in his opinion the property was worth 765*l.* Mr. Baker also read a letter from the steward of Sir Greville Smyth, accepting the offer of 765*l.* for the half-acre of necessary for the erection of the schools. Mr. Lawes was of opinion that the designs should be handed over to the architect who had already been employed on two occasions. A long discussion ensued as to whether Mr. Coleridge, the architect to the Board, be employed to supply designs for the schools, or whether they should be advertised, and it was eventually decided to advertise for plans for schools to accommodate not less than 400 and not more than 600. Mr. Whitwill reported that the Freestone schools were approaching completion, and suggested some kind of public opening. The matter was referred to the committee.

Cowpen, N. Humberland.—The School Board of Cowpen have adopted the designs of Thomas Oliver, of Newcastle-upon-Tyne, for both the Cowpen and the Newsham districts.

with Shields.—The schools in Ocean-road, led by the South Shields School Board, opened on the 3rd inst. The buildings, which consist of two separate blocks, one for boys and girls and the other for infants, are enclosed within an acre and a half of playground, and thus raise the buildings considerably above the street level. The site, which other- wise was a somewhat difficult one to treat, began made conducive to the effect of the site of the Ocean-road front by elevating upon a retaining wall, which is surmounted by a plain wrought-iron palisading. The whole of the buildings are built of red brick, made upon the spot, with stone and white blue bricks sparingly used as dressings. Accommodation is provided for about 1,400 children. The boys and girls are placed in one block, the infants in another, each having separate simple class-rooms, hat, cap, and cloak-rooms, lavatories, conveniences, and covered playgrounds. The masters and mistresses have a separate private room, with the usual comforts. The walls have been built hollow, so as to resist the weather, and the warming of the school and class-rooms will be secured by means of hot-water pipes, fireplaces being adopted elsewhere. The ventilation is by means of ventilating valves, by openings in the ceilings and roofs, and by regulating pivot-hung windows, high above the children's heads. The cost will be over 10,000*l.* Mr. Thomas Brown, the architect to the School Board, has designed and superintended the works; and Mr. Hart Allison was the sole contractor; and Mr. J. W. Andrews the clerk of the works.

OLLOYD'S AND THE STRENGTH OF SHIPS.

A pamphlet clearly written by Mr. John William Richardson,* on a very important subject, the author, who is a well known ship-builder, draws attention to the strange fact that Lloyd's does not make any difference in scantlings, according to the strength of materials, or, indeed, for any other reason. One would have imagined that with stronger material they would have increased the scantlings; but not so: a fire ship is to be made no thicker than one of iron. Mr. Richardson shows how this and other strange rules encourage the construction and overloading of weak ships. It is a curious subject, calling as loudly for public attention as anything Mr. Pimms has already done, as regards ship-owners, ship-brokers, or ship-builders.

KELVIN-GROVE MUSEUM AND AQUARIUM.

For some time past a movement has been on foot for extending the Kelvin-grove Museum in the West End Park, Glasgow, and as the plans rapidly approaching completion, the necessary tenders for building will shortly be invited. The extension of the museum proper will consist of a hall, 88 ft. by 40 ft., with a gallery running round at a height of 14 ft. The staircase between the present building and the new building will be 30 ft. by 20 ft. The proposed extension will be carried out on the western side, new portion being in the Roman style of architecture, with a frontage of 85 ft., and a width of 40 ft. The entrance portico, with columns on either side, will be towards the east, and a tasteful balustrade will run round the front of the building. Further on the western side will be another hall, 88 ft. by 18 ft. and 20 ft. high, which will, perhaps, form the most interesting portion of the whole extension, inasmuch as the intention is to devote it to the purposes of an aquarium. Necessarily the accommodation will be somewhat limited, as compared with that provided at the Crystal Palace and at Brighton, as still many interesting specimens will be shown in the various tanks, which it is proposed carry round the walls of the apartment. The Town Council, some time since, voted a sum of money towards the erection of an aquarium, Lloyd's Register of Shipping, its effect upon the Art of Ship-building. By John William Richardson, London: Glasgow Wilson, Royal Exchange, 1874.

whilst the necessary funds for the extension of the museum proper are being raised by private subscription. Of the 7,000*l.* required for the purpose, it was recently mentioned by Councillor McBean, who has the matter in hand, that 5,000*l.* had been already contributed. It may be mentioned that the aquarium referred to is in no way connected with that proposed to be constructed by the Aquarium Building Company of Glasgow, Limited. This latter proposes to raise 100,000*l.* in 10,000 shares of 10*l.* each, and to obtain borrowing powers to the extent of 50,000*l.*; and it is said they have provisionally secured an extensive site in the heart of the city on which to erect a marine aquarium, concert-room, hotel, restaurant, shops, warehouses, offices, &c.

When the building is finished "Let us haste to Kelvin-grove" will again become a popular refrain.

TENDER FOR ST. JOHN'S CHURCH, HORSLEYDOWN.

Sir,—Your correspondent's letter with reference to the recent tenders for painting, &c., at the above church makes it necessary for us to ask you to insert this statement.

On the tenders being opened, Messrs. Mansfield's was found to be the lowest, but as it was so much below the others, it was "withdrawn" by the gentleman representing that firm, who said that there must have been some great mistake in it (as was indeed plain). We were then informed that by this cure had become the lowest, but as the acceptance of the tender rested with the churchwardens, we were told we should be written to on the subject.

We concluded, therefore, and we think very naturally, that our tender only awaited formal acceptance, and in writing to the architects on other business, we expressed our pleasure at being successful. We also forwarded the list of tenders to you, of course omitting the one that had been withdrawn, and, therefore, was no longer in the list. Not till after this did we learn, to our great surprise, that the withdrawn tender had been amended, sent in again, and accepted. We never supposed such a thing possible, and we think it would be difficult to find any contractor or professional man who would say that it should have been allowed.

Before the note apprising us of this had been delivered half an hour, we sent to your office, asking that the list of tenders might not be inserted, but as we were too late. We ought, perhaps, to have omitted the word "accepted" against our names, though we were but reckoning on the almost universal custom in doing so; but we still think that any tender that is withdrawn is in the same condition as one that has never been sent in, and has, therefore, no place in the list.

We stated it because we thought Messrs. M. could not desire its insertion, and we doubt much if they feel under any obligation to "One of the Contractors," who has so unnecessarily made the matter public.

We ask you to be good enough to insert this somewhat lengthy explanation; for we should be the last, knowingly, to send anything erroneous to you for publication.

FITMAN & CUTHBERTSON.

CONSTANT WATER-SUPPLY IN WHITECHAPEL.

In his report, dated 4th July, Mr. John Liddle, Medical Officer of Health for the district, says on this subject:—

"The water-supply on the constant service is now general in the northern part of the district, which is within the water limits of the East London Company. From inquiries which the inspectors have made of the inhabitants, it appears that the change from the intermittent to the constant service has given satisfaction; and no inconvenience has been experienced by the inhabitants while the alterations in the fittings were in progress, and the expense has not been complained of, either to the Board or its officers. The cost to the owners, in making the alterations, ranges from 7*l.* 6*d.* upwards; the amount depending upon the length of new pipe required. In some cases there has been no occasion to disturb the old fittings. The supposed cost of alterations has not been nearly so great as was anticipated, and I may add, that the companies are desirous to lessen as much as possible the expense to the owners of property. The screw-down taps are in general use, and they appear to be the best for private dwellings. The Kilmarrock machine, Kennedy's and Guest & Chimes's patents, are probably the best adapted for courts; but no doubt further improvements in the course of a short time will be made in the several apparatuses now in use. Every house in the district where a constant supply is given will be provided with a screw-down tap in the street, so that in the event of the fittings getting out of repair, the occupiers can turn off the water pending the repairs."

The constant water-supply is a question of so much importance to the public health that Mr. Liddle makes some further remarks upon the subject; and before doing so, gives a brief history of the water-supply in this district since the formation of the Union in 1854.

He goes on to say:—It is highly satisfactory to be able to record the progressive improvement which has taken place in the water-supply in this district since the formation of your Board.

All the pumps are now abolished.

Not one of the old stand-pipes exist now which were erected in several of the courts, from which a limited quantity of water was supplied six days in the week to those persons who were so fortunate as to be at home when the water was turned on,

and who possessed suitable vessels to hold and convenient places to stand such vessels, whereby the water kept for the next day might not become contaminated.

Water is now supplied to every house where there is a receptacle for it, and the complaints of an insufficient supply are very few. In those houses in which it is impossible either to fix a butt or cistern, water waste-preventers are in use.

Although such improvements have been effected in this district as regards the water-supply, much more is yet required to be done before a satisfactory result will be arrived at. Butts still exist, some of which are placed in cellars alongside of the privies; many of the butts are without covers and taps; some are too small, and the majority of them are in bad condition.

In all the reports which have been made upon the subject of water-supply to the metropolis, it is recommended that the constant service should be adopted. But in adopting this system of water-supply, it is necessary, for the protection of the public health, to lay down such rules, as regards the fittings, as will prevent any contamination of the water; for, unless due care is taken by all householders receiving water on the constant service, not only will there be danger to the health of the inmates of any particular house, but the danger may extend to all those householders who are supplied by the same service-pipe. This Mr. Liddle carefully points out, and makes other precautionary remarks.

UNSAFE BUILDINGS.

JOHNSTON V. JARRISON AND OTHERS.

THIS was an action (tried before Baron Pollock) brought against the defendants, who are warehousemen, for the damage to two cargoes of sugar of the plaintiff's stored in the defendants' warehouse, caused by the falling in of the building. It was alleged for the plaintiff that the warehouse was in an unsafe condition, and the evidence was given in the plaintiff's case of the existence of a crack in the wall of the gable, and of the absence of a proper number of props or stanchions placed between the beams of each floor and those of the floor above to act as supports, and of the loosening and displacement of such stanchions as were there. The case was not ultimately rested on those alleged defects, however, but it appeared to be accepted as common ground that the stanchions were sufficient if properly looked after at the time of the storing, and that the warehouse was otherwise safe, and, in short, that the accident happened from some want of care in the supervision of the stanchions and the placing them in their proper positions as the storing proceeded. It appeared that, owing to the springing in the floors, the stanchions do not tie the beams, and are only pressed upon by them at the times when the floors are loaded. Until then they are liable to get out of the upright, and it is necessary to put them into position before and during the loading of the floors. If one or two are out of place the floor will eventually give way as those above are loaded in succession and the superincumbent weight is gradually increased. The question became one as to whose duty it was to look after the stanchions, and whether, if it was the defendants', they properly discharged it, leaving the accident to have been caused by some subsequent carelessness on the part of the plaintiff's porters, by whom the storing was being carried on. The plaintiff called a number of the porters in question to prove that they complained of the state of the stanchions, and of their not being properly looked after by the warehouseman, while the latter stated that he properly examined them from time to time, and found them to be rightly placed, leading to the conclusion that the accident was due to carelessness on the part of the plaintiff's porters or to the mischance of some of the bags slipping obliquely against the stanchions and displacing them.

His Lordship, in summing up, directed the jury that it is the duty of a warehouseman, who does not let his warehouses as a lessor, but takes goods into it to hold and keep them for their owner, to provide a warehouse reasonably fit for their reception, and so to maintain and keep it, and that it was the duty of the defendants in this case to put the props into their proper position.

The jury, in the result, found their verdict for the plaintiff for 317*l.*

LONDON SOCIETY OF FOREMEN BUILDERS.

Sir,—Your report of the festival of the London Association of Foremen Builders and Draughtsmen suggests the question why so important a body of men as the builders' foremen of London have not a similar institution. The intelligence of towns above that of country districts is simply owing to the interchange of ideas from the continual intercourse of the people. This desirable result is brought about without its being aimed at, and often in spite of a foolish spirit of attempted isolation. It is evident, therefore, that frequent meetings and social relations between persons of a practical craft or profession must lead to the moral improvement of those engaged in it, and thus raise the result of their labor. This, in the first place, would benefit the trade or profession thus associated together, and ultimately the general public, inasmuch as the services rendered must ever be according to the status of those who serve.

The building trade is now taking a more important position than it has ever done in the past, and as education and culture extend among the people, so will the demand for good construction and design be increased. That the supply may keep pace with the demand requires that those engaged in every department of the trade should encourage its improvement and development. Our designers do not deem their education complete when they leave the office in which they have been articled. They

have their Institute and Architectural Association, and this for the further development of a profession to which they have had a special training. Our *constructors*, on the other hand, have no organisation in any way analogous to this Association of Architects, though there are many reasons why it is more demanded in their case.

What are the antecedents of a builder's foreman? Almost without an exception he has served an apprenticeship to one particular trade; or, in other words, he has learnt in detail one part of building construction. To this education is perhaps added good general ideas and other characteristics needed by one superintending a number of men. Now, I think all would agree this is a fair statement of the case; and, if so, I would ask the builders' foremen of London whether it is not a duty to the profession, and for the public good, to found some such institution? I feel sure I am but giving utterance to the thoughts of many foremen, and, as one among them, I would express the hope that these thoughts may lead to a discussion of the matter in your columns, resulting in the establishing of the London Society of Foremen Builders.

What has become of the Clerks of Works and Foremen's Society?—Ed.

NOTES FROM SCOTLAND.

New Town-hall for Paisley.—Sometime since Mr. George R. Clark bequeathed the sum of 20,000*l.* for the erection of a Town-hall, reading-room, and smoking-room for Paisley, and it is gratifying to learn that the munificent bequest is about to be turned to practical use by the trustees. A suitable site has been purchased in the locality known as the New Town, for about 9,000*l.* This site runs from the end of the old bridge, on the margin of the river Cart, east of High-street, to the Abbey Close, and extends up the Close to a point near the United Presbyterian Church, immediately opposite the abbey, and in front of the statue to be erected there to Wilson, the ornithologist. The committee of the Town Council, who have the work in hand, are about to secure a competent architect, to whom will be entrusted the design of the buildings and the preparation of the working plans. After meeting all the preliminary costs connected with the purchase of the site, preparation of plans, &c., it is estimated that there will be about 12,000*l.* in hand for the erection of the hall. According to the terms of Mr. Clark's will, his executors are not bound to disburse the legacy until the expiry of ten years after his decease, but his relatives have determined to begin the erection of the Town-hall immediately after the Whitsunday term of 1875, or in about two years after the date of the death of the generous donor.

ACCIDENTS.

Fall of a Roof in Bradford.—At the old gas-works, Eastbrook-street, seven men have been more or less injured. They had been ordered to scrape and tar the framework of an old iron roof covering a cinder-shed. At the moment of the accident six or seven of them were employed at various parts of the roof, when, without any warning, a large portion of it, measuring about twenty yards in length, gave way, and fell into the shed beneath, carrying with it the seven workmen, and burying them in the debris. Fortunately the ground in the shed was covered with cinders, which broke the fall.

Fall of a House at Leek.—A newly-erected shop, belonging to Mr. Devonport, confectioner, has fallen, a defect in the foundation occasioning the disaster. No one was hurt, but two men had a very narrow escape. A second or two before the house, which was not quite completed, collapsed, they were standing talking close to the building, but took alarm at noises they heard, and ran to the other side of the road, pursued by falling bricks and other material, the heavy chimney-pots smashing to pieces on the pavement at their feet. If the accident had occurred in the day-time, when the men were at work, and passers-by numerous, the result would have been frightful.

STAINED GLASS.

Darlington Parish Church.—The windows which have been purchased by public subscription in memory of the late vicar are now completed. They have been done by Mr. G. J. Baguley, of Newcastle-on-Tyne. The subject of the first window is Our Lord instituting the Last Supper. The centre window is occupied with a picture of the Crucifixion. Surrounding our Lord's head is a diapered ruby ground-work of antique glass. In the third window is the subject of the Entombment of Christ. The three windows are surmounted by architectural canopies, the two outer ones being varied by the introduction of foliage, and at the base

of the subjects are ornamental arcades, also with foliage.

All Saints', Lynn.—A new painted east window has been placed in the chancel of this church. It is the gift of the Rev. W. H. Prowse and Mrs. Prowse, in memory of the deceased mother of the latter. The previous east window is being re-fixed in the south transept. The new work is by Messrs. Hardman & Co., of Birmingham. The subjects represented are the Crucifixion in the centre, and the Nativity and Baptism in the side lights. The figures are about half of life-size. In the tracery above and in the base are figures of several major and minor prophets; and each subject is, as it were, framed in tabernacle work, to harmonise with the window tracery and the reredos beneath.

St. John's, South Horsey.—The church of St. John, Brownswood Park, has had several stained-glass windows placed in it, the chancel having three, representing subjects from the life of Christ, viz., the Agony in the Garden, the Crucifixion, and the Resurrection. The other windows throughout the building are mostly of an ornamental character, and have been supplied by Messrs. Gibbs & Moore, of Southampton-row, London. The reredos, which is of stone, has also panels of decoration, introduced on a material invented and decorated upon by the same firm.

St. John's, Bradford.—The east window in this church has just been filled with stained glass, in memory of the late Mr. John Light, J.P. The subject is the Ascension. The work was designed and executed by Messrs. Powell, Brothers, of Leeds.

Bath Abbey.—This church has received another addition to the many stained-glass windows already in the building, this one completing those on the north side of the choir. The window is one of five lights, and tracery. The main subject, which runs through the lower lights, depicts our Lord preaching His Sermon on the Mount. The window has been executed by Messrs. Bell, of Bristol.

Ashbourn Church.—A memorial window has been erected in the south transept of this church, as a token of esteem for the Rev. John Richard Errington, late vicar of Ashbourn, at the close of his ministry of twenty-two years. It was the wish of Mr. Errington that the memorial should be given in this way, as the window in the south transept was falling into decay, and he suggested that the restoration of it would be to him the most pleasing memorial. The subject and design of the window were entirely left to his judgment in these matters. The cost of the window is about 600*l.* The work, which was undertaken by Messrs. Hardman, of Birmingham, has now been completed. The window consists of seven lights, and the upper part is filled with tracery. It had previously been filled with stained glass, of which some parts remained, and these determined the character of the new window; indeed, one small compartment is fitted with the old glass. The design is based on religious music. The principal figures are those of Jubal, Moses, Miriam, David, Solomon, St. Cecilia, and St. Ambrose, the last being the reputed author of the "Te Deum." Above these are seven church-bells and ringers, in the act of ringing; and higher yet are angels and archangels, with musical instruments of various kinds.

Glaston Church, Rutland.—A stained glass window has recently been erected in this church to the memory of Mrs. Algernon Turner, of Bisbrooke Hall. The window was designed by the Hon. W. C. Evans Freke, and executed by Messrs. Hardman, of Birmingham. It consists of three lights and tracery; the centre light contains a figure of our Lord standing on the globe, his right hand raised in the act of blessing, and in his left hand the orb and cross, and from his head radiate rays of light in the form of a cross. In the dexter light is a figure of Jacob reclining in sleep with his vision represented above as recorded in Genesis xxviii.; and in the sinister light is a figure of Nathaniel kneeling under a fig-tree in the attitude of prayer, both pointing heavenwards. All three figures are surmounted by canopies in the style of the fifteenth century, and the bases below them are of the same style. The tracery is filled with angels encircling a centre, and some of them in the act of praising God with musical instruments.

Newton Toney Church.—On Saturday, July 18, was unveiled a memorial window in the parish church of Newton Toney, near Salisbury. It is the western window and consists of three lights.

The subjects are the charity of Dorcas, a distressed widow showing Peter the garments bestowed on them, and St. Peter presenting Dorcas alive to them. The window is in memory of Mrs. Paill, the late wife of the Rector, and from the studio of Messrs. Camm, Brod, & Smethwick, Birmingham.

Gloucester Cathedral.—A painted window has been erected in the cloisters of this Cathedral in memory of Mr. Robert Bransby Coopers, on three occasions, represented the city of Gloucester in Parliament. The window selected is the easternmost in the south walk, and the subjects are the conversion and the martyrdom of St. Paul, in accordance with the arrangements prepared by the late Bishop Jemm when Dean of Gloucester. Each of the two subjects occupies three of the six main lights, and the figures of angels, bearing the palm of martyrdom; above is the figure of the saint ascending; and in the top tracery light the martyr's crown. At the base is a brass, with the inscription. The artists were Messrs. Hardman & Co.

St. Mary de Crypt, Gloucester.—Messrs. Heaton, Butler, & Bayne have completed a memorial window in this church to the late William Watson, of Southgate-street. The window in the south aisle, near the seat of Mr. Watson usually occupied, consists of five lights, with tracery. In the latter is the figure of an angel, bearing on a scroll the words "Blessed are the merciful." The lower lights are filled by two groups, illustrating the feelings of the hungry and the visiting of the poor. Floral designs are substituted for the floral canopy work; and at the base, under a floral border, is the inscription.

Woodford Church.—A stained-glass window has been placed in this church, the gift of Mr. B. Gibbons, Fulseaw Park, Wilmslow. The subject is the miracle at the gate of Nain, which fills the three lower lights. The upper lights have the text across, "God hath visited his people," on a bright scarlet ground, with willies. Messrs. Edmundson & Son, of Manchester, provided it.

VARIORUM.

The twelfth annual edition of "the Red Guide to the London Charities," 1874-5, by Herbert Fry, has been published by Harlow. It is a remarkable list, and shows in alphabetical order the name, date of foundation, address, objects, annual income, and chief details of each institution.—"The Gardener's Chronicle," giving some particulars of paper-making, mentions a North American grass (*Arundinaria macrospora*, Michx.) which is said to some extent in paper-making. "It belongs to the tribe Bambusideae, and is a stiff-growing cane-like plant, attaining a considerable height. It is abundant on the banks of creeks and rivers in South Carolina and Georgia, the stems being stiff and hard, somewhat like those of bamboo; they appear to require exceptional treatment in their preliminary working for paper-making. A few years back a company was established in North Carolina for the purpose of preparing 'paper stock' from this plant. The process of procedure is thus described: 'Tightly compressed bundles of the canes are put into steam cylinders or guns, and then subjected to the action of steam at a pressure of about 170 lb. to the inch for about ten minutes. The gums and glutinous matters which hold the fibres together are thereby dissolved or softened, and whilst in that state the cane is blown in the air by the force of the steam in the gun, and the fibres are separated by the expansion of the steam amongst them. The fibres are then against a large target with considerable force, and the discharge resembles that of artillery. A battery of ten guns of the smaller size, 24 in. long and 12 in. in diameter, will yield over 50 tons per day. No delicate machinery is required, nor skilled workmen.'—"Capital & Labour has some trenchant observations on the scamping of work by workmen, observations which persons who know most about the subject will be the least able to controvert:—"Qualifications of conscience are soon stifled if it is the fashion to be unconscientious. And the worst of it is that fashion is so strong that there are no qualities to be stifled. One of the principal unfortunates impressed upon the young apprentice not only that he must do as little work as possible for as much pay as he can get, but also that what little work he does shall be done with the

that possible trouble to himself. That is a very comfortable lesson for a heedless youth to learn; and he never has occasion to unlearn it. He sees no more harm in shirring over his work than in drinking two or three more glasses of beer a day than he actually requires, or in having children before he can support them; so he slurs over his work to the end of his days. The essential dishonesty of this state of things surely does not need to be enlarged upon; and its mischievous tendency must be apparent to every one who looks at it fairly. It is an inevitable concomitant, however, of the existing arrangements by which, not through their fault alone, the working classes have come to regard their position as antagonistic to the position of the employers. Not till the two parties are united will the future prosperity of England be secured. But there is still a chance of their being united until a more independent spirit, sounder judgment, and higher principle than at present prevail have been developed among our workmen. Honest pride in good work needs to be fostered and stimulated."

Miscellaneous.

Preservation of Jedburgh Abbey.—For some time past the Marquis of Lothian has been devoting no little attention to the measures necessary for preserving the interesting ruins of Jedburgh Abbey. A notable feature of the building is the doorway of the cloister on the south of the nave. This, however, has been lying so rapidly to decay, that the marquis has decided, instead of attempting restoration, to produce it in the form of an exact duplicate, to be put up probably as an entrance to the family mausoleum in the abbey. The necessary drawings having been prepared by Mr. Anderson, architect, Edinburgh, the mason's work was entrusted to Horbertson, Galashiels, and the carving to Farmer & Brindley, London. Another subject of special anxiety has been the state of the central tower of the abbey. When the general condition of the building has been thoroughly examined by Mr. Anderson, who recommended the shoring up of the central tower, the careful picking out of the imperfect masonry, and the substitution of good solid stone work for the dry rubbish which now forms the heart of the piers. Sir G. Gilbert Scott confirmed Mr. Anderson's views, and, we believe, the Marquis has resolved to carry out the latter gentleman's recommendations so soon as complete command of the buildings can be obtained. At present the greater portion of the nave is occupied as the parish church. A new parish church is now, however, in course of building.

The Future Necropolis of Paris.—Méry is to be the necropolis of the capital; and as the creation of this relatively distant burying-place is but an adjournment of an important sanitary problem, the Council have resolved that a prize be offered, six months hence, for the best system of incineration, and that the Assembly be petitioned to pass a Bill allowing cremation to be facultative in the city of Paris. Méry-sur-Seine is 34 kilomètres north of Paris. Not only holiday-seekers alone have been running down to Méry, but architects, builders, and other sorts of speculators, and heads of families. Not many years ago the plateau was part of the Condé hunting-grounds. The entrance to the necropolis will lie between the villages of Soguelles and Leveillon, by which the road from Méry passes. The mortuary chapel will face Pontoise. I am sorry, for the sake of dwellers lower down the Seine, that all the sewage of the burying-ground must fall into it.—*Correspondent of Morning Post.*

Norfolk and Suffolk Artists.—The collection of pictures by deceased and living Norfolk and Suffolk artists, gathered together for the British Medical Association meeting at Norwich, has remained on view at St. Andrew's-hall, with the exception of the collection exhibited some years ago at the Free Library, there has not been a like opportunity of inspecting the works of local artists; and the present collection contains many pictures that had no existence at that time. The *Norfolk Chronicle* states that old Crome and his sons, the Standaards, the Starks, the Cotmans (father and son), Thirle, Opie, Vincent, Clover, Colkett, right, Priest, Hodgson, Sandys, Middleton, Emson, Loud, Freeman, Walker, and others are represented, but especially Crome and cotmans.

Müller's Orphan Houses.—Mr. Müller has issued his "Brief Narrative of Facts" in connection with his Orphan Houses on Ashley Down. He says that since the formation of the institution on March 5th, 1834, he has "obtained from the Lord, simply in answer to prayer," 617,000l. 38,800 children or grown-up persons have been taught in the various schools, entirely supported by the funds of the institution, besides the tens of thousands who have been benefited in the schools which were assisted by its funds; above 8,200 now frequent the schools. There have been, likewise, missionaries assisted by its funds, and of late years more than 170 in number. On this subject alone 138,000l. have been expended from the beginning. Also 4,408 orphans have been under Mr. Müller's care, and five large houses, at an expense of 115,000l., have been erected and fitted up for the accommodation of 2,050 orphans. During the last few weeks, he says, the expense of the institution have been so great, and the income so small, as that "the balance we had in hand has decreased altogether more than 5,000l.; and if this it were to go on about two months longer, we should not have a shilling left." He is, however, as full of confidence as ever, for all that.

Artificial Stone Pipes.—Mr. J. Fottrell, of Dame-street, Dublin, manager of a public company, has patented some improvements in artificial stone pipes and tubes, and in the coating or lining thereof, to render them suitable for the conduct of alkaline liquids and acid products from chemical, manure, and gasworks, for sewage, saline liquids, and gas. Mr. Fottrell says:—"For the conduit of gas I line the interiors and ends with a coating of silicate of soda in a crude state by painting such parts with a strong solution of the substance, and allowing it to dry slowly. Any other soluble silicate or aluminate may be employed or a mixture of them. For the conveyance of sewage, the tubes or pipes should be smoothly turned within, and when so arranged should be coated internally with a thin but perfect layer of bitumen laid on hot, and diluted with some oil in order to lower the fusing point so as to ensure complete union with the bitumen agglutinating the particles of stone. For acids, the mineral basis of the tubing as described in my Letters Patent, No. 3096, is altered, and the natural bituminous rock omitted from the composition."

The New Building Societies' Act.—The Act passed in the last session to consolidate and amend the laws relating to building societies in the United Kingdom contains some important provisions as to the liability of members, and will come into operation on the 2nd November, when the statute of the 6 & 7 William IV., c. 32, on Benefit Building Societies, will be repealed. There are 44 sections to the new law, with a schedule of forms to be used. The registrars of friendly societies in England, Ireland, and Scotland are to be registrars of building societies. There are various provisions as to the tables to be made and the objects of the society, the most important of which relate to the liability of members. The 14th section states that the liability of a member in respect of a share upon which no advance has been made shall be limited to the amount actually paid or in arrear on such share; and in respect of a share on which an advance has been made, to be limited to the amount payable thereon under any mortgage or other security, or under the rules of a society.

The Necessity for Public Playgrounds.—At an inquest held by Dr. Hardwick on the body of a female child who had been run over by a railway van, the learned coroner remarked that, owing to the inaction of the municipal authorities, the metropolis was almost without accommodation for persons to sit or rest, and the same remarks applied to open spaces for children's playgrounds. Headavocated the throwing open of the gardens in the squares for certain hours in the day. All children ought to have at least two or three hours, or more, exercise in the fresh air daily. The general public and authorities appeared indifferent to this most important matter, but it was one affecting the future of the country.

Peal of Bells at Clay-cross.—The new peal of bells erected in the church of St. Bartholomew's, Clay-cross, has been formally opened. The bells were manufactured by Messrs. Warner & Sons, of London, at a cost of 300l. The Bishop of Lichfield conducted the service held to celebrate the event. A public luncheon afterwards took place in the parochial school-room.

Laying the Foundation-stone of the New Samaritan Hospital, Belfast.—The ceremony of laying the foundation-stone of the Samaritan Hospital has taken place at the site of the building in Lisburn-road. There was a large and influential assemblage of gentlemen present. The building will be, in after years, one of many monuments in this town of a life devoted to the alleviation of suffering. Mr. Benn, the founder, has now passed away, but a cast of him has been preserved, and this will enable such a statue to be erected as will not only identify him with this institution, but will serve to keep his personal appearance fresh in the memory of those who knew him. The erection of this statue having been a part of the original conception, provision has been made for it by a niche over the principal entrance to the building. Mr. Benn has left a sum of money for the building of a larger hospital at Glenravel-street, as the editor of the *News Letter* states.

Monster Blast of Rock.—On Thursday in last week a limestone-hill, calculated to weigh 50,000 tons, on the Caplow Limestone Works, leased by Messrs. R. Briggs & Sons, was blown up with seventy barrels of gunpowder, each weighing 100 lb. The hill, which is 16 yards high, 40 long, and 13 broad, faces the highway from Clitheroe to Chatburn, on which stands the union workhouse, some 300 yards distant. The gunpowder was placed in a boring in the shape of the letter T, 16 ft. in circumference. The sound of the explosion was like the roar of artillery, and the appearance to the sight like a huge cloud falling. A portion of the walling of the highway was knocked down, a part of the workhouse roof was knocked in, and huge stones ploughed the fields like shot. Nobody was injured. One fragment, weighing about 100 tons, was thrown out a distance of 20 yards.

Masters and Men.—On Saturday evening last the foremen and clerks in the employ of Messrs. George Smith & Co., builders, &c., entertained Mr. Henry Gregory Smith and the members of his family at a banquet held at the Greyhound Hotel, Dalwich. Mr. George Smith was expected, but was absent by medical advice. Mr. Alfred Mansfield, who occupied the chair, proposed, in warm terms, the health of Mr. Henry Gregory Smith, who had always been found a true friend and a kind employer. Mr. Smith in reply said he considered that it was equally the duty of an employer to study the interests of his employes as it was for them to work for the interests of their employer. Perhaps on a future occasion he should be the inviter instead of the invited. He sincerely hoped that the same happy relations that had always existed between himself and those around would continue.

Kirkcaldy Fine Art Exhibition.—The third annual exhibition of the Kirkcaldy Fine Art Association has been opened, and promises to be of interest to the connoisseur as well as of value to the students of the district. The pictures hung this year number nearly 300, besides some pieces of sculpture, and include specimens of Jamieson (1636), known as the Scottish Vandyke, Sir H. Raeburn, Sydney R. Percy, Robert Herdman, R.S.A., Norman Macbeth, A.R.S.A., Waller H. Paton, R.S.A., J. B. McDonald, A.R.S.A., W. Beattie Brown, A.R.S.A., J. C. Wintour, John Smart, A.R.S.A., James Cassie, J. A. Houston, and many other artists, besides a considerable number of works by local artists and amateurs. Unfortunately, the Town-hall, where the exhibition is held, is very unsuitable for the hanging of pictures.

Opening of a Tumulus at Thirsk.—A tumulus has been opened near Kewpwick. The mound was situated on the brow of the hill to the north of the village on Kewpwick moor. The plain all along this range of hills abounds in tumuli. Canon Greenwell, Professor Rawlston, M.D., Curator of Oxford Museum, and the Rev. W. C. Lukis, Rector of Wath, were present. A cinerary urn was found containing ashes as if of a human being, and several skeletons. They are supposed to have been deposited nearly two thousand years ago. An old Roman road, leading past the Limekiln House, runs within a few hundred yards of the tumulus.

Public Park for Brighton?—A public park is wanted for Brighton, and the local journals are asking who will give one to the town.—"who, by his liberality or his energy, will associate his memory with a public park for Brighton?" Immortality is in the market.

New Schools at Ilkeston.—The foundation of new national schools has been laid by the Duke of Rutland, on a site known as the Cricket Field Ground, at Ilkeston, which he has given for this purpose. One of the old schools is to be pulled down, and the other is intended to be converted into a market-hall. Mr. Isaac Warner, of Ilkeston, has been contractor for the erection of the new schools, which are situated quite close to the church. The building will comprise three large rooms for girls and boys, and, in addition, four class-rooms, and will accommodate nearly 1,000 children. The cost of erection of these schools and another set in Granby-street, is expected, will not exceed 3,000*l*. A large number of people turned out to witness the procession.

Opening of a New Lecture-hall at Rosedale Abbey.—A new lecture-hall, built by the proprietors of the Rosedale Mines (North Riding of Yorkshire), Mr. Morrison, Mr. Leeman, M.P., and Mr. Sherill, M.P., for the miners, has been opened at Rosedale. The lecture-room is capable of seating about 400 persons. It is also to be employed as a reading-room. Beneath the chief room are a number of small apartments, hereafter to be devoted to discussions, educational classes, winter evening games, refreshments, &c. Provision is also made for sickness or accidents that may happen at the mines, the west end of the new building being an hospital for sick and maimed.

New Church for Battersea.—Mr. George Cubitt, M.P., has erected, at his sole cost, a new temporary church, in Plough-lane, Battersea, which was opened on Saturday last. A permanent new church is about to be erected, for which the Rev. Erskine Clarke, the vicar, has purchased a house in Plough-lane, to be used as a parsonage, to which there is attached sufficient ground for the sites of the new church and schools.

Unitarian Church, King's Lynn.—The memorial-stone of a new Unitarian Church was laid at King's Lynn on the 12th inst. The building is Gothic, of the Early Decorated period, and intended to accommodate 250 persons, and will cost about 1,000*l*. Messrs. Adams & Son, of King's Lynn and Wisbech, are the architects, and Mr. J. Leach is the builder.

TENDERS

For pulling down and rebuilding the Adam and Eve, Liverpool-road, Ilkington, for Messrs. Combs & Co. Mr. H. R. Cotton, architect. Quantities by Mr. A. J. Gate:—

Foxley.....	2,886 0 0
Newman & Mann.....	2,523 0 0
Williams & Son.....	2,768 0 0
Manley & Rogers.....	2,735 0 0
Hyde.....	2,705 0 0
McLachlan.....	2,498 0 0
Patrik.....	2,063 0 0
Toms.....	2,066 0 0

For fittings, &c., to the above, for the tenant, Mr. Scott:—

Foxley.....	2,403 0 0
Williams & Son.....	385 0 0
Newman & Mann.....	367 0 0
Manley & Rogers.....	365 0 0
Hyde.....	380 0 0
McLachlan.....	367 0 0
Toms.....	367 0 0
Patrik.....	336 0 0

For repairs, painting, &c., to Ashton and Beauchere Lodges, Balam-hill, for Messrs. Fox & Bondfield:—

Loat & Co.....	2,240 0 0
Boyce.....	270 0 0
Maxwell, Bros.....	262 0 0

For St. Paul's new district church (to be built of concrete), Clacton-on-Sea, Mr. G. Gard-Pye, architect:—

Clarke & Son.....	2,265 0 0
Luff.....	873 0 0
Dobson.....	865 0 0
Snelling.....	824 0 0
Saunders & Son (accepted).....	839 0 0
Drake & Co.*.....	569 0 0

* Concrete and plasterer's work only.

For Wesleyan chapel, Rivercourt-road, Hammersmith, Mr. Charles Bell, architect. Quantities supplied:—

Total.	Sum included for Squire.
Ennor.....	28,250 0 0
Dove, Bros.....	7,995 0 0
Cowland.....	7,987 0 0
Blisset & Son.....	7,844 0 0
Hobson.....	7,754 0 0
Elkington.....	7,664 0 0
Nye.....	7,640 0 0
Downs.....	7,397 0 0
Manley & Rogers.....	7,257 0 0
Stumpson.....	7,270 0 0
Gibson.....	7,000 0 0
Brown & Robinson.....	6,983 0 0
Newman & Mann.....	6,887 0 0
Nightingale.....	6,970 0 0
Adamson.....	6,888 0 0

For two houses in Snake's-lane, Woodford, Messrs. Hooper & Lewis, architects. Quantities not supplied:—

Judd & Hawkins.....	23,690 0 0
Staines & Son.....	2,346 0 0
Ling.....	2,670 0 0
Wells.....	2,268 0 0

For alterations to shops and premises, Nos. 61 and 62, London-road, for Mr. Horsford:—

Prebble & Morley (accepted).....	2,554 0 0
----------------------------------	-----------

For railway-sidings and loading platform at Norton, for the Conduit Colliery Company. Mr. J. R. Veal, architect:—

G. & F. Higham (accepted).....	2,805 0 0
--------------------------------	-----------

For engine-house, &c., for railway incline:—

G. & F. Higham (accepted).....	2,194 0 0
--------------------------------	-----------

For weighing-machine house:—

G. & F. Higham (accepted).....	2,138 0 0
--------------------------------	-----------

For alterations and enlargement of Congregational church, Fatcham, Hants. Mr. P. Chapman, architect:—

Plummer, Gambin, & Blackman.....	2,287 13 0
Tutte (accepted).....	278 18 8

For new ale store, at the Griffin Brewery, Chiswick, for Messrs. Fuller, Smith, & Turner. Mr. G. More, architect:—

Bangs & Co. (accepted).....	21,784 0 0
-----------------------------	------------

Head & Williams..... 57 15 0

For works, 9, Seymour-street, Portman-square, Mr. J. H. Stevens, architect:—

Elkington.....	21,300 0 0
Merrett & Ashby.....	11,350 0 0
Nightingale.....	1,238 0 0
Wagner.....	1,150 0 0

For rebuilding 412, Kingsland-road, Mr. E. H. Horne, architect. Quantities supplied:—

Marks.....	2,844 0 0
Hayworth.....	786 0 0
Lewis.....	773 0 0
Waldram & Co.....	738 0 0

For Wesleyan Methodist chapel and schools, Finsbury Park, Mr. F. Borcham, architect:—

Waldram & Co.....	27,910 0 0
Scrivener & White.....	7,360 0 0
Chessum.....	7,196 0 0
Dove, Bros.....	6,785 0 0
Roberts.....	6,773 0 0
Bayes & Ramage.....	6,700 0 0
Hill, Higge, & Hill.....	6,640 0 0
Ennor.....	6,631 0 0
Richards.....	6,380 0 0
Blackmore & Morley.....	5,865 0 0
Parsons.....	5,599 0 0
Parist (accepted).....	5,473 0 0

For a vicarage at St. Peter's, Paddington, for the Rev. W. H. O'Brien Hodge, Messrs. Vigers & Philipotts, architects. Quantities by Mr. Sydney Rogers:—

Conder.....	22,771 0 0
Thompson & Smith.....	2,723 0 0
Temple & Forster.....	2,673 0 0
Dove, Bros.....	2,645 0 0
Bayes & Ramage.....	2,450 0 0
Mark.....	2,430 0 0

For house at Eritth, for Mr. C. Moberly. Mr. Herbert Ford, architect:—

Carter.....	23,687 0 0
Webber.....	3,403 0 0
Perry & Co.....	3,358 0 0
Nightingale.....	3,339 0 0
Jerrud.....	3,277 0 0
Dove & Co.....	3,207 0 0
Wright.....	3,183 0 0
Scrivener & White.....	3,125 0 0
Marshall.....	3,120 0 0
Boye.....	3,063 0 0
Tongue.....	3,069 0 0
Adamson & Son.....	3,012 0 0
Kirk & Co.....	2,867 0 0
Small.....	2,741 0 0

For detached house, Banstead, Surrey, for Mr. A. Scarle, Messrs. Osborn & Russell, architects. Quantities supplied:—

Pope.....	22,669 0 0
Sabey & Son.....	2,476 0 0
Colls & Son.....	2,385 0 0
Keal (accepted).....	2,300 0 0

For alterations and additions to villa, Forest-hill, Mr. W. Thomas, architect:—

Eyder & Son.....	24,578 0 0
Crabb.....	1,412 0 0
Gates.....	1,393 0 0

For studio, Fitzroy-road, Regent's Park, for Mr. B. Goodall, Messrs. Batterbury & Huxley, architects:—

Manley & Rogers (accepted).....	2,250 0 0
---------------------------------	-----------

For alterations, &c., to Nos. 14 and 16, Westbourne-grove, for Messrs. Seward, Bros, Mr. W. S. R. Fay, architect:—

Blott.....	2,805 0 0
Bowles.....	861 0 0
Smith.....	550 0 0

For rebuilding Hainault House, at Chigwell, Essex (exclusive of paperhanging, plumbing, fittings, stove gasfittings, and bell-hangings), for Mr. T. Bondell, Messrs. Arthur & Harston, architects. Quantities supplied:—

Perry & Sons.....	22,944 0 0
Banor.....	2,897 0 0
Bangs.....	2,875 0 0
Pain.....	2,765 0 0
Palmer (accepted).....	2,450 0 0

Zerratum, August 15th.—New Roman Catholic school, Sandhurst. The builder's name should be Cumham, & Carras, as printed.

TO CORRESPONDENTS.

A. J. G. M. V. P. & R. W. R. A. E. C. P. A. M. T. R. G. C. H. T. R. T. P. C. M. R. T. W. A. J. P. A. R. A. F. G. H. T. R. T. P. C. M. R. T. A. M. R. G. W. A. F. G. M. T. M. R. T. H. M. R. R. B. N. J. C. M. W. P. R. G. Baron B. W. I. (block up the window, if not an ancient right). We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily publication. NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

	Situations	Situations
	per line	per line
Six lines (about fifty words) or under ..	2s. 6d.	4s. 6d.
Each additional line (about ten words) ..	6s. 6d.	6s. 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to reside in any part of the United Kingdom at the rate of the per annum, payable in advance. Halfpenny stamps accepted for amounts under 6*s*. Any larger amount should be remitted by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to DOUGLAS FOURDRINER.

Advertisements cannot be received for the current week's issue later than **THREE o'clock** on **THURSDAY**.

The Publisher cannot be responsible for TYPING MONIALS left at the Office in reply to Advertisements, and strongly recommends that CORRECTIONS should be sent.

NOTICE.—All communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent Garden. All other Communications should be addressed to the "Editor," and not to the "Publisher."

Bath Stone of best quality.
RANDELL, SAUNDERS, & CO. (Limited),
Quarrymen and Stone Merchants.
List of Prices at the Quarries and Deposits also cost of transit to any part of the Kingdom, on application to
Bath Stone Office, Corsham, Wilts. [Advt.]

Asphalte.
Soyssel, Patent Metallic Lava and White Asphaltes.
M. S T O D A R T & C O.
Office:
No. 90, Cannon-street, E.C. [Advt.]

TRELOAR & SONS,

Manufacturers of

COCOA-NUT MATS AND MATTING.

69, LUDGATE HILL, E.C.

CORK CARPET, FLOOR CLOTH, LINOLEUM, KAMPTULICON,

And all the new Floor Coverings.

The Builder.

VOL. XXXII.—No. 1648.

Ancient and Modern Furniture.



THE collection of articles included under the general term "Furniture at the Kensington Museum," has only somewhat recently become so numerous and important as to be regarded as a special department. The authorities have, however, since the acquisition of the Boulages collection of cabinets, chairs, &c., commenced a more systematic illustration of furniture and carved woodwork, and can now show the student or visitor a series of specimens which, if not, as they admit, quite a representative collection, affords examples of many of the leading styles of design and execution, past and present, in their best and most elaborate form. The publication of the *catalogue raisonné* of this class of work was entrusted to Mr. Pollen, who in a large and thick volume* has supplied an amount of information and descriptive criticism in regard to each object, which should very much elucidate the study of the collection, and will form an interesting compilation for reference apart from it: while the introduction preceding the catalogue furnishes a sketch of the history of furniture design, so far as there are data for it, written in a remarkably clear and readable style, and diversified by very able and thoughtful criticism.

So far, we say, as there are data for such a history,—for most articles of furniture being of more or less perishable materials, it is obvious that the study of it from any adequate number of examples must be confined to the period of the average duration of constructions in oak, walnut-wood, and ebony, and other even less lasting materials. Even so far as existing examples take up, however, a connected history of the subject has not yet appeared, and Mr. Pollen's essay is offered as "an attempt to connect together information which is to be met with in books on many subjects"; though the writer modestly disclaims the idea of having achieved a history that can be considered by any means complete.

The two extended chapters into which the introduction is divided deal with the subject from two different points of view: the first chapter tracing the history of the art of decorative furniture generally from one nation and period to another, in relation to the prevailing artistic taste of each period; while in the second chapter the author takes up special articles of furniture, as "bedsteads," "chairs," "tables," &c., devoting a separate section to each, and pointing out the changes which each underwent at different periods. The first chapter is divided under the heads *Antique*, including Egyptian, Ninevite, Greek, and Roman work; *Modern*, including Early and Late Mediæval; and *Renaissance*, including seventeenth and eighteenth-century work. The antique section is, of course, much the more concise; and, in fact, very detailed writing in regard to antique furniture must be based on so few examples or repre-

sentations, that only very general conclusions can be drawn in regard to it; and the few forms preserved to us are mostly well known through illustration, and have, in fact, formed a good deal of the stock-in-trade of painters and book-illustrators. It is not, therefore, much to the purpose to go over again what has been picked out with doubt and difficulty concerning the domestic habits and furniture of the Greeks and Egyptians. The course is clearer when we come to the times of Imperial Rome, and meet with representations and remains of typical forms of furniture, in the shape of couches and "loo-tables," and other things, the forms of which have furnished types, sometimes very little altered, down to perfectly modern times. The hints of ingenious and extravagant luxuries of service and arrangement at Roman entertainments, which reach us in a kind of half-understood fashion through the pages of satirists and historians, tell us for certain only that there must have been a great deal that would have interested us in the furniture and *objets de luxe* of that enervated and licentious period. When we quit this classic ground, and come to what our author calls by comparison the "modern period," we find little to take us beyond conjecture previously to the twelfth century, and then of course rather by records than by objects remaining. In the next two centuries one of the most marked and characteristic customs in connexion with furnishing of which we have record, is in the accounts of the preparations that were made in the bedrooms of Queens of England to which they retired before the birth of a child. Henry III. directed that his queen's bedroom "should be freshly wainscoted and tiled, and that a list or border should be made, well painted with images of our Lord and Angels, with incense-pots spattered over the list or border; that the four Evangelists should be painted in the chamber," &c. There is something not unsuitable or unpleasant in the semi-religious pomp with which the august expected event was thus surrounded. In one respect opinions would seem to have altered by the time of Henry VII., for in an account quoted as to the decking of the chamber of his queen for a similar occasion, it is observable that no figure subjects were allowed on the tapestry, "being inconvenient for ladies in such a case," and for fear of any sudden fright from "figures which gloomily glare." How characteristic is the last sentence, with its suggestion of heavy dark tapestry pictures, calling up such weird fancies as Scott has portrayed in his chapter on the "green-room" at the antiquary's residence. Our author points to the hammer-beam roof of the fourteenth century as accompanying or marking the period of great changes in furniture and household woodwork. The roof was no improvement scientifically on its predecessors, but it marked a growing taste for richer and more purely ornamental treatment of woodwork in this country. It was after this period that furniture and architecture assimilated more in design. Before this period "a certain originality and inventiveness was preserved in the decoration both of architectonic woodwork and furniture," and the general forms were designed "without immediate imitation of architectonic detail."

In noticing the constant repetition of architectural detail in the furniture of the fifteenth century, and its generally architectural character, Mr. Pollen suggests that we must take into account how extensively timber was used in the ordinary domestic buildings of that century,*—

* And far into the next, as a passage in the first scene of the "Merchant of Venice" curiously indicates, where Solanio describes what his anxiety would be if he had ships at sea:—

"Could I go to church
And see the holy edifice of stone,
And not bethink me straight of dangerous rocks?"
The evident conclusion is, that he would not be in the habit of seeing any other buildings "of stone."

oak especially, which became the favourite wood both for house-building and furniture,—and probably the same man who carved the beams and panels on the house-front would be called on to make the furniture, and this intimate connexion between the two branches of work may also have paved the way to the extensive imitation of stone detail (buttresses, &c.) in the furniture of the late Perpendicular period. It does not do to be too critical upon matters of principle of this sort, perhaps; for a quantity of the finest ornamental furniture (and other work, too) in European countries is bad in principle; but one cannot help comparing the effect on the judgment of the finest of this architectonic work with that of the large cabinet of German make (No. 497, photographed in the catalogue), to which Mr. Pollen applies the epithet which, we remember, involuntarily escaped us on first noticing it, "grand"; and it really is that, yet it is absolutely without the refinement of modern cabinet-makers' design and workmanship; it is simply a great solidly-put-together piece of carpentry, decorated with fine metal hinges and with sunk tracery ornament of the most beautiful, though simple, design, and so placed as to add to and emphasise the square, massive character of the whole. It is a striking instance of the effect that may be obtained without going beyond the sphere of carpentry proper, and without the slightest imitation of detail properly characteristic of another class of object or of material.

Yet, on good or bad principles, there was much beautiful furniture made in England in this Late Gothic period; and, as Mr. Pollen observes, "It is difficult to realise," in regard to these works of art, "the England which Leland saw in his travels. It must have been full of splendid objects, and during the reign of Henry, the feudal mansions, as well as the numerous royal palaces of Windsor, Richmond, Havering, and others were filled with magnificent furniture. Mabuse and Torrigiano were employed by the king, and this example found many imitators; artists, both foreign and English, were employed to make secular furniture, as rich and beautiful as that of the churches and religious houses that covered the country." And yet, as our author observes, "the whole system awaited a change;" and perhaps this coming change was as much foreshadowed by the increased attention to, and correctness in, delineating the human figure, as in anything else. For it is a curious, but we think indisputable fact, that the power of drawing or carving the figure well, and the indulgence in it, has scarcely ever co-existed with the power of producing the most picturesque and fanciful ornamental work. The one seems adverse to the other: it is so in special nations, as well as at special periods, as we see in the case of the Japanese, as well as other Eastern nations; splendid in the brilliant fancy and exquisite workmanship of their ornament, contemptible and ludicrous in their figure-drawing.

However, the Renaissance dawned, or set (whichever the reader please) upon Europe, and architectural forms, imitations of Classic detail, became predominant in furniture. "An architectural character, not proper to woodwork for any constructive reasons, was imparted to cabinets, chests, &c. They were artificially provided with parts that imitated the lines, brackets, and all the details of Classic entablatures which have constructive reasons in architecture, but which, reduced to the proportions of furniture, have not the same propriety. These subdivisions brought into use the art of *joinery*." Furniture was taken out of its obvious forms in order to impress upon it a Renaissance character. It was not perceived at the time that this might be done, and unity of character might be entirely preserved between the architecture and the furniture, without transferring the treatment

* Ancient and Modern Furniture and Woodwork in the South Kensington Museum: described with an Introduction, by John Haverford Pollen. Published by the Science and Art Department of the Committee of Council on Education, by Chapman & Hall, London.

and details of the former to the latter. But the movement in favour of this architecturalised furniture was as universal in Europe as the Renaissance movement itself; and, as Mr. Pollen observes, "in describing the furniture of Central Italy of this period, we describe the history of contemporaneous furniture throughout Europe." And we may add that modern society has, for the most part, been ever since under the dominion of this architectural idea in regard to furniture. And this domination is owing not only to the great intellectual prestige of the Renaissance, associated as it was with some of the greatest names in the history of art, but to the fact, alluded to at the commencement of these remarks, that so little furniture remains earlier than the sixteenth or latter part of the fifteenth century; consequently we date back, or the popular notions on the subject do, only to times when the architectural ideal was in full force; and there is no store of counteracting models of another school to act as a corrective to public taste. The consequence is, that the majority of persons can form no idea of a bookcase or a cabinet or a wardrobe except as a thing with a cornice, and think it unfinished without; and we see daily examples of architectural-looking sideboards with consoles and brackets supported on substantial-looking columns which, to the amazement of the beholder, swing away with the door when it is opened. It is excusable that the public, who have been habituated, one may say, for generations to this style of thing, should regard it as a necessary condition of ornamental furniture; indeed, one may suppose the taste for it to undergo hereditary transmission; but what are we to say to some of our leading Gothic designers, the priests and profits of the "true" in art, who out-herod Herod in this respect, and put forth designs of cabinets with sloping roofs, imitation tiles, and dormers? If they are laughed at for this, what else can they expect, on their own principles? And why do they do it?

After Italy, there can be no question that France came out most successfully in the execution of Renaissance furniture. Two or three of the examples in the Kensington Museum are, allowing for defect of style, unsurpassable in their way. The English artificers scarcely attained the same refinement; their work may be mistaken for Flemish at times, but not for French. It may be doubted, however, whether the north German woodwork of the Renaissance, though inferior in workmanship, is not more interesting and picturesque in effect, and more masculine and vigorous in manner. Taken as illustrated at Kensington this is certainly the case, unless in regard perhaps to one French cabinet. The figure decorations are inferior to the French in execution, but they have more point and interest, much of the French figure sculpture of the period being confined to neat execution of nondescript half-figures ending in artificial scrolls, and suggesting nothing whatever either of beauty or interest. In the Flemish furniture work the figure is made much more rational use of as a rule. "It should be added, also, that their designers and architects had an immense sense of dignity, which we recognise immediately when we see their compositions as a whole. Depths and hollow points of light, prominences and relative retirement of parts in their arrangements of carved ornament, were matters thoroughly understood; that general greenness which we call 'effect,' a certain impression of their work as a whole, which they succeed in imparting to the mind of the observers." A somewhat similar criticism may be passed on the work of the Elizabethan period in England, of which Mr. Pollen observes that though the "proprieties of art" are violated by them at every turn, "yet we retain a sense of their dignity and appropriateness as a whole which defies criticism." He adds that is certainly the case, that even the comparative rudeness of execution adds to their effect, "often much lessened by the more mechanical neatness of modern work when reproduced in this style." That this is so is undoubtedly owing to the broader play of light and shade which this rougher execution allows of, in comparison with the smooth surfaces and thin sharp edges of modern work of the same school. It is strange that this should not be perceived by such talented modern makers as Messrs. Ponsardin, for instance, whose beautifully finished cabinet (2,692), with the figures in relief of excellent design and modelling, nevertheless has a singularly tame and merely pretty effect in contrast with some of the works of the sixteenth century adjoining it.

The introduction of marquetry, together with the decline of the architectural movement of the Renaissance, encouraged the treatment of boxes and cabinets as such, the ornament being applied in flat inlay, instead of in the shape of architectural features and carving. It must be admitted, however, that the works produced in this form are for the most part inferior in character and interest to the best of the Renaissance style proper; but there is no reason why they should be. The inlaid furniture was, however, often made so destitute of surface relief or construction line, that its appearance was weak and poor, in spite of the elegance of the ornament.

Every one is familiar with the ornament of the eighteenth century, or that most characteristic of it, which has immortalised Louis XV., under whose reign it originated. There are some typical specimens of this in the Museum in the shape chiefly of picture-frames, out in soft wood (gilt) in those extraordinary broken curves sometimes called *rococo*, a term originating, all our readers may not be aware, from *rocaille*—rock and shell work. The close of the century, however, saw a comparative purification of taste in the rise of the *Louis Seize* school, noted for a finish and delicacy of execution, and a certain cold elegance of design, suited at least to the feeling of the time.

The whole of this French post-Renaissance work is, in fact, pre-eminently the art of the *salon*,—of a society rich, luxurious, and coldly intellectual, desiring to have everything brilliant and elegant about it, and indifferent as to truth of principle or dignity of style. There is a sort of *moral* about furniture, a relation between its character and the character of those who use and approve it, which gives to a collection of work of this kind more than a mere artificer's interest. In the great activity that is now being displayed in the revival of artistic furniture, it is gratifying to see how much purer and better the taste of the drawing-room is becoming (where it has any taste at all) than was that of the French *salon*. There are symptoms, too, of something like a chance of art furniture for the many, as well as for the few. The highest class of work, of course, must always be expensive, but there is more effort now towards making things artistic in a simple way than there has been for a long time, though still within very confined limits.

We have not space here to follow our author through his chapters on the special history of different branches of furniture; but we may return to the subject in reference to some of the typical examples to be found in Kensington Museum. In noting our appreciation of Mr. Pollen's valuable labours, we may express a wish that this catalogue could be issued also in a small and portable cheap form, without the illustrations, and perhaps with some abridgment, with a view to induce its use by visitors on the spot, and in examining the furniture. The present volume is too large except as a reference catalogue, and is not likely to be bought by ordinary visitors, who nevertheless would be much the better for some guide to point out to them what is really best worth study and admiration. The persistency with which they at present collect round and exclaim over all the gilt articles, mostly the worst in point of taste and artistic value, is rather painful to the nerves of the critical bystander.

The only fault we have to find in connexion with the catalogue is the entire want of order in the arrangement of numbers either in the book or in the Museum. When we wish to refer from the object to its description in the catalogue, a considerable hunt through the pages is required to come on the number; and as to finding in the Museum an object mentioned in the catalogue, that seems to be a mere matter of chance; you may or may not. Mr. Pollen gives, as a frontispiece, a chromo-lithograph of a large carved and gilt coffer, as one of the finest specimens in the Museum of Italian work of its class. This, however, is nowhere in the furniture corridor, nor among the works of a similar class in one of the upper galleries, nor could any official furnish information as to its whereabouts. This is not quite as it should be. A more systematic arrangement and classification of the objects mentioned in the catalogue would surely be possible, and is certainly desirable.

Freehold Property in the City of London. Messrs. Haxell & Green have sold at the Mart the freehold property, 15, Gresham-street West, with a frontage of 21 ft., for the sum of 10,000l.

FRENCH EXCURSION OF THE ARCHITECTURAL ASSOCIATION.

On Friday evening in last week, after a fortnight spent in company, the party mustered in good force at Rouen, picking up there a few stragglers who had not followed the other part of the second week's programme, for which Rheims had acted as the deputy-headquarters. Then a dispersed and those returning thus to standard, devoted a postprandial minute or more to comparing notes, and the orthodox mixture of speechmaking and ringing cheers;—in English regarded with calm complacency by onlookers, but here the theme of some wondering comment, and it may be of doubts as to the entire sanity of such fabricators of strange sounds. Imagination is not given to every Frenchman vigorous enough to startle him into ecstasy at English hurrahs and the expression of convivial feeling in "musical honours." M. l'Abbé J. Génin, l'Abbé Senlis, may well be regarded as the to be expected exception; when writing in the following way, with no little enthusiasm, a somewhat similar performance in his town:—"Rien de plus touchant et de plus gracieux à la fois, que de toast Anglais, chanté, le verre en main, par des voix mâles et patristiques, dans les salons de M. l'Evêque." But at Rouen to the British party came no lingering doubts—for they drank and toasted the leader who had brought a good time to a happy ending—by his forethought, knowledge, and personal kindness.

At Soissons, the party were politely received by the Bishop. M. l'Abbé Delaplace, Dean of the Chapter, and two of the members of the committee having charge of the building, were in attendance during the stay at the cathedral.

At Rheims, M. Le Bay, Curé-Doyen de la Basilique de Saint Remi, accompanied the members to all parts of his church, taking an active interest as a practical archaeologist in the many architectural problems to be found in the interesting example of an earlier building remodelled into Lanet. Mr. Leblan, of Rheims, architect, thoroughly familiar with every detail and armed with the complete and beautiful series of drawings prepared for the Government in illustration of this historical monument, attended; as also the architect who some thirty years ago designed and carried out the west front as it now stands.

In order to meet the party at Laon, M. confère, M. Boeswillwald, made a special journey from the south of France, and spent a most active time in the cathedral and at Laon. Martin and the other buildings of interest in the city, till the hour of departure arrived. Triforia, towers, external galleries,—every portion of the works of the great cathedral,—we visited in his company, and a piece was set upon the nave floor, by his direction, to show the construction of the new iron roof (slated, but of wood used). M. Dechaume, the sculptor, was at work on the west front, should not the piece without a word of thanks to him for his attention, nor the courteous and welcome-giving clergy of Laon.

At Chalons-sur-Marne,—but why continue recital which for those not present might be tedious, and for those present unnecessary. Almost without exception, the clergy, who have been apprised of the coming, showed themselves eager to be present, and to bring other local authorities with them. The good Curé of Chalons (sur-Oise) is stated to have announced from his pulpit on the previous Sunday the expected arrival, in the course of the next week of "La docte caravane,"—as (with a happy allusion to the five-horse vehicles conveyed M.M. les Archéologues d'Angleterre) one of the local journals denominated the party.

In so rapid a movement through a number of monumental buildings, some distinctive features of architecture and its condition, of course, force themselves prominently into notice. Of these there is the very considerable amount of repair and renewing that has been lately done, or is now in hand. It is hardly no novelty in England to find dilapidation being provided against, and buildings threatened with ruin, injured by unseemly interpolations being restored to something resembling their original condition. But the pertinacity of the efforts to maintain to complete afresh ancient buildings in England seems even outdone by that shown in France, at any rate, in the case of the more prominent buildings. Of course, this is no new matter.

* See pp. 703, 721, ante.

for long it has been the cause of no little consternation to architectural antiquaries and the numerous body of critics more devoted to the historical aspects of, and preservation of authenticity in, national monuments, than concerned for their completeness of design, or troubled at lacunæ in their details. The conservative instinct in England has allowed but a narrow field nowadays to the restorationist; and that field, as each day the arena for practice grows narrower, still lessens in theory. But let us note, in series, some of the important buildings of France looked at during the last few days that have been very much changed in the course of no great number of years, or are now in a fair way of losing some of their present features. St. Germain des Prés, one of the oldest buildings in Paris (nave of eleventh century) is now by no means unpleasant interior, decorated in the time of Charles X. and onwards, with "nave capitals copied from the old with scrupulous fidelity"; and externally its Romanesque tower is the result of considerable restoration. Notre Dame every one has watched, and the renovations of its buttresses and piers, the renewal of statues and carving, as well as its additional sacristy and other buildings to the south. La Sainte Chapelle is still in hand, with scaffolds at the west doorway, and changes of stonework in progress. Its internal painting, red and green, and gilt, and blue, has for years been the theme of regret among the advocates of visible joints in masonry, and of natural light and shade; and enthusiasts for thirteenth-century stained glass grumble at the violent repairs to the wall surfaces, urging that they should be better content to rest their eyes at intervals there while drinking in the splendours of the glazing. The *flèche*, so noticeable externally, dates from 1853. The old church at Montmartre, the hill which is to hold the wonderful Marie Madeleine building, proposed by the Archbishop of Paris, is now regarded as a public monument, and as such cared for by the State; and, as a consequence, the whole of its triapsidal west end is closed off for restoration, though the necessary demolition is not yet seriously begun. St. Denis still remains as it has for years, the subject of pulling down and putting up; several bays at the west are now fenced in the church; the chapel of brick and plaster dating up to now on the south side of the nave. (a work of the last century) approaches its righteous doom. The Church of Notre Dame, once the Cathedral, at Sens, has all sorts of renewals in the eastern chapels, and parts of the west front. Beauvais Cathedral is in hand under M. Vandermere. The wonderful tower of Champagne is scaffolded from church to tower gable. At Evreux, the nave is, with the exception of three bays, divided off from the rest of the church, and is being actively dealt with under the guidance of one of the Government architects. Two of the flying buttresses on the north have been pitched in pieces on the ground, and as some cracks have shown themselves in the filling in of the vault it is proposed to renew the whole. These works are not regarded with favour apparently by the townspeople and local gentry at Evreux, who appear to lean to the restoration, if at all possible, of the old work mutilated. One of the local anti-destruction party took occasion to mention that M. Camette, chef de division des travaux au Ministère des Cultes, deserved a place in the annals of history for destroying (as he put it) the Front of Périgueux, the cathedral at Angoulême, &c., and for finishing up a long career by placing the well-reverenced cathedral of Auxerre. At Soissons, also, in the rare south-west corner with its circular south end, contemporary with the choir at Canterbury (William of Sens, 1144-1178),—a dated example, 1168-1175,—repairs are being rapidly made for the pulling down. The platform is just complete at the level of the clearstory. The work is to be executed where necessary. The western portion of the nave at Laon is temporarily cut off, the whole building has been the scene of very busy operations. The re-building of the tower is a work of great importance—was effected by building between the great arches, and filling also on the outer sides of the piers, which were then turned from the new sound work (two to each side), and the piers, &c., thus saved by their loads, rebuilt. The new roof is probably worthy of imitation, certainly against the principle nothing can be said; its perfectly combustible construction is far in advance of the threatening masses of woodwork piled up from time to time on our English cathedrals.

The little chapels (upper and lower) of the Episcopal palace, east of the cathedral, are just being got in hand; now they are beautiful, if somewhat untidy, masses of grey colour, covered with all the rust of untouched antiquity. The cathedral at Chalons will soon have many new parapets and buttress tops. Its south transept has been refaced or rebuilt,—but unluckily shows fresh and wide fissures on the surface, having, to all appearance, torn itself bodily westward. Notre Dame here has been restored thoroughly inside and out. Workmen make signs of their presence at Rouen. One would hope some day the wondrous central spire will receive abatement. The fresh spire at St. Maclon caused a sigh to some of the party who had seen the church without it. The original defect—a want of repose—has been intensified by this erection, which calls out, like to all around it, for the first share of attention, and tends still more than of yore to render a mere aggregation of details what for its many merits,—its elegance and grace among others,—most of us would be glad to regard as a work of serious architecture, possessing a real unity of character.

In the above list, which is sufficiently lengthy to point a moral for those who wish to indulge in that recreation, no notice has been taken of numerous other ecclesiastical buildings which show the marks of less radical reparations, nor have the civic buildings been mentioned. The mention of the fact that a water-tight roof, with central gutter, has been erected in the Salle des Pas Perdus (west wing of the Palais de Justice), at Rouen—leading one to expect a renewal of the old ship-like roof of that large hall,—may, however, interest some traveller just now; and the additions of masonry of about a third of the previous height, and of a bracketed wooden gallery, and a conical slated roof to the Tour du Donjon, associated with Joan of Arc, form, taken together, a work of restoration—no doubt efficient enough for some purpose held in view by the directors—but a little amazing to advocates for letting things alone when you can.

As being apparently in marked contrast to the tendency at work, leading on occasion to restoration *à outrance*—the neglect of other good buildings might be alluded to: as evidence (some of our patriotic band would allege) of the English not being the only illogical people in existence. St. Frambourg, at Sens, one of the finest of possible unadorned interiors, of most elegant Lancet, just clear of Transitional—nearly 32 ft. clear width, and ten full bays in length, and with an apse beyond,—is a stable and cart-house, and a shed for building stores. St. Pierre, in the same town, mostly Flamboyant, but with many remains of Lancet work of great beauty, is a cavalry stable, of which one may allow M. Gérin to speak:—"Faut-il ajouter à notre honte,—espérons qu'elle sera main-découronnée par ces architectes contemplèrent les chevrons de nos cuisines installés dans les nefs bâties pour la prière?" (*Journal de Sens*, August 20th). St. André, at Chartres, with very rare Transitional carving, and rich Flamboyant side-chapel, and a west front of beautiful proportions, is filled with hay,—is, in fact, part of the buildings of a farmer. St. Pierre, at Soissons, nave and side aisles, large west doorway of four orders, and a most elegant Transitional design, with a strong tinge of Romanesque feeling, contains a cooper's workshop and casks. And these are only one or two instances among many,—though, perhaps, as decided as any that could be conveniently hit upon as samples of model ecclesiastical edifices turned wholly to not particularly dignified secular uses.

At the risk of descending still further into common-place, another impression made on the mind by actual contact with a number of buildings in a short space of time, and not simply the result of reflection,—may here find a place. It would foolishly seem also to run in with a prevalent feeling among some of the leading practitioners of English Gothic just now.

The great use of the visible vaults connecting the interior of a building into unity,—binding the whole together at the summits of the walls, as it is bound by the floor at their bases,—appears indubitable,—instinctively felt, indeed,—when the single walls of the ordinary English parish church are imaged out beside the still-uprising masonry of arched walls,—the stone vaults found in such French parish churches as Melle, Champagne, Gonesse, &c. It may be ungracious to depreciate the graceful and grand timber roofs that, well fitted for their positions, crown not a few of our larger parish churches;

but it would seem a simple fact that no interior can equal in genuine expression of architectural oneness (connexion and interdependence of parts) that constructed from base to ridge in similar materials, and with all the main bearing portions evidently in a state of compression. Apparent altitude, so essential an element of dignity of effect, can never be attained without some courageous insistence on so vulgar a thing to all seeming as simple extent of dimensions.

Raising the side walls up to the wall-ribs, and carrying the eye without a break of colour, or discontinuity of design, along an over-arching vault;—these are means by which the natural heights may be seemingly increased. But nothing can make up to the ordinary English church for its pair of divisions, with no outrageous space for either,—when thought of in comparison with the three-storied bays of lofty ground-stories and clearstories, with blind stories well in scale, and supplying usefully, also, another term in the proportions.

But these considerations would find with difficulty their necessary limits, and would no doubt lead one further than opportunity will allow. It may, therefore, be advisable to break off now, and therefore to postpone the promised diary.

Dieppe, August 31.

JOHN HENRY FOLEY, SCULPTOR.

A GREAT artist has left us. Mr. John Henry Foley, R.A., who died at Hampden on the 27th ult., was incontestably at the head of his profession, and had achieved a reputation which will grow as the years go down,—as shadows do at nightfall." He was born in Dublin in May, 1818, so that he was only fifty-six when he died. His attention being early directed to art by his step-grandfather, who was a sculptor in the Irish metropolis, young Foley, when only in his fourteenth year, entered the drawing and modelling schools of the Royal Dublin Society, and, having carried off almost every prize, resolved to try his chances on the larger and wider field of England, and to make sculpture his profession. With this object in view he came over to London, and became a student at the Royal Academy. This was about the year 1834, when he was just sixteen. Five years later, when he was scarcely twenty-one, he appeared for the first time as an exhibitor in its rooms. His works in 1839, "The Death of Abel," and "Innocence," attracted much attention; but it was his contribution of 1840, "Ino and Bacchus," which may be said to have made his fame, and from this period his success was assured. The work itself was purchased by the Earl of Ellesmere. At the competition invited for the important task of executing statues for the new Palace of Westminster, Mr. Foley readily entered the lists, exhibiting, in addition to his "Ino and Bacchus" just named, the "Youth at a Stream," executed for the occasion. At this time, however, his commissions were but few, and the writer well remembers when he went to Mr. Foley, on the part of the Art-Union of London, with proposals that he should execute for that Association statuettes of the "Youth at a Stream," and "Innocence," to be produced respectively in bronze and Parian, the more than ordinary gratification expressed by the sculptor. These commissions were carried out with the most anxious attention, as was a similar commission for the same Association in later days, a reduction of his noble statue, "Caractacus," which, executed in bronze by Mr. Hatfield, we have no hesitation in regarding as the finest work of its kind produced in England.

The Westminster Hall competition led to his being commissioned to execute the statues of Hampden in 1847, and Selden in 1853. Mr. Foley in the meantime became an Associate of the Royal Academy in 1849, and two years later his well-known work, "The Mother," was exhibited. In 1854 the Corporation of London requested him to execute "Egeria," which now adorns the Mansion House. For the same body he modelled four years afterwards the "Caractacus," which is also placed in the Mansion House, and to which we have already referred. Before this work was finished, however, he received a commission from Calcutta for a group, "Lord Hardinge and Charge," which he executed in bronze, and on the completion of this in 1859, he received a public request from upwards of a hundred and fifty gentlemen distinguished in literature and art, asking him to provide a copy of the work for the metropolis as an illustration of the perfection of contemporary art. Another

noble group—the equestrian statue of "Sir James Outram" (probably his greatest work), also for Calcutta—was, as may be remembered, temporarily placed in Water's place, whence it was finally removed at the close of last year. A committee was formed in this case to secure a replica of the work; and Mr. G. F. Teniswood undertook to act as honorary secretary. Some hundreds of letters were sent out inviting subscriptions, but the replies did not justify proceeding, although the admiration expressed was universal. In 1868, the year in which his "Caractacus" was produced, Mr. Foley was elected Royal Academician, and gave as his diploma work his "Comus." Even that date requests for the eminent artist's services came in on all sides, from public and private sources, with such rapidity that he was unable to execute them, and for a time serious illness compelled him to abstain from work altogether.

Previously to his election as Royal Academician, he had executed, besides the works mentioned above, the "Houseless Wanderer," "Lear and Cordelia," "The Death of Lear," "Venus rescuing Æneas," "Prospero relating his Adventures to Miranda," "Contemplation," and "The Monnre."

Of late years he exhibited nothing at the Royal Academy, in consequence, as we have understood, of what he considered a slight. Among his most important portrait statues may be mentioned Sir Charles Barry, executed by subscription for the new Palace at Westminster; Lord Herbert, for the War Office; Lord Elphinstone, for Bombay; the Hon. Jas. Stuart, for Ceylon; Edmund Burke and Oliver Goldsmith, for Dublin; Father Mathew, for Cork; Sir Henry Marsh and Sir Dominic Corrigan, for Dublin. Mr. Foley was a member of the Royal Hibernian Academy, and in 1862 he was elected a member of the Belgian Academy. His group of "Asia," on the Albert Memorial in Hyde Park, is a splendid work. Mr. Foley, on the death of Baron Marchetti, was commissioned by her Majesty to execute the great statue of the Prince Consort for the National Memorial in Hyde Park, the model of which he had successfully completed, and he was busily engaged in superintending the casting in bronze nearly up to the period of his lamented death. He had previously executed statues of the Prince Consort for Dublin, Cambridge, and Birmingham. One of his best known monumental works is that of James Ward, R.A., in Kensal-green, of which we published an engraving at the time of its completion. He leaves models in progress of equestrian statues of Earl Canning, for Calcutta, and of Lord Gough, for Dublin. Also full-size models of Sir Joshua Reynolds, the Earl of Rose, and of Faraday, and the statue of Sir Benjamin Lee Guinness, which last is completed at the foundry. Sketch models of John Stuart Mill, of Lord Derby (for South Lancashire), the Marquis of Lothian, and of many others, have also been prepared. He was an indefatigable worker, never satisfied, and often destroyed in a moment the work of months. We have heard it said, laughingly, in the studio, that the modelling of Outram's horse's tail cost 37l. 10s., so often was it cancelled. Mr. C. B. Birch and Mr. Brock, who had both long assisted him, are named by Mr. Foley to complete his unfinished works.

We are glad to be able to conclude this brief notice of a most distinguished artist with the intimation that on this (Friday) morning the remains of John Henry Foley will be interred in the crypt of St. Paul's Cathedral, near those of his peers. There were difficulties in the way of this most proper act, but they were surmounted by the determination and energy of two old and warm friends.

The Preservation of Timber.—Sigismund Beer, a German chemist, says the *Timber Trades Journal*, discovered that by the use of borax as a solvent the coagulation of sap was prevented, and it could be speedily and effectually removed by boiling, without injury to the wood tissues. The obnoxious ingredients being thus removed, the wood is rendered closer in grain, and thereby improved in appearance, becomes impervious to decay, and perfectly insusceptible to atmospheric changes. Mr. Beer patented his discovery in America, on the Continent, and in this country, and eventually disposed of the rights for Great Britain to Messrs. Joseph Pierce & Co., Regent-road, Liverpool. The efficacy of this process in seasoning wood has been efficiently proved.

ODDS AND ENDS FROM BELFAST.

BEFORE selecting a few subjects from the voluminous reports of the Belfast meeting of the men of science now before us, we may say that one decided local good which the meeting has already done is that, through a discussion which took place in the section of Economics, a reconciliation between employers and employed may be said to have been at once brought about. This good news was announced with radiant countenance by President Tyndall. The suddenness of the compromise made it none the less welcome, and the mills that have long been silent will again open as the British Association closes.

Capital and Labour.

The interest of the meeting centred in the Economic Science and Statistical Section during the discussion of this subject. The section was crowded throughout the day. Lord O'Hagan presided in the first instance, and Sir George Campbell then took the vacated chair. The question was that of trade-unions, strikes, and lock-outs, and a number of working men representing the mill operatives on strike in Belfast were invited to be present to express their views.

Mr. A. Hamilton presented a report from the committee on the economic effects of trade-unions and on the laws of economic science bearing on the principles on which they are founded. The report, which had been prepared by Professor Leone Levi, stated that the question had been before the Association on other occasions, and in 1869 a committee reported upon it. Since that date a royal commission had inquired into the subject. These inquiries furnished sufficient materials for arriving at a sound judgment on the question submitted for consideration. Nevertheless, it was now evident that the economic bearings of the questions at issue were as yet but insufficiently appreciated, especially by the parties most interested in the question. It was, indeed, much to be desired that the relations of capital and labour were put on a more satisfactory footing than they now appeared to be placed, and the committee trusted that they might render some practical service to the contending parties if they were able to test the claims urged either by employers or employed by referring to the sound principles of political economy. After referring to the dual character of trade-unions—their friendly society side and the workmen's protection society phase of their organisation—the report noticed the formation of combinations among employers, the latest instance being the National Federation of Associated Employers, recently organised in Manchester as a defensive organisation of employers of labour to resist the designs of trade-unions so far as these were hostile to the interests of employers, the freedom of non-unionists, and the well-being of the community. Although the general object of these combinations, whether of capitalists or labourers, was well known, both from the written rules which bound them together and from what had been spoken from time to time, the committee thought it desirable to ascertain, by personal contact with some representative men of both classes, as to whether they now stood by the rules of their unions, and how far they were prepared to defend them. For that purpose, the committee stated, a conference between employers and employed was held on the 17th of May last, in the rooms of the British Association, when the questions discussed were:—1. What might be regarded as the minimum rate of wages? 2. Could that minimum rate be uniform in any trade, and could that uniformity be enforced? 3. Was combination capable of affecting the rate of wages, whether in favour of employers or employed? 4. Could an artificial restriction of labour or capital be economically right or beneficial in any circumstances? The committee, however, had not been able to exhaust the inquiry on the points in dispute between employers and employed, and they had therefore determined not to make a final report on the present occasion, but recommended that the committee should be reappointed.

Mr. F. W. Fellers, F.S.S., next gave an exposition of political economy, and the laws affecting the prices of commodities and labour, and strikes and lock-outs; and contended that though unfortunately this science was often spoken of as hard and harsh, yet a better knowledge of its principles by both employers and employed would do much to prevent the unfortunate strikes and lock-outs that wasted

so much of our national resources. Speaking of trade-unions, he argued that it was the brain and directing power and the economical spirit that had created capital and increased wages, and not combinations or lock-outs or strikes. Strikes, he contended, had a result different from that which was generally supposed. Strikes did good, but they did so by finding out that spot where each article cost most to be made.

Mr. W. H. Dodd, M.A., Barrington Lecturer, read a paper on "The Law of Strikes and Trade-Unions," in which he showed that the laws of pure political economy did not act without modification, and that there were matters which in practice varied these laws. They were modified, he said, by the nature of profits themselves, the first element of which was remuneration for saving or interest; the second was remuneration for risk or assurance; and the third was the wage of superintendence, including elements not included under the first two. This was this third element that a combination of labour attacked. On that very account a strike was more difficult of settlement, since the amount of profits was unknown to those who attacked them. Though socialism, he remarked, seemed to be the sole arbiter in land tenure and though relations between capital and labour were supposed to be founded solely on contract, political economy could not organise and did not seek to organise. The fact was that friendliness and sympathy and co-operation between employer and employed, as between landlord and tenant, was not only the best security for social content, but was also the way to utilize to the utmost the productive forces of nature. He also laid before the meeting in detail the particulars regarding the strike in the linen trade in Belfast.

Sir George Campbell suggested that, as it had been heard the principles of political economy expounded, the speakers might apply themselves to the practical question. How the acknowledged evil of strikes could be remedied? He remarked that he was not an adherent of pure political economy. He was inclined to believe that they could have no combinations of any sort, kind, if the question of wages could be left to the pure laws of supply and demand, probably that would be best for all parties. But he knew as a matter of fact that this was hardly attainable. They knew there were opposing camps of employers and employed, and was for them to ascertain how these camps might be best reconciled for the advancement of all parties.

Mr. James Brownlee, secretary of the Belfast Dressers' Association, then stated the case on behalf of the men of Belfast now on strike. While admitting that wages must be subject to the laws of supply and demand, he endeavoured to show that the exigencies of the times did justify the proposed reduction of wages, as was only the case in depressed times. He thought, therefore, that it lay with the masters to prove the case, and that, in his opinion, they had failed. Mr. Brownlee also drew attention to expensive management of limited liability companies at the present day, and argued that workmen should not be made to suffer from cause.

Mr. William Ewart, millowner, Belfast, on behalf of the associated millowners, said he did not look upon this as a strike between labour and capital, but it was altogether brought about by the bad state of trade, which he thought was palpable to all who lived in Belfast. In mitigation of that, he stated, had been given by workers. In regard to arbitration, he said it did not like arbitration. He thought that if principle was to be established that wages should be settled by arbitration, they might bid goodbye to any increase in the trade of the country, for, he asked, what man would embark his capital in a trade where he would have nothing to do with settling the rate of wages, but these would be settled by other people? He, however, mediation and adjustment, and he thought if the workers would appoint a committee of powers to adjust matters with the masters, dispute would be settled at once.

In the course of a long discussion which was then followed, Mr. Councillor Hart gave great amusement by arguing strongly in favour of protection as a means whereby employers could get more profits and workers more without strikes. Further information was given on behalf of the men by Mr. Brennan, who charged the millowners with having the

any overture of the workers with scorn; but this statement was denied by Mr. Ewart, who stated that denunciations invariably thanked the masters for the uniform kindness with which they had been treated. Ultimately, Mr. Ewart said he thought that the president of the section, Lord Hagan, should be asked to hear evidence on both sides, and give his opinion on the matters in dispute. This was advocated also by Mr. Whitwell. Mr. Ball suggested that in future such evils might be avoided by a scheme of mutual co-operation between capital and labour at Belfast; and Prof. Donnell, of Belfast, demanded arbitration in opposition to the views put forward by Mr. Ewart. He stated plainly to the workmen that they had nothing to fear from liberal science, for Adam Smith, John Stuart Mill, Prof. Cairns, Prof. Fawcett, and Prof. Leslie are not only the highest exponents of this great liberal science, but they were the warmest friends of the working classes, and ever foremost every good work to promote their interests. His suggestion for the president of the section acting as arbiter, however, was considered impracticable, owing to the meetings being near their termination.

Surveys of Ireland.

In Section E, Geography, which met in the Presbyterian College, Major Wilson in the chair, paper on this subject, communicated by the Ordnance Department, was read by Mr. Rye, though many very ancient charts and sketches left, the earliest Government mapped surveys, stated, are those made in the reign of Elizabeth the Commission appointed by the Crown to survey the plantation of Ulster. The great survey was made during the Commonwealth. After a terrier had been made of the fished lands, the necessary measurements and springs were commenced by the Surveyor-General, Mr. Worely. He employed as contractor William (afterwards Sir William) Petty, who in supplanted him in his own office. The survey was completed within the prescribed time. It was called the Down survey because it was laid down, and mapped in distinction from more terrier or Domesday book. It consists of county maps, on a scale of forty perches to a mile. Many of the maps have been destroyed by fire, but have been replaced by copies, a few of baronies, and the remainder, 1,170, of parishes. These maps are evidence in courts of law. It was Frederick the Great who first introduced the science of military topography into the studies of his staff. The necessity of this was soon felt in the armies of other European powers; and, after the battle of Minden, General Watson conceived the idea of a map of the Highlands. By the middle of 1824 observations had been extended over the whole of Great Britain, and a select committee was appointed to provide for a general survey of Ireland. A survey of 6 in. to the mile was determined on, and in 1825 the Irish triangulation began on Mount Divis, near Belfast. A large number of officers of the Engineers were employed under the immediate direction of Colonel Colly, the present Director-General of the survey being one of the distinguished men to look part in the early survey. The valuation of Ireland being, in the first instance, a land valuation, the survey was originally the townland survey. It is on the Ordnance survey that local assessments and taxes are based. It also acts as a basis in the transfer of property under the Landed Estates Court. A judge gives an order to the survey to revise a portion of the Ordnance maps relating to property to be sold, the latest changes being inserted. The map, after being approved of by a judge, is lithographed, and the purchaser receives a copy on parchment, which is beyond dispute, the conveyance making over the property "as described in the annexed map." It is also used for the settlement of boundaries of town divisions, the carrying out of railway lines, canals, roads, and all transactions between landlord and tenant relating to land. It was curious to observe that the Down survey, originally made the instrument of conveying to the heirs of Cromwell the confiscated lands, is in 1874, the means by which the descendants of the original owners may have come back to them, under the Land Act, the fields their ancestors once possessed.

The Ulster Tenant Right.

In the section of Economic Science, Professor Mill read a paper "On the Ulster Tenant Right," in which he made suggestions for the

amendment of the Land Act. He said that the great boon which the Land Act had conferred on the Ulster tenantry was cordially acknowledged. The process of disintegration and distinction which had been at work to arbitrarily extinguish the tenant-right custom had been arrested effectually and for ever. But the tenants had discovered defects in the working of the Land Act, and complained.—1. That the restrictions on the value of their tenant-right property had not been fully removed. 2. That the leaseholders under the custom were not sufficiently protected. 3. That even where an unrestricted tenant-right was proved the process of judicial investigation led to an inadequate reward, and that the tenant failed to obtain what he could obtain from a solvent and unobjectionable tenant in open market. 4. That the process of adjusting rents was roundabout, indirect, and ineffective. 5. That the tenant right in certain classes of holdings mentioned in the 15th section, such as town parks and pasture-farms, had been left without legalisation, and was now being rapidly confiscated. All those were complaints as to the administration of the Act, not as to its policy. And they were not without justification in the language of the Act and the intentions of its authors. The protection which the Land Act gave to the tenant-right custom in ordinary holdings should, in principle, and in justice, be extended to all tenant-right dealings of old date, whether affecting town parks or positive farms. It was the opinion of many lawyers that the language of the Act was large enough to avoid these various difficulties. But the courts had decided otherwise. The remedy for the difficulties that had arisen was obvious. Let an amending Act declare that every holder in Ulster was presumptively subject to the Ulster tenant-right custom, thus leaving it to the landlord who disputed the custom to show that the holding had never been subject to the custom, or that the tenant had voluntarily parted with its benefits; let the Act declare the competency to investigate the question of fair rent directly, and to make decrees for declaration of right and specific performance; and, finally, let the Act decide that the 15th section should not apply to the Ulster custom. These amendments, and they were not inconsistent with, if not contemplated by, the Act, would do much to complete the large measure of justice which the wisdom of the United Parliament has bestowed upon the Irish tenantry.

A long discussion ensued, in which Sir George Campbell and others took part.

An Age of Colossi.

In the department of Anthropology, under the presidency of Sir Wm. Wyld, a paper on this subject, by Mr. J. S. Phené, F.S.A., was read, with examples, by photographs and drawings, of various colossi extant in Britain and Ireland. The author of this paper, after referring to some of the points suggested by him in a previous paper on the same subject, read by him before the British Association at their meeting at Bradford, brought forward some instances of very similar customs between the Egyptians, early people of America, and Chinese, the last being, in his opinion, the most modern; and he argued that a great similarity of treatment and worship of the Nile and the Mississippi rivers, shown by the vast similitudes found along the margins of each, indicated that the very ancient constructors of these very similar designs on both rivers had a common or similar origin; hence, that it was probable that America was peopled by Western Asian emigration prior to the central parts of Europe, or even of Central Asia, as the facility for a coast-line route would be much greater than an overland one to migratory people. He argued also from the emblems found at these distant points, common religious worship among these distant people, in the earliest times, and serpent worship being prominent. After giving various facts as to an age of Colossi, he again brought forward, amongst some of the Colossi of Europe those of the British Isles, natural as well as artificial, showing in several cases that where huge natural similitudes of the human form or countenance were apparent, there vast artificial figures (some in Britain being larger than any other representations in the world) were to be found. The giant in Sussex, 240 ft. high, that in Dorsetshire, 180 ft.—in the vicinity of the first there being a great sphinx-like head, an isolated rock, and reputed Celtic deity on the estate of Mr. Charles Hill in the same county, and the vast

human and other animal semblances on Dartmoor, in the direction of the second. The great countenances in the white rocks near the Giant's Causeway appeared to have suggested similar simulation, as Pennant mentioned such a figure in the Isle of Arran, just opposite, and a great lithic representation of the human form still exists in Sligo. Other examples were given, including the Colossi of Easter Island, and of Elephanta, Ellora, and Bamian. He also showed that in consequence of the observations of Dr. Boddoo, the late president of the Anthropological Section, as to the interest attaching to the question, and the importance of ascertaining if any evidences of cremation could be found, he had been, he thought, successful in obtaining such evidences.

Natural Mythology.

Another paper by Mr. Phené, on "Natural Mythology," and some of the incentives to its adoption in Britain and Ireland, was also read in the same section.

In this paper the author carefully abstained from any of the higher kinds of even Pagan worship, which might approach to natural theology, and from the worship of animals, real or mythological, but confined himself wholly to instances of a mythological impersonation of remarkable natural objects, giving as an instance of his argument "the image that fell down from Jupiter."

A very large photograph of the "Sphinx of Egypt" was exhibited for the purpose of showing the weathering of the stone, the characteristics of which led the author to think that the original natural condition of the rock before being sculptured into its present form, was that of a human similitude, and that this very fact had suggested the artistic labour displayed upon it. The diagrams showed a number of curious appearances of rocks in various parts of the world, some almost as like the human countenance in their purely natural condition as the "Sphinx" is at present. He showed that the localities of such objects had been sought as places of veneration, and, no doubt, for the celebration of religious, and even sacrificial rites, and around them, as on Dartmoor, which abounded in such appearances, were tumuli and barrows of the dead.

The Anthropology of Prehistoric Peru.

Dr. T. J. Hatcher, F.R.G.S., read a paper on this subject. The paper commenced by recording how little is known up to the present of the glorious days of Peru, long before the time of the Incas; and the author conveyed his agreement with Mr. Baldwin as to the original South Americans,—notably those of Peru,—being the oldest people on that continent. He proceeded to show how little dependence was to be placed on the romantic gaseading of the Spanish writers with regard to the Incas, of whose fabulous origin and mythological genealogy no account was traced by them to a period further back than about seven centuries ago, or near to the time when William the Conqueror came to England. It likewise discussed the writings of various authors of whose works translations have been recently published by the Hakluyt Society, showing them to be full of anomalies and contradictions, in the vain attempt to make the Incas be considered as the earliest civilised race of Peru. The grandeur and extent of the ancient burial-mounds was a wonderful thing. It was shown by diagrams and illustrations. The colossal work of those done by human hands—and some of them measured from 20,000,000 to 24,000,000 cubic feet,—showed what a superior race these early Peruvians must have been. The difference in morals as in the physique of the Peruvians and Chinese of the present day was commented upon to prove there could not have been—though supposed by very high authority—a homogeneity of origin. The author added that in the "Guide to Belfast," compiled by members of the Belfast Naturalists' Field Club, for the use of members of the British Association, the following statement was made at p. 184, under the head of "Sepulchral Monuments":—"The popular idea is that all or nearly all the old forts were constructed by the Danes, but this is quite erroneous. The greater number of our ancient national monuments were erected hundreds of years before the landing of the Danes in Ireland." Just such a popular and erroneous idea as this existed in Peru with reference to the great works there being accredited to the Incas, whereas they were daily finding out that they were erected, like the Irish forts and mounds, hundreds, if not thousands,

of years before there was an Inca in the land. He added that the process of inhumation used in pre-historic times in Ireland seemed to have been the same as in Peru.

Mr. Phené drew attention to the similarity between the mounds found in Peru and those found in the Mississippi Valley, though those in Peru are much more gigantic.

Are Brutes and Men Automata alike?

At one of the soirées in Ulster Hall Professor Huxley's lecture created, at its conclusion at any rate, a decided sensation. The progress of biological science was naturally with him in a master's hands. René Descartes was spoken of at much length, and his investigations were so keenly analysed that the lecture might not inappropriately have been called a dissertation on the eminent Frenchman's life and times. Not the least charm of the discourse was the frequency with which the Professor spoke face to face with his hearers, and with that clearness and earnestness which his students so much prize. It seemed to be assumed without a question that he would hit out pretty straight from the shoulder in defence of his friend Tyndall. The president himself hinted as much when, in introducing Professor Huxley, he described him as "A man loving truth above all things, but perfectly fearless in his utterance; a man who, though he is a hard hitter, strikes honourably above the belt, and never descends to deliver a foul blow." Towards the close of his remarks Professor Huxley said:—

So far as we know, animals are conscious automata. That doctrine is perfectly consistent with any view that we may choose to take. One very curious subject of speculation is whether animals possess souls or not. The doctrine to which I have referred is not inconsistent with the perfectly strict and literal adherence to the Scripture text concerning the beast that perisheth. Nor, on the other hand, so far as I know, does it prevent any one from entertaining the amiable convictions ascribed by Pope to his "untutored savage," that when he passed to the realms of the blessed his faithful dog should bear him company. In fact, all these accessory questions to which I have referred involve problems which cannot be discussed by physical science, inasmuch as they lie not within the scope of physical science, but come within the scope of that great mother of all sciences—philosophy. Before any direct answer can be given upon any of these questions, we must hear what philosophy has to say for and against the views that may be held. I need hardly say that I do not propose to enter into that region of discussion. . . . I hold that the view I have taken of the relations between the physical and mental faculties of brutes applies in its fulness and entirety to man. But, in my conviction, there is no such logical connexion as is pretended between the doctrine I accept and the consequences which people profess to draw from it. To those who do not look into these matters with candour and with a desire to know the truth, I have nothing whatever to say, except to warn them on their own behalf what they do, for assuredly if for preaching such doctrine as I have preached to you to-night I am cited before the bar of public opinion I shall not stand there alone. On my one hand I shall have among the theologians St. Augustine, John Calom, and a man whose name should be well known to the Presbyterians of Ulster, Jonathan Edwards, unless indeed it be the fashion to neglect the study of the great masters of divinity, as many other great studies are neglected now-a-days; and I shall have upon my other hand among the philosophers Leibnitz; I shall have Père Malebranche, who saw all things in God; I shall have David Hartley, the theologian as well as philosopher; I shall have Charles Bonnet, the eminent naturalist, and one of the most zealous defenders Christianity has ever had, I think. I shall have within easy reach, at any rate, John Locke; certainly the school of Descartes would be there, if not their master; and I am inclined to think in due justice a citation would have to be served upon Emmanuel Kant himself. In such society it may be better to be a prisoner than a judge; but I would ask those who are likely to be influenced by the din and clamour which are raised about these questions, whether they are more likely to be right in assuming that those great men I have mentioned, the fathers of the Church and the fathers of philosophy, knew what they were about, or that the pigmies who raise this din know better than they did what they meant.

On Wild Flowers and Insects.

At another of the Ulster Hall meetings, Sir John Lubbock, bart., M.P., delivered an address to a crowded meeting "On Common Wild Flowers, considered in relation to Insects." Professor Tyndall occupied the chair. The lecturer, after some preliminary remarks, reminded his hearers that Mr. Darwin's theory is based on the following considerations:—Firstly, that no two animals or plants in nature are identical in all respects; secondly, that the offspring tend to inherit the peculiarities of their parents; and thirdly, that of those which come into existence only a certain number reach maturity; and fourthly, that of those which are on the whole the best adapted to the circumstances in which they are placed are most likely to leave descendants. Now, applying these considerations to flowers, if it is an advantage to them that they should be visited by insects (and that this is so will be presently shown), then it is obvious that those flowers which, either by their larger size, or brighter colour, or sweeter scent, or greater richness in honey, are most attractive to insects, will *ceteris paribus* have an advantage in the struggle for existence, and be most likely to perpetuate their race. Every one, however, who has watched flowers, and seen how assiduously they are visited by insects for the sake of honey, will admit that they must often transfer pollen from the stamens to the pistil; in many cases from the stamens to the pistil of the same flower; but in others from the stamens of one flower to the pistil of another. This we will call cross-fertilisation. I will not now enlarge on the importance of this cross-fertilisation, which has been fully proved by experiment. Sir John then called attention in detail to some of our common wild flowers, in order to show how beautifully they are adapted to profit by the visits of insects, and how the various parts are arranged so as to favour not only the transfer of pollen from one flower to another, but also its deposition on that part of the pistil which is especially prepared for its reception. He drew particular attention to the dandelion, to which particular branch of the vegetable creation Mr. Darwin had given great attention, and showed the remarkable adaptation of the organism of the plants to the movements and habits of insects. Close study of the relationship between wild flowers and insects induced the belief that while the cowslip is fertilised chiefly by bees by day, the primrose is fertilised by moths at night. Many flowers close their petals during rain, which is obviously an advantage, since it prevents the honey pollen from being spoiled or washed away. Everybody, however, has observed that even in fine weather certain flowers close at particular hours. This habit of going to sleep is surely very curious. Why should flowers do so? In animals we can understand it; they are tired, and require rest. But why should flowers sleep? Why should some flowers do so and not others? Moreover, different flowers keep different hours. The daisy opens at sunrise and closes at sunset, whence its name, "Day's-eye." The dandelion (*Leontodon taraxacum*) opens at seven and closes at five; *argemone alba* is open from nine to three; the common mouse-ear hawkweed is said to be awake at eight and go to sleep at two; the scarlet pimpernel (*anagallis arvensis*) to wake at seven and close soon after two; while *trago-pogon pratense* opens at four in the morning and closes just before twelve, whence its English name, "John go to bed at noon." Farmers' boys in some parts are said to regulate their dinner by it. Other flowers, on the contrary, open in the evening. Now, it is obvious that flowers which are fertilised by night-flying insects would derive no advantage from being open by day; and, on the other hand, that those which are fertilised by bees would gain nothing by being open at night. Nay, it would be a distinct disadvantage, because it would render them liable to be robbed of their honey and pollen by insects which are not capable of fertilising them. I believe, then, that the closing of flowers has reference to the habits of insects. Some of those flowers which attract insects by smell emit their scent at particular hours; thus *hesperia matronalis* and *lychnis vespertina* smell in the evening, and *orchis bifolia* is particularly sweet at night. I have been good-humouredly accused of attacking the little busy bee, because I have attempted to show that it does not possess all the high qualities which have been popularly and poetically ascribed to it. But if scientific observations do not altogether support this intellectual

eminence which has been ascribed to bees, they have made known to us in the economy of the hive many curious peculiarities which no one has ever dreamt of, and have shown that bees and other insects have an importance as regards flowers which had been previously unsuspected. To them we owe the beauties of our gardens, the sweetness of our fields. To them flowers are indebted for their form. Not only have the brilliant colours, the sweet scent, and the honey of flowers been gradually developed by the unconscious selection of insects, but the very arrangement of the borders, the circular road and radiating lines, the form, size, and position of the petals, the arrangement of the stamens and pistils are all arranged with reference to the visits of insects, and in such a manner as to ensure the grand object which renders these visits necessary.

We will end while we are amongst the flowers.

SUBJECTS FOR PAPERS.

THE INSTITUTION OF CIVIL ENGINEERS.

THE Council are seeking to improve and enlarge the publications of the Institution. One means to that end, it has this year been thought desirable to prefix to the list of Subjects for Papers, now published, a statement of the nature and amount of the funds at the disposal of the Council for rewarding the authors of meritorious communications. It is hoped that this may induce the members (of all classes) to others to prepare and present careful and complete memoirs suited for discussion, as well as shorter papers, or notes, on various professional topics, for record in the Transactions, but not necessarily for reading or discussion at the meeting. Beyond these two divisions of original matter, it is intended to add abstracts of some of the more important essays published in analogous societies abroad, and in foreign engineering and technical journals of repute and standing. If the members will aid the Council by pointing out to the officers of the Institution reliable sources of information, or by occasionally contributing digests of articles from the periodicals referred to, it is thought that it may be possible to produce a quarterly volume, and in that way to put the members in possession of the details of engineering progress in all countries.

THE SHOREDITCH TO OXFORD-STREET IMPROVEMENT.

SALE OF BUILDING MATERIALS.

As a preliminary to the new street which is about to be constructed from Shoreditch to Oxford-street, the materials of forty-two houses, shops, and business premises were sold at auction on Tuesday last, which will fortunately secure the removal of a number of the most dilapidated and unhealthy dwellings in the east of London. The property sold included six materials of six houses and shops on the east side of Curtain-road, the site upon which the stand being required for the proposed improvements. Also about twenty tumble-down houses at the rear of the before-named houses and shops situated between Curtain-road and High-street, Shoreditch. Those miserable dwellings situated in King John-court, Crown-court, and Wood buildings, dark and narrow alleys, are about wretched-looking tenements as are to be found in the East End, and altogether unfit for human habitation. Another portion of the property situated on the opposite side of Curtain-road and in Susannah-row. It consists of six houses and shops of a superior character, three stories high, and only recently erected. Their demolition, however, is necessary, as the line of the intended new street intersects them. In addition to the last-named houses and shops, materials of six houses in Willow-walk, an public-house and two houses in Taberna square, situate between Curtain-road and the junction of the intended new street with Curtain-street, were also sold. A second sale of materials of several other houses in the neighbourhood will take place towards the end of the present month.

Oxford Main Drainage.—The Oxford Local Board, at their meeting of Wednesday last, have resolved to proceed with the construction of the outfall sewer, and other works, in plans prepared by Mr. W. H. White, C.E. engineer.

VASE FOR THE PARIS OPERA HOUSE.

THE *Sèvres* Vase represented by the accompanying engraving is in the Exposition of National Manufactures now open in the Palace of Industry, Paris. It was designed by M. Garnier, architect, and is intended to stand in the saloon of the new Opera-house.

The saloon is a large rectangular room, 160 ft. long and 40 ft. high. It is lighted by five windows looking on the boulevard, and is terminated at each end by a small square room. The ceiling is divided into one rectangular and two oval divisions, the general idea of the painted composition being the union of melody and harmony, personified by female figures entwined, rising to the clouds. To the right of the group is *Poetry*, seated on *Pegasus*, and waving her lyre. On the left, *Glory* floats in the air, bearing the attributes,—the crown and trumpet.

NOTES ON PUBLIC WORKS AND BUILDINGS ABROAD.

SOME interesting information upon this subject is contained in several Foreign Office reports which have just been published. We first get particulars regarding public works, &c., in Egypt. At Alexandria there has been erected a large building for the purpose of a produce-market and exchange, and it is found to be of great benefit to the commercial community. The building is described as a large and handsome one, not devoid of architectural pretension; and, in fact, it is mentioned that few cities in Europe can lay claim to the possession of a more commodious produce bourse. The total sum expended upon the construction of the building was £50,000, and it yields an annual rental of £6,000. Another matter which is receiving the attention of the authorities of Alexandria is the perfect drainage of the place, the consequence being that fevers are prevalent, and must continue so until the system of drainage is altered and rendered less effective. Another cause of illness and disease is the bad style in which many of the houses are constructed; but it is to the credit of the Khedive that he shows a great desire to introduce reform in this direction. It is to be hoped that it will succeed. Railway construction in Egypt is also progressing favourably. An important line is being constructed from Alexandria to Sidi Barrani, opposite Cairo, on the left bank of the Nile, in order to avoid the necessity of erecting a costly bridge at Cairo, and to convey the produce of the Soudan direct to the sea. Another new line, from Dessouk to Shirben, a distance of 58 miles,—will considerably shorten the journey between Damietta and Alexandria; and a canal will be formed along the length of the line, which is expected to be of great use. Important harbour works are also approaching completion at Alexandria.

A large breakwater has been constructed, and the inner mole run out to within a short distance of its entire length of 980 yards. The mole is intended to be more than 100 ft. broad, and is designed to form quays from the railway to the Custom House, but it has been found necessary to abandon the idea of having perpendicular quay walls, alongside of which vessels could lie, owing to the great difficulty of getting a proper foundation, there being 40 ft. of mud; consequently the walls will be roughly made of rubble and stone, and iron piers will be run out at intervals. The contractors for the harbour works are Messrs. Greenfield & Co., and it is thought that they will be enabled with the execution of a scheme which is under discussion to widen and deepen the harbour, so as to enable vessels to enter at all times, and in any weather. From Port Said we get some information as to public works there. With regard to the Suez Canal, it is

stated that no difficulty has been experienced in keeping up the requisite depth of water in the canal, and that the principal danger the company has to contend against is the silting up of land at the entrance of the harbour of Port Said. To the westward, or outer side of the western mole or breakwater, the sand gains annually on the sea about 30 yards, whilst a considerable quantity filters through the breakwater and forms on the inner side. The company having discovered that a bank was forming to the westward of the entrance channel, procured from Marseilles a very powerful steam-dredge, in order to keep the entrance channel clear. It having also been decided to lengthen the western mole by 600 metres,—at which distance hard ground will be reached at a depth of five or six fathoms,—the

great number of pilgrims congregate there in the open spaces, and no arrangements whatever are made for removing the *débris* and filth which accumulate, and it is mentioned that while the Khedive has been induced to spend many thousands of pounds in building and dredging a spacious wet dock, which is useless even for his own steamers, the authorities make no effort to improve Suez, which seems to be treated as though it were not part of the dominions of the Khedive; and, according to the opinion of an authority upon the subject, "unless some European can manage to make a 'plant' on the Viceroy in the shape of a contract, Suez does not seem to be worth the attention of the Egyptian Government."

We learn from Bahia (Brazil) that great enterprise has been there manifested in the introduction of street railways, which now run in nearly all parts of that city, and which are found to be a great convenience to the public, the more especially as Bahia, being very hilly, locomotion is alike costly and exhaustive. As a necessary complement to the street railways, and in order to avoid the extreme gradient of the principal hill of the city, a powerful hydraulic elevator has also been introduced, and is largely used. From Carthagena (Colombia) we learn that it is expected that something will be done ere long to rescue that city from its present state of isolation. Several projects are consequently on foot for opening the Dique canal to steam navigation. The Government of the State, to whom the Dique belongs, offers an exclusive privilege for fifty years and a guarantee of three per cent. on \$300,000 for twenty-five years, and the National Government a guarantee of seven per cent. on the same amount for a like period, to any company which would undertake the work. An English engineer has estimated the expense at which the canal could be opened for steamers of 500 tons capacity at 18,000l., including the hastening of the present route, by cutting through the angles, from 116 to 81 miles. This estimate, however, is considered under the mark, as it does not include the cost of dredging-machines, &c. A total sum of 50,000l. is considered by competent judges amply sufficient for all purposes. From Panama (Colombia) we also learn that the repairing of the cathedral there (which is the only public work in which the Government is engaged) is nearly finished. Building operations, generally speaking, have been pretty active of late in that city, inasmuch as many of the private residences have been repaired and rebuilt, the architectural appearance of the city being thus considerably improved. With regard to public works in Costa Rica, there is nothing of much importance to note. It may be mentioned, however, that in 1871 the construction of a railway was commenced from Alajuela to Limon, a distance of 114 miles; and the line was to have been completed in three years. Not only is there no hope of its being finished for some time to come, but doubts exist as to whether it will ever be finished at all. This want of success in the construction of the line is attributed to the useless waste of funds in having commenced the work in the interior, thus having to pay enormous freights on all the rails, &c., and also to the lack of integrity of the persons through whose hands the money has passed. More capital is now required, and it is stated that unless more funds are forthcoming the line cannot be finished; and it is difficult to see how the Government will be able to pay the interest and sinking-funds on the loans already obtained.

Relative to public works in France, it may be noted that Mr. Consul Hotham, writing from Calais, states that as regards the submarine tunnel between that port and Dover, this stupendous work will doubtless eventually be constructed, in which case the question as to the



VASE FOR THE SALOON OF NEW OPERA HOUSE, PARIS.

Designed by M. Garnier.

Canal Company have re-opened the concrete works of Messrs. Dasseaud, where the blocks of which the mole was constructed were manufactured, and which establishment, since the opening of the canal, has been closed. These works are now employed in fabricating blocks, and it is anticipated that the whole construction of the mole will probably be completed in from two to three years. When finished it will measure 3,100 metres in length. Stones procured from the islands of the Grecian Archipelago are much used in the work. It is further mentioned that the Canal Company intend at a future date to considerably enlarge the harbour of Port Said, which is at present capable of containing from fifty to sixty large vessels. With regard to the town of Suez, the reports do not give very satisfactory intelligence. The town remains in a very neglected condition, and local officials, sanitary or other, show extremely little inclination to attend to the cleanliness or salubrity of the town. A

best kind of vessel to be employed will be set at rest, and breakwaters, dredging machines, narrow harbours, floating sands, &c., will be things of the past so far as international communication in that channel is concerned. The same writer also mentions the proposal of a scientific French gentleman to prolong an iron pier and breakwater into the sea at Calais, and he mentions that, should this plan be carried out, vessels of considerable dimensions would doubtless be able to lie alongside in all weathers.

From St. Malo we learn that important public works have been constructed at the ports of St. Malo and St. Servan, with a view of forming a floating wet dock, approved by the French Government in 1870. The advantages of such a wet dock have been waited for with the more anxiety, inasmuch as of late years many important works have been executed with the intention of converting into a floating wet dock all the bay which separates the towns of St. Malo and St. Servan, in conformity with various laws and decrees, granting in all the sum of 748,000*l.* for that purpose. It is stated that the engineers have yet to furnish a definite plan, and should they be able to restrict themselves to the amount of the first estimate, the expenses yet to be incurred may amount to (say) 320,000*l.*—a sum which, as is justly observed, must be a great sacrifice for the French Government in the present state of affairs; but at the same time it would give the ports of St. Malo and St. Servan a floating wet dock, on which more than 680,000*l.* have been already expended.

With regard to public works in Russia, we get some interesting information from Taganrog. Amongst the buildings being erected there is a large new school, which is in course of construction by the municipality, for the instruction of female scholars. Important works for the construction of a new mole have been finished at the port so far as regards affording security to steamers, barges, &c., employed in the coasting trade; other collateral works, however, are not yet completed. Attention is drawn to the fact that Taganrog is a rising port, showing signs, in some respects, of material progress, although in others being behind the times. Projects for supplying good water to the inhabitants have not made so much advancement as was expected. The establishment of a public slaughter-house is contemplated; but the roads and pavements remain in a deplorable state of neglect, no hopes being seriously entertained of amendment, unless the lives of some eminent councillors are endangered. Then, it is thought probable that reform may be introduced.

With regard to the trade and industry of Taganrog, it is worthy of note that of late buildings there have been erected on quite a gigantic scale for the manufacture of bricks, tiles, &c., in which a good business has been done. The reports from Porto Rico reveal the existence there of a not very satisfactory state of things. In fact, it is stated that, during the past year, nothing could exceed the neglect with which all public works have been treated. The fine Macadamised road from the capital to Cagnes, twenty-five miles in length, once the pride of the island, is now as rugged as an African track; the gas of the town is irredeemably offensive; the telegraph wires and posts are in a state of inefficiency, while railways, irrigation, and drainage, still remain matters of distant speculation. From another Spanish town,—Barcelona,—we get somewhat better news. The condition of that port has very greatly improved of late, and the works commenced for the amelioration and deepening of the harbour have been carried on without interruption, in order to render it perfectly safe and commodious for all kinds of vessels.

Utilising Refuse Lime from Gasworks.

Mr. G. H. Forbes, clerk in orders, rector of Broughton, Northampton, proposes to combine the foul lime of gasworks, or its equivalent, with coke, with or without chalk or limestone, with or without bituminous substance, and with or without hydrocarbon oil or spirit. The compound is burnt in a grate or stove, and when sufficiently burnt is reduced to powder for use as cement or plaster, or artificial stone. He also proposes to form a compound of the foul or refuse lime of gasworks, or its equivalent, with coke, coal, or cinders, with or without bituminous substance, oil, and vegetable matter, and to combine the materials in such a manner that the compound may be used as fuel in any stove or furnace.

CUMBERLAND AND WESTMORELAND ARCHAEOLOGICAL INSTITUTION.

The Cumberland and Westmoreland Antiquarian and Archaeological Institution held their second meeting and excursions in the season at Carlisle. The rendezvous was in the Castle-square, where Dr. Simpson stated the order of business.

Mr. Richard S. Ferguson took under his charge the large party of ladies and gentlemen who had assembled, and conducted them to the "Tide Tower," at the west end of the Castle Green, and there read a description of it, forming part of a paper upon the Castle, which he had prepared for the occasion. During the reading of the description, and afterwards, many of the visitors entered the tower, and examined it for themselves. It was found that part of the moulded brick arch referred to by Mr. Ferguson had given way during the last few days, and arrangements were at once inaugurated for restoring it, Mr. Whitwell, M.P., having offered to bear the expense of doing so. From the Tide Tower the company proceeded to the site of the draw-bridge, where Mr. Ferguson commenced his description of the Castle itself.

Mr. Ferguson expressed his thanks to Mr. George T. Clark, F.S.A., and to ourselves for permission to use Mr. Clark's account of Carlisle Castle in the *Builder*.

Captain Gage, of the 34th Regiment, read a short narrative of the services of that gallant regiment; and Captain Osborne read a narrative of the services of the 55th Westmoreland Regiment, which, he remarked, had been prepared by Quarter-Master-Sergeant Noskes, from the records of the regiment and from different memoranda of his own. Reports of these and other proceedings at the meeting appear in the local *Journal* of the 14th inst.

Before the meeting separated, Dr. Simpson suggested the desirability of sending to the proper authorities at the War Office a representation respecting the proposed alterations in the Castle, expressing a hope that while the ancient remains should be preserved the ground would not be so encumbered with new buildings as to diminish the interest in one of the most interesting buildings in Carlisle. This was agreed to unanimously.

In the evening the members and their friends repaired to Morton, where Mr. Ferguson, M.P., held a *conversazione*.

On the second day, Thursday, the members of the Society met at the Cathedral at ten o'clock, and attended divine service. There was again a considerable attendance, including many ladies. After divine service an inspection of the Cathedral was made, and afterwards the party paid a visit to the tithe barn near St. Cuthbert's Church. A brief interval was allowed for luncheon, and then carriages were ordered and an excursion made to High Head Castle, Rose Castle, and Dalston Hall, at each of which places a paper was read. Rain fell heavily, and marred to no inconsiderable extent both the enjoyment and the instruction to be derived from carrying out the seemingly pleasant programme. The outside of none of the places visited could be examined with any comfort, and it was accordingly left undone.

A YEARLY RECORD OF SCIENCE, AND A YEARLY RECORD OF ART.

PROFESSOR TYNDALL, whose capital address all by this time must have carefully read, has faithfully kept up the "programme" of the British Association for the Advancement of Science, and has given us a broad and general idea of the progress "science"—to adopt that most comprehensively general word,—during the past year has made, and its present position, both *per se* and in its relation to other regions of thought and of human interests. It is only proper that this should be done, and that the world should know precisely how matters so interesting to it do really stand. The British Association for the Advancement of Science does this, and the world has good reason to thank it for the timely work it accomplishes. It must always be good to know precisely whereabouts we stand, what the past has done, and what in all probability the future is most likely to bring forth, and to do. Of "science" we do thus get year by year some really intelligible notion; and it does seem somewhat strange that there has been no such general and comprehensive means of ascertaining more or less authoritatively what the present is, and

what the probable future will be, of fine art generally. It would be a thing of no small benefit, not a little useful to artists everywhere and not less, we are quite sure, interesting to the public. We beg to be understood. We, of course, bear in mind all that is done, and do well, for the most part, by the many already existing art, and architectural, and archaeological societies and associations; but they, the most part, busy themselves with special details peculiar to each one of them, so even confining themselves strictly to one special style of art or architecture. And it is as well that this should be so. But what we here intend is not specialties and details only, which must, of course, be included anywhere, but a broad and general idea, and retrospect and prospect of art generally and universally, indeed, like the science-survey, all comprehensive, and everywhere, as far as it can be done, or is possible. It is not a little curious to see how things are, and are suffered to go on, and how much at times is missed. The subject, broad as it is, is, we trust, worth a few reflections and, perhaps, a hint or two in passing.

Well, then, in the first place, it is quite certain that no sort of chaos, which can be contemplated in nature, can well be more chaotic than that art, as it now-a-days manifests itself. We do not mean by this more than that all kinds of things, in a sense, rushed together, and got mixed up with each other, in the production of many objects of daily utility, and commonplace "ornamentation"; and that you may find in some of the commonest things, and in the cheapest well as most costly objects a perfect chaos of details,—and, there is really no other word, *discordances*. There surely never was a time when a general view periodically of all fine art was more needful; and most curious would be to witness the skilful analysis and resolution of any special to-day object by a master hand into its component parts, and with a reference to all the sources from which it had, perhaps unconsciously come. This would really treating fine art as a science, and in a scientific way, "accounting for it." Surely this would be helpful very many ways, and might lead to much that is now unthought of.

No one, we presume, will dispute the usefulness and interest here to be found. It would surely be to bring into prominence the nature, maybe, the origination of the primitive styles of art, whether of architecture or of common objects. It would help to resolve things into their component "atoms," and we might time come to see, though but vaguely, perhaps into the causes which gave birth to the original types of art,—a subject hardly yet even attempted. We might call this, borrowing from science, the "atomic theory" of fine art, or, endeavour to find out how and out of what materials art has in each case sprung. We might even call upon Democritus, and try to imitate him in his uncompromising antagonism to those who are inclined to reduce the phenomena of art to caprice and mere accident. From nothing might, from this scientific point of view, and lowering our old Greek, say, nothing can come. Nothing, even in art, happens by chance, not the coming into actuality of *ornamentation*, as sometimes behold it, everything having its cause. We might even go further and call upon some of more fiery and poetic nature, and come with no small truth, that there is inherent among the component parts, or "atoms," of forms, a "love and a hate" which accounts for their combination or their non-combination. Thus might the analyst get from Epicurus further hint, and learn much from his quibbling in his Athenian garden. Science, well be followed,—there is no fear that science will have it all to herself; for, as the professor hereabouts says, man never has been and he never will be, satisfied with operations and products of the *understand* alone. Physical science cannot cover all demands of his nature. Art, and imagination, and fancy, and even what are termed trifles, equally needful at times. We might even farther, and learn of the old Greek philosopher, and science another mighty fact, not a little needful to learn in these days, of capital on one hand, and labour on the other, that by internal light, and guidance of the mind, it is in vain to seek to transcend *experience*, commonplace experience, which so many are sometimes inclined to do. The aid of the sense, needful, and the bodily powers are needed "instruments" whereby to produce a true result. It is wonderful to find how truly and practically

the old Greek of the antique Past, now so far from us, saw into the inherent truth and necessity of things. Observation with a purpose, instruments to aid the senses, scientific method, induction, and more than all, perhaps, experiment, are no new things after all!

We might then go on following the scientific order into the causes of "delay" in art progress, as here done in scientific progress. Quite as various a subject, and as difficult to account for, may be, more difficult. Why, says the learned professor, was the scientific intellect compelled to lie fallow, like an exhausted soil, for nearly two millenniums before it could regather the elements necessary to its fertility and strength? and why were at times even the great facts of science almost forgotten for a generation, only to be rediscovered, and applied to practical purposes?

Why, indeed? Bacon, and in recent times Huxell, tried to answer these knotty questions. May we not then with equal reason ask such questions in art as have here been done in science? To then ask how it is that Greek art—to cite at one instance—has managed to hold its pre-eminence place through the centuries as it has done, and now does? What was it that gave the antique Greek his superlative power over material? Why again has the art ground of Greece fallen ever since. The Greek man is alive, and a clever man he is in many ways, but here is his power, his special and individual power, over art, in sculpture and in architecture! The birth of art, such as the Greek, is a wonderful phenomenon enough, quite as curious as any art science can show, and as well worth the name of a special Association of talent to go into the mysteries of. The culmination of Greek art as perhaps yet more wonderful, while its death as a thing not to be accounted for. Is there anything in fine art in these days worthy to fill the space once filled by the Greek? Where is it to be? If not so, why not? Subjects as of interest as any science has to propound, and most surely as hard to get to the bottom of; ending, in fact, a British Association in all its length to tackle.

There would, indeed, be no need of subjects. It be useful in science to compare Goethe and Aristotle, and to create, as the Professor at least did, the Starigrite with powers well nigh human, and to say of Goethe, with all his rhetorical lights, that even he was "incomplete"; what we not say in art that Phidias, looking at the work he did, must have said of himself all but superhuman in power over the dead and formless material; and then, comparing him with others, wonder how it that they are so "incomplete" as they are. Between the means of the sculptors of modern times and the sculptors of old Greece there is a millennium of years. What a distance is there between the works they have severally produced. And new aids are needed, what new system of art education, what new material, what new and improved surroundings, and ways of thinking? What new system of art action is needed to enable the modern man to rival, if not to excel, his antique prototype?

Indeed, might we not pursue this comparison between the course of science, as so ably developed by Professor Tyndall, into not a few interesting and instructive details? In science, as he shows, there have been periods of astonishing fertility of thought, almost creative thoughts, and there have been periods of well-nigh total eclipse, wherein this science seems to have been well nigh forgotten, or to have at least retired into a quiet and almost forgotten byways. Surely there has been the same in art and architecture. There are difficulties here indicated enough to hunt for in science, but not a wit the less so there in art; and might not art benefit as much by some special means of finding these out, at least of specially talking about them? A final looking after the advancement of art, in an inquiring sense, we cannot but think might not be a little useful, and would not certainly tend upon the special work of existing institutions, or the work that is now so actively pursued.

We are here only pointing to some of the most work and problems indicated by the progress of science, and by the yearly record made of it. All the sciences are in turn reviewed under review, and constant reference made from one to the others. We know whereabouts we are, and to a certain extent we know what to attempt next; and more,—an important fact, indeed,—whereabouts the deficiencies are. Art, as we know, there are not a few com-

plicated phenomena. A number of elements are separated, and yet they are one, for they all meet together under the same roof. Painting, sculpture, and architecture, and "common objects" are perpetually coming together, and the world would be glad to know year by year how they agree, and whether or how style rules them, and whether year by year "Progress" is made in them. Are they all going at one uniform pace, or is one outstripping the others, and getting the better of them. We scarcely know which to take first, so crude is the subject matter. The present state for example of "ornamentation," to use that somewhat awkward word, is it better, or not so good, as the past ages produced? Is it advancing, and if so, in what direction? What an amount of work there really is if we but come to think about it seriously for a moment. A vast Association might well find its work here, and might, may be, find a positive relief now and then even in a little abstract primitive, and even "atomic" science. But, slow and sure would be the best, and in a careful collocation of facts, scattered about as things are everywhere, and in logical deductions from such facts, would the real strength and usefulness be best and most surely found.

PARIS NOTES.

ONE of the most serious consequences of the last war, and the pacific revolution it brought about, was undoubtedly the utter ruin of several financial and industrial associations, which were creating, or about to create, busy cities and factories in many almost deserted parts of France. They had proved their power by raising the fashionable seaside colony of Deauville in less than two years, and by quadrupling in some six months the number of houses at Arcachon. A company, known as the Compagnie du Commerce de France, had undertaken the construction of a bathing station at Saint Nazaire, a few miles from Nantes. It was to be called Nouvelle Ville, and, in the opinion of the directors, was destined to become a thriving faubourg of the central city, Nantes. Each director was to have a villa, and several other advantages were offered. But the rule of the Septennate is not favourable to enterprises such as this. The forced sale of 420,000 metres of land belonging to the company took place on the 20th ult.; the buildings already erected went for 700,000 francs; and on the 28th another company of the same kind founded, selling the bathing town it was about to establish at Cabourg, Calvados, in nineteen lots, each of which fetched on the average about 9,000 francs.

Placed beside these and many other records of ruin that could be named, the project of the Paris budget for 1875 is an instructive document. The ordinary expenses are not interesting: they are scarcely met by the ordinary revenue, and are occasioned by mere administrative exigencies. It is in the chapter devoted to *dépenses extraordinaires* that we can see what the civic authorities intend to do for the building trade, and the 85,000 workmen employed in it, during the coming year. There is, firstly, a sum of 400,000 francs allotted to the service of reconstituting the archives and registries burnt under the Commune. Half a million is destined to charitable works; that is to say, the reparation of the hospitals of Saint Louis, Saint Antoine, La Pitié, the Salpêtrière, Bicêtre, &c. Another half-million represents the contribution of the city towards the cost of two bridges; 400,000 francs are set apart for the continuation of the artesian wells of the Place Herbert and the Butte aux Cailles; while 300,000 francs are consecrated to the construction of new galleries for spring-water. The architectural service,—one of the most important items under the Empire,—may count upon a subvention of 3,400,000 francs, to be divided between the Chaplains and Rollin Colleges, the Hôtel de Ville, the Théâtre Lyrique, and other municipal properties. The total of extraordinary expenses is estimated at seven millions. The Comte de Paris is the proprietor of the old Château d'Amboise, and the reparations he is having executed have resulted in an important discovery. Some labourers at work in the pleasure-grounds met last week with a stone of considerable dimensions. It was dug up with care, and when brought to the surface was discovered to be a gravestone. An inscription cut in the stone was finally deciphered. It contained the name of Leonardo da Vinci. The architect telegraphed to the Comte de Paris, who ordered the vault to be opened in the presence of a committee of savants, when the

body of the famous painter was discovered in a state of perfect preservation. Da Vinci is known to have died in the vicinity of Amboise, but his resting-place has hitherto remained a mystery. The skeleton has been placed in a coffin lined with lead, and will be preserved in the chapel of the chateau.

The exhibition of Baudry's frescoes destined to ornament the new Opera-house opened on Thursday, at the École des Beaux Arts. There are three ceilings: that which is to occupy the half-circle of the cupola of the auditorium represents Apollo bestriding Pegasus, and followed by Music and Poetry, with Fame tendering the palm of immortality. The second ceiling is occupied by the Muses, to whom Apollo descends from his chariot, half-turning aside to offer his lyre to the Graces. The third ceiling is the apotheosis of Homer surrounded by the poets and artists of all countries and epochs, among which may be discovered the painter's own portrait and that of the Opera architect, Garnier. Then follow the monster mural pieces: St. Cecilia (Baudry has drawn largely from sacred history), Catholicism represented as the origin of modern music, Salome dancing before Herod, David with the harp, &c. There are also eight medallions of children,—two metres in height,—playing the different instruments of antiquity and civilisation. Mr. Baudry is a wit as well as a painter. When asked how he would represent English music, he answered,—“In the figure of a fool, who plays and thinks he understands,”—and he has kept his complimentary promise. Ireland and Scotland, however, are represented with the harp, jig, and bagpipes. The result is generally esteemed very poor for eight years of unceasing labour.

HOTEL AND SHOPS, HOLBORN VIADUCT.

This building is situate at the most easterly extremity of the Holborn Viaduct, opposite St. Sepulchre's Church, and immediately adjoining Holborn Viaduct Station of the London, Chatham, and Dover Railway. The position it occupies is very commanding, having three frontages, facing "The Viaduct," Newgate-street and Old Bailey, and Green Arbour-court, the side entrance to Holborn Viaduct Station.

The ground-floor (over which the hotel is built) with the exception of the double entrance to the hotel, the bar, and the restaurant, is all occupied by shops.

On the first-floor there are handsome coffee and commercial rooms, reading-room, several sitting-rooms, cloak-room, serving-room, lifts, w.c.s, and lavatories.

On the second-floor are billiard and smoking rooms, thirteen bed-rooms or sitting-rooms, lifts, w.c.s, lavatories, &c.

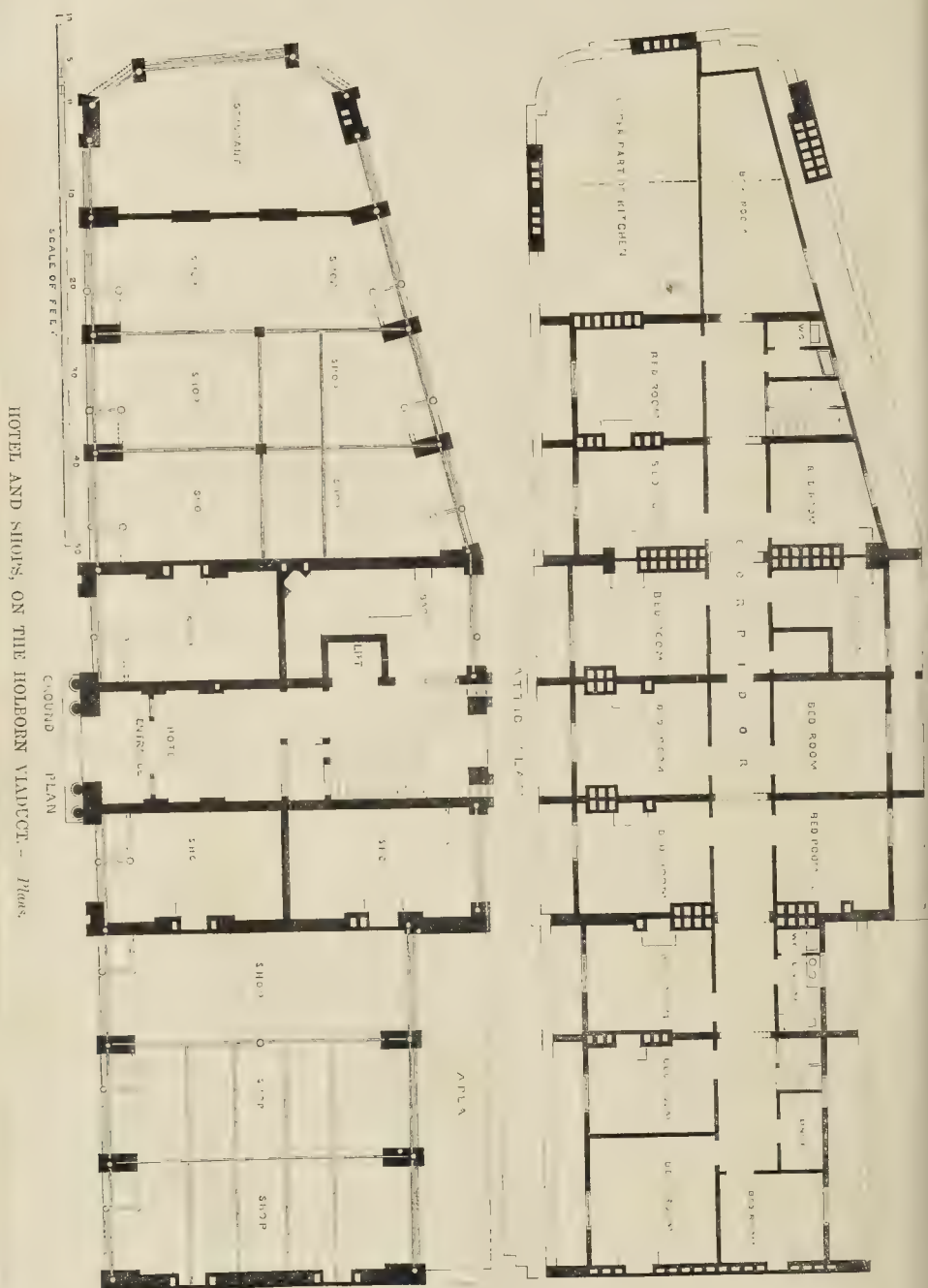
On the third, fourth, and fifth floors there are fifty-one bed-rooms, with a sufficient number of lavatories, and so forth, on each floor.

On the sixth floor, large kitchen, scullery, larders, still-room, housekeeper's room, pantry, plate-room, housemaid's room, servants' hall, bakery, china and store rooms, knives, linen-room; and

On the seventh floor, thirteen bed-rooms and box-room.

The building is being erected for the Association of Land Financiers, No. 7, Whitehall-place, by Mr. James M'Lachlan, under the architect Mr. E. Evans Cronk, of Cockspur-street, Charing-cross. Mr. Thomas Chapman is foreman of the works.

Hopkinson's Sash-Fastener.—This seems to us a really good invention. A sash-fastener must be of that simple form which can easily be put into use, either for securing or opening; and the action must be that which is universally adopted, viz., by simply turning round the handle. There must not be any secret or complicated parts to be put in motion, nor more than one movement of the hand necessary either to secure or open. Hopkinson's patent sash-fastener now before us fulfils all these requirements. It is the ordinary sash-fastener, but the arm has on its left side a projection, which, when the windows are secured, is immediately behind the opening between the sashes, and instantaneously wedges up any instrument pushed up from the outside to open the fastener. It is without any complicated parts to get out of order, or to be broken by the force that thieves use. The price is the same as that of the common fastener, and it certainly seems to us a capital invention. Messrs. Tonks & Sons, of Birmingham, are the makers.





HOTEL AND SHOPS, ON THE HOLBORN VIADUCT.—MR. E. EVANS, ARCHT.

THE FUTURE MAINTENANCE OF
ENGLISH CATHEDRALS.

The proceeding of the Ecclesiastical Commissioners, in taking under their management the Capitular Estates, has caused some anxiety with regard to the maintenance of the cathedrals. Hitherto, the Dean and Chapter of cathedrals have been the sole arbiters of what was requisite in rebuilding, restoring, and cleansing of abbeys, cathedrals, and capitular structures,—acting, of course, under the advice of architects and their clerks of works.

It is no secret that in too many instances our ancient cathedrals and churches have been suffered to fall into decay by parsimonious "chapters," and that "the hat has to go round" to restore edifices which should never have required the subscriptions of laity. It remains to be seen if the "new broom" will sweep cleaner than the ancient chapter besom; and it is likely to be first tested on Ripon Cathedral, for its Dean and Chapter have just transferred their estates to the Ecclesiastical Commissioners for England, in consideration of an annual payment of 6,000l., "until such time as they may be re-endowed with estates in possession calculated to produce that sum annually."

No surplus is likely to accrue out of the revenues of the Chapter of Ripon. When the collegiate church was made, in 1843, the cathedral of the new see of Ripon, the chapter was fixed at a dean and four canons, with incomes of 1,000l. and 500l. respectively.

In order to provide these sums, and to secure adequate provision for the services of the church and the maintenance of the fabric, it became necessary to supplement the chapter revenues by an annual payment of 3,300l. out of the funds of the Ecclesiastical Commission.

The annuity of 6,000l., now payable, is in substitution of this sum, as well as in consideration of the transfer of all the estates of the chapter, with the exception of the cathedral, with its graveyard and the diocesan and canonical residence houses.

The present Ripon Cathedral establishment consists of a dean and four canons, who form the chapter, among whom one-half of the annuity is divisible; two minor canons, who also discharge, as joint vicars, the parochial duty of the parish of Ripon; an organist, six lay clerks, eight chorists, two vergers, a sexton, an assistant, and an organ-blower. These latter absorb, with the maintenance of the fabric, the remaining 3,000l.

It will thus be seen that the new scheme still mixes up clerical salaries with architectural necessities, so that it is difficult to set aside a stated yearly appropriation for building works.

MELBOURNE.

TENDERS for the erection of the new public offices, Eastern-bill, have been called for. The buildings will be erected in accordance with the plans prepared by Mr. M. Egan, architect, whose design was chosen by the Government out of the number sent in in the public competition over a year ago. Alterations have since been made in the plans. The new offices will be erected on the foundations at the rear of the Treasury buildings, and it is intended to concentrate within them all the various public departments now scattered over the city. These include the Public Works, the Crown Lands, the Crown Law, the Mining, the Water Supply, the Treasury Departments. The original plan was remarkable for the strict avoidance of any of the graces of architecture, and was severely criticised upon that ground. The architect has since, however, says the *Argus*, been at pains to remedy the objection, and several alterations have been introduced with the view of rendering the appearance of the structure more in accord with the requirements of the public taste. It has been decided to add an additional length of 72 ft. to the east wing, in order to accommodate the Yau Yau department, and to bring all the offices of the Crown Lands department on to the one floor. Extended accommodation will also be thus provided for the Public Works department. In this extension of the wing there will be constructed one large room, 50 ft. by 64 ft., the proposal being that all the officers of the Yau Yau department shall be gathered together in the one room. In the centre block the principal entrance opens into a large hall, 36 ft. wide, from which rises the grand staircase. In the original plan it was intended to have two stair-

cases, but these have now been thrown into one. The first flight will be 9 ft. in width, and the staircase will then branch off into two flights 6 ft. in width. On each side of the entrance-hall there will be rows of columns. A portion of the hall will be reserved off for messenger and telegraph-rooms. The Crown Lands department will be accommodated on the first floor, the board-room occupying the centre of the building. In accordance with a practice adopted in the large public offices in England, accommodation will be provided to enable the officers of the department to obtain luncheon in the building. With this view a large dining-room will be constructed on the third floor, with kitchens and other necessary conveniences attached. The basement is set apart for strong-rooms, store-rooms, &c. There will be two hydraulic lifts for the convenience of raising stores to the different portions of the building, and tramways will be laid down in the basement. The large strong-room, in which the valuable plans of the land department will be kept, will be detached from the main building, and will be made fireproof. The windows will be closed with patent iron shutters, which can all be closed simultaneously by one movement of machinery. The above are the principal deviations from the original plan, so far as regards the internal arrangement of the building.

The architect has endeavoured in several ways to improve the external appearance of the edifice, and to remove from his design the reproach of plainness which was at first cast upon it. The different stories will be divided by cornices, instead of by simple bands, and the central portion of the structure will be ornamented by rows of coupled columns, built into the walls, rising to the second floor, and finished off with large panels and vases. There will be a portico in front of the building, over which will be placed a coat of arms. In the original design the roof of the edifice was intended to be in one span, but the plan has been altered, and the roof will be in three spans, and with a greater pitch. Ventilators will be placed in the roof, which, while increasing the ventilation, will also serve, to some extent, to relieve the appearance. An important feature in the original design of Mr. Egan was the approaches from Collins-street. He proposed to construct two embankments—one from the south end of the Treasury, the other from the front of the new offices. These would be connected by an iron bridge, 150 ft. long. The idea has been adopted by the Government, but instead of the embankment retaining walls will be used. By that means less injury will be done to the Treasury gardens. The cost of the work is estimated to be about 150,000l.

SOMERSETSHIRE HISTORY.

THE annual meeting of the Somersetshire Archaeological Society has been held in Sherborne. Mr. Dunby Seymour, as president, delivered a very interesting address. Towards the close he said—"If ever we have a really good history of Somersetshire we shall owe it probably to the interest inspired by our society and some of its distinguished members. If some gentleman in every parish were to collect the details connected with it, and accurately examine the available records and papers, describe the monuments of the past, and collect the traditions, we should soon have a body which might be worked up into a really good history of the county. The late Bishop of Salisbury some years ago requested every incumbent to draw up a short memoir of his own parish, and, I believe, many gentlemen took great pains in executing the wishes of the good Bishop, and that a valuable body of materials has been collected, which some day, no doubt, will be made use of. Our own Bishop has done us the honour of presiding over our society, and honoured us with his presence to-day, and has always shown a lively interest in our welfare. The clergy in past ages have done perhaps more for archaeology than any other body of men, and Mr. Hallam places the labours of the congregations of the Benedictines of St. Mary before all the labours of the two Universities of Oxford and Cambridge put together. I know of no reason why our Protestant clergy should be less industrious than the clergy of the Catholic Church, without in any way neglecting their proper duties. They have all of them received a learned education, and I have always thought that a good public free county library was much needed, where those disposed to keep up their

learning might consult the necessary works. Actuated by these views, I once, a very long time ago, gave the nucleus of a public library in Wiltshire, but no progress in this scheme has since been made. There are very few counties more interesting than Somersetshire; it is a kind of epitome of all England. There are the port and marine of Bristol; the fisheries of the Channel; the coal and other mines of the Mendips; the wild and beautiful scenery of the Quantocks; the unrivalled pastures of the Vale of Taunton, and fruit orchards which may vie with those of Kent. The taste and wealth of Glastonbury and other abbeys have made the most of the beautiful materials for building which we possess, and have left us, both in ecclesiastical and domestic architecture, edifices of consummate beauty, heightened by the charm of antiquity. Our historic souvenirs yield to those of no other country. First come the Celtic legends, which cluster imperishably round the Isle of Avalon. They relate to a people with many great qualities, and often brilliant genius, always interesting and always unfortunate. Whether their lot was to oppose the Roman, like Boadicea, or the Saxon, like King Arthur, or the Protestant succession, like Lochiel and the Highlanders, or the Spanish Republic, like Don Carlos, at the present hour, we see the same qualities and may predict the same fate. English institutions pass through a healthy growth, but when an attempt was made to check the development of our institutions in the seventeenth century, Laud and Strafford had to yield to Cromwell, and the unfortunate Charles II. found refuge among faithful friends in this neighbourhood. Then we come to another hero, typical of a more successful epoch. The greater part of the history of the great Alfred is very clearly connected with our county. Then the Saxon rises and falls; the Norman conquers us for an age. From the mixture of races rises the English nation. Again, a few years later, Somersetshire is imperishably associated with the rebellion of the unhappy Monmouth, and traditions, as we know, were long preserved of the rebellion and its cruel suppression around Sedgemoor. Thus Somersetshire, from the earliest to the latest times, has had her full share of the interest attaching to the growth of the noble stream of English history. If we have Arthur and Alfred at the beginning, we may look, in comparatively modern times, to Raleigh on the border at Sherborne, and to Wellington, who honoured us by taking the deserved title of his victories from a small town in our county. What nobler field can the archaeologist have than to examine the features and collect the traditions of a county where great events have passed and great men have lived? Each village almost has traditions and remains connected with the early history of our county. Let us hope that the roll of Somersetshire worthies is not closed, but that the rising generation, when they study our past history, may emulate their forefathers, and remember that, with education brought to every man's door, we are more and more approaching the ideal of the political economist, when every man may start on equal terms in the race of life.

BRADFORD SCHOOL-BOARD SCHOOLS.

A LIST of fifty-seven efficient public elementary schools in the borough has been prepared, and of these sixteen are Board schools. Five new School Board schools have been opened, and the compulsory bye-laws put in force at the same time. There are now eight School Board schools completed, at a cost of about 116,000l.

The Ryan-street schools have been built from the designs of Messrs. Jackson & Longley, architects, and are situated in a populous district off Manchester-road, where the town is extensively spreading. Standing on a hill-side, with a frontage of 300 ft., broken in the centre with a projecting gable and tower, 75 ft. in height, flanked on either extremity with two projecting wings, with bay windows, they have an imposing appearance. The boys' school, at the east end, is 66 ft. by 20 ft., with a wing in the rear 29 ft. by 20 ft., and 16 ft. 6 in. in height to the wall-plate; two class-rooms open from it, one 21 ft. by 18 ft., and the other 20 ft. square; the cloak-room is 18 ft. by 15 ft., and the lavatory 18 ft. by 11 ft. The infants' school is in the rear of the centre, measures 61 ft. by 30 ft., has a height of 27 ft. to the collar-beam, and a gallery is placed at either end; the class-rooms are respectively 22 ft. by 20 ft., and 18 ft. by 20 ft.;

the cloak-room, 17 ft. by 20 ft.; and the lavatory 11 ft. square. The girls' school, at the west end, is 80 ft. by 20 ft., and the wing in the rear 20 ft. square, of the same height as the boys' school; one class-room is 20 ft. square, and the other 21 ft. by 18 ft., while the lavatories and cloak-rooms are of similar size to the boys'. Separate entrances are provided for all the departments, and all have distinct playgrounds, asphalted. The rooms have open-timbered roofs. The schools are surrounded with dwarf walls and palisading. Mr. Squire Holdsworth, builder, of Wike, took the whole contract and sub-let it to other people. Mr. Alfred Thornton is clerk of the works. The capacity of the schools is for 800 scholars. The site, 9,680 yards in extent, cost 2,800l.; the expenditure on the building is 14,729l.; and adding architect's commission brings the total cost up to 18,029l., or at the rate of 22l. 10s. 8d. per head per scholar, but the workable capacity of the school is greater than 800 scholars.

The site for the Barkerend schools, erected from the designs of Messrs. Andrews & Pepper, architects, is near Barkerend-road, on the east side of the borough, fronting to Undercliffe-street. The style is French Gothic, simply treated, but a tower in the original design was cut out to decrease the cost. The shape is the same as most of the other schools, the infants' school in the centre projecting to the rear, and the boys' and girls' schools in the wings. The main front is 240 ft. long, and the infants' school 92 ft. deep. The boys' school is 52 ft. by 20 ft., and 19 ft. in height to where the roof begins to rise from the wall. The girls' school is of similar size, and the school-rooms have two class-rooms each, one 20 ft. by 18 ft., and the other 18 ft. by 16 ft. The infants' school-room is 40 ft. by 30 ft., entered from the playground, and has two class-rooms, each 22 ft. by 18 ft. The infants' school-room and some of the class-rooms are fitted up with galleries, and the buildings cover an area of 1,100 yards. Accommodation is found for 500 children. The site, 8,353 yards in extent, cost 3,460l.; the outlay on the building is 10,966l., and with the addition of commission makes the total expenditure 14,976l., or at the rate of 29l. 19s. per head per scholar. Mr. S. Holdsworth is the contractor.

Dudley-hill Schools are situated on the hill-top, near the extremity of the borough, at Bowling. They have been built from the designs of Messrs. Knowles & Wilcock, architects. The T-shaped style has been chosen, the boys at one end, the girls at the other, and the infants in the rear. The facade is broken by four gables, filled with tracery windows, one gable at either end and two in the centre, a bell-tower rising to a height of 90 ft. over the boys' entrance, topped with a vane. The boys' school at the east end, 50 ft. by 20 ft., has two class-rooms, one 18 ft. by 17 ft., and the other 18 ft. by 17 ft., with cloak-room 17 ft. 10 in. by 18 ft., and lavatory 17 ft. 10 in. by 12 ft. The girls' school is of the same size, with two class-rooms, cloak-room, 16 ft. by 18 ft., and lavatory. Both school-rooms are 25 ft. 6 in. in height. The infants' school, with entrance from the playground, is 44 ft. 6 in. long by 30 ft. wide, and 29 ft. 6 in. in height, fitted with a gallery and two class-rooms, one 30 ft. by 20 ft., and the other 20 ft. by 15 ft., with lavatory and cloak-room. The roofs are hammer-headed. Mr. Levi Moulson is clerk of the works. The schools front to Lorne and Argyll streets. The buildings, which will accommodate 480 scholars, have been erected for 9,520l., or a total expenditure, inclusive of commission, of 12,300l., or at the rate of 25l. 12s. 6d. per head per scholar. Messrs. Milner & Rind were the masons, and Mr. S. Jackson, joiner.

Horton Bank Top School, built from the plans of Mr. E. Simpson, architect, is exclusively for infants, and is the smallest of the Board schools. It stands high up on the hill-side at Horton Bank Top, and the infants will have the benefit of exposure to the full fury of the northern blasts. The site, 7,497 yards in extent, although bought cheap for 700l. has proved a dear bargain, and has caused the schools to cost far more than was intended. First, there was a bill to remove, then an old quarry was discovered, and almost as much stone had to be buried before such a foundation could be got as would suffice to build an ordinary school. It was proposed to build a school for 600 children, boys, girls, and infants, but it was eventually decided to proceed only with the infant department, for 200 scholars. The entire scheme would have formed a handsome school with a tower. The completed school

is 57 ft. long by 30 ft. wide, and 36 ft. in height to the collar beam, with a class-room opening from it, 18 ft. square, and a babies' room, 37 ft. by 20 ft. There is also a cloak-room and a lavatory. The playground in the rear is asphalted. Messrs. B. Illingworth & Son, builders, Bradford, were the builders. The gas-fittings have been supplied by Mr. Thomson, of Birmingham. Owing to the special causes, the cost of this school has been comparatively greater than any of the others, although there is hardly any ornamental work about it. The site, 7,496 yards, cost 700l.; there has been expended on the building, 5,158l., and adding commission, makes a total of 6,208l., or at the rate of 31l. 0s. 9d. per head per scholar.

All these schools are built of stone externally, and internally the woodwork is of selected pitch pine, the door jambs, window dressings, and other work of cleaved ashlar. The windows facing the south are filled in with ground glass to mitigate the force of the sun's rays; ventilation is effected by Burt & Potts' iron window-frames, to open at pleasure, and ventilators in the roof. Warming is by Gibbs's adaptation of Perkins's hot-water apparatus, as well as by open fire-grates in all the rooms. The conveniences are Macfarlane's patent. The fittings are of pitch pine, and the playgrounds, large and roomy, are covered with asphalt. The cost appended to each school includes everything, fittings, as well as land and buildings. The total cost of the eight schools will be 116,429l., and estimating the aggregate capacity at 4,480 scholars, the aggregate cost per head per scholar is about 25l. 19s. 9d. The following table gives in a compact form a few particulars respecting the Board's eight schools:—

Name of School.	No. of Schs.	Site.	Cost of Land.	Cost of Building.
Bowling Back-lane	500	7,800	2,270	10,974
Dudley-hill	480	8,000	2,400	9,520
Petersham-street	800	7,851	8,750	14,550
Horton Bank	200	7,498	700	5,158
Lily Croft	600	10,365	3,350	11,940
Stanton-street	870	9,680	2,800	14,729
Whitley-lane	600	11,000	3,600	8,200
Totals.....	4,480	70,545	£33,510	£83,437
			per head	
			Scholar.	
Name of School.	Architects' Com.	Total Cost.	Scholar.	
Barkerend	£150	£11,976	£29 19 0	
Bowling Back-lane	435	13,659	27 8 4	
Dudley-hill	40	12,300	25 12 6	
Petersham-street	532	23,882	29 15 9	
Horton Bank	300	6,208	31 0 8	
Lily Croft	460	15,050	25 5 0	
Stanton-street	600	18,029	22 10 8	
Whitley-lane	375	12,275	20 9 2	
Totals.....	£3,782	£116,429		

THE ILIAD AND METALS OF HOMER: THE DISCOVERIES IN THE TROAD.

AFTER Dr. Schliemann had left the Troad, a pot filled with gold was found by two workmen, who rightly concluded from its weight that it contained valuables. Might not this pot have been buried by its owner, as is done in Palestine nowadays, on account of wars, invasions, robberies, &c., carried on in that lawless land? We may also infer from the valuables contained in this pot, and from the vases, &c., that gold was not scarce in that ancient city. Homer represents gold to have been abundant also among his heroes. We read that Agamemnon was about to sacrifice his daughter at Aulis when Diana snatched her away and left a hind in her stead. With this we may compare Abraham's offering up of Isaac in Gen. xxii., when a goat was sacrificed in his stead. Idomeneus, on the point of being shipwrecked, vowed that if preserved he would sacrifice whatever he met with when he landed; he was preserved, and having landed, met his son, and would have carried out his vow had not his subjects expelled him. Compare with this Judges vi.

Mortars and pestles have been found in numbers in the Troad. The Arabs use such mortars and pestles to "bray" wheat for making a kind of bread called *kibby*. They also pound fish and flesh in them; from the flesh they make *lebni imkhi*—"kid in its mother's milk." Might not these Troadic mortars and pestles have been applied to the same use?

Bracelets, ear-rings, head-dresses, &c., have also been found. Gideon defeated the Midianites, "and said unto them (i.e., the Israelites) I would desire a request of you, that ye would give me, every man, the ear-rings of his prey; for they (the Midianites) had golden ear-rings,

because they were Ismaelites, i.e., Arabs. And the weight of the golden ear-rings that he requested was 1,700 shekels of gold (about 3,300l.), besides ornaments, and collars, and purple raiment. Nor were ornaments confined to wandering Arabs, for every nation of the East possessed them.

There cannot be the least doubt that a city existed there, and was burned; but that it was besieged, taken in the manner described, and burned by Greeks, is a matter extremely dubious if not altogether improbable.

The Kingdom of Lydia bordered on Mysia, in which Troy was situated; but might not these two have been joined in one under the Moenians whom the Lydians expelled?

Homer was born in or beside Lydia, and that iron was unknown in Lydia, even at a later date, is proved by the celebrated conversation between Croesus and Solon, the Athenian (B.C. 560-546). These Moenians were, it is supposed, Pelasgians, and "it is more than probable that the Trojan Æneas and his followers were likewise Pelasgians"; indeed, a Lydian origin has been assigned to some of the discoveries.

Homer is called the Moenian bard by Horace

"Scriberia Vario fortis, et hostium Victor, Moenii carminis alite."—Carm. i. 6. 2.

"Non, si priores Moenon tenet Sedes Homerus."—Carm. iv. 9. 5.

There cannot be the least doubt that this so-called Troy had an Asiatic origin; that the people inhabiting it and the Greeks were sprung from two different stocks; and, if such is the case, why should the king and generals of an Asiatic city have Grecian names? We may fairly suppose that traditions of the invasion of Lydia by the Lydians were current in Homer's time, and, since Homer was a minstrel of the people, and his object was to please his countrymen, he may have woven (and probably did weave) other legends into these, and thus formed a great national poem. Perhaps Troy itself was the chief stronghold of the Moenians.

As regards metals. If *αἰὶς* (iron) was used for domestic, agricultural, and household purposes (?) in other countries, it was not so used in Homer's birthplace; for Croesus, having been asked by Solon if there was any iron in Lydia, replied in the negative. Now, if the Greeks possessed iron in such abundance we may infer that the Trojans also possessed it; for, as appears from the Iliad itself, the Trojans were as civilised as their opponents. But we have no evidence that the inhabitants of the city which Dr. Schliemann has disinterred were acquainted with iron at all.

There is good reason to believe that Homer was acquainted with bronze. The bronze materials in the British Isles are supposed to have been introduced by the Phœnicians; if so, Homer was also acquainted with bronze, for the Phœnicians, traded with Smyrna and other parts in Asia Minor and Greece. Long, bronze leaf-shaped swords have been found in Greece, corresponding to those mentioned by Homer.

Ἰαπὶς may perhaps be derived from *ῥῆς*, "fire"; he occasioned the burning of Troy, and his mother dreamed that a blazing torch was about to be born. Helen (*Ἑλένη*) from *εἰλέ* (root *ἔλ*) sor. 2 of *αἰλέω*, "I seize," i.e., "she who was carried off." She was wife of Menelaus and was carried off by Paris.

Ἑκὺβα (*Ἑκάβη*) from *ἐκβάω*, sor. 2nd part. *οἰκβαίνω*, "to go out of proper bounds," i.e., "ah! that went out of her wits," and consequently out of her form—she was changed into a dog.

I believe that a Grecian army was never arrayed against the city, whose ruins have now been discovered; but that it was probably the stronghold of the Moenians, and was taken by the Lydians, and that on the invasion of the Lydians the Iliad of Homer is founded, mixed up with other traditions. T. A. M.

New County Buildings for Shetland.

The erection of the new county buildings, comprising Sheriff Court-room, Sheriff Clerk and Procurator Fiscal's offices, have been commenced at Lerwick. Mr. Rhind, of Edinburgh, is the architect. A new county jail is also to be built in the vicinity of the County Buildings, the site of both being on an elevated piece of ground at the north hillhead of the town. The contract for the Court-room has been taken by an Edinburgh firm for 3,600l., of which amount the Treasury pay one-half. The contract for the new prison has been taken by a local firm, the amount being about 4,000l. Both buildings are to be proceeded with at once.

MARGATE DRAINAGE COMPETITION.

At the last meeting of the Margate Council, a report from Sir Joseph Bazalgette was read, in the course of which the writer said, none of the competitors had complied literally with all the requirements and conditions of the competition. Others from several of the competitors were also read.

Mr. Bailey Denton, the author of "Intermittent Filtration," wrote to the council and pointed out that it was supposed when the competitors consented to send in plans for the drainage that none selected were invited on account of their own experience and connexion with the best drainage schemes, and had he known that Sir Joseph Bazalgette was going to be called in to advise the council, he should have objected to compete, well knowing the opposition Sir Joseph ad to his views. He protested against the appointment of a judge who was necessarily prejudiced.

The Borough Surveyor, Mr. Albert Latham, sent in a written application to the Council for permission to lay before them a plan embodying the tunnel idea of "Economy," and the suggestions of Sir Joseph Bazalgette; and thus get a combined plan, which, in his opinion, would carry out the drainage of the borough to a successful termination. He was anxious that what was one should be done to the advantage of the borough, and he should consider the services now rendered would fall within the office held by him. The Council came to a resolution to examine the plans themselves with reference to some of the objections raised by the referee; and it was resolved that Mr. Latham's letter should be dealt with as soon as the premiums were awarded.

HASTINGS TOWN HALL COMPETITION.

St.—When a body of practical men, deliberately and cool blood, set any number of men to work to furnish out with designs for a building comprising certain specified requirements, for an outlay of 10,000*l.*, which is being considerably less than half the probable cost for it is clearly manifest that the accommodation required by their conditions will, at the rate of 8*d.* per cubic foot, amount to 24,000*l.*; the aforesaid sum of 10,000*l.* will provide for the modest outlay of 34*d.* per cubic foot; it is to be sincerely hoped that the decision of this competition will not rest with those who drew up the conditions, that such kind invitations will be declined (of course, if they think) by many others besides. W. P.

THE FLORICULTURE OF KENNINGTON PARK.

The inhabitants of Lambeth, as represented by the local vestry, have at present a grievance, what they complain of as the imperfect and unsatisfactory planting and arrangement of the flowers in Kennington Park; and a deputation on the vestry has just had an interview on the subject with Lord Henry Gordon Lennox, the Chief Commissioner of Works. The grievance at before the Chief Commissioner was that the annual sum of 1,500*l.*, voted by Parliament to the park, has been gradually reduced, and that during the present year it is only 1,370*l.* They complain that this reduction has been made in the face of an increase in the total sum devoted to the parks, and they are desirous of knowing by the southern portion of the metropolis could have had the money devoted to it reduced in this way by the Government, whilst for the northern portion there had been an increase. At their main complaint was that the planting at the park with flowers, which was formerly carried out by Mr. Rogers, on behalf of the Government, was now effected upon the contract system, the result of which was that new agricultural productions were excluded from the park, that the plants were of an inferior character, those which were generally found in the Royal Parks, that the planting was not done in the proper season, and that the general appearance of the park during the summer season was now a very unsatisfactory state. They urged upon the Chief Commissioner the desirability of reverting to the former system, and to do away with the present unsatisfactory contract under which the park was suffering. Battersea Park was cited as a striking instance of the superiority of the system there adopted, where the planting was done by the Government.

Lord Henry Lennox, in his reply to the deputation, observed that, as it appeared to him the reputation wished him to break the existing contract, they had asked him really to reverse the policy of his predecessor, and instead of the floriculture of Kennington Park being continued under contract, the Government should reassume it

into their own hands. The matter would require his serious consideration. The whole tendency of the past few years had been to take the management of the parks out of the hands of Government, and place them under the control of the Metropolitan Board. He promised the deputation that the whole matter should receive his careful attention, and he would give his reply as soon as possible after his return from the holidays.

It may be added, that the great falling off in the floriculture of Kennington Park during the last two or three years has been a subject of general remark. Those who have been in the habit of passing through the park cannot fail to have noticed this fact.

AN AWKWARD SLIP.

A LANDSLIP, of a very alarming and serious description, is taking place at Hagegate, in the Cleveland district, and indicates what honey-combing the earth by mines is likely to end in.

The slip in question has completely blocked up the turnpike road for nearly half a mile, and already a lawsuit, between Lords Faversham and De L'Isle and tenants, is set down for hearing at the next York Assizes, arising out of the matter.

An attempt has been made to remove the obstruction, which is composed principally of hard clay, but it proved a complete failure, owing to the great elevation and steep incline whence the slip proceeded, and the consequent danger of causing a yet more dangerous precipitation of matter, which would imperil several farm-houses and large buildings in the locality. As it is, fears are entertained that the mischief will be considerably increased during the winter months. The mountain is owned by Lord Faversham, and its sliding down has invaded the estate of Lord De L'Isle, and the ratepayers of the township, who are tenants of Lord De L'Isle, are the parties chiefly aggrieved. They consider that Lord Faversham should take back his own estate, which is at once "real" and, as it appears, "movable," because the slip has been caused by permitting excavations by miners in search of jet.

The whole of the mountain on the west side has also been similarly undermined, and the farmers and others are in daily fear of being buried alive. Travellers have to make a *détour* of two miles through the obstruction.

SEWAGE IRRIGATION AT LEAMINGTON.

We have received a letter from Mr. T. Mellard Reade, C.E., in which he says:

A few weeks ago I had the pleasure of inspecting the results achieved on Lord Warwick's farm at Leamington. The population is 24,000, but of these 15,000 only are connected with the water service. The sewage is pumped up from the outfall by two 60-horse engines through from two to three miles of 18 in. cast-iron pipes, the total lift being 130 ft. This part of the scheme has been engineered and paid for by the town, which delivers at its own cost the whole of its sewage on to Lord Warwick's farm, he paying a rental of 400*l.* per annum for it, and on his part covenanting to purify the whole of it for thirty years. The farm consists of about 400 acres of gently sloping ground, the subsoil being mostly gravelly drift, lying on the Keuper sandstone and marls. It is laid out on the catchwater system, excepting where very flat, in which case the ridge and furrow is adopted. The main carriers are of fire-clay pipes, and, excepting for the occasional manholes and outlets, the sewage is unobscurable. One of the advantages claimed by Mr. Clifford for pipes as against troughs, such as are used on Mr. Hope's farm at Romford, is that the sewage can be carried over banks without any unsightly banking up or trellises being required, as he finds practically that 18-inch pipes with cement joints will stand a 6 ft. head of water. I can speak positively as to the extreme simplicity and success of the method of distribution adopted.

About fifty acres are laid down in rye grass, which is grown and frequently sewaged for two years, and is then broken up and replaced by other crops. This is really the safety-valve of the farm, as grass is the only crop that will stand constant sewing. There are, also, about forty acres of pasture, great care being taken in sewing it, to avoid injuring the character of the grasses; 310 acres are devoted to tillage; and the splendid crops of wheat, barley, oats,

mangolds, cabbage, potatoes, &c., bear witness to the efficacy of the system. . . . The total growth of rye-grass per annum is nine cuttings, yielding about from fifty to sixty tons to the acre. The mangolds Mr. Taff estimates will be from forty to fifty tons to the acre.

These are some of the facts elicited during my inspection. The sewage of Leamington is effectually disposed of and thoroughly clarified, and it appears to me that filtration through the ground, urged by the Committee of the British Association on the Treatment and Utilisation of Sewage, as so necessary, can be as effectually done in a much simpler manner and more economically by the catchwater system than by the ridge and furrow system considered essential by them. We also learn this: that sewage can be effectually disposed of and clarified by land, but that the profit is only incidental to favourable conditions.

IMPROVEMENT OF DECORATIVE ART.

MR. GEORGE DOBIE, of George-street, Edinburgh, has renewed his offer of a number of prizes for the best designs in drawing-room and dining-room decoration, and also for designs in church interior decoration in perspective. The competition is open to journeymen house-painters and decorators, British and foreign. A similar competition took place about seven years ago. It was so successful, that Mr. Dobie has felt stimulated to renew his offer. A new feature introduced on this occasion is a competition in designs for church interior decoration,—a branch of art which has of late been largely developed. The designs must be lodged by the 1st of February next year, and their respective merits will be decided by a committee of qualified artists. The working classes, we understand, will again be allowed an opportunity of inspecting the various designs,—a privilege of which a large number of operatives gladly availed themselves on the occasion of the last competition.

DUNDEE PICTURE GALLERY AND MUSEUM.

THE Dundee Free Library Committee are just now showing a very attractive exhibition of pictures in their Free Gallery and Museum. The collection is representative of various styles and schools of painting. In portraiture we have five works from the easels of Lely, Reynolds, Northcote, Romney, and Grant, lent by Lord Kinnaird. There are three works attributed to Wilson in the department of landscape. The first, "The Good Samaritan," was presented to the gallery by Rev. C. C. Maxwell; the second, "Solitude," an engraved work, has been lent by Mr. A. D. Grimond; and the third, "Cicero's Villa," is also the property of Mr. Maxwell. These works are justly attributed to this great master of landscape, inasmuch as they are characterised by internal evidence of their genuineness. Showing the defects of composition which marked Wilson's productions, they have also his great originality and that natural colour which blinds the critic to his defects. Mr. Maxwell also lends some excellent copies of Italian and Spanish pictures, and a work by Teniers, "The Alchemist." Numerous specimens of the Dutch and Flemish school are contributed by Mr. Michael Ferrier, whilst several excellent examples of a rising local landscape artist, Mr. Allan Ramsay, are sent by various connoisseurs. The museum is also constantly receiving additions, and is well worthy a visit.

LINCOLN'S INN FIELDS TO THE STRAND.

A "WORKING MAN" writes,— "Living not far from King's College Hospital, I have often thought how much better it would be if there was a road to it through Houghton-street. I think the front of the hospital is in a line with Houghton-street. Some five or six years since two houses in Clements-lane fell down; if the other two, facing Houghton-street, had fallen with them, there would have been a fine opening to the hospital. I think it is a great pity they did not fall. I was passing by last evening, when I saw workmen putting hoarding round these two houses in Houghton-street. I thought, 'Now they are going to make the straight road to the hospital,' but was informed they were going to build a school. I thought it was a

great pity, because it is almost a straight road from the Strand, and it would save people from dodging round that beautiful colonnade in Clare-market. Instead of building a noble institution, like King's College Hospital in, it ought to be brought out more prominently, so that it could be seen, and then some of those gentlemen who leave legacies to different institutions would not forget King's College Hospital; for I am sorry to say they do forget that hospital more than any other in London."

The whole nest of streets and passages behind the south side of Lincoln's-inn-fields requires rearrangement and improvement. There is a legend hereabout that years ago a young man from the country bearing a black bag started one winter night from Portugal-street to get into the Strand, and that he has been wandering round and about ever since, constantly returning with a disconsolate aspect to his original starting-point. On foggy nights his form may be described in Clare Market. Anyhow no one has yet heard that he ever reached the Strand.

HOSPITAL CONSTRUCTION.

M. POLLET, civil engineer, has excited considerable sensation in military circles by a project recently read at the Académie des Sciences on "Incombustible Barracks and Hospitals." The application of the new army law, the augmentation of artillery regiments necessitating a provision for about 200,000 men, render M. Pollet's system a question of the day. In a small scale at Paris, in a larger one at Bourges, it has already been carried out with complete success. M. Larrey, member of the Institute, in presenting the inventor's *mémoire*, said that most of the barracks and *caserments* actually existing were buildings of elevated construction with several stories superposed. Their massive walls, their receding angles, form heaps of porous substances which favour the accumulation of dust, the development of miasma, and the breeding of vermin. M. Pollet demands, *in primis*, the withdrawal of military stations from populous centres. Having a vast space before him, he suppresses the superposition of stories. He then seeks conditions of salubrity, solidity, and economy in the form of his construction, and in the selection of incombustible materials, strong and light, offering hard and elastic surfaces and not apt to split or rot. Having compared different interior vaults, M. Pollet decided upon adopting the ogive. The construction of his incombustible barracks is, therefore, characterised by an iron ogival framework springing from brick foundations, and united by rafters of iron; the interstices between the ribs are filled with solid or tubular bricks. The flooring is either paved, asphalt, or laid on a foundation of metal shavings. These constructive principles are also applicable to the building of cavalry stables. M. Larrey warmly recommends M. Pollet's system. He alleges that it is chiefly applicable to military hospitals; and he observes, moreover, that the majority of young soldiers are peasants, accustomed to a one-storied home, reared in the salubrious conditions of such a building affords, and they must sicken or perish in the five-storied barracks actually existent.

A FLÛCHE FOR WESTMINSTER ABBEY.

SIR,—With reference to Mr. Wethered's late most interesting letter to the *Times*, one could not but be forcibly reminded, whilst reading that portion bearing immediately on Notre Dame, Paris, of the great want which all must experience, when viewing the exterior of the Abbey, of a something, whether tower or flèche, to crown the crossing of the church.

It has, however, always seemed to me a matter for hearty congratulation that Sir Christopher Wren was never permitted to erect the tower and spire for which he had prepared plans and drawings; not that the design in itself was objectionable, but that a central tower, with or without a spire, would appear to be out of all character with the rest of the church. The slenderness of the four great columns that must have borne the weight, the unusual narrowness of the great aisle in proportion to its height, and the extremely eastern position of the transepts—all point to the undesirability of carrying out such a design as that once contemplated by the great architect of St. Paul's.

But, if these peculiar features of the Abbey be so many valid objections to the erection of a central tower, do they not all tend to prove that

it was the original intention of Henry III.'s architect to have placed a flèche at the intersection of the transepts; and is not this conjecture strengthened by the fact that corbels still exist between the springings of the arches, under the lantern, evidently intended to carry the ribs of a groined roof; also, that old prints of the Abbey show no lantern, but the lofty external roofs of lead, of nave chancel and transepts, meeting at a point which would be that now occupied by the central boss of the lantern? It must not be forgotten, too, that the Abbey is built after a French model.

Of one thing, at all events, there can scarcely be a doubt, viz., that the present lantern was never originally contemplated. Mean and contemptible, it is out of all character with the general splendour of the Abbey. May I suggest, then, that to have Sir G. Gilbert Scott's opinion as to the desirability and feasibility of substituting a flèche for the lantern would be most interesting? In conclusion, let me add that, constructed of wood covered with lead, and carried up no greater height than the general proportions of the Abbey would demand, a flèche need not tax, to a greater degree than does the present lantern, the strength of the four supporting columns beneath.

THE WHITBY JET EXHIBITION.

UNDER the auspices of the Whitley Institute of Popular Literature, Science, and Arts, an exhibition of manufactured jet was recently opened in St. Hilda's Hall, Whitby. The Whitley Institute has long had an art-class in operation, for teaching young jet-workers the true principles of taste and design, and under the tuition of Mr. T. H. Readman it has done much good. The first jet exhibition was held in Whitby in 1853, when liberal prizes were awarded, and so peculiarly profitable was that effort that the nucleus of a building fund was then formed. Again, in 1863, the jet exhibition was revived, chiefly through the instrumentality of the late Sir H. S. Thompson, who was then M.P. for the borough, and who perceived the national magnitude and growing importance of the trade. After this the movement was arrested, but now the exhibition is successfully revived again. Sir George Elliot, bart., M.P., subscribed 60*l.*—or 20*l.* a year for three years—to promote honourable rivalry and superior excellence among the workmen in jet, and to adapt the manufacture more effectually to modern tastes and requirements. The Society of Arts, London; Mr. C. M. Palmer, M.P.; Mr. Milbank, M.P.; and many of the local nobility and gentry, have afforded substantial aid, and the leading master jet-ornament manufacturers have also supported the undertaking with spirit. The result is that the committee have been able to offer 120*l.* in prizes, in forty classes, and the total number of entries exceeds 250. Some of the articles sent in to compete were sold before the prizes were awarded for as much as 60*l.* or 70*l.* each. Others are remarkable in design and execution. Many of the specimens were classic in treatment. The exhibition was formally opened by Mr. George Taylor, of Clepham Park, Surrey, who heartily congratulated the promoters on the success of the exhibition. Professor Tennant, of London, was the judge of the specimens, that gentleman having also been one of the judges for the Turners' Company, when the freedom of that ancient City guild was bestowed on a Whitley jet-worker for the best carved work. There was a very large and fashionable attendance, and the exhibition remained open on the following day.

FIRES.

At Glasgow Prison.—A fire recently broke out in the Glasgow South Prison, Jail-square. The flames were not extinguished till the roofs of the kitchen and the cooking-rooms were burned down, and considerable damage was done to clothing and other property. It is supposed that the fire was the result of the overheating of a flue. The damage to the building and property is considerable.

Great Fire at Nottingham.—100,000*l.* damage has been done, and 1,000 men thrown out of employment, by a fire on the premises of Mr. Samuel Morley, M.P., in Mansvers-street, Nottingham. (The only current employers in the hosiery trade is the member for Bristol.) In the factory was a great deal of patent machinery of great value, besides considerable stock. On the

21st ult. the workpeople left as usual, and at half-past two o'clock a.m. the centre of the great building was a blaze. The inhabitants of the locality insist that they might have subdued the flames at the outset had there been plenty of water in the factory cistern, but unfortunately there was not. All the fire-engines in the town were brought into requisition, but when the fire had taken fairly hold the efforts of the firemen were futile. The work of destruction went on for several hours, carrying all before it,—first one part of the factory and then another falling, until the whole was demolished. At least a thousand people will be thrown out of employment by the disaster. The owner is well insured. The origin of the fire is not known, but a strict inquiry is to be made.

Fire at Jarrow.—A fire which has proved very destructive broke out in the extensive paper-mills belonging to Messrs. William, Henry, & A. Richardson, situated at Springwell, near Jarrow-on-Tyne. The fire was first discovered in the laboratory, and rapidly spread to the finishing-room, containing 4,000*l.* worth of paper ready for customers. Thence it passed to the spar-to-grass shed, and continued to burn with alarming force, and was not extinguished until the large and valuable mills, with their entire stock of paper and material, were completely destroyed, the walls alone being left standing. The machinery in the mills is also greatly damaged, and the loss will amount to between 30,000*l.* and 40,000*l.* Through the casualty about 250 men and women will be thrown out of employment. The premises and stock are insured. The cause of the fire is at present unknown.

SANITARY AND EDUCATIONAL EXHIBITION, GLASGOW.

WE desire again to remind some of our readers of the Exhibition in connexion with the Social Science Congress that will be held in Glasgow from the 30th of September to the 10th of October, 1874. It will be the third exhibition, of sanitary, educational, and domestic appliances in connexion with the Association for the Promotion of Social Science, and will take place at the Drill-hall, Burnbank, Glasgow. The managing committee look forward to a very large and valuable display of scientific and useful appliances coming within the range of their operations. The objects included will come under the heads:—

1. Warming, Ventilating, and Lighting.
2. Domestic Appliances and Economic Apparatus.
3. Sanitary Architecture and Appliances, for outward and interior ornamentation.
4. Sanitary Engineering and Disinfectants.
5. Food and Clothing, Specimens of Food and Confectionary of all descriptions; and,
6. School Furniture and Educational Apparatus.

Mr. James Robinson, at No. 1, Adam-street, Adelphi, secretary to the managing committee, will give any information that may be desired.

SCHOOL BOARD SCHOOLS.

Long Busby.—The new Board Schools here have been opened. The building stands on an eminence. It is a simple Gothic structure, built of plain red bricks, without any attempt at avoidable ornamentation. The boys' school is on the ground-floor, the girls' on the upper floor, approached by a stone staircase. Each school consists of a large room, 53 ft. in length by 18 ft. in breadth, with additional class-rooms for higher classes. The large rooms are provided with patent folding desks that are available either for writing-desks, tables, or seats with backs. They are light, airy, and well ventilated, and have besides a wainscoting to the height of something like 5 ft. The entrance to the boys' school is by a porch to the left. The staircase, which is approached from the right end of the building, leads to the girls' school, and is surmounted by a bell-turret somewhere about 60 ft. in height. Each school has its separate play-ground and other conveniences. In front of the school building, and separated from the street by a narrow strip of garden, stands the master and mistress's house. Under the same roof is a board room, with waiting-room attached. The infants' school is at a short distance from the boys' and girls' school. It is not an entirely new building though it has undergone considerable repair and enlargement. It was originally built for

school, but was afterwards used as a working men's club-room. With reference to the new schools, some difficulty was experienced in obtaining a solid foundation, in consequence of its probably having been the site of a sand-pit at some former period. In some cases they had to go down 13 ft. to make a good foundation, which caused considerable delay, as well as added to the expense. The foundation is of concrete.

ST. JOHN'S CHURCH, HORSELYDOWN.

Err.—As our name has appeared in your paper during the last two weeks in reference to the estimates for the above, will you allow us to offer an explanation? We beg to say our tender was never withdrawn, but our amount being so much lower than others, led us to re-examine our quantities, which had been hastily prepared through pressure of business, and we found that we had made an error in cost, which we immediately brought to the notice of the architects, who were satisfied with the explanation, and our amount being then considerably lower than any of the others, we were ordered to carry out the works.

T. H. MANSFIELD & SON.

* The architects have confirmed this statement, and here the matter may end. That there was an irregularity in the proceedings seems clear.

CASES UNDER METROPOLITAN BUILDING ACT.

WOODEN BUILDINGS.

At Hammersmith, Mr. Wigmore, builder, of Fulham, appeared before Mr. Ingham to answer two summonses, at the instance of Mr. Moseley, district surveyor: one for erecting a building without notice, and the other requiring him to enclose it with incombustible materials.

Mr. Claydon, who defended, submitted that it was not building within the meaning of the Act. It was a temporary erection without sides to it, and used as a covering or awning. It did not touch any building. There were there builders round about, who had similar erections.

Mr. Evan Evans, a builder, who said he had seen the structure, which was 7½ in. from the adjoining building. It was simply a roof, supported by uprights consisting of rails.

Mr. Ingham thought the defendant ought to go to the Metropolitan Board of Works for their sanction to it. He could certainly hold that it was a building. He fined the defendant 1s. and 2s. costs, for not giving notice, and adjourned the other summons to give him an opportunity to apply to the Metropolitan Board, who would sanction the structure if there was not any danger.

Mr. Serff, a builder, of Fulham, also submitted his respect to a carpenter's shop in Star-lane. The defendant said it was a temporary building. Mr. Ingham said some of the things commenced with being temporary and ended with being permanent. He fined the defendant 1s. and 2s. costs, for not giving notice, and adjourned the other summons to give him an opportunity to apply to the Metropolitan Board, who would sanction the structure if there was not any danger.

THE NEW LAW ON BUILDING SOCIETIES.

The Act passed in the last Session to consolidate and amend the laws relating to Building Societies will come into operation on the 2nd of November next. It contains forty-four sections and a schedule of forms to be used extending over the United Kingdom. The registrars of Friendly Societies are to be registrars of Building Societies. A terminating society means a society which by its rules is to terminate at a fixed date or when a result specified in the rules is attained; a permanent society, which has not a fixed date or a specified result. Any number of persons may establish a society, either terminating or permanent, to raise money by shares or the objects mentioned, and the liability of any member of a society under this Act in respect of any share upon which no advance has been made is to be limited to the amount actually paid or in arrears on such share, and in respect of any share upon which an advance has been made to be limited to the amount payable thereon under any mortgage or other security, or under the rules of the society. There are several sections as to the making, registration, and alteration of rules, and they are to be binding on all members and persons claiming on account of a member. Officers are to give security, and to account and invest the surplus funds: the property of a society is to vest without conveyance. Provision is made for payment of sums not exceeding 50l. in case of testacy. Punishment is provided for withholding books, &c., as also for obtaining money fraudulently. The statute points out the necessary proceedings for the termination or dissolution of a society. Societies may unite with others, or one society may transfer its engagements to another. Disputes may be determined by arbitration or by a Court, as also by the Registrar. Buildings for the object of a society may be purchased or leased, and minors may be elected members. Annual accounts are to be

made, and regulations to be made with power to the Secretary of State to make orders as to fees, &c. The forms to carry out the Act are concisely worded.

THE WALKER ART GALLERY, LIVERPOOL.

THE tenders for the Walker Art Gallery, of which we gave a view and plan recently, were opened on the 27th ult., by his worship the Mayor, Mr. Andrew Barclay Walker, and were as follows:—

Tomkinson & Sons.....	23,145	0	0
Lesh.....	19,521	0	0
Jones & Sons.....	18,130	0	0
Urmon.....	19,427	0	0
Rom.....	19,000	0	0
Mulla.....	18,979	0	0
Wells & Sons.....	18,890	0	0
W. & F. Witter.....	18,890	0	0
Barrington & Sons.....	18,558	0	0
Thornhill.....	18,540	0	0
Holme & Nicol.....	18,284	0	0
Gabbutt.....	18,169	0	0
Haigh & Co.....	17,949	0	0

Messrs. Haigh & Co.'s tender being the lowest has been accepted, and this amount, with some 3,000l. for furnishings and sculpture, will represent, it is stated, the entire cost of this building, which, we trust, will long hold up to honour the name of the liberal donor.

CHURCH-BUILDING NEWS.

Horsham, St. Faith.—The parish church of St. Faith, about five miles from Norwich, has been restored and reopened, at a cost of 3,000l. It consists of a nave and north and south aisles, south porch, west tower, and chancel, which are all in the Perpendicular style of architecture. The arcade between the nave and north aisle had seven arches and piers, all formed in rough brickwork and plastered over. On the south side there were six similar arches, the porch occupying the place of the seventh. All these arches had gone over several inches from the upright. These have all been taken down, and arcades formed of moulded stone work, and the clearstories rebuilt. The old oak roof has been restored, and additional ties introduced in it, and covered with green slates instead of as formerly with thatch. The roofs of the side aisles have also been taken off and re-made as far as necessary and re-fixed and covered with lead as before. All the windows, doorways, and other stonework where defective have been made good as far as absolutely necessary. The whole of the windows have been glazed with cathedral glass with narrow coloured glass borders. The tower, which is upwards of 100 ft. high, has been put in good order, the parapet and pinnacles being rebuilt as they were. Two of the bells have been recast, and the whole peal of six rehung. The reorganizing was done by Messrs. Warner & Son, of London, and the rebanging by Mr. Crane, of Horsham. The porch, which is a flint and stone erection, with a chamber over it, has been restored, and a staircase of open stone-work made in the south aisle to reach the parvise, which is to be used as a vestry. The benching is of oak, with poppy-head ends, to match several old poppy-heads which remained in the church, and which are re-used. The flooring under the seats is of wood and the passages are paved with Minton's tiles. The old screen, which had been painted over in white, has had its panels freed from the modern coatings of paint, and the result has been the discovery of ten panels containing various saints. The pulpit, which is of the same date as the screen, the latter part of the fifteenth century, was also painted white; but Mr. Phipson was strongly of opinion that under this the original paintings remained, and upon the careful removal of this white paint, ten figures were discovered, namely, St. Christopher with the Infant Jesus, St. John the Evangelist, with cup and serpent, St. Andrew with cross and bull, the Virgin Mary holding the Infant Jesus, with a monk below in the attitude of prayer, St. John the Baptist with the lamb and book and cross, St. Stephen holding stones in a napkin, a monk holding a crossier and book, probably St. Benedict, and another holding a crossier. The last is a female figure crowned, holding a saw in her left hand and a book in the right. They have been re-fixed just as they were discovered, without any retouching. The whole of the works have been executed by Mr. Robinson Cornish, builder, North Walsham, from the designs and under the superintendence of Mr. Phipson.

Newcastle-under-Lyme.—A report has been prepared by the Building Committee giving particulars with reference to the re-erection of St. Giles's Church. The foundation-stone was laid in September last. The lowest tender for the execution of the works was that of Mr. Horeman, of Wolverhampton, and was for 15,000l. Certain amendments were subsequently made in the plans, and it was decided to postpone other portions of the work. A contract was then entered into with Mr. Horeman for 10,150l. 12s. 6d., which amount exceeds the sum at present subscribed to the extent of 2,275l. 16s. 5d., while it provides for the superstructure only, and does not include the internal fittings, architect's commission, and other items. The additional amount of 5,527l. 18s. 5d. is therefore required for the entire completion of all the works, including the replacement of tablets, tombstones, and gravestones. The building is proceeding under the superintendence of Mr. Clarke, the clerk of the works. Only a comparatively small portion of the work necessary for the restoration of the tower is included in the present contract, and comprises the restoration of the Early English arch leading into the church and replacing the eastern side of the same as high as the apex of the nave roof. It is estimated that about 750l. will be required to further restore the tower.

Weymouth.—An interval of twelve months has elapsed since the Earl of Shaftesbury, the Lord-Lieutenant of the county, laid the central stone in the chancel window of Christ Church, and now the consecration and opening of the building for divine service have taken place. The erection of Christ Church has cost about 6,000l. The seats are one half free, and the edifice has been consecrated and opened free of debt or nearly so. There was great need in the town for additional church accommodation, those already in existence being too small to accommodate the visitors and residents during the summer months. Christ Church will supply this deficiency to a great extent, sittings being here provided for 800 persons. The tower is marked by the slate-roofed spire, which gives it a truncated appearance, although it is 124 ft. high. A stone spire, it is said, will be added at some future day. The architect is Mr. Ewan Christian, of London. The edifice is in the Decorated style. It is built of Portland stone in random courses, with dressings of Douling stone. The interior is of red brick and pointed with black mortar, whilst courses of grey bricks run round the walls and arches. The main arches are supported by several Pennant stone pillars, with caps and bases of carved Portland stone. Two Devon marble pillars sustain the chancel arch, the base of each displaying some carving. The chancel window, which is in King-street, is of the Early Decorated style, with the centre light reaching to the crown of the arch. This idea is carried out in the greater part of the windows. There is also a three-light window for the southern aisle. In Park-street are three more windows, whilst the nave is lighted by four clearstory windows. The church has a chancel, nave, and two aisles, vestibule, organ-chamber, and belfry. The width of the former is 33 ft. in the clear, and the aisles 17 ft. 6 in. The chancel is 33 ft. long, and the nave 39 ft. At some future time, as the necessities of the neighbourhood grow, and as money is forthcoming, the western wall will be pulled down, and accommodation be thus provided for something like 800 more persons. When such is the case the chancel will appear more in harmony with the nave. The whole of the chancel is laid with encaustic tiles, whilst the space within the Communion-rails is paved with the same material, but of a much more elaborate pattern. The church is conspicuous by its want of anything approaching adornment or decoration. At present the seats, which are of red pine, are neither stained nor varnished. At the rear of the church is a small building which will be used as an infant schoolroom, in order to satisfy the requirements of the Education Department, and thus prevent, as far as possible, the interference of a School Board in the parish. Mr. Thomas Dodson is the builder of the church. His contract was for 4,100l., and this, together with the expense of the freehold, and the cost of laying a concrete foundation, and other items, makes the total erection of the church to amount to 6,800l. The new edifice is intended to have a peal of bells, and it is for this purpose the tower has been strengthened by some 3,600 piles, 8 ft. in length, being driven into a solid bed of concrete, 6 ft. in depth. Notwithstanding these

precautions, however, there was a slight settlement. The architect was consulted, and he gave it as his opinion that the stability of the tower was not in the least impaired by the operations connected with the drainage near the church. The money required for the bells still remains to be raised. Of the three churches in the town not one possesses more than a solitary bell. The new church is intended to be a chapel of ease to the mother church.

Bromsgrove.—The new church of All Saints, Bromsgrove, the foundation-stone of which was laid about twelve months since, has been consecrated and opened for public service by the Bishop of Worcester. The building is erected at the north end of the town, near the Workhouse. It may be stated to owe its origin to the late son-in-law of the vicar of Bromsgrove (the Rev. W. M. Molyneux), who, some time before his death, offered the sum of 500*l.* towards the object. The money was willed to the bishop under certain restrictions, and, added to a similar amount given by his lordship, formed the nucleus of a fund for completing the work. The church comprises nave with aisles, chancel with apsidal end, and organ-chamber on the north side, vestries for the clergy and choir on the south side, a baptistery formed at the north-west angle of the nave and aisles, in the lower portion of the tower, which rises at this part of the building, but which is as yet only partly erected, owing to limited funds. The principal entrance is at the west end, under a traceried west window. The style is Geometrical Gothic, after the type prevailing in the transitional period at the end of the thirteenth century. The detail is of simple character, and the architect appears to have studied effect in the work. The easternmost bay of the aisles on each side being projected and buttressed after the manner of transepts, breaks up the monotony of the roofing and elevation, and gives the edifice a cruciform appearance. The building is generally executed with the local sandstone, which has for centuries held a reputation as a sound building material, and of which the ancient parish church of St. John is built; but Box Bath stone is introduced in the tracing and portions of the moulded work throughout the building. Grey tinted stone is used for external walling, but a combination of light red and grey tinted stones is introduced in the moulded arches and piers of the nave and interior generally, which is lined throughout with yellow or buff-coloured pressed bricks, relieved by pattern brickwork, bandings, and crosses worked in red and light blue bricks, in the spandrels of the arches, &c. The roof is open-timbered. A lofty arch is thrown across the nave where the transepts occur. Open rose lights are also inserted in the clerestory wall, over the transept arches. The roof is covered with brimble Brossley plain tiles, with red ridge cresting. The windows are glazed with cathedral-tinted rough-rolled plate glass, in lead quarry lights. The chancel is paved with encaustic tiles, and the body of the church with blue and red quarry tiles, arranged in patterns. The building will accommodate 620 persons in the nave and choir. The building contract was completed by the autumn of 1873, since which time the church has awaited consecration. The contract was, after competition, undertaken by Mr. A. Estcourt (O. Estcourt & Co.), of Gloucester, whose tender was the lowest sent in, and who has executed the work, at a cost of 4,458*l.* 9*s.* 2*d.* Some portion of the carving had been executed by Mr. Roddis, of Birmingham, although the main portion remains to be done. The church will be heated by a hot-air apparatus, by Blake & Co. of Coventry. The architect, from whose designs and under whose direction the church and the various works connected with it were executed, is Mr. John Cotton, of Birmingham.

DISSENTING CHURCH-BUILDING NEWS.

Bolton.—The first of a series of opening services has taken place in the new Wesleyan Chapel. The whole cost, including the ground, is 3,300*l.*, which is more than was first estimated. The buildings are erected on a site given by the late Mr. James Rhodes, adjoining the highway and near the junction with the Tale-road. The basement, which, owing to the fall of the ground, is unusually light and airy, is devoted to school purposes, and the ground-floor forms the chapel, approached from Bolton-road by a flight of eight steps. The dimensions of the chapel internally are 67 ft. by 32 ft., and 27 ft. high to the ceiling. It is seated with open benches of pitch pine, and

having low and sloping backs, and without doors. A gallery similarly seated is formed over the entrance-lobby, together affording accommodation for 340 persons. The windows are finished internally with plaster architraves and imposts mouldings, filled with ground glass pink borders. The whole of the joiner's work is of pitch pine. There is a minister's vestry with private entrance on the ground floor, and in the basement a large schoolroom with windows on three sides is provided, together with two vestries and a room for heating apparatus. Externally the building is of simple character, Italian in style. The walling generally is pitch-faced, and the open porch of the principal entrance is entirely of boated ashlar. The work has been carried out, at a cost of about 2,200*l.*, by the following contractors:—Messrs. Kitchen & Rhodes, masons; James Naylor, joiner; Walsh & Son, plumbers; James Firth, plasterer; and—Thornton, slater. The architects are Messrs. T. H. & F. Healey, of Bradford.

Birtenshaw (Bolton).—The memorial stone of a new Wesleyan Chapel has been laid at Birtenshaw, Toppings, Torton. The site is on the north side of the road leading from Branley Cross to Egerton. The chapel, which will be in the Gothic style, will be set back from the road about ten yards, and the ground rises from the road. The buildings, according to the plans, comprise a chapel, 57 ft. 6 in. long, and 35 ft. wide inside; and at the back, or north side, a minister's vestry, and choir vestry over the same, having externally the appearance of a chancel. The principal entrance will be at the front, opening into a vestibule, 7 ft. 6 in. wide, and extending in length the full width of the chapel, having folding doors therein, also stairs on each side (for boys and girls respectively) leading up to the scholars' gallery, which will be formed over the vestibule and project slightly into the chapel. The walls will be of brick above the stone foundations now already put in; the front and two side elevations will be faced with patent pressed bricks, and relieved with blue brick bands and string courses, also stone dressings. The front will be gabled. Internally the walls will be wainscoted 4 ft. high with match boarding, finished moulded capping, and above which the walls will be plastered. The height of the chapel internally will be 18 ft. to the square of side walls, and 26 ft. to the highest part of the ceiling. All the windows to the chapel will have margin squares, and be glazed with ground-glass. The margins to front windows and fan-light, also to north lights (placed on each side of orchestra) will have coloured glass. Arrangements for ventilation will be made. The chapel will comfortably seat 346 persons. The estimated cost of the building, so far as now contracted for, is 1,330*l.* This is exclusive of heating and lighting, erection of outbuildings, boundary walls, formation of grounds, &c., which, with other incidental expenses, will probably increase the cost to about 1,600*l.* The plans have been prepared by, and the works are being carried out under the superintendence of, Mr. Thomas Ormrod, architect, Bolton, and the contractor for the whole of the works now arranged for is Mr. William Townson, joiner and builder, of Bolton and Astley Bridge.

High Wycombe.—On Tuesday, the 21st ult., the foundation-stone of a new Primitive Methodist Chapel with schoolrooms, vestries, &c., at High Wycombe, Bucks, was laid by Lieut.-Col. the Hon. W. H. F. Carrington, M.P. The new buildings will comprise a chapel with end and side galleries, to seat 500 adults; schoolrooms under; and in the rear three class-rooms, wash-house, stores, offices, &c. The main building is nearly 70 ft. from street to ridge. The style is thirteenth-century Gothic. The materials are of washed stock and red bricks, with stone. The fittings are in pitch pine. The total cost will be about 3,500*l.*, including site. The heating apparatus is to be by Messrs. Haden & Son. The contractor is Mr. Ruben Spicer, of Wycombe; and the architect is Mr. Arthur Vernon.

Warrington.—The memorial stones of a new Wesleyan Chapel in Bewsey-road, Warrington, have been laid. The chapel, which is situated at the corner of Bewsey-road and Froghall-lane, is designed to present a good porch to both, outline and grouping of parts being depended upon rather than ornamentation. The style chosen is Early Gothic, and the bricks of the neighbourhood will be the principal material used, with courses of black bricks and bands and dressings of stone. The front to Bewsey-road is treated

as the best. The large gable forming the end of the chapel will be the principal feature, and it is designed with an arcade of three arches of polished granite shafts and carved heads forming an open porch to the entrance; above this is a central group of windows under arched head supported by stone shafts, which run down to the ground clustering with the granite columns tied thereto by moulded stone bands, and connected therewith both by the carved capitals and moulded bases. Stone turrets rise on each side of the gable springing from the buttresses which support each end of the arcade. The interior is arranged for about 470 persons on the ground floor and 370 in the galleries, which will run round the sides. The end opposite the entrance will have what may be called a chancel arch and apse, for although the space will be occupied by the organ and choir, this effect will be retained as much as possible. The fittings throughout are to be of pitch pine, varnished. Behind the chapel, but in direct communication therewith, will be four vestries, having entrance also from the side street, and a schoolroom which will seat 105 persons. The buildings have been designed and will be erected under the superintendence of Mr. C. O. Ellison, architect, Liverpool; and Messrs. Collin & Son, of Warrington, are the contractors for the whole. The estimated outlay, including cost of land, will be about 6,000*l.*

Haverfordwest.—The Tabernacle Chapel, which has for the last twelve months been undergoing extensive alteration and enlargement, is now re-opened for Divine worship. To a casual observer it would appear an entirely new building, and with the exception of the side-walls and the ceiling this is the case. On the plan the main part of the building is quadrilateral, with a projecting semicircular centre towards the front and rear. The main part of the building is 51 ft. 6 in. long, and 40 ft. wide, and divides longitudinally into nave and aisles. The front part comprises a central lobby, 14 ft. by 7 ft. and two staircase lobbies, wholly separated from each other, but entered from a semicircular portico, 18 ft. in diameter, over which is the organ-gallery. The rear part of the nave forms a projecting apse, 19 ft. in diameter, containing the pulpit platform; and to the left of this the vestry, entered from the body of the chapel. There are two side galleries and a deep exaltory approached from enclosed lobbies on either side of the building. The style of the building is Italian, freely treated; the exterior presents a façade comprising the semicircular centre and two receding wings divided into two stories or orders, the lower of which forms a rusticated stylobate, and the upper an entablature of Ionic order. The semicircular centre has three intercolumniations formed by two single and two coupled columns carried upon the subbase of the stylobate, and each intercolumniation has a square-headed window with moulded architraves, margins, and carved keystones and sill-trusses. A view of the interior shows a nave and aisles, formed by an arcading of five bays, divided by light cast-iron columns, with foliated capital carrying the galleries, and supporting moulded and enriched elliptic arches, with circular enriched medallions in the spandrels. The columns are connected by an ornamental cast-iron gallery front, supported by a moulded cornice and frieze. The arcading supports a coffered and moulded ceiling, with enriched centrepieces, the ceiling over the nave being elliptic (the main portion of this ceiling is old). The ceiling of the apse is semi-domical, panelled and enriched, springing from a moulded cornice carried around, and above seven semicircular arch-headed windows of tinted cathedral glass, with coloured borders and rosettes. The interior seats and fittings are of red fir, stained and varnished. The aisles are paved with encaustic tile border, and the vestibules wholly with mosaic paving. Messrs. Allett of Pembroke Dock, are the builders; Messrs. Macfarlane, of Glasgow, and Mr. Marychurch supplied the ornamental ironwork; Messrs. Messenger, of London, the gasfittings; Messrs. May of Broseley, the encaustic tilework; and the architects are Messrs. Lawrence & Goodman, Newport, Monmouthshire.

Chester.—The foundation-stone of a new Congregational Church has been laid in Upper Northgate-street. The structure is to be of 3,240*l.* Mr. T. M. Lockwood, of Chester, is the architect, and the contract for carrying out the work is undertaken by Mr. Thomas Richard, also of Chester. The building will be 72 ft. 6 in. long, and 38 ft. 6 in. wide, internally, having its main entrance from Northgate-street, through

two porches leading to the vestibule, 7 ft. in width. The height of the building will be 32 ft. in to the ceiling line inside, and about 48 ft. to the ridge. There will be a triangular space to the roof left for ventilation. The timber principals and other roof timbers are exposed below the ceiling line, and, like the other internal fittings, will be of pitch pine. Accommodation will be provided for 500 sittings, all upon the ground-floor. Externally, the front to North-street consists of one gabled end, with large ve-light lancet window, having broad mullions and detached shafts of red Mansfield stone, with arched caps and bases. On the north side of the gable is a square tower, which, at the height of 42 ft. from the ground, becomes octagonal in form. It is pierced by eight beffy lights, and terminates in a spire and vane, reaching the height of 100 ft. The front of the building, the tower, spire, and portions of the sides will be clad with Storeton Hill stone. The general style of the edifice will be Gothic of the thirteenth century.

Miscellaneous.

A Short Life.—Within one month from the completion of the first house in Pithole city, Pennsylvania, that city had a telegraph-office hotel, costing the owner \$10,000. In one month more there was a daily paper established, and in the next a theatre; in another month another theatre, and then an academy of music. Six months there were seventy-four hotels and boarding-houses; in the seventh month the city reached its highest prosperity. It then had but 15,000 people, elaborate waterworks, a railway, and an expensive city government. It occurred the completion of labour-saving enterprise—the so-called Miller Farm Pipe line, by which the petroleum was sent off independent of the labouring population. At once 80 persons were thrown out of employment, the 2,000 houses became useless. This was a death-blow to Pithole. At once the hotels, theatres, and the telegraph-office were closed, and the daily paper gave up its ghost, while almost every one packed up his trunk and moved. Only nine families remain out of a population of 15,000 souls, while the railroad from Pithole and Oleopolis runs only one train a day, consisting of a locomotive and a single car, which usually empty; but the company is obliged to keep running, otherwise the charter for the road would be lost. They still hope against hope better times for that unfortunate city, which only seven months was born, full-grown, got it, and died. Undoubtedly this is a case unparalleled in history, modern or ancient. From Egypt nor Greece can give examples of so rapid changes.—*Boston Journal.*

The Duke of Westminster on the Rebuilding of Eaton Hall.—At the close of the meetings on the coming of age of Earl Grosvenor, the whole of the workmen employed by Messrs. Smith in the rebuilding of Eaton Hall, numbering about 250, with their wives and little ones, making altogether about 450, were entertained to dinner and tea. Before the former was served an illuminated address was presented by Mr. Papps, the foreman, on behalf of the men, to Earl Grosvenor, who made a noble reply. At dinner, in reply to the toast, "The Duke and Duchess of Westminster," his grace said, after thanking the company:—"You are kind enough to say in the address that you and we might long enjoy the mansion, which, from skilled hands, is now built. Some may be of the opinion that it is very much too large for two people, but I would remark that we are an increasing family; and above and beyond Eaton Hall happens to be a show place, for many people—our American cousins, for instance, who having seen the old town of Chester—come to Eaton to see something new, and I think ought to be able to show them a house worthy of a member of the aristocracy of the great country. It is not for me to say a word against it was here before, but I think we shall have reason to be proud of the work of Mr. Waterhouse (architect), and the work of the skilled men who are carrying out his designs. I only think that as a sort of excuse that, though it be too large for any two people—that, however, large the family may be—still it is a house which contributes to the enjoyment of a great many people who come to see it and to walk in the gardens.

Memorial of the late Rev. R. J. F. Thomas.—The late Vicar of Yeovil was one of the most valued members of the Yeovil Lodge of Freemasons. Brother Shout, of Yeovil and Horshington, architect, gratuitously prepared a design for an altar-tomb to be erected over his vault in the cemetery, and the work was entrusted to Mr. Swarbridge, marble mason, of Yeovil. The brethren also resolved to fix a monumental brass, appropriately inscribed, in St. John's Church, and Messrs. Petter & Edgar, ironfounders, of Yeovil, were commissioned to carry out this portion of the work. The tomb has recently been unveiled. It consists of a block of Pennant stone, on the south side of the cemetery, near the chapels. It is 7 ft. long by 2 ft. 6 in. wide, exclusive of the plinth and platform of the same stone, raising the whole to the height of about 3 ft. The plan of the tomb may be described as cruciform; but this is disguised in outline by the contour of the centre-piece, carved in circular compartments at sides, on each of which appears, in *alto relievo*, the jewel of the Provincial Grand Chaplain of Somerset, the rank of the deceased. This centre-piece is slightly elevated above the coping top of the tomb, and takes an octagonal form, containing in a circle a carved representation of a jewel of a Past Master, with the date of his exaltation and number of his Lodge. Each end of the tomb is carved with the symbol known as the "Triple Tau." The tomb is surrounded by iron railing about 18 in. high, each pillar ornamented with the square and compasses. The railings were also supplied by Messrs. Petter & Edgar.

The Proposed Waterworks for Doncaster.—According to the plans and specifications, which have been on view at the local Mansion-house, it appears that, briefly speaking, the proposed waterworks will consist of one large and principal, and two smaller and subsidiary reservoirs, a conduit or line of pipes passing from that situated at the most easterly point on the north side of the smaller reservoir, and then onwards through Ravenfield Park and Gold Wood to the principal and largest reservoir. From this latter reservoir an iron pipe will be laid to convey the water to Doncaster. On the west side of the main reservoir there will be a sewer to intercept the drainage from Thrybergh. The two smaller reservoirs will be connected by a culvert: there will be an outlet culvert and valve well; and a flood channel which will connect the reservoirs with the overflow weir. All the reservoirs will be situated in the parish of Ravenfield. The main reservoir will be placed in the Silver Wood Valley, and will tap the Silver Wood brook. All the work is to be completed by the 1st of January, 1877, otherwise the contractor will be liable to a forfeit of 50*l.* for each day that the work is prolonged beyond that time.

Fatal Accident at Bombay.—On the 2nd of August, says the *Times of India*, a lamentable accident occurred, by which the Hon. Narayan Wassodeo, a member of the Legislative Council of the Governor of Bombay, lost his life. It appears that the pillars supporting a large hall, and forming a portico in front of the house, were observed to be in an unsafe condition on the night previous. Arrangements were being made for their repair, and the native workman who had examined them thought that there was no immediate danger to be apprehended. While he and Mr. Narayan and several others were standing talking under the portico large pieces of plaster commenced to crumble off from the tops of the pillars. As they were proceeding up the stairs into the hall above, the whole of the front part of the building fell in with a tremendous crash, burying six persons beneath its ruins. The neighbours rendered immediate assistance, and all, with the exception of Mr. Narayan and the native mason, were taken out more or less injured. After a search of two hours amongst the ruins, Mr. Narayan's body was found buried several feet deep under beams and plaster. He was quite dead.

Inauguration of the Meter System on Public Lamps in St. Pancras.—The ceremony of attaching the first meter to public lamps in St. Pancras, under the average meter system, has taken place at the lamp opposite No. 1, Osunburgh-terrace, Euston-road. The ceremony was performed by Mr. T. B. Westacott, chairman of the lighting committee, and amongst those present were Mr. Parkinson, the contractor, and Mr. Clutterbuck, gas engineer and inspector of lighting.

Geographical Gardens.—A suggestive idea is proposed by Mr. Augustus J. Harvey, that a people's geographical garden, designed and laid out by scientific men, and combining instruction with amusement, should exist in every city and large town in the United Kingdom, for the popular and practical teaching of physical geography, either side by side with maps, atlases, and charts, or in complete and entire substitution of them. To show rough and sensible elevation, it should cover several acres of ground, according to any scale in inches and feet. It is compared to "a gigantic horizontal relief map, mapped or massed out into geographical shape, impervious to weather, and possibly moulded out of concrete, &c., but covered with vegetation; or a vast model of the entire surface of our globe [as Wild's globe was in idea, though not the same as worked out], and showing to sight and touch all its chief physical features, spread out, as it were, like a miniature panorama, upon which we can stand and walk about, with no pretensions to perfect scientific and geometrical accuracy, but simply sensible rough approximations, every square foot having its special geographical interest and importance."

The Value of the Liverpool Gasworks.—The Borough Recorder has delivered judgment in the case of the Liverpool Gas Company (appellants) and the Churchwardens of Liverpool (respondents). The case arose out of the assessment made by the parish authorities, in which the Gas Company, who had been previously rated at 11,555*l.*, were charged upon a rateable value of 19,000*l.* The whole matter has been referred to Mr. Hunt, surveyor and valuer, of London. That gentleman found that the rateable value of the Gas Company's work was 19,415*l.*, or 415*l.* over the amount at which the respondents had valued them. The matter came again before the Recorder, on an application made on behalf of the parish, to confirm the rate in accordance with Mr. Hunt's certificate. The Recorder, in giving judgment, said he thought both sides were justified in asking that the justice of increasing the rate from 11,500*l.* to 19,415*l.* should be tried. He decreed that each side should pay its own costs, and that the cost of the arbitration should be divided.

The Newcastle College of Physical Science.—The fifth report of the Royal Commission on Scientific Instruction for the Advancement of Science just issued, says of this college:—"There appears to be every reason to think that the Newcastle College of Science is serving a most useful purpose in its own neighbourhood. The experiment of introducing an engineering course into the curriculum of the University of Durham has been tried, and must be considered to have failed. The reason given for this failure by the Dean of Durham is that a great number of young men who would wish to attend that course live in Newcastle, or near Newcastle, and have to come some distance to Durham, and that consequently very few of them do come. And there can be no doubt that local colleges in the great centres of manufacturing industry are in a position to meet local requirements which central institutions in London or the National Universities are unable to do."

The Enlargement of King's College.—The Governors of King's College are engaged in adding a new triangular wing, one story high, built in a similar style of architecture and in a line with Somerset House, and fronting the Thames Embankment. The work is being rapidly pushed forward. It is built of Portland stone, and lighted by seven windows, surmounted in the centre by a carved stone escutcheon, bearing the arms of the college, and the motto, "Sapientia et Sapienter." In the rear the dissecting-room and laboratory are being considerably enlarged, and new consulting-rooms and offices erected. The students' rooms are undergoing material alteration and improvement; whilst on the top floor a new and commodious drawing-school is in course of construction. The completion of the works has been entrusted to Mr. T. Ennor, of Commercial-road, and is being carried out by Mr. Winsley, foreman of works.

Sir W. Fairbairn. The Manchester City Council have adopted a resolution expressing their regret at the deep loss Manchester has sustained through the death of Sir William Fairbairn. A suggestion by the Deputy-Mayor that a statue should be erected to his memory near the infirmary, alongside those of Watt and Dalton, was very warmly received.

The Late Mrs. Alfred Gatty.—A memorial of the late Mrs. Alfred Gatty ("Aunt Judy") has been received at Ecclesfield, the result of Lady Warrender's suggestion of a sixpenny subscription by the young readers of the magazine. The sum of 38l. 6s. 3d. was quickly contributed. The design was presented by Mr. William White, architect, a friend of Mrs. Gatty's family. It is in the form of a panel of Forest of Dean stone, which rises to a point, and is edged with a line of dark reddish marble. In the recess are emblems, executed in fine statuary marble—a triangle, a cross, palm branches, a crown, and a star. The panel behind is diapered in gold. Below is the inscription, in gilt lettering. The pedestal which supports the tablet is of Caen stone, and represents the upper portion of an angel. The work was executed by Mr. Faulkner, of Exeter, and will be fixed into the wall in Ecclesfield parish church. "The whole tablet measures about 8½ ft. by 1 ft. 10 in.

New Floating Baths on the Thames.—The new floating bath, on the Thames, which, by the sanction of the Thames Conservancy and the Metropolitan Board of Works, will be moored in the place now occupied by one of the landing stages at Hungerford Bridge, is on the point of completion. The bath is built of corrugated iron and glass, with a lofty dome at each end. The entire length is 180 ft. by 31 ft. The bath itself affords a swimming area of 135 ft. by 25 ft., is paved with encaustic tiles, filled at each end with huge filters capable of purifying Thames water at the rate of 1,000 gallons per minute, and flanked on both sides by dressing-rooms, hot baths, &c. At certain hours the bath will be set apart for ladies. During the winter months a stream of hot water will pass through the bath to regulate the temperature. A second bath for Pimlico, to be moored opposite Pimlico Pier, 260 ft. by 47 ft., and having a swimming area of 200 ft. by 40 ft., will also shortly be commenced.

St. George's Hospital.—The alterations in St. George's Hospital, which has been entirely closed to the public since the 31st of May last, are now completed. The entire building has been cleaned and repainted, the wards reorganised, and the walls stripped and repapered. A new heating apparatus, specially designed so as to maintain an equality in temperature, has taken the place of the original machinery. The sanitary arrangements are said to have received attention; the drains, closets, sinks, &c., throughout the whole building have been taken up and relaid afresh. The original contract, which was for 5,000l., has been considerably exceeded.

Doncaster Water Works.—The Doncaster Corporation has held a special meeting for the purpose of receiving tenders for the construction of reservoirs and other undertakings in connexion with the new water works for the town. A committee reported that four tenders in all had been received, namely:—Messrs. Logan & Hemingway, Rotherham, 56,183l.; Mr. Richard Brookes, Clapton, 55,300l.; Messrs. N. B. Fogg & Co., Bradford, 47,000l.; and Mr. James Thane, Thaneville, Maryport, 42,538l. The engineer, Mr. B. S. Brundell, C.E., had made inquiries, and Mr. Thane's tender was accepted by the Council.

Fall of a Building.—At Cambridge, on Monday morning, four workmen engaged in pulling down the Old Master's Lodge, Pembroke College, narrowly escaped a terrible death. The gable had fallen, which shook the whole building, when the second and top floors fell with the men who were at work on the highest part. Two of them escaped unhurt; the others, Harvey and Stubbing, were buried beneath four or five tons of debris for half an hour, when they were extricated, and conveyed to Addenbrough Hospital. Harvey is severely bruised. Stubbing, besides other injuries, had his collar-bone fractured.

The Monument to the late Lord Galloway at Newton-Stewart.—The Countess Dowager of Galloway has intimated to the committee that she prefers the design of Mr. Park, architect, Newton-Stewart, for the proposed monument. It is 57 ft. high, Gothic, and very ornamental. In addition to a medallion portrait of his lordship and the family coat of arms, it has four rampant lions, bearing shields at each corner, and is surmounted by a very graceful cross. As the committee will, of course, give effect to her ladyship's preference, the work will be begun at once.—*Edinburgh Courant.*

Gosforth Park, Newcastle-on-Tyne.—Practical operations on this extensive building estate are about to be inaugurated by the chairman of the proprietary company. The working plans of the estate, which have been prepared by Mr. Thomas Parker, architect, Newcastle, show a provision of sites for every variety of house, from the moderate-sized plots for cottages to plots for villa residences, of a few acres in extent, thus affording every facility to the business-men of Newcastle to plant their dwellings "out in the clear," and that without the serious drawback of a long daily journey. A portion of the estate has already been leased to a builder for brick works, and brickmaking machinery is now in the course of erection. There are special stone-quarries in the immediate vicinity of the ground.

New Church in Brixton.—A new church has just been commenced in the parish of Brixton. The building is designed in the early Gothic style, and consists of nave and aisles, chancel, organ-chambers, vestry, north and south porches, and a tower and spire at the north-west angle. It has a lofty clearstory, divided by an arcade of arches. The accommodation is for 1,000 persons on the ground floor. The church is to be faced with Kentish-rag and Bath-stone dressings, and green slates are to be used for the roof. Mr. E. C. Robins is the architect, and the amount of the contract, exclusive of the upper portion of the tower and spire, is 6,712l.

Laying the Foundation-stone of St. Andrew's Hall, Southport.—The foundation-stone of a new hall, which is to be erected in connexion with St. Andrew's Church, Southport, has been laid by the Mayor of Southport, in the presence of a large number of people. The hall is designed so that it may be used as a Sunday school, reading-room, class-rooms, and for lectures, public meetings, and a parochial public library. For large meetings the area available will be 70 ft. by 40 ft. Behind the hall will be a committee-room, ladies' cloakroom, &c. The erection of the building will cost about 1,000l.

Proposed Cottage Hospital for Basingstoke.—The proposal to establish a Cottage Hospital for this neighbourhood is likely soon to be carried into effect. A site has been granted by the Corporation, on lease for ninety-nine years, at a nominal rent. A subscription list within the district of the Basingstoke Union have consented to give their services. The hospital is intended to have two wards, with four beds in each, but will not be available for cases of an infectious or contagious character.

Northumberland House.—The catalogues are out for the sale of the first portion of the building materials, fittings, &c., of Northumberland House, Charing-cross. The items comprise 3,000,000 bricks, marble chimney-pieces, the great marble staircase, of which we published a view not long ago, and a portion of the artistic decorations of the State apartments. These will be sold by auction, by Messrs. Horne, Eversfield, & Co., on September 8th and two following days. The remaining portion, comprising the Strand front, will be sold on Tuesday, November 10th.

Warwick Castle.—Great progress is being made with the restoration of Warwick Castle. All the destroyed apartments have been rebuilt in a substantial manner, but the work of ornamentation will require considerable additional time for its completion. Workmen are busily engaged in laying the marble floor of the Baronial Hall, twenty tons of white and red marble having been obtained from Italy for the purpose. Much of the armour damaged by the fire has been restored, and will again serve to decorate the walls.

Close of the International Exhibition at Kensington.—To induce artizans and others to visit the Exhibition for the purpose of gaining technical instruction, the charge of admission has been reduced to 3d. each person, on Mondays, Tuesdays, and Saturdays, being the free days at the South Kensington Museum. The Exhibition will close on the 31st of October.

"City United Club."—The premises which have been secured by the committee of this Club form part of Ludgate-circus, with a fine frontage in New Bridge-street, and adjoin the London, Chatham, and Dover Railway Station. The building has been erected expressly for a Club, and contains upwards of seventy rooms.

A Home for Printers.—The Philadelphia Public Ledger says:—Mr. J. G. Cooley, of Middletown, Connecticut, proposes to turn over the whole of his property, consisting of a well-stocked farm of 150 acres, to his fellow printers who in old age desire to secure a peaceful home at the price of moderate labour. Neither the sick nor the sick will be admitted. Mr. Cooley began life as a printer, and made a fortune in New York by manufacturing wooden type, a large job work.

The Autumn Exhibition of the Birmingham Royal Society of Artists.—This exhibition has been opened. There is a collection of 673 art-works of varied character and merit. The local Daily Post speaks favourably of it as an advance upon most of its predecessors, and averages standard of merit being more than usually high, and the interest well distributed. On the private view day something like 2,000 worth of the pictures were sold.

The Thames Embankment.—An official meeting of parishioners and others residing in the precincts of St. Bride's and Whitefriars, been taking steps for the purpose of opening an approach from Fleet-street to the Victoria Embankment. It was decided that a memorial presented to the Metropolitan Board of Works praying them to open up a new road from Whitefriars-street over the site of the Whitefriars dock to the Embankment.

The Projected New Theatre for Worcester.—The capital of the company, formed for the purchase of the old and the erection of a theatre, has been all taken up. The Earl Dudley has put down his name for a hundred shares. The directors have issued advertisements for tenders for the new works proposed to be constructed.

TENDERS

For the erection of a lecture-hall, &c., at the Congregational Church, Southport, Exeter. Messrs. Tarring & Son, architects.—

.....	£1,181 10 0
Luscombe	1,047 0 0
Smith	1,035 0 0
Scadding	839 0 0

For alterations and additions to offices of "Bell Telegram Company," Old Jewry. Mr. H. H. Co. architect.—

Vernal	£1,075 0 0
Oliver	1,225 0 0
Mitchin	1,160 0 0
Moreland & Nixon	970 0 0

For Soldiers' Home, Bank-street, Alderholt Trust, of the Wesleyan Church, Aldershot. Mr. W. Puck, architect. Quantities supplied:—

Hobson	£3,350 0 0
Niblett	3,300 0 0
Coddard	3,225 0 0
Mantell & Wells	2,991 0 0
Garland & Kemp	2,800 0 0

For alterations to premises, Leather-market, London, for Messrs. Hepburn & Sons. Mr. J. architect.—

Lascelles	£567 0 0
Colls & Son	680 0 0
Tarrant	584 0 0

For alterations and additions to the offices of B. Works, St. Giles. Mr. W. J. Trehearne, architect.—

Colls & Son	£769 0 0
Charlton & Martin	746 0 0
Crockett	700 0 0
Brecknall	607 0 0

For Congregational Mission Church, New El Kent. Mr. W. Ranger, architect.—

Hassman	£737 0 0
Deacon	647 0 0
Booker (accepted)	650 0 0

For new Wesleyan Chapel, Langtoft, near Don. Yorkshire. Mr. W. Ranger, architect.—

Mainprize (accepted)	£220 0 0
----------------------------	----------

For alterations and additions to Wesleyan C. Higham Ferrers, Northamptonshire. Mr. W. R. architect.—

Hall (accepted)	£200 0 0
-----------------------	----------

For rebuilding No. 10, Ship-street, gardens, Brixton. Mr. W. G. Tuppen, surveyor.—

Nash & Co.	£2,050 0 0
Lockyer	633 0 0
Patching & Webber	629 0 0
W. & J. Garrett	574 0 0
Barnes (accepted)	524 0 0

For building four cottages at Beckenham, Kent. H. Nicholl. Mr. Alex. R. Stenning, architect.—

Crosley	£1,050 0 0
Hooker	1,035 0 0
Burrows & Brooker	900 0 0
Lee (accepted)	820 0 0

The Builder.

VOL. XXXII.—No. 1649.



Geoffrey Chaucer, Clerk
of the Works.

EMBEES of all professions and trades are justly proud of those great men who, in times past, have thrown a lustre over the occupations they now follow, and it is therefore gratifying to us to know that Chaucer, the father of English poetry, was also a practical architect. It is true, we must share the honour with many others, for Chaucer's was an active life. He was a soldier, a valet, an esquire of the king's household, an envoy on several foreign missions, comptroller of the cus-

oms, clerk of the works, and member of parliament. Then he was a scientific man, according to the science of his day, and possessed a considerable knowledge of astronomy, as is evidenced not only by his continual allusions in the "Canterbury Tales," which enable us to fix the very day and year of his "Prologue," his "Knight's Tale," &c.; but also by the "Treatise on the Astrolabe," written for his son Lewis, and by his "Complaint of Mars." Certainly he runs down his acquaintance with the stars in the "House of Fame," but it is not the ignorant man who laughs at his own want of knowledge. Chaucer's thorough acquaintance with alchemy is shown by his "Canon's Yeoman's Tale"; and his minor poems and tales are so impregnated with old book knowledge that Sandras, when commenting on the "Parliament of Fowles," reproaches him with seeking his inspiration in books rather than in nature. It was this many-sidedness that made Chaucer the great poet he was, able to bring his multivarious experience to the aid of his rare genius. During a large part of the poet's long life, he held important appointments, and Mr. Furnivall has done good work by diligently searching the public records for the facts of his life. Certain entries have been extracted for the benefit of the members of the Chaucer Society, and we propose to draw attention to those that relate to his office of clerk of the works, some of which are new to students. On June 8, 1374, Chaucer was appointed Comptroller of the Customs, and Subsidy of Wools, Skins, and Tanned Hides in the Port of London, probably through the influence of his patron, John of Gaunt. He kept possession of this office for twelve years, and of the Comptrollership of Petty Customs for four years; but the Duke of Lancaster being succeeded in the Government by the Duke of Gloucester and his Council, a commission was issued in November, 1386, for inquiring into the state of the Subsidies and Customs, the result of which was Chaucer's dismissal from his comptrollerships. In 1389 his friends returned to the Government, and he was appointed Clerk of the King's Works, at a salary of 2s. a day, with power to appoint a deputy to be paid by the Crown. For two years the

post had the superintendence of several of the Royal buildings, and his writings give evidence that he felt an interest in the duties that he was called to perform. Chaucer was appointed Clerk of the Works at Westminster, the Tower of London, &c., on July 12, 1389, and the king's writ, directing him to pay the arrears of Henry de Yevole's salary at 12d. a day, as former clerk of the works, is dated September 27. An inventory of dead stock, tools, &c., about the king's palaces, castles, &c., appears to have been delivered to Chaucer on November 10. This document is partly eaten away, and the ink is very faint. William Hannay was comptroller of the king's works, and his duty was to check the clerk. The king's writ to Chaucer, directing him to pay the arrears of wages due to this officer at 12d. a day, is dated February 16, 1390. In March of this year Chaucer was on the Thames-bank-repair Commission, and in May he was employed in setting up scaffolds in Smithfield for Richard II. and his queen (Anne of Bohemia), to see the oasts at that place. On July 12, Chaucer was appointed Clerk of the Works at St. George's Chapel, Windsor, which was stated in his commission to be threatened with ruin, and likely to fall to the ground unless it was speedily repaired. He was given power to impress masons, carpenters, and other workmen and labourers, wherever they could be found, to work at the king's wages; and he bought, through his agent, John Paule, 101 baskets (*doillets*) of Stapleton stone, and 200 loads of Reigate stone, to repair the chapel with, but he did not use these materials, and handed them over to his successor, Gedney, in the following year. The St. George's of Chaucer's time was a new chapel begun by Edward III., and it is rather puzzling to hear of a building that had not been completed forty years falling to decay, but it was probably owing to a sinking of the foundation. Gedney did not do any permanent repairs to the chapel, but used Chaucer's materials elsewhere, and in the reign of Edward IV. the walls were found to be in a state of decay, and the present collegiate chapel of St. George was commenced under the superintendence of Richard Beauchamp, Bishop of Salisbury. A little was done to the chapel in the reign of Richard III., and more in that of Henry VII., under the direction of the munificent Sir Reginald Bray, but it was not completed until Henry VIII.'s reign.

On September 3, 1390, Chaucer was so unfortunate as to be robbed of nearly 200*l.* of the King's money, his horse, and other movables, half at Westminster, and half near the "fowle oke," at Hatcham in Surrey, by certain notorious thieves, as was fully confessed by the mouth of one of them in gaol at Westminster. This was a serious loss, but Chaucer was afterwards forgiven the money by a special king's writ. We obtain a vivid realisation of the dangers of the streets and roads in the fourteenth century from the accounts of these highway robberies, and it is very interesting to picture to ourselves Chaucer (whom we are too apt to think of only as a poet) travelling to different parts of the country, with money in his purse to pay the workmen employed at those places where he was clerk of the works, and to remember the constant peril he was in. On September 28, Henry Yevole, the King's chief Cementeer, received from Chaucer 70*l.* due to him for wages in 1388, and 2*ss.*, the balance of a year's wages (18*l.* 8*ss.*) from September 29, 1389, to September 29, 1390, at 12*d.* a day. William Hannay, the controller, gave his receipt for one year and a half's wages on January 7, 1391, and Richard Swift, master of the king's carpenters, received one year's wages at 1*s.* a day on February 15, 1391. This was the last payment made by Chaucer before he heard of his dismissal from his office, for on June 17 of the same year he received the king's writ telling him that John Gedney had been

appointed his successor as clerk of the works at the Palace of Westminster, the Tower of London, &c. The king's writ to Chaucer commanding him not to interfere with John Gedney, his successor as clerk of the works at St. George's Chapel, Windsor, is dated July 8, 1391. Gedney gave Chaucer a receipt for the loads of Stapleton and Reigate stone which he had bought for St. George's Chapel on July 12 of this same year. We have already seen what were the wages paid to the various persons employed on the different works, and we will now make a note of the sums disbursed by Chaucer for materials and wages. He received from the Treasury, during the three years that he was clerk of the works, the total sum of 1,209*l.* 9*s.* 9*d.* His outlay for materials, wages, and (including his own at 2*s.* a day—70*l.* 12*s.*) the cost of making scaffolds at Smithfield (8*l.* 12*s.* 6*d.*), and the 20*l.* of which he was robbed, make altogether 1,301*l.* 8*s.* 11*d.* The balance (79*l.* 0*s.* 9*d.*) he accounted for in his St. George's Chapel account for stone, carriage, and the wages of three labourers for sixteen days loading and unloading. These cost 101*l.* 17*s.* 4*d.*, so that there was upwards of 20*l.* due to Chaucer. We do not know why the poet was dismissed from his office, but it has been supposed that his neglect of the Windsor Chapel gave great dissatisfaction. This, however, is improbable, as he had only held the office of clerk of the works at Windsor one year when it was taken from him, and in this time he had so far proceeded with the work that was required of him, as to have obtained the stone for the purpose. We must, therefore, seek for some other reason. If Chaucer attended to his duties at all thoroughly, he must have been fully occupied, because the places he had under his charge were far apart. We have only mentioned a few of these, but Sir Harris Nicolas gives the following list:—The Castle of Berkhamstead, the King's Manors of Kennington, Eltham, Clarendon, Sheen, Byfleet, Childern Langley, and Feckenham, and the Royal Lodge of Hatherberg in the New Forest, the Lodges in the Parks of Clarendon, Childern Langley, and Feckenham, and the Mews for the King's falcons at Charing-cross. Chaucer may have occasionally visited these places during his two years of office, or he may have been connected with them only on paper, but on either supposition it is an interesting incident in the history of each of these places that it was in some way associated with the "morning star of English poetry." On the 22nd of January, 1391, Chaucer appointed John Elmhurst as his deputy for repairs to be done at the Palace of Westminster and the Tower of London, which appointment was confirmed by the Crown a few months only before John Gedney was made Clerk of the Works, as we have already seen.

Having set down what is known of the two years of Chaucer's life which more especially interest us, we will take the opportunity of adding a few notes on the present state of our Chaucer knowledge, so that we may see their position in the complete life of the poet. The facts that have come down to us are few, and have been so overloaded with imagination by such writers as William Godwin as to leave us in some doubt as to what we are to believe. An imaginative author finds it easier to deal with a few facts than with many, as he has all the more scope for his theories, and stubborn facts seldom fit in well with fine-drawn conjecture. We have to unlearn much that has been taken for granted by the biographers, for supposed facts have been largely drawn from the "Testament of Love," a work which was doubtless composed some years after Chaucer's time. It praises Chaucer himself almost extravagantly, and is written in a style so unlike his usual one, that we can only marvel that it was ever supposed to be his. Mr. Furnivall has been so indefatigable since he started the Chaucer

Society in 1869, both in editing the best manuscripts of the "Canterbury Tales" and the minor poems, and in attempting to obtain the key to the poet's life in his writings, that he has given us a better and nearer knowledge of the genial old man, of whom all Englishmen should be proud. He has swept away so much of the old, and added so much new, information that the life will have eventually to be re-written. The date of Chaucer's birth is still, after much discussion, an undecided point. Nicolas believes him to have been born in 1328, basing this opinion on the supposition that he died at the age of 72 in 1400; but it is much more probable, as "Geoffrey Chaucer, Esquire, of the age of xl. years and upwards, armed for xxvii. years [was] produced on behalf of Sir Richard Scrope, sworn and examined," in the celebrated Scrope and Grosvenor case on the 15th of October, 1386, that he was born about 1340. This view agrees with Mr. Bond's discovery of Chaucer's name in the Household Book of Elizabeth Countess of Ulster, wife of Prince Lionel, third son of Edward III., for 1357-59, and if, as is probable, the position held by the poet was that of page, it is much more likely that his age was in those years from seventeen to nineteen than twenty-nine to thirty-one. Our poet was the son of John Chaucer, vintner, of Thames-street, London, and probably of his wife Agnes. There is, therefore, little doubt that his school life was spent at one of the already famous London schools. It has very generally been supposed that he was educated at one of the Universities for a learned profession, but this is hardly reconcilable with his place as the Princess Elizabeth's page. In the autumn of 1359 he joined Edward III.'s army of invasion of France, and was taken prisoner. In March of the following year he was ransomed, the king giving sixteen pounds for the purpose, or 13s. 4d. less than he allowed another man for a riding-horse. Mr. Furnivall makes Chaucer in love with the pitiless Lady of the "Compleynt to Pity" in 1361 or 1362, and supposes him to have written that poem in 1367 or 1368. In June, 1367, he was Valet of the King's Chamber or Household, and got a yearly salary of thirty marks for life, for his former and future services. On September 12th, 1369, Blanche, Duchess of Lancaster, the wife of John of Gaunt, died, and Chaucer wrote his "Dette of the Duchesse." He was again in France during the war of 1369-70. "On the 12th of November, 1372, Chaucer, being then one of the King's Esquires, was joined in a Commission with James Pronam and John de Mari, citizens of Genoa, to treat with the Duke, citizens, and merchants of Genoa, for the purpose of choosing some port in England where the Genoese might form a commercial establishment." The year 1373 is a specially interesting one in Chaucer's life, as it is probable that when he went to Italy he visited Petrarch at Padua. This, however, is only a supposition founded on a passage in the Prologue to his "Clarkes Tale." On June 8th, 1374, Chaucer was appointed Comptroller of the Great Customs, and a few days after the Duke of Lancaster granted him a pension of 10*l.* for life for the good service which he and his wife Philippa had rendered to the said Duke, to his consort and to his mother, the Queen. This is the first mention of Chaucer's wife as such; the previous entries of her name that are known are not in any way connected with Geoffrey Chaucer. Before August, 1372, the Duke of Lancaster had given Philippa Chaucer a pension of 10*l.*, which grant, according to Nicolas, seems to have been computed in 1374 for an annuity of the same amount to her and her husband for life. This looks very much as if she had in this last year just married Geoffrey. It has been thought that these grants from the Duke of Lancaster help to prove the relationship of Chaucer's wife to Katherine Swynford, the mistress, and afterwards third wife of the Duke; but when looked at more closely, they seem but poor gifts from a prince of the blood to a near connexion. Mr. Furnivall supposes the "Parliament of Fowles," Chaucer's first humorous poem, to have been written in 1374, or, at least, after 1373, when Chaucer came back from Italy, and was likely to have read Boccaccio's "Teseide," from which he translated a long passage, and inserted it into his poem. The "Compleynt of Mars" is placed in 1375, and the translation of "Boethius" in 1376. In 1377 and 1378 Chaucer went abroad on several missions, and received secret service money. In June, 1377, Edward III. died, and was succeeded by Richard II., whose advisers were favourable to Chaucer. "Troilus" is

supposed to have been finished in 1382 (the year its author was appointed Controller of Petty Customs), the "Lines to Adam Scrivener" written in 1383, the "House of Fame" in 1384, and the Prologue to the "Legende of Good Women" in 1387, as it alludes to Eustache Deschamps's ballad of the "Flower and Leaf," written on the marriage of John of Gaunt's daughter, Philippa, with John I. of Portugal.

We have already seen how important a period in the poet's life the year 1386 was, and this is taken as the central period of the "Canterbury Tales." It is a popular error to suppose that Chaucer's masterpiece was composed at once and as a whole. Most of the tales were written at different times, and connected together by the device of a pilgrimage to Canterbury, in 1388. Other tales were afterwards written, and the irregularity of the production of these tales accounts for their different arrangement in the various manuscripts. Editors and scribes tried to make their manuscripts conform to what they supposed to be a correct order, and added bits of their own to make all pleasant. The consequence has been that the geography of the journey was so thoroughly muddled that nothing could be made of it until Mr. Bradshaw separated the tales into groups, and then lifted one of these groups up to an earlier position in the scheme. In consequence of this change the places where the party stopped came into their proper position, and all was harmony. Of the minor poems, the "Astrolabe," the "Complaint of Venus," and the "Envoy to Scogan," seem to have been written between 1391 and 1393. About this time Chaucer appears to have fallen into poverty, and was forced continually to borrow money from the Exchequer on account of his pension. In 1397 he had a grant of a yearly tun of wine from Richard II., and a fragment of his receipt for it in 1399 has just been found in the Public Record Office by Mr. Walford Selby. In 1399 Chaucer wrote his "Complaint to his Purse," addressed to the new king (Henry IV.), the son of his old patroness, Duchess Blanche of Lancaster, whose death, in 1369, he had commemorated in a poem, and Henry, immediately after his accession, granted Chaucer an additional annuity of forty marks. He did not, however, live long to enjoy his improved fortunes, but died on October 25, 1400, less than a year after he had obtained a lease of a tenement in the garden of St. Mary's Chapel, Westminster, for fifty-three years (or less if he died sooner). It is not surprising, now that something like scientific criticism has been applied to the poems of Chaucer, that several of those hitherto attributed to him are disputed. The chief test used by such critics as Mr. Bradshaw and Professor Ten Brink is the non-rhyming of *-ye* and *-y* (as curteisye, and generally). In the undoubted works of Chaucer he never (except in one instance) rhymes these two endings together, just as modern French poets refuse to rhyme *-e* and *-i*. Mr. Bradshaw used another test besides this one, and he found that those poems which were proved spurious by the rhyme test were not assigned to Chaucer by good manuscripts, and that those assigned by manuscripts to Chaucer stood the rhyme test.

It would be tedious to point out in detail all the new facts in the *resumé* given above, but a reference to Sir Harris Nicolas's generally trustworthy life will show how much has been discovered lately.

We would in conclusion recommend all those who wish due honour to be done to the great Clerk of the Works to subscribe to the Chaucer Society, which has done and is doing so much towards raising a fitting memorial of him.

AS TO THE ACTUAL STATE OF SANITARY LAW.

The first of the new series of reports of the Medical Officer of the Privy Council and Local Government Board, which is numbered C. 1,021 in the issue of Parliamentary Papers for the year 1874, is not one of those documents to which justice can be done in a paragraph of a few lines in the corner of a newspaper. It is a report not only pregnant with the wisdom acquired by wide experience, but remarkable for a statesman-like breadth of view, as well as for a broad and tender human sympathy. While avoiding anything that might look like casting a stone at his late chief, or reading a lecture to his successor, Mr. Simon says so much that is in full accordance with our repeated expressions of opinion, that it is easy to read between the lines.

The logic of fact so fully corroborates the truth of those points, on which we have often insisted, as to the comparative inutility of the sanitary measures of the last Parliament, as carried out by the Local Board, that it is highly advisable to pass to those simple expedients by which a tranquillity may be communicated to the administration of the law.

Mr. Simon commences by submitting to the President of the Local Government Board that during the past two years and a half, and particularly during the last year, the circumstances of official and administrative transition, consequent on the Acts of Parliament of 1871 and 1872, have been such that no consistent scheme of report in general relation to the sanitary interests which are under the superintendence of the Board has been possible. The Report for 1873 illustrates the difficulty of unsettled circumstances.

The largest, and incomparably the most important, part of the business of the Local Government Board, as relating to public health, during 1873, was that which regarded the action of local public authorities, under the Act of 1872, in appointing the officers of health and inspectors of nuisances. This part of the administration has been rendered at once more complex and less effective by the vital defect of the measure of 1872,—the omission, or, we might rather say, the systematic avoidance, of that simple and natural organisation of the medical and other inspectors, under their own officers and chiefs for large sanitary and watershed districts, which would have enabled each local nominee, now isolated, and often helpless in presence of a paragon and ill-informed local Board, to do his duty to the country, with out fear and without counteraction. For the first time, the Report states, the medical profession throughout the country was to be brought into official use with a view to the better prevention of disease. This action, the writer points out, was, at least in part, even in the terms of the statute, tentative, and the discretion displayed by the various local Boards was thus not only of great future consequence to the local working of the Sanitary Acts, but further, to the eventual public estimation of the new machinery. It was thus signally *inadvisable* that the individual regulating wheels should have been so carefully thrown out of the proper gear, that, instead of a harmonious and efficient machine, there should be only an uncoordinated series of more or less isolated efforts. Throughout 1873 the Board was advising local authorities in detail on particular schemes of appointment and duty for sanitary regulation. This branch of the business, however, was exclusively in the hands of the non-medical officers of the Board. For this reason an attempt is made to give an account of the proceedings and their results. We are thus led in the dark as to a matter of extreme importance in a case in which the advice of the Board, in every individual instance, can possess more than a transitory and questionable importance, without comparison with other ill cases, and thus with the general sanitary system throughout the country.

The medical inspections which were made throughout the entire country, during 1873, were only forty-two in number. Of these the reporter tabulates a detailed list. With the exception of one case, relating to hospital accommodation, and one, to certain manufacturing processes causing nuisance to several districts, the ground of inquiry was almost always the presence of preventable disease. Thus we find at Bally-carr Hexthorpe "frequent prevalence of enteric fever, defective sewerage and drainage, polluted water supply, improper means for the disposal of refuse." This inquiry, dating in February, 1873, strikes the key-note of the remainder of the investigations. Unwholesome water is connected with the foregoing evils at Barking. Enteric fever occurs, in the same neighbourhood, in the vicinity of a well contaminated by sewage. Enteric fever prevails frequently at Bishop Stortford; imperfect ventilation of sewers is a feature in this case. At Breanock, prevalence of fever is noted, under similar conditions. At Brierley Hill (Staffordshire), zymotic disease continually prevalent among dirty, ill-ventilated, and over-crowded cottages. At Camptol (Gloucestershire), enteric fever has been more or less prevalent for the last three years: the wells are polluted. At Cornbrooke (Warwickshire), an outbreak of enteric fever followed the arrival of a patient suffering from this disease.

from Leamington; the apparent medium of contamination being a well exposed to pollution. At Doncaster is remarked a large general and infant mortality; endemic enteric fever and typhoid; epidemic scarlet fever and small-pox; of course, we have to add polluted water, with general absence of sanitary care, and presence of iggeries. And so we might go on through the hole of the forty-two cases, to which we call the attention of our readers in the pages of the report itself. Whatever there may be, to use the words of Mr. Simon, that is tentative in the action of the administration, the intimate connexion between bad water, bad drainage, bad ventilation, overcrowding, and communion with the sick; and endemic and epidemic disease, involving an abnormally high state of mortality, is beyond the shadow of a doubt. There is nothing new to our readers; but it has been rarely, if ever, more pointedly brought forward as in the dry statements of these collected medical reports.

An inquiry of a different nature, and of considerable importance, has also been in progress during the past year, but has not yet been completed. It regards the sanitary conditions which are involved in the pursuit of certain industries, and they are at present carried on. Many of our readers will at once recall to mind some cases of this nature. In the cutlery business, for example, it was the case some time ago that so ample was the case expected to exceed the age of forty, and particles struck off in the grinding process, variously causing disease of the lungs. Masks and wire and glass, and magnetic provisions for protecting the pulverised iron, were suggested complete precautions; but were resisted by the chief interested in the matter. Again, the effect of the phosphorus used in making safety matches, until the use of the allotropism of that chemical element, was to produce destructive caries of the jaw. The inquiries conducted by Mr. Simon have been carried on, with respect to the metal trades, at Sheffield, Wolverhampton, Alcester, Bromsgrove, and Birmingham, by Dr. Ballard; as to glove-making, by Dr. Blackall; as to pillow-lace manufacture, at Newport and Towcester, by Dr. Blackall; as to straw-plaiting at Tring, Bedford, and Bedford; silk-weaving at Leith; and weaving and watch-making at Coventry; hosiery manufacture at Leicester and Stockley, by Dr. Thorne. The outcome of these several investigations will, hereafter, form a very valuable contribution to the general body of sanitary administration.

Having concluded the ordinary report for the year, the writer, again referring to the state of local and administrative transition which has occurred during the period, takes a glance at the sanitary future of the country. The outcome of reports, which are now demanded by the situation on the subject, will be to enable us to ascertain the practical effect of the laws which are in force for the prevention of disease throughout England. It is stated, as the common conviction of persons who are in a position to form a reliable judgment on the subject, that the half-million deaths which now annually occur throughout the country are more numerous, by fully one third part, than they would be, if existing knowledge of the chief causes of disease were reasonably well applied throughout the country. Without calling in question, in any way, a statement made on such authority, it seems to us that the outcome of the statistics might be better expressed in other form. Admitting, on the testimony of the Medical Officer of the Local Government Board, that some 125,000 cases of preventable fever annually attain their final record in the death register, it seems to us that these fatalities do not so much represent additional, as timely, deaths. It is not that more people die at long average, in the year, so much as that these 125,000 die so much sooner than would be the case if proper sanitary precautions were universal. The point which is of an importance not easy to exaggerate, in our view, has to be added another set of evil, namely, the great economic loss to the country thus occasioned. Enteric fever, and other forms of epidemic and endemic disease, which it is the special duty of the sanitary engineer to hold at bay, or absolutely to stamp out, he attacks the very young, or those in the prime of life, than those more advanced in years.

None, indeed, are secure, or, at least, are safe, for security may be an imaginary feeling; but the most valuable lives are the most exposed. Considering the rate of infant mortality, we can hardly be in error if we allow twenty years of life to be lost by each of the 125,000 preventable deaths. What is the value to the country of these 2,500,000 years of active life, thus cut off from the sum total of the productive life of the nation? If we average it only at 100s. per annum, and it is chiefly among the higher and more delicately-organised nervous systems that the ravages of the enemy occur, we have a loss of 250,000,000s. sterling per annum, arising from the unjustifiable neglect of decency, comfort, and salubrity.

In the sanitary administration of England, Mr. Simon remarks, there are certain cases where local action cannot be taken without the previous express sanction of the central authority. Much influence thus attaches to this body. Further, in case of epidemic emergencies, a special power to issue directions is attributed to the Central Board, under the Diseases Prevention Act of 1838. But, with such exceptions, all that, in the present state of the law, is competent to the Local Government Board, is a course of observation and inquiry. Thus regarded, it is plain that instead of a Central Sanitary Authority, properly so called, we have actually only a sort of permanent Royal Commission, authorised to collect evidence, and to do but little more. This is not exactly the language, but it is, in point of fact, the meaning of the Report. It may well be disheartening to those who regarded with hope the result of the unusually favourable opportunity for legislation that was open to the proposers of the measure of 1872, to find, on such high authority, the real state of the case. But it is of the first importance that, such being the truth, it should be distinctly understood by the country. We hoped for sanitary administration; we have only sanitary observation. Let us make the best of what we have; but let us not suppose that we have what the public health requires, or that we are in a state to do much more than cry "Wolf, wolf," if danger press. The test of local sanitary administration, the reporter truly points out, will be the success with which it prevents disease. In all cases where preventable disease is not prevented, the Local Government Board can now ascertain the fact by skilled inspection. It can, further, give advice, and, in extreme cases, issue orders under the Diseases Prevention Act. But, as the case stands, it is the augmented death-rate which will be the mainspring of such action as is competent to the Board; not the general outcome of a competent medical and sanitary survey of the country. We must continue to pay our annual 250,000,000s. a little longer, say some ten or twenty years, as the price for securing the entirely unchecked autonomy of the Local Boards, and of educating the rural mind to take a correct view of the combined sanitary and political advantages secured for them by the providence of the last Parliament.

The fifteen hundred sanitary districts of the country contribute their respective quota to our 125,000 preventable (or rather deferrable) deaths, in very different ratios. The higher the contingent, the greater the proof of what Mr. Simon mildly terms "sanitary mismanagement." Thus it is extremely important to note that figures which make but little arithmetical show, may have the utmost medical significance. One or two deaths from enteric fever, noted in a quarterly return of the Registrar General, in regard of some village or small country town, may indicate long continued prevalence of neglect of the most dangerous nature. One or two deaths by scarlatina or small-pox may indicate the beginning of an epidemic which, if unchecked, may in a few months decimate the invaded district, and spread thence, with concentrated venom, over a wide neighbourhood. Thus no single death from preventable sources can be overlooked without danger. The terrible satire of the concluding remark of Mr. Simon (which we think must have been penned during the rule of his late chief), is so striking that we must quote his own words:—"It seems almost necessary to add that a method of procedure which waits for death as its ground of action may peculiarly dispense with cumulative proofs, and that, as no one preventable death can any longer be remedied in regard of him who has suffered it, so the record of it may the more emphatically claim to be read as a protest on the part of others."

At a time when both the country and the

Houses of Parliament appear gladly to be taking breath after a fever of organic legislation, we are not about to raise the cry for new Acts of Parliament, or for immediate amendments of those already existing. Extreme legislative activity, it may well be held, is at once a proof and a result of administrative incapacity. It is so much easier to shift the blame of non-success on to the shoulders of 650 men, than fairly and honestly to meet it, that it is only too common for men to cry out for a change of law when all that is wanted is a change of administrators. But we cannot help believing that, under the powers of the existing Acts of Parliament, very much might be done by a truly earnest and competent Minister of Public Health, to avoid that waiting and watching for preventable deaths to which the medical officer of the Privy Council, in spite of his own wishes, is resigned. We do not speak as if giving a lawyer's opinion on an Act of Parliament. In fact, the usual view of the legal profession is, that no opinion as to the meaning of an Act of Parliament is reliable until cases under it have been fought out before the ordinary tribunals of the law. But it has seemed to us all along, from the first perusal of the draft measure of 1872, that it lay very much with the President of the Local Board to render that measure efficient, or the reverse. That the central authority has power to make such simple alterations in the mutual relations between the health officers throughout the country, as to give to them that organic union which constitutes vitality, is, we think, the case. If otherwise, of course we can only, as Mr. Simon hints, count and weigh deaths; and look forward to future amendment of the law. But so little, by way of change in arrangement, would cause so immense a difference in the effective power of every health officer, that we cannot but hold such improvement to be within the scope of the measure. Even voluntary association might effect the great object in view. But voluntary association would demand, not only energetic initiation, but some means of compensating the associated officers for loss of time. We indicate this only as a proof of what lies, in our view, within the power of the central authority. The great point is, that reports as to sanitary abuses should not be made exclusively to those persons who have to pay for the removal of the abuses; and who thus will be the last readily to admit their existence. Let the Local Boards continue their present relation with their own officers. But let every report be sent in duplicate, so that it shall be accessible to the central authority. The mere knowledge of this fact would give an authority to every inspector, and would furnish a stimulus to every local sanitary authority throughout the country. If the Board of every union or parish were aware that a report, duly made to them on a given day, detailing certain probable causes of preventable disease, had also been laid before the chief officers of the Local Government Board, it is only in human nature that a very different degree of energy would be displayed in the removal of those evils. Death might still be waited for. The Central Board might make no sign. But, if death came, the responsibility of the local do-nothings would be brought out with such undeniable distinctness that their position before the country would be unenviable. We should thus bring the ordinary motives of human conduct to work on behalf of sanitary reform. As it is, matters are so arranged as to make these motives all pull in the reverse way. On one side is economy of life and health. On the other side is economy of ratepayers' money. Nine men out of ten, unless specially educated and trained in the matter, will sacrifice the invisible to the visible economy. Besides, it is not only that; it is the invisible economy as to one's poor neighbour, in most cases, that has to be weighed against the visible economy of one's own rates. The guardian, in his comfortable homestead, is not in any danger, he thinks, of annoyance, because the cotter has his pigs under his own bedroom window, or lets his gutters contribute foul water to his well. Therefore, if the conscientious inspector takes his tale to the Board, there must be an extraordinary degree of public spirit and enlightenment in the members of that Board if the amendments ordered are not of the very smallest. But let the Board know that other and watchful eyes will read the report as to John Thatcher's pig-stye and well within a few days, and that questions may hereafter arise as to what action was taken on the report of the inspector, and the week would not be out before something would be done.

In a word, human nature was enlisted against sanitary reform by the arrangement of the Act of 1872. Cannot the present chief of the Local Government Board make that same unsleeping power pull in the right direction?

SCOTT-MONASTICON.

THE learned and indefatigable precursor of Chichester, whose labours in the field of ecclesiastical history and archaeology have been very valuable in their results, has in his last work* crossed the borders, and endeavoured to reduce to form and order the chaos of Scottish ecclesiastical history, tradition, and monumental relics. It is, as the author remarks, matter for surprise "that Scotland, to a proverb jealous of her nationality, and proud of her ancient lineage, in which, as in many other matters affecting the past, her temper is eminently conservative, yet can be so indifferent to the sacred reliques of her national art, and neglect the precious heirlooms of this kind transmitted to the present time." The reason for this comparative neglect is, Mr. Walcott considers, that the popular mind "has been sedulously educated to regard such remains as monuments of idolatry and superstition"; and that these have so far fallen out of notice that they are even forgotten in descriptions of the country, which is represented to the stranger as "full of salmon streams, heathery moors, gorse-clad, robed in purple and gold, and rich in game," but as destitute, except in the neighbourhood immediately around Edinburgh, of the monuments of human fame and human labour which other countries have sheltered and studied with the deepest interest. The spacious quarto volume before us,—not filled with fine writing or reflections, but thickly studded with facts, histories, and statistics,—is at first glance a rebuke and a contradiction to those who deny to Scotland any interest except as a grand game preserve. We are glad to learn, however, on Mr. Walcott's authority, that "the narrow, unsparring, superstition, which broke up tombs, tore down crosses, crumbled precious sculptures into dust, and effaced the chronicles of antiquity engraved in stone," is being exorcised by a more liberal feeling, and that there is arising a disposition to seek materials for road-making and house-building from other quarries than the ancient walls of churches and abbeys. The present work, therefore, seems to be published at a fortunate juncture, in time to give tabular information to the owners of Scottish ecclesiastical relics, in regard to matters of which they are beginning to recognise the value.

The work has been divided by the author into four sections, with the object of furnishing to each reader, in the most accessible manner, the precise kind of information he requires. The four sections are as follows:—

1. Historical: reaching the seventeenth century, when all interest in the ecclesiastical glories of the country becomes extinct.
2. Architectural: containing the dates and examples of the successive styles of buildings.
3. Legendary: embracing the folk-lore and traditions connected with the various foundations.
4. Descriptive accounts of the buildings, lists of members, their valuations at the dissolution, and present condition."

It is only with the architectural portion of the subject that we should be called on to deal in any detailed manner in these columns: this, however, constitutes the smallest part of the work, and, in the way of architectural illustration, of course, adds nothing to the work published by Mr. R. W. Billings, some time since, in illustration of Scottish architecture. The architectural section gives a useful list of the existing remains of Mediæval architecture in Scotland, accompanied by some remarks as to distinctive peculiarities of the style north of the border; the retention of the round arch especially, to a date later than in England, and while other details had partaken of the general change and progress of the style, as shown, for instance, in the fine doorway at Aberbrothwick, where the treatment of shafts and caps in the jambs reminds us of the west front of Peterborough (in detail), while the mouldings of the circular arch approximate much more to Norman. In

remarking on some of the peculiar forms of window-tracery, Mr. Walcott notices the "pear-shaped loop," with a circular foliated head, which is not uncommon, and which is, in fact, a step further in "plate-tracery" than the English builders got, and is a better way of filling up the space between two pointed window-heads than the English method of inserting a circle between the heads of the lower lights. The drawing down of the lower part of the circle into the "pear shape," so as to be concentric, or nearly so, with the arches of the lower lights, may be called the missing link between plate-tracery and tracery proper, a link almost omitted in the rapid development of tracery in England. One of the most peculiar forms of this pear-shaped light is that to be seen in Glasgow Cathedral, where the jamb shafts, from whose caps the cusping springs, are retained, and follow the curve of the lower part of the light, with a singular effect. In this case, the lower jamba of the light are convex, and not concave, in line. Among vagaries of Scottish tracery is the singular form shown in the window, eccentric in design altogether, in the Michael Kirk, near Elgin, where a heavy moulded tracery-bar is bordered continuously by a broad thick fillet on each side, square in section, and forming the cusping in the heads of the lights. The effect is as if the lights had been cut out of a large slab, and the mouldings of the tracery planted on the interspaces between them. No such abortion, at least, was ever found in any period of Gothic as practised in England. In the later windows of Melrose, on the other hand, we find variations from the more usual forms of "perpendicular" tracery, which are rich in effect and suggestive.

In its towers, such as are left, Scottish ecclesiastical architecture was seldom happy; but in the mass it deserves, as Sir G. G. Scott recently urged, far more systematic study and illustrative record than it has received. There is, in many of the best specimens of the earlier period, a kind of massive and half-barbarous power which is scarcely found elsewhere. It is less logically constructed,—more piled together,—than the architecture of corresponding date in England. The choir of Jedburgh, for instance, is similar in its mouldings and details to English work of the Transitional period, though somewhat weightier and heavier in scale; but the treatment of the arcade of the ground story, not sprung from the impost, but abutting against the body of the great cylindrical piers, gives a peculiar air of rugged grandeur, different from the impression of the most massive Norman work carried out in England. The interest in such a case is of course rather historical and associative than purely architectural; and the manner in which the peculiar national position of Scotland in the middle ages, as well as the marked individuality of character which has remained ineffaced to this day, have acted upon the architecture of the country, and modified the forms in the first instance adopted from France or England, is one of the most curious and interesting chapters in the history of the relation between style and national circumstances.

Mr. Walcott's book, however, rather gives occasion for such reflections than leads to them, the object of the work being, both in the architectural and in the historical and legendary sections, to give facts, and satisfactory authorities for them. It is thus not a book for general reading so much as for reference and information, and the very extent and fulness of the information given interferes with the existence of what is generally called literary excellence or interest; but for the purpose for which it is written the book will not be less valuable on this account. Plans of the principal buildings referred to are given, and a few views, which we seem to remember seeing elsewhere. The book is excellently printed on strong, thick, durable paper, as books of this class should be; and has the desirable addition of a wide margin, too often omitted in these close-shaving days. It will take its place in every reference library and antiquary's bookcase, as the only work of anything like completeness and precision at present existing on the subject, and will form a worthy addition to the list of useful and laboriously compiled works of a similar nature which we already owe to the industry of its author. It is the lot of workers such as Mr. Walcott to receive scarcely the due estimate of their labours in comparison with that obtained for many more amusing, perhaps, but less trustworthy and more easily written records. The amount of more printed matter in such books as these, considerable as it is, in most cases very inade-

quately represents the time and research which it has cost; and we owe a larger debt than is always recognised to those who are willing to undertake a great deal of intellectual drudgery in order to present a mass of historical facts in a readable and concentrated form, for the benefit of the general student.

ART-PUBLICATIONS OF THE MONTH.

THE *Art Journal* offers its readers this month the rather unusual specialty—an engraving of work which has never been exhibited and unknown to the public. The original is by the clever artist, Mr. Boughton, who received a commission from the proprietors of the *Journal* to paint a subject from Shakespeare of his own choosing. He has selected a situation which we do not remember to have seen illustrated before—that in Richard II., where Isabella, having walked into the garden with her ladies for diversion of her thoughts, overhears the gardeners "talking politics" together, not her comfort. Judging from the engraving, the work should be one of Mr. Boughton's best; the constrained attitude and wearied expression the principal figure tell the story very well. Mr. C. W. Carr contributes some remarks on the new purchases by Francesco, Pinturicchio, Signorelli, &c., in the National Gallery; and Mr. W. B. Scott continues his articles on Venetian painters, the present number being dedicated to Tintoretto. The other illustrations are Pavinio's "Marriage of Cana," and the portion of the Albert Memorial sculptures containing the architects. The rest of the bas-reliefs have been already illustrated. These latter are very carefully and conscientiously done; but they must not be relied on for doing justice to the sculptor's work in regard to expression—the scale is too small for that. Miss Mary M. Rogers continues her interesting papers on Art-work in Syria and Palestine.

The salient point in the illustrations of the *Portfolio* for the current month, is an etching from Gainsborough's fine portrait, known as "The Parish Clerk," in the National Gallery; work not only of the highest excellence artistically, but interesting as the representation of the best type of a very characteristic class of men who were in their glory in the artist's day and have now nearly disappeared under the influence of modern ecclesiastical transformations. The etching, by Wainman, is careful and accurate, though a little tame in style: the resting on the desk-rail is scarcely successful. Mr. Wornum, who contributes a few words in relation to the work and its author, does justice to the versatility of the painter's genius, which seems to stand continually higher in estimate. Mrs. Siddons, and at the landscape hanging about midway between them, in the National Gallery, and reflect that these are all the work of the same painter, produces an impression remarkably varied power. Mr. Wornum, indeed complains, not without reason, of Gainsborough's lack of finish at times, and his trusting so much to slight and rapid touches to secure an effect; but it is perhaps scarcely fair to call the "Mudra" a "sketch"; it is sufficiently finished: the painter's object, which manifestly was not more material one. Mr. Taine, when he visits and made notes on our art-collections, was particularly struck with the thoroughly lady-like appearance and manner which Gainsborough had infused into this figure; it was no mere "study of the nude," but a lady in undergarments or Gerome would have left Gainsborough far behind, no doubt, in the painting and working up of the detail of the figure; but would either of them have been capable of equaling the English painter's refinement of feeling? We have come down so much to the mere feeling of the artist and life-school of late years, that such a work would hardly be appreciated now.

Mr. Benington Atkinson, in the pages of the same periodical, discourses on "The Witness: Artists to Beauty" which seems to tend in the right direction, if a little vague in expression. A communication by Mr. G. A. Simcox, on "Art and Antiquarianism," comes round at the end, that *venata questio*, the decoration of St. Paul. The tone is evidently in favour of an extensive system of decoration, or rather, perhaps, applied high art. The writer thinks we are bound to be content with a grey, melancholy looking interior, because the architect desired nothing better; we should make it as beautiful as we can by our own lights: so we read.

* Scott-Monasticon: the Ancient Church of Scotland; a History of the Cathedrals, conventual Foundations, Collegiate Churches and Hospitals of Scotland. By Mackenzie E. C. Walcott, B.D., F.R.S., Precentor of Chichester. London: Virtue, Spalding, & Daldy.

aning, though he commits himself to nothing definite.

If writing about a scheme ensured its success, lead, the decoration of St. Paul's, when viewed, ought to be one of the most successful ever done, for the amount of ink shed on it is, as our American friends say, "a tithe." A series of letters on the subject are going through the monthly serial called *Art*. It is more to the purpose is the commencement of a series of papers by Mr. Cave Thomas, the "Theory of Colour," specially from the artist's point of view, and in which all scientific humilities or theories unnecessary to the artist are to be ignored, and the subject gone to exactly as far as it affects the practice of painting, and no further. Mr. Thomas's "Age," half-length (one of a series), reproduced by the Heliotype process, is a fine conception; we are glad to meet, even in the shape of journal illustrations, with the productions of an artist whose work too little has been seen of late. The masterpiece is a fac-simile of a study by a young artist at Rome, Mr. Henry Ellis, for "Antony and Cleopatra," in Elysium, taken from the passage where Antony depicts their future in the other world: as a poetic conception and composition, this is a remarkable drawing, and shows high promise.

The *Illustration* has been giving at intervals, for some time past, articles descriptive and critical on the private collections of pictures in England, which are worth the attention of those who wish to know where specimens of each painter are attainable for inspection or study. The last number commences an interesting description of the art-treasures of Chateaufort, which is particularly rich in drawings by the great masters. All the collections mentioned by the *Athenæum* critic may not be accessible to ordinary visitors, but probably most of them are open to any one who cares to see them, and the papers, if collected, would form a useful memorandum of what is to be seen, and where, as well as give a more adequate idea than perhaps generally exists of the great wealth of this country in old and valuable paintings.

The last number of the *Gazette des Architectes* (August 31) contains a paper by M. Durand on schools and school-planning, which will have its interest for those engaged in this class of work. A review of the designs for the church of the *Card Cow* in the previous number, reference is made to the "beautiful perspective views" of the interior and exterior, accompanying the plans of Messrs. Phipps and Phané Spiers, as demonstrating to us once more that their countrymen are our masters in water-colour. A review of this same large church competition, in *Perin*, *avocat*, writes to the *Gazette*, enclosing an extract from the "Mémoires Critiques d'Architecture" of M. Fremin, Finance Minister in 1802, who seems to have had special contempt for the achievement of the architectural profession in regard to practical church-building. "There are some churches," wrote this critic of the bureau, "where the architects, while letting their imagination run wild, have at last discovered the secret of rendering all the nuns consumptive. These gentlemen, who rejoice in large lungs and remarkably strong chests, trouble themselves very little about these poor virgins, already enfeebled by the austerities of their profession, tiring their lungs and straining their throats in singing; seeing that they themselves often know nothing of any harmony better than that produced by the tink of the coins in which they are paid, and do not think about the necessity of providing that the nuns should be able to sing quietly and without effort, and that the listeners should have musical sound and not shrieking. . . . The architect who makes the plan of a church should not neglect to calculate its acoustic effect, in such sort that the harmony of the sacred hymn does not die and disperse itself under his vaults." The worthy advocate seems to think the publication of these remarks peculiarly called for just as this large church is to be built on Montmartre. Evidently the legal profession is not given to complimenting the architectural in France, any more than in England.

Our Paris correspondent alluded last week to Baudry's paintings for the Paris Opera-house as being considered disappointing in their results. An opposite idea is conveyed in the long article on the painter and his works in the recent number of the *Gazette des Beaux Arts* (August, not September; the French serials of this class are, somehow or other, wonderfully dilatory in finding their way over here), by M. René

Ménard, who may perhaps be prejudiced in favour of the subject of his eulogies. Grace and refinement are not Baudry's strong points. His group of the "Graces" reminds one of the portly dames of Rubens; but in other figures given there, especially that of Hesiod, and the sitting figure from the same group, there is a manifest inspiration of composition and pose not often met with in modern subjects of this class. The cartoon for the "Judgment of Paris," of which a photo-lithograph is given, is also marked by great power in the drawing and expression of the figures, especially of the Juno, and very original conception in the figure of Paris, whose languid, sensuous air accords well with his legendary character. Mr. Ménard says of the principal figures, "These three figures have an amplitude of *fourmure* and a power in the modelling which recall the Italian masters of the Renaissance, and remove us far indeed from those starved forms which contemporary art has made such abuse of." In the same breath the reviewer raises a question as to the legendary correctness of representing the three candidates for the apple as disrobed, affirming that the oldest form of the legend represents Venus alone as partially displaying her charms, as a final and convincing argument. However, the other form has been so universally accepted by painters and poets (by none more finely treated than by our present poet-laureate) that it is not likely to be shaken now.

The illustrations of the single figures of M. Baudry, as well as those to the article on the last Salon, are nearly all fac-simile reproductions of the artist's own sketches, "Croquis de l'Auteur," by a process of engraving analogous to that of which we gave an illustration the other day. These, of course, do not give anything like a *vérité* of the original in detail, and are, in regard to finish, below what the subscribers to any English publication of the same stamp would look for. But they have more real artistic interest than any but the finest class of wood engravings. If they do not give an imitation of the artist's handiwork in the original painting, they give his thought as he felt it himself, and his actual handiwork in this short-hand expression of it, which sometimes derives a new interest from showing the artist's power of manipulation in another branch of art. The sketch by M. Paris of his "View in the Campagna" is most masterly as an indication of light, shadow, and distance in comparatively few lines: the work is a very original one.

The same number of the *Beaux Arts* commences a series of "Lettres Anglaises," by M. Dubouloz, with the heading "A Philip Cunliffe Owen, Esq., Directeur du South Kensington Museum, the right man in the right place," ces lettres sont respectueusement dédiées." The writer avers that to initiate readers of the *Gazette* into all the exhibitions opened "under the pretext of art" during the London season, would be to undertake a labour from which Hercules himself might have shrunk. M. Dubouloz confines himself for the present to the Academy, where, need we say, he finds the works of Dalou and Carpeaux the first things of any consequence. As to the "Danse" of the latter, a national pride in such work is excusable, but it is a pity the compatriot critics of so able an artist as M. Dalou should blindly encourage him in making an utterly wrong use of the art of sculpture. Mr. Leighton is patted on the back and told he can do better, and "must be himself next year." Scarcely a word of commendation can be extorted even for his best work this year, that figure "une comme la main, ce que la pudeur Britannique traduit en un costume of the most *gerest description*,"—a rap at the pretentious mock-property phrases of English newspapers which is not uncalled for. But the French critic is most exercised in mind as to the forthcoming loan exhibition of works by Callcott, Etty, and Maclise. He thought the *ennui* resulting from the Landseer exhibition must have shown that such collections could only be desirable in connexion with the very highest names in art. In regard to the next exhibition, he observes that Callcott will suffer least,—"he was a veritable artist, and merits and occupies an honourable place in the second rank." The exhibition will tell nothing about Etty which every one does not know at present; he was an artist always waiting to scale heaven, but never succeeding in his ideal: "still, there is something in William Etty." But to Maclise M. Dubouloz denies any claim whatever to high artistic rank, and thinks the late painter's former colleagues will be doing him a "très-méchant service" in proving the

nullity of his claim. He refers sarcastically to the gigantic poster inviting an inspection of the "Strongbow" picture, "22 ft. by 16 ft., and pronounced to be the finest picture in the world"; the whole translated for the benefit of readers of the *Gazette*: that such an advertisement should have been put forth in connexion with the work of any painter of high claims may well move astonishment and ridicule. M. Dubouloz ought to know, however, that this is a mere picture-dealer's dodge, over which no one has any control. We suspect, moreover, the writer knows less of Maclise's works than he ought.

French art-critics seem very anxious at present that we should have every opportunity of seeing ourselves as others see us. M. Dubouloz's criticisms are not without interest, but they would be pleasanter to read, and would do more good, if they were less prejudiced, and if he were not quite so sure of everything.

Admirers of M. Jules Breton, whose works are so well known in English exhibitions, may be interested to learn that the painter is also a poet. Three short pieces by him appear at the close of the number of the *Gazette des Beaux Arts* to which we have been referring.

FRENCH EXCURSION OF THE ARCHITECTURAL ASSOCIATION.*

	FRANCE.	NORMAN.
Romanesque	800 to 1130	1066 to 1145
Transitional	1120 to 1150	1145 to 1190
	or 1130	
Lancet	1180 to 1230	1190 to 1245
(Or might be considered as a prolonged Transition from 1120 to 1250.)		
Geometrical	1225 to 1320	1245 to 1315
	or 1230	
[Or even later in some instances]		
Corvilinear, Early		
and Late	1320 to 1520	1315 to 1360
		Rectilinear.
		[Late Corvilinear = Flamboyant] ... 1360 to 1500

The above shows Mr. Sharpe's nomenclature as provisionally suggested—in a tabular form.

The following notes refer to some of the smaller churches visited, churches not mentioned in the ordinary guide-books, and, therefore, not much known—

Chapel of the Hôtel Dieu, Paris (St. Julien le Pauvre).—North door opens into the court of Hospital. Three apses at the east. Elegant vault and original windows. Some caps suggestive of Canterbury Choir (1174, &c.). Nave of four bays altered or reconstructed in Renaissance time; further extension westwards originally indicated by remains at north-west angle. Interesting step in the progress towards full Gothic. Apsé, about 1170; nave aisles later. The chancel is in direct succession to St. Germain des Prés, consecrated 1163. "Charmante petite église de la fin du XII. siècle," says M. Viollet-le-Duc, v. 190. A bay measured by members of the party; mouldings cymagraphed, and foliage drawn.

Montmartre.—The old church on the hill,—the roof used in pre-electric days for semaphore signalling,—the dormers (and equally the prospect tower close by) give Paris from a natural eminence; steep streets sloping towards the Trinity and towards Place Lafayette. Marble columns here, supposed to have belonged to a temple of Mercury, and very Roman-like caps north and south of apse, and on the west responds of the nave. Nave of five bays Transitional; not unlike the choir of St. Germain des Prés in arrangement, but short of some portion of its upper stages by Flamboyant vaulting. Three apses at the east; a good external design to the main apse, with very pronounced buttresses.

Gonesse.—The parish church of a small town. Begun at the east end just at the close of the Transitional period, eight years or so later than the Chapel at Hôtel Dieu, Paris. Note as a peculiarity pilaster shafts running from floor to vaulting (with caps and bases), found also in Notre Dame. Crossing and triforium, columns of apse extremely slender; no doubt the builders wished to keep the bays narrow as usual, to keep clear of crippled perspective of arches, and then desired not to magnify the rather numerous supports; cut-off corners of abaci of columns suggest near approach of Lancet period. All pointed arches. Nave: ground-story Lancet,

* See pp. 703, 721, 741, ante.

EXPENDITURE ON RAILWAY
CONSTRUCTION.

WITHIN the past three or four weeks the half-yearly meetings of the several railway companies have been held. The reports and proceedings of nearly all the leading companies show that a large expenditure in new works and buildings is going on.

The expenditure in new works, during the half-year, by the Midland Company, exceeds that of any of its competitors, and is a striking illustration of the elasticity and expansion of this great company. The entire outlay for the half-year on works and working stock amounted to 1,509,565*l.*, of which 520,598*l.* were expended on lines already opened for traffic, for increased accommodation, including new stations, goods sheds, engine-sheds, sidings, cottages, and construction of block telegraph; whilst 160,034*l.* were expended in additional working stock. In addition to this outlay, 506,108*l.* were expended on lines and works in course of construction, of which no less than 342,000*l.* were spent on the title and Carlisle line; and with respect to this, which will be a most important addition to the company's system, the chairman stated that his engineer, Mr. Creasey, hoped to have the line of permanent rails constructed through by the beginning of next year. He added that every possible exertion was being made to complete and open the line, the directors being fully alive to its great importance, and to its being brought into effective operation. Beyond the expenditure above named, on existing and new lines actually their own property, they had also expended during the half-year 322,825*l.* in contributions to joint lines, making altogether the sum of 1,509,565*l.*, as before named. The chairman stated, as an interesting fact, that the company at the present moment possessed 1,067 locomotive engines, 2,856 coaching vehicles, 478 merchandise and mineral wagons, and 283 horses, and that the total outlay on this working stock was 5,718,987*l.* The contemplated expenditure during the present half-year will further new works is equal to the past half, the chairman stating that during the current half-year they proposed to lay out 365,000*l.* on increased accommodation on lines open; 18,000*l.* on additional working stock; 355,000*l.* on lines in course of construction; 150,000*l.* on sidings to other companies; and 160,000*l.* on lines and works not yet commenced; making together a contemplated outlay this half-year of nearly a million and a half.

The London and North-Western Company do not state in detail the amount which they have expended in new works during the past half-year, although from the great station and other works which they have in hand at Liverpool and various parts of the country, it is known to be considerable. They are, however, about to spend a heavy sum in new lines and other works, amounting to about 2,500,000*l.*, and this was voted to the directors at the meeting on Saturday, 1,685,000*l.* of this amount are for new lines and other works, authorised by the Act of 1874. The report of the directors stated that, owing to the increase in the cost of almost every description of materials used by the company, and the advances in the price of labour of all kinds, the working expenses of the company had risen from 46 per cent. in 1871, to 56 per cent. in the present year, being an increase of 10 per cent.

The expenditure of the Great Northern Company in new lines and works on existing lines during the half-year, was upwards of 700,000*l.*, included 86,000*l.* in the purchase of land for the construction of new lines in Yorkshire; 5,000*l.* on lines in Derbyshire, Nottinghamshire, Leicestershire; and 54,000*l.* on the High-gate and North London Junction Line. During the same period, the expenditure on the main line and branches, including the improvement and extensions of sidings and stations, was 19,967*l.*, whilst additions to the working stock amounted to 75,831*l.* In addition to this the company distributed during the half-year 169,858*l.* towards the capital expended on the Cheshire line, including the new station at Liverpool. The directors were authorised to expend 227,250*l.* on additional works during the current half-year, of which 40,000*l.* are for the new goods houses now constructing at Farrington Road; 10,000*l.* for the enlargement of the Coln Station; 12,562*l.* for works at Bradford; 160,000*l.* for the extension of the block telegraph. The North-Eastern Company expended up-

wards of 480,000*l.* during the half-year in new and additional works, 149,610*l.* being on new lines, and 330,000*l.* in providing additional station and warehouse accommodation on lines already opened for traffic. The expenditure by this company during the half-year on rolling stock was exceptionally large, being no less than 458,943*l.*, and a number of statistics on the subject which was stated by the chairman of the meeting will be read with interest. He said that during the half-year they had added fifty-two new locomotive engines to their stock, so that they had in all now 1,155 locomotive engines on their railway. The plant for their passenger and merchandise traffic had also been largely increased, especially in the matter of mineral wagons. They had added no fewer than 1,415 mineral wagons, increasing such stock beyond that of any other company, looking at the districts to be served. The company had at this moment no fewer than 43,597 mineral wagons of various kinds, and the whole of the rolling stock numbered 73,158, which has cost the company upwards of seven millions sterling. The expenditure must still continue during the current and succeeding half-year to the amount of about 600,000*l.*, and when that sum of money was spent, the entire working stock of the North-Eastern Company would be as nearly as possible worth eight millions sterling. Adverting to the great rise in the price of labour, and the rate now paid to artisans of every class, he said that the total increase in the working expenses of the company amounted to 183,393*l.*, and fully one-half of that—above 80,000*l.* of it—was due to wages.

As compared with the several companies already referred to, the expenditure of the Great Eastern during the half-year was limited, the total outlay in works being 137,794*l.*, of which 69,988*l.* were on account of the new station in Liverpool-street, and 42,999*l.* in additional lands and works for the parent line, of which 14,211*l.* were spent at Peterborough in providing additional sidings for coal traffic, which has nearly doubled itself within the last seven years. Referring to the prospective junction with the Metropolitan and East London lines, the chairman observed that until their arrangements were fully completed at Liverpool-street, the metropolitan and suburban traffic could not be fully developed; but they were in the meantime working it in a manner that would be the means of inducing people to go and build their houses in the metropolitan district eight or ten miles round London.

The proceedings at the meeting of the South-Eastern Company disclosed prospective expenditure on new works, rather than any reference to outlay during the past half-year. The chairman (Sir Edward Watkin), stated that they had bought most of the property for the Greenwich and Woolwich line, and that that morning they had let the contract for the completion of the line to Messrs. Aird, the well-known contractors, and they hoped that the railway would be opened in eighteen months. They had also bought all the property, and nearly completed the works, on the Hythe and Sandgate line. And they had likewise bought a large amount of property to enable them to go on with the Blackfriars branch. The chairman then made an interesting and important statement relative to the proposed Channel tunnel. He said that the Northern of France Railway Company and the present French Government had come to the conclusion, apparently without a shadow of doubt upon their minds, that it was quite possible to construct a tunnel 19½ miles long, between the nearest eligible point upon the French coast and the nearest eligible point upon the English coast. He then referred to the proposal that the Northern of France, the South Eastern, the London, Chatham, and Dover, and other companies, should subscribe the cost (estimated at 80,000*l.*) of sinking two shafts, one on the French side and one on the English, and of driving a drift-way on each side a mile under the Channel. With reference to this proposal he said he had always contended that a great work like that of a tunnel under the Channel could only be, and ought only to be, conducted at international cost. But then came the argument that if they succeeded in connecting the South Eastern and Chatham and Dover railways by a tunnel with the railways of France, their property must become, perhaps, the best in the world, and apart from the international interest they would have a dividend interest in it. Having expressed his opinion that the day was gone by when the project could be regarded as a chimera, and that the construction of the

tunnel was only a question of time, as was shown by the manner in which it was regarded by some of the leading engineers and public men of the present day, he warmly supported the proposal to raise the sum named in order to carry out the experiments, and if they succeeded, the people of England and the people of France would be in a position to urge and force upon their Governments the completion of the work.

The report of the London and Brighton Company stated that, although the directors had the authority of the shareholders for the large expenditure of 500,000*l.*, they were in no hurry to exercise it, but were only going on gradually improving the rolling-stock and stations, in order to keep themselves up to the mark for the traffic.

The proceedings at the meeting of the Great Western Company showed that the conversion of the gauge from broad to narrow had been actively carried forward during the half-year, and that when the short section now in progress between Kinsley Junction and Bathampton was completed, there would be a continuous narrow gauge throughout the whole of the Great Western system, while the gauge upon the main line between London and Bristol would be broad as well as narrow.

The expenditure of the Lancashire and Yorkshire Company during the half-year in new and enlarged works and rolling-stock was 657,282*l.*, and included 344,606*l.* for land and enlargement of stations, and 165,324*l.* on lines in course of construction. The outlay on rolling-stock during the same period was 128,357*l.*

THE CAMBRIAN ARCHÆOLOGICAL
ASSOCIATION AT WRXHAM.

WRXHAM, now a first-class station on the Great Western line of railway from Shrewsbury to Chester, has memories of the long past in its history, and as a border town has been subject to much vicissitude. Around it are still to be traced remains of the famous dyke thrown up by Offa, king of Mercia, to arrest the incursions of the Welsh, and its church—once collegiate—was in the late troublous times of the Commonwealth used as a prison by the Parliamentarians. Around it are castles and churches, earthworks, Roman or British, and not a few fine seats of resident gentry, among which may be enumerated Eaton Hall and Wynnstay, the latter the ancestral seat of the president of the Association, Sir Watkin W. Wynn, M.P. These, or as many of them as could be inspected in the course of the week, were visited by the members of the Association, and for this purpose a programme of arrangements for each day's excursion had been drawn out by the officers of the society, who set out a goodly list of places to be visited and work to be done in the five days' sojourn at Wrexham.

The annual meeting was opened at Wrexham. The retiring president was the Hon. Arthur Walsh, and the president elected Sir W. W. Wynn, bart. The latter delivered the inaugural address, in which he referred to the extensive field afforded in the Wrexham district for the researches of the society, and expressed the hope that their excursions and meetings would be rich in results. The secretary (the Rev. E. L. Barnwell, of Melksham, Wilts) then read the annual report, which showed that the society was in a far more satisfactory state now than when it before met in the county of Denbigh twenty years ago, and that the Welsh generally paid more attention to the antiquities of their country than they formerly did. The report was adopted, and subsequently several papers were read.

On the second day the members proceeded to Chirk, and special carriages were provided for their use by the Great Western Railway Company. On arriving at Chirk they were met by the vicar, the Rev. Mr. Thompson, who, assisted by Mr. Somerville, agent to Mr. Biddulph, conducted the party over the castle, which contains a great many objects of interest to antiquarians. After spending two hours in inspecting the castle, the company returned to the station, and were conveyed to Ruabon for the purpose of visiting Wynnstay, the seat of Sir Watkin W. Wynn, bart., M.P., who entertained the members to luncheon. The party subsequently inspected the church at Ruabon, and a paper was read by the Rev. E. W. Edwards, vicar, descriptive of the edifice. Mr. Whalley, M.P., produced for the inspection of the members two pieces of stone, which he said were part of a monumental effigy found in the church, and belonging to a period about the fifth or sixth

century. However, Mr. Bloxam gave it as his opinion that it certainly was not of any earlier date than the fourteenth century. Mr. Whalley seemed crest-fallen at this dictum, and the stones, which he had brought to the place in his carriage, were left on a gravestone, Mr. Whalley having apparently done with what one of the members remarked was "another false claimant." After visiting some other spots of interest, the company returned to Wrexham for the evening meeting, which was presided over by Professor Babington, who gave a description of the day's excursion, and alluded to the members having trodden upon the toes of some gentlemen at Ruabon with reference to the antiquity of a stone, which was shown to be of a comparatively modern date. Addresses were delivered by Mr. Bloxam and other gentlemen.

Wednesday was devoted to a visit to Chester, the programme being to take first the cathedral, then St. John's Church, and afterwards the other antiquities of the city. Over sixty members arrived by train from Wrexham. The Dean met them in the chapter-house of the cathedral, and for a couple of hours entertained and instructed his listeners with an interesting account of the mother church of the diocese and its architectural peculiarities.

The visitors inspected the lady-chapel, and thence moved to the south aisle, where the Dean explained the circumstances which led to the discovery of what is believed to be the tomb of Roger Higden. The discovery of the wand in the coffin had been differently interpreted. [Mr. Bloxam said his view was that it was found where the person interred had been on a pilgrimage.]

From this point the visitors proceeded to the walls near the east end of the cathedral, where the Dean explained the progress of the restoration externally; and they next descended to the cloisters, where the task of *vicarone* was undertaken by Mr. W. Wynne Ffonkes. The party having proceeded round the cloisters, the crypt was explored, and the tour of the building closed at the King's School, formerly the monks' refectory.

Leaving the cathedral, the visitors inspected St. John's Church.

The party luncheoned at the Grosvenor Hotel. Subsequently they paid a visit to the old bridge, the ancient houses in Bridge-street and Water-gate-street, and other points of interest about the walls and the city. It had been intended to drive through Eaton Park to Farnham and Holt; but as the objects of interest in Chester occupied the whole day in their examination, only a section of the party proceeded thither, and from thence, after partaking of the hospitality of the mayor, to Wrexham.

On Thursday, there was a carriage excursion to Watte's Dyke, the programme including Gwersyllt, Caergwile, Caer Estry, Hope Church, and Hawarden Castle, returning by Dodleston Church and Camp, Trevalyn, Marford, the Rofis Camp, and Gresford Church.

On Friday, the parish church and local antiquities were visited, and the excursion programme included Marchwiel, Old Cross from Bangor Monastery, Overton Church, Penley, Hammer Church, Emral, Bangor Monachorum, and Althrey.

The meeting for the reading of papers (the last of the series) was held at the Corn Exchange at Wrexham on Thursday night. Sir Watkin Williams Wynn, M.P., was in the chair; and Mr. Whalley, M.P., was among those who took part in the proceedings.

Professor Babington gave an account of the excursions of Wednesday and Thursday.

Mr. Bloxam then described Caergwile and Hawarden Castle, visited that day, and expressed an opinion that they both had a British foundation. He considered a portion of Caergwile Castle to be Roman. In Wales Roman masonry was all stone, but in the South of England it was partly stone and partly brick. He noticed, *en passant*, what he considered an error made by Mr. Charles Kean in producing "Macbeth." There was in one of the scenes a long range of Roman wall represented as made of brick and stone masonry instead of stone alone.* Mr.

* The scene in question was suggested and drawn by the conductor of this journal; the motive being to force upon the spectator the fact that the period of the play was not long after that of the Roman occupation. It is pleasant to hear that it has remained so long on Mr. Bloxam's memory. The scene, which is described in the play-book as "England: Exterior of an Anglo-Saxon City, with Roman Wall," represented a lofty inclosure of masonry, with bonding courses of Roman bricks at regular intervals, as seen in several Roman walls still remaining in this country. It does not seem to us open to Mr. Bloxam's criticism.

Bloxam added that he had been requested to inspect Windsor Castle, and looking round he soon satisfied himself that the castle was erected on an ancient British fortification. There were all the indications of the ancient British fortress there, and he found the same at Bangor and Dover; they found Mediæval castles on the site of ancient British fortresses.

Mr. Bloxam next spoke on the subject of inscribed British stones, and expressed his belief that the pillar of Eliseg, near Valle Crucis Abbey, was a Roman pillar, and not British, as had been supposed. He then read a paper "On the Inscribed British Monument of St. Cadvan in the Church of Towyn."

Mr. Trevor Parkins read a paper on Offa's Dyke, which elicited some discussion.

Mr. Whalley suggested that these archaeological associations would arrive at safer conclusions if they would condescend to rise a little above the consideration of the material remains of ancient times, and consider what were the real relations—

Sir Watkin W. Wynn said the meeting was now discussing the subject of Offa's Dyke only.

Mr. Whalley trusted he was not out of order. He went on to say that the present accepted theory about English history as to what the Romans, Saxons, and Britons were was as far as any history could possibly be from the truth, that the ordinary accepted school histories were the results of such party, polemical, and ecclesiastical contentions and differences as tended to promote the interests of one party, and especially of the Roman Catholics, to the exclusion of the others. Mr. Whalley went on to complain that Mr. Bloxam had, in the course of his remarks that evening on Welsh effigies, stated that the pillar of Eliseg, near Valle Crucis Abbey, was a Roman pillar, thus robbing them of what was, and had been always considered as, a pillar of their local traditions. He expressed his dissent from this sort of hap-hazard conclusions, and he maintained that the Romans never, in the ordinary acceptance of the word, "conquered" that country. On the authority of Chief Justice Fortescue and another learned Judge, he maintained that it was a fallacy to suppose that this country was ever under Roman power. The Romans had, no doubt, obtained a certain influence here, and we had obtained a certain influence in Rome, but without either nation practically interfering either in language or laws with the other.

The discussion shortly after dropped.

NEW WESLEYAN CHAPEL, LOWER ROAD, ROTHERHITHE.

This chapel, just now completed, is one of those erected under the direction of the Wesleyan Metropolitan Chapel Building Fund, and will accommodate 1,030 persons, viz. 500 on ground floor and 440 in the side and end galleries. The very restricted and awkward nature of the site has necessitated the irregular plan, but it has been so treated as to present no unpleasant internal effect, and the exterior has perhaps benefited by it, enabling breaks being made in the front elevation to conform to the raking frontage line. The pulpit and communion-table are in a small recess at the end of the chapel, over which there is a circular window. The chapel is lighted by eight large traceried windows in the sides and by the large window in the main gable, by which, in spite of the enclosed site, ample light will be obtained. The roof is open timbered, ceiled at the collar, and of hammer and tie-beam construction. It is supported by iron columns, and the arched above them is treated in an appropriate manner. The galleries are reached by stone staircases on each side, one in the tower and another in the side-turret. An open porch gives access to the chapel, which is protected from draughts by double sets of doors. All the seats are open, and provided with hat rests and umbrella-stands. The organ-chamber is reached from the gallery, and is in an arched recess to the left of the pulpit. In the rear of the chapel are three vestries, with coal and heating chamber below, and adjoining them in the rear of some houses is room enough for schools to be erected at a future time, access to which can be had from a side street.

The front of the chapel and tower is faced with Kentish rag in jointed courses, and with Bath stone dressings. The glazing is by Mr. Odell, of the City-road, the front and end windows being of tinted geometric designs. The gas-lighting is by Mr. Shrivell from the architect's

designs; and the warming by Mr. Grundy, Manchester.

The architect is Mr. Charles Bell, of Unicorn Court, Old Broad-street; and the builders are Messrs. Nutt, of Albany-street, whose contract for the whole is for 4,952*l*.

REFERENCES TO PLAN.

A. Porch.	G. Organ over.
B. Stairs to Gallery.	H. Vestry.
C. Chapel.	I. Minister's Vestry.
D. Communion.	K. Lobby.
E. Table.	L. W.C.
F. Pulpit.	M. Vestry.

THE GRANVILLE HALL, RAMSGATE.

We give a view of the new hall which has been built upon a piece of ground adjoining the Granville Hotel, Ramsgate, and serves to complete the block of buildings forming the hotel. The exterior of the hall is unpretending; the interior is made to have the appearance of a hall attached to a residence, set apart for private theatricals or concerts. It is, however, big enough for moderately large assemblies, a municipal dinner or a county ball. The style is Gothic, like that of the rest of the building. The hall proper is 34 ft. long, but the total length is 112 ft. It is 41 ft. high by 35 ft. wide. There is a stage with a very neat proscenium at the north end, and a gallery at the southern end. Under this gallery are two large lobbies, one used for entrance from the street, and which is reached by a flight of stone steps; the other is on a level with the hall with communication with the hotel.

The roof of the building is wagon-headed, divided by arched ribs into seven bays; the ribs are subdivided into two panels in breadth, filled in with bird's-bill matched boards of pitch-pine, varnished; the arched ribs are of the same material, also varnished, but of a darker tint, and are supported on timber cantilevers projecting from the walls, and resting on stone corbels. From each of the cantilevers a timber rod extends across the hall, with a suspending rod in centre from ridge. These rods are twisted and painted deep blue, with some gilding.

The body of the hall is well lighted, by day a lofty window in each bay; by night, with a corona suspended from each cantilever. The gallery is lighted by four corbels, on standard. The walls are at present painted of a French grey tint. There are three entrances from the street, all opening on to the floor of the hall, much confusion would be avoided in the event of a casualty by this arrangement.

The contractor for the building was J. Horne, of Ramsgate; Messrs. Richardson & Slade, of London, furnished the corona; and Mr. Meakin, of London, has his patent wind-raising and shutting apparatus in full force.

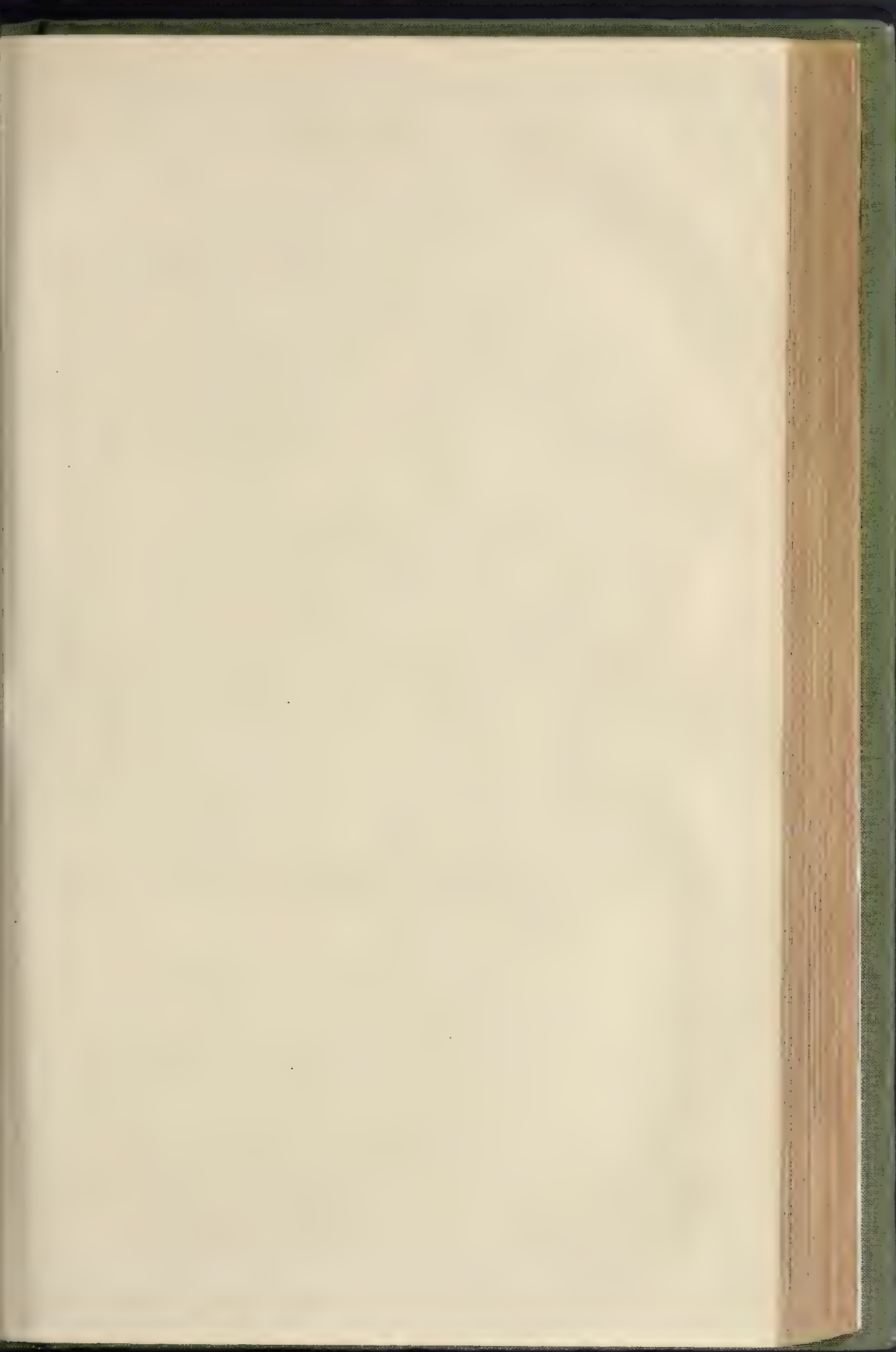
The architect is Mr. Wimperis, of Sackville street, Piccadilly.

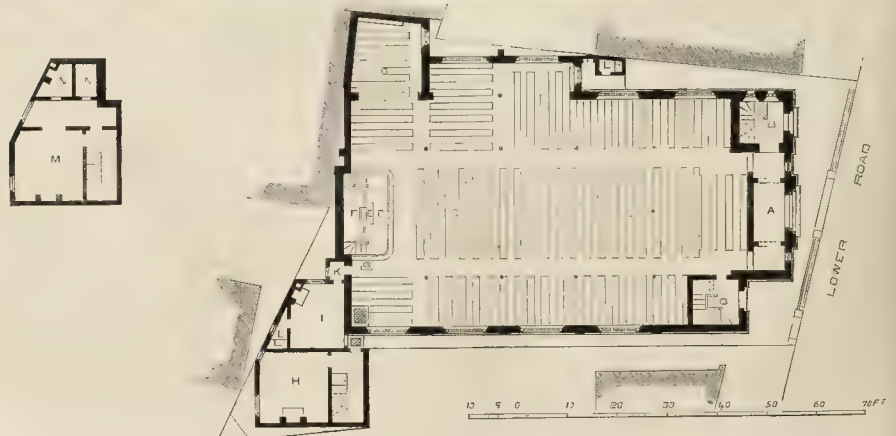
It may be mentioned that a large supper room adjoining the hall at the proscenium end is fitted up with a gallery for minstrels. The room is 41 ft. long, 31 ft. high, and 31 ft. wide, and is approached by steps down from the hall and on a level with the hotel.

GAMBLE INSTITUTE, GOUROCK.

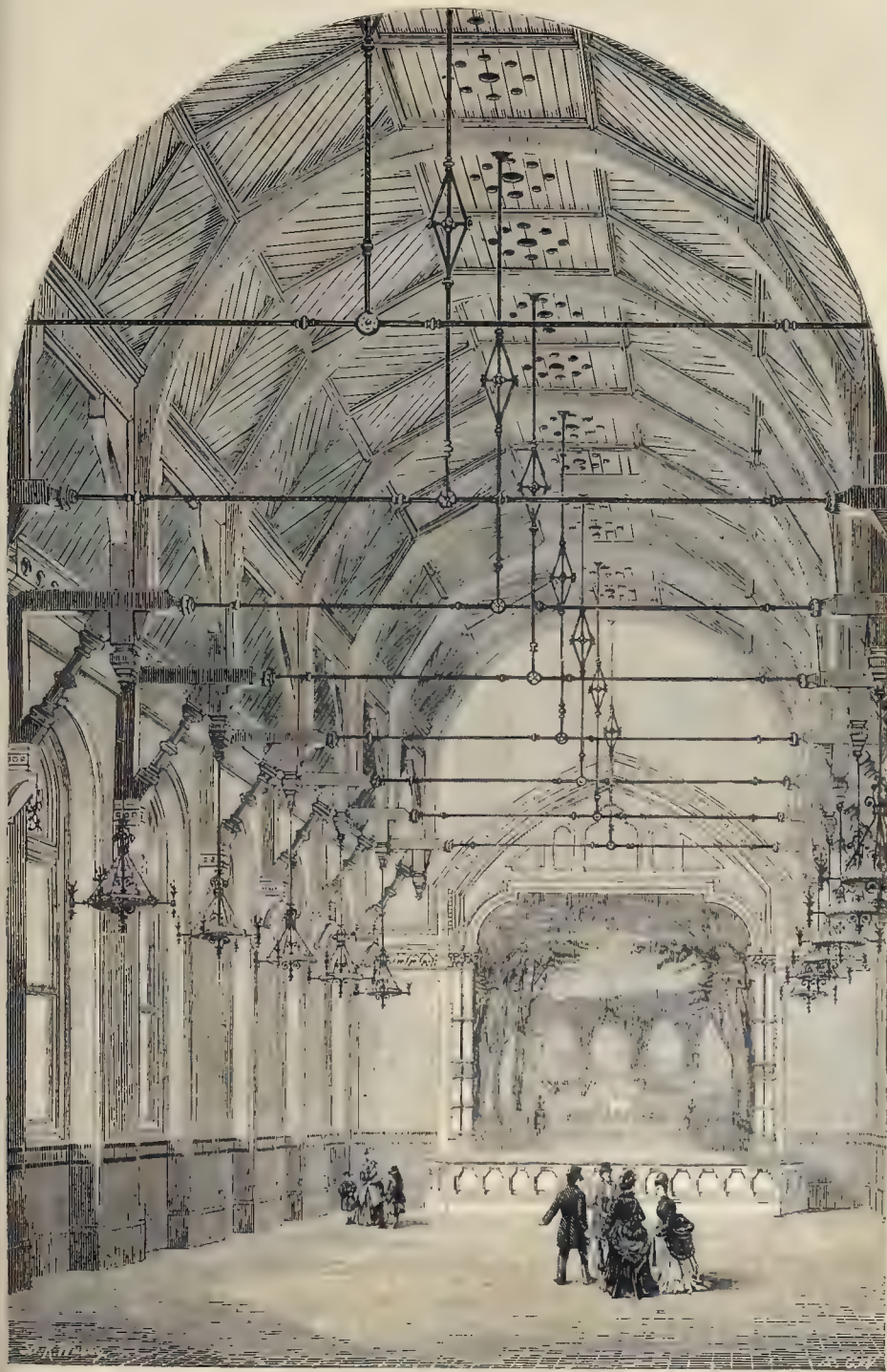
Mrs. GAMBLE, of Ashburn, having generously decided to build at Gourock, on the Clyde, a library and reading-room for the use of the inhabitants, the foundation-stone was laid on Wednesday, the 9th inst. The day was observed as a general holiday, and a procession, headed by bands of music, perambulated the town. It was arranged that Bailie Melvin should present the trowel to Mrs. Gamble, who laid the foundation-stone. The building is now in process of construction, and will comprise a large hall capable of holding 350 persons, and a lesser hall which will accommodate about 100. There will be an extensive library, coffee-room, smoking room, and a set of baths.

Kirkaldy Masons.—A meeting of the United Operative Masons of Kirkaldy has been held to consider the question of weekly wages as apprenticeship. Delegates had waited upon the various masters in town, asking them to put their men weekly; but the whole of them had refused to comply with the request, except Messrs. James Miln & Son. It was agreed to again wait on the masters, and if they still refused to grant weekly pay and have their apprentices bound, that the operatives should give their notices to leave work on the same day.





NEW WESLEYAN CHAPEL, LOWER ROAD, ROTHERHITHE.—MR. CHARLES BELL, ARCHITECT.



THE GRANVILLE HALL, RAMSGATE.—MR. WIMPERIS, ARCHITECT.

A FEW WORDS AS TO MODERN ARCHITECTURAL SCULPTURE.

This is a subject in which every young sculptor should be interested, since he has invariably to grapple with this portion of the art when about to start in life.

Taking examples of modern work into consideration, and comparing them with the works of ancient Greece and Rome, we are not in any way inclined to view the former as high art; far from it, for several reasons connected with its execution which we hope to explain presently.

Apart from the capabilities of the artist, we have to study that kind of material which will be the most available in economising the expenditure as well as in beautifying a large building. Stone, no doubt, is the most common in this country, but the quality of this material as a rule is so inferior as to render it entirely inadequate to the purposes of high art, though we are well acquainted with one kind which may be procured in this country, that would be unquestionably well adapted for internal works of high finish; but this stone is seldom used, except in the locality where it is procurable. Bronze, again, will be considered too expensive for general use in a building, and most architects probably would think its colour detrimental to the general effect. Into such questions we at present do not intend to enter. We may just mention terra cotta as a material which may be far more extensively used than it is at present, not only for the sake of economy alone, but for its durability, and its ready adaptation to that kind of decoration which calls the modeller's art into requisition. It has many advantages over stone, including that of the work being left entirely as it comes from the modeller's own hand, unless reproductions are made; and even then it gives greater facilities of being finished by the artist than the common productions which we generally see in stone.

We proceed at once to the principal part of our subject, namely, the production of architectural art; and we will also endeavour to inquire into the capacity of those who are engaged in the execution of such works. Such an inquiry would by no means confer credit on the dispensers of such work, and on the rotten system which is generally called "business," which has crept in to the annoyance of young and aspiring artists.

With the revival of the Mediæval style of architecture, sculpture, of course, became one of its dependent accessories; the architect having at his command an ornamental carver, who would not only be employed in cutting ornament, but often human heads for label terminals, and grotesque animals probably used as gargoyles. And wherever it is thought necessary to introduce the whole figure, the architect has only to apply to his carver, who at once undertakes the task irrespective of his incapacity and want of knowledge of the human form. For a moment we will just glance at the results of such untutored hands attempting the higher branches of art. The carver procures a block of stone, and we soon see him pelting away at a supposed saint, or perhaps, a virgin; modelling and pointing are out of the question, nor have they been even heard of among this class of men. We may at once conclude what the result would be from one who had but a vague knowledge of proportion and was altogether wanting in that of anatomy and the other requirements of the art. Stone which had been given into disproportionate and distorted forms was (and even is, now) set up in our churches to be gaped at, and even admired, by our art-revering public, and often enlarded by some of our Gothic architects, as being an excellent sample of Mediæval art. We have seen in churches which had been entirely built or restored by some eminent architect of the day, figures whose heads have varied from a fifth to a tenth part of the whole length; and yet these are held in high esteem by experts in Gothic art. If such opinions are to be taken as valid, we do not hesitate to pronounce the said art a nothing else but barbarous; and we doubt whether much progress can be made until architects shall have acquired a higher knowledge of art in general.

The Mediæval sculptors, no doubt, had the result of rendering in stone with a certain amount of truthfulness the foliage and the textile draperies of the period, but whenever the nude was attempted, we see not the same life-touches as in flesh as we see in his drapery. If he had studied the first principles of art, he could not have forgotten that those principles are based

upon truth. Truth is the very soul of all art. And whenever it is discarded, art at once becomes dead and corruptible; hence we see but few Mediæval examples worthy to be called high art, simply because Nature herself had not been consulted at the outset, and that truth, which she invariably teaches, had not been brought to bear upon the artist's mind with any amount of force. The great difficulty with old sculptors, no doubt, was, that there was not to be found an established school, where they could procure that knowledge of the human form which was indispensable to their art; nor had they the works of the great masters of antiquity placed before them to copy. The nude life, again, would probably be prohibited on account of their adherence to monastic views, so that they had many difficulties to contend with; and it is surprising that they should have accomplished even so much as they have.

Compare the advantages modern tuition has been able to render the art student. Schools have been established. At the Royal Academy and the British Museum he may indulge his appetite for art to satiety. There are many students who avail themselves of these institutions, some of them acquiring a great amount of proficiency in their art. But what are the effects of these institutions upon architectural art? Do our architects in any way encourage these hard-working students? I think not, or why do we so constantly see such detestable attempts in our churches, and why should men who are very little better than masons be employed? After working themselves into the good graces of the architect, they invariably thrive, and carry on a pretty good trade, but their productions are like inferior literature, "cheap and nasty," totally unworthy of the resources we have at our command for better work. It is true, within the last few years some progress has been made, though not in any way benefiting the student. The true artist has to succumb to the quack, simply because the latter has the audacity to represent himself as what he is really not; his vocation is not that of an artist, but of a talker: hence quackery has so far established itself as to be eagerly sought for by some of our architects. This part of the subject requires to be treated separately.

To return to the art-worker, who, probably after studying for some years at the Royal Academy, and having gained some of its honours, is obliged to seek his fortune where he can; most likely we may find him giving his assistance to such a man as we have mentioned above at a low rate of wages, simply because his employer has been obliged to take the work cheap himself; so that through the assistance of these students the quack has been able to succeed in doing better work than he did formerly. Even now, if we find a work tolerably well modelled, it is usually badly carved by ornamental carvers, who have never in any way studied the figure. The necessity for cheapness again prevents any length of time being spent on the work, even if there was an expert carver employed; but good figure-carvers are seldom seen in the shops of these architectural art manufacturers.

I think the reader will see that our purpose has been to point out the gross injustice done in entrusting works to incompetent men, simply because they are able to talk the architect into giving it to them. But why are some of our architects so easily duped? I say architects, because invariably whenever they are employed themselves, they employ, for the decoration in all its branches, according to their own judgment, whom they think fit. It is evident, then, that to architects we have to look for reform if we are ever to have it; but it is doubtful whether they will be inclined to such a course so long as they consider themselves sufficiently well served by the quack who is favoured with their patronage. It is high time that something should be done to forward not only the interests of art in general, but of those students who might become our greatest sculptors.

We heard a short time ago some talk about a national school for sculpture, but whether any proceedings have been taken to establish one, we have not heard. Such an establishment undoubtedly could not but confer the greatest benefit upon the lower branches of the art, and especially upon such of our students as aim to something higher.

J. M. G.

Fire in a German Town.—There has been a great fire at Meiningen, in Germany. Half the town is destroyed, and more than 3,000 persons have been rendered homeless.

THE HIGH SCHOOL, NEWCASTLE.

THE first stone of the proposed new school has been laid on an elevated site of about seven acres, overlooking the town. The school building and master's house, and boarding-house, are all connected together, the principal school front being towards Mount Pleasant, while the boarding-house and master's house face towards the public walks and Trentburn.

The principal entrance to the school building is in the centre of the Mount Pleasant front, with another entrance opposite to it from the School Close. On the left of the entrance-hall is an office for the school marshal, and a book store. The entrance-hall opens into a corridor 8 ft. wide, the full length of the building, with the large school-room, 60 ft. by 30 ft., at the upper, or east end. On the north side of the corridor are five class-rooms, 25 ft. by 17 ft., and one lecture, or large class-room, 25 ft. by 26 ft.; at the west end is the head master's class-room, or library, 30 ft. by 22 ft. At the west end of the corridor a stone staircase leads to the basement, which, owing to the fall in the ground, is at this point above the ground level. Under the head-master's class-room is a laboratory, which will be fitted up with the most modern appliances; and under the class-rooms a chemical class-room, chemical store-room, lavatory, and an apparatus-room, communicating with the lecture-room. On the same level as the principal class-rooms, and between them and the masters' house, are an assistant master's room, boarders' dining-room, 30 ft. by 17 ft., and matron's sitting-room, and store-rooms.

The whole of the first floor above the class-rooms is fitted up as one long dormitory, which is divided by wooden partitions, about 5 ft. high, into separate cubicles, for forty boarders: these would be used as studies, and also as dormitories, by the boys. Bath-room and W. C.s are provided in connexion with this dormitory. Day and night sick-rooms, bath-room, &c., for sick boys, which could be completely cut off from the rest of the boarders in case of infection, are provided. Matron's bedroom, linen-closet, and box-room complete the boarders' part of the house. The kitchens and offices are in the basement, on the same level as the laboratory.

The head-master's house contains dining, drawing, and sitting rooms, study, on the ground-floor, eight bedrooms, and two dressing-rooms, besides bath, W. C.s, and store-rooms on the first and second floors.

The whole of the school and class-rooms and dormitories will be heated by hot water, and will be thoroughly ventilated. The school close will be laid out as cricket and play grounds.

The buildings will be of red bricks, with white stone dressings, and will be of a plain Tudor style of architecture. A tower and flèche will probably be added at some future period. The contract has not been let. The architects are Messrs. Lewes & Son, of Newcastle, whose designs were selected in a limited competition.

CREMATION, CEMETERIES, AND CAMPO SANTOS.

THERE is news of cremation in earnest from Vienna. The municipality of the Austrian capital has determined, on the advice of the local sanitary authorities, to disestablish burial of the dead, as a practice injurious to the health of the living. Henceforth the dead are to be burnt on scientific principles. Cremation is not absolutely declared to be compulsory, so that the 20,000 Viennese who die annually may perhaps be permitted to say with their latest breath whether they have a preference for the fiery furnace or the dank pit. The authorities, however, seem to be enamoured of cremation for economical as well as sanitary reasons, so that as soon as the municipal ovens are got into working order there may be a peremptory prohibition of burial as a public "nuisance." What with the doings of the German cremationists in New York, the boasted success of grim experiments in Leipzig, and this adoption of the burying process by the public authorities of Vienna, cremation would seem to have progressed beyond the stage of abstract discussion, and become a stern fact of this terribly scientific age. But do we know that cremation already exists as a long-established practice in the British empire itself? We scarcely do; yet read the following master-of-fact paragraph from the *Times of India* of the 6th ult. :—

"The remains of the Hon. Narayan Wansodeo, member of the Legislative Council of Bombay, whose lamented

death through the fall of a building was reported by telegraph, were solemnly cremated on the burning-ground at Sonapore. The body was placed, after it was recovered from under the ruins, on the floor of a large apartment at the rear of one of the wings of the house, and the female members of the family, seating themselves around it, gave themselves up to uncontrollable grief. The unhappy widow was overwhelmed by the dreadful calamity which had befallen her. A great number of the leading members of the European and various native communities called and took a last look at the remains as they lay covered with a white robe, the lower part of the face being alone exposed. It was at first intended to perform the last offices on the ground adjacent to the Temple at Walkeshwar, but ultimately it was considered that the burning-ground at Sonapore would be a more appropriate scene, for there Mr. Narayan had, at considerable cost, erected a place of shelter for mourners, planted trees, and in other ways shown his munificence. The procession started about seven p.m. In three hours only a handful of ashes remained of him who was but that morning the influential leader of the Hindoo community, full of life and hope."

In a lengthy preface to a second edition of his *Sermon on Cremation*, the Bishop of Lincoln says that Christianity holds a middle course between that stocial and cynical indifference which would sternly forbid, or sneeringly scoff, at expressions of sorrow for the departed, and that immoderate grief which either betokens a lack of faith in the resurrection, or seeks to display itself in extravagant ostentation. In early days life was a prison to Christians and death a joyful deliverance from it. After quoting from St. Cyprian's treatise, "De Mortalitate," and from other fathers, the right reverend prelate observes that both funeral obsequies and mourning attire at funerals, and subsequently, need reformation. The improvement of churchyards in rural districts is even more urgent. While much has been effected in the last fifty years for the restoration and improvement of churches, comparatively little has been done for churchyards. A rural churchyard may, if duly cared for, be made to exercise ministerial functions scarcely less effective for good than the Church itself. It is often placed in a sequestered spot and quiet seclusion, and is, therefore, favourable to religious meditation and prayer. The churchyard may perform a religious work. But this is too often marred and frustrated, the Bishop contends, by broken and decayed walls, the inroads of cattle, the character of the tombstones, which make it doubtful whether they belong to a Pagan burying-place or Christian cemetery; while sometimes the selfishness and vanity of men obtrude themselves in massive rectangular altar-tombs (how unlike those of a more devotional age), fenced round with a jealous iron palisade or *chevaux de frise*, and enclosing a wild conservatory of docks and nettles. With regard to public cemeteries, the Bishop says, "Why should not cemetery companies or religious guilds be formed, under ecclesiastical authority, by the co-operation of the laity with the clergy for devout Christian burial of the dead of our great cities and towns? Many more cemeteries than now exist will ere long be wanted. The outcry for cremation itself is a sufficient proof of this. Let that demand, which will become louder and louder, be met by the Christian Church acting on her own principles in her own way."

The right reverend prelate then suggests an English Campo Santo. Why should not a Nicolas of Pisa be associated with a Giovanni by congenial works of Christian sculpture? Why should not English Orgagnas come forth and adorn the walls of its cloistral arcades with frescoes representing such sacred subjects as are found in the catacombs, and which speak of death, burial, resurrection, and ascension, and which, while they charm the eye, cheer also the heart of the spectator? Might not, also, some noble church be erected in connexion with the holy precincts, and add fresh beauty and sanctity to it, as the Campo Santo at Pisa derives a solemn dignity from its association with the group of sacred buildings near it, the graceful baptistry, the mysterious campanile, and the majestic cathedral? The bishop would have the painter's pencil employed to reproduce the Christian teaching of the ancient catacombs.

Proposed Opening of Lincoln's-Inn Gardens to the Public.—A memorial, signed by the clergy, district visitors, and influential tradesmen of the locality, has been presented to the Benchers of the Honourable Society of Lincoln's-inn, praying that body to be pleased to take steps for the withdrawal of the restriction as to the access to the Lincoln's-inn Gardens to the general public, and follow the example of the Benchers of the Temple, to throw open the same at stated hours as a place of public recreation.

STAINED GLASS IN SCOTLAND.

A NUMBER of the friends of the late Earl of Dalhousie, belonging to various denominations, have suggested the propriety of placing a memorial window in the new Free Church, Dunkeld, now in course of erection, and the congregation at a recent meeting most cordially entertained the proposal. The many noble qualities his lordship possessed, and especially the uniform kindness he manifested towards the congregation from his first connexion with them until he laid the foundation of their new church in June last, have prompted the suggestion. After consultation with the architect it is found that from 200*l.* to 300*l.* will be required to meet the desired end, and this sum it is proposed to raise by contributions from the congregation and friends.

The committee appointed to carry out the wishes of the subscribers to a memorial of the late Lord Marjoribanks, resolved upon the erection of a stained-glass window in Norham Church, and some time since selected a design submitted by Mr. Baguley, of Newcastle. The work has now been completed to the satisfaction of the committee, and consists of a window in the chancel of the church, the subjects being "The Good Samaritan" and "The Vision of Cornelius." A memorial brass plate has been placed next to the window, designed by the same artist, with the following inscription:—"In grateful memory of David Baron Marjoribanks, of Ladykirk, by contribution."

The fine five-light window in the chancel of St. Peter's English Episcopal Church, Montrose, has been filled with stained glass by Messrs. Cotter & Co. of London. A life-size figure of Our Saviour occupies the centre division of the window; whilst in the two divisions, on either side, are figures of the four Evangelists. The nimbus, dresses, &c., differ in each figure, while the ornamentation in the upper portion of each division consists of fruit without paint. The words, "Ecce Homo" are placed at the bottom of the centre compartment. Messrs. Cotter & Co. recently supplied the memorial windows erected in Crathie Church by her Majesty in memory of the Prince Consort and the Rev. Norman McLeod.

Two painted glass windows have been recently exhibited in the Royal Glass Manufactory at Munich that have been executed for a church at Dalry, near Glasgow. German critics speak of them in high terms of commendation.

STORAGE OF WATER.

SIR,—In reference to the above subject, it may be worth mentioning that, for more than twenty years I occupied a house near Liverpool, where every drop of water made use of, for all purposes, fell in rain on the roof. It was an old house, originally built by the owner for his own residence, in a district not then supplied by street mains, and there was no spring on the premises. A large tank was constructed under the back kitchen, into which all the rain that fell on the roof was conveyed, passing through a bed of sand and gravel, so as to be pumped up perfectly clear, but with rather a smoky taste. This was removed by passing it through an ordinary charcoal filter for drinking. The quality of the water was most excellent for washing, cooking, and making tea; and on submitting it once to an analytic chemist, he pronounced it to be remarkably pure. Our household consisted of three in family (with occasional visitors) and two servants. There was a wash-house with boiler on the premises, and most of the washing was done at home; a shower-bath was used daily, and we never thought of restricting ourselves in the use of water in any way, watering the garden included. Yet we never knew what it was to be short of water. One summer, after a drought for many weeks, feeling curious to know how our supply was holding out, I removed a movable flagstone in the floor of the back kitchen, and measured the depth of water, which proved to be 5 ft. Once only during the whole term of our long residence, was the tank emptied and cleaned, and then not because the quality of the water was at all impaired, but simply because it seemed desirable from lapse of time, and some repairs in the pipes presented a convenient opportunity. The tank, of course, was cemented, not lined, with lead. I have often thought that houses might with great advantage be more generally constructed so as to store the rainwater in a similar manner, which could, I imagine, be easily done so as to

preclude all possibility of sewage making its way into the tank, which is the only conceivable objection that occurs to me. J. R.

A CARILLON, OR SET OF CHIMES, FOR ST. PAUL'S CATHEDRAL.

In the *Times*, of the 2nd of October last, it was intimated that St. Paul's is to have a set of chimes if the needful funds can be raised, and about the same time certain other newspapers told us that "at last our metropolitan cathedral is to have a carillon!" but very lately some one has gone much further, and stated, "There is a project for a large peal of ten or twelve bells for St. Paul's Cathedral, and I have recommended a B tenor of 3 tons (!) for that."

Now, with a view to show that I have some reason for writing on the subject, it may be mentioned that, being an amateur musician, I have surveyed all the more important bells in the metropolis, as well as the finest carillons in Belgium, and often listened critically to their music. I have also given much attention to the various qualities of the sounds emitted by bells in general. The music produced by the ringing of a good peal of bells, at a proper time and place, and in moderation, is very pleasing to the ear; but the ringing of a large and extremely heavy peal in a situation like that of St. Paul's, would, in my opinion, become a nuisance, and probably cause a decrease in the value of house property in the neighbourhood. At a short distance from the cathedral are the far-famed "Bow bells," with a grand tenor of 53 cwt., to say nothing about St. Bride's and other peals of ten or twelve. A peal of large and heavy bells is, then, by no means desirable at St. Paul's cathedral.

If, however, the dean and chapter should sanction the other scheme, and if the necessary funds can be raised for a carillon, or set of chimes, to be put up in the north-western tower, though surely this is very doubtful,—I would recommend a series of comparatively small bells tuned to the chromatic scale, similar to those in the tower of Antwerp Cathedral. The machine, should, of course, be constructed by Messrs. Gillett & Bland, of Croydon.

THOMAS WALESBY.

BILTON HOUSE.

THIS mansion, about a mile and a half from Rugby, south-west, was purchased by Mr. Joseph Addison, A.D. 1711. On his death, the house and manor devolved upon his sole daughter, who resided here for many years, and was buried in the chancel of the adjacent church, without a monument. The estate then devolved upon the Hon. John Simpson. In Smith's "History of Warwickshire" (1830), this house is described as a spacious, irregular edifice, constructed at different periods. The chief suite of rooms is of the style of architecture which prevailed in the reign of King James I., erected, probably, by the Brougham family, who then owned the estate; the remainder of the house was erected, probably, by Mr. Addison for the reception of his wife, the Countess of Warwick. The gardens are described as extensive and kept up in the olden style: the house was entered by iron folding gates, leading to an ancient porch. The avenue of trees, which I saw it many years since, appeared to me to have been the original of that mentioned in the *Spectator*, No. 110, as being suitable for an evening walk, and for reflection. The church is a desirable specimen of Gothic architecture, having an octagonal spire, which springs from a square tower.

The plain interior was divided by an open-worked stone screen. The *Gentleman's Magazine*, vol. 67, part i., pp. 256, 385, contains an obituary notice of Miss Addison, who died in 1797, aged 79 years, unmarried. Burke's "Visitation of Seats," first series, vol. ii., 1853, contains an engraving of the modern edifice on Bilton Grange, near Rugby, described as the "only specimen of Pugin's Domestic architecture in the fashion of the Catholic days of Henry VIII. and Cardinal Wolsey's Hampton Court." Bilton House is referred to, but not engraved, in the second series of this work.

C. COOKE.

The Odessa Theatre Competition.—The *Gazette des Architectes et du Bâtiment* for August 31st (Morel & Co., 13, Rue Bonaparte, Paris), contains the conditions of this competition (open to all nations), together with plan and sections of the site, and current prices of materials.

DAMAGE BY LIGHTNING TO ST. GILES'S CATHEDRAL, EDINBURGH.

The damage recently caused by lightning to the crown of St. Giles's Cathedral, Edinburgh, has proved much more serious than was at first anticipated. The spire was struck just underneath the vane, and as there was no conductor, the lightning passed downwards, until it made its way through the masonry of the staircase, which forms one of the buttresses of the crown. The stones have been more or less shattered and displaced at the point of contact, and two of the pinnacles have been knocked down. One of them fell on the platform beneath, doing considerable damage, and the other lighted on the roof of one of the churches, but fortunately at a part above one of the walls, or the debris would have gone through the slates and fallen into the church. In the staircase the lightning made a breach from 1 in. to 2 in. wide, right through the masonry, which has a blackened appearance denoting the line of passage taken by the lightning. Mr. Fraser, burgh engineer, has made an examination of the building, and reported to the Procurator Fiscal. The damage is estimated at between 200l. and 300l.

FREE LIBRARY FOR CHEETHAM.

At a meeting of the Free Libraries Committee of the Council, held the 25th day of August, it was resolved to erect a free library at Cheetham, and that Messrs. Clegg & Knowles, Messrs. Speckman & Charlesworth, Messrs. Price & Linklater, and Messrs. Barker & Ellis be asked to submit designs for the building.

THE LATE SIR JOHN RENNIE.

We record with regret the death of this distinguished engineer. Sir John Rennie, Past President of the Institution of Civil Engineers, was born August 30, 1794. He first assisted his father, the late John Rennie, in building both Southwark and Waterloo Bridges. After the death of his father, in 1821, he succeeded to him as Engineer to the Admiralty, a post he held for many years. Among his more important works, we may mention the London Bridge, for which he received the honour of knighthood, Sheerness Dockyard, the completion of Ramsgate Harbour, and Plymouth Breakwater, commenced by his father, and the Lonsdale's Docks at Whitehaven, a portion of which he carried out, and the carrying out, for a number of years, of the great system of drainage and land reclamation in the Lincolnshire fens. He was also the author of a fine work on Harbours, of which Her Majesty was graciously pleased to accept the dedication, and which he received tokens of honour from the Emperors of Russia and Austria. He was also the author of a "Monograph on Plymouth Breakwater," and a small "History of Engineering," in the form of a Presidential Address to the Institution of Civil Engineers. In conjunction with his late brother, G. Rennie, he contributed to introduce the screw propeller into the navy, and erected the machinery for the mints of Bombay, Calcutta, and Mexico. Also they erected the Royal Clarence Victualling Yard at Plymouth, and Sir John Rennie was the first to conceive the use of the diving-bell in engineering works. Sir John Rennie was admittedly an authority on all subjects connected with hydraulic engineering, harbours, canals, drainage, irrigation, the storage of water, and the management of rivers; and his pamphlet on the "Drainage of Lombardy" having attracted the notice of the Italian Premier, Signor Sella, he induced the King of Italy to confer upon him the order of St. Maurice and St. Lazarus. Sir John long possessed a wide reputation on the Continent, as may be gathered not only from the remarks, but from the fact that he conducted the harbour of Ponte Delgada in the Azores, that he was a Knight of the Tower and Sword of Portugal, of the Wess of Sweden, and also a member of the Academy of Science of Stockholm, and of the Austrian Society of Engineers. Sir John was further well versed in general literature; and besides being devoted to most of the scientific and learned studies in the metropolis, he was long an active member of the Royal Society and Meteorological Committee, and one of the Council, and was also chairman of the Juries at the Exhibition, 1862. In later years, owing to age and increasing infirmities, he had retired almost entirely from

active life and public notice, and finally died September 3, 1874. His kindness of heart won him numerous friends; and while many will regret his loss, he will have left few enemies.

NEW JEWISH SYNAGOGUE IN LIVERPOOL.

The new Jewish synagogue which has been erected for the Liverpool Old Hebrew congregation, in Prince's-road, has been consecrated, by the Rev. Dr. N. Adler, chief rabbi. The cost of the building, exclusive of the decorations, will be about 18,000l. Accommodation will be afforded for about 800.

The style of architecture is described by our authority, the local *Journal*, as being eclectic, and selected from both Eastern and Western schools of art, blended together with the sole view of producing a pleasing composition, with enough of the Eastern feeling to render it suggestive, and enough of the Western severity to make it appropriate for a street building in an English town. The Mosque style, which has almost universally been adopted for the modern synagogues, is, in this building, entirely absent, the architects believing that the Mosque style is both unsuggestive and inappropriate for a Jewish place of worship. It is said that many hints were derived from the architectural remains recently brought to light in Jerusalem, and that they formed the basis for many of the ornamental features of the building. On plan the synagogue is a parallelogram, 90 ft. long by 56 ft. wide, with a sacarium projected eastward, and a large entrance vestibule at the west end. The body or nave of the building is 26 ft. wide by 48 ft. high to the vaulted roof, and opens into the lateral aisles through twelve lofty arches, supported on tapered octagonal columns, with spreading capitals of foliage. Above these arches is the clearstory of thirty-six circular-headed windows, arranged in groups of three, in the pointed transverse vaults of the roof. The arches of the clearstory windows are supported on pilasters, with capitals of foliage. The roof is a barrel vault, intersected with transverse pointed vaults, and is specially designed to receive the painted decoration shown on the original competition drawing of the interior by the architects. In the lateral aisles, and at the west end, over the entrance-vestibule, are placed the ladies' galleries, finished towards the nave with gallery-fronts, constructed of pitch-pine, with ebonised columns, having gilded capitals and bases, and with capping covered with crimson cloth. The rest of the decoration proposed for these gallery-fronts will be done along with the general work when the building is perfectly dry.

The sacarium is separated from the nave by an elaborate cusped arch, supported on groups of red and green marble columns, and is roofed in a different way from the nave, being of a wagon form, divided into square panels by moulded ribs. The decoration for this ceiling will be richer than any other in the building. Across the sacarium is an arched screen, from the centre of which the ark is projected. The ark has been pronounced to be one of the finest in Europe. It stands on a polished marble platform, five steps high, and is itself entirely composed of polished marbles of various colours, alabaster, and Caen stone, and stands 25 ft. high above the platform, terminating upwards in a group of five domes on open arcades. The whole of the Caen stone, carved work, and domes are to be enriched with gold and colours. At the back of the ark is the choir gallery, lighted with a large rose-window, which corresponds with the window in the western façade. In front of the ark platform is placed the pulpit, designed to strictly accord with the ark, and constructed entirely of polished marbles and carved alabaster. Above the platform, in front of the ark, hangs the "perpetual light," a lamp of metal gilt, and at each end of the platform, on black marble bases, stand seven branch candlesticks in polished brass.

The reading-desk, an important piece of furniture in a synagogue, is placed in the open space left between the seats in the nave; it is of an ornamental character, and constructed of oak, relieved with rosewood columns, carved foliage, and figured pitch pine panels. The whole of the seats throughout the building are of pitch pine, with arms and upholstered cushions. The whole of the windows lighting the interior of the synagogue are of stained glass in floral designs. The gas-lighting is distributed without glare. The

front entrance vestibule, measuring 60 ft. long by 19 ft. wide, gives access to the synagogue through three double-swing doors, and to the ladies' galleries by two broad and easy staircases, on the landings of which open two ladies' retiring-rooms. The position of the synagogue as a street building with only one free frontage has dictated the keeping of the sides and east end somewhat simple in design, but the carved stonework and such like are carried as connecting links all round the building. The centre feature is the west gable of the nave, flanked by two octagonal turrets about 100 ft. high, terminating in carved stone domed tabernacles. In the gable is placed the grand portal, executed in carved and moulded stonework, with jambs of red brick; and nook shafts and centre column of polished granite. The doors are of oak, hung with wrought-iron hinges. The height of this portal to the top of the outer arch is 23 ft. Over this doorway is a rose-window, deeply recessed within a cusped and moulded arch, supported on wall columns of carved stone, and surmounted with a corbelled and pierced parapet of stone. On each side of the main gable lateral wings are projected, terminating in gables flanked with four square turrets, which terminate with open domed tabernacles. These wings are pierced with two orders of windows, executed in carved and moulded stonework, with polished granite and twisted stone columns. Again projecting laterally from the gables of the wings are semicircular buildings containing the staircases to the galleries. These are designed so as to artistically terminate the façade east and west. The façade measures 96 ft. from east to west.

A boundary wall, of design in accordance with the building, extends along Prince's-road, pierced with three gateways, to give access to the grounds. The works are executed from the designs and under the superintendence of Messrs. W. & G. Audley, architects. The general contractors are Messrs. Jones & Sons. The ark, pulpit, and general carving are executed by Mr. A. Norbury; the stained glass by Messrs. R. B. Edmundson & Son, of Manchester; the gasfittings by Messrs. Hart, Son, Peard, & Co., of London; and the other minor works by other well-known firms.

ASSOCIATION OF SANITARY ENGINEERS AND SURVEYORS.

The fifth meeting of the District Committee of this Association for the Midlands was held on Saturday before last in St. Mary's Hall, Coventry. There were present the following members of Council:—Mr. E. Pritchard, Assoc. Inst. C.E., hon. sec. for Midlands, Warwick; Mr. H. Atty, hon. sec. for Yorkshire, Keighley; Mr. E. L. Stephens, C.E., Leicester; Messrs. E. J. Purnell, Coventry; R. Davidson, Leamington; B. H. Vale, Stow-on-the-Wold; S. Harper, Assoc. Inst. C.E., Merthyr Tydvil; G. Cole, Hereford; I. H. Pidcock, Northampton; A. Comilar, Kidderminster; J. Boys, Walsall; I. Lobley, Hanley; E. Sherman, Wellingborough; B. Baker, Willenhall. List of visitors:—Alderman Marriott, Coventry; Dr. Fenton, medical officer of health, Coventry; Mr. F. Wyles, F.G.S., Allesley Hall, Coventry; Mr. Thomas Whitley, Coventry; Mr. William Boon, Coventry; Mr. W. J. Bagdally, assistant surveyor, Leamington; Mr. John Baker, assistant surveyor, Warwick; Mr. A. J. Ingram, Warwick; Mr. A. J. Fairlie, Warwick.

In the unavoidable absence of Mr. Lewis Angell, the president of the Association, Mr. Purnell, C.E., surveyor to the Coventry Urban Sanitary Authority, took the chair.

Amongst other proceedings, the hon. secretary read a letter from Mr. Rawlinson, C.E., the former part of which was not for publication, but which dealt with the question of the defecation of sewage by chemical processes. In the latter part of the letter he said that he thoroughly approved of the Association, and hoped it would prosper and become a power in the land.

The company then, under the leadership of Mr. Purnell, paid a visit to the silk factory of Mr. T. Stevens, and also to the what factory of Mr. Wallen, at both of which what was seen very much interested the members of the Association and the visitors. They then returned to the Craven Arms Hotel, from whence they were conveyed in an omnibus drawn by four horses to the sewage works at Whitley, where they were met by Mr. Melliss, C.E.

engineer to the company, and Mr. Collington, the manager of the Coventry works, acting on behalf of the General Sewage Manure Company. The gentlemen were taken over the works, and various steps in the process were explained in detail by Mr. Collington, the members of the Association asking a number of questions, which were freely and courteously answered. The effluent water was seen under very unfavourable circumstances owing to the violent storms which had occurred during the morning,—one, in fact, a very short time before the party reached the works. In consequence of this the outflowing water was mixed with a considerable quantity of mud, and presented a very dark appearance, which tended to unfavourably impress the visitors with the efficacy of the process. Mr. Collington battled against the adverse circumstances, and strove in every way to show that the dark colour of the water had no bearing whatever upon the general mode of treatment adopted, but it appeared that after all his efforts an impression was left upon the minds of the majority of those present less favourable than probably would have been the case if the water had been clearer.

The company then re-entered the omnibuses, and were driven to the waterworks at Spion-cott, where the Diamond Boring Company are engaged in sinking a shaft for a further supply of water. When the visitors reached the works, the drill was not working, in consequence of an accident. After waiting some little time, operations were commenced, and watched with considerable interest for a few minutes, the members crowding the small platform to get as near a view as possible of the action of the machinery. At this point an accident with a strap stopped all further operations. The process adopted by the Diamond Boring Company was explained in detail, and subsequently the party adjourned to a quiet part of the grounds, where Mr. Purnell, city surveyor, read a paper, containing a description of the city waterworks and the various borings.

The party inspected the engines, the various points of which were explained by Mr. Purnell, and then returned to St. Mary's Hall, Mr. Lewis Angell (president), presiding.

The first business was the reading of a paper, by Mr. Mellis, C.E., on the sewage process, to which we shall have occasion to recur.

The company then adjourned to the Craven Arms to dinner.

THE MATERIALS OF NORTHUMBERLAND HOUSE.

THE sale of the first portion of the building materials and structural decorations of Northumberland House has occupied three days during the present week. The sale commenced on Tuesday last, when the east side of the quadrangle, the grand staircase, and the stables and coach-houses, and yard, were disposed of. The number of lots included in the day's sale was 150, and of these twenty-five lots belonged to the grand staircase, consisting principally of valuable marble of varied work and character. This portion of the property attracted a large number of connoisseurs, as well as ordinary purchasers, and the sums which the various lots realised will be interesting. The staircase itself, as stated in the catalogue, consisted of the centre flight of thirteen marble steps, 7 ft. wide, and two side flights of sixteen steps, each 5 ft. 4 in. wide, with centre landing 22 ft. 4 in. by 6 ft. 9 in. by 6 in. thick, polished both sides, 70 ft. run of marble skirting, the polished marble sides under centre flight with skirting and pilasters, two circular plinths, and handsome and richly-gilt ornate scroll balustrade, with moulded Spanish mahogany handrail. This lot, for which 100l. were first offered, was sold for 360l. The several other lots connected with the staircase were sold for the following sums:—Four marble steps, 11 ft. wide, and two marble plinths, 5 ft. 8 in. long by 2 ft. 8 in. high, 13l.; marble skirting round the top landing, 5l. 10s.; carved scroll pattern statuary marble skirting, with marble capping, 2½ in. thick, and ovolo moulding and marble shelf, 13 ft. 10 in. by 2 ft. 5½ in., 27l. 5s.; black and white marble paving on upper landing, 310 ft. 16l.; ditto on middle landing, 440 ft., 30l.; ditto, at foot of staircase, 270 ft., 18l.; marble skirting and two plinths, 2l. 6s.; a pair of Verd antique scagliola, three-quarter columns, 13 ft. 8 in. high, with metal capitals and plinths, 18l. 18s.; three pairs of capital pilasters to correspond, 10l. 10s.; a similar lot, 11l. 10s.; two pairs of flat pilasters to corre-

spond, 12l. 15s.; ditto, ditto, 13l.; a pair of whole columns to correspond, 19l. 10s.; a pair of ditto, at foot of staircase, 14l. 10s.; two pairs of pilasters to correspond, 8l. 5s.; the Sienna scagliola panels and lining on walls above upper landing, sides of staircase, walls of music-room, and at foot of staircase, in four lots, realised only 5l. 14s., it appearing to be the general opinion of those present that they could not be removed without the face being broken and destroyed; a pair of polished vein marble doorways, with moulded architraves, and openings 7 ft. 7 in. by 3 ft. 8 in., 24l.; three single ditto, with openings 10 ft. by 5 ft., and 9 ft. by 4 ft., 12l. 5s.; the total sum realised by the staircase being 627l. The materials in the east side of the quadrangle generally, apart from the staircase, realised an aggregate sum of 545l., the lead flats, gutters, hips, and ridges, and the lead and iron rain-water pipes in this part of the building fetching 189l.; whilst the main outer and inner walls of the block, which were divided into two lots, and which were described as consisting of Portland-stone ashlar, stone blocking, cornice, stringing, window and door dressings, and the stock brickwork, was sold for 86l. The materials of the stables, coach-houses, and yard realised 518l., the lead-flats, gutters, hips, ridges, the lead and iron rain-water pipes, and iron arched gutters being sold for 145l., and the stock brickwork of the coach-houses and stables for 82l. The entire proceeds of the day's sale amounted to 1,690l.

The sale on Wednesday consisted of that part of the mansion described in the catalogue as the centre building, the northern frontage forming the south side of the quadrangle, and the south elevation being known as the garden front. The first lots sold were the materials at the top of the building, under the lead flats, consisting of boards and beams, gutter-boards, boarded and timber floors, window-sashes, and doors. These were in twenty lots, which together realised 83l. 13s. Three doors in the large dining-room, and three in the glass drawing-room, were sold for 34l. The floor of the large drawing-room was sold for 30l. and that of the large dining-room for 31l., and the floors of the several other rooms in proportion. The materials of the block itself, which had been apportioned in thirty-five lots, were the last portions disposed of during the day's sale, and fetched an aggregate sum of 1,010l. 16s. The entire proceeds of the day's sale amounted to 1,884l.

On Thursday, the materials of the west side of the quadrangle were sold, consisting chiefly of the ball-room buildings and the grand ball-room and corridor. The proceeds of the day's sale amounted to 1,400l. 13s. 6d.

A RIGHTEOUS STRIKE.

IN allusion to the disregard of large employers of labour to affording a decent water supply to cottages and homes of working men in the north of England, *the Builder*, a few weeks back, noticed a report of a speech delivered by a clergyman who advised the employers to "strike" for water and decency. Last week a large body of men, some 800, employed at the Trimdon Collieries, Durham, took the advice to heart and then threw down their tools, much to the astonishment of Messrs. Wood & Co., the owners of the pits, and men and boys are now out on a water and water-closet strike. The men, whose families number some 3,000, gave their employers notice that they had suffered almost a martyrdom for want of water for drinking and domestic purposes. That their complaints had at first been unheeded and then put off from day to day. That Acts of Parliament, backed by Government Local Boards in London, were treated as dead letters and winked at; and that it was time to see what the men could do in the matter by pressure of a strike; and that unless water and decent accommodation were afforded they would no longer work or pay rent. The men have since made a further demand of two pints of water to take down the pits, with each man for drinking purposes, and a good supply for washing themselves in the mines as well as at their homes.

The owners are now searching the surrounding districts for water in sober earnestness and no strike was ever inaugurated with better wishes for success from outsiders than the one above noted.

That the Trimdon men will be followed, throughout Northumberland, Durham, Lancashire and Staffordshire, where water is the last

thing cared for by mine and land owners, may be surmised from the fact of the vast body of men employed at the Brandon and Roynon Collieries, sending a strong deputation to the Durham Board of Guardians. The spokesman said, "We are all suffering from want of water. We have done all we could to get a supply, but have been unable to do so, and we now come into the City of Durham to ask you if you can do anything for us. The little water we have is very nasty both for making tea and drinking. We complain both of quality and quantity. All we get is from the pit, and we have to carry it there. There is no proper supply."

It remains to be seen what a "strike" for decency and water will effect.

MASTERS AND MEN.

ANOTHER thirty foremen and clerks, in the employ of Messrs. Hill, Higgs, & Hill, builders, of Crown Works, South Lambeth, were entertained at a dinner on Saturday last, at Kenyon House, Clapham, by Mr. Higgs, sen., on his retiring from business. In the course of it, Mr. Rowland Hill proposed the health of Mr. Higgs, and expressed a hope that the new firm of Hill, Higgs, & Hill would uphold the character of the two old firms of Mr. Higgs and Messrs. Hill and Sons, which had been carried on many years in a successful manner; he saw no fear, for they had premises four acres in extent, and large additions of machinery. The success of the new firm was then proposed and responded to. Mr. Hill, in proposing the health of their foremen coupled with the toast the name of Mr. Hawkins, whose character he was pleased to speak of in high terms after nineteen years' connexion. He also proposed the health of his late foreman, Mr. T. Seward, in whom he had been able to place confidence for nearly twenty-five years. This of course pleased Mr. Seward, who said so in reply. It was altogether a very pleasant meeting.

The clerks and foremen of the same firm and party of friends met at the Ordnance Arms, Woking, to present a testimonial to their late manager, Mr. T. Seward, to show their appreciation of his kindness to all employed under his management. It consisted of a timepiece, mounted with a bronze figure. Mr. Jarrett, long connected with the firm, was called upon to make the presentation, which, it is unnecessary to say, Mr. Seward received very gratefully.

CARBONIC ACID AS A MOTIVE POWER.

MUCH interest has recently been created in Holland by the publication, in Prof. Huizinga's *Journal*, of an article descriptive of Dr. Beins' "Carbolum Motor," which is spoken of as "the successor of steam." It appears, says *the Mining Journal*, that for many years Dr. Beins, of Groningen, assisted by his brother-in-law, Mr. J. F. Beins, manager of the Netherlands Soda Factory at Amsterdam, have been engaged in experiments, with a view of transforming heat into mechanical power more advantageously than is done in the steam and other engines at present in use. In one of these experiments they sought to find what degree of tension carbonic acid given off by bicarbonate of soda would have, and were surprised and pleased to find that this sodium salt (or the corresponding potassium salt) in a dry pulverised state, or in an aqueous solution, when heated in a closed place gives off a portion of the carbonic acid which is condensed at the cold end of the space so that at a temperature of 300 to 400 C. high, carbonic acid can be distilled out with a tension of 60 or 60 atmospheres. Dr. Beins has taken the experiment to several scientific men in Holland, who have taken great interest in the matter. The compressed state of the gas is a condition of importance for its application to technical chemistry, and Dr. Beins has found that the liquid acid, which he calls, we think, fortunately, "carbolum," supplies an excellent motive power under certain circumstances. The liquid has nothing to do with carbonic acid, if the "um" were thought essential in its nomenclature it ought to have been called carboneum, rather than carbolum.

The invention has been examined by official Commission in Holland, and Dr. B.

*The public analyst for the county of Durham, August 10th, thus reports:—"I have examined and analysed water left at my laboratory, and find it to be contaminated with sewage, and is perfectly unfit for drinking. Gravimetrically: total solid matter 35.3; chlorine, 6.19; free ammonia, 0.0155; albumen ammonia, 0.00979."

states that the late Dutch Minister of the Navy has taken great interest in the project for applying the invention for sub-marine vessels. The Commission, it seems, agreed with the inventor regarding the main points; but, for reasons independent of the project itself, the government has not yet resolved upon its immediate adoption. He asserts that freezing-machines, working by evaporation of carbolicum, produce ice at less cost than any existing freezing apparatus; and that, as regards this general usefulness of carbolic acid, an inexhaustible store is obtainable from common chalk.

COMPETITIONS.

THE designs of Messrs. Hay & Oliver, of Great James-street, Bedford-row, have been chosen in the open competition for Board Schools at New-castle-under-Lyme, to accommodate 800 children. Messrs. Hay & Oliver have also been successful in the competition for Holbeck Grammar School.

THE COST OF

THE METROPOLIS BUILDINGS BILL AND THE VESTRIES.

THE amount paid to counsel engaged in the Metropolitan Buildings Bill last session, 1,794*l.*, was considered by many of the vestries excessive, and at the meeting of the Shoreditch Vestry, last week, there was a rather warm discussion on the subject, in the course of which certain resolutions of the Metropolitan Board of Works were the reverse of complimentary. Mr. Rooke, a representative of the vestry at the Metropolitan Board, having admitted that 1,794*l.* had been paid to counsel in connexion with the abandoned Bill, added that the Parliamentary committee of the Board had been instructed to prepare and lay before the Board, as soon after the recess as possible, a return showing the whole of the charges connected with the preparation and introduction of the Bill into Parliament. Mr. Cox, a member of the vestry, then remarked, that while the Bill was being considered by the Metropolitan Board a communication was sent from that vestry suggesting the introduction of certain sanitary clauses. That communication was sent back to them, and they were told by the Metropolitan Board, that after they had passed a Building Bill they would bring in a Sanitary Bill. Mr. Cox added that, as it appeared to him, a Building Act without sanitary provisions was a farce and a delusion. In order that the vestry might have an opportunity of expressing an opinion on the Bill and the expenses involved in it, he moved a resolution to the effect that the vestry was of opinion that the sum of 1,794*l.* paid in counsel's fees was an excessive sum, and trusted that the Board would in future keep a strict watch upon their legal and professional expenditure. Mr. Turner, in seconding the motion, which was unanimously carried, said he was exceedingly glad the Bill had been abandoned, for it was little better than a loaded insult to every representative vestry in the metropolis.

THE DRAINAGE OF THE SHAFESBURY PARK ESTATE.

THE Artizans', Labourers', and General Wellings Company are at issue with the Wandsworth District Board of Works respecting the drainage of the Shaftesbury Park Estate at Clapham Hill, near the Clapham Junction station, and from a correspondence which has taken place between the parties litigation appears probable. A dispute seems to have arisen owing to the alleged imperfect drainage of the estate, the local board contending that the directors have not complied with the Act of Parliament, and they require the works to be done over again, according to which the company object. At the last meeting of the Wandsworth District Board, a letter was read from the solicitor to the Wellings Company, stating that after mature deliberation the directors regretted their inability to carry out the proposed re-construction of the drainage system on the Shaftesbury Park Estate, but that being anxious to avoid expensive and protracted litigation, and with the view of establishing a good understanding in future, the directors suggested that the question of difference should be submitted to competent persons for their decision. The communication was very unfavourably received, and the reading was followed by strong expressions of

opinion on the part of the several members present. The chairman said that with the rest of the board he had taken a very anxious view of the matter. After stating that the board had not been respectfully treated by the company, he asked, What was there to refer to arbitration? Was it whether the Act of Parliament was right, or whether the board had or had not acted according to Act of Parliament? He could not see what there was to refer to arbitration. It would be most unwise to establish any such precedent, because there was no saying to what extent the references to arbitration would have to be resorted to if one was agreed to in the present case. He added that the board had a clear case, and he thought the proper way would be to proceed against the company. A member present suggested that the drains should be cut off from the main sewer, and let the company then bring their action against the board. Another member thought the board might as well "put up shutters" as allow itself and officers to be set at naught in the manner the company were doing. He considered the proposal to refer the matter to arbitration an insult to the board after the board had requested that the law should be carried out in regard to the drainage of the estate. It was unanimously resolved that the board required strict compliance with the Act, or that otherwise legal proceedings would be taken against the company.

ACCIDENTS.

At the laying of a Foundation-stone.—While the foundation-stones and memorial-stones of the Primitive Methodist Chapel, now being built at Goole, on the Boothferry-road, were being laid, the platform on which the Sunday-school children, with their teachers, were arranged suddenly gave way, and the whole of them were precipitated to the ground. Fortunately no one was seriously hurt, the fall being only a distance of a few feet.

Destruction of Saw Mills by Fire.—The mills of Messrs. Moore & Co., called Litton Mills, at Millers Dale, near Buxton, took fire from the over-heating of the machinery. A fire-engine was on the premises, but it was out of repair. The Buxton Volunteer Fire Brigade was in attendance, but the centre of the mills was destroyed. The damage is estimated at about 20,000*l.* The mills are insured. A large number of hands are thrown out of employment.

HASTINGS TOWN-HALL COMPETITION.

Sir,—We beg, through the medium of your columns, to inform intending competitors for the Hastings Town-hall that we have sent an urgent request to the Mayor and Corporation of Hastings to withdraw the clause in the conditions restricting the cost to 10,000*l.*; and also to extend the time for sending in the designs to October 24th, and so hope that those who wish to consider that it is impossible to meet the requirements of the corporation for the sum named, will join in our request to have the amount increased. Two Competitors.

PROVIDENT INSTITUTION OF BUILDERS' FOREMEN AND CLERKS OF WORKS.

Sir,—In answer to your query in the *Builder* of the 26th ult., I beg to state that the Provident Institution of Builders' Foremen and Clerks of Works hold their meetings on the first and third Wednesdays in every month, at 9, Conduit-street, when they would feel only too happy in explaining the objects of the institution to those wishing to become members. Herewith I send a copy of the last yearly report, from which it will be seen we disbursed the sum of 230*l.* for pensions alone during the past year.

T. W. H. BENFORD, Corresponding Secretary.

BUILDERS' APPRENTICES.

At the last sittings of the Durham Police Court, before the Mayor, Mr. Robert Robson, builder and contractor, of Claypath, Durham, charged one of his apprentices, Thomas Kenwick, with having absented himself from his service.

Mr. Robson stated that the apprentice left his work on the 26th of August, and coolly came back on the 28th, returning on the third morning at seven instead of six o'clock. Six o'clock was the appointed time for the men and apprentices to commence work, but it was generally seven, before the defendant arrived. Both the foreman and himself had remonstrated with the defendant frequently in reference to his irregularities, but without avail, and he had, therefore, no alternative but to bring him before the mayor to be dealt with.

The Mayor.—Have you any questions to ask your master?

Apprentice.—Another apprentice, Mr. Grey's son, the carrier, was away a week.

The Mayor.—That might be; he might have his master's permission.

The Mayor, to plaintiff.—What damage have you sustained?

Mr. Robson.—I lay the damage at the moderate sum of

ten shillings. I was put to much inconvenience having to put another hand on to do his work, and had to remove some masons who could not get on in consequence of the defendant's work not being completed.

The Mayor.—Perhaps you do not press this case, but if you do it is our duty to say that we shall deal with it in a way which may probably have the effect of checking these irregularities on the part of apprentices. If the case is pressed the Bench is determined to send this apprentice to prison.

Mr. Robson.—It is that end that deters masters taking proceedings against idle apprentices until actually compelled. I have here no wish to press the case hardly against him; but I wish you to deal with him in such a way as will put an end to the inconvenience and unpleasantness I have had to encounter. Unless some kind of authority can be established amongst apprentices I might as well have none at all.

Apprentice.—I will faithfully promise not to misbehave again, sir. I will go to work at the proper time, and conform to the regulations of my master's establishment.

The Mayor.—The Bench, Mr. Robson, consider it necessary to ask you if you will promise, if we abstain from sending him to prison now, that, if the irregularities are repeated, you will at once bring him or others before them. We ask this on public ground, so that offences of this description may be put a stop to.

Mr. Robson.—I make that promise, but I fear much that the end may be. I am afraid that apprentices are now in the habit of spending their evenings at music-halls, and gambling as well. I know they stay out late, drink, smoke, and render themselves unfit for work next morning. It was far different in my time.

The Mayor.—Too true, I believe; but this time we fine the defendant 10*s.* and the full costs for the amount of damage done to Mr. Robson; and, my lad, think yourself well off for having so lenient a master, or you would have been sent to prison for three months' hard labour. The Bench hope that this case will be brought far and near to the attention of both good and idle apprentices.

CHURCH-BUILDING NEWS.

Tideswell.—The restoration of "The King Cathedral of the Peak" is proceeding. Already an entirely new oak roof, covered with lead, has been placed on the chancel—a portion of the church, measuring between 60 ft. and 70 ft. long,—and a restoration of all the stonework effected. The architect is Mr. John D. Sedding, of Bristol. One portion of the church, however, has been restored as a distinct gift, according to the designs and under the superintendence of Messrs. Innocent & Brown, architects, Sheffield, namely, the De Bower Chapel, in the south transept. Indeed, this is the only part of the restoration which may be said to be fully completed. This chapel, with its oak screen, its pavement of varied and costly marbles, large painted windows, carved oak roof, and restored double altar-tomb, must have cost over 2,000*l.*—the gift, in addition to a liberal donation to the general fund, of Mr. J. Bower Brown, J.P., of Woodthorpe, Sheffield. The large south window contains figures of the four Evangelists, and the Redeemer in the centre, the large mass of tracery above the main lights being illuminated with symbols, angels, and figures. The eastern window of the chapel represents the Resurrection. The screen which divides the chapel from the adjoining Bulwer Lytton Chapel is of great height. The workmanship is by Mr. Hayball, of Sheffield. The carved oak tracery is placed on a carved stone base. Within the screen, surrounded by an expensive marble pavement, inlaid in patterns, stands the large raised tomb of Sir Thurstan de Bower, and the Lady Margaret his wife, who were buried there in the early part of the fifteenth century. The carved marble figures and some portions of the sides of the monument, relegated some forty years ago to an obscure corner of the chancel, have now been placed in their original positions, with such new additions as were required to restore the original design. The sculptor was Mr. Earp, of London. A member of the Foljambe family, one of the most ancient and powerful of the families of the Peak in bygone days, to whose piety and liberality Tideswell Church owes much, proposes, we understand, to place a painted window in the east end of the chancel, near the spot where rest the bones of Sir John Foljambe, the founder, it would seem, of the chancel, and the chief member of the Royal Guild of St. Mary of Tideswell, to which was attached the chapel in the north transept of this church. The part of the church now to be dealt with is the roof of the nave. The nave roof may be restored without sacrificing any of the ancient features of it. Something near 5,000*l.* will still be required to do justice to this restoration, without reckoning many matters of decoration, which must, in any case, be left to individual gifts.

Huntington.—The ancient little church dedicated to All Saints, situate at Huntington, about three miles from York, has been reopened for Divine service, after having undergone a restoration. Indeed it may be said that it has been rebuilt, for the only portion of the old fabric left

standing is a part of the chancel. The edifice had been gradually decaying, so much so that it would soon have been quite unfit for the holding of religious services. The floor was damp, the walls were shattered, the internal fittings sorely in need of repair, and the whole structure in a more or less dilapidated condition. The architect consulted was Mr. C. T. Newstead, York, and he prepared the necessary plans and drawings. It was determined to rebuild the porch, preserving the semi-Norman doorway; to entirely rebuild the nave, and add thereto a north aisle, so as to give increased accommodation; to substitute for the flat roof, with the ceiling underneath, a high pitched and open-timbered one; to reseat the whole of the church, raise the chancel roof, insert a chancel arch, rebuild the vestry, and complete the work with a tower, surmounted by a spire. All these works have been carried out. The restored church has thus been enlarged and provided with open seats of pine-wood, and it will now accommodate 250.

DISSENTING CHURCH-BUILDING NEWS.

Ipswich.—Within the past few weeks, the commencement of an iron chapel, for the United Free Methodists, has been made in the Wood-bridge-road, and now there have been the customary ceremonies attendant upon the commencement of a new building in another part of the town, Clarkson-street, for another Methodist body, the Primitives. The site affords evidence of the rapid extension of the town. The portion of the green that once was, which has been secured by the Primitive Methodists, is the corner abutting upon Clarkson and Wilberforce streets, and to the north of the new Board School, which occupies another large portion, and here will be erected a chapel and school-room, in a plain style. The building, which will be recessed from the road ten or a dozen feet, and inclosed with palisades, will be of red brick, with white facings, and the front elevation will be facing Clarkson-street, and will consist of a gable with a rose-window above, and three single-light windows below. Entrance will be obtained from this street by means of two porches, one in front and the other on the east side of the building. Inside, the chapel, which will be 60 ft. long by 35 ft. wide, and will accommodate 400 persons, will be benched. There will be a common open roof. The west front, towards Wilberforce-street, will be relieved by buttresses between each of the windows and a gable with a circular window, and at the lower end, on a level with the roadway, there being a considerable fall in the ground, will be the entrance to the schoolroom and class-rooms, which are provided for in the basement. The schoolroom will be 35 ft. by a little under 30 ft., and will give accommodation for about 225 children, and in addition there will be two class-rooms, one 15 ft. by 10 ft., and the other about 10 ft. square, besides a vestry and offices. The contract has been taken by Mr. Robert Girling, for the sum of 1,274*l.*, and is being carried out under the superintendence of Messrs. Cattemole & Eade, architects, Ipswich. The total cost will be about 1,500*l.*

Wavertree.—A new Wesleyan chapel for the accommodation of the rapidly-increasing population of Wavertree has been formerly opened for divine service. The new building is situate in Victoria Park, closely adjoining Wavertree-road. The site of the building contains an area of nearly 1,400 square yards. The chapel has been built from the designs of Mr. John E. Reeve, of Liverpool and Wavertree, architect. The style of the architecture may be called a free treatment of the Middle Pointed Period of Gothic architecture, made conformable to the usages of the present day. The exterior of the building is built of coursed Yorkshire parpinks, with dressings of worked red Woolton stone. The principal front consists of a gable, enclosing a large five-light traceried window, with gabled entrance doorway moulded and carved, the upper portion being finished with a floriated facial at a height of 65 ft. from the ground level. There are minor entrances at the sides and back. The north and south fronts have two light traceried windows with large buttresses; in addition, a shallow transept is formed on the north side, with large traceried circular light, the west end having an apsidal termination, and being finished with ornamental wrought-iron work. The whole of the windows are filled in with quarries in lead lights, those in the capital being pleasingly

diversified by different shades of coloured cathedral glass. At the north-east corner is placed a geometrical stone staircase leading to a small gallery over the west end. This staircase is continued up to the height of nearly 60 ft., and it is contemplated to terminate the same with an octagonal broach-banded spire, the total height from the ground to the final being nearly 130 ft. In consequence of the great fall in the land, advantage has been taken to form two heights of class-rooms, one being level with the chapel and another under the same level with the street in the rear. These class-rooms are 20 ft. by 14 ft., and lofty, having a separate external entrance and necessary conveniences in connexion therewith. There is a small yard on this level with heating chamber and apparatus for warming. A vestry 12 ft. by 10 ft. is provided for the minister, with separate entrance and all necessary conveniences. The system of heating is by hot-water pipes carried round the aisles and passages and corridors. The ventilation is regulated by gratings in the walls and floors, the cold air passing over the hot-water pipes, and being carried away through apertures made for the same in the upper parts of the ceiling and in the windows. The interior measures 69 ft. in length and 44 ft. in width, with one transept 21 ft. 6 in. in width, the height to underside of the ceiling being 40 ft. The apsidal termination for the communion measures 15½ ft. by 13½ ft., with grooved and moulded ceiling with ornamental bosses and cornices. The arch dividing the same from the chapel is moulded and supported with carved caps and terminations and red polished marble caps, the height to the underside of the arch being 30 ft. The roof of the chapel is polygonal in form, supported by carved and moulded principals, with moulded purlins and cornices, resting on capitals and bases and polished red marble shafts. The whole of the fittings are of selected pitch pine, the seat accommodation being for nearly 600. The pulpit is octagonal in form, carried by a moulded cap and base, and surrounded at the eight corners with ebonised shafts, turned bands, and bases, and carved capitals of sycamore. Special attention has been given to the system of openings for ventilation. The general contractor was Mr. David Readdie; Mr. Johnson had the contract for the slating, &c.; and Mr. Merriock executed the plumbing, painting, and glazing. The gas-fittings were supplied by Mr. F. C. Connor, of Wavertree, and the carving was executed by Mr. Rogers, of Liverpool. The entire cost of the building, land, and furnishing, will be about 5,000*l.*

Ivybridge, South Devon.—A chapel for the Wesleyan denomination is being erected in this village, at the cost of Messrs. Allen & Sons, paper manufacturers. It is Early Geometrical in style, consists of nave, transepts, chancel, and tower and spire, 90 ft. high, and is to seat about 600 persons. The cost, exclusive of the site, which is also provided by Messrs. Allen, will be about 4,000*l.* Messrs. Norman & Hine, of Plymouth, are the architects.

Books Received.

The Rural Life of Shakespeare, as Illustrated by his Works. By C. ROACH SMITH. Second edition. London: Bell, York-street, Covent-garden. 1874.

In this enlarged edition of his very pleasant brochure on Shakespeare's knowledge and love of country life, Mr. Smith says he has been encouraged by the approval of some of our most eminent Shakespearian students and scholars, and by the almost unanimous verdict of the press, to prosecute his agreeable research, and therefore he offers this enlarged edition of the result of his examination of "Shakespeare," published four years ago.

This is a different sort of inquiry altogether from those disquisitions got up to prove that Shakespeare was a lawyer, a sailor, a mad-doctor, and so forth. More serious study dispels such notions, but in no way do they affect the accumulation of allusions to rural life, the force of which consists in their vivid life-like character, in their infinity, and in their diffusion throughout his entire works, constituting a personal peculiarity which of itself alone goes far to confute the fancies that have induced some critics to maintain that this or that play was not written by Shakespeare himself, but only adopted by him as a play worth acting, or adding to his stock.

VARIORUM.

The Gardener's Magazine says,—"Wire gauze as a substitute for glass is fast gaining the attention of persons engaged in constructive work. It is much employed in the Regent's Park Carriage Works, for the lifting door-screens of carriages, for which hitherto glass has been exclusively used. It is admirable in the summer for this purpose, as it subdues the glare of light and moderates the heat, and admits but little dust, while it ensures perfect ventilation. The riders in a carriage provided with these gauze windows see plainly through it, and have all the advantages without the disadvantages of glass. It is worth considering whether the plant-house for various purposes—such, perhaps as the growth of camelias and heaths—might not be better fitted with wire gauze than with glass, with wooden shutters for cold weather."—The Alder (*Alnus glutinosa*) is, says *the Gardener's Chronicle*, next to the Willows, the most ubiquitous tree in England and Wales, wherever brooks take their winding course, through the country, or in marshy ground where it forms dense leafy bushes. According to London, it is the most aquatic of European trees, being found in wet, swampy ground throughout the whole of Europe. Many places in England have received their names from the Alder; as, for instance, the now familiar Alder shot, or properly Aldershot,—the wood of Alders—from their abundance in that boggy locality. The term *Orle* is the vulgar name for Alder in the midland and western counties, thus giving an appellation to Orleton and other villages. Numerous places in Wales and on its borders also show the prevalence of the Alder, its Celtic name being *Wern*. Both Shrewsbury and anciently called Pengwern, and the Malver Hills, were so called from the Alder-groves there encompassed them in early times; and a brook near Worcester, that bears the name of Laver, is at the present day shrouded in Alder-bushes. The adjunct "worn" is indeed attached to innumerable localities in Wales.—"Barnaby Rudge" is now completed in the Household Edition of the works of Charles Dickens. It includes a large number of illustrations.

Miscellaneous.

A Hint to Sheffield Saw-makers.—A New York correspondent writes:—"The saw-makers of Sheffield are in a fair way to be taught a rather rough lesson by their old enemy, Harney, of Philadelphia. His brother-in-law is on his way to England with a magnificent set of saw and tool samples, resolved to wrest the home trade from your townsmen. I have no doubt about his dividing the trade with Sheffield. He can make as good a saw, and a much better looking one, at a given price, than any manufacturer in Sheffield. Carpenters, lumber-men and artisans generally declare his saws, of every grade, equal to Spear & Jackson's, and very much cheaper. As you are aware, he has already swept up the United States and California trade and will very soon make what he leaves of the Canadian trade not worth having. He employs over 1,000 men, many of them having been with him twenty years, and will not have a man about him who belongs to a union. He uses about twenty tons of steel per week, and casts over 100 tons of Swedish iron at a time. He says he can make his saw-steel at a little over threepence-halfpenny per pound, which, of the quality, is as cheap as it can be done in Sheffield. His iron pays a cent. per pound duty, and when his manufactured goods are exported he gets drawback. Coal and coke are cheaper in Philadelphia than in Sheffield, and wages are a matter of secondary account, because machinery of the most improved and novel kind is used for every process, and the men are paid mainly by the day as a basis. No lists, no idle Mondays and Tuesdays, no turning out, and calling in gentlemen to 'arbitrate'; it is 'root hog or die'."

Sonorous Sand.—A specimen of this remarkable substance, to which we have before had occasion to allude, taken from a bank on the island of Kauai, of the Hawaiian group, was received, at a recent scientific meeting at San Francisco, from W. R. Frink, of Honolulu, and a description of its peculiarity was contained in a letter from the donor. It is not stated, however, what is the chemical nature of the sand. It seems to possess its curious sonorosity only when quite dry.

The Channel Tunnel.—The project in question consists in the immersing of a duct on the English and French coasts, and the boring of two galleries on each side. Of the result of enterprise, says the *Journal de Calais*, there is no doubt. The soul of the enterprise, M. Michael Chevalier, Léon Say, and, secondly, is M. Lavalley, an engineer who has mounted the greatest difficulties in the construction of the Suez Canal, and without whom this gigantic enterprise could not have been completed. M. Lavalley estimates the cost of the work at 150,000,000; the English engineers think it will amount to 250,000,000. He insists that this work should be done partly by France and partly by England, and that to induce the two countries to press on this undertaking energetically there should be a bonus for one which works the fastest. The 4,000,000, being the preliminary capital are nearly all, it is said, subscribed. It is not likely that our Government will take any part in it.

The Congress of Orientalists.—The annual meeting will be held September 14, at 10 p.m., at the Royal Institution, Albemarle Street; an address will be delivered. On the 15th, the Sémiole Section, under Sir Henry Wilson, K.C.B., will meet at 2.30 p.m., at the Rooms of the Royal Society of Literature, at Martin's place, Charing-cross. On the 16th, the Turanian Section; 17th, the Aryan and Hamitic Section; 18th, the Archaeological Section; and 19th, the Ethnological Section, will have meetings. There will be a reception at the British Museum on the 15th; on the 16th, Sir Bartle Frere will give a breakfast to members of the Congress, at Wimbledon; on the 17th, the India Office library and the Soane Museum will be inspected; on the 18th, Mr. Macquet will give an afternoon garden party to the members, at Claymore House, Enfield; and the 19th the South Kensington Museum will be visited.

The Artizans' Institute for Promoting General and Technical Knowledge.—The office of Bedford has just sent 100*l.* for aiding the establishment of this institution, to the Rev. H. Solly, who is to be its first principal. Samuel Morley, M.P. (who is one of the trustees in conjunction with Lord Lyttleton and Hodgson Pratt), has also given 100*l.*, besides contributing 100*l.* a year for three years. Mr. John H. Chance, of Birmingham, who gives 5*l.*; Messrs. E. & F. Nettlefold, 20*l.*; Mr. Arthur, M.P., Mr. Digby, and Mr. Gazezove, each, with the above-mentioned friends, and many other smaller contributors, have thus enabled the trustees to take premises in Upper Martin's-lane. The object of the Institute appears to be to exemplify in a central locality, in a special institution, those plans for the general and technical instruction of the working classes which so many of them now desire to be carried into effect.

Art Exhibition, Brussels.—Brussels, though possessing already a number of well-arranged and well-arranged markets, has long been the want of a good central market. The structure near the new boulevard which crosses the town, commenced some years ago to supply this want, is now completed. The buildings, being specially well adapted for an exhibition, an exhibition of productions of Belgian industrial art was considered the fittest for its inauguration. On Saturday last the exhibition was opened by the King of the Belgians, who was accompanied by the Queen, the Princess Louise. In the building are to be found specimens of Belgian coaching, and architectural work of all kinds in stone, marble, and iron. Belgian wood-carving is represented by a church-pulpit, terminating in a spire, and by minor work. Of bronze there is a good collection.

Economy of Labour.—The Society for the promotion of Scientific Industry intend holding a year, in Manchester, an exhibition of appliances for the saving of labour. The exhibition will be in two divisions, the first including such machines and implements as are used in the working of metal, wood, and stone, and the second will comprise such implements as can be used for domestic purposes. The special object of this division will be to encourage the development and production of appliances having for their aim the lessening of the labour of the household; the saving of fuel; the improved preparation of food; and the increased healthiness of home.

New Railway from Hammersmith to London.—Hammersmith is being put in communication with London by a new line of railway. The western station of the new line is situated on the south side of the Broadway, Hammersmith, very nearly opposite to the station of the Metropolitan Railway. Leaving Hammersmith, the trains run through the market gardens, and on to North End, Fulham, where there is a station. They pass over the West London line. Between the Addison-road (Kensington) and Earl's Court Stations the trains run on to the Metropolitan District Company's rails and thence to Victoria or Charing-cross without stopping. The new line is a mile and eight chains in length. It passes under two permanent bridges only. Next year it is intended, if possible, to extend the line to Acton.

Extension of the Thames Embankment. Her Majesty's Commissioners of Works and Public Buildings are about to extend the embankment wall of the Houses of Parliament 366 feet to the west of the Victoria Tower. With this extension there will then remain only one quarter of a mile of river frontage from Blackfriars to Baldozia Bridge unembanked. This slight break in the link is that part of the river fronting Millbank, &c., and as on the inundations in March last this district suffered considerably, representations will be made to the Metropolitan Board of Works immediately after the recess drawing their attention to the favourableness of the opportunity for acting in concert with the Government in carrying out a complete and connected thoroughfare along the whole south-west side of the river.

Windsor Castle.—During the Queen's absence in Scotland several portions of Windsor Castle are undergoing repairs at the hands of the Board of Works. A new oak roof is being constructed over the dean's cloisters, which adjoin the Albert Memorial Chapel, and the residence of the Dean of Windsor. The roof, which has for years sheltered visitors to St. George's Chapel, has been removed, owing to its weather-worn condition, and the beams are being replaced with English oak grown in the district. At Henry III.'s Tower, the residence of General Sir T. M. and Lady Biddulph, which is situated at the east end of the houses occupied by the military knights of Windsor, scaffoldings have been erected and a number of workmen are employed in repairing the exterior stonework.

Sewage Difficulty at Barnsley.—At a meeting of the Town Council, the town clerk read a report from Mr. Hawksley, of London, who had been called in to report upon the best means of dealing with the sewage of the town, which at present is turned into the river Dearne, and pollutes the stream between Barnsley and Doncaster, and which must be abated in accordance with an order made by one of the superior courts. The report recommended the placing of the railway, near Hoyle Mill. Mr. Councillor Marshall said, before they expended something like 40,000*l.*, they ought to be satisfied that the scheme they adopted would be successful. After some discussion, it was agreed that a deputation visit Birmingham, Coventry, and other places where sewage works are in operation, and report to the General Purposes Committee.

Peat Manufacture.—Mr. James Edmeston, writing from Paris in reference to the failure of the peat manufacture near Dumfries, says,—"I have just returned from the inspection of some peat works in Switzerland, where all that is needed to prepare the fuel is done in a very simple and economical manner, without sheds or any machinery for compression, or skilled labour, one machine turning out eight tons a day, at a cost of 10 francs a ton (exclusive of royalty), and the fuel itself is in great demand for steam boilers, breweries, brick-kilns, lime-burning, &c. (for the last two purposes it has some special advantages). The development of peat deposits in England and Ireland is far too important to be hastily abandoned, and I am disposed to believe that there is no occasion whatever why this should be done. In the case above named a large profit is made."

Canvas for Painting on.—Messrs. Lecher, Barbe, & Co., of Regent-street, have sent us specimens of unprepared canvas, on which to paint decorations for wall hangings, imitations of old and modern tapestries and fabrics, screens, panels, and so forth. The variety of pattern is remarkable, and the material seems an excellent one.

Rapid Mechanical Coal-cutting.—A trial of coal-cutting machinery took place recently at Haddington, near Edinburgh, when several apparatus were tried. In response to the invitation of the Haddington Agricultural Society, a number of coal-cutting machines were publicly tested. Among the competing machines was one which has just been patented, and sent in haste to the show. This novel machine under-cut 60 ft. of coal in one hour (or 1 ft. per minute), the depth of the coal being 3 ft., and the width of the groove rather less than 3 in., and it thereby secured the first prize and gold medal of the society, having distanced the nearest competitor by 9 ft. The trial took place in the presence of 20,000 spectators, and under the close inspection of many of the principal Scotch coalowners and colliery managers. This ingenious apparatus is the invention of Messrs. Warsop and Hill.—Condensed from *Iron and Coal Trades Review*.

Baptist College, Rusholme.—A new Baptist College, the foundation-stone of which was laid some two years ago by Mr. C. H. Spurgeon, has been opened in Rusholme. The institution is the fruit of the Baptist Evangelical Association, a body who at first sought to educate young men for the Baptist ministry in the city of Chester. They were refused a suitable building there on the ground that they were Nonconformists and Baptists; and subsequently the work of theological instruction was carried on in the Chamber Hall, Bury, beginning with five students, and continued to a growing number, until this year. The new college has been erected at a cost of 9,695*l.*, and nearly the whole of this sum has been subscribed.

Electric Bells.—The bells throughout the Royal Hotel, Blackfriars, recently opened, are fitted on the electric system by Messrs. Adams & Son, of Marshall-street, Golden-square, and the Haymarket. Not merely has each floor its distinct system ringing into the service-room on the same floor, but there is a communication with every room to the office on the ground-floor, which shows when any bell has been rung, and also when it has been answered, so that the person in charge can detect any omission on the part of the servants answering the bell. This same system has been employed by the same firm at the Midland Grand Hotel, St. Pancras. Architects arranging plans for large establishments may find it worth while to look into the system.

Primitive Methodist Mission Hall for Tunbridge Wells.—The foundation-stone of a new Mission Hall, in connexion with the Primitive Methodist body of Tunbridge Wells, has been laid in the Down-lane. The stone having been duly laid, says the *Kent Courier*, a novel mode of raising funds was indulged in. Ladies and gentlemen were invited to a little amateur brick-laying, the payment for the privilege being at the rate of half-a-crown per brick. The total cost of the building is estimated at 800*l.* The contractors are Messrs. Penn Brothers, of Pembury, and the architects Messrs. Weeks & Hughes, of Tunbridge Wells, and the hall will be in the Gothic style of architecture, and be capable of accommodating about two hundred persons.

Mr. Squier.—There are but few citizens in our midst (says the *New York Herald* of the 20th ultimo) unacquainted with the name and fame of Ephraim George Squier, one of the most talented American archaeologists, who will not regret to learn that his mind has succumbed to over-study. Mr. E. G. Squier was born in Bethlehem, Albany county, on the 17th of June, 1821. While acting as United States Minister in Nicaragua he obtained materials from which he wrote, in 1852, "Nicaragua: its People, Scenery, Ancient Monuments, and Interoceanic Canal." In 1861 he published "Monographs of Authors who have written in the Aboriginal Languages of Central America." In addition to this he has written several other works on American antiquities.

Temple Bar.—Mr. Deputy Lowman Taylor has given notice of his intention to move, at the approaching meeting of the Court of Common Council, that it be referred to the City Lands Committee of the Corporation to consider the present state of Temple-bar and its approaches, and the propriety of continuing some structure at the same spot, special regard being had to the public convenience, and to report generally upon the subject.

The Gas Supply of Liverpool.—An effort is to be made at the next meeting of the Liverpool Town Council to place the supply of gas to the town in the hands of the Corporation, as is the case in Manchester and some other towns where it is found that the gas is dealt out at a cheaper rate, while the profits of the manufacture are available for town improvements or other public purposes of advantage. It will be proposed in the first instance to appoint a special committee to consider the advisability of acquiring the works of the existing company in Liverpool, and generally to report upon the subject.

A Business Picture.—To commemorate the high tent that was put up at Chelmsford in May last on the occasion of a dinner to "the Essex Conservative Ten," as they are called, Messrs. John Edgington & Co. have published a lithograph showing the diners in full swing, and giving portraits around the view of all the principal guests. It is a pity it was not done by some one who knew how to draw a human creature. The marquee certainly was of colossal proportions—the largest, in fact, that was ever erected in the United Kingdom—its dimensions being 275 ft. by 115 ft., with a central elevation of 55 ft., and side elevations of from 12 ft. to 13 ft.

A Granite Monument.—A memorial entrance to burial-ground in Oakwood Cemetery, Syracuse, U.S. America, has been erected by Mrs. Wicks, in memory of her husband, Mr. E. B. Wicks, banker. The memorial is composed of nineteen pieces of polished and unpolished Aberdeen grey blue granite, and is about 17 ft. high, by nearly 11 ft. broad. The arch is composed of a single stone. Mr. A. Russell, architect, of Syracuse, gave the design, and the working drawings and the whole granite work of the memorial were executed by Mr. John W. Legge, sculptor, Aberdeen. The work seems very good: we wish the design had been so too.

The Uniform Principle in Wages.—A number of hauliers from Aberdare and the Rhondda Valley have asked to be paid according to their ability, and not at a uniform rate. The Council of the Monmouthshire and South Wales Coalowners' Association, to whom the application was made, pointed out that this request is entirely contrary to all Union rules, but expressed their pleasure that the men were beginning to discover the unfairness of the Union principle.

New Public Market, Harrogate.—On Saturday last, Mr. Henry Greenemith, chairman of the Harrogate Improvement Commissioners, formally opened the new public market, in the presence of about 2,000 persons. The market is situate in Cambridge-street and Beulah-place, close to the North-Eastern Railway, and is a very handsome and convenient edifice. The cost of the market is 3,600*l.*, exclusive of land. Mr. Arthur Hiscoe was the architect.

Walthamstow.—The new parochial schools of St. James's, Walthamstow, were recently opened. These schools for 400 children have been built at a cost of 2,500*l.* They are in the Gothic style, brick inside and out, with ornamental red brick arches and open roof. They are designed for boys, girls, and infants, with separate class-rooms and playgrounds, and furnished with modern improvements. The builder is Mr. Morter, of Stratford, from the design of Mr. J. Ladds, of Bedford-row.

Freemasonic Ceremony at Dartford.—The ceremony of laying the foundation-stone of a new porch to Swanscombe Church, near Dartford, has taken place; Prince Rhodanakis, Grand Master of Freemasonry in the kingdom of Greece, being present. The trowel used, it is said, was that used by Charles II. to lay the foundation-stone of St. Paul's Cathedral.

Chimes for St. Cathbert's Church, Darlington.—Workmen are now busily employed in setting a series of chimes in connexion with the clock of St. Cathbert's Church. The machinery is manufactured by Messrs. Moor & Sons, of Clerkenwell, and tunes will be played at four, eight, and twelve each day, there being different tunes for every day of the week.

Proposed International Exhibition at Santiago.—The Secretary of State for Foreign Affairs has received a note from the Chilean Minister accredited to this Court, inviting the co-operation of her Majesty's Government in an International Exhibition, to be opened at Santiago de Chile on the 16th of September, 1875.

Water Works.—Nine plans for the proposed water works for Maidenhead have been sent in, and the committee have of late been very busily engaged in considering the merits of each. They have reduced the number to four, which have still further to be examined to select the best.

Fall of a Circus Platform.—During a performance at Sangers's Circus, Reading, a platform, on which were about 400 people, gave way. Fortunately no one was very seriously injured, although several persons were badly out about the face and hands.

A New Convent.—The foundation-stone of the new convent and schools of Notre Dame de Sion was laid on Tuesday afternoon by the Rev. Father Dolan, priest of the Church of the Sacred Heart, Eden-grove, Holloway, near to which the new buildings will be erected.

New Church, Guildford.—The contract of Mr. Goddard, of Farnham (5,850*l.*), for the erection of a new church in the parish of St. Nicholas has been accepted. The architect is Mr. A. W. Mellersh, of Godalming.

School Board, Buckingham.—Mr. E. H. Lingen Barker has been appointed architect to the Board.

TENDERS

For the erection of Premises, corner of Docon-street, Walworth-road, Mr. C. H. Flack, architect:—
Langmaid & Way 4,173 0 0
Thompson 4,173 0 0
Stoner 3,943 0 0
Downs 3,777 0 0
Ward 3,720 0 0

For alterations and additions to house at Woking, Surrey, and for stabling thereto. Messrs. E. W. Lower & Son, architects:—

Mason 22,675 0 0
Colls & Sons 2,290 0 0
Kirk 2,277 0 0
Mitchell & Son 2,236 0 0
Harris 2,100 0 0
Whitburn (accepted) 2,015 10 0

For the erection of a villa residence, at Hampstead, for Mr. C. Wills, Mr. Theodore K. Green, architect:—

Perry Brothers 22,145 0 0
Adamson 2,130 0 0
Shepherd 2,125 0 0
Newman & Mann 1,975 0 0
Servener & White 1,930 0 0
Sharpton & Cole 1,927 0 0
Lawrence 1,838 0 0
Browne & Robinson 1,808 0 0
Simpson & Baker (accepted) 1,898 0 0

For residence on the Abbey Hill, Kentish-wood, for Mr. A. Morris. Mr. E. H. Lingen Barker, architect:—

Stimmonds 21,521 10 0
Clark 1,965 0 0
Parker 1,901 0 0
Stanh 1,671 10 0
Ball & Clark 1,667 1 9
Foster 1,631 10 0
Swan 1,628 12 8
Sheasly 1,006 18 2
Davis 981 14 5
Mills (accepted) 877 2 10

For finishing two houses, Nos. 9 and 10, Cannonbury-terrace, Ramegate, for Mr. E. J. Hobbs:—

Oshorn 2,293 10 0
Do. A. T. 372 0 0
Miller 573 10 0
Newby 610 18 0
Goodman (accepted) 400 0 0

For works at No. 40, Camden-square, Camden-town, for Mr. W. W. Blackstone. Mr. W. Paise, architect.

Quantities supplied:—
Rehens 4,013 12 0
Manley & Rogers 435 0 0
Kelly Brothers 384 0 0
Hobson 375 0 0
Cowie 350 0 0

For the erection of new Board Schools, at Grand-burgh-cum-Burgh. Mr. Ridley King, architect:—
Cunliff 21,451 0 0
Bennett 1,450 0 0
Luff (accepted) 1,361 0 0

For new hall for Curriers' Company, London-ware Messrs. J. & J. Belcher, architects:—
Braid, Jopling, & Co. 24,117 0 0

For the erection of a church at Caerfaluwlach, Mr. J. Hill, architect:—
Morris (accepted) 21,800 0 0

For alterations to the "Prince Regent," 111, East-ros. City-road, for Mr. Henry Westlake. Mr. James Harris, architect:—

Williams & Son 4,330 0 0
Starkey 296 0 0
Bishop 296 0 0

For new workshops, Camberwell House, for Messrs. Paul & Richards. Mr. W. Adams Murphy, architect. Quantities supplied:—

Shapley 21,038 0 0
Waldram & Co. 1,019 0 0
Newman & Mann 1,016 0 0
Cooke & Grest 1,002 0 0
Sharpton & Cole 999 0 0
Canning & Mullins 988 0 0
Thompson 984 0 0
Sewell & Son 975 0 0

TO CORRESPONDENTS.

T. L. & Son.—H. G. A. Subscriber.—G. W. Y.—J. H.—Son.—T. G.—R. G. C. R.—F.—C. & B.—T. W.—Col. M.—R. W. & Son.—Mr. M.—O. H. F.—W. R.—F. G.—B. J. & Co.—J. T. D. H.—W. G. S.—H. H.—J. R. D.—T. K.—J. B.—E. E.—J. B. (yes)—G. A. (declined with thanks)—E. L. (thanks, next week).

We are compelled to decline pointing out books and get addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the names and addresses of the sender, not necessarily publication.

Note.—The responsibility of signed articles, and papers for public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

By lines (about fifty words) or under .. 2s. 6d. 4s. 6d. Each additional line (about ten words) .. 6d. 1s. 2s.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to read in any part of the United Kingdom at the rate of 12s. per ann. Payable in Advance. Halfpenny stamps accepted for amounts under 6s. Any larger amounts be remitted by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to DULCIS FUNDING.

Advertisements cannot be received for the current week's issue later than THREE o'clock p. on THURSDAY.

The Publisher cannot be responsible for THE MONIALS left at the Office in reply to Advertisements, and strongly recommends that COPIES ONLY should be sent.

Bath Stone of best quality.

RANDELL, SAUNDERS, & CO. (Limited) Quarrymen and Stone Merchants. List of Prices at the Quarries and Depot also cost of transit to any part of the Kingdom, application to Bath Stone Office, Corsham, Wilts. [Adv.]

Asphalts.

Seyssel, Patent Metallic Lava and White Asphalts. M. S. T. O. D. A. R. T. & CO. Office: No. 90, Cannon-street, E.C. [Adv.]

TRELOAR & SONS,

Manufacturers of

COCOA-NUT MATS AND MATTING

69, LUDGATE HILL, E.C.

CORK CARPET, FLOOR CLOTH, LINOLEUM, KAMPTULICON.

And all the new Floor Coverings.

The Builder.

VOL. XXXII.—No. 1650.

Sir Balthazar Gerbier.

LEVER, versatile Sir Balthazar Gerbier, painter, architect, diplomatist, colonist, and master of the ceremonies, the travelling companion of Charles I. and the Duke of Buckingham, and the friend of Rubens and Vandyck, does not deserve the neglect into which his name has been allowed to drop. Walpole notices him pretty fully, but the account he gives is incomplete and inaccurate. The only trustworthy life of Gerbier is the short one communicated by Mr. Papworth to the Dictionary of the Architectural Publication Society. In the present age, when it is necessary for those who wish to excel to keep strictly to their subject, versatility is looked upon with suspicion, and Gerbier has lately been called by a popular writer, "a restless architectural quack and adventurer."

This is a very unjust description of him, and as it happens that the library of the British Museum contains a curious collection of his printed works and two of his MSS., we will endeavour to piece out his history from them; though this is not the first time that Gerbier and his works have been mentioned in these pages. Gerbier was one of those men who are fain to take the public into their confidence, and therefore we are able now, 200 years after his death, to see him as his contemporaries knew him.

The parents of Gerbier were Huguenots who lost all in the religious persecutions of France, and had to fly from their native country. His father was Anthony Gerbier, who held the barony of Ouvilly, in Normandy, and his mother was Radegonde, a member of the family of the Lords of Blavet, in Picardy. He was born at Middelburg, in Zealand, about the year 1591, soon after his parents had settled there on leaving France; but when a boy he was taken to that country by an elder brother's means, and was educated there. On growing up to be a man he returned to Holland, and soon after joined himself to the suite of Noel Caron, the Dutch Ambassador to London. In an "Address to the Parliament of England," which he issued in the year 1650, he says, that "zeals towards this nation made him come to it in 1616 from Zealand, his native country, to apply himself to the publique service." He attracted the attention of Sir George Villiers, afterwards Duke of Buckingham, who was pleased with his good handwriting and "skill in the sciences," and took him into his service. Here he contrived the scenes for masques and shows that Buckingham was pleased to exhibit before his great visitors; he altered his employer's houses, drew plans, and painted portraits, and had the spending of large sums of money upon books, pictures, and rarities of all kinds. He also invented "warlike engines" for the defence of Ro-

schelle, and made himself useful in many ways. When the Prince of Wales and the Duke of Buckingham made their romantic journey to Madrid, Gerbier attended them, ostensibly in the character of a painter, and he drew a miniature of the Infanta, which was sent over to King James. He was, however, employed in the treaty of marriage, and afterwards wrote an interesting vindication of the king, prince, and duke, which still exists in manuscript in the British Museum (Sloane MS., 4,181). His duties must have been multifarious, for the Duchess wrote to her husband while he was away:—"I pray you, if you have any idle time, sit to Gerbier for your picture, that I may have it well done in little." Buckingham is said to have made the most of his opportunities for collecting pictures when in Spain, and he employed Gerbier to look out for them, and to catalogue them when they had been collected. On the accession of Charles I. Gerbier found a wider field for the exercise of his talents, but although he left the service of the duke he always continued his esteem for his former master, and describes him in one of his latest tracts as "the matches of all the subjects in the world." His first public employment was as envoy to Holland to meet the representatives of France and Germany, and to arrange for the restitution of the Palatinate. He was afterwards employed in several transactions of State, and was Resident at Brussels for several years. In 1628 he entertained the king and queen at supper, and in the same year he was knighted at Hampton Court. He was appointed Joint Master of the Ceremonies, with Sir John Finett, after whose death he became sole master, and in 1641 he was naturalised and took the oaths of allegiance and supremacy. Charles I. seems to have stood by his servant, and always spoke of him with affection. He said, "He hath done me long and faithful service"; but Gerbier had enemies who maligned him to the king, and said he ought to be hanged by the legs. These enemies showed themselves in 1642, when it was bruited about over London that Gerbier was a Papist, and sheltered Papist priests in his house at Bethnal-green, and it was further reported that he "had six brass pieces in his house wherewith he might batter down all the houses on the Greene." He published a small pamphlet on this "wicked and inhumane plot," in which he stated that he was born in the reformed religion, "and suffered for the same in the womb of his mother, who, being with child, fled from the bloody persecution of the French against the Protestants." This treatment, and the rising disturbances between the king and his Parliament, disgusted Gerbier, so that he requested permission to retire from the country, and he was absent from England for seven years. Trouble continued to follow him abroad, for three of his daughters were inveigled from him, and received into the English nunnery in Paris. He admonished them, and tried to get them to confer with him on questions of faith, but all without avail, and he wrote a narrative of his ill success. At the end of his "last admonitions" (Earl MS., 3,384), he added an address to his sons and two remaining daughters, who continued Protestants, in which he pointed out texts of Scripture to strengthen their faith, and give them arms against the Romanists. He also composed a prayer "for your poor sisters who sitt in darkness." In 1648 Gerbier returned to England, and, being in want of money, he thought to make it by the erection of an academy, "to tend to the glory of God, the honour of the nation, the improvement of all lovers of virtue, and the breeding of youth therein." The scheme was a praiseworthy one; but instead of growing with success, it was started in a highly developed state, and soon decayed. Hebrew, Greek, Latin, French, Italian, Spanish, German, and Low Dutch, history, constitutional law, natural phi-

losophy, mathematics, arithmetic, geography, and several sorts of good writing, were all taught. The terms were 6l. a month for the teaching (including 3l. for learning to ride the great horse). Gentlemen were boarded at 3l. a month. Rules and regulations were made, and part of the scheme was the weekly reading of lectures by the master or by the professors. At these lectures, which took place every Wednesday, at three o'clock, any person was allowed to speak. Several of the lectures were printed, as those on military architecture, navigation, cosmography, geography, the art of well speaking, &c. The last laid Gerbier open to the satire of Butler, who entered in his scottions will of the Earl of Pembroke,—"All my other speeches, of what colour soever, I give to help Sir Balthazar's art of well speaking." The lecture on music seems to have been like more modern entertainments; for the advertisements tell us that "those who are expert in the art have promised to make good what the lecturer says in commendation of it." The summer quarters of the academy were at Bethnal-green, and the winter in the Whitefriars. The academy was to some extent an imitation of the Museum Minervæ, which was founded by Sir Francis Kynaston, in Covent-garden; but it is a mistake to suppose that it was in any way a precursor of the Royal Academy, because it was not a fine-art school. The object of the founder was not merely to teach the languages as at ordinary schools, but to educate boys in the fashionable arts of the time, so that they might become men of the world. In one of his numerous prospectuses, Gerbier professes "to lend one shilling to six gratis to such as are in extreme need, and have not wherewithal to endeavour their subsistence, whereas week by week they may drive on some trade." He was full of schemes for the relief of the poor and the extirpation of usury; but although he addressed himself to the Parliament, his endeavours were fruitless. His "Art of well Speaking" (1650) is dedicated to the Parliament and their Speaker, Wm. Lenthall, "the supreme power of this nation," who are told that they are the public voice, and that voice is the voice of God. In the same year he laid tenders before a Committee of the Council of State on the Flanders debt, the public security, the cloth trade, the silk manufacture, and the art of refining salt, but they do not seem to have appreciated his zeal for the public welfare, and he therefore left England. Gerbier was not long idle, for in 1653 he published at the Hague a book on the pernicious effects of wicked favourites in the various European nations, where, in each case, he lays the faults of the King upon the shoulders of the favourite. Literary work was only a means to an end with Gerbier, and not being contented to remain inactive in Holland he sailed with his family for South America. Here he hoped to have been able to found a colony, but he was treated ill by the Dutch governor, at Surinam, and violently assaulted by the populace. He was besieged in his house, when one daughter was killed, another wounded, and his own life threatened. His papers were taken from him, and he was sent home to Europe, but he still had faith in his colonising theories, and published at Rotterdam "a summary description, manifesting that greater profits are to be done in the bott than in the cold parts of America; also advertisement for men inclined to plantations in America." The Restoration now occurring, Gerbier was again in the midst of active business, and the few remaining years of his life were fully occupied. He came over to England and designed the triumphal arches which were erected to welcome the arrival of Charles II. The chief part of his attention was now devoted to architecture, and two of his latest works contain the results of a large practical experience of building operations. The first of these was "A Brief Discourse concerning the three chief

Principles of magnificent Building, viz., Solidity, Convenience, and Ornament," dedicated to the King and to the two Houses of Parliament. In his dedication to Charles II. the author claims the office of Master of Ceremonies, because it was confirmed unto him during his life by Charles I., and he also affirms that the place of Surveyor-General was intended for him after the death of Inigo Jones. In that to the Lords and Commons he mentions a printed paper which he had presented to them concerning the cleaning of the streets, the levelling of the valley at Fleet-bridge with Fleet-street and Chancery-lane, and the making of a sumptuous gate at Temple Bar. The discourse is full of sound advice as to the three points mentioned on the title. The author writes: "I must also advise builders on high grounds to cause their surveyors to search for springs, and shun them, which serve better to fill up glasses to allay the vapours of Gascony wines than to make a pond in a cellar," and he illustrates his meaning as to solidity by the following anecdote:—"The first stories ought rather to be vaulted than boarded, to prevent such an accident as happened to Lewis XIII., French King (and his Queen at the ball) when the floor of the room (with all the company), fell down; the King and Queen only remaining (by a special providence) on the hearth of the chimney, setting under the cloth of state." How good a subject this would make for the painter. The necessity of convenience in respect of width and size of stairs is set forth, and it is added "a noble pair of stairs should have a couple, and no windowes on the sides; which for the most part serve but for rude and unadvised men to break." The importance of good taste in ornament is insisted upon, and it is hinted that "the greatness of a sovereign consists not in the quantity of stone and timber heaped together, [for] the quarries possess more stone and the woods more timber than a banquet-room." Gerbier ends his little treatise with the hope that the inhabitants of London will take the right course to improve the form of their streets, to make St. Paul's Cathedral worthy of their city, and to raise a palace fit for their King. The "Counsel and Advice to all Builders" is still more curious than the little book we have just described, for it is introduced by forty-one dedications to eminent persons, from the Queen-Mother to the courteous reader, and these dedications contain much curious matter. The author excuses himself for the number of these epistles by the example of Antonio Perez, Secretary of State to Philip II. of Spain, but adds that he has more reason on his side, because his object is public interest. The book is "freely offered to a number of persons who either themselves or friends may have occasion to make use of it, it is freely offered as to the upper so to the lower end of a table, like a fresh gathered fruit, and none of those who are pleased to accept it are craved to patronise it." Much ingenuity is exhibited in the reasons that are given to each of the great men for the dedication of the book to them. Many of these were building new mansions at the time, and some might have benefited by the advice given; for instance, Lord Chancellor Clarendon would probably have saved much money had he taken it. The Earl of Southampton is told that he leads the way in building, and the Earl of Bedford that it cannot be improper to offer the book "to the most noble successor of the author of the Piazza, whereby this great metropolis of Albion is beautified as the firmament is by the sun among the other stars." The Earl of Leicester is complimented on Leicester House, the Earl of St. Albans on his buildings in St. James's-fields, and the Earl of Stafford on Tart Hall. The Earl of Manchester, as chamberlain, is supposed to be able to judge of what is needful in a palace; and Lord Brouncker, as president of the Royal Society, will be particularly careful to expose ill builders who "well deserve to be comprehended in the bill of mortality, since by their exorbitances happen many irreparable accidents, viz., chimneys, which, falling through the roofs of houses, kill good people in their beds, who contrive rooms, windowes, and doores which draw upon inhabitants ill and infectious aire." Although these dedications are written to nearly all the great officers of the kingdom, Gerbier finds a place for his pupil, William Wince, and gives him good advice as to the use of perfect lines and careful drawings. This preliminary matter occupies nearly half of the book, and 100 pages only are left for counsel and advice, but a large amount of practical information is pressed into

this space. The author again draws particular attention to three essentials of good building, viz., solidity, convenience, and ornament. He was well before his time, and we find him throughout his book continually insisting on the importance "of placing a building where good ayre is, and that neither chimneyes nor doores may be so placed as to serve for the attracting of infectious aire, which kills more than the sword or the seas overturns ships." He had a peculiar aversion to the north-west wind, and objected to windows being exposed to that quarter. The builders who are counselled in this book are the proprietors, and the architects are styled "surveyors." The clerk of the works is to be versed in the prices of materials, and to know the cost of all things belonging to a building. He must provide work for the workmen with judgment, so "that the carpenter may not stay for the bricklayers, nor the bricklayers nor the masons for the carpenters." He ought also to be careful in the distribution of materials, and must be discreet even in the distribution of nails, for the pockets of some carpenters are said to partake much of the quality of the ostrich's stomach. His eye must be over all the workmen, to check carelessness; but the owner of the buildings should not choose a master workman for his clerk of the works, because the workmen will not obey one of themselves. This manual has an historical value in that the prices of all kinds of material and work are carefully set down. About the time of printing these two books Gerbier had an opportunity of showing his own skill in building, for he was commissioned by Lord Craven to build him a new mansion at Hampstead-Marshal, Berkshire, and the foundation was laid in 1662. In Knyff & Kip's "Britannia Illustrata" (1707) there is a view of the house and grounds. The buildings are extensive; and although the front is in rather *bizarre* taste, it will bear comparison with most of the other mansions figured in this book. Gerbier's last book was published at Oxford in 1665, and entitled "Subsidium Perigrinantibus; or, an Assistance to a Traveller in his Conversa with Hollanders, Germans, Venetians, Italians, Spaniards, French." It is not, as might be inferred from the title, to teach languages, but to give the traveller such information as would assist him in forming a just opinion of the places he visited. Walpole makes his Balthazar even more versatile than he was, for he attributes to him a play called "The False Favourite Disgraced," which was really written by his eldest son, George. This tragedy was printed in 1667, in which year George Gerbier alias D'Ouvilly, translated Thevet's "Lives of Illustrious Personages," added to the edition of North's "Plutarch," published in 1657.

Sir Balthazar Gerbier did not live to see Hampstead-Marshal finished, but died in 1667, aged about seventy-six years, and was buried in the chancel of the church close by the house. Captain William Wind finished the house, but in 1718 it was totally destroyed by fire. Dobson painted in one picture his own portrait with those of Gerbier and Sir Charles Cotterell, and Gerbier's portrait has been mistaken for that of Inigo Jones.

It is somewhat difficult to sum up Gerbier's character in a few words, because the real work of his life is nearly lost to us, and we only possess his ephemeral pamphlets; but he has pictured himself to us as a man of active mind, sound judgment, and good taste. Had he been less versatile he would probably have made a greater figure in history; but he did sufficient good work in his day to make us feel some interest in the particulars of his life.

THE ANCIENT WORK OF THE COPPERSMITH.

The subject of the earliest artificers' work in copper, is one that possesses extreme interest, for many different reasons, and it is one as to which much further information than we actually possess is extremely desirable. The chief difficulty that attends the commencement of the inquiry is this. As a general rule, in art, the simpler processes are more ancient than the more complex. Now the production or the working of a metal of any description may naturally be supposed to be more ancient than that of any alloy of that metal. But our earliest relics of any cupreous arms, tools, or other objects, are not, as a rule, of pure copper, but of some kind of bronze, or copper alloy. It

is perfectly well known that certain alloys of copper are far more malleable by the workman, as well as harder and more available as tools or weapons, than is the pure metal. But we must regard it as probable that a considerable amount of skill had been attained in the smelting and casting of copper, before the ancient copper-smith thought of alloying the metal; and as utensils of bronze so very far precede, in the archeological series, any evidence of the discovery and the manufacture of iron, the commencement of this early metallurgical work seems to be pushed back into an almost unattainable antiquity.

The best source of light which we may now expect to gain on this point is the careful survey of the ancient world, including not only topographical information, but that accurate physical investigation which shall tell us of the source of the wealth of the future and of the traces of the industry of the past. Here archeological research joins hands with industrial inquiry. When we have ascertained, as we may properly hope to do, from what sources the various nations of antiquity, whose history we seek to trace, derived their metals, we shall have the first positive information as to the origin of the various descriptions of ancient bronze.

Copper occurs in a virgin or native state in many places, especially in out-crops. It also occurs in veins, and "pockets," or nodules, which the French miners call *godes*; where it ramifies into crystals, and into delicate efflorescent threads. In Siberia it found the *cuvre amygdalé*, which resembles a dusky-red stone, sparkling with specks of metal. Black oxides, and blue and green carbonates, known as azurite and malachite, accompany native copper. Specimens of the former are found at Chessy, in France, of a lovely dark-blue, resembling, but darker than, that of the blue vase usually exhibited by chemists. Malachite occurs in the Oural mountains, and its use in Russia as an article of splendour is well known. The ordinary yellow pyrites is of frequent occurrence in Wales and elsewhere; and its little bright pyramids and parallelopedons may readily be mistaken, by the unwary, for gold. The "peacock-copper" of Tuscany has iridescent colours. Like the yellow pyrites, it is a double sulphuret of copper and of iron. The Fahlerz, or grey copper, of the Germans, contains, besides copper and iron, silver, arsenic, and antimony. It is smelted for the sake of the silver and the copper; but is extremely difficult to manage, from the complex nature of the ore. But it is highly probable that in this grey copper we have an indication of some of those deposits of natural alloys, which fact suggested to the ancient metallurgists the production of bronze.

Tin,—which, with copper, constitutes true bronze,—is stated in the works on metallurgy to be unknown as a mineralogical neighbour of the latter metal. It is not known to occur in a virgin state. The Cassiterides, or tin islands of the ancients, whence this valuable metal was brought by the Phœnician navigators before the time of Homer, are as yet undetermined; though some authors have sought to identify them with our Cornish coasts. Tin is usually found as a crystallised oxide, of a chocolate-brown colour, and of a form closely resembling rock crystals. More rarely it occurs in what are called stanniferous sands, either yellow, rose-coloured, or translucent as crystal. It is found in India; supplies at present are derived from Banca and Malacca, as well as from Cornwall. It also occurs in Brittany. The island Vectis of the early navigators, has been explained to lie at the mouth of the Loire; to be the island Saint Michael; to be the Isle of Wight. From each new guess we come to the same result,—the importance of a better physical survey of the Old World.

There is little doubt that, on descending to historic times, tin was brought to the basin of the Mediterranean from India, from Gaul, and from Britain. The mineral was readily separated, by washing, from the sand in which it was found, and then exposed to heat. As the ore is a compound of oxygen with tin, a charcoal fire will effect the reduction of the metal, so that the process has little varied, in principle, from the earliest date to the present time.

No ancient author speaks of bronze, the *as*, or *chalcus*, of the Classic writers, as if possessed of any acquaintance with its compound character. The hardening, tempering, and working of bronze is spoken of as we might now speak of the manufacture of iron. When not only the sword and the hunting-knife, but the chisel, the

needle, the axe, and the fish-hook were made of bronze, there can be little doubt that the early craftsmen studied and experimented how best to give to their work the hardness of the flint, combined with the elasticity or tenacity of bone.

Very recent discovery has thrown a ray of light on this difficult subject of inquiry. In the immediate vicinity of Sidon, in the ancient Phœnicia, have been recovered not only copper-mines, but a closely neighbouring lode of stanniferous crystals. It is also stated that coal sufficient to carry on the operations of smelting is in the immediate neighbourhood. A ridge of hills runs east and west in this part of Syria, terminating chiefly on the coast. Steps are in contemplation for the reopening of these ancient mines. But their discovery is more important as an archaeological than as an industrial question. It tends to show that Nature herself indicated the original mixture of bronze. The position of a source of this alloy in the very head-quarters of the most famous mariners of antiquity is another most instructive fact. Hitherto it has been utterly inexplicable why the tin of Cornwall or of India should have been sought in order to mix with the copper of the Mediterranean seas. But when the alloy had once been indicated, or casually found, by the smelting of contiguous ores, the search for the rarer metal would have been a natural result. Again, what occurs at Sidon may have occurred elsewhere, and the very earliest bronze may have been indicated by Nature herself.

Brass, which is an alloy of copper and zinc, is much more modern alloy than bronze, being but little of its existence before the imperial age of Rome. We find that new brass coins were struck by Julius Cæsar, which Pliny says contained *cadmia* from the Luvian mine, and were equal to the excellence of *aurichalcum*, or *sestertii* and *dupondii*. *Aurichalcum* is sometimes spelt *aurichalcum*, as if it meant copper of a golden colour; but its etymology really notes "mountain copper," and some native notes "mountain calamine, or zinc ore." Strabo speaks of a "false silver," which, mixed with copper, became a *brass*, or alloy, which some called *aurichalcum*. Copper itself is said to have derived its name from the island of Cyprus; and *brass*, or rather the Greek word *chalcos*, from *chalcos*, in Eubœa. The Corinthian brass, which is occasionally mentioned as of extreme value, is generally taken to be the same as *electrum*, or mixture of gold and silver. Specimens of an argentiferous gold, rich in silver, from Transylvania, are to be seen in the British Museum, under the name of *electrum*, which attract attention from the sharpness of the crystalline forms. As the knowledge of metallurgy passed from a craft into a mystery, and especially when the expectation of being about to discover the secret of the transmutation of metals had seized the imaginations of men, tin was known by the sign of Jupiter, copper by that of Venus, gold and silver by those of the sun and the moon. The specimens to be found in museums of ancient objects in bronze are numerous and important. We are not now referring to the statuettes and sculptural bronzes, amongst which may be found some of the most perfect specimens of ancient art anywhere extant. One of the latest additions to the bronze-room of the British Museum is a female head, of unrivalled beauty; and also of great interest, as showing much of the method of the ancient workers in bronze. But we rather call attention to such undated specimens as the bronze Etruscan *krater*, found at Capua, with mounted Amazons round the rim; and the draped female figure from Sessa, the Volturmo, a town famed for the rare beauty of its women,—one of the most ancient and interesting examples of casting in bronze. Ancient bronze has not the indestructible character of the precious metals. The disappearance of a vase, may, unless special care be taken for its preservation, lead to the rapid crumbling of the object into dust. At Baine, near Naples, an ancient cemetery, in which the different construction and structure of three super-imposed sets of tombs bear testimony to the successive occupation of the spot by three distinct races, the Oscan, or Etruscan tombs, in this cemetery, are built of square stones, with a pyramidal top, not unfrequently contain large bronze vases, of nearly globular form, which are found bedded in a layer of perhaps not more than 6 in. of consolidated dust. The late Count of Syracuse opened many of these tombs, and recovered many interesting objects; amongst others, the

dresser-case of a lady, with implements in bronze. It was his Royal Highness's custom to have the bronze objects plunged into boiling water immediately on being unearthed, which was stated to be the only known precaution against speedy decay.

An extremely interesting question is as yet unsolved as to the method of coinage in use in ancient times, not for copper alone, but for gold and silver. The subject is intimately connected with that before us, from the fact, that the dies used in coining were exclusively of bronze or of copper. From the beauty and sharpness of many ancient coins it is evident, not only that the art of the die-sinker, as matter of graceful taste, was of a very high order, but also that the metallurgic or mechanical part of his craft must have been adequately advanced. That means of hardening bronze, with which we are not now familiar, formerly existed, seems hardly to be questioned. But our most accomplished numismatists speak with no little hesitation as to the process by which the impression of the die was communicated to the coin.

We are not, however, without some positive information on the subject, although more is still very desirable. The British Museum possesses amongst its numerous treasures an ancient Roman die. This is an iron implement, formed in two parts, one being a socket, into which the other fits. In the middle of the socket is a circular recess, into which a copper coin is fitted. The plunger, or upper portion of the die, has a similar recess, fitted also with a copper die. The disc of metal to be struck must have been placed on the lower die, and the guidance of the socket served to bring the upper die into exact opposition to the lower. There is no collar in order to keep the coin central on the die. It is possible that a loose collar may have been lost, but the probability is, that the metal instrument is complete as it exists. The reason for this opinion is the great irregularity with which many ancient coins are struck. It is rare to find the impression central. A piece of unstamped metal is often found on one side, while the device overlaps the metal on the other. This irregularity would, however, have been very natural, if the disc were simply placed on the die by the workman, without any collar to confine it. In the recent improved process for striking coins and medals, a loose steel collar is added, which at once gives a central position to the device, secures the exact roundness of the coin, and serves to mill or ornament the edge. The process may be watched any day at the International Exhibition at South Kensington. It is to be lamented that the modelling of the large gilt medal, which has been recently issued by the directors of that institution to the exhibitors, does not equal the mechanical excellence of the machinery by which it is turned out.

The question remains, of the mode in which force was applied to the dies. The word "struck" is still employed, although it is, in fact, a gradually increasing pressure which is brought to bear on the disc. In the earliest coins it is very possible that a violent blow was actually given to the die. The square depression on the reverse of many ancient coins seems to point to this method of formation. But the British Museum die has not been so treated. It is made of excellent iron, more closely resembling that of Styria than any now commonly made, but which we believe to have been procured from the Apennines. But the plunger, or upper part of the instrument, has no marks such as a series of violent blows would have occasioned. Our readers who are accustomed to the blacksmith's sets will understand what we mean. Nor is this freedom from foliation or crushing due to want of use. The copper dies inserted in the coin bear signs of considerable use.

We think that the inference is unavoidable, that the iron must have been inserted in wooden blocks; and that pressure must have been applied as it is in the oil-presses and the macaroni-presses of Italy, at the present day, by the combination of the lever and of the screw. The habits of the peasants and lower classes of the Peninsula, especially in the wilder parts, as in the Abruzzi and the Calabria, are wonderfully little changed since the imperial times. At Canosa, for example, the very same grittiness in the bread which Horace deprecates in his journey to Brundisium still endangers the teeth of the eater. The mode of applying enormous

pressure which is now in use is, there can be little question, as ancient as it is effective. Rude in its details, it is essentially in principle one with the latest machinery of our mints.

The dies in the instrument which we are describing seem to be of copper, and bear marks of rough usage. But it can hardly be doubted that among the Greeks, and probably the Asiatic nations, hardened bronze was employed. Some of the vexed questions as to ancient coins hinge, to a great extent, on this subject of the hardness of the die. Thus when coins are found very closely resembling one another, but not *fac similes*, it is supposed that they are produced by different dies cut and used in the same year. This, of course, is possible, although it is also possible to ride such a hobby to death. Thus De Saulley figures, in his "*Recherches sur la Numismatique Judaïque*," plates xiv. and xv., eight copper issues, or assariens, which differ very widely in their treatment of the palm-tree and the vine-leaf which they bear, in the arrangement, and even in the type or form of the letters on the field; and ascribes them all to the same year,—viz., 134 of the Christian era. This extraordinary attribution is only brought within the limits of possibility by the assumption of the use of numerous dies in the same year,—an assumption, however, that does not account for the artistic and palæo-graphic differences of the pieces in question. It has been clearly shown by a writer in an important contemporary publication ("*Bible Educator*," parts xiv. and xv.) that the year II. on these coins refers to the second year of the seven, a constantly recurring date, the distinction of which, on the coins used for sacred tribute, was important. Thus the absurdity of attributing 90 per cent. of all the known Jewish coins to the outside 9, out of 184 years, will, it is to be hoped, not disguise any further works on coinage.

The distribution of copper over the surface of the earth is wide and abundant. In the Old World it occurs in Asia Minor, Italy, Spain, France, Morocco, Algiers; as well as in Persia, Abyssinia, Congo, the Cape of Good Hope district, and Madagascar; and in England, Germany, Sweden, and Russia. It occurs on the shores of Lake Baikal, in China, and in Japan. It is found in Australia. In the New World it occurs in Canada, in the United States, in the Antilles, in California, and in Chili. It tinges the promontory of Cape Farewell. These are only the best known and more conspicuous deposits, as they appear on the face of the map. In Russia, copper mines were worked, in prehistoric times, in Siberia, in the Bashkir land, and in the Kirghis steppes, by a people of whom we have no account. Early in the present century the now famous mines of Nijni Tagil were commenced; and soon after it was discovered that the whole of the eastern slope of the Ural, from Voskresensk in the extreme north, to near the village of Malvatina in the extreme south, abounded, more or less, in copper. Tin is also found in the Ural, though it is not now worked. The yield of the ore at Nijni Tagil, from 1814 to 1830, was above 3 to 4 per cent. In 1836 it rose to 5 per cent.; from which it has gradually dropped to half that proportion. The depth of the mines here is ninety fathoms. Near Simbeisk, in former times, it was found profitable to work a copper ore which contained only 2 per cent. of metal. Old clay pots have been found here, which were used by the early smelters, and which indicate from their great rudeness, a richer ore, as no results could be obtained from the present ore by so rude a process. At the fair at Nijni Tagil copper ore sold, in 1870, at from 2½ to 3 kopecks per pood, being equal to from 3s. 11d. to 4s. 8d. per ton; so that the copper is made for 47½. 6s. per ton. The Ural Mountains yield, besides copper and tin, gold, silver, lead, sulphur, chrome ore, diamonds, jasper, marble, talc, alabaster, and steatite.

Spain was the great source of the supply of metals for the Romans, as well as for their rivals, the Carthaginians. Ancient mines have been discovered in the Spanish peninsula, some of which have been resumed with profit. Veins of copper and of tin, as well as deposits of lead, of iron, and of antimony, await the industry of the Spaniard, whenever the good time shall arrive when Spaniards become industrious.

In the Alpine districts, Piedmont is rich in metalliferous strata. The Val d'Aosta is rich in copper pyrites, as the Val d'Ancône is renowned for gold pyrites. The mountains which border the Gulf of Genoa, are rich in copper. The hills of Modena, famous for their

quarries of Carrara marble, contain copper, as well as iron, lead, and silver. On the north portion of Tuscany are found veins of argentiferous copper. From the mines of Campiglia the bronze of the ancient Etruscans is said to have been derived. In fact, the whole western slope of the Apennine chain, running to the south-east from the shore of the Gulf of Genoa, is rich in metalliferous strata. The silver which formed the materials for the famous coinage of Syracuse, was derived, it is thought, from the Calabrian Apennines.

From this hasty glance at the regions whence much of the metal used in the bronze period must have been derived, indications may be grasped which the advance of physical geography will convert into positive sources of knowledge. It would seem that copper, like gold, existed in a virgin state, and that the native lodes and the richer ores were successively exhausted, until the ore became too poor to repay the rude process of the ancient smelter. It also appears clear that, in certain places, as at Sidon and in the Oural, tin is even now found in close proximity to copper. In other places calamine, or zinc ore, is found near copper lodes. We infer that both bronze and brass were thus, in the first instance, the natural products of certain rich lodes or ores. As these, in the long lapse of time that preceded the use of iron, became exhausted, commerce, taught by metallurgy, sought the rarer metal, tin, in those spots whence it is now derived.

GREY ABBEY, COUNTY DOWN.

A MONOGRAPH of this abbey, so far as it remains, is sent to us by Mr. James J. Phillips, of Belfast, as a contribution from the other side of the Channel to the study and illustration of Cistercian architecture, which seems likely to be a *cheval de bataille* for architects and archaeologists for a time, now that the way has been so energetically led by an able English illustrator of the subject. The Abbey of St. Mary of Grey is not far from Belfast, and the portions remaining include the church (the greater part of the main walls and two of the "crossing" arches), the walls of the chapter-house, pantry, kitchen, and refectory to a height of about 4 ft. from the ground, except the south and west walls of the refectory, of which more is standing; the south end, with its gable and lancet windows, is nearly complete, though much overgrown with ivy. From the regularity with which the other walls are reduced to their present level, there can be little doubt that the building has, as in so many similar cases, been systematically used as a quarry, though there is no cut stonework in it, except on the jambs of the doors and windows. It is now, we are informed, in good hands, and under careful custody.

The plan tallies with the ordinary Cistercian plan in its disposition; the long building (now to be called *Dormus Conversorum*) usually found on the west side of the cloister court, has entirely disappeared as far as visible tokens go, but an excavation would probably reveal its foundations. The remarkable incident in the plan of Grey Abbey is the fact of the nave consisting only of a single aisle, an arrangement quite inconsistent with the ordinary Cistercian plan. In explanation of this the author adopts the opinion of the diocesan architect of the district, Mr. T. Drew, R.E.A., who suggests that this nave was an antecedent Irish work, similar in type to other ancient churches of the diocese, which are "long, narrow, rectangular buildings of such striking similarity in plan, proportion, severe simplicity, and such architectural details as remain, that they must be recognised as the work of a unique and distinctive school of church builders." Seeing that the chapter-house and friary have the remains of the nave piers dividing them into three and two aisles respectively, it would seem in the highest degree improbable that the same builders should have built the church, the largest and architecturally most important part of the group, in a single compartment; and the view quoted above is antecedently probable. The tracery and outer jamb mouldings may very well have been inserted in the older walls; in the same way that the small Late Perpendicular window in the west end has been inserted at a yet subsequent period, the original circular arch yet remaining over the inner jambs. Tracery, or the remains of it, occurs only in the windows of the choir, the rest being lancet lights; and the tracery, as far as we can judge by the drawings given of the small

portions that remain, appear to be of comparatively late date.

The east end of the church exhibits a simple and dignified elevation, with two stories of triple lancet openings. The west doorway is deeply moulded, and is a fine specimen of late twelfth-century work, as also the doorway in the west wall of the transept, probably formerly opening into the cloister.

Mr. Phillips, who is author of both the letter-press and the lithographic illustrations, has taken much trouble in rendering his work complete, and acknowledges assistance from several gentlemen whose names are well known in archaeology. The illustrations, to a small scale, are effectively drawn; we should, however, prefer uniformity in the illustrating process, and not a mingling of pen-drawing with lithographic chalk; which latter medium, besides, is more suitable for illustrations of a "popular" type than for giving what architectural students must look for. We must point out also that to the architect such a monograph cannot be regarded as complete without sections of the mouldings to at least quarter-size; the little sections given here are of no use, except just as explanatory of the drawings.

A facsimile is given of the principal masons' marks found on the building, which the writer observes, "correspond with masons' marks of various dates found in different parts of the world, as a comparison with the extensive series collected by Mr. Godwin would show." He adds that "the very practical and common-sense workmen who wrought the stones for this abbey left other marks than these little incisions, and on such fragments as the sections of the clustered columns are to be found the lines by which, seven hundred years ago, the stone-cutters squared and set out their work."

EDINBURGH.

HITHERTO the district police-stations in this city have been buildings of no architectural character. A new station for the west has just been completed from the designs of Mr. Robert Moreham, city superintendent, which is an exception to this rule. It is situated at the east end of Torphichen-street, and consists of three stories; the sky-line is broken by a main gable terminated by a foliated finial, gable windows with appropriate finials, and a square tower having a steep slated roof culminating in a louvre ventilator. The doorway of the police-office is semicircular-arched and moulded, and the entrance to the fire-engine house is similarly treated on a larger scale. The building cost about 4,000*l.*, and is a picturesque erection, in which a good effect has been produced without unnecessary expenditure.

In George-street a large frontage has been screened off, and operations have been commenced for the erection of new offices for the Union Bank of Scotland, designed by Mr. David Bryce, R.S.A.

In London-road a large and handsome church is approaching completion for the United Presbyterian body, from the designs of Mr. Harforth, of which more hereafter.

The Osborne Hotel, at the west end of Princes-street, is now completed. It is an imposing pile, of French character, the details executed in compo; it will not add to the architectural reputation of the city. We understand that the Clarendon and Waverley hotels, both in Princes-street, are to be overhauled and rendered more convenient within, and more attractive outwardly; at present they consist merely of adjoining dwelling-houses, having no distinctive character.

The University authorities have invited the following gentlemen to compete for the new Medical Class-rooms:—Mr. David Bryce, Messrs. Cousin & Lessele, Messrs. Peddie & Kinnear, Messrs. Wardrope & Reid, and Mr. Robert Anderson. Mr. Bryce has invariably declined to compete, and has not made the present an exceptional instance. The other gentlemen have, however, intimated their willingness to do so.

In the first instance, small sketch drawings are to be submitted, accompanied by explanations, but without coloured perspectives, and must be lodged on or before the 1st of December next. The cost, exclusive of fittings, is limited to 70,000*l.* The committee express a preference to fitness and propriety of style rather than to elaboration in detail, and call attention to recent improvements in buildings of a similar nature. The accommodation required for the various

classes is as follows:—Anatomy, 4,000; chemistry, 400; physiology, 250; pathology, 200; materia medica, 250; surgery, 250; practice of physic, 250; midwifery, 200; medical jurisprudence, 200; with a retiring-room attached for each professor. There are likewise required, an anatomical theatre, with a superficial area of 1,800 ft.; an anatomical museum, 112 ft. by 40 ft., and 42 ft. high, with two galleries surrounding the area; a dissecting-room, 100 ft. by 40 ft., and 30 ft. high, with cellars attached; a museum of chemistry, an apparatus-room, and other accommodation for that department, &c. The University hall must provide accommodation for 2,000, the ground-floor to be an open area, with movable seats, and three sides of the hall to have galleries with fixed seats, the fourth side to be occupied by a platform, with accommodation for 300 persons.

The site of the building is, as we have already informed our readers, at the entrance to the Meadows, and adjoining the new infirmary. It comprises the space presently occupied by Park-place, Teviot-row, and Park-street. It is open on all sides, the aspects to the west and north being particularly good for architectural display. To the eastward there is a block of buildings, forming part of the west side of Bristo-street, which is very contracted at this point, the removal of which would greatly enhance the effect of the new buildings, besides being a great improvement in other respects.

EAST LONDON RAILWAY.

THE East London Railway is not, like many that have been constructed before it, a means of communication by railway between one locality and another as termini, or to bring a particular place or district into communication with some great railway system. It is at present, in so far as opened, a merely local line, but when it has been completed, according to the intentions of its promoters, by the execution of the works that are now being carried out, it will be a continuous through route between the great railway systems on the north of the Thames, and others on its south bank, particularly the South-Eastern, and the London, Brighton, and South Coast, and will command, doubtless, in the future a large mineral and other traffic.

The portion of the line now open is from Wapping to Newcross, and to the Old Kent-road Station of the South London line, by which there is communication with Peckham, Denmark-hill, Brixton, Clapham, South Lambeth, Battersea, and Victoria Stations. The junction between the East London and the South London lines was amongst the first portion of the works completed. It will be seen that by change of carriages this route gives travellers by the East London access to the London, Chatham, and Dover lines at Loughborough.

At present the East London line has its terminal station closely adjoining that of the Brighton Company at Newcross. By changing from the one station to the other, the East London passengers have, of course, access to the Crystal Palace, and to all stations on the Brighton line.

The works now in progress, and that are in an advanced state, at the southern portion of the East London system, are up and down junctions with the South-Eastern and the Brighton and Newcross Stations. These branches are in all something over two miles, and include a crossing under the main line of the South-Eastern, which has four lines of rails near the Newcross Station. This has been effected without any interruption to the heavy local and through traffic of the South-Eastern other than the exhibition of a green, or caution, flag at the place where the works are being carried out. This line, the reader may be reminded, is the one most used by Imperial, Royal, and other distinguished personages travelling between England and the Continent. The South-Eastern road is carried on flanged girders of wrought iron, 12 in. deep, and placed at 5 ft. between centres. The head-room for the trains of the East London passing beneath is about 14 ft. The finished works on the East London line include two other crossings, of a similar character, under the main line of the South-Eastern, and a crossing under the main joint lines of the Brighton and South-Eastern at Redhill.

The East London line, as has been stated, is already open between Newcross and Wapping. From Newcross to Deptford-road Station, or nearly so, the works are of an ordinary character.

From that point the works become very heavy, in the retaining walls of the Grand Surrey Docks, which are closely skirted by the line, and in the descent, by covered-way and tunnel, to Rotherhithe Station, at the southern entrance to the old Thames Tunnel, which has been utilised for the railway route. Rotherhithe station platform is at the bottom of a great well, that is, bounded by high battering walls on each side, that are assisted in retaining their positions by cast-iron struts of enormous weight, resting on the piers on each side. The old tunnel needed but little done to it beyond the laying of the rails. The original well and stairs at Wapping that led to the tunnel still remain.

Beyond Wapping, the works, which are very heavy, are in active progress. The northern end of the line will be a junction with the Great Eastern, and an entrance to the Liverpool-street new station of that company. From this point the East London Company will have access to the Metropolitan system, and, through union with the Great Eastern Company with the Great Northern, Midland, London and North-Western, and other companies, having communication with all parts of England and of the United Kingdom. Sir John Hawkshaw, F.R.S., is engineer-in-chief of the East London; Mr. W. Hunt, his courteous and efficient resident engineer; and Messrs. T. & C. Walker, are the contractors.

ARCHÆOLOGICAL SOCIETIES.

Leicestershire Archaeological Association.—The general meeting of the members of this society was taken place. The first day was devoted to the gathering in the old Guildhall, under the presidency of the Mayor, Mr. W. Kempson. At the morning meeting a local paper, contributed by Mr. T. North, on "the Pates of Eye, Kettleby, and Lysonby" was read, and an inspection of the five old churches of Leicestershire—St. Martin's, St. Mary's, St. Nicholas's, All Saints', and St. Margaret's—was made.

This inspection being completed, the party avoided their way to the Wellington Hotel, where a number sat down to a cold collation, presided over by the Mayor. At four o'clock a gathering took place at Wyggeston's Hospital, the ancient characteristics of which were explained by Mr. Thompson, who afterwards conducted the party to various objects of local antiquarian interest, including the Jewry Wall, the Castle, and Trinity Hospital.

The Public Evening Meeting was held in the Town-hall, under the presidency of the Mayor, at eight o'clock, when the attendance was very limited.

Mr. James Thompson began with reading a paper on the Rolls of the Mayors of Leicester.

Wednesday was devoted to an excursion to the churches of Syston, Rearsby, Gaddesby, Ashby Folville, Twyford, Queenborough, and Barkby, the guide being Mr. M. H. Bloxam, of Rugby.

Wiltshire Archaeological Society.—The annual congress of the Wiltshire Archaeological and Natural History Society has taken place at Devizes. The opening meeting was held in the town-hall, in the presence of a numerous assemblage. The president for the year, Mr. Gabriel Goldney, M.P. for Chippenham, presided; and the company included Sir John Awdry, the Ven. Archdeacon of Wilts, the Right Hon. E. P. Bouverie, the Rev. Canon Jackson, the Rev. C. Awdry, the Mayor and Corporation of the Borough, the Rev. A. C. Smith and Mr. W. Cunningham, the honorary secretaries, and many of the principal residents in the district. The Rev. A. Smith conveyed to the meeting the great regret felt by the Marquis of Lansdowne that his absence from the country would prevent his attending the congress. Mr. Smith then read the annual report, which congratulated the members upon the fact that this year the Society had attained its majority, having been established twenty-one years. The present muster-roll contained 341 names, and not a few of the members were archaeologists whose fame extended far and wide. The Right Hon. E. P. Bouverie moved the adoption of the report, and, while admitting that beyond being a member of this Society he had title or no claim to be considered an archaeologist, said he nevertheless felt a great interest in the preservation of those ancient monuments in which Wiltshire abounded. He remembered to have seen while travelling across the county of Wilts, some forty or fifty-five years ago, parties of men engaged in breaking up the noble stones of the Druidical Temple

at Avebury, for use in the repair of roads, and partly owing to the operations of such societies as this, that spirit had almost entirely passed away, and there was a strong desire in these days to maintain those monumental mysteries, as many of them were, they being interesting links between us and the early occupiers of our land. Canon Jackson, Mr. H. A. Merewether, Q.C., and others, also spoke; and the president (Mr. Goldney) delivered an address on archaeology. The business of the meeting having closed, the company visited the new museum and library, which were formally opened. The collection of objects was well arranged. In the evening there was a *conversazione* in the town-hall, after dinner at the Bear Hotel.

SOIRÉES AND LECTURES AT NORTHAMPTON.

THE DEEP WELL—ROMAN CATACOMBS—FLINT IMPLEMENTS.

A VERY spirited and highly successful series of soirées and lectures to inaugurate the Northampton Museum, with music, experiments, works of art, and other exhibition displays of interesting objects, has been carried out by a committee appointed for the purpose; and the local *Herald* and *Mercury* give full reports of the proceedings.

One of the papers was on the local deep well, by Mr. A. Haviland. The lecturer, in commencing, drew attention to the fact of the prevailing drought during the last six months having brought to the minds of the people the necessity of understanding well-sinking. Taking the whole year, nearly 10 in. were in defect. He then drew attention to the different sources of water within the neighbourhood of Northampton. In the first instance, he stated that there were drift gravels which were to be found in pockets of the Upper Lias Clay. This was one source. In high grounds especially these patches of drift gravel were the abundant source of water—a superficial, and, therefore, an easily attainable source by the Abyssinian pump. This cropped out in conjunction with gravel and clay, and supplied the villages with water, though not persistently. The next source that we had was one we found at Kingsthorpe; first, where the water was got at in the Marlstone, and through which it percolated until it came to the Estuarine Clay which underlaid it. This was another source of their water-supply. The next source was the Northampton sand, which cropped up beneath the Estuarine Clay. When present, it became also a great recipient of rain. This lay on the Upper Lias Clay, and was the great source of water throughout the county. It was the original source of the water that supplied the old conduit of the town in the fifteenth century. This, the lecturer pointed out, was a supply which was so failing in consequence of the drought. He then said that if such a town depended entirely upon this third source, they would practically be without water; that, foreseeing this, the Water Company had, in 1897, procured a supply from the Marlstone, which lay underneath 153 ft. of the Upper Lias Clay. He pointed out how this Marlstone in Northampton and the neighbourhood within ten or twelve miles cropped out upon the surface on the high ground, and there received the rainfall; and it was from this abundant outcropping of the Marlstone in Leicestershire and Rutland, and a great portion of Northamptonshire, that the Marlstone water-source was derived.

"A Visit to a Roman Catacomb," by the Rev. Dr. Scott, was the subject of another lecture. The rev. gentleman commenced by saying that owing to the destruction of the early Christian records under Diocletian, the Roman catacombs were invested with a peculiar interest, as the chief source of information concerning the history of the age of martyrs, from a Christian point of view. The Catacombs were the burial-places of the early Christian dead. There were to be found the bodies of the martyrs, in sepulchres specially designed for their honour. Here were St. Flavia Domitilla, niece of Vespasian, with her Chamberlains, SS. Nereus and Achilles. Here was martyred St. Sixtus, and here rested St. Lawrence, his deacon, likewise a martyr. Here were hidden the early Bishops of Rome. Here the early Christians assembled at the martyrs' tombs for the celebration of the Holy Eucharist. Here St. Jerome tells us he was wont to spend the Sunday afternoon with his youthful companions,—visiting these resting-

places of the early Christian heroes. In fact, here we found the roots of the great tree of the Christian faith. The Greeks would admit none to high political office who had not duly cared for their fathers' tombs. The Romans, from the same feeling, granted perfect liberty of choice for all to bury the dead where and as they pleased, provided the spot was sufficiently removed from the city, and a few other similar legal arrangements complied with. Thus the Christians were enabled to bury the martyrs where they suffered. Hence we have the tomb of St. Peter on the Vatican, of St. Paul on the Ostian Way, of St. Priscilla, and others contemporary with the Apostles. In course of time this resulted in a vast underground necropolis, extending, if all the galleries were in one line, certainly to a length equal to that of Italy, and not improbably to a distance of a thousand miles. During 410 years from the time of the Apostles 6,000,000 ordinary Christians and martyrs were here laid to rest. After that period the Catacombs were visited as shrines by the liberated Christians. In course of time the martyrs' bodies were removed to churches especially built for that purpose above-ground. Then after Rome's troubles at the hands of the invading barbarians, the catacombs remained hidden and almost unknown for 700 years. They were partially rediscovered in the sixteenth century, and were in our day being for the first time completely investigated.

Flint Implements.

Mr. S. Sharp read a paper on early flint implements, which is of especial interest with respect to what we had occasion to say two or three years ago as to the true nature of the glacial era, as one simply of *extreme summers alternating with equally extreme winters*—an idea long entertained by us, and to which we were lately much pleased to find that Professor Owen distinctly and explicitly adheres. The lecturer, in commencing, said, he should divide his short discourse into three sections. In the first he should state the when, the where, and under what circumstances these implements had been found. In the second he should address reasons for the conclusion that they were really of man's handiwork, and state the uses to which they were applied. In the third he should attempt to convey an idea of the extreme remoteness of the period at which the fabricators of these flint implements had lived. The first record of the finding of an unpolished worked flint hatchet was in the British Museum. In the catalogue of Sir Hans Sloane's Museum (upon which, in 1853, the British Museum was founded) was a description of a "British weapon" which had been "found," as the catalogue states, "with an elephant's tooth, opposite Black Mary's, near Greys inn lane." This weapon (which our present knowledge told us was fashioned long before there was a "Britain" at all) was still in the British Museum. In the 13th volume of the "Archæologia" was an account of "flint weapons" found at Hoxne, in Suffolk, in gravel containing fresh-water shells and bones of elephants. Several of these "flint weapons" were still preserved in the Museum, and many others from time to time, up to a recent period, had been collected from the same spot. About 1830, the Rev. Mr. McEnery, a Roman Catholic clergyman, explored the caverns near Torquay, known as Kent's Hole, and found, in the lower bed, numerous worked flints, associated with the teeth and bones of the mammoth (or woolly elephant), the woolly rhinoceros, cave bear, hyena, &c. This cave had since been thoroughly explored, and Mr. McEnery's discoveries fully confirmed and greatly amplified. In 1833, Dr. Schomberg, of Liege, discovered in caves, in the valley of the Meuse, in Belgium, in places 200 ft. above the river level, bones of man and worked flint, "surrounded by teeth of elephant, rhinoceros, bear, hyena, and horse." Numerous flint implements had been found in other localities in Belgium. In 1841, M. Boucher de Perthes, of Abbeville, discovered in the gravel of the Somme valley, at Menchecourt, near the city, a worked flint associated with bones of extinct mammals; and subsequently many at various places in the same valley, associated with teeth of the mammoth, and bones of other extinct mammals. He published a work, in which he attributed the worked flints to antediluvian man, and concluded that they and the huge mammalian remains had been entombed together by the deluge. In 1858, the attention of Dr. Falconer, F.R.S., the great English naturalist and geologist, was directed to the subject; and, at his suggestion, a

party of eminent geologists and antiquaries visited Abbeville and Amiens, inspected the collections of the French geologists, examined the gravels in which the implements and animal remains had been discovered, found many of the flint implements and elephants' teeth *in situ*, verified the conclusions already arrived at as to the real association in time of the implements with the elephants, and assigned to them an antiquity incomparably greater than that assigned them by the French philosophers. Since that time, such flint instruments had been found in abundance in the valley of the Lark and Little Ouse, in Norfolk and Suffolk, and in smaller numbers in the drift of the Reculvers Cliff in Kent, at several places in South Hampshire, in the Isle of Wight, near Salisbury, and in many other localities in this country too numerous to refer to now. Numerous cases in France occurred, containing, not only the handiwork of man in flint associated with the remains of extinct animals, but human skeletons and bones, and with them fragments of coarse pottery and numerous worked objects in bone, ivory, and cervine horn. The extinct species of animals found in this country, in association with flint implements, included the mammoth, or woolly-coated elephant (at least one-third larger than any living elephant), another still larger elephant, a woolly rhinoceros, another species, a large hippopotamus, the cave bear, cave hyena, cave lion, the *machairodus*, or sabre-toothed lion, an immense deer (*megaceros*), a huge ox, bison, &c. Besides these, many animals extinct in this country, but occurring in other parts of the world, such as the musk-buffalo, the reindeer, the arctic bear, the grizzly bear, &c., had been found in the same deposits. If it was asked, what were the uses and objects of these early flint implements, he should certainly say that some forms of them were used as weapons of offence in the shape of missiles, some as hatchets or hafts of handles, others as hatchets used naked in the hand; some large ones, it had been thought, were used for rudely tilling the soil; some evidently for scraping skins. The simplicity of the times in which the human fabricators of these flint implements lived, depended greatly upon the questions as to whether these objects of human handiwork were really contemporary with the animals with whose remains they were found stratigraphically associated, and as to the remoteness of the period in which those animals existed. The age represented by the association of man with extinct animals had been termed by Sir John Lubbock, F.R.S., the Palæolithic, or ancient stone age, and this age was divisible into two periods of successive remoteness, marked in the latter period, as compared with the former, by a great advance in manipulatory skill, indicating a commensurate advance in the direction of civilisation. These were classed as the river Gravel or Drift Period (the earlier) and the Cave Period (the later of the two). To establish the coeval coincidence of man and the mammoth in the earlier, the Drift Period, was not so easy of proof as in the Cave Period. With reference to the latter, indeed, their contemporaneity was indisputable. In beds of the Gravel Period no human bones had yet been discovered, but so universal had proved the stratigraphical association of the great extinct mammals, that it had become an accepted expectation that where the one had been found the other would be found also. In the Woodwardian Museum, at Cambridge, were the skull and horns of a bison, of an extinct and immense species, found in the gravel near there: when found, the cranium was fractured, and in the fracture was a flint implement, such as those he now exhibited, proving three things,—the presence of man; the use by him, at any rate, if not the manufacture, of the flint implement; and the contemporaneous existence of man and the extinct beast. Positive proof was offered in the caves of the south of France that man and the mammoth and other extinct animals did really and truly live at the same time. It had been stated that in these caves skeletons were associated with flint implements, coarse pottery, and objects wrought in bone, ivory, and cervine horn. The last included domestic instruments, needles, harpoons, &c., wonderful incised drawings upon bone of various animals, a reindeer horn carved into an easily-recognised figure of a reindeer, and, most wonderful of all, upon a fragment of a mammoth's tooth, an incised drawing, by these cave men of the Glacial era, of the living mammoth itself, which no Palæon-

tologist could fail to recognise, and which no naturalist could mistake for a representation of a now existing elephant.

THE STRIKE IN THE SLATE QUARRIES.

SIR,—I have recently spent some days in the slate-quarries in Carnarvonshire, Merionethshire, and Montgomeryshire, where the closing of Lord Penryhn's great works excited universal interest, and although, since my return to town, the dispute has been "patched up" it is still entitled to more public discussion than it has hitherto received out of Wales.

It is estimated that the number of skilled slate-makers and rockmen in the Bangor district does not exceed 6,000, of which number about one half were employed at Lord Penryhn's quarries; the quarries at Festiniog, Machynlleth, &c., employing about 3,000 more: so that the supply of slates for the United Kingdom, besides the large and increasing export trade, depends upon the industry and skill of about 9,000 men; and so great is the demand for the produce of their labour that it is necessary to book orders at the quarries for long periods before delivery is required,—often as long as eighteen months in advance,—and yet, in the face of so prosperous a trade, with prices steadily increasing under the prevailing laws of supply and demand, some 3,000 men are allowed to abandon the largest slate-quarry in the world, on grounds which appear to be singularly insufficient to the unprejudiced inquirer. The system of working a slate-quarry is by piece-work,—the men generally working in gangs or crews of three or four,—at prices for the slates produced in accordance with printed lists; but, as the formation of rock is more or less favourable for the production of slates, when a certain piece of rock or "bargain," as it is termed, is let to the men, a payment is agreed upon, in addition to the price-list of slates, in order to rectify the inequality in the formation of rock; and this payment, called "poundage," is regulated according to the appearance of the formation. Thus a bargain may be let without any poundage if the slate rock be of easy split, and with horizontal foot joints of the necessary division for the different sizes of slates. This would be known as a "first-class bargain"; and at the printed scale of prices three men would make 20l. to 25l. per month; but if the joints be irregular, the split more difficult, and in consequence the slates produced reduced in number by such defects, poundage, ranging from 2s. 6d. in every pound's worth of slates made up to 40s. or 50s., is added to the prices. Most quarries contain different strata of slate-rock, varying in their colour, spots, stripes, joints, size of blocks, &c., and these peculiarities make it difficult to fix the proper poundage.

Having fixed the terms upon which a bargain was let, one would naturally suppose that whatever the result of the working, the men would be paid the amount earned according to agreement; but, in Lord Penryhn's quarry, while no guarantee existed of a minimum rate of wages, a maximum was fixed, no man being allowed to receive more than 5l. for a month's work, although he produced slates which entitled him to 8l. One can scarcely imagine a more vicious system, demoralising to the men, and opposed to the interest of the proprietor; and yet this formed one of the substantial grievances of the men. When the price-lists upon which the producers are paid are compared with the prices at which the slates are sold at the quarries, it seems utterly incomprehensible that work so productive should be stopped for a moment, on such apparently insufficient grounds; for example, the fixed price for making slates of 24 in. by 12 in. has been 25s. per 1,200 for a long period; whereas, according to price-lists before me, the charge at the quarry, for the same article, was, in September, 1872, 192s.; in September, 1873, 195s.; in January, 1874, 200s.; and I believe that a further advance of 15 per cent. is to be made on the 1st proximo. So great is the demand for slate that there appears to be no prospect of any reduction in prices, and yet Lord Penryhn has refused to guarantee his workpeople the moderate wages of 30s. per week to quarrymen, and 25s. to labourers, on the ground that it would be a premium on idleness, while he has found no such fault with the system of mulcting the men of part of their poundage if, by their industry and good fortune, they earned what he considered was too much!

The dispute in Lord Penryhn's quarry has not been limited entirely to a question of wages, although other grievances have indirectly arisen out of the system of regulating the poundage,—thus, charges of bribery and favouritism in letting the bargains have been made, and persecution of men who did not vote according to Lord Penryhn's views at the last election are matters of complaint. Then, Lord Penryhn has much offended the men, and excited very strong feeling against himself, by stating that although wages at his quarry were lower than at others, his workmen enjoyed the advantage of low-rented cottages, infirmaries, cheap schools, clothing, and medical oblation to which his lordship made large contributions. This parade of charity as a reason for giving low wages caused great indignation, and the men retort that 1s. per month being deducted from them to support the sick funds, it is their own money that has been expended, and they ask for a statement of accounts, being of opinion that 150l. per month out of their wages may have proved a source of profit to the quarry. As to the cottages, the men also allege that the improvements they have themselves made, and the rent they have paid, fall far short of remunerating his lordship. The managers of the quarry became very unpopular with the bulk of the men, probably to some extent as the natural result of their having to work on a vicious principle; at all events, the men refused to go on under their control, and demanded their dismissal. The necessity for perfect confidence between the managers and the men is apparent to all who consider the peculiar nature of the terms made in letting the bargains; and the men were determined either to have some guarantee of earning "a fair day's wage for a fair day's work," or a change of managers.

The use of slate increases so rapidly as its value is recognised as a substitute for stone, marble, &c., that the public is deeply concerned in the present struggle. Not only is slate entirely superseding tiles for roofing purposes, but enamelled chimney-pieces of elaborate design, slabs for cisterns, window-cills, coping for walls, ornamental flooring-tiles for passages, conservatories, flower-boxes, &c., doorsteps, landings, ridge-rolls, tombs, bagatelle and billiard boards, school slates, and a multitude of other articles are in demand on account of the great cheapness and durability of the substance, and its capability of being carved and worked into almost any form.

Doubtless a vast amount of capital has been uselessly expended in opening slate quarries that have proved to be worthless; but, on the other hand, a good, well-managed quarry is probably among the greatest prizes a capitalist can secure. To see, therefore, such a property as Lord Penryhn's quarry at Bethesda idle, if among the most remarkable "sensations" of the season. The proprietors of the quarries sit at work rapidly absorbed the men on strike, and taking advantage of Lord Penryhn's being *hors de combat*, raised the prices of slates, which have been hitherto ruled pretty much by his lordship. The quarrymen appear to be a very industrious, peaceable class, the vast majority members of religious denominations, devoting their leisure to the practice of music and other rational pursuits. I never heard better choral singing, nor more effective instrumentalists than the workers in slate-quarries. They live on the simplest fare,—bread, milk, potatoes, and a little tea is often all that can be afforded; in fact, to quote an article from the *Carnarvon and Denbigh Herald*, of the 15th ult.:—"Food of poor nourishing qualities cannot be procured for a family of five or six children for 3l. or 4l. a month, and the rising generation in the neighbourhood of Bethesda stand in the most imminent danger of being permanently crippled because their bodies cannot be properly developed on the strength of bread and tea or milk and potatoes, which are almost the only articles of food procurable by the inadequate wages paid at the great quarries."

GEORGE OFFER.

Steam Pumps.—We notice that Messrs Hayward, Tyler, & Co., of Whitecross-street, have been again successful with their "Universal" steam pump in an open competition held at Lille, the centre of manufacturing industry in the north of France, the "Comité Agricole de Lille" having awarded them a handsome gold medal. These pumps appear to find increasing favour.

VAULTING AS A MODERN EXPEDIENT.

The circulation of the last number of the Professional Papers of the Institute of Architects, containing so much as was read of the recent prize essay on vaulting, and the discussion thereupon, suggests the consideration of the practical relation of the subject to contemporary architecture.

The subject is, as an enthusiastic speaker in the discussion observed, a "magnificent" one, regarded as (what it undoubtedly is) the principal key to the greatest and constructive basis of one of the most interesting styles of architecture. Considered in its bearing on the past of architecture, no subject in architectural study can be more interesting, or better repay investigation. Following it up, we trace out the difficulties of the Mediaeval builders, and become more intimate with their processes of construction than by any other study; and we are met face to face by some of the most knotty and intricate problems possible in masonry construction.

Much has been said, and too much can hardly be said, as to the grand effect realised by the architects of the vaulted naves of the Middle Ages, and the triumph of architectural expression over material, in the air of lightness and spontaneous growth imparted to these really mighty and massive structures. As examples of successful overcoming, or evasion and concealment of difficulties, they are beyond praise. But can the Gothic vault really be regarded as a model of constructive skill, as an example of how the thing ought to be done, or only as an instance of how it may be managed?

As the means of bringing an arched roof to bear upon points and not upon large surfaces, and thus economising abutment, the gradual substitution of the Gothic interpenetrating vault for the Roman wagon vault, was a move entirely in the direction of engineering economy of material. And the substitution of the pointed arch for the stilted or segmental arches, and the makeshift twists of the Early Romanesque vaulting, was a further step both in construction and design, striking away at once a host of difficulties in the way of accommodating the vaulting ribs to different proportions of plan and to the varying lengths of transverse and diagonal ribs. But if we examine further we find the carrying out in detail less logical and precise; and it is noticeable that every fresh paper or work on the subject launches us anew amid the difficulties of adjustment of the vaulting ribs at their springing, and the impossibility, even with the pointed arch, of getting ribs of different spans, and therefore different curvatures, to agree together at setting out, or to come home amicably on to the impost. What the pointed arch does accomplish is this—it removes the necessity of domical treatment in the vault, and, introducing a varying radius for the vaulting-ribs, enables the builder at least to keep springings and heads respectively at the same level, instead of resorting either to stilted doming. But the pointed arch ribs of different radius take different curves in their progress from impost to ridge, and until they are so far separated, above the springing, that the eye no longer regards them in relation to each other and to the abacus, they are not susceptible of symmetrical treatment and arrangement. It is singular that this manifest defect has been so little spoken of as a defect. In every essay on the subject, as we observed, this difficulty appears, and it is pointed out how the Mediaeval builders either ignored it, and let their vaulting-ribs break away from each other irregularly and at varying heights above the abacus; or how, as suggested in Mr. Egle's paper, concealed compound curves might have been used in the diagonal ribs to bring them into symmetrical relation with the rest; or, as Mr. Phené Spiers suggested in the discussion, the difficulty was over by setting back the diagonal ribs on the piers. But it does not seem sufficiently recognised that all this (with all reverence for the Mediaeval builders) was very makeshift work, and was really getting out of a difficulty by a mere rule of thumb, and not by any logical or consistent system. It was a kind of cooking of construction to make it seem to do what in reality it mathematically could not do. And this is not solving the problem. When a system of vaulting ribs of the same section springs from symmetrical-planned abacus, it should be regular that they should meet it and spring on to it symmetrically. No Greek architect could have been content to leave such a problem the condition in which the Mediaeval builders

left it. It is true that in a large proportion of vaults the springing, being high up and forested to the eye, is so little regarded that it may become practically a very secondary matter, but in those lower structures where the springing of the ribs from the abacus is brought near to the eye, it is always awkward in appearance, and has a look of accident about it, very unsatisfactory. This defect was really got over, and the problem solved, when the Tudor architects invented the system of vaulting known as fan tracery, in which every rib springs from the abacus at equal angles with its neighbours, and with the same radius of curvature. This entire solution of the mechanical and mathematical problem at this point by the Tudor architects was referred to and enlarged upon long ago by able critics, yet in the paper and discussion at the Institute on the occasion referred to, the merit of these latter builders on this head was all but ignored, and the reader of the paper finished with a quotation from Mr. Street specially intended as a rap at the late vaulters, and as a plea for the use, in modern buildings, of the simple early quadripartite vault, as the best and truest. This is not a logical way of looking at it. It is perfectly true that the Tudor vault erred, perhaps on the side of over-richness of elaboration, certainly in the sense of not being, in its most elaborate examples, treated with architectural truth, the ribs being carved as ornaments when the actual rib construction was really almost in abeyance. This was a defect, a bathos of style which no one is obliged to imitate, and which detracts seriously, no doubt, from the architectural merit of the later Gothic vaults. But it must nevertheless be remembered that these roofs do exhibit the only complete solution of an important problem in the design of vaulting lines and surfaces, and that the older vaults, though grander, more masculine and severe in style, all the while shirked a problem which ought to have been solved. And we do not think any modern architect should plume himself on the construction of vaulting until he has shown that, without imitating the artistic defects of the fan roofs, he can combine with a severer and simpler vault (if he likes) a mathematically correct solution of the problem of symmetrically springing the ribs. It is a poor excuse to say that what was good enough for the Mediaeval builder is good enough for us.

It should be borne in mind that there is still a problem to be solved in realising the homogeneous character which the vault should give to a building,—that of the external roofing. The time-honoured practice of placing a timber roof over the vault to protect it is another makeshift, and, despite its all but universality, we have no business to rest there. If vaulting is extensively employed again, it rests with modern architects to devise a method of finishing it externally so as to dispense with a timber shed over it, to render it homogeneous in character and at the same time satisfactory in external appearance. This should not, we think, be impossible; we have cement, tiles, roofing-slats, other means for devising external impervious covering; and an attempt to realise this desideratum might lead, in the most natural manner possible, to some of that novelty in architectural treatment which is so often asked for, but which will only arrive as the spontaneous result of new developments of construction.

THE SCOTTISH DOMESTIC STYLE.

It has been alleged that Scotchmen adhere with remarkable tenacity to their natural peculiarities. This is undoubtedly the case as regards the domestic architecture of the country. The tourist in Scotland, whichever way he directs his steps, will find mansions new and old of a character not found elsewhere. He may indeed when journeying in France have cast his eyes on similar structures, for the Scottish baronial style (as it is called) is based upon that of the French château, resulting from the alliance and intercourse which subsisted between the two countries when Scotland was a separate kingdom. But there is a rugged boldness about the Scottish mansion not found in its French prototype; it has a character of its own, influenced doubtless by the difference of climate and material, and the comparative poverty of the people.

In Scotland, as elsewhere, the Renaissance took a firm hold for a time both in town and country, and a considerable number of mansions

was erected there in the Classical manner, principally from the designs of the Messrs. Adams; but these it is generally admitted are out of harmony with the surrounding scenery, and lately some of them have been transmogrified into the national style. Amongst these may be mentioned Panmure Castle, the residence of the Earl of Dalhousie, and Kinnaird Castle, the seat of the Earl of Southesk. This affords proof of the pliability of the style; it is essentially Gothic in character, although the pointed arch is rarely found, and that only tentatively in the earliest examples.

It is a mistake to suppose, as some do, that internal comfort is sacrificed to external effect in these mansions; if instances of such exist, it is the fault of the architect and not of the style. We doubt if anywhere there will be found more convenient and comfortable residences than those erected from the designs of Mr. David Bryce, R.S.A., who is *factis princeps* in this line.

Those turrets which form so picturesque a feature are not mere useless appendages, but form snug retreats, useful as dressing-rooms, wardrobes, &c. The gables rise in steps, the most natural and common-sense mode of construction where stone is used, saving a considerable amount of labour, and producing an effect equal at least to that of a moulded coping, to prepare for which the angles of the steps must be cut off. The style readily yields itself to any inequality in the ground level; the basement does not require to be screened off, but when left to declare itself gives emphasis and substantiality to the superstructure. The architect having abundance of durable stone at command, stone often of a hard and intractable nature, makes his detail large and forcible rather than refined; he corbels out oriels, and runs bold string-courses along the wall-surface, producing an effect of massive strength combined with variety of outline. Even when a more picturesque style is adopted, unless it is treated in a massive and vigorous manner it is not satisfactory. The half-timber manor-house, which is so charming amidst the hills of Surrey, seems here to be dimy and out of place. The cold blast which sweeps over the moor, the chilling mist which creeps down the valley, and the fierce driving sleet of winter, are enemies which must be guarded against. When properly treated, the modern mansion is no sham castle; it is but a reminiscence of the past, replete with comfort and suitable to the climate.

The tower which generally forms the culminating point of the pile, need not be furnished with a machicolated parapet: such are still built, but when they are, do not seem so much out of place as they do in a town-hall or a court of law. The flag-staff, again, is no mere ornamental appendage; it is the simplest of telegraphs, where the habitations are widely scattered. When the flag is fluttering in the breeze the neighbours know the house is occupied, and may then bend their way over hill and dale if they wish to visit the occupant, and nowhere is the visit of a friend more heartily welcomed than in those turreted and picturesque mansions.

In towns, many examples of the style exist. The features are there modified to suit the circumstances. Towers and turrets are rarely found, except when the house is quite detached, and in some instances a piazza is formed on the street level. It is but recently that the style has been re-applied to street architecture, but it is now in great favour, especially in positions where the gradients are steep; in such positions a series of gables rising one above another forms a much more happy combination than that of a number of horizontal cornices abruptly breaking off at short intervals. In the old town of Edinburgh several new streets have been erected in this style, with more or less success; there is a tendency to overdo this kind of thing and to crowd in too much detail, giving a restless character to the design. In some instances new detail has been used, and the style admits of being freely treated. It can be applied to many purposes besides a dwelling-house; the new Royal Infirmary of Edinburgh is being carried out in this style, and, so far as erected, is effective without being expensive.

Architectural Association Prizes.—The prize as encouragement for architectural sketching has this year been awarded to Mr. G. D. Oliver, of 14, Southampton-street, Fitzroy-square. The drawings, &c., submitted by Messrs. W. Talbot Brown, A. W. Hennings, and E. Vacher were honourably mentioned.

HOSPITALS THAT KILL.

THAT there are such places our readers know full well. As we have again and again asserted with reference to many existing institutions, patients would have a better chance in a wretched tent under a hedge, with the poorest attendance, than they have within the costly building overlooked by the highest surgical skill, and waited on night and day by attentive nurses.

At the recent Congress of the British Medical Association in Norwich, Dr. Michael Beverley read a paper on Hospital Hygiene, with references to the Norfolk and Norwich Hospital in its Past, Present, and Future, which deserves such extra publicity as we can give it. In this paper Dr. Beverley proved that during the past ten years influences have been at work in the Norfolk Hospital which have given rise to a very large amount of that most fatal of septic diseases, pyæmia, and that it has increased the proportion of deaths after operations and injuries to an extent which, large as he felt it to be, he had failed to realise, until he had made these investigations, "and which although beyond their present control, brings little credit to the surgeons, whose skill, however great, is frequently neutralised by causes which, in his opinion, may, and indeed must, be counteracted in the future, if hospitals are to continue fit receptacles for the wounded, either accidental or surgical."

The reader thus concluded:—
"We have been almost entirely obliged to give up operating in the hospital, and the corporation has placed at our disposal for this purpose, for the last six months, a small iron hospital, where most of the operations have been performed; but even there erysipelas has proved fatal in a case of excision of breast for cancer, brought about, in my opinion, by an overcrowding under one roof of nothing but surgical wounds at a time when, from the unusual heat of the weather, the temperature in this small iron hospital was almost unbearable. Here, then, are the facts:—A pyæmic-stricken hospital, centenarian in age, original form and sanitary arrangements good, but spoiled by subsequent additions. Its requirements for the reception of surgical patients and serious accidents of all kinds still greatly increasing. Such is the problem I ask you to help us to solve. Time will not permit me to ventilate my opinions at further length on this part of the subject. I content myself with urging that, whatever is done, there should be no additions to the present building. Mr. Erichsen states, 'There is one remarkable circumstance connected with the age of hospitals: that new buildings added on to old hospitals become more unhealthy than the original building.' I do not think it will be necessary to pull the hospital down and build an entirely new one, although, if we had the funds, such would probably be the wisest course. This has been done at Lincoln, where it was found (after years of attempts to root out pyæmia, by renewing the interior of the hospital, improving ventilation, &c.; in short, taking the same steps as we are now taking at Norwich) that nothing but demolition would remove it; that, as the writer on the subject puts it, 'Just as the cattle plague has to be stamped out by the pole-axe, so has the infection of a pyæmic hospital to be destroyed by the pick' (Erichsen). I am not quite prepared to recommend the 'pick,' as we have a very large proportion of chronic medical cases, and a few acute ones, always under treatment in our hospital. Let it be retained, then, for these; but I will suggest that it be restored as much as possible to its original form; let the other causes which produce overcrowding and tend to its unhealthiness, be removed; such as the reception of a large body of out-patients twice a week, and more or less every day, into the centre of the building. Let the dead-house and its belongings, now connected with and close to the wards and corridors, be removed to a safe distance. Let there be a more careful attention to the ventilation of the lower corridors at night, which for many months of the year supply the wards with night air; and I think by these, and a closer attention to the simple hygienic rules on the part of nurses and officers, the old building may be retained with safety. But what is to be done for the surgical patients? If for them you build a new surgical hospital on the recently-acquired three acres of land, with all the improvements and appliances which sanitary science and knowledge can produce, I fear you will not remedy the evil. For a time your new building will probably give you an improved death-rate after wounds and

operations, but I venture to think that in due course septic troubles will arise, and they necessarily must in any building constantly and exclusively used for surgical purposes. My proposition is to have a series of one-storied and separate buildings, dotted over the ground which has been bought for the extension of the hospital. That these buildings should be in sufficient numbers to admit of one for each sex, being kept always empty, so that after the plan recommended by Billroth, no ward should be used for more than a month or six weeks in succession. It should then be emptied, carefully cleaned and left open, the furniture and linen well aired and washed; to this end the beds should be limited to eight, with two small separation-rooms to each for very bad cases, as by so limiting the number, sufficient can be discharged to allow the wards to be easily emptied and filled again in turns, and for this reason also the new patients should be always placed in the ward last cleaned. In addition, I think, there should be a separate building into which any case of erysipelas or septic disease can be at once removed and isolated. The plan of detached buildings is, I am aware, open to many objections from the administrative point of view, as regards hospital economy and management, but these are difficulties which can be overcome; and even granted that many inconveniences must exist more than in the present compact and comfortable edifice, still it is our first duty to adopt such plans in hospital extension as shall give to those who entrust their lives to our care the best chance of recovery, and the greatest freedom from the risk of any dangers likely to be caused by the hospital itself; in fine, it is only right we should take care that the advantages we offer are not more than counterbalanced by the sacrifice of life from diseases caught within its walls, and aggravated by its influences. If the plan suggested of detached and isolated one-storied small buildings, so erected that an unlimited supply of pure air for the inmates is the chief consideration in their construction, and the two rules laid down by Dr. Parkes in his work on "Practical Hygiene" be carried out: first—"That the sick should be distributed over as large an area as possible, and each sick man be removed as far as possible from his neighbour"; second—"That the sick should be placed in small detached, and perfectly ventilated buildings, so that there is no great number of persons in one building, and no possibility of the polluted air of one ward passing into another": then the Norwich surgeons might again be said not only to acknowledge Nature, but to take her as the senior partner of the firm, and so hope once more to show the same admirable balance-sheet in favour of life, which gained such golden opinions for the Norfolk and Norwich Hospital in the pre-pyæmic era."

In the course of the discussion which afterwards took place, Mr. Richard Barwell could not agree with the advice given, because it must be remembered that hospitals were chiefly charitable institutions, and, valuable as human life was, no more than a certain amount of money could be afforded. For his own part, he recommended that all the additions which had been made should be pulled down and perfect ventilation secured both back and front. There should be only one row of beds to each row of windows. Dr. Falconer said the great object ought to be to allow the air free access to and egress from the hospital. The system of washing stairs and floors ought to be abolished, and the floors simply dry-rubbed. He also recommended a movable roof, which should be removed periodically, and further that out-patients should be excluded from within the walls of the hospital.

Mr. J. Hutchinson said it was assuming too much to say that new hospitals were free from pyæmia. In the Schleswig-Holstein war, where cottages were converted into hospitals, the doctors had much trouble with pyæmia in the treatment of the wounded, and in the new buildings at St. Thomas's Hospital, pyæmia had made its appearance. Although hospital ventilation was desirable, it had, in his opinion, little or nothing to do with such diseases as hospital gangrene, erysipelas, and pyæmia. Was it not desirable to undertake a special and close investigation as to what were the real causes of these diseases, and the modes of their spreading?

Dr. Beverley, in replying, said, he believed that the pressure of septic diseases was due to bad ventilation and overcrowding. He held that if a new surgical hospital were erected, with all recent appliances, there would be good results,

but only for a time. He was convinced of the feasibility of his plan of erecting isolated wards on the new ground recently acquired for the Norfolk and Norwich Hospital. The proper material for hospital walls had not yet been determined; but in a ward now being refitted by a private benefactor, he had recommended that the plaster should be stripped from the walls, and Parian cement, polished, used instead, and this recommendation had been adopted.

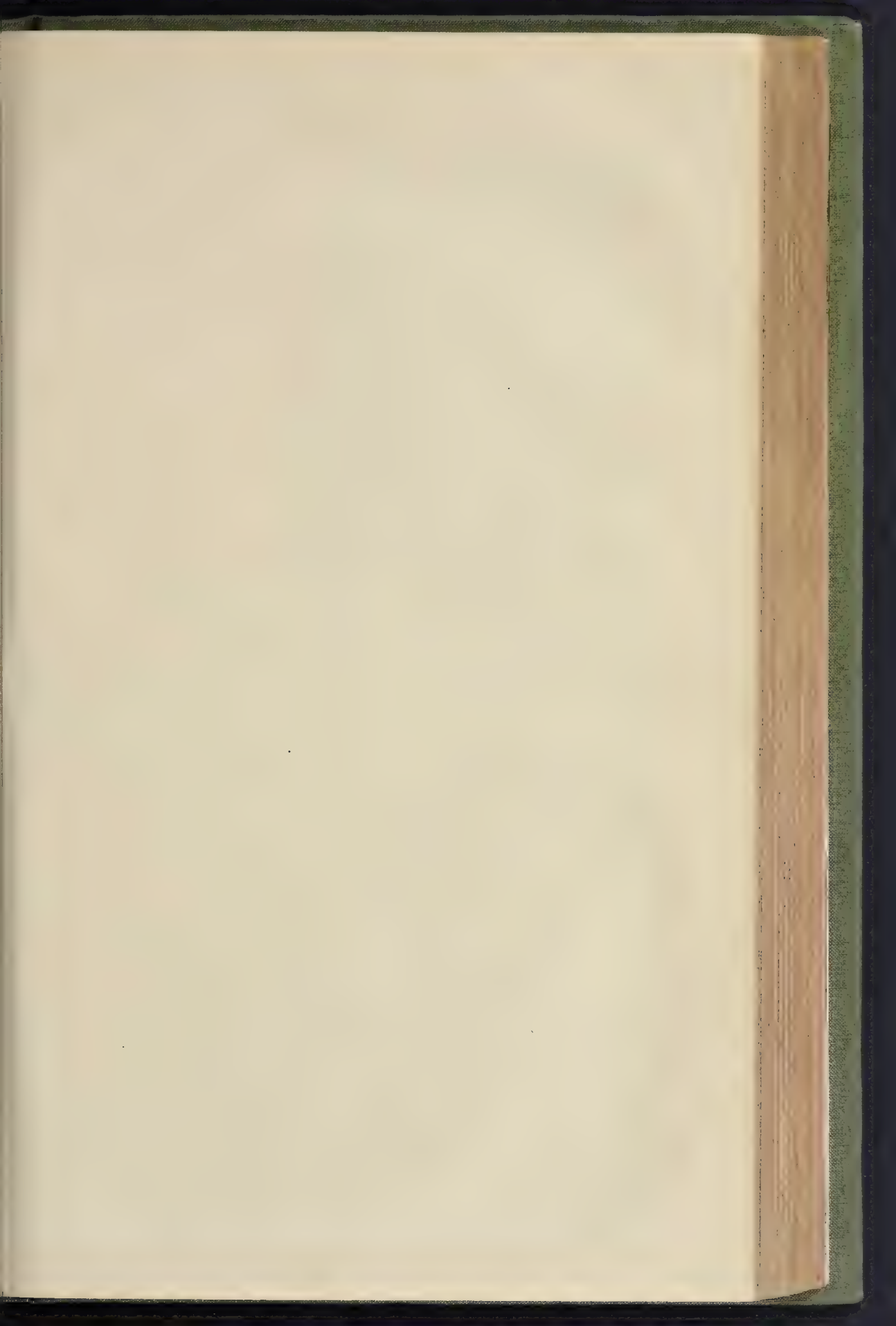
The objection raised to the proposal by the first speaker, namely, that valuable as human life is, only a certain amount of money can be afforded for hospitals, surely cannot be accepted as better erect no buildings at all than such as become destructive instead of curative.

ASSESSMENT OF GASWORKS, BRISTOL.

THE Bristol United Gas Light Company are the owners and occupiers of the Gasworks which supply Bristol with gas. The property of the company extends over a district which embraces an area much larger than the boundaries of the ancient city of Bristol. The works or stations are three in number, and are situated at Canon's Marsh, Avon-street, and Maudlin-street, the two former being large works, the latter a small one, comprising, in fact, little more than one gas-holder. The mains and pipes of the company extend throughout the whole of the parishes comprised within the boundaries of the ancient city as well as into other parishes in the Bedminster and Clifton Unions.

When the new valuations were made in all the parishes, the company's assessments were very considerably increased, and the company appealed against the new assessment in every case. Much negotiation resulted, and in the end it was referred by mutual agreement to the arbitration of Mr. John Clutton, of Whitehall-place, London, to determine and state in his award the total gross estimated rental and rateable value of the entire rateable property of the said Bristol United Gas Light Company, and also to apportion the same among the various parishes. The inquiry was commenced on the 18th day of November, 1873, and was completed on the 14th day of January, 1874. The late Mr. Horace Lloyd, Q.C., and Mr. F. Meadows White, Q.C., appeared for the appellants; and Mr. Field, Q.C., and Mr. Norris, Q.C., for the respondents. Mr. Edward Ryde, of Parliament-street, Westminster, valued the works for the year ending the 30th day of June, 1871, at 10,959*l.*, and for the year ending the 30th day of June, 1872, at 7,007*l.* Mr. Townsend, the secretary to the company, and Mr. Fiddes, the engineer, were called to prove facts connected with the working of the company. Mr. Henry Finlay, engineer to the Surrey Consumers' Gas Company at Rotherhithe, and Mr. William King, engineer to the Liverpool United Gas Light Company (the largest provincial company), were called to prove that the various data upon which Mr. Ryde's valuation was based were correct. Mr. John Foster, architect, of Bristol, proved the structural value of many of the buildings. Mr. Thomas Hawksley (past president of the Institution of Civil Engineers) proved that he had turned his attention a good deal to gas, and its manufacture; that he was acquainted with a very large number indeed of the gasworks in England, and that he had also turned his attention to the principles and practice of rating gasworks; that he had seen Mr. Ryde's valuation, and did not differ from Mr. Ryde in general principles. He agreed with the greater part of the valuation, but there were a few little things in which, as might be expected, different gentlemen would hold different opinions, the amounts, however, did not vary very much in the general working out. Mr. Henry James Castle, of Chancery-lane, London, valued the property for the parishes at 20,412*l.* for the year 1871, and at 15,849*l.* for the year 1872. Mr. Alfred Penny and Mr. George William Stevenson, proved engineering facts connected with gasworks. Mr. William Sturge valued the property for the year 1871 at 17,633*l.*, and for the year 1872 at 13,828*l.* Mr. Ashmead and Mr. Thomas confirmed Mr. Sturge's valuation. The arbitrator has awarded, for the year 1871, 14,048*l.*; for the year 1872, 10,445*l.*

The Vendôme Column.—The restoration of this historical monument is the work of two Paris founders, M.M. Maillet and Thiebault. The cost of the restoration will be from 250,000*fr.* to 300,000*fr.*





ARCHITECTURAL SCRAPS.

ARCHITECTURAL SCRAPS.

THE jottings represented above are not without suggestiveness.

No. 1 shows a wooden door, of pierced work, *temp.* Queen Elizabeth, from the hermitage at Pontefract, Yorkshire, in which, tradition says, Peter, the hermit, of Pomfret, lived in the time of King John.

Nos. 2 and 3, Two windows from an old building at Minehead, Somersetshire, now used as a tannery. The woodwork is of great solidity, fastened with pegs. The arched windows are in the upper story, whilst the square-headed one is on the ground-floor.

Nos. 4 and 5, Door-hoods or canopies from Woodstock, Oxfordshire. In No. 5, the truss or bracket is of wood, boldly carved, with secondary support of iron. No. 4 is entirely of wrought-iron; the foliage and scroll-work being worked with great freedom of handling.

TOURNAY CATHEDRAL.

BELGIUM does not possess a finer example of Gothic architecture than the choir of the cathedral at Tournay, and it is strange that so very little should be known as to the history of this very remarkable work; even the date of its erection is involved in doubt. Hovelant, a local historian and archæologist, says that this choir was commenced in the latter part of the eleventh century! Schayes, that it was begun in 1110, and completed in 1242; Kugler, that it was completed in 1338. Now none of these dates are in accordance with the architecture of the building, which, from the great similarity it bears to the choir of the cathedral at Beauvais (erected 1240-1250), is probably a building of the latter half of the thirteenth century. There is no probability of the Belgian church being of an earlier date than the French one, because if we compare contemporary buildings in the two countries we find that the French were half a century in advance of the Belgians.* The choir

of Tournay Cathedral is so far superior in point of detail and construction to anything else in Belgium, that it may be doubted whether, after all, it was not the work of a French architect. There is an entire absence of that heaviness of detail and clumsiness of construction so apparent in Belgian buildings of the thirteenth century, nor are any of the "bungling" contrivances by which the Mediaeval builders in Belgium overcame their difficulties to be seen in this church. Here the arches set down properly on to the capitals, and the capitals are set properly on the shafts or columns, and the whole work seems to have been carefully set out before it was erected, a thing not to be found in any other early church in Belgium.

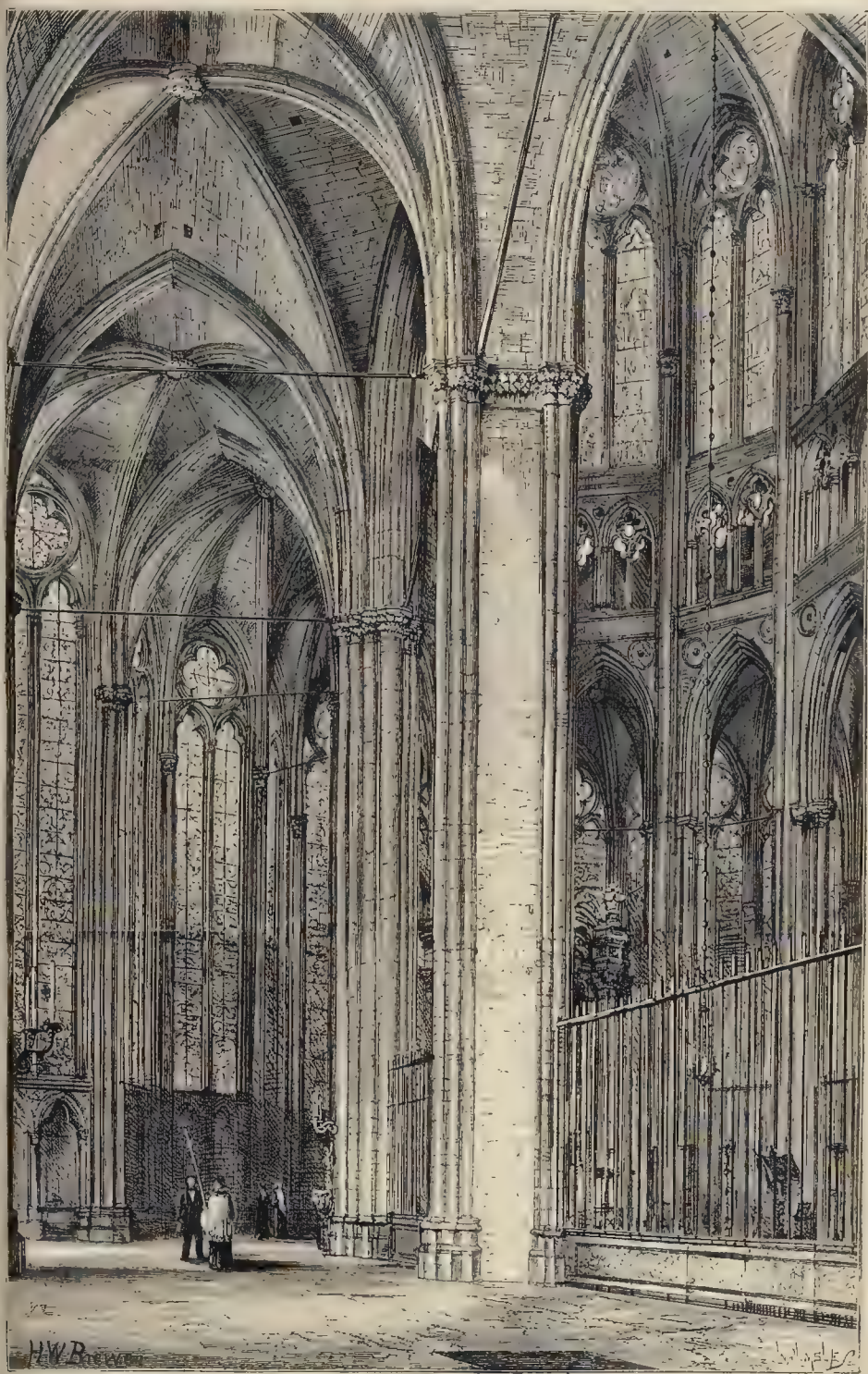
The choir of Tournay is of grand dimensions; it contains seven bays in length, exclusive of the apse. The aisles are very large, and have shallow chapels opening into each bay; the entire length, exclusive of the lady-chapel at the east end, is 190 ft.; the height to the vaulting, 111 ft.; and the width, exclusive of the chapels, 100 ft. The arrangement of the chevet is singular: the centre compartment alone opens into a chapel, the other four compartments are bowed out into apses. The effect of this is to give great space in the part of the aisle which surrounds the high altar; and as this space is available for congregational purposes, it is a remarkably good arrangement for High Mass and other grand ecclesiastical functions, especially when, as is the case at Tournay, there is a very solid rood-screen at the west end of the choir.

With the exception of Beauvais no more daring exploit in the way of construction was ever attempted in the middle ages than the erection of the choir of Tournay; of course it was too daring. The Gothic architects succeeded in supporting a stone vault upon the smallest possible substructure, but they could not succeed in supporting it upon nothing, and hence we find that at Beauvais they were obliged to subdivide the arches and add supplementary piers, and at Tournay the buttresses have had to be enlarged, and the whole building tied up with iron rods. It is said that these ties were not added till

the time of Louis XIV.; but fractures and settlements seem to have taken place even before the work was completed, for in one of the small apses, forming the chevet, a window is about 8 in. larger at the bottom than at the top. No settlements, however, seem to have taken place lately, and the opening of the triforium some thirty years ago, which had been blocked up during the last century, has had no bad effect upon the stability of the building, while it has added greatly to its beauty. There are several peculiarities in the design of this choir which we will now point out. In the first place, the piers are not arranged like columns, but are placed with their axes at right angles to the choir like buttresses. Secondly, the triforium, instead of being arranged as a continuous arcade or a series of arches equally subdivided, consists of two Gothic openings of two lights each, with a smaller opening of one light between them. This centre light, in addition to being much narrower than the other openings, is also lower, and the large space above it is pierced by two cusped circles. In the apse, where the compartments are narrower, than at the sides of the choir, this centrally opening is omitted. And thirdly, the clearstory windows, which are very high and lofty, are also singular: they are of three lights, and as the two outer lights are made to coincide with the larger openings of the triforium below, and the centre light with the smaller central opening of the triforium, the centre light is very much narrower than the two outer ones. Outside the effect of this is not satisfactory, but internally, the stained glass has been skillfully arranged so as to subdivide the two larger lights into three compartments each, and thus the awkward look has been avoided.

This choir has been well restored. None of the furniture is old except the rood-screen, which is a magnificent example of early Renaissance work, constructed of marble and alabaster, and covered with sculpture. The high altar is composed of white marble and bronze gilt, and was brought from the now-destroyed church of St. Martin. It is poor in design, and although its material is costly, it looks mean and undignified. The stalls, bishop's throne, and side-screens

* This may be seen by comparing the choirs of Amiens and Brussels, which were contemporary.



TOURNAY CATHEDRAL, BELGIUM.—THE CHOIR: THIRTEENTH CENTURY.

are all unworthy of this noble choir; in fact, the whole of the furniture and nearly all of the monuments were destroyed by the soldiers of the French Republic. A new altar has been put up in the lady-chapel,—it is of stone with an arched front, but is too poor for its position. All the windows of the choir and apse have been filled with very rich modern stained glass; and though the colours are a little crude, the windows are excellent in design, and the general effect is decidedly good. We believe these windows are by Capronier; probably a few years will take off the metallic look in some of the colouring.

The transept of the cathedral is a fine specimen of Romanesque work. In very early days a conductor of this journal printed some particulars of the building at that time, and of various opinions expressed as to the ages of its structure. These will be found in the *Civil Engineers' Journal*.

ARCHITECTURE ON DEESIDE.

SOME years ago Mr. W. Cunliffe Brooks inquired of us the name and address of the author of a competition design which, though unsuccessful, we had published because of its cleverness, and desired to know what we could say for him. We were able to say what satisfied our inquirer, and the following article, which, because of the same incident, we reprint from the *Aberdeen Journal*, sets forth one small part of the result that introduction. We recall with gratification several similar instances wherein, during the course of our long editorship, a few honest words we served to lay the foundation-stone of good repute, without the knowledge, even to this day, in more than one case, of the person benefited.

"We lately had an outing up Deeside, and took an opportunity of visiting a number of architectural works lately executed, or in course of construction, all by one architect,—Mr. George Truettitt, of London; but while we now give a description of these works, be it known that it is not for the purpose of puffing up this gentleman, and we hope, upon future occasions, to give descriptions of works by our own local architects, and which we shall have even greater pleasure in doing than in noticing those by one who is a stranger to us.

Our first visit was to Borrowstone, Kincairdine Ness,—Captain Hart's residence. Here, some two years ago, Mr. Truettitt altered the old house, adding a new dining and drawing room, new bedrooms, bath, &c., and joining the new to the old work by a low wing,—*fortunately*, as a fire occurred this spring, and burnt the whole of the old place to the ground, the new building being the means of preserving the new. The rubbish has now been cleared away, and the new works are in progress, in the same style as the old rooms erected three years ago. We may remark that, in Mr. Truettitt's buildings, we do not get that horrid old appearance which we have in our Union-street, where the chief aim seems to be to get every stone as white as marble, and as smooth. He, on the contrary, has his stones as varied in colour as he can, and, with the exception of the "dressings," the work is as rough as possible,—not rough work, but pieces of random sizes, and rough on the face. The result is, that he gets a great variety of colour, and a deal of light and shade, even on a plain wall. The paint of his frames and sashes is a warm yellowish colour, which adds much to the general effect, and again gets rid of cold appearances.

The second place we visited was Aboyne Castle, the seat of the Marquis of Huntly. Here, Mr. Truettitt, about five years ago, pulled down the old kitchen department, which was in a ruinous condition, and erected new buildings in its place, all in granite, with stepped gables, very simply done, but effectively. We notice a total absence of mouldings, everything done in square in the edges, and which seems to be the most reasonable way of using granite,—certainly the best way of saving a client's pocket. We have often seen in polished work that square corners look better than moulded, and cost nothing at all compared with the latter. We saw the same result in unpolished work. On the Green, at Aboyne, we noticed that the same architect had just commenced new pools, under the local School Board, and, on examining the plans, we found the same style intended to be carried out,—stones of varied size, high roofs; and here we may mention

that Mr. Truettitt never seems to have a show front to his buildings. He carries the same work all the way round, and distributes his gables, &c., so that his outlines look well from any point of view. We can point out some buildings in a certain great northern city of which we are proud, where we have the cold white granite front, every block as square as possible, while the sides are done roughly with variegated stones; and we have thought to ourselves what a pity they did not mix up the lot together, and use squared ones equally all round, and rough ones equally also. The cost would have been no more, and the effect doubled.

From Aboyne we went to Glen Tanar; and here Mr. W. Cunliffe Brooks's liberality and taste have allowed our friend plenty of scope for his designs in all kinds of works. At the Bridge of Tanar, on a fine rock, is a tower—the entrance lodge of the estate. Here there is no show front: the windows of the different floors are dodged about, so that each front has only about one window; and the stones have been very carefully selected, of various colours, in stages. The lower portion of the tower is well 'battered' down into the rock; a staircase runs up inside one corner, and has a projecting turret at the top, covered with lead. This is one of the most effective buildings we have seen here, while we noticed that there is nothing in it which we could point to as being expensive, as work which was not absolutely needed, or which could have been done at less cost, but all done well and properly. From the tower we pass by the side of the River Tanar till we come to another lodge at the deer fence. This building is square, with roof hipped all ways.

We then pass on to what was a tumble-down old cottage, of one story only. A wing has been added at the end, at right angles to it, and with gables in front. The old part has had a projecting window added, and new frames and sashes. So, with the addition also of some shrubs and flowers, this looks a delightful little cottage. The new wing contains a scullery, &c.; and here, as in all the cottages erected by Mr. Brooks, he has had the water laid on from the hills in pipes, and taken to the sinks, where there are no taps, but the water is always running day and night, a right regal 'constant supply.' The population of Glen Tanar having increased some 50 per cent. since Mr. Brooks landed in it, the consumption of whisky, we presume, has not decreased; but if it be true that less per head is consumed, we presume it must be from Mr. Brooks having done away with the excuse the men had, when at home, of having nothing to mix with the genuine article.

The next place is a house perched up above the road,—the old farmhouse. This was a dreadful blot on the landscape; but, by erecting a picturesque dairy at one end, with low walls, high roof, and verandah, which verandah is carried in front of the house, the whole gets quite right. The dairy-walls all round internally have white glazed tiles above the shelves, with various monogram devices, dates, and subjects relating to dairy matters, all done by the hand. There is also a white marble fountain, with a constant supply of water, in which the butter is deposited. We next reach the kitchen garden, with its high wall, at the corner of which, forming, as it were, part of the wall, is the gardener's cottage. One would expect a couple of rooms here, as only a corner window and a couple of small ones besides are to be seen; but inside we find kitchen, scullery, sitting-room, and three bedrooms, &c., the entrance-door and most of the windows being towards the garden. Mr. Truettitt seems to be great in corner windows. Wherever he can with propriety put one, there we find it; and it is not only most pleasing externally, but it is exceedingly nice inside the room to be able to see in two directions. The corner window to this cottage is a triple one: the corner of the room is cut off, and the window extends also on each side,—so it is a three-light window in three different planes. We now turn off to the stabling, which is very extensive. Stables, loose boxes, coach-houses, harness-room, cleaning-place, &c.,—all with plenty of room and of good height, and also cottages. The stables have water always running, and the buildings are in the same simple but effective style as all the other buildings in the glen. We see the architect likes to keep his walls low and roofs high,—a sure way of getting effect when the proportion is good. Near the stables we find the deer and game lair, with well-stuffed roofs to keep them cool, overhanging eaves, ornamented tiles on the walls, with appropriate devices, birds,

&c.; and, as we hear, well stocked, according to the seasons. A little beyond, we come to the dog-kennels, perfect in arrangement, and as picturesque as all the other works, with constant flow of water through the yards for drinking and bathing. We then see two houses, in one of which lives Mr. Brooks's great deer-stalker, and if he does not appreciate his home, where he has plenty of room, his out-of-door seats, and his water, he ought to, as we dare say he does. We must now make off to the House itself of Glen Tanar. This originally was one of the little Scotch cottages: two rooms on ground-floor and two attics in roof. The Earl of Southesk then had the shooting for a time, and erected a wing, containing dining-room, drawing-room, and some bed-rooms; but when Mr. Brooks came these were all made into bed-rooms, and in six weeks Mr. Truettitt designed, and had three large reception-rooms built, 30 ft. by 22 ft. each. As time was an object, these rooms were erected of timber, and harled outside; but they have since had an external casing of granite. Another large wing has been built, consisting of servants' hall, bed-rooms, &c., new kitchen department; and the old part of the building has been altered and added to, and made to agree with the new work. We here get a large verandah and porch combined in rustic work, and other bits of rustic work about the building. Internally, the principal rooms have pine dados and panelled ceilings, and we notice in all the bed-rooms ornamental glass of quaint design, every pattern different, and designed by the architect. This glass is in the lower panes of the sashes, and while it gets rid of the usual short white blinds, gives a cheerful effect to the rooms, and adds to the external general effect. Sitting and bed rooms are papered with tinted-glazed plain papers, of quiet tints; they do not, therefore, interfere at all with the pictures, engravings, water-colour drawings, &c., with which the whole of the walls throughout the house are well covered. Our advice to all our readers is to cover your walls with such quiet tints that you may put up your pictures, or old china, or anything you like, and in whatever position you choose. To return to the house: carpets are the same everywhere—sitting-rooms, bed-rooms, and staircase. This adds greatly to the repose of the place. The bed-rooms are purposely all small, but there are plenty of them. One idea was to keep the house as small in appearance as possible. Besides, here in Scotland, when on a visit, a man would rather be in a cosy room, with a fire which will warm it, than in a great barn of a place where a fire makes no impression. Wash-stands and dressing-tables, looking-glasses, and writing-tables, are all designed purposely, and mostly made fixtures. Wherever a shelf or a bracket could be put up, there it is. The beds are so nice, that one does not like to get up, and a distinguished visitor once said they were so comfortable that 'it was worth a guinea a minute to be in one.' Throughout the house, Mr. Brooks has no end of fine antique furniture, ivories, bronzes, &c.; but the charm of the whole is the comfort which prevails everywhere in this his Scottish home, even to his bedroom, which is perhaps the most perfect and delightful room in the house.

From the house we crossed the Tanar by a rustic bridge, and in a few minutes came to the Church of St. Lemo. There were the ruins here of a small laird's house, with an ancient archway. The latter was left intact, the old walls covered in, and now we find a charming little church. The roofs, seats, choir-seats, and pulpit are all rustic pine, from the forest. Between the rafters the roof is 'powdered' with lead stars, gilt, and with small mirror in centre of each; the floor is granite,—a granite font, the most simple one we ever saw,—and all the windows, which are very small, are filled with ornamental glass. The whole of this little church is most effective, and, of course, is visited by all who go to Glen Tanar.

Making now over the hill, and by the Queen's-road to the Dee, we soon come to a building on its banks, called Fasnadarch. This is a fishing lodge, which has just been erected. Here Mr. Truettitt gives us his stepped gables, high roofs, verandah, and bay windows, to his heart's content. It has also a terrace overhanging the river, and a great river wall going right down to the river.

We should have liked to have gone up the Glen and into the Forest, but we found a notice which showed that tourists, if they went without leave, 'might get accidentally shot in the forest,' and as we did not wish our friends to

moan for us quite so soon, or the proprietors of this paper to appoint some one in our place, we thought we would not venture, not having the required pass. We were told, however, that the same architect had been putting up quaint little stables and butts in out-of-the-way places, and that Mr. Brooks, besides thirty miles of deer fencing, had made miles of new roads, and straightened and levelled miles of old ones, also had put up stone bridges, iron bridges, wooden rustic bridges, attended to the water-courses, and, in fact, had done everything that could be done in reason and with good taste.

After passing Dinnet Bridge, we came to Cambus O'May, a lovely spot, and where, through Lord Huntly's exertions, the good railway folks are going to make a station. Here, on the hill, or some distance up, our architect is putting up a capital house for Mr. K. L. Gaskell, dining-room, drawing-room, library, billiard-room, and lots of bedrooms. There will be three gables in front towards the road, the centre one stepped, and below it a large bay window, with verandah around it.

It will be perceived that we have not merely been describing a number of buildings, but from what we have seen, we have given our readers several practical hints which many may profit by, and we hope they will.

As to the architect who has designed these works, he has to thank his clients for giving him such a capital opportunity of leaving his mark on Deeside.

We may add that our townsmen, Messrs. Warrack & Daniel, have been engaged in carrying out the greater portion of the above works; and that Messrs. Burgess & Son, of Aboyne, have done the greater portion of the masonry. Mr. Stuart has been resident clerk of the works nearly all the time at Glen Tanar."

INDUSTRIAL INSTITUTE FOR THE BLIND AT PRESTON.

THE mayor of Preston, on Thursday, 10th inst., opened the new and extensive shop, work-rooms, committee and show rooms, just completed for the "Preston Industrial Institute for the Blind."

The large sale-shop, 30 ft. by 30 ft., is fitted up with every requisite, and has a long counter, about 32 ft., made of the choicest pitch-pine wood, and occupies part of the frontage to Glover's street; in the rear are rooms for "cane" seating, 29 ft. by 14 ft.; brush-room, 40 ft. by 28 ft., with "pan" room, 18 ft. by 12 ft., and apparatus occupying one end. The remaining portion of the frontage is the residence for the saleswomen, and comprises large kitchen, parlour, and scullery, and three bedrooms on the first floor. The cellars under the whole of the buildings, roomy and lofty, are used as workrooms, storerooms, &c., the largest being 32 ft. by 28 ft. for ship-making; this cellar is constructed in one span. The first floor is approached by two staircases, one for the house portion, and the other for the public in case of meetings or for educational purposes for the blind. Each staircase leads to the large committee-room and secretary's office. These rooms are so constructed that, by removing a sliding partition, one large room for public entertainments can be formed, having separate entrances. Adjoining are lavatories, cloak, and ante rooms.

The main ground-floor front is built of Long-ridge stone, and is effective in design. In the centre of the building is provided a hose sufficiently long, in case of fire, to extend to all the main rooms. The total cost has been 3,000*l.*, and the money was raised at a bazaar held in April, 1872, when the net proceeds amounted to 3,444*l.* 1*s.* 9*d.*, after paying all expenses. The work has been well carried out by Mr. John Walsley, of Preston, under the supervision of Mr. T. B. Myres (Messrs. Myres, Veevers, & Myres, architects), Preston.

THE NEW HARBOUR AT ABERDEEN.

The extension of the North Pier, which has been inaugurated by the Duke of Edinburgh laying the chief stone, will complete the whole work of the harbour improvements at Aberdeen. The total cost of these improvements will amount to about 250,000*l.* In accordance with the powers of the Act of 1868, the diversion of the river Dee was commenced in the following year, and finished two years ago, at a cost of about 52,000*l.*, while the new south breakwater was

begun in the spring of 1870, and was concluded towards the end of last year, the cost being about 80,000*l.* The breakwater was erected for the purpose of protecting the end of the North Pier from the full weight of the sea, and to prevent too great an influx into the harbour. It was formed solely of concrete, and is 950 ft. in length and 47 ft. in height. This second extension of the North Pier was contemplated in the Act of 1868, it being considered that without it the harbour was incomplete. The original North Pier, which extended to 1,200 ft. in length, was designed by Mr. Smeaton, the eminent engineer, and constructed according to his plans. The first two sections of the pier were constructed of stone, but the new extension is to be formed of concrete, in similar fashion to the south breakwater. Mr. W. Dyce Cay, the engineer of the commissioners, designed the work, his plan having been approved of by Sir John Hawkshaw and Mr. Abernethy. The foundation for the first 250 ft. consists of a rubble mound, and beyond that distance of fine sand, the depth of water above the foundation being about 15 ft. at low water of ordinary spring tides. Mr. Cay, in his report on the construction, says:—

"It is proposed to form the foundation of the structure by laying down a concrete mound or platform of considerable width. This platform will be formed of bags, each containing about fifty tons of concrete deposited in a liquid state. The deposit of these bags will be effected by the use of a hopper box fitted into the well of a steam hopper barge. The bottom of the box will be formed of two doors opening on hinges, through which the concrete will be made to drop. It is proposed to lay down the bags considerably in advance of the upper part of the work so as to allow them time to sink and settle into or through the sand and become consolidated before they are built on. The foundation mound will be formed of three courses or tiers of fifty-ton bags laid longitudinally in the direction of the pier, the lowest tier being about 120 ft. and the upper tier about 55 ft. wide; above them another tier of bags will be laid transversely, each bag being about 10 ft. long after deposit and extending across the work from outside to outside, while the work will bring up the work to about 2 ft. below low water of ordinary spring tides; above them will be placed one course or tier of concrete blocks averaging twenty tons weight each, which will bring the work up to 2 ft. above low water of ordinary spring tides; from which level to the roadway, a height of about 24 ft., the work will be built of concrete deposited liquid *in situ* in frames in pieces of about 600 tons each, as in the new south breakwater."

By this extension, which it is estimated will cost 44,000*l.*, the breadth of the harbour entrance will be enlarged from 450 ft. to 1,200 ft. Another important improvement about to be executed is the deepening of the entrance, to allow large vessels to leave and enter the harbour during any state of the tide.

RHOESMOR, NORTH WALES.

THE foundation-stone of a new church in course of erection in this district, on the Duke of Westminster's estate, was laid on Thursday, the 27th of August last, by Mrs. J. Scott Bankes, of Soughton Hall. The church is to be in the Early English style, with nave 24 ft. broad by 60 ft. in length, and a chancel with semi-circular apse, in which are five single lancets. The only entrance is by a south porch, the vestry and organ-chamber being on the north of the chancel. The nave is to be separated from the chancel by a dwarf wall of Halkyn marble; the seven steps to the communion-table will be of the same. The bell-turret is immediately over the chancel arch. The Ven. Archdeacon Foulkes preached the sermon in the schoolroom adjoining the site, and the Duke of Westminster laid 100*l.* upon the stone, which bore the following inscription:—"The foundation-stone of the church of St. Paul, Caerfallwch, was laid by Mrs. J. Scott Bankes, on Thursday, 27th August, 1874. Rev. T. Williams, M.A., Vicar of Northop; Rev. T. E. Jones, B.A., curate, Caerfallwch. John Hill, architect, Brighton." The builder is Mr. Wm. Morris, of Rhyl, and the estimate of total cost is 1,300*l.*

INIGO JONES.

MR. JOHN TIMBS, in the course of a communication to the *City Press*, aided by Peter Cunningham's "Life of Inigo Jones," brings together into an agreeable form some of the more salient particulars: as thus,—"With the consent of the king, Inigo Jones began to remove St. Gregory's Church, which stood at the west end of Old St. Paul's, and it would have been soon demolished had the king's affairs been at the time in a more prosperous condition. But it was now Inigo's turn to be annoyed. The parishioners of St. Gregory laid their complaint before the House of Commons, and the Commons sent it on to the Lords, with a declaration ap-

pendent that the parishioners deserved redress and that proceedings should be taken against the king's architect for the demolition he had caused. The complaint of the parishioners was not reached us, but the declaration of the Commons contains some curious characteristics of Inigo's manner. He is accused of saying, 'that he would not undertake the repairs of St. Paul's,' 'unless he might be the sole mason,' or might have the principalship thereof; a harmless charge, indeed, but personally insulting, from the curious confirmation it supplies to the truth of Jonsen's satire. The charge is, however, more offensive. He first pulled down a portion of the church, and then threatened, 'that if the parishioners would not take down the rest of it, then the galleries should be sawed down, and with the materials of the said church should be thrown down into the street'; but, finding this of no avail, he further threatened, 'that if they did not take down the said church they should be laid by the heels.' The declaration of the Commons brought Inigo before the House of Lords, and his answer to the charge was, 'that he was not guilty of offence in such a manner and form as a declaration expressed.' Inigo gained time, in this way, but the division was against him, and the great architect not only saw his noble work of reconstruction at a standstill, but the stones he had quarried and conveyed to the City made over to the parishioners of St. Gregory's, for the rebuilding of their church (Dugdale's 'St. Paul's,' Second edition, 1770).

The last years of Inigo Jones's life.—The last of Inigo's works was the church of St. Philip in Covent-garden, at the consecration of which by Bishop Juxon, the architect was present. 'This church,' says Elmes, 'is the only specimen of the true Vitruvian Tuscan ever known to have been executed.' Jones lived forty years longer, but the Civil War diverted his thoughts and means from the peaceful employment of architecture, and found for the king and his nobility other and sterner occupations than superintending squares or rebuilding palaces. The stones quarried for St. Paul's were taken, we have seen, to rebuild St. Gregory. Whitehall was left unfinished; Greenwich was mere fragment of a large design; and masons and workmen in the squares of Lincoln and Covent-garden took to arms, fought for King or Commons, as interested inclination led them. Poets, actors, and grave-diggers were alike thrown out of their occupations. Davenant, the Poet Laureate, became Lieutenant-General of Ordnance under the King; Winthorpe, Governor of Farnham, the Parliament; while Robinson, the actor, Hollar, Peake, and Faithorne, the engravers, were still greater. Inigo Jones himself, weary of arms in their hands at the siege of Basle (Carlyle's 'Cromwell,' 2nd edition).

The last twelve years of Jones's life were clouded with anxieties and disappointments. He was not only imprisoned, but fined for loyalty. His office of surveyor was at the time nominal; for he was neither employer nor paid as one. But he had a money, which in those perilous times he was a loss how to preserve. There were others the same difficulty; and Inigo, united with Nicholas Stone, the sculptor, buried his money in a private place near his house in Scotland-yard. That he had all the fear, which Pepye in a similar situation so well describes, it is too much to imagine; and he had need of alarm. The Parliament published an encouraging servants to inform of such concealments, and as four of the workmen were paid to the deposit, Jones and his friend removed privately, and with their own hands buried it in Lambeth Marsh.

Jones had now survived the friends to whom he was indebted for his advancement; the persons with whom he had been associated; and the patrons to whom he owed his appointments. He had lived to see King Charles beheld in an open street before his own banqueting-house at Whitehall; Ben Jonson and Chapman at rest in Westminster Abbey; and the churchyard of Giles-in-the-Fields; and the Earl of Arundel, both the Earls of Pembroke, William and Philip, gathered to their ancestral vaults. Grief, fortune, and old age, at last terminated Inigo Jones's life. He died at Somerset House, in Strand, on the 21st of June, 1652, in his 74th year; and on the 26th of the same month was buried, by his own desire, by the side of his father and mother, in the church of St. Bennet Paul's Wharf, where a monument of white

able, for which he left 100l., was erected. It stood at some distance from his grave, and was destroyed in the Great Fire of 1666. It is to be rebuilt that Wren, when rebuilding the church, rebuilt the monument.

Vanduyck and Jones were friends, and the architect sat to the painter for at least two noble traits. Vanduyck and Inigo were asked together to the dinners of the Painter Stainers' company, as appears by an entry in the company's book,—an honour which was considerable, and looked upon as such.

Inigo lived in Scotland-yard, was a Roman Catholic, and paid periodical fines to the owners of the poor of St. Martin's-in-the-Fields, the privilege of eating flesh in Lent. The necessity that rendered the privilege requisite is known; but that he had his ailments may be gathered from a prescription, written with his own hand at the end of his companion *Palladio*;

IMPROVEMENTS IN SHOREDITCH.

It appears that the improvements in Shoreditch, the Act for which was passed upwards of 20 years ago, are at once about to be proceeded with. In answer to a question at the meeting of the Shoreditch Vestry, it was stated that with regard to the improvement to be effected the setting back of the houses opposite the North London Railway Station, the cost would be about 150,000l. The freehold interest had been acquired, and notices were immediately to be served on the occupiers, and it was expected that the whole of the property would be taken down, and set back in about twelve months in October next. The Willow Walk improvement included the formation of an entirely new street. Its cost had been estimated at 270,000l., and it was fully expected that the site of the new street would be entirely cleared by Christ-
mas, when the formation of the street would at once proceed with. By Lady-day, 1875, it was every reason to believe it would be open for traffic.

SOUTHPORT WINTER GARDENS AND AQUARIUM.

The winter gardens, aquarium, and pavilion at Southport are now just approaching completion, after an expenditure of about 160,000l. They are, under one roof, an aquarium, second only to none in the kingdom; a bandilion, capable of seating 2,000 people; a promenade adjoining, 170 ft. long by 44 ft. wide, with light verandahs and terraces running the entire length outside; a reading-gallery, supplied with all the chief daily papers circulating in London and the northern counties, as well as the principal monthly and quarterly localities; another part devoted to chess, billiards, and similar games; and a conservatory or winter garden at the other end.

These winter gardens and aquarium have been built by a limited company, many of the shares held by the principal inhabitants of the town. The site is in the centre of the town, on a sea frontage of some 370 yards, and bounded on the north side by Coronation-walk, and on the east by Lord-street. The entire area is about nine acres, which has been laid out in designs by the architects, by Mr. Thomas, the head gardener to the company. The design facing the sea are laid out with special care, so as to form sheltered walks in boisterous weather, and, although not covering more than five or six acres, they appear much more extensive; cool sheltered caves, grottoes, and ornamental rock bridges are features in the grounds. The winter garden proper is between the building and Lord-street, and is sheltered in the prevailing west and south-west winds.

There are two entrances to the grounds—one for pedestrians only, at Coronation-walk, leading in the Esplanade; the other, which is the principal entrance, is in Lord-street, and consists of two stone lodges, with gates between. The "stage-porch," at the west of the building, is an ornate piece of ironwork, by Messrs. Rankin & Co. of Liverpool, ironfounders. From this point the stairs will enter by a staircase, 15 ft. in breadth, leading to the promenade above, and the entrance below. The main staircase, indeed, is the centre of the building, which in outline resembles a double cross—the band pavilion being at one extreme, the conservatory at the other, and the promenade between. In the aquarium and conservatory concrete has been used with success, and extensively, notably for

finished staircases, halls, arches, and pillars. This work has been carried out by Messrs. Smith & Fawke, of Birkdale. The whole of the timber is pitch pine, and the roofs are all open-timbered, stained, and varnished. The contractors for this work were Messrs. Haigh & Co., of Liverpool. The entire building is heated with hot water, by Mr. Massinger, of Loughborough. The plastering, plumbing, gasfitting, and painting, have been done by Messrs. Leech, of Bury; the stonework by Mr. Halsall, of Southport; and the brickwork by Mr. Lamb. All the works have been designed and carried out under the superintendence of Messrs. Maxwell & Tuke, of Bury, the resident clerk of works being Mr. Foster. The only decoration in the way of stone figure carving is observable around the outside of the pavilion, figures representing the progress of art and music being arranged around the coping.

The principal hall of the aquarium has moulded columns and groined arch roof. No light is admitted direct into the hall without passing through tinted glass, or being reflected through the twenty-three tanks along the sides. Each of these tanks is now filled with specimens from the deep sea, including conger eels, cod, wrasse, monkfish, soles, plaice, skate, ray, spiny and other lobsters, king crabs from North America, octopus, a collection of spiny and other crabs, whiting, whitebait, anemones, and a collection of various species of dogfish. The whole of this department of the undertaking has been superintended by Mr. M. H. Reed. The water is kept pure by constant circulation. Under the principal conservatory there is a reservoir, which is kept filled with 300,000 gallons of sea-water, exclusive of that in the tanks, which themselves contain from 150,000 to 200,000 gallons. The store-tanks are divided at two levels. The water is first pumped from the lower to the higher one, and from thence it circulates by its own gravity through the whole tank system, the jets which pass the water into each being of sufficient force to carry with them a current of air. To do this work of pumping there are two engines of eight-horse power each, capable of throwing 8,000 gallons per hour, and three other pumps throwing 2,000 gallons per hour each, while in addition there are air-pumps for circulating warm or cold air through the aquarium. The whole of the machinery is in duplicate.

A STRIKE FOR HEALTH.

THESE'S hope at last for the workmen, who
Are striking to obtain
Water to drink, and decency, too:
Oh! may they strike again!

Though wars have stain'd our history's page,
Plagues work a deeper line;
Thousands have died in every age,
In workshop, mart, and mine.

The monarch's palace, the baron's hall,
Suffer'd belimes by stealth;
Bot peasants and craftsmen, one and all,
Had neither home nor health.

The lowly hands were sear'd on the soil,
Who lived in huts and caves;
And still in this age many who toil
Dwell in their living graves.

Our craftsmen, and building workmen, too,
Who work'd for power and wealth,
Have gasp'd for water and air, and knew
They died athirst for health.

Oh, Pilmen, on! your cause it is good
This time, the world admits,
For water pure with your daily food,
And ventilated pits.

C. H. C.

INSTITUTE OF SURVEYORS, MELBOURNE.

An association named the Victorian Institute of Surveyors has been formed in Melbourne, having for its objects the improvement of the status of the profession in this colony by the admission or retention of none but competent and trustworthy members; to afford some guarantee to the Government and the public requiring the services of surveyors; to provide means for the discussion of professional questions, with a view to mutual improvement; and to promote friendly relations amongst its members. The Institute has succeeded in attaching to it Mr. Skene, Surveyor-General; Mr. Ellery, Government astronomer and director of the geodetic survey; Mr. Couchman, chief mining surveyor; several of the district surveyors; and a large

number of authorised surveyors in the Government service and in private practice. A preliminary meeting has been held, about forty gentlemen being present, who elected a council, consisting of Messrs. Ellery (president), Couchman (vice-president), Stuart Murray (treasurer), and Davidson, W. G. Couchman, Archdall, Gardner, M'Nulty, and Muntz; Mr. Skene, to whom the president's chair was offered, being unable, through pressure of official duties, to accept the position. The council has drafted general rules for the government of the Institute, and revised the list of proposed members, fifty-three, of whom thirty-eight are approved, eleven postponed for further inquiries, and four rejected. Leading members of the profession are taking a warm interest in the success of the Institute, and it is expected that its influence will have a beneficial effect upon the profession.

THE SLAUGHTER-HOUSES ACT.

THE Slaughter-houses Act, ordered by the House of Commons to be printed on the 15th of June, passed the second reading on the 3rd of July, and through Committee of the House on the 7th of that month, although copies of it were not procurable until one day before it reached the last-mentioned stage. As an amendment of the law-governing businesses declared by section 3 to be offensive, it might have been presumed that any advantage in priority of information would most properly have been given to the public who suffer from their noxious character, represented by the medical officers of health of the metropolis; but, instead, the Government exhibited marked concern for the prescribed trades (under the Building Act of 1844), by conferring with their principal members as to the manner in which they preferred to be dealt with, the public being the while kept in ignorance of the proposals intended for submission to Parliamentary decision. The necessary outcome of so extraordinary a legislative manoeuvre is stamped upon the measure as it passed. Thanks for the vigilance of Dr. Duffield, the Kensington Health Officer, and to the Society of Medical Officers of Health, whom he aroused to instant activity so soon as he could get a copy of the proposed statute, the measure of mischief it perpetuates is somewhat restricted. The "offensive" businesses were intended by the parties interested in them to be removed from all direct interference on the part of the vestries, whose medical officers and sanitary inspectors previously possessed certain powers of inspection and control—the latter secured by objection before the Justices in Petty Session. The 3rd section, as originally framed, while giving a monopoly to existing businesses which must be of enormous value to some of them—as instance, the tallow-melters,—also left them at liberty so to extend the area of their premises as to make their future suppression by perchance an almost inaccessible luxury, not to be contemplated by any save extremely wealthy parishes. The suggested amendments framed by Dr. Duffield, and adopted by the Society of Health officers, drew attention to these especially obnoxious features of the Bill; and notwithstanding the indelicate haste with which, intolerant of sanitarian objections, the measure was pressed through both Houses, the resolute efforts of Dr. Duffield, the Vestry of Kensington, and Mr. William Banting were successful in checking such gratuitous attacks upon the public weal.

Some doubt remains as to the precise effect of the 3rd and 10th sections (taken together) in altering the procedure in regard to slaughter-houses. By section 3 the sanction of the local authority is made a necessary preliminary to the renewal of any licence. By section 12, the "local authority" is defined to mean the Metropolitan Board of Works,—a body destitute of even the shadow of a sanitary staff,—for the metropolis outside the City; and the Commissioners of Sewers,—who have both medical and sanitary officers,—within the City. Section 3 requires notice of any application for a renewal of licence to be given by the Metropolitan Board of Works to Vestries, but invests the lay Board with the power of determining what measure of validity shall attach to the technical objections urged (on report of their sanitary officers) by the Vestries. Section 10 declares the duty of justices to be the renewal of licences "as a matter of course," and then goes on, assuming section 93 of the Metropolitan Management Amendment Act, 1862 to continue in force,—to say that "such

[Metropolitan Board] may, if they think fit, show cause against such licence being renewed, in like manner as such other parties [the Vestries] are empowered by that section to show cause." Here, plainly, is a middle which may lead to interminable litigation, if indeed it do not, in effect, nullify the designed transfer of authority to the Metropolitan Board of Works. The 93rd section of the Act of 1862 is not repealed. On the other hand, in section 14 of the new statute it is provided "that the repeal" only of the sections of the Building Act, 1844, "enacted in this Act shall not affect . . . (3) the institution of any investigation on legal proceeding, or any other remedy for ascertaining . . . any liability . . . as aforesaid," apparently saving the Vestries' rights and powers of inspection; while section 17 further states that "Nothing in this Act contained shall affect the general law of nuisance, or make legal any act or default which would have been illegal if this Act had not passed, or, save as in this Act expressly provided, affect any Act of Parliament relating to any business specified in this Act." Assuredly, the Government is not to be congratulated upon the first step it has taken to redeem Mr. Disraeli's promise of legislation for the public health; and the Act itself furnishes a forcible illustration of O'Connell's famous *mot anent* the driving of a coach-and-six through the statutes of the realm. J. T. D.

THE STATUE OF QUEEN ANNE.

Sir,—Although the artistic qualities of the monument in front of St. Paul's are not great, I perfectly agree with the sentiments expressed in the *Builder* of last week, with respect to the proposed removal. Similar sites have been chosen for monumental sculpture, from time immemorial, because sculpture so placed gives value by its smaller dimensions to the grand proportions of an important public edifice. The general outline of the monument is good, and the *coup d'œil*, as the cathedral is approached from the west, would suffer by the removal of the statue of Queen Anne. That Wren sanctioned its placement is sufficient reason why it should remain undisturbed, at least, until we can substitute something better of the same kind.

The lamp-post at the corner of Ludgate-hill is in the way, or anyone of those "forty thieves," as I heard those ugly turbaned porphyry posts called—if a man will be foolish enough to place himself behind it, not otherwise.

If we begin to quarrel with the art in our public monuments where shall we stop? Shall we leave Wellington at Hyde-park-corner, or the grotesque statues and quaint glass in our Gothic cathedrals? Sufficient for the day is the evil thereof, and it will be well if a coming age does not come giggling on with the cry of "Biot out the decorations of St. Paul's."

W. CAVE THOMAS.

THE SIMPSON MEMORIAL.

OUR readers will remember, says the *Weekly Scotsman*, that as the result of a movement set on foot shortly after the death of Sir James Y. Simpson, a sum of nearly 6,000*l.* was subscribed, chiefly in Scotland, for the purpose of obtaining a suitable memorial of that distinguished surgeon. In accordance with what seemed to be the general feeling, it was resolved that a portion of the fund should be expended on a statue, to be placed in some public position in Edinburgh, and that the balance, expected to amount to at least 3,000*l.*, should be made over to the Maternity Hospital, on condition that it should be supplemented by an equal sum, and applied towards the erection of a new building for that useful charity, with which the name of Simpson should in future be associated. With regard to the latter portion of the scheme, the proposed conditions were accepted by the directors of the hospital. As to the statue, the acting committee lost no time in giving the necessary commission to Mr. W. Brodie, R.S.A., and the work, so far as the sculptor is concerned, is now nearly completed. The difficulties encountered in dealing with a figure such as Simpson's have been overcome by adopting the sitting posture. Being intended to occupy a site in some important street or square, the statue is designed on a colossal scale, about twice the size of life. The Professor is represented in his academic robes, as if in the act of lecturing to his students. Seated on a chair of

classic design, which is for the most part hidden by the flowing drapery, the figure is posed in an attitude significant of the alert energy which was eminently characteristic of the man. Mr. Brodie hopes about two months hence to place his model in the hands of Messrs. Mansfield & Co., London, by whom it is to be cast in bronze. The sculptor is also engaged upon a bust of Simpson, which, with an accompanying bas-relief, illustrative of some feature of the great surgeon's career, is intended to be placed in Westminster Abbey.

BAD WATER.

WE may remind our readers that in the new Sanitary Act, which is now in force, there is an important provision as to private wells, tanks, and cisterns. On a representation to a nuisance authority that the water is polluted, the justices can order the parties to be summoned, and direct a portion of the water to be analysed. In cases of cisterns in private houses, the provision, if carried out, will be productive of considerable benefit, as on a representation that the water is so polluted as to be injurious to health, a summons can be issued. An appeal is to be allowed, and magistrates can grant costs when a summons is dismissed.

RIPLEY WATERWORKS.

FOR several years past the inhabitants of the small but flourishing town of Ripley, Derby, have suffered from an inadequate supply of water. The Local Board have for some time had the matter under their careful consideration, and several methods of remedying the evil have been suggested. At length it has been definitely decided to sink a well for the purpose, and pump the water sufficiently high to supply the town by gravitation. A field has therefore been purchased near to the town, and in a position where it is confidently believed that an abundant supply of pure water will be obtained at a depth of about 10 yards.

On Thursday, the 10th inst., active operations were commenced. The members of the Local Board met, and proceeded to the place, in order to turn the first turf, which inaugural ceremony, in the absence of the chairman, Mr. G. Staley, was duly performed by Mr. J. W. Nuttall, who afterwards, in a few appropriate words, expressed his satisfaction at the prospect of this long-felt want being soon supplied. The ground was afterwards speedily taken possession of by the contractor, Mr. W. Seddon, of Morley Park, near Belper; and the work of sinking the well is satisfactorily proceeding, under the superintendence of Mr. R. Argile, jun., sanitary engineer, of Ripley.

A NEW SYNAGOGUE IN PARIS.

THE inauguration of a new Jewish Consistorial Temple in the Rue de la Victoire has taken place. The nave, according to *Galignani*, is twice as wide as that of Notre Dame, and nearly as high. In the middle of the edifice is the *Théba*, the altar at which the rabbi officiates, and at the end the choir, with marble columns and stained glass windows, on which are represented allegories of the twelve tribes. At a higher level is a gallery, reserved exclusively for the female portion of the congregation. The building has cost two millions of francs, and taken ten years to construct. Barons Alphonse and Nathaniel de Rothschild, accompanied by the several members of their family, were present; and M. Beer, officiating minister, ascended the *Théba*, where was seen the seven-branched candlestick, a work of art more than 6 ft. in height, the tables of the law, an enormous crown symbolising the crowning of the latter, and two candelabra, the whole in massive silver. These ornaments were given by Baron Alphonse.

ACCIDENTS.

Scaffold Accident near Oldham.—At the village of Lees, near Oldham, seven men were engaged repairing the schools connected with Zion Chapel, and for that purpose were standing on a cross-beam. Without a moment's warning the scaffold gave way, and all the workmen were precipitated to the ground, a distance of nearly 30 ft. Two of them sustained broken limbs, two were severely cut and bruised; the injuries of the other three were only slight.

Peril in Sinking Shafts at Bilston.—The sinkers who were engaged in sinking a coal-shaft at Moxley, near Bilston, had a narrow escape. The sinking had reached a depth of about 100 yards. The men had fired a shot, and were being drawn to the surface to await the explosion. When within thirty yards of the pit's mouth the crank of the engine broke. With great presence of mind the engine-tender applied the brake instantly, and so prevented the men being dashed to the bottom. They remained suspended while they were for about an hour before they could be released.

HOARWITHEY NEW BRIDGE COMPETITION.

Sir,—In response to the advertisement for designs for this bridge, I sent in a drawing for an iron structure based upon the designs, but from that day to this I have not received a written communication.

The directors were to meet on the 30th of April, and on that day to give their decision. I have been unable to obtain any reply or information whatever, although I have written to the solicitor three or four times, and also to the directors, nor has my drawing been returned.

I do not care a pin about the competition, but the courteous behaviour of the parties who have received designs is hardly bearable. What am I to do to receive my drawing? It may not be worth sixpence, but I am right to it, or to be paid the premium, surely.

Perhaps some of your readers may be able to make an action at law could be sustained, based upon the premium as the maximum damages; if so, I am prepared to try the point, and thus settle a much-vaunted question. NOT THE "MAN OF ROSS."

BILLS OF SALE ON TRADE MACHINERY.

THE Act to Amend the Law relating to Mortgages of Machinery and Bills of Sale sets forth:—With respect to mortgages of machinery, that trade machinery shall be deemed to be personal chattels, within the meaning of the Bills of Sale Act, 1854; and it confirms past mortgages of trade machinery and permits of their registration.

With regard to the law as to bills of sale, the Act retains certain priorities of bills of sale, and provides that bills of sale shall be executed in the presence of an attesting officer.

Trade machinery is thus defined for the purposes of the Act, unless there is something in the context inconsistent with such meaning; that is to say, "trade machinery" means the machinery used in, or attached to, any factory or workshop, 1st, exclusive of the motive powers, such as the water-wheel and steam engine, and the shafts, boilers, monkey-engines, and other fixed apparatus of the said motive powers; and 2nd, exclusive of the portable machinery, such as the shafts, wheels, drums, and the fixed apparatus which transmit the action of the motive powers to the other machinery fixed and loose, and 3rd, exclusive of the pipes for steam, gas, and water in the factory or workshop.

Builders and other firms borrowing funds on the security of machinery will find the Lord Chancellor's decision somewhat complicated, and a solicitor must now be engaged to draw up all bills of sale, thus adding to the expense entailed by borrowers.

SCHOOL BOARD SCHOOLS.

Kingsland.—The formal opening of the Tottenham-road school took place under the auspices of Sir Charles Reed; and, notwithstanding the disagreeable weather, a very large number of the inhabitants of the district attended, and evinced a lively interest in the educational movement. The school, which is capable of accommodating 726 boys, girls, and infants, was built by Mr. Robson, the School Board architect, at a cost for site of 3,032*l.*; building, 9,200*l.*; being at the rate per head for site, 4*l.* 6*s.* 6*d.* for building, 8*l.* 8*s.* 10*d.* The schoolrooms are spacious and airy, and the whole establishment is fully supplied with educational appliances. The Tottenham-road School completes a total of sixty-five schools already established by the Board, and capable of accommodating 56,411 children. The gross cost for sites has been 146,399*l.*, and for buildings, 404,707*l.*, giving an average cost per head for site and building, 9*l.* 18*s.* 6*d.* Sir C. Reed was supported by Mr. Currie, vice-chairman of the Board. The Chairman, in opening the proceedings, remarked upon the gratifying fact that the School Board now sixty-five schools open out of 100 originally contemplated. Four years before it had decided that school accommodation should be provided for 100,000 children, and they had already provided for 57,012. In addition to they had many temporary schools all crowded with children waiting impatiently for the opening of their permanent schools. In Hackney district there were, in 1873, 123 efficient schools accommodating 28,185 children, and this at the average attendance was 25,225. He was obliged to add that there were still 18,000 children not going to any school, and of these upwards of 7,000 were between five and ten years of age, and would therefore soon be lessened from responsibility. There were 8,000 attending non-efficient schools, and these schools

last remark, had been condemned, not by Board, but by the Education Department. Given a few more figures, the Chairman said by stating the gratifying fact that a school was about to be opened for the blind, and dumb in Bethnal-green. He trusted something would also be done for the poor, of whom there were 277 in Hackney.

Mr. Currie followed with a detailed statement of the cost of the school, and a few remarks respecting the deplorable educational deficiencies of children whom the Board taken from other schools.

North.—A new School Board school in the north division, and situated in James-street, Hampton-street, Camberwell, has been opened by Sir Charles Reed, in the presence of a number of the inhabitants. In touching the action of the Board, he said that in district, if all the available schools were there was a deficiency for 1,922 children; school would accommodate 590, and the one in Gloucester-road would accommodate 1, a statement which he thought would give an answer to any cry that they were too near existing schools. The site has an area of 11,326 sq. ft., with legal charges cost £12s. 10d.; the cost of the building is £1,180l. 12s. 10d., or 11l. per head of the children. The details of accommodating powers are,—214 boys, girls, 215 infants.

Gateshead.—The schools in Prior-street, Gateshead, erected by the Gateshead School Board, formally opened on the 7th inst. A public being held for the purpose. The Mayor (George Charleton) presided. Among the guests were Sir Walter James, bart., Mr. J. M.P., and the Ven. Archdeacon Priest. New buildings are situated on a level site of two acres in extent, at the junction of Prior-street and Prior-street, and are in two lots and separate blocks, that for the infants' department being in one story, and that for the hand girls in two stories. The boys' school consists of one large main school-room, 56 ft. by 34 ft., with seats arranged on the "double row" plan, and three class-rooms, each by 18 ft. The girls' school, which is on the first floor, approached by a stone staircase in flight, is almost identical in its arrangement with the boys' school, over which it is situated. The main school is somewhat larger than the boys', being 63 ft. 6 in. in length, and class-rooms being the same size as those for boys. The infants are accommodated in two main school-rooms, each 56 ft. by 34 ft., four class-rooms, each 20 ft. by 16 ft. 6 in. In all, the whole of the walls are plastered and finished a pale grey colour, with a dark dado round for a distance of 4 ft. from the bottom. Externally, the buildings are finished with picked common bricks, with red bands and dressings; the roofs are slated, and have lead ridge tiles. The girls' staircase has been carried up in the form of a low bell-tower, a high-pitched roof. The chimneys are throughout made bold and massive, and are raised to a considerable height to ensure a good draft. The school buildings are surrounded by wrought-iron palisading, on dwarf walls, with piers. The playgrounds are enclosed with solid walls, about 8 ft. high. Accommodation is provided for 373 boys, girls, and 636 infants, giving a total of 1,011 children. The boys' and girls' schools are planned to give an area of 8 square feet of floor space, and 128 cubic feet of air to each child, the infants' schools to give 8 square feet and 136 cubic feet to each child. The cost of the buildings, including fittings, boundary, &c., has amounted to £7,533l., or 5l. 6s. 4d. per child. Mr. John Harrison, of Gateshead, the sole contractor; Messrs. Walker & Emley, who did the stores and heating apparatus; and Thomas has acted as clerk of the works; and Thomas Oliver, of Newcastle, was the architect.

Margate Aquarium.—We note that preliminary preparations in connection with the works of this undertaking, under the cliffs of Fort Point, have been commenced during last week, under the superintendence of H. Law, C.E., engineer to the company. The wall will be constructed entirely of concrete of a six tons' weight, which have been made in four years. These blocks, a number of the same kind of which were set at Dover will be set in cement here.

CHURCH-BUILDING NEWS.

Howden.—The foundation stone of St. Paul's Church, Howden, has been laid. The church will be in the Gothic style, and will seat 320 persons. A chancel is in contemplation, and when that addition is made, the number will be 440. The estimated cost of the church is 2,600l., and the chancel will cost 1,000l. more.

Campbell.—For years it has been seen that something must be done for Campbell church, else it would altogether go to decay; and at length it was decided to restore the church, and Sir G. Gilbert Scott was invited to inspect and report upon the work and cost. The then condition of the church was reported on by Sir G. Gilbert Scott, and an effort was at once made to raise the sum required. A subscription list was opened, and a sum total promised or paid (to the present time) of 2,000l. The contract for the restoration was given to Messrs. Shillito & Morgan, of Campbell, and the first work undertaken was the nave. The greater part of this is now nearly complete. The walls have been stripped of their whitewash, and these and also the pillars and arches have been fresh pointed and repaired. A new roof and pavement of Staffordshire tiles have been fixed, and a new stone font added. While these repairs were being carried out, the Sunday and other services were conducted in the chancel and other parts of the church, but now these have been finished, service is held in the newly-restored nave. The other portions of the church are now being attended to, but it will be some time yet ere all is completed. The estimated cost of the entire restoration was 4,000l. Other work, however, which it has since been found necessary to do will swell the expense to nearly 1,000l. more. Against this, however, the patron of the living, Mr. G. B. C. Yarborough, of Campsall, and several members of his family, have undertaken the restoration of the chancel, the cost of which is estimated at about 1,100l. The total sum, therefore, required is about 4,000l.

Kingston.—The memorial stone has been laid of a church, which, with a vicarage, is to be built at the foot of Surbiton-hill, on the border of Kingston parish, at a cost of some 19,000l. The whole expense will be borne by Mr. Conlthurst, who is erecting the church and vicarage "as a thank-offering to God for blessings vouchsafed; for the faithful preaching of his word; and in memory of his beloved and only sister, Hannah Mabella Conlthurst." Lord Lovelace laid the stone.

Northampton.—A meeting of the St. Giles' restoration committee has been held, at which Mr. Law, the architect, presented his report on the state of the church, and a meeting of the parishioners and friends is to be called, at which the minutes of this meeting will be read, advising the repairs of the substantial portions of the church and side chapels, including roofs and floors, in pursuance of Mr. E. F. Law's plan and estimate, and during the interim the plans lie at Mr. E. F. Law's office for inspection.

York.—The Archbishop of York has consecrated the Church of St. Clement, York, a church which is to form a chapel of ease for a district of the parish of St. Mary's, Bishopthorpe, outside the walls, known as Clementhorpe. The church is built inside and out of red stock brickwork, relieved with bands of black bricks, stonework being only used when constructively necessary. The plan of the church consists of nave and aisles and an apsidal chancel, with organ-chamber on the north and vestry on the south side. The nave is divided from the aisles by arcades of four arches each. These arches are of moulded brickwork, and are carried by circular stone pillars, having carved caps of conventional foliage. Above the nave arcades are the clearstory windows, of simple pointed character. The chancel has one three-light window in eastern bay of apse, and a two-light window to side bays. The west window of nave is of four lights, and side aisle windows of two lights. All the windows are glazed with cathedral glass, and the east window will shortly be filled with stained glass by Caproniere, of Brussels, the gift of Mr. G. Wilson, in memory of his wife. The entrance doorways are at west end of north and south aisles, and have inner wooden porches with folding doors. A small bell turret is corbelled out from buttresses at the west end, and contains one bell. The roof of nave and aisles is open-timbered, dressed, stained, and varnished, and the places between the spars are plastered. The roofs are covered with Lancashire blue slates. The open seats, and joiners' work generally, are of pitch pine, stained and varnished. The church ground is enclosed by

wrought-iron railings. The total cost of the building, which will accommodate 557 people, will be about 3,800l., and the work has been carried out from the designs, and under the superintendence of Messrs. J. B. & W. Atkinson, architects, York. The following contractors have carried out the works—brickwork and masonry, Biscombe; carpenter and joiners' work, Rookledge; slating, Wood & Co.; plumbing and glazing, Robinson; painting and staining, Pearson; carving, Cole; ironwork, Bousfield. The new church which has just been erected for the use of the patients of the North Riding Lunatic Asylum has been formally opened for special service and sermon by the Hon. and very Rev. the Dean of York. For many years past a large room has been fitted up and set apart for divine service, but recently that room, which was in the centre of the main building, has been found too small for the large number of patients. Apart from the circumscribed space, an almost insuperable objection to it as a place of worship arose, on the part of some of the inmates, on the ground that it was not a "church" they were required to attend. The result was, that last year steps were taken to obviate the difficulty by the erection of a new church on the grounds of the institution. A site, immediately facing the principal entrance to the asylum, and nearer the River Ouse than the institution itself is, was selected, and here a church has been erected. The church is cruciform, and consists of nave, transepts, chancel, and tower, and is entered by a western porch. The lower portion of the tower is utilised as a room for epileptic patients. The north transept is divided from the church by an ornamental traceried screen, with carved caps and mahogany shafts. The organ, which has been restored and enlarged by Mr. Denman, is placed in the south transept, the screen of which matches the vestry screen. Underneath the vestry is placed the heating-chamber. There are four steps from the chancel to the Communion-table. The aisles are laid with red, black, and buff tiles, in patterns, and the chancel is laid with encaustic tiles. The east end is octagonal, lighted by three two-light windows. The roofs are open-timbered. The nave and transept roofs are plastered between the spars; the chancel roof is boarded. The whole of the sittings, doors, pulpit, screens, &c., are made of pitch pine, and are varnished. The exterior is faced with Bradford wall stones and Whitby stone dressings. The design is of an Early Decorated character throughout. The nave and chancel are lighted by two-light tracery windows, the sides of the transept and tower are lighted by one-light tracery windows, and the west gable has a three-light window. The tower is surmounted by an octagonal belfry. There is but one bell, and above the belfry rises a dressed Whitby stone spire, terminated by a gilt vane and lightning conductor. The height is 92 ft. from the ground. The architects from whose designs the church was erected, were Messrs. Gould & Fisher, of York. The stone carving has been executed by Mr. Hessay, of York. The contractors for the remainder of the work were—Mr. Biacom, builder; Messrs. Bellerby, joiners; Messrs. Hodgson, plumbers (who also supplied the heating apparatus); Messrs. Dodgson, slaters; and Mr. Hick, painter.

Hammerwich, near Lichfield.—The new church of St. John the Baptist, Hammerwich, has been opened for divine service. The new edifice is built in the Early English style, the plan being a double parallelogram, forming a nave and chancel with a north aisle, which is separated from the nave by three arches, supported on moulded and carved columns. At the end of the north aisle is a small organ-chamber and vestry. The tower forms the west entrance to the church. The nave is lighted on the south side by complete lancet windows, between each of which a buttress of two stages is introduced, thus dividing the nave into three bays. The windows of the north aisle are very much smaller, but have three lights to each bay. The doorway of the tower, which is the west entrance to the church, has stone columns, with trefoil head, moulded, and recessed-arch moulding, carved capitals to the columns, with the dog-tooth ornament introduced into the jamb and arch-moulding. The tower is of three stages, with large complete lancet-windows placed on each face of the belfry-stage, with a spire of stone, and being little short of 100 ft. in height. The roofs are open-timbered. The chancel, which is the most important feature of the interior, is large for a church of such dimen-

sions. It is constructed entirely of stone from the quarry in the hamlet, whence was taken the stone for two other neighbouring churches. It is also said to be the same quarry from which a large quantity of the stone used in building Lichfield Cathedral was taken. The chancel has a groined roof. The window immediately over the altar is almost identical with the eastern window in the old church, there being a desire on the part of the parishioners to preserve this. The woodwork is of deal, stained; the floor tiled, that of the chancel in colours, of an enriched pattern of Minton & Co.'s manufacture. The architects were Messrs. Newman & Billing, of London, from whose designs the work has been carried out by the Rector, the Rev. R. Gordon, and Mr. James, of Gentshaw, who has acted as clerk of the works. The church will seat about 250 persons, and has been erected at a cost of little under 3,000l.

Newton (Wells).—St. David's Church, Newtown, after being closed for some months for alterations and re-arrangement of seats and other improvements, has been reopened for divine service. The contract for the works was taken by Mr. Edward Williams, of Newtown, builder. The architect, from whose designs and under whose superintendence the work has been carried out, is Mr. David Walker, of Liverpool. It may be added that after the removal and refixing the organ, the main front pipes were painted and gilded by Mr. R. Powell, of Severn-square, from the architect's designs. The alterations cost about 2,250l., and an estimate for the east window, by Messrs. Clayton & Bell, of London, is 570l.

Maidstone.—The foundation-stone of St. Peter's Church has been laid. The site selected is at the upper portion of St. Mary's-hill estate, and faces the road leading to Hall's Hole. The church is to be from plans of Mr. Cronk, architect, of Tunbridge Wells, and will be a thank-offering for the recovery of the Rev. Canon Hoare. It will be built of local stone, with windows of Bath-stone dressings and tiled roof, and will consist of a nave and chancel. Accommodation will be provided for 450 persons, and the church is so arranged that aisles can be added.

DISSENTING CHURCH-BUILDING NEWS.

Newcastle-on-Tyne.—The Bainbridge Memorial Chapel, to seat about 300, and designed by Mr. Thomas Oliver, architect, Newcastle-on-Tyne, is now in course of erection by the Wesleyan body of that town. The four corner-stones were laid as separate foundation-stones a short time ago. The cost of the building will be about 3,000l.

West Bromwich.—It has been resolved to erect a Unitarian Church here. About 1,000l. were subscribed in the locality and in Birmingham, and a site having been obtained adjoining the district hospital, the erection of a chapel was proceeded with. The builders are Messrs. Stockton & Sons, of Oldbury; and the designs have been prepared by Mr. Pison, of Birmingham. The chapel is intended to accommodate 300 or 400 persons. The estimated cost of the building is about 1,400l.

Nottingham.—A new Wesleyan chapel, which has been erected in Tennyson-street, has been opened for divine worship. The building is designed to provide accommodation for the Dissenting inhabitants of the Forest district. The style of architecture is modern Italian; the outer walls of the sub-story are built of rock-faced Bulwell stone, and the remainder of pressed bricks, with Hollington stone dressings. The front is divided into centre and side wings; the central portion contains three entrances, which are approached by a flight of terrace steps. The doorways have polished marble columns with enriched caps; the arches and other dressings being of Hollington stone. The sub-story contains a schoolroom, 58 ft. 4 in. by 35 ft.; band-room, 25 ft. by 20 ft.; four vestries, each 14 ft. by 13 ft.; and spacious rooms for heating apparatus, &c. The whole of these rooms are 13 ft. high, and approached by two wide flights of steps outside and two inside. A wide area is left all round, affording ample space for light and ventilation. The internal dimensions of the chapel are 100 ft. by 59 ft. The ground-floor is approached by a wide vestibule and inside corridor extending the whole width of the chapel, the staircases to the gallery being at each end of same. The ground-floor will seat

800 persons, and the gallery about 200 persons. The pews are arranged in the amphitheatre form, divided by four aisles, giving good space for ingress and egress. The ceiling is constructed with ornamental coved cornice, and divided into moulded and enriched panels, the ribs of panels extending down the cove, stopping on ornamental corbels. The windows have enriched archivolts and strings. The outside of the chapel is enclosed by a rock-faced Bulwell stone wall and palisade. The total cost will be 6,000l. The principal contractor is Mr. Henry Vickers, and the sub-contractors are:—stone work, Mr. McPherson; plastering, Mr. Wilkinson; plumbing and glazing, Messrs. Corden Brothers; heating apparatus, Messrs. Lewis & Grundy; gasfitting, Messrs. D. New & Co.; and ironwork, Messrs. Goddard & Massey. The pulpit has been built by Messrs. Stevenson & Weston. The architect is Mr. Collyer. The foundation stones of a new Primitive Methodist chapel and schools have been laid at the Forest-road. The building is being erected by Mr. Priestley, and the architect is Mr. B. C. Sutton. The contemplated cost will be about 2,000l. The place is 60 ft. by 40 ft. inside, and the basement story consists of a large schoolroom, five class-rooms, scullery, and heating apparatus. The chapel is to accommodate, seated, about 400 persons, and its height is 26 ft. from the floor to the wall-plate. It will be built high enough for a gallery, but, for the present, it is not intended to put one in. On the northern side of the chapel is the preacher's vestry, which will be fitted up with requisites for such an apartment. On the eastern side there is space for a minister's room, which might be erected on some future occasion. The general style is modern Italian.

Leeds.—The foundation-stone of a new Wesleyan chapel has been laid in Leeds, the site of the proposed building being at the corner of Hyde Park and Clapham roads, Woodhouse Moor. The edifice, which is part of an extension scheme in connexion with Oxford-place Circuit, is to cost 8,000l., and will accommodate 1,000 persons. Another stage in the completion of the extension scheme at present being carried out by the Wesleyans of Leeds has been arrived at. The new chapel, which has been erected in Woodhouse Carr, to supersede the old school-room used as a preaching-room in that now rapidly-growing suburb, has been formally opened for public worship. The chapel, which has been erected from the designs of Mr. G. F. Danby, Leeds, will comfortably seat 500 persons, and by the erection of side galleries the accommodation can be increased to 650. The style of architecture is Italian, and the building is of stone, lined with brickwork. The front is to Meanwood-road, from which a wide flight of steps leads into a lobby, and thence into the body of the chapel, and by staircases to an end gallery. A minister's vestry, with organ-chamber over, is placed at the rear and is approached by a separate entrance and staircase. Under the chapel, but raised above the ground level, is the schoolroom, to hold 300 scholars, with separate entrances for boys and girls; also class-rooms, library, kitchen, and all other necessary accommodation. Both chapel and school-room are heated with hot air. The whole of the internal joiner-work is stained and varnished. The building is surrounded with a low wall, surmounted by iron railings. The total cost, including land, has been 3,250l. The works have been carried out under the superintendence of the architect by Mr. Charles Myers, mason; Mr. J. Ledger, joiner; Mr. J. Franks, plasterer; Mr. Williams, plumber; Mr. J. Blackburn, painter; and Mr. Rawlins, slater.

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Bedford.—A new chapel has been opened at Bedford. The building is situated on the Midland-road. The style is late Early English, and the structure is built of stone from Warrington, near Olney, with Bath-stone dressings. It has a nave with two aisles, the dimensions of the body of the building being 41 ft. by 40 ft. It is intended to carry out the structure, when needed, another 26 ft. The chancel is 24 ft. by 22 ft. 4 in.; opening from it there are two side chapels, each 11 ft. 8 in. by 8 ft., the one dedicated to "the Blessed Sacrament," and the other to the Virgin Mary. One of the chief features is the groined wooden roof of the chancel, which is adorned with bosses decorated with various symbols, viz., the Holy Child on the cross, the Agnus Dei, the

pelican, and the I.H.S. The reredos is in money with the architecture of the chapel, four compartments, under carved canopies, figures of four saints.—St. David (with the harp), St. Gregory, St. Nicholas, and St. Andrew. The decorations, including the reredos, which is Farmer & Brindley, and the ornaments of altar, are the gifts of children in Great Britain and Ireland, and also children of France, Belgium, in honour of the Holy Child. The altar and tabernacle are of marble. The cost of the portion erected, with fittings, &c., nearly 4,000l. It has been built by subscription, many of the chief donors being anonymous. The architect of the building is Mr. Gilbert Blount. The builder is Mr. John Watkins, Northampton.

Canterbury.—Recently the Duke of North laid the foundation stone of a new Catholic church at Canterbury. The site of the church is at the back of the disman Protestant church of St. Mary Magdalene, Burgate-street. The new edifice has been designed by Mr. John Green Hall, architect, Canterbury, and will be in the Early Decorated style of architecture. It will comprise a nave with aisles, sanctuary, three side chapels, confessionals, priests' and boys' sacristies, reliquary room, organ chamber, and baptistery. The plan of the building forms a parallelogram from the east end of which projects a sanctuary, where the high altar will be placed and at either side on the level of the floor of nave will be a side chapel, dedicated to the Virgin Mary and St. Joseph respectively. The remaining chapel and the sacristies are on the left of the nave, and one of the confessionals placed on the right and another on the left, they will be built in between two of the external buttresses, thus avoiding their projecting into the body of the church. The roof of the altar rises to a height of 50 ft. to the ridge, and is open timbered, with boarded roof stained and varnished. The front elevation will have a spire rising above the central gable, flanked either side with a pinnacle. The spire will be 76 ft. high. The front elevation will be finished with Kentish-rag stone and Bath stone dressings, the remainder of the church will be built with white bricks and Bath stone dressings. The estimated cost of the edifice, which is designed to accommodate 450 persons, is 4,000l., without pulpit or any internal fittings. Messrs. Gaskin & Godden, of Canterbury, are the builders, and the work is to be completed about twelve months.

SCHOOL BUILDING NEWS.

Slough.—The new British School in Hersell street, the foundation-stone of which was laid August last, by Mr. Lambert, M.P., having been completed, the event has been celebrated by a dinner in the schoolroom. The building has been erected at a cost of 561l. 15s. for ground and 150l. it is estimated will be expended on school fittings, and other expenses. The school has been erected at a cost per pupil of about 3l.

Longborough.—The foundation stone of new schools has been laid at Longborough, a picturesque village, which stands on a slope of the Cotswold hills, between Stow and Moreton. Two new schools are contiguous to the road, and within easy access of the vicarage and the parish church. The school is to be erected in the extra school-room accommodation prescribed by the new Educational Act. The site was originally the playground of the old school. Mr. Rushout laid the stone. The school district which includes Sezincote, has a population of nearly 700, and the rooms are for the accommodation of 150 children. The builders are Messrs. Newman & Sons, of Evesham, and the cost of the new schools will be about 500l.

Totton (Devon).—New Church of England and voluntary schools have been opened at Upton. The inhabitants decided to avoid employing the machinery of a school board, and although the parish is essentially an agricultural one, and not largely populated, the parishioners at the last census numbering, we believe, about 440, sufficient money has been raised by subscriptions, aided by the Government grant, to provide for the erection of the building, which has accommodation for about 100 children. The cost is 600l. There is a playground attached to the school, which is situated in a healthy position. The building was erected by Mr.

Edinburgh Town Council.—The Council met on Tuesday last week, and, amongst other things, considered and remitted to the Lord Provost's Committee a modified plan submitted by Mr. Gowans for ornamenting the archway under the North Bridge abutting on Jeffrey-street.

The Builder.

VOL. XXXII.—No. 1651.

orientalism: What it has done, and What it will do.



ASSUREDLY the International Congress of Orientalists is among the most remarkable of gatherings which have for very many years been got together; and its objects are certainly second to none, either in intensity of interest or practical importance. It would be vain to attempt to go through the list of the profound researches of the scholars who met together and came from so far to tell of and to talk about them. One is fairly lost in amazement in the endeavour to fathom the depths of such difficulties,

to get a clear idea as to how things so difficult have been found out, and how such secrets, long buried, have been compelled to reveal themselves. One is fairly lost in the poetry of a well-nigh forgotten past, at the mere sound of the names of places, men, and things, and perhaps more than all, at the echoes of the dead languages. There is first, and we but cite one of two by way of introduction, the all-powerful Sanskrit,—the mother of languages,—as it would most seem to be the most copious, comprehensive, and beautiful of tongues; and of which never-to-be-weary Germany has compiled a "Dictionary" in seven volumes; to say nothing of the diving into "Ritual Books," and other matters to be found enshrined in it. It seems an odd enough circumstance worth note at not a few of the very oldest and primeval things should be not merely among the best of their kind, but the best. The Book of Job, the oldest book in the world, as some love to think it, has, says Carlyle, no equal as a literary work, either in the Bible itself or out of it; and the Sanskrit tongue, old as it is, has, we are told, no equal, not even in the all but perfect antique Greek.

How is this, all things following the "law of progress"? We could have wished that some of the learned persons had thrown a little light upon this knotty point. Then, but once more, here is the all but fabulous language of the ancient Persian, but familiar as household words to Martin Haug: ensnaring, as it does, the forgotten songs and proverbs of Zoroaster, his disciples, and his successors. All are alike lost to human ken, till modern science and erudition came to revivify them, so that we may now know what the thoughts of men were in those far distant days.

But, leaving for the present,—though with no small reluctance, for a good deal might be written,—these antique and profound matters, let us say a few words on one of the texts furnished us by the learned President of this Congress of

Orientalists, Dr. Birch. Probably, he said, in this great city of London is to be found some man "who can speak any dialect under the sun," or one able to read any writing written on this planet. And,—the pursuit of such researches is like that one touch of nature which makes us all akin. Orientalists are of one family, and students must feel that in presence of that family bond, all distinctions of race, nationality, and creed vanish! It would be perhaps impossible to cite sentences more emphatic than those, or more thoroughly descriptive of the aspirations and feelings of the time, if not of those who may be termed the general public; yet certainly of those to whom the public look up as their future guides, and teachers, and pioneers of progress. But what is an Eastern man or Oriental, and how does he differ from a Western man or Northern? And what is really implied in this amalgamation, or mixing together, of all things, all over the world? The subject is worth a little talk.

It is in truth a tremendous question, and it is to be hoped that it will be taken up by some one competent to treat it before long. Is the "Northern" an improvement on the "Eastern," or is the Eastern a mere remnant of the past, incapable of "improvement." Can the Northern again be improved by coming into closer contact with the Oriental, now, as he so undoubtedly was in past days; for even the Greek, as we have been reminded, attributed the genius of even his development to contact with the Asiatic world. Nothing, most assuredly, is more astonishing than the fact of European civilisation being so indebted for its controlling influences to the East, to that East which it has left (looking at but one side of it) so far behind. How much could here be said, and much more be thought. We must needs stick to our artistic text, but cannot help remarking on the really wonderful fact of that faith which now rules so absolutely the Northern man, springing as it did from so small an area, all surrounded by Eastern men; that it should have all but disappeared from the land of its birth, but to give place to another historic faith, its bitterest foe. Can any of these learned Orientalists throw light on this most strange event in human history? But, as we ask, what is the Eastern man? What is he now doing, and how far is he to be "improved" by these Western influences? And does he, we may ask, see any danger at all in the tremendous influences that are being day by day, and year by year, brought so benevolently to bear upon him, to enlighten him, to educate him, and to improve him in all manner of ways, and, may be, to "transform" him? Is he indeed at all conscious of his position?

It is not only, it is to be carefully noted, languages, and their cognate subjects, that engaged the attention of the Congress, but archaeology also had its place, as tending powerfully to illustrate them, and to throw light on the extinct civilisations of the past, and to bring that past visibly and tangibly before us. In a city, however ruinous, you may, with an effort, live the old life for a brief time over again, so that we are furnished on all hands with matter to go by, and to test old and new capabilities by. We have thus a general notion of the countries, the men, the languages, and the buildings of Oriental past days, as well as those of the present, with which we are more immediately concerned, and can compare them with all that is immediately about us,—all so typical of what is proudly designated an "advanced civilisation."

And a word as to the special countries, or parts of the earth's surface, which these diverse nationalities have found, either by accident or otherwise, a home in: a somewhat mysterious subject, leading far. To take but a single instance: Northern India, at the foot of the Himalayan mountains. It is quite within the

powers of the "imaginative faculty" to picture such a spot of the earth's surface as without inhabitant, and left alone with nature and to solitude; and we now know, with some accuracy, but not altogether, what the people are who at this moment people it. It would have been a curious subject of inquiry, and may, in the future of this Oriental Society, lead to much, to inquire as to how the ways and thoughts of a people are moulded or altered by the physical character of the country they inhabit. Surely it is, and must be, a something. To live at the foot of so wonderful a scene,—a chain of mountain forms, the highest on the earth's surface, their inaccessible summits covered with eternal snow, altogether incapable of "improvement"; so that, like the sea itself, mighty Nature has it all her own way, and must needs speak direct to the heart of the man who lives within sight. Indeed, without any stretch of language, we may say that dreamy fancies must need hang, like cloud cities, around him; the curtain of existence is ever slowly rising, in many-coloured splendour and gloom, before him, and the "music of song is ever on his path." It is impossible, as we take it, for a denizen of a brick-built town to realise this state of things with any degree of accuracy, and it may well be, that this Conference should be interested in it; for even the very language of such a race of men, who thus cannot but commune with Nature, must be affected by it: and, like the Arab with his sand desert, with no less, as Humboldt has remarked, than 700 distinct words for his desert, the very language, as well as the thoughts, of such men so placed must needs be affected, and even exalted, by the influence which such scenes ever before them must exercise over and in them! Would it not be a fine text for a future Congress,—the character and language of a people as affected by the country they live in, as, indeed, the arts and architecture are now known to be when unbordered. We can hardly imagine a nobler theme, or one more suggestive.

Archæology came, as we have said, into the programme of the Conference, and the subject is large enough certainly to occupy almost any amount of attention. The ancient monuments of India are full enough of mystery and wonderful novelty, and take us back into primeval times, and to times wherein the separated individualities of the world worked out each one its own. Pyramids, temples, tombs, inscriptions, coins, and not a few other things, came under this comprehensive heading, and we could almost have wished that a little more had been done in it by this Congress. Once give the house a man lives in, and the temple he worships in, and you know perhaps more about him than even the language he speaks can tell you. Nay, we are almost inclined to think that as much is to be learned of the ancient inhabitants of such a country as India, from the study of the "ways of living of the present inhabitants, in out-of-the-way districts, not near the large towns, wherein European influences have driven out native modes of work, than by almost any amount of learned reading of antique records. Things change but little in such places, and like the human face of to-day, the copy of the human face of the past, it is probable that could we but be taken back for a brief hour to the villages of prehistoric India,—the land and home of the Vedic hymns,—we should hardly know it from some poor village of to-day, not to be found on a map, and should find in it not much more, and not much less than we can now find in the "unimproved" crowd of houses or huts we have pictured.

We have thus but glanced at this grand subject of Orientalism, the true import of which has indeed but hardly as yet dawned in this Western world of ours. Commonly an Eastern country is looked upon as but little else

than an immense field or "market" for the "manufactures" of the West; but it is far, very far, more than this. If in our Indian empire we can do nothing and learn nothing but how to flood it with cheap manufactured goods, and thus to "destroy the native manufactures," how very little can be said of our doing, or, rather, better nothing said. What a contrast between the old and the new, between the past and the present. We, in these times and modern days, offer to the Indian our cheapest of "printed goods," and outbid him fairly after a fashion, and compel the native workman to find a something else to do than to weave his own many-coloured coat; but, in the old time, what did he do for us, without knowing it? Let the learned professors in this Congress reply. Studies and thinkings, which to the modern, even learned, man, are new and strange, were long ago in the innermost recesses of the farthest East pondered over, and even elaborated into systems, and the whole time and thoughtful energies of the modern giants of erudition are even now employed in the bringing into the light of day, and in translating into European talk, the thoughts and actual words of those ancient thinkers and speculators. Theologies, metaphysics, cosmogonies, and even "ritualisms,"—no man, says one, knowing how much there is in our most approved forms, which comes from a past, almost, if not quite, beyond historic note and record. The science even of religion itself, says Max Müller, must come not out of one faith, but out of many.

It is difficult to run away from this fertile theme; so attractive, and so full of novelty; so poetic, not to say dreamy, but yet so very practical and suggestive,—not over flattering to the Northern, by the bye. Professor Max Müller, the president of the Aryan Section, must needs startle not a few mortals who have not yet gone beyond the home of their birth. He said that we no longer vaguely and poetically exclaim, *Es Oriente Lux*, but we now know, that all the most vital elements of our knowledge and "civilisation"; our measures, about which there has been so much talk; our art, our religion, our traditions, nay, our very nursery stories, came to us from the East. The rays of light from the East it was that called forth the hidden germs of the "dark and dreary" West. In other words, the Oriental was the primitive teacher and grand instructor of the Northern man; and, says the Professor, had not the East done this work for the North, then that same North, now the very light of the world, "might have remained for ever a barren and forgotten promontory of the primeval Asiatic continent"! And we are now actually waiting, it would seem, so he sums it up, not so much it is true, for any particularly new thing which the East can teach us, but the East can place before us "old things," and then leave us to draw from them "lessons more strange and startling than anything now dreamt of in our philosophy." Indeed, to such lengths does he go that he declares what Rome and Athens did for our Northern Barbarian progenitors, the East has done and will yet do for us! What more can be said; and will any venture to doubt of the importance of an Oriental Congress and Oriental studies?

PUZZOLANA, NATURAL AND ARTIFICIAL.

ONE of the most valuable occupations of men of science in France, is that of examining and re-examining from time to time the various substances in use in the arts, analysing their composition, testing their positive value, and explaining the rationale of their manufacture or preparation. This habit is the dire enemy of the rule of thumb, and the results, being published in scientific journals of repute, are open to all the world. In this way, within a few years, most of the materials used in building, stone, marble, lime, &c., have been examined and reported on by educated and practical engineers and others, with great advantages to those occupied in construction.

A careful essay on Puzzolana, natural and artificial, is now before us, and we proceed to give a *resumé* of the principal points for the benefit of our readers.

The puzzolanas are argillaceous compounds, which, mixed with quicklime, are rendered hydraulic, and improve the qualities of hydraulic jimes. The name comes from that of the town of Puzzuoli, near Naples, where the Romans

obtained it in ancient times. They well knew its value, but did not understand its nature. Little was really known of it scientifically till the end of the last century, when Vicat determined the value of the various elements of which it was composed.

The natural puzzolanas may be divided into two classes, the volcanic, and those which are composed of natural substances not volcanic, such as siliceous and amphibolous rocks, argillaceous sand, and chalk containing gelatinous or semi-gelatinous silica.

The volcanic puzzolana is lava, or the produce of eruptions, the composition of which varies according to its age, the depth of the deposit beneath the soil, and the nature of the substances with which it is mixed. The essential elements are alumina, silica, peroxide of iron, and sometimes magnesia, lime, soda, potash, and slight traces of other substances. It is found near extinct and active volcanoes, in the form of powder mixed with coarser substances, filled with cavities, having the appearance and porosity of pumice-stone. It is of various tints,—white, grey, yellow, brown, violet, and that of Rome is of the colour of wine lens. The best kinds are found in Italy, and the principal shipping ports are Leghorn and Civita Vecchia. The price is about 26s. to 29s. the cubic metre. It is also found in several of the departments of France, and there are large deposits in the island of Guadaloupe, to be obtained at a third of the above price. Great quantities have also been found in the island of Santorin, in Greece, richer in silica than that of Italy or Germany (Andernach), and its employment has given excellent results. The price on the spot is almost nominal.

M. L'Écler gives the following analysis of the Greek puzzolana:—

Silica	...	68.50
Alumina	...	13.31
Oxide of iron	...	5.50
" " magnesia	...	0.73
Lime	...	2.36
Soda	...	4.71
Potash	...	3.13
Water	...	1.45
Chloride of sodium	...	0.31

The trass, or trass, of Holland, and of Andernach and Plaidt, in Germany, when pulverised, forms excellent puzzolana, which has been used in the great works in Holland and on the banks of the Rhine. It is said that the mortar made with it is not affected by sea-water, which, if true, deserves confirmation.

Natural puzzolana contains from 60 to 90 per cent. of clay, and 10 to 40 per cent. of lime.

Vicat analysed all the principal known kinds of puzzolana, and we have eight results before us, of which we give the first and the last:—

Roman Puzzolana.

Mixed sand	...	5.00
Silica	...	47.66
Alumina	...	14.33
Magnesia	...	3.86
Peroxide of iron	...	10.33
Lime	...	7.66
Water	...	7.03
Alkaline and volatile substances	...	4.13

Puzzolana of Andernach.

Silica	...	49.01
Alumina	...	18.95
Magnesia	...	2.12
Peroxide of iron	...	12.31
Lime	...	5.11
Water, &c.	...	11.58

In other cases the proportion of mixed sand is much larger, reaching 20 per cent., while in others there is scarcely any pure silica, the quantity of alumina varies also from 11 to 18 per cent., and the iron from 10 to 34 per cent.

The natural non-volcanic puzzolanas are various. The siliceous rocks, gneiss, or pierre morte,—soft, light stone, found at the base of the chalk formation, and which contains silica in the gelatinous or semi-gelatinous form,—have the puzzolanous qualities, but in a weak degree. The following is the analysis of M. Sauvage:—

Silica, soluble in liquid potash	...	56.00
Chloride sand, very fine	...	12.00
Quartzose sand	...	17.00
Clay	...	7.00
Water	...	8.00

The amphibolous rocks, or decomposed diorites, found in Lower Brittany, and particularly in

Finisterre and Morbihan, have the appearance of coarse clay of a red or dirty white colour. The employment after a slight burning, which improves their qualities, was found tolerably satisfactory by M. Avril, Inspector-General, Ponts et Chaussées, in the constructions connected with the Nantes and Brest canal. They contain 10 per cent. of sand, 38 to 60 per cent. of silica, 28 to 29 per cent. of alumina, 10 to 12 per cent. of peroxide of iron, and very small quantities, or none at all, of lime and alkaline substances.

The sand in the vicinity of Brest, which owes its origin to the decomposition of granitic gneiss is also used for the same purpose, after slight burning. It contains 60 per cent. of silica; 10 per cent. of alumina; 8 per cent. of iron; 6 per cent. of lime and magnesia, and nearly 8 per cent. of soluble matters.

Near Saint Assier and Masudan, in the Dogné, there are entire hills composed of quartz sand mixed with clay, known as *maïna*. They contain 4 per cent. of quartz or sand, 38 per cent. of silica, 20 per cent. of alumina, 12 per cent. of peroxide of iron, 8 per cent. of carbonate of lime, and 17 per cent. of water.

Some of these puzzolanas produce mortar which sets after three days' immersion, while others require fifteen days; these are extremely between which lie many intermediary qualities.

M. Vicat thus estimates the relative value of the puzzolanas made from the following clays:—

Very clay and fine clay produce puzzolana set down at the relative value of 77 to 100, average 90.50 per cent.; the average composition of the clays is:—Silica, 68.25; alumina, 28 per cent. and water, 13.75 per cent.

Coarse clay, value 70; composition on the average, silica, 59.10; alumina, 19; peroxide of iron, 10; and water, 12 per cent. These clays are burnt in the ordinary way; the following are submitted to extra heat.

Marly clay, power as puzzolana, 63; composition—silica, 30 per cent.; alumina, 20 per cent.; peroxide of iron, 2 per cent.; carbonate of lime, 38 per cent.; water, 10 per cent.

Brick earth, power equal to 45; composition—average—silica, 23.50 per cent.; alumina, 10 per cent.; peroxide of iron, 6 per cent.; carbonate of lime, 24 per cent.; carbonate of magnesia, 9 per cent.; sand or quartz, 19 per cent.; water, 8 per cent.

Amongst the puzzolanas made from burnt clays most frequently employed in public works of importance, may be mentioned that of Chartres, which has an average density of 1,200 kilograms per cubic metre. Mixed with two thirds of common hydraulic lime, the mortar sets under water in three days. That made at Faquères, in the Marne, has a density of about 1,300 kilograms. Two parts of quicklime and one of this puzzolana, form a mortar which sets after forty hours' immersion.

Blue schists calcined, or slaty schist, of which the best deposits are found in the commune of Haineville, in La Manche, have yielded after having been leaded to whiteness excellent puzzolana.

The employment of the ochreous earths pointed out by Chaptal in 1797; it may be burnt either with wood or coal, and the products are not injured in any way by being mixed.

The puzzolanas made from the various clays contain, according to Vicat, from 30 to 66 per cent. of silica, 19 to 32 per cent. of alumina; some contain 1 to 13 per cent. of lime, 4 to 1 per cent. of iron, and some as much as 14 to 21 per cent. of inert matters.

Artificial puzzolana has been made from time immemorial from broken bricks and tiles, but with very variable and generally poor results. It could not be otherwise, for the production of good puzzolana depends upon the fact of the material being burnt only to a certain extent. Coal cinders, peat, and wood ashes, especially the last, make puzzolana of good quality; the must be sifted with care to rid them of foreign substances, and they should be stored in a dry place and only moved in fine weather.

Forge scoria pulverised and finely sifted, has high qualities for producing puzzolana.

The residue from the fabrication of nitric acid with clay and azotate of potash forms the most valuable and energetic puzzolana. The mortar in which it enters acquires a hardness superior to that of the hardest lias. The cost of the material, however, which is only used in the south of France, prevents its being much employed.

The above is a pretty complete list of the

rious kinds of puzzolana in use at the present time in public and private works, and in places where materials are dear they are of great service. The complete knowledge of their various qualities can only be obtained by actual experience; generally, however, it may be affirmed that the puzzolanas which are affected by acids are the most effective; but their employment in marine hydraulic works must be decided, as salt water will completely disintegrate them.

The artificial, like the volcanic, puzzolanas, are the produce of the effect of fire in bodies essentially composed of silica and alumina.

The materials generally employed, then, are, say, the mud of seaports, docks, &c., the sands called arènes, already mentioned, argillaceous schists, ferruginous clay, ochreous earth, broken bricks and tiles, wood ashes, cinders, &c., the residue of nitric acid, and certain igneous rocks in a state of decomposition. The burning is effected in the same way as that of bricks and lime, the material being sometimes formed with lumps, and sometimes burnt in a state of powder, or irregular fragments. In the last case, they are treated in reverberatory furnaces. This plan, which was employed by Pesot, saves the cost and labour of pulverisation after burning, which is always greater than when effected previously.

M. Vicat strongly recommends a system which consists in drying the clays in the sun, or by means of hot air, and then reducing them to powder in a mill, on the same principle as those used for coffee and spices, or with stones, and in exposing the powder to sufficient heat to drive off all the moisture which it contains. He employed for this purpose a series of hollow cylinders in cast iron, placed near to each other, which the powder is introduced, the cylinders being so arranged as to pass successively through conduit, formed of non-conducting materials, which receives a current of air heated to 600°/700° centigrade. A slight inclination is given to this conduit, so that the slightest effort is sufficient to cause the cylinders to move through by merely removing that one at the lower end and placing a fresh one at the other. The powdered clay only partially fills the cylinder, that it rolls over itself as the latter proceeds, and all the particles come in contact with the hot air. By this means the puzzolana obtained possesses all the qualities of which it is capable. It must be noted, however, that each kind of clay demands a different degree of heat, which can only be settled by practice.

Clay is transformed into puzzolana when it has lost the water it contained, and also the quality of making a paste with water. M. Vicat signifies "normal burning" that which has been conducted under the following conditions:—1. The previous reduction of the substance to be burnt to fine powder; 2. The action of fire heated to 600° or 700° centigrade, and maintained till the aluminous hydrosilicate becomes anhydrous; 3. The admission of air during the whole operation. "Super-normal burning," he describes that which, without being carried above 750° centigrade, has been sufficiently prolonged to decompose the carbonate of lime contained in the clay.

The same author, from a large number of experiments and observations, derives the following conclusions:—

1. The rank which a substance holds as a material for puzzolana depends almost precisely on the proportion of argillaceous matter which it contains.
2. Other conditions being equal, that clay is the best which contains the largest proportion of silica, without, however, passing a certain limit, so as not to exclude all the aluminium.
3. Of various puzzolanas of equal proportions of principles, that which has the greatest specific gravity is to be preferred.
4. "Normal burning" develops most fully the qualities of all puzzolanas made from materials free of carbonate of lime, or not containing more than 12 to 15 per cent. of it.
5. In all other cases the "super-normal burning" is more effective.

The methods of burning as well as the qualities of the puzzolana vary *ad infinitum*. General Russard, who has given great attention to this subject, prefers clays which contain about equal quantities of silica and alumina, and only 4 or 5 per cent. of carbonate of lime. Pottery clays are often of this character. The general recommendation to be treated in the same manner as bricks, to make them up into lumps, larger or smaller in proportion to the lime

they contain, and afterwards to reduce them to very fine powder by means of silk bolters, as the finer the powder the greater is the effect of the puzzolana.

M. Saint-Léger in his works at Meudon, mixes with the clay a quarter of its volume of quicklime in the form of paste, and he obtains artificial puzzolana far more energetic than the best natural puzzolanas, and which remains unaltered for an indefinite time, an advantage which the hydraulic limes do not possess.

Following the indications above given, excellent puzzolana may be made anywhere, when the composition of the material at hand has been ascertained. M. Berthier furnishes the following ready method of analysing clays:—"When the clay contains lime, the latter is always in the form of carbonate; its presence may therefore be easily ascertained by pouring a few drops of any acid or vinegar on to a piece of the clay, or into a thin solution of the clay in water, when effervescence will take place in proportion to the amount of the lime present. The analysis of calcareous clays is the same as for argillaceous limestone."

NEW BUILDINGS NEAR LUDGATE CIRCUS.

THE process of rebuilding has been going on with activity for some little time past in Ludgate-circus and along New Bridge-street, southwards, and along St. Bride-street northwards. The most prominent recent addition to the architecture of the vicinity, by position and importance, is the new "City United Club," occupying the south-east face of the Circus, and extending some way down the east side of New Bridge-street. This building has a generally "handsome" effect, with its costly stone front, and pavilion roofs; but much more cannot be said for it. The style may be described as Italian, with rather a large and not very refined treatment of detail: the keystones of the circular window-heads are abnormally prominent,—a fashion of the day in Classic design. The composition is crowned, over the main cornice, by circular-headed dormers, with Classic vases rather unfortunately squeezed in between them. The carving is up to the mark in execution, and in design is equal to, and very like, much other work of the kind that is done at present. A novelty in detail is the omission of the "tenia" under the main cornice, the balance of horizontal lines being preserved by two slight breaks forming fascias, architecturally wise: this makes an agreeable variation from the stereotyped form of cornice.

"New Bridge-street Chambers," lower down on the same side, is a curious medley of bits of Greek, Italian, and modern detail, very heavily treated. The large block of building called "Bridge Chambers," adjoining the Blackfriars Metropolitan Railway Station, and showing a frontage on the curve rounding into the adjoining street, is a work of more importance. It is in the Gothic, or at least in a Gothic style, for the treatment of the ground-floor piers, and of the wall shafts running from them to the top of the building, belongs to a phase of Gothic feeling in architecture quite distinct from that of much of the other detail. The first-floor windows, segmental-arched openings, recessed under pointed arches, and with carved ornament in the heads, are well treated, and the series of square panels variously carved, marking the first and third floor horizontal courses, have a very good, firm effect, while enlivening the whole considerably. The bands of carved foliage between and above these panelled string-courses are too coarse and large in scale for their position, and that in the main cornice especially requires a heavier line over it, to keep it in its place, instead of the mere fillet which forms the finish. In the shafts brought down from the parapet wall, between the dormers, to the ground, the architect has just missed a new combination of the *utile* with the *dulce*, in not making these down-spouts, treated architecturally: they look half like it now, and half like the vaulting shafts of a cathedral got astray; but they are just where rain-spouts should be, and where they might have been made to look like a natural feature in the design.

The very praiseworthy building of the "Economic Life Assurance Society," with the elaborate and effective terra-cotta decoration, was noticed with approval in these columns, just as it was completed a year ago, and was afterwards illustrated. With some faults it is in

interest and effect very far beyond any new building in its immediate neighbourhood. The other new offices and chambers adjoining it, on the west side of New Bridge-street, call for no remark; they are neat and uninteresting to a degree.

In the back street, reached by the turning opposite the London, Chatham, and Dover Railway Station, a brick warehouse, built for Messrs. Collins, shows a sensible plain architectural treatment, with large pilasters running through all the stories and arched under the cornice; the ground story is marked off by carved stone strings, below which the piers are more massive in proportion; an inversion of the delightful arrangement common in most of our street fronts, where the tenants of the ground-floor shops think every foot of plate-glass a matter of life or death, and where accordingly, the ground story is generally the lightest of all. No City architecture worth speaking of is possible until this curse of the "shop-front" is got rid of. The warehouse of Messrs. Spicer, next to the last-named, is a much more ambitious structure, with Italian pedimented and consoled windows, and therefore not looking like a warehouse at all; moreover, it is built of the palest buff brick with stone of nearly the same tint; hardly a fortunate combination. The London Mission-house, ranging with these two warehouses, is certainly as un-mission like, as formal and repelling in aspect, as a building could well be. No artistic outcasts will be attracted to it by its outside, at all events.

On Ludgate-hill there is a large block in an advanced state, but still be-scaffolded out of sight. Messrs. Treloar's premises are meant to be architecturally effective, but the details are somewhat incongruous. The carved capitals on the ground-story are too spongy-looking in outline and texture; they seem to have no sustaining power. The premises next below these, belonging to Messrs. Lynes & Son, and close over the hated viaduct, exhibit some refinement of treatment and a pleasing general effect, in a modified Italian manner; the use of a flat-topped arch to the window openings gives an individuality of manner, rather perhaps at the expense of pure constructive principles.

"Ludgate Circus Buildings," in Farringdon-street, cannot be reckoned among the architectural ornaments of the neighbourhood. Diverging to St. Bride-street, we notice Messrs. Thurgood & Durham's warehouse, of which Mr. Bridgman is the architect,—an effective treatment of brick-work, with red impressed ornamental vousoirs to the arches, and a brick corbelled cornice, simple and not ineffective. There is a novelty in detail also in the bosses upon which the window labels are stopped. The building generally is architecturally an honest one, unpretentious, and suitable for its purpose. At the corner of St. Bride-street and Poppin's-court is a slice of brick warehouses, with wall diaper in impressed red brick, also an agreeable bit of plain building, only a little too notchy in the stonework. The premises of Messrs. Gordon & Gotch, next in the list, make a very presentable brick and stone building, the entrance face on the angle, with ornamental vousoirs "as before," and granite shafts to the windows. The front is unfortunately spoiled by sign-boards. The warehouse (Mr. T. Chamberlain, architect) next to this is in a much plainer fashion, also good, with pilasters and arches somewhat like the warehouse of Messrs. Collins above mentioned, and with panels of notch-end bricks to diversify the wall surface. It is agreeable to see a general recognition that even a warehouse may be made susceptible of architectural interest, and a variety of experiments, at least, being made with this object. The premises of Messrs. Macintosh & Co., again, show some pleasing treatment, this time in red brick (except the ground story), built in pilaster between the windows, and the whole crowned by an overhanging terra-cotta cornice forming a large *cavetto*, and decorated with foliage and bosses in relief, a little toy-box looking, but still not unpleasant; and the tone of the red brick and terra-cotta is decidedly agreeable. Passing over an absolutely unarchitectural erection, we come to the lion of the street, the new offices of the *Standard* newspaper. A showy and expensive building this certainly is, but we cannot get much pleasure out of it. The two large doorways, with their deep jambs, masses of square lintel over, and large consoles are the best part of the design. The arms of the United Kingdom are sculptured on shields supported by wreaths in the fanlight of each doorway. The detail is strictly Italian, and so far attains more unity of style than most

of the buildings in the neighbourhood; but the only novelties in the design are somewhat questionable ones; the arched archivolt of the centre ground-floor window, within a square architrave, with the spandrels glazed, looks like an inspiration from the cabinet-maker's shop and the sham balcony balustrade beneath the first floor windows, where there is no balcony and no room for one, is absurd. The sitting statue of Britannia at the top, grasping the flag-staff, is modelled with some power and spirit; it may be a question whether the figure should not be looking up to the standard which she supports, rather than looking down as if to spy who went in and out of the office, though no doubt some interesting conclusions might be drawn in that manner. The name "Standard" is painted across the building in huge gilt capitals, on the bare masonry, in a very *à fresco* manner. If the name was to be made so prominent a feature, the architect should have made it form a part of his design, instead of leaving it to be merely painted on in this accidental kind of manner. We should have been glad to see a great journalistic establishment indulging a little more in the artistic, and less in the mere show side of architecture, in the exterior aspect of its new home.

The premises of Messrs. Hyde & Co., next door to the Standard office, show a good deal of merit and refinement in the treatment of ornamental detail, in the flat slightly-recessed carving in the architraves and the semicircular panels over them; this is a building quite removed from vulgarity, but better in detail than in total effect; the design is not quite coherent enough. The rest of the new buildings in the row are specimens of brick architecture presenting nothing for comment; that belonging to Messrs. Cassell, Petter, & Galpin is better than the others, and is solidly treated. We have omitted special mention of Messrs. Collinson & Look's premises near the bottom of St. Bride-street, because they have been noticed in our columns before. The building is open to the charge of being too "archæological" in some respects, but it has the merit of unity of style and detail, and a broad and powerful treatment *en masse*, besides a rich and agreeable tone in the materials selected. On the score of picturesque, it stands *forte princeps* amidst its neighbours.

TEMPLE BAR.

The treatment of Temple Bar was the subject of discussion at the meeting of the Court of Common Council at Guildhall last week; and the days of the Bar are evidently numbered. There were proposals, however, for dealing with the structure otherwise than by annihilation. Mr. G. Thomson proposed the removal of Temple Bar to Temple Gardens. Mr. Ernest Turner, architect, suggested a design for improving it; raising the present structure and building an arch underneath. A third letter was read suggesting the removal of the structure to Guildhall-yard. None of these propositions being apparently entertained at all, Mr. Deputy Lowman Taylor moved that it be referred to the City Lands Committee to report forthwith to the Court on the state and condition of Temple Bar, and on the propriety or expediency of "continuing" the present erection, or substituting some other structure serving the purpose of a bar at the same spot, special regard being had to public convenience, &c.

The inquiry into the "state and condition" ought to be a short one, considering the structure itself has answered it by anticipation; and as to "continuing" that is not a sentence likely to be passed upon it.* The intended setting back of the line of street for the new Law Courts settles that point; for it would then look absurdly lop-sided, and the architect's improvement scheme would scarcely be any help in regard to that question. The consideration as to sweeping it away entirely is complicated, however, by the fact that the Corporation of London have some ancient rights "at that spot" which they do not wish to lose the maintenance of; and hence the consideration as to what is to be done if the present Bar is removed. We agree with Mr. Deputy Taylor that ancient rights of that kind, being things historically interesting, are as well kept in mind; and some way of marking the site of old Temple Bar in a manner in keeping with the nature of the said

rights, that is to say, in some way recalling or suggesting the idea of a gate or bar, would be appropriate. Some of the Law Courts designs showed indications of a treatment of this kind, in an arch thrown across at that point, and we should think this might be very well done, and the characteristic associations of the site thus preserved (or some of them: there are associations in connection with it that are not agreeable enough to deserve preservation); but we should suggest, without actual gates. They could never, under any circumstances, be practically wanted, and would be sure to be more or less in the way of traffic. The desirability of throwing back the north line of Fleet-street, in a line with the Law Courts, as far as Chancery-line, must be obvious, and will, we hope, be carried out. Every opportunity should be taken of widening any part of those crowded City thoroughfares; even if it be supposed impossible ever to carry the new line throughout, it at least gives space, and relieves the traffic for a part of the distance; and people never know what they may be losing by throwing away any chance of even partial improvement in the readjustment of thoroughfares in crowded districts.

At the meeting of the City Commission of Sewers at Guildhall, on Tuesday last, it was unanimously resolved to refer Mr. Taylor's motion for widening Fleet-street to the Finance and Improvement Committee for serious consideration. There was talk also of a "grand widening of the Strand and Fleet-street on the southern side facing the Law Courts, and extending from Essex-street on the west to the Inner Temple entrance on the east."

As to the structure, is it not the association of the site, as the old landmark between London and Westminster, that is the most important, rather than the actual stones of the old gateway? We should really question its being worth while to deliberately set it up anywhere else, as it is evident that it must go from its present position. It is a poorly-designed and poorly-constructed thing, and has no architectural value, and we can hardly imagine any situation in which it could possess any dignity or interest apart from its present site and associations.

ON SOME NUISANCES AND ABSURDITIES IN LONDON.

LONDON is the most remarkable and enlightened capital in the world. Its inhabitants confess it themselves. To the educated Londoner it is the centre of intellectual interests, "the meeting place of souls." To the average Londoner it is the place where everything is better and bigger than anywhere else, and better managed, and where he thinks Heaven he was born. With the faith of the former we do not on this occasion meddle, and perhaps should in no case be disposed to controvert it. But the faith of the Cockney optimist might be liable to be rudely shaken if he had the means, or took the trouble, to investigate its basis, by comparison with the manners and customs of some benighted country towns. In some small matters at least, which go to make the comfort of civilised life in cities, he would find his central paradise rather deficient; and that proceedings are tolerated therein that would be voted antiquated and absurd in some less civilised regions.

An instance of this is the prevalence in many parts of London of "street cries," and those of the most uncouth, barbarous, and apparently unmeaning description. We have met with nothing of the sort, to anything like this extent, in other large towns. We once noticed, when passing two or three days at a very old-fashioned small country town in Suffolk, a prevalence of out-door exclamations which rather recalled this charming feature of the metropolis, save that they were much less uncouth and more intelligible. But we never encountered it in the large provincial towns of England. Macaulay (we think) gives a graphic description of what must have been the effect on the ear in days when Cheapside was a series of unglazed shops, where (in place of the modern display of goods in the window) apprentices stood at the doors, each bent on shouting out the nature and excellence of his master's wares loud enough to over-power his neighbours. But we are not so very far advanced in civilisation when we allow people to make uncouth and indescribable howlings, like so many Yahoos, up and down respectable streets, under pretence of advertising something they want to sell.

Again: the barrel-organ nuisance is becoming something quite intolerable. This does exist in other towns, of course, but nowhere, so far as we know, to the same extent and with the same violence as in London. It is one of the first disagreeables which strikes new residents. Scarcely any neighbourhood is safe from these pests, and some quarters, specially favoured, are almost driven to desperation by them. It is not uncommon for the listener to have the benefit of hearing two at once, equidistant one from him, and bining in sweet discord. There are larger, more refined instruments of torture also, on an extended scale, which do still greater execution and carry further. Neither time nor place is sacred from them; they are known to strike at any hour up to midnight. We should be inclined seriously to think that in the case of studious and hard-working people, illness might often be traced to the irritation of the brain produced by this pestilent interruption to the studies. Have our medical journals anything to say to that? A state of things which permits a crowd of good-for-nothing vagabonds to live idly, and constitute themselves a continual annoyance to forty-nine persons out of fifty, because the fiftieth is blockhead enough to put them for it,* is a disgrace to the government of the metropolis.

The late Judge Talford, in his little book called "Vacation Rambles" (one of the pleasantest records of the holidays of a cultivated man that we know of), expressed a hope, in reference to well-known and little-observed railway company's maxim, that "no gratuitas" might be the rule all over the world before long, and that every one would combine to make it so. How far it is so in London most of our readers know. The hotels have at last pretended to set the faces against the system. But in most of the theatres it is still rampant. In one very well-known theatre in the Strand arrangements are made for practising three separate extortions during the evening, accompanied (if the slightest demerit is made) by impertinence. The waiter at public restaurants, dining-rooms, and railway buffets, offers a still more extensive field. The great system of "what you please, sir," prevails throughout all these places in London. It may be said that here and at the theatres the sun "extorted" one but small. That is not the question; though we surmise that the annual aggregate of which the public is robbed in London by these methods would much exceed what is obtained in the course of the year by burglary. It is the principle that is wrong and not business-like. Even a people who are not the least disposed to shed shillings, wish to know why they have to pay, and not to find one amount mentioned and another expected. But the social results of it are bad also. A class of persons who are, to a large extent, subsisting on "What you please, Sir," are sure to become either very cringing or very impudent, but generally the latter. This is undoubtedly the reason why attendance at this class of places in London is worse, and the manners of the attendants more devoid of civility than in other large towns, where the proper, businesslike method is adopted of charging attendance at a fixed rate with other things. The system prevalent in London is not found anywhere else to the same extent; it is upheld in the interests of those who practise it because they rightly reckon that nine persons out of ten will give more, if asked for it, as gratuity, than they would pay as a regular charge, through dread of being considered "shabby." This desire not to be thought shabby supports a host of abuses; for of course we only mention the theatre and restaurant as salient examples; the "what you please" system has endless ramifications, and meets you at almost every turn. It rests with the public to put it down, and the sooner they begin the better.

Another venerated and venerable metropolitan absurdity is the London omnibus. In "less civilised parts" improvements are made in public conveyances; in London, they remain where they were. The London omnibus is short, rickety, and jolting. It moves very slowly, and stops at every street-corner, and on every possible pretext. If you get inside you are cramped, dislocated, and either smothered or killed by a draught. If you prefer being cramped and dislocated without being smothered, you find the stops for access to the top arranged in every instance so as to afford the greatest possible

* See "Measure for Measure"—"Thou art to continue, thou knave, thou! Thou art to continue!"

* It must be remembered also that a great deal of what these rascals make is in the way of "bush money," paid in self-defence, as the sole means of getting rid of them. They may be ordered on; but they go next door.

hilly in mounting, and the greatest number of chances for shrapnel. Omnibuses in parts of the world are not built like this; never seems to occur to any one that improvement can be needed. The four-wheeled Londoners are even worse, in proportion, the omnibuses, and the contrast between the comfortable carriage-like omnibuses put at the disposal of the public in the despoised "provincial" towns, at the same fares, is rather striking. Hansoms are a little improving; and we must say that, as a whole, in spite of the strictures of some daily papers, we think the manners of the cabmen have evinced an improvement of years. This, however, does not apply to omnibus drivers, who mostly show a noble indifference of manner worthy of a free

man. Those who have had experience of river boats elsewhere will not be likely, either, to be impressed by the Thames steambot service, some from the Mersey to the Thames, for example, in this respect, like going back years or so. The Thames traffic, it is said, demands small and fast boats rather than once; but the discomfort and even in the worst boats, the utter want of shelter in bad weather, and the general meanness of the fittings for accommodation is not creditable to the enterprise or spirit of progress of the Thames companies. One antiquated "dodge" practised on them is amusing enough—the retort of the "inevitable boy," whose sharp bark transmits the captain's orders to the engine-driver in a fashion seen nowhere else. Simple expedient of a single-handle and dial, in use long ago in other parts, or even the simpler one of a speaking-tube, one must suppose has never occurred to the mind of a Thames-boat engineer.

As to the matter of the nomenclature and numbering of streets London is still deficiently confusing. The proportion of street-ends out any name up at all in them is considerable, and in many other cases the name has become nearly illegible, and seems never to be used. Things appear to be perversely done in this respect. The "Gower-street" of the Underground Railway, for instance (a very important one, as it is nearest the Euston terminus), is not in Gower-street at all, nor is the name of Gower-street to be found near it; the street is near, but with no name up; and how are strangers to find it? The system of numbering is incomprehensible. You find 14 and 19 next to each other, and 105 side, while 106 is round the corner at the end of the street. The system of carrying names and numbers round corners is most confusing to people who are used to a rational plan. In most streets a good many numbers are missing, while others are split up in halves A's and B's, as Mr. Albany notices in the "Two Roses," where somebody's address is listed; "No. 21, isn't it?" "No. 21." We need not say that the day the name was just been changed (and carried round a corner, another street being tacked on to it), every number altered and repainted; yet the new arrangement was not consecutive, duplicate numbers were left nearly opposite one another!

But the great, the crowning absurdity which peculiar to London is the system by which the inhabitants of one of the greatest and most important cities in the world are every week out for twenty-four hours from all means of ordinary communication, either in giving or receiving intelligence. Under what particular inspiration of Sabbatarian wisdom in high places a decree went forth, it is needless to recall; it mainly stands alone in its operation. The Londoner on Sunday is cut off from all intelligence of what may be happening elsewhere, from all interchange of letters with friends and relations, just on the day when most men have more leisure than usual to read and write such letters; he may be wanted immediately on some important juncture, his friend or relative may be dead or dying, but he cannot be got at. And this monstrous arrangement—for it is so, in relation to the state of modern society—is the distinguishing feature of the postal arrangements of the capital city of the kingdom! One could not be surprised at it in a remote country village. Of course, it is highly desirable that there should be a break in the arduous labours of the post-office officials; but this might be avoided for without difficulty.

The defence we have heard set up for the

present system, that people are very glad to be relieved from the reception of business letters on Sunday, is futile. Most people who have many business letters do not receive them at their residences, and need not read them on Sunday if they do. We hope that on an early occasion some member of our legislature will have sense and spirit enough to endeavour to get an end put to this weekly check on intercommunication, so annoying, unnecessary, and entirely at variance with modern habits. That it should be so tamely acquiesced in would be matter of wonder but for that optimism of the average Londoner to which we have already referred, and which leads him to regard all arrangements which have received the sanction of custom in London as *ipso facto* right, wise, and as unalterable as the laws of the Medes and Persians. This shows a beautiful spirit of resignation and contentment; but whether it is very consistent with social progress and improvement is another question.

BERKSHIRE ARCHAEOLOGICAL AND ARCHITECTURAL SOCIETY.

THE members of this Society have had a pleasant and successful excursion to Uffington and the White Horse with one or two of the most ancient churches in the district, were visited, and interesting papers read. The Vale of the White Horse is rich in archaeological and historical lore.

The party left Reading by the 9.20 a.m. train Great Western Railway, arriving at Challow shortly after eleven o'clock. Childrey Church was then visited, and subsequently Sparsholt Church, the Blowing Stone, the White Horse Hills, Uffington Church, and Baulking Church. Vehicles were in waiting at the Challow Station, and the weather being fine, the excursions were pleasant and enjoyable.

On arriving at the quaint old church of Childrey, the party was addressed by the Rev. George Pardue, vicar of Challow, who at the request of the newly-appointed Rector of Childrey, explained the principal objects of interest in the edifice.

The next place visited was Sparsholt Church, where the party was received by the Vicar who read a paper on Sparsholt.

Immediately on leaving the church the party proceeded to the vicarage, where luncheon was provided.

The party then re-entered the carriages, and proceeded to the White Horse Hills, passing on their way the park and mansion of Mr. E. Atkins, of Kingston Lisle. Before ascending the Downs the party alighted at the famous Blowing Stone, which is one of the chief natural curiosities of the county, and lies under an elm tree opposite a public-house, known as "The Blowing Stone." The stone is about 3 ft. high, 3 ft. 6 in. broad, and 2 ft. thick. It is pierced with several holes, and the sound produced by blowing into one on the top is similar to the sound of a large horn or pipe of an organ. There is a tradition that the stone was formerly used to give alarm on the approach of an enemy, and that it was thus used by Alfred the Great. One or two gentlemen attempted to produce the sound but failed, but a man who happened to be on the spot, and who was evidently *au fait* at the work, blew a prolonged blast, much to the satisfaction of the visitors.

The White Horse-hill was next visited, the party walking from the Blowing Stone to the top of the hill, upon which is cut the colossal representation of the White Horse. The figure, which has often been described, consists of a trench cut in the sides of a steep green hill, and must be seen at a distance before any shape of a horse can be discerned. It has been generally believed that this curious figure was cut to commemorate the victory of King Ethelred, and his brother Alfred (afterwards Alfred the Great) over the Danes, at Ashdown, in the year 871. Very near to the White Horse is an ancient campment, consisting of a plain, surrounded by a rampart and ditch. This enclosure is called Uffington Castle, and is 893 ft. above the level of the sea. The scouring of the White Horse, which took place in September, 1857, and

* It must be remembered also that the system does not only affect the Londoner. One consequence of it is, that letters to be delivered in the country on Monday do not reach their destination, when at any distance, till the afternoon. We have heard most serious complaints of the consequent inconvenience to men of business in the provinces.

has been commemorated in a work published by Mr. Tom Hughes, is a ceremony which takes place periodically, and consists of cleansing and scouring out the trench, so as to renew and preserve the figure of the horse. The company, seated on the grassy slopes, listened with attention to a paper which was read by the Rev. C. H. Tomlinson, on the subject of the "White Horse."

Although Baulking Church was not down in the programme of the day, time permitted the members a short visit to this quaint and interesting edifice.

After viewing the church, the party proceeded to the Uffington station, G. W. R., where general expressions of satisfaction were made with reference to the day's excursion, and the hon. sec., Mr. Clapton C. Rolfe, of Reading, was complimented on the manner in which he had carried out the whole of the arrangements.

THE VALUE OF PROPERTY IN GLASGOW.

THE Court for the hearing of appeals against the valuations made by the Assessor for the burgh, was held last week; and from what then transpired something may be gleaned as to the value of property in the city. The increase in the total value of property this year amounts to about 200,000*l.*, the annual value last year exclusive of railways and canals, being 2,366,200*l.* In the fashionable district of the west end there were in all 364 cases of assessment, 154 of these being appealed against. Considerable discussion took place as to the rate at which houses in this extensive and wealthy locality should be assessed, and the Court eventually retired to consider the matter. Subsequently, Mr. Marwick, Town Clerk, read the decision, which was to the following effect:—That dwelling-houses in the localities from which the appeals had come should be valued at the rate of 6*d.* instead of 5*d.* per square foot up to 7,000, and at 5*d.* instead of 4*d.* per square foot on the excess of floorage above 7,000, except the following streets, which should be charged at 4*d.* per square foot less: Royal-crescent, Sandford-place, lower end of Lynedoch-street, and Fitzroy-place. On this basis the whole of the assessments were subsequently laid.

THE TOWER, A NATIONAL MUSEUM.

MR. HEPWORTH DIXON took the chair at a meeting on Monday night, called in aid of the movement for opening the Tower of London to the public one day a week, and made a very eloquent and effective speech in that direction. Why, he said, is this building so interesting to us? Because it is the scene, so to speak—the battle-ground—on which the greatest historical events of our country have been transacted. Every stone in that edifice has a story of its own. In the time of the tyrant King John there was a lovely girl, Maude the Fair, the daughter of Fitzwalter, one of our great Barons. The tyrant fell in love with her; proffered her dishonourable love. She resisted his suit; whereupon he seized her by force, carried her to the Tower, and when she still resisted him he placed her in that round turret on the top of the white gate, where he kept her, believing he could starve her into submission; but the noble girl fought and resisted his wicked efforts. And this deed resulted in the birth of the liberty of the subject; for the father of the girl took up arms against the king, which ended in his signing the great charter of our liberties. It is because the Tower of London has about it so much that is ennobling and simple, as well as so much that is dark, tragic, and terrible, that I agree with those who have got up this movement that these great records should be unsealed. In France I find that every monument is freely open to the public at least three days a week, and even in Russia likewise. It is the same everywhere but in England. We have all been, I think, too negligent. We have rights, but we have not asserted them. I am certain this meeting will delight every statesman who honestly and sincerely looks for the advancement of the country. Let us go to Mr. Disraeli, and say we are all fellow-students of history. To shut the Tower up is equal to taxing the knowledge of the public. There is no statesman with a heart and a brain of an English gentleman, but will say, "If I can turn the people into the Tower to revel in the historical glories of England, I shall have done a good thing

in my day, and one for which I shall be held in honourable remembrance."

Several other speakers followed, and a memorial was submitted to the meeting, which it was proposed should be addressed to Mr. Disraeli, asking the sanction of the Government to the proposals of the meeting.

We agree with the meeting as to opening the Tower, say one day in the week, to the people, admitting at the same time that good arrangement will be needed; but we would go further. We want, as we have often said, to find the Armoury properly cared for, and a man with special knowledge appointed for that purpose; and we urge, as we have done before, that the money taken for viewing it should be spent in maintaining and increasing its usefulness. The conditions under which it now exists are discreditable to the country. We trust that when the memorial above alluded to is presented to the Prime Minister, something will be said on this head as well.

THE CHURCH IN CHICAGO.

THE late Bishop of Illinois, the Right Rev. H. J. Whitehouse, D.D., was the only prelate of the American House of Bishops who succeeded in calling into shadowy existence a capital organisation. From his own private fortune he furnished the funds that were requisite for the erection of a cathedral church and the payment of four canons. The cathedral at Chicago, dedicated to SS. Peter and Paul, was not large; it was rather the nucleus of a diocesan centre than an attempt at a finished structure worthy of its designation. It might have been considerably enlarged, but for a difference between the bishop, who would not wait, and his diocesan committee, without whom no episcopal function could be legitimately exercised. After its erection, the cathedral was viewed by the authorities of the see simply as a piece of private property, forming a part of the bishop's estate; but, nevertheless, they recognised its existence as a church so far as to summon the diocesan convention to assemble annually within its walls. Funds have been subscribed or guaranteed in connexion with several other of the American sees for the building of cathedrals; but Chicago stands pretty much alone in its actual realisation of the idea. We may mention, further, that Illinois stands alone in the special and systematic care given to the subject of church building, in which it follows generally the plans and regulations framed by the London Diocesan Church-building Society.

NEW BATHS AND WASHHOUSES IN CAMBERWELL.

IN connexion with a block of new buildings which are about to be erected in Camberwell-road, close to the Waterloo-road Station of the London, Chatham, and Dover Railway, new baths and washhouses, on a large and comprehensive scale, will also be constructed. The site of the intended buildings is on the west side of the Camberwell-road, adjoining Brunswick terrace, and in close proximity to Grosvenor-street and park. The site extends a considerable depth westward, and on that portion immediately fronting Camberwell-road a number of large and commodious shops and houses will be built, whilst in the rear there will be a large swimming-bath, 74 ft. by 50 ft., approached through an entrance in Camberwell-road, in the centre of the block of buildings just named. The swimming-bath will have a lofty open timber ceiling, along the centre of which will run a lantern light, serving also for ventilation purposes. The depth of the bath will be 4 ft. at one end, and 7 ft. at the other, and on each side there will be boxes—sixty in number—for the accommodation of bathers. The utilisation of the bath, in the winter season, for meetings, lectures, and musical and other entertainments, is a prominent feature in the intended arrangements, and with this view galleries will be erected. In addition to the swimming-bath there will also be a number of ladies' and gentlemen's private baths, the former being placed on the south side of the entrance to the swimming-bath. The washhouse and laundry accommodation is a prominent feature in the undertaking. The washhouses will be erected in the upper portion of the building, running parallel with the full length of the swimming-bath, on each side. We understand that the undertaking is promoted by a number of private gentlemen, who have every confidence in its success. The site may be described as in

the centre of a dense population, and the close proximity of the railway will also admit of easy access to the baths from the surrounding districts. Mr. Hemming, of Chantrey-road, Brixton, is the architect who has designed the baths and buildings.

ANCIENT SKELETONS IN RAMSGATE.

IN laying out a new road on the East Cliff, at Ramsgate, on a portion of the Granville Estate, immediately adjoining the Coast Guard Station, five skeletons were discovered in a very perfect state of preservation. The skeletons were in shallow graves excavated in the chalk, and were only about 1 ft. 3 in. below the surface of the ground. The bodies had been interred very nearly due north and south, the heads being towards the north, and were all lying in the same direction. One of the skeletons had the arms bent at the elbows, with the fore-arms lying across the lower ribs. Two small urns, about 7 in. high, were discovered with this interment, one being placed at the head and the other between the knees. The pottery is apparently British of the Roman period. One of the urns was destroyed, but the other was disinterred entire, and is now in the hands of a collector in the town. Through the instrumentality of Mr. E. Ellice-Clark, the borough engineer, the skeleton last described has been removed without disturbing it from the position in which it was found, and will, it is understood, be preserved in a museum it is intended to form in Ramsgate. The rest of the bodies were re-interred where they were found.

A TOWN HALL AND MARKET FOR HEYWOOD.

A PUBLIC meeting of the ratepayers of Heywood, convened by the Local Board, has been held in the large hall of the Mechanics' Institute, for the purpose of sanctioning or rejecting a scheme to be submitted to the meeting by the Local Board for the erection of a market and public offices, on a site comprising 5,000 yards of land in Church-street, purchased at a cost of 5,000l. by former Boards. About 600 persons attended the meeting. Mr. William Bell (chairman of the Local Board) presided. The chairman explained that the project of the Board was to erect public offices fronting Church-street, having a frontage of 90 ft., and a market at the back. The whole of the buildings would occupy an area of 1,500 yards. The proposed cost was 10,000l., which the Board asked the consent of the ratepayers to borrow from the Local Government Board at 3½ per cent. The market would be self-supporting. Mr. G. N. Hodgkinson moved a resolution that the meeting sanction the erection of a market and public offices at a cost of 10,000l. The motion was carried almost unanimously. Mr. John Buckley moved that in lieu of offices to let the Board be requested to provide a large assembly-room at an extra outlay of 4,000l. The motion was carried unanimously. Plans of offices and market, by Messrs. Maxwell & Tuke, Bury, have been approved by the Local Board.

MARGATE DRAINAGE COMPETITION.

THE eight plans submitted in competition for the drainage of Margate were referred by the Town Council to Sir Joseph Bazalgette, to advise as to the two plans for premiation. This gentleman represented, that with certain modifications the plan of "Economy" appeared to him most clearly to indicate the general outline of a scheme which ought to be adopted, and next in order of merit was that of "C. E."

Some difference of opinion existing in the council as to Sir Joseph Bazalgette's report, the council then referred the matter to the borough surveyor, to ascertain if the referee's report was correct.

The borough surveyor, in his report read at the last meeting, states that the plan of "Experientia" is in accordance with the suggestions of Sir Joseph Bazalgette, notwithstanding the assertions of this eminent authority to the contrary. The reference to the borough surveyor is somewhat anomalous after his offer to the Board at a former meeting to submit a plan on his own account, embodying the tunnel ideas of "Economy" and the suggestions of Sir Joseph Bazalgette, and that he should consider

such services to fall within the office held by him.

The local *Gazette*, which has all through it important competition advocated fair-play to the competitors, remarks,—

"We are sorry to be obliged to express our astonishment at the complications which are evidently, from cause or other, gathering round this vital question, and yet nothing can be more simple, with the evidence before the Council, to set in a manner fair to the competitors, honourable to themselves, and in the interests of the ratepayers."

Sir Joseph Bazalgette has advised the Council that he cannot recommend either of the plans to be sent to the Local Government Board without certain modifications, but that the plans of "Economy" and "C. E." appear to him to come nearest to the scheme which he would recommend for the drainage of Margate, and that they deserve the offered premiums."

The duty of the Board is clear to a certain point; they should at once award the premiums in accordance with the recommendation of the referees. As to their after proceeding we would suggest, neither plan being satisfactory, that the authors of the two premiated designs should be supplied with all the additional information that has been gathered together with the suggestion of the referees, and invited to submit fresh plans from which the one to be carried out, if approved by the Local Government Board, should be selected.

OPENING OF THE NORFOLK COUNTY SCHOOL.

THE school which it was determined a few years ago to build, with the view of providing a higher class of education for the children of the agriculturists of Norfolk, and the foundation stone of which was laid by H.R.H. the Prince of Wales on Easter Monday, 1873, has been opened. Its site is on the summit of the Bintree hills, Elmham. The extensive range of buildings consists of a central block surmounted by two towers. It has two wings running north and south; the latter is entirely devoted to the masters' and servants' rooms, with head master's house at the end of it practically detached, although communicating with it. There is a corresponding building at the extremity of the north wing intended as a house for a second master, should the school become sufficiently strong in numbers to command one. Meanwhile this building is sufficiently detached from the main structure to be convertible into an infirmary. At present has been used as a temporary laundry. In the centre of the whole building is a large hall, having on one side a stage and platform, and on the other used as a reception-room, and on the opposite side a large room fitted with desks. On either side of the north corridor on the ground floor are several class-rooms. Around the central hall which will be used as a general place of meeting there are two tiers of galleries, out of which the corridors, fitted with barrack-like dormitories, the partitions of which are not carried completely up, so that there will be an uninterrupted current of air running through the dormitories. Movable baths are provided. There are no general lavatories. In fact, the dormitories are made as home-like as possible. The dining-hall and kitchen offices are on the upper floor, with a lift leading to the porter's office, the entrance, and to the larders and cellars of the basement. Capt. Warren's patent is the system of cooking that has been adopted. The exterior is of flint, with red brick dressings, and with large dormers and weather tiling at the eaves; the roof being of red and black bands tiles. The architects were Messrs. John Gild & Gough, of London, and the work has been executed by Mr. Robert Skipper, of East Dereham. The estimated cost, 8,000l., has been exceeded but little, if any. The necessary money has been raised by shares to the amount of 10,000l., the Earl of Leicester, and other noblemen, with many of the yeomanry of the county, being shareholders.

Discovery at Gilling Castle, Yorkshire.

THE mansion is partly modern, and attached to a very early Norman Castle, which possesses attractions for archaeologists. Beneath the older part are dungeons, in one of which there was a walled-up doorway, the arch being pointed as if of the transition period. A portion of the walling has been taken away, and it has been discovered that the stones of the arch, having carved shields and arms, thought to be of the original founders; and the doorway would seem to be that of the original Norman structure. We should doubt as to the asserted age of the arma

THE MANUFACTURE OF COLOURS FOR PAINTING.

The British public is indebted to American forces for the publication of an English translation of an important French work on this subject.

This goodly volume of 660 pages, derived, as is, from the best and greatly improved Parisian of the well-known work of MM. Riffault, Rignaud, and Toussaint, edited by M. F. Alepierre, is believed to be by far the most thorough and complete treatise upon the important subject of which it treats ever published in English language.

It comprises some account of those pigments now known to have been used by the ancients; the principles of colour as developed by Chevreul; thorough descriptions of the nature and properties of the raw materials used, and the processes and machinery for the manufacture of an immense variety of pigments; the combinations necessary in the compounding of those colours, and tones which are the results of the mixture of colours; practical information as to dyes; and a variety of analyses and tests of pigments; and much other useful matter.

The information on the all-important subject of white lead is especially voluminous. In reference to the danger to health connected with certain manipulations or processes in its manufacture at the lead-works of the department of the Seine, the authors state that the operation of the white lead from the non-corroded metal, and the first dry pounding and tining, are the most unwholesome parts of the manufacture. In nearly all of the works of this, the workman picks up by hand the large and slightly adhering scales of white lead, and separates the remainder by twisting and bending in every direction the non-corroded lead. This hand-picking is generally done in the bed itself, and sometimes in a special room, where the whole of the corroded metal is carried, in the shape it comes from the pots. This picking, however, where the hands are constantly covered with carbonate of lead, is not the most dangerous part of the operation, because the thick scales are separated without much dust. It is the metallic lead still retains a certain quantity of white lead strongly adhering, it is usually beaten with a wooden hammer, thus producing a fine dust, which is inhaled by the workman. This operation is therefore the most dangerous, and is now substituted in several works by mechanical means, which impel the path of the men much less. The buckles or cests with their still adherent white lead are, one by one, upon an endless cloth, which carries them to an inclined hopper, from which they pass between two pairs of grooved rollers, and thence through an inclined cylindrical sieve, that passes through the holes of the sieve is conveyed into a hopper, which delivers it into a trough on wheels. The metallic lead falls from the lower opening of the sieve into another trough. The whole of the machinery is inclosed in tight wooden partitions, the only free opening of which is that for the passage of the endless cloth. The trough filled with the white lead is removed when the dust has subsided, and its contents are mixed with the scales picked up by hand. The next dry grinding is, in the majority of cases, still effected under vertical stones, rolling upon a horizontal bed.

The packing of white lead is often a cause of adhesion. To prevent the production of dust, Mr. Lefèvre lets the white lead into the barrel slowly and carefully, and then compresses it by means of a screw, which pushes down a wooden cone of a diameter slightly less than that of the barrel. A new addition of white lead is compressed in the same manner, and the operation is continued until the barrel is thoroughly filled. The packing of the lump white lead is effected as follows:—Rows of lumps, already wrapped in paper, are formed as close as possible; and when the barrel is half filled, it is shaken after it has been covered with several thicknesses of cloth.

* A Practical Treatise on the Manufacture of Colours for Painting, comprising the Origin, Definition, and Classification of Colours; the Treatment of the Raw Materials; the best Formulas and the newest Processes for the Preparation of every Description of Pigment, and the necessary Apparatus and Directions for its Use; together with the Testing, Application, and Qualities of Paints. By MM. Riffault, Vergnaud, and Toussaint. Edited and translated by M. F. Alepierre. Translated from the French by A. A. Fequet, Chemist and Engineer. Illustrated by Eighty Engravings. Philadelphia: Henry Carey Baird, Industrial Publisher, 409, Walnut-street, and London: Sampson Low, Marston, Low, & Seale, Crown Building, 188, Fleet-street. 1874.

These are removed when the dust has subsided; but there is very little dust when the lumps are wrapped in paper. The pucker has always two barrels on hand, so as not to lose time, and when one is filled, the cover is immediately put on. All the rooms in Mr. Lefèvre's works are kept perfectly clean, and the clothing of the men is of such a nature as to prevent the contact of the white lead with the skin. MM. Lefèvre & Co. have taken all possible precautions for protecting their men from lead diseases, which are always dangerous and sometimes mortal. They have improved the operations of casting the lead, taking the beds apart, separating the white lead from the spirals, grinding the white lead in water or oil, filling and emptying the drying pots, dry grinding, and sifting and packing.

Dr. Ure appears to have been among the first to ascertain the difference between white lead and the precipitated carbonates. White lead is anhydrous, amorphous, and opaque in oil; whereas Dr. Ure found out by microscopic observations that the precipitated carbonate was partly crystalline and translucent.

Various chemical compounds have been proposed as substitutes for white lead. Antimony-white is said to have at least twice the covering power of the best white lead. Antimony, however, is a poisonous metal as well as lead. Indeed, an old chemist, Basil Valentine, says that the one partakes of the nature of the other. Zinc is not so poisonous, but the covering power is not equal to lead.

Some modern colours are very changeable, and where these are brilliant and beautiful they form a perilous appliance in the hands of artists. Indeed, while some old pictures are as brilliant as ever they were, others that are not old are changing seriously. In this respect, therefore, a work such as the present may be somewhat dangerous for use by artists. Experiments on the fixedness of colours in oil painting are much wanted; and a lesson might be got from the ancients in this respect. But it seems that examinations of ancient monuments have revealed to chemists other colours than white, black, yellow, brown, red, blue, and green.

One serious defect in white lead, whether as a basis colour, if we are right in calling it so, for mixture with others, or, *per se*, is its changeability by sulphur; and as in picture galleries, where the public congregates, there is a liability to sulphurous vapours pervading the atmosphere, much harm may be thus done to pictures. But while oil does not seem to prevent the blackening of white lead, or of colours mixed with white lead, we have found white lead used with certain varnishes to withstand for several years even the sulphurous fumes from locomotives close at hand without being blackened. No doubt what is called the painter's desideratum, which appears to be of this nature, will be found to protect white lead in this way. The less volatility there is in the varnish of course the better. White wax would be a good subject for experiment. This, generally speaking, is the kind of experiments that artists are much in want of.

The work under notice contains some information in respect to the preparation of what is called the silicate colours. We quote as to this from an appendix on oils, varnishes, and the groundings, &c., of colours:—

"Our processes for giving more body or opacity to the colours produced by the combination of silica with silicates, alkaline earths, and metallic oxides, and therefore making tinted pigments, will be easily understood by the following description:—In several arts, in painting on porcelain and glass, for instance, the colours employed are formed of the materials we have indicated. In certain cases it is not absolutely necessary that the colours should be opaque, and in glass painting, on the contrary, transparency in the colours is a desideratum. The colours formed by the combination of silica with alkalies, alkaline earths, and metallic oxides, are remarkable for their resistance to the action of air and dampness; therefore, it is desirable that they should be employed in ordinary painting; but it is also absolutely necessary that they should possess sufficient body and opacity to cover well the materials upon which they are applied. It is known that several kinds of glass, especially those which contain a great proportion of lime, will have their molecular arrangement completely changed by a long exposure to a not very intense red heat. From an ordinary transparent glass they will become a semiopaque material, known under the names of *desfatted glass*, or *Reissner's porcelain*. Basing ourselves upon this fact, we propose the following mode of operation:—We introduce into an ordinary glass pot a mixture of 250 kilograms of white sand, 100 kilograms of dry sulphate of soda, 50 kilograms of phosphate of lime, and 4 kilograms of charcoal, the latter being added for decomposing and removing the acid of the sulphate of soda. We pour the melted mixture, by means of an iron ladle, into cold water, and the suddenly cooled glass is reduced to small fragments, which are immediately heated for three or four days at from 370° to 480° C., in ordinary gas retorts. The hot fragments are then again raked into cold water. They become still more integrated, and are so brittle that they are easily powdered under ordi-

nary vertical running stones. The devitrification operated in the retorts, at a low and protracted heat, still increases the opacity due to the phosphate of lime. In certain cases, when an extreme degree of opacity is desired, a suitable proportion of oxide of tin is added. The previously indicated mixture gives a white opaque glass, which may be used as a basis for all the desired colours. It is well known that metallic oxides are generally employed in colouring glass; these oxides are, therefore, combined with the above materials before their fusion in the glass pots, and in proportions to suit the desired hues or tones of colour. We shall not here examine these proportions, since our present object is to give sufficient body and opacity to vitreous compounds, in order to use them with water or oils as ordinary paints."

Although there are more or less obvious errors in the work, it is a very valuable and useful one.

THE EVENTFUL LIVES OF ARTISTS.

"His life like that of most artists was uneventful." This is one of the stereotyped and constantly-recurring phrases in the columns of our journals. Do the writers who use it mean to say that the painting of a fine picture or the execution of a noble statue is not an important event? If they do they woefully lack perception, for these are as important, if not more so, as most events which occur in this diminutive planet. Let these guinea-a-liners consider for awhile what extraordinary events the production of the Phidian Marbles, the Apollo, the Last Judgment, or the Madonna di San Sisto, were. Common mortals are so dazzled by present powers, by wealth, and noise, that they mistake the events that come of these for the great and enduring events of time, whereas these are but very ordinary and transitory things, which repeat themselves times out of number. Dynasties rise and fall. Revolutions, like volcanoes, throw up their blinding smoke and scoriae, and blaze themselves out. Nations have their political epidemics as individuals,—thanks to mortal folly,—have to go through or perish under measles, whooping-cough, or small-pox. But what now of the mighty Popes, the early power of the Roman Church, the subtle statecraft, or the wars of Italy? Who cares any longer about these? The world goes to Italy to witness those great events in art which took form and happened hundreds of years since, events which still astonish and excite its admiration. The dynasty of genius is alone enduring. The thrones of its princes may be temporarily usurped by force, wealth, and pageantry, but these events are only the prelude to a glorious restoration. A nation passes through its social and political revolutions only that it may culminate in philosophy, literature, and art. If it should not attain the topmost round in these, whatever may be the mischief it may have done in the time it has passed,—it is no more.

The poor short-sighted things who fret their hour upon the stage, and are called, *par excellence*, statesmen, take no note of art but as something which they may patronise. Patronise, forsooth! They are too dull to see that if they be doing any good at all, their heads only pave the way to mightier things than statecraft. They cannot understand that the art mind is the dominant mind,—the highest type of intelligence; that art is the greatest and most difficult problem humanity has to solve.

We have shown, then, that the artist's life is not only not uneventful when entirely devoted to art, though it produce nothing but fine works of painting, sculpture, or architecture; but we could also show that the lives of great artists have been eventful in other phases of life than their own speciality,—nay, that they have played their parts in general affairs. Artists have shown themselves to be philosophers, statesmen, soldiers, engineers, and so on; have shown themselves equal to stirring times, and have suggested measures which have now advanced, now saved their country. The lives of artists, then, are not uneventful, but most eventful in all that is enduring,—in that, for which, above all things, civilisation exists.

We would not, therefore, have the labelled dust of a great sculptor stowed away in the eastern corner of the crypt as the remains of an "uneventful life"; his was not only eventful by the production of the fine works of which every one within the last few weeks must have seen a list, but in those struggles which the soundest men in the country have to experience. The fact is, the world rails against the persecutors of men who worked for truth's sake of old; but they in turn become the neglectors and persecutors of the truth-seekers of to-day. The truth is not so readily recognisable as we are

apt to think. Truth has lain at the world's feet for thousands of years, and yet how little of it has been garnered. The world does not know the right thing when it sees it; the crowd looks for glitter, and, in pursuing this, runs over and tramples down the real thing. Thus it was that Foley's talent was long overlooked. He had, therefore, like other men of genius, to struggle against the ignorance and stupidity of the public, till a rift came in the clouds, and then the dear old England of extremes heaped commissions upon him, and we shall not be far from the truth if we say, crushed the life out of him, killed him with kindness. His works will be amongst the most important events of our time, amongst those events by which posterity will be able to form a favourable judgment of our state of cultivation. Reader, give a thought to the pains and penalties endured by men who care for the status of England.

Foley's desire to produce noble and conscientious work earned him a tomb in St. Paul's, as his steadfastness, truthfulness, and kindness obtained for him a place in the hearts of all who knew him.

STREET ARCHITECTURE.

No. 74, CORNHILL, LONDON.

We illustrate in our present number a building lately erected at 74, Cornhill, and the entrance to Newman's-court. The proprietor, Mr. A. J. Nash, a glass and china merchant, occupies the basement, ground-floor, and mezzanine. The upper floors, each consisting of a set of three rooms, having a lavatory and w.c., are let off as offices. The staircase from the mezzanine upwards is of oak, considered by the architect preferable to stone in case of fire. The attic, occupied by the housekeeper, contains a living-room and two bed-rooms. The former opens on to an asphalt terrace, overlooking Newman's-court. The roof is covered with the Broomhall tiles. The builders were Messrs. King & Son. The architect was Mr. Thomas T. Smith, of Bloomsbury, under whose direction the work has been carried out, at a cost of 3,500*l*.

NEW BUILDINGS, CHEAPSIDE.

WITH the exception of the few years immediately following the Fire of London, there have probably been more houses built within the last ten years in the city of London, upon old and new foundations, than in any preceding hundred years. The rebuildings which immediately took place after the Fire of 1666 were necessarily carried out in haste, and from the great demand for materials, those nearest to hand (often of a very inferior description) were used, and it is not surprising, after the lapse of above 200 years, that a great part of the houses in the city of London, not previously rebuilt in the interval, now require to be so. This was the case with the two houses, Nos. 48 and 49, Cheapside, forming the subject of one of our illustrations. These houses had been erected after the Fire, and had thick party walls; the fronts towards the street, which had been originally of timber framing, had been replaced some seventy years since by brickwork; but the whole of the back-fronts, and some buildings in the rear, had been left in their original condition. The enclosures to No. 48 were constructed of timber framing, covered with weather boarding; and those of No. 49, of timber framing, covered with lath and plaster, with wooden barge-boards. Upon all the old maps of the city of London, this part of Cheapside is shown of a great width, having an open space in front and around the tower of Bow Church, which formerly stood west of the present body of the church, and at some distance back from the street. The ground in Cheapside, west of the church, had either been excavated to a very considerable depth, or the original level was very much below the present one of the street, for an average depth of nearly 30 ft. was obliged to be excavated, through made ground, before anything like undisturbed ground was reached, which, when reached, was gravel. The filling up of this hollow space consisted principally of garden mould, flints, bones, large lumps of chalk, broken building stones, among which were found some architectural remains in the Early English style of architecture, capitals and bases of columns, with pieces of worked Purbeck and Kentish rag stone, and below this the made earth was full of fragments of Roman pottery, some glass lacrimatories, with broken pieces of glass scent or

ointment vases, and a few very-much corroded (so as to be undistinguishable) bronze coins. The Roman pottery was principally fine red Samian ware, with ornamental patterns, and some with figures, in low relief, of dogs pursuing fowls, but broken into small fragments. There were also parts of some coarsely-made amphore and tazas of common workmanship and design.

Stow, describing an excavation made at this spot in the year 1595, says, "Thomas Tomlinson causing, in the High-street of Cheape, a vault to be digged and made, there was found at 15 ft. deep, a faire pavement, like unto that above ground, and at the further end, at the channel, was found a tree sawed into five steps, which was to step over some brooke running out of the west, towards Wallbrooke, and upon the edge of the said brooke, as it seemeth, there were found lying along the bodies of two great trees, the ends thereof were sawn off, and firm timber, as at the first when they fell. Part of the said trees remain yet in the ground undigged. It is all formed ground, until they went past the trees aforesaid, which was about 17 ft. deep or better; thus much hath the ground of this cite (in that place) been raised from the maine." And in confirmation of his description, there is at present in front of the adjoining houses, Nos. 48 and 49, situated at the north-east corner of Bread-street, a very large and spacious ancient vault, at a considerable depth, going entirely under the roadway of Cheapside, and there is not much doubt but that this is the vault dug by Thomas Tomlinson.

Nearly immediately in front of Nos. 48 and 49 stood Cheapside Cross; one of the crosses erected in memory of Queen Eleanor. In an old print published in the early part of Charles I.'s time, showing the procession, accompanying Mary de Medici, on her visit to her daughter Henrietta, Charles's queen, this cross is shown as standing in the middle of the street, which was of a very considerable width, and, in olden times, tournaments were held on this spot. At one held in September, 1331, at which Queen Philippa was present, owing to the faulty construction of the scaffold upon which she sat, it broke down, and the queen and several of her court fell upon the spectators standing below, and she and they were much hurt; and it was only at the earnest intercession of the queen, that the persons putting up the erection were not severely punished. After this occurrence the king (Edward III.) caused a permanent stone building to be erected on the ground adjoining Bow Church for the queen and her court to view similar shows and processions, to prevent the chances of any such casualty again arising from a temporary and ill-constructed erection being used. Stow complains that, in his time, the street had begun to be much narrowed at this point, first by the erection of stalls for the sale of goods, growing into small sheds, which had been temporarily erected upon the sides of the wide roadway, and which were gradually added to, until they became permanent tall houses, some of them three, four, and five stories high, by which buildings the open space was much encroached upon, to the narrowing even of the ordinary roadway. Owing to these gradual contractions of the street, the cross erected in the centre, became, or was considered, an obstruction; and during the Protectorate it was resolved to remove it. This cross, which had been erected by Edward I. in 1290, was re-edified in 1441 by a subscription of some members of the corporation; and was repaired and gilded all over in 1484 and 1486. It was, subsequently, from time to time repaired and re-decorated; but it gradually, by each reparation, lost some of the original beautiful design which it had displayed when first erected, and degenerated into a very commonplace structure; for at its last repair in 1600, in compliment to Queen Elizabeth, an effigy of Diana was put in the place of the figure of Queen Eleanor, which had fallen into decay, and to the whole was given a semi-classical character. An arcade, supported by columns, was substituted for the canopies, and this was surmounted by a ribbed dome upon which a large cross was placed exciting the aversion of the puritan party. With these changes to the erection we can hardly regret its destruction, which took place in 1643, by command of Parliament, or join in the regrets expressed by the royalist, James Howell, in his familiar letters, for its loss.

A little to the west of this cross stood the Standard, opposite the end of Honey-lane and Bread-street, the erection of which was com-

menced by Sir John Well, mayor, in 1430, and completed after his death by his executors. It caused water to be brought from a spring at Tyburn, and provided a reservoir here with a pipe that was always running for the use of his fellow citizens. The Standard seems to have been the place for certain executions of an irregular character, for in the year 1338 a boy of Exeter, who had rendered himself unpopular, and other executions of note also here took place. In the year 1381 Wat Tyler executed several of his prisoners at the Standard, and in 1450 Jack Cade here beheaded Lord Saye. Several persons were whipped here, branded, or had their ears cut off for certain misdemeanours. In the year 1461, John Doig had one of his hands cut off for striking a man before the Judges at Westminster, and many minor punishments were here carried into effect. It was also the place for publicly burning offensive books, unpopular charters, and ordinances. Misals of the Saints were burnt in Henry VIII.'s time; and Bibles, and the works of the Reformers in Queen Mary's.

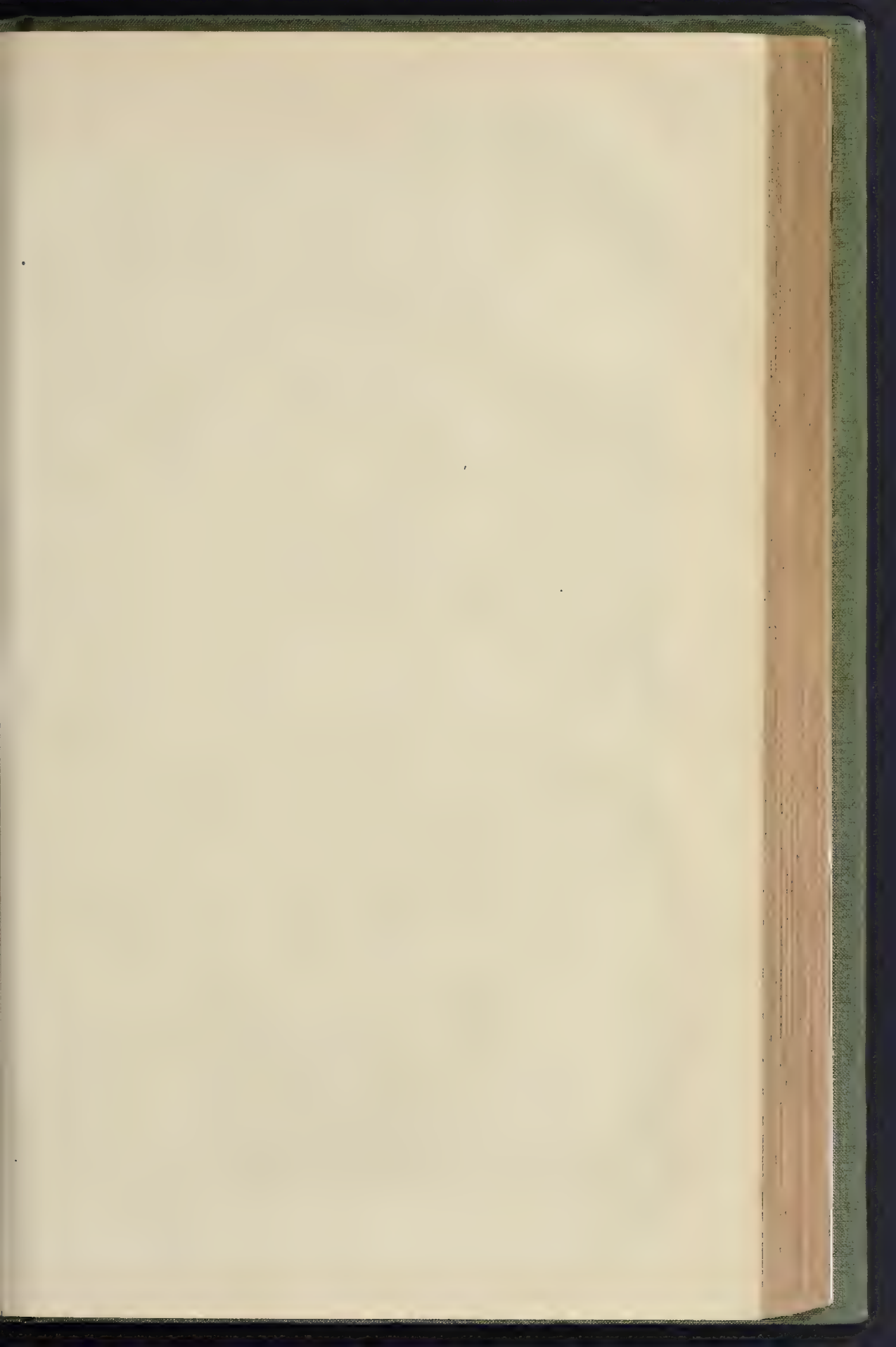
Immediately in the rear of these houses was formerly situated Spread Eagle-court, now wholly absorbed in Messrs. Coppestake & Co.'s premises, and in that court immediately in the rear of No. 49, stood the residence of John Milton, senior, scrivener (in modern parlance, a solicitor), the father of Milton, the poet, who was born here on the 9th of December, 1608, and here he lived and studied until he left for Cambridge in the seventeenth year of his age. The old maps of the period show Spread Eagle-court, like many City courts, a *cul de sac*,—close ill-ventilated, and a very confined place, opening into Bread-street, which was then, as it is now a narrow, and probably at that time a not very salubrious outlet; for Stow remarks of Honey lane opposite to it, that it was not so called from its sweetness, for it was particularly dirty and unsavoury; and we can fully sympathise with the enjoyment which must have been felt by the poet whenever he left Spread Eagle-court for the country. He thus expresses himself in his "Paradise Lost":—

"A one who long in populous city pent,
Where houses thick and sew'rs annoy the air,
Forth issuing, on a summer's morn, to breathe
Among the pleasant villages and farms."

This part of Cheapside used to be known as Goldsmith-row, from the number of goldsmiths' shops which were here situated; and these houses during the Tudor period were considered among the most stately, and were occupied by some of the richest citizens in the City. No. 48, was occupied by a continuous succession of gold and silver smiths, from a very early period, down to the time that the present firm of Keith, Prowse, & Co., the music publishers, took possession of the premises in 1834 (Thomas Cox Savory being the last of about twenty preceding firms of gold and silver smiths), when the old smelting furnace was at that time at last removed, and gold was exchanged upon these premises for notes.

The defective condition of the old side walls of these buildings, which walls were more than their entire width out of the perpendicular, and only prevented from falling by the massive oak and chestnut beams in the floors strutting the walls, rendered it necessary to rebuild, and the constantly increasing value of space inducing a desire to utilise what was lost by bad construction and inconvenient arrangement, rendered the pulling down and rebuilding these premises a prudent and advantageous investment of capital. In the first instance Mr. R. L. Rommieu, who is the architect to the two new buildings, prepared designs of a Mediaeval character for both of the houses, varying, however, in design, but still in unison so as to form one composition. That prepared for No. 48 has been carried out with very little variation, but Messrs. Lake & Turner preferring the Renaissance style, Mr. Rommieu, in conformity with their wishes, prepared a second design for No. 49, which has been carried out by him; Messrs. Perry & Co., of Bow, being the builders; Mr. Frampton doing the carving for No. 48, and Mr. Kelsey that for No. 49, from full-size details furnished by the architect. The figure of David was executed by Mr. Wyon, the sculptor, as well as the figure of Plenty and the medallions, from small sketches by the architect.

Cheltenham Borough Surveyorship.—Mr. D. J. Humphris has been re-elected to this office, as newly constituted.





STREET ARCHITECTURE: No. 74, CORNHILL, LONDON.—MR. THOMAS T. SMITH, ARCHITECT.



STREET ARCHITECTURE: Nos 48 & 49, CHEAPSIDE, LONDON.—MR. R. L. ROUMIEU, ARCHITECT.

A VISIT TO MOLD AND

ITS NEIGHBOURHOOD, NORTH WALES.

The churches of North Wales are mostly of a very mean description, which must be mainly attributed to the poverty and scanty population of this mountainous district. Those churches in which superior work occurs are mostly Perpendicular. Among them are the large and rich churches of St. Giles, Wrexham (fully described in the *Builder*, vol. xxi., p. 609); All Saints, Gresford; and St. Mary, Mold.

Mold was formerly written Mould, and in Welsh, *Yr Wyddgrug*, i.e., a barrow or mound; and hence, also, *Mons Altus*, a lofty mount. The town is situated in a fertile valley, near the river Alyn. The neighbourhood abounds with lead ore, and the mining and smelting works give employment to a large number of labourers.

The church consists of a nave, aisles, south porch, vestry-room (north side), polygonal apse, and a square tower at the west end, containing six bells. The dimensions of the church are stated to be 124 ft. in length, including the tower, but not the apse. The width of the nave and aisles is 61 ft., the nave being 24 ft. and each aisle 16 ft., and the piers 2 ft. 6 in. square. The present church is described by Rickman as "rich and beautiful Perpendicular church." It is dedicated to St. Mary, and was erected in 1600. It is noticed as early as the time of Henry VII. Of this edifice, the nave (roof excepted), aisles, and south porch only remain.

The tower and the apse are modern, the former having been built in 1768, and the apse in 1856. The vestry is also a modern addition. The nave is separated from the aisles by piers, consisting of two three-quarter circular shafts, and two moulded shafts, with hollows between the capitals and bases being octagonal. The former are moulded, with sculptures, and the latter are moulded and stilted. There are seven depressed arches on each side, with vaulting-shafts springing from angels, holding shields, with armorial bearings.

In many churches the plain surfaces of the nave arcades were relieved by wall-paintings of a religious character; in Mold Church sculpture has been freely introduced.

In each span over the nave arches is a circle, with an octafol, and above these is a continuous horizontal broad band of squares, with circles, &c., containing quatrefoils, shields, and devices, and a string-course with animals. The clear-story windows are mere square openings, and the roof, which is modern, is low, and hardly seen from the outside. The tie-beams are moulded, with knees. The richness imparted to the nave by the predominance of surface sculpture, and the absence of plain surface, tends to confuse and bewilder, rather than to please the eye. The west gallery has been cleared away, exposing the side of the tower, and there being no tower-arch, as is usual, but only a small doorway, a large blank space is exposed to view. This remarkably ugly feature has been partly covered by marble tablets, which, contrasting with the rich arcades of the nave, present an offensive appearance. The mural marble monuments are in memory of John Davies, of Gwysaney, 1705; Bethel Whitmore, 1731; wife of John Wynne, of Tower, 1737; Roger Wynne, of Tower, 1776; William Wynne, of Tower, D.D., rector of Llanvechen, 1776; Louise Bertrand, 1789; Margaret, wife of Sir George Wynne, 1793; Rev. Thomas Williams, M.A., curate, 1801; Watkin Griffith, of Rhual, 1808; Thomas Griffith, of Rhual, 1811; Wilson Henry Jones, and — Lloyd, Bishop of St. Asaph.

At the time when the church was "altered and beautified," in 1856, at a cost of 5,000l., the galleries and all the high pews on the ground-floor were removed, and new solid oak benches, with poppy-heads, together with a carved pulpit, with stalls for the clergy of the same material, were introduced. The pulpit stands on the north side of the nave, by the east end. The large lectern was the gift of William Walcott Rhual, of Gwysaney Hall. The nave and aisles are paved with stone.

The windows of the aisles have depressed robes. They are in four lights, with cinquefoil heads, and trefoil-headed lights in arches, with quarry lights. The east windows are in five lights, with ogee heads. The window at the east end of the south aisle is adorned with painted and stained glass, in memory of David Hughes and his wife, placed there by their children in 1853. The window in the wall near is to the memory of Henry Raikes, of

Llwynegryn. It illustrates, in eight panels, the parable of the Talents. Another memorial window, at the west end of the south aisle, is in memory of Lizzie, wife of W. B. Marston. The prominent figures are Moses striking the rock, Christ's baptism, Christ blessing little children, Christ conversing with the woman of Samaria, and the visit of Nicodemus to Christ.

The above five subjects alluding to water and baptism, are appropriately introduced; the font was removed to this part, west end of south aisle, in 1864, in consequence of a new west doorway and entrance being effected; the cost of the latter was borne by the family of the late Henry Raikes.

The font is of stone, raised upon three steps, octagonal with angular buttresses, and panelled with quatrefoils, shields, &c. It is of good proportions, and large enough for total immersion. The lid is of oak, flat, and embattled on the edge with a Scriptural quotation, with a cross on the top. The date of the font is 1847, being the gift of Miss Clough.

Affixed to the wall over the inner doorway of the south porch are large benefaction boards.

Of monuments and brasses in the south aisle, there is an ancient canopied stone mural monument at the east end, with a modern marble monument ridiculously fixed in it. Beneath the window at this end is a brass plate in memory of the Rev. Richard Davis, vicar of Rhual, 1746. In the south-east angle is an Italian monument, of marble, with broken pediment, arms in centre, supported by two fluted Ionic columns. On a pedestal in full relief, is a statue with a Roman toga, resting with one arm on an urn, to the memory of Robert Davies, a distinguished antiquary of Llanerch, 1723. The sculptor was H. Chasereau. The following mural monuments and brass plates are also on the south wall of this aisle—a marble scroll tablet to Robert Davies, 1710; a brass plate to William Lloyd, of Bertridd, 1739; and two elaborate brass plates, one to Henry Raikes, of Llwynegryn, 1863; and the other to Frederick Philips, of Rhual, 1866.

Also a white marble Medieval tablet to John Wynne Eyton, of Leeswood, and daughter of Robert Lloyd, 1847; to the Rev. Hope Wynne Eyton, vicar of this parish thirty-two years, 1824; Margaret Sidney, daughter of Edward Jones, of Wepre Hall, 1826; John Langford, 1836; and to the wife of Thomas Whitley, of Bronicod, 1800.

The south porch is raised seven steps above the churchyard, with three additional steps to the floor of the church. The roof is an open span, with diagonal buttresses,—pinnacles are wanting. There is a seat on each side, and the floor is paved with modern encaustic tiles.

The organ is on the floor at the east end of the north aisle; the memorial window at this end is to the Rev. Robert Wynne Eyton, M.A., late vicar of Northop. The north aisle contains a marble Medieval tablet to William Williams, 1839; and another tablet to the wife of the Hon. Charles Napier, 1834; and also Field Marshal Sir Alfred Clarke, G.C.B., 1832; an elaborate white marble Medieval monument to Charlotte, daughter of T. Griffith, of Rhual, 1819. A brass plate in memory of John Jones, of Bistree, 1721; cut in stone beneath the above is 17. MPEI, 1697.

In the several windows of aisles are fragments of ancient painted and stained glass.

Near the north door is a flat stone, over the remains of Richard Wilson, R.A., 1782.

A small vestry-room of Late Perpendicular style has been added to the north door. The labels to the windows have stringy foliated terminations.

The roofs of the aisles are of a low pitch with tie-beams.

The new polygonal apse is raised two steps above the nave floor. The five windows of the apse are of an earlier character, in three transomed lights with cinquefoil heads; the stained glass is by Wailes, of Newcastle-on-Tyne. The three central windows contain the principal incidents in our Saviour's life, at the cost of 400l., raised by public subscription, as a testimonial to the vicar, the late Dean Clough. The two side windows are memorial, one is to the memory of the late Colonel and Mrs. Philips, of Rhual; and the other in memory of the Rev. Hope Wynne Eyton, vicar of Mold. The labels over the windows externally are supported by soulless Medieval heads. In the south-east angle of the apse is an octagonal embattled turret. The apse is paved with modern encaustic tiles; the altar-rail is of oak, and arcaded with trefoiled heads to arches.

On the external and internal cornices are between 200 and 300 carvings of animals and fabulous objects; they are distributed equidistant, mutilated, and now not unlike clouds on a summer's evening; the mind can picture to itself any forms it can imagine. These sculptures have not been improved by the "Restoration." Rickman considers them curious examples, "being a complete chase of cats, rats, mice, dogs, and a variety of imaginary figures, amongst which various grotesque monkeys are very conspicuous." An architect should never visit a church without a field-glass; it is of great value in rendering intelligible the various sculptures.

One reason assigned for the very curious, grotesque, and sometimes disgusting sculptures in our cathedrals and churches, is that in regular churches the seculars were ridiculed, and in secular churches the regulars. The Christianity taught by the so-called regulars must have been rendered nugatory, and the morals of the people debased, by these vagaries. It has been also conjectured that there were rites in the Medieval church which strongly partook of the same character as these sculptures, and that the grotesque was felt to be, in its due mixture and proportion, an ingredient of the sublime.

It has been asserted that the most simple forms which agree with good taste are not called beautiful unless they are placed in direct opposition with something ugly. Surely an educated mind ought to be able to appreciate a beautiful object without its being placed in juxtaposition with an ugly one.

Externally, the body of the church, including the apse, is embattled; the buttresses are in two stages, with ogee canopies, crockets, and finials, supported by carved heads. The buttresses are surmounted with pinnacles set diamondwise. The parapet, buttresses, and strings of the new apse, are exactly copied from, and range with, the body of the church. Instead of repeating the pinnacles of the church, loftier pinnacles have been put, presenting a most ridiculous appearance, being shored up with iron crabs. The gargoyles heads to the rain-water spouts of aisles are absurdly large, which is often the case in Late Perpendicular churches.

While in the church a funeral took place: a young woman who died of typhus fever one day, was buried the next day; other members of the family had recovered from the same malady. A fine view of the country is obtained from the churchyard, and the picturesque of the sad scene was somewhat enhanced by the clergyman conducting the body to the grave with a colleague on his head.

Numerous tumuli are to be seen in the neighbourhood; in 1832, a barrow or cairn was discovered near the railway station at Mold; it consisted of large slabs of stone and pieces of broken pottery, a number of amber beads, a few bones which formed an entire skeleton, and a complete breastplate or gorget, in one entire piece (a sheet of pure beaten gold), weighing seventeen ounces, embossed with various patterns in high relief; over its whole surface; the skeleton within it was 41 in. in length. This relic was purchased by the trustees of the British Museum, and valued at 70l. It has been engraved in the "Archæologia," vol. 26.

A favourite journey of tourists from Mold is to the mountain called *Moel Famman*, 1,845 ft. above the level of the sea, seven miles from the town to its summit. In 1810, a monument was erected on it, in the Egyptian style, 150 ft. high and 60 ft. wide at the bottom, to commemorate the fiftieth anniversary of the reign of George III. On the summit is a room for visitors and there is a shed for horses. In 1864, the pyramidal portion was blown down, and it is to be regretted that no effort has been made to restore it, the more especially as the monument is a very conspicuous object from long distances on land, and is also seen as a landmark from many miles off far out at sea.

Of the public erections in Mold, a fountain and clock were placed in the town in 1864, in memory of the Prince Consort. There are two market-halls, county-hall, National schools, militia barracks, savings bank, and others. The places of worship, except the church, are all of the dissenting class, and as numerous and various as the shops in the town; there are chapels belonging to the Roman Catholics, Calvinists, Welsh Independents, Baptists, Nonconformists, &c. If they would only practise what they preach real good might emanate from them.

The gentlemen's seats around the town are

many, and all picturesquely situated. About one mile from Mold is a mansion of historical interest, having a lofty attached embattled tower; the latter of the date of the fifteenth century. It was formerly the residence of Reinalt ap Gryffydd ap Bleddyn. It is tenanted by a farmer, and has a desolate appearance.

Meeting a London friend when returning from Mold, he rebuked me for wasting my time in staring at old churches and monuments. I interrogated him as to his amusement: "Oh, fishing," said he. "And what did you get for your fish?" "A good dinner," was the reply. I reminded him that the productions of art may be enjoyed by the whole world, without being consumed; whereas he consumed his object.

The local guide-book to Mold, there is but one, and of recent date, being the first, well printed with 100 pages, contains very little information, and that not of an instructive kind. It is of a philosophical nature, dreamy, and appears to have been written by a preacher. "The eye of sense," says its author, "tracing eanty foreshadowings of the brightness, with dark omens in the aspect of the times," "wistful glance restrained through darkness," "superstition floating in the air," and "looking with loving eyes to draw pure and holy inspirations." These ideas may be in keeping with "wild Wales," but are really too much for tourists, especially flying tourists, who seek information at once. The "Dream of Brother Meyrick, a Monk of Basingwerk Monastery," the "Battle of Alltula," and the "Ancient Druids," occupy many pages. If Murray would issue a series of cheap local handbooks, they would be very acceptable to tourists. W. PETTIT GRIFFITH, F.S.A.

COLONIAL ART-GALLERY.

THE sum of 500l. having been voted by Parliament towards the formation of a picture-gallery in Sydney, the best mode of disposing of it has become a question. At a recent meeting of the council of the Academy of Arts there, a minute by Mr. J. E. Thomas was read. In the course of it the writer says,—

"A national gallery should illustrate what is truly great in art; should set before the public pictures that are the works of master minds, or good copies of them, and not be filled by a lot of rubbish manufactured (as I myself have often seen done) in Warious-street, and sold to the uninitiated as 'old masters.' nor should it be filled with 'little bits' of water-colour drawings, which, however 'pretty,' and in a manner in the great galleries of Rome, Florence, Dresden, Paris, &c.

In forming the nucleus of a national collection of pictures in Melbourne, the Government or their advisers appear to have been aware of the fact that the best works of the 'old masters' are in France, and at great public buildings, and cannot be removed; that their easel pictures (principally studies for larger works) are for the most part already in the great National Galleries of Europe; and that even those in private collections are catalogued, and their histories all well known to picture-dealers; and that an opportunity is rarely afforded for their purchase, and that even then they fetch fabulous prices,—as, for instance, the famous picture of 'The Ascension of the Virgin,' by Murillo, which was bought by the French Government for 25,000l. Knowing, I say, all this, the authorities in Melbourne very wisely determined to commission competent judges in England to purchase paintings by the great masters of our time; and in so doing, they, in my opinion, adopted the right course, and one worthy of being followed by the Government of New South Wales.

A gallery, however, such as that in course of formation in Melbourne or that proposed here, would undoubtedly be greatly enhanced in value, if good copies of some of the masterpieces of art in the world were added to the collection, seeing that it is hopeless to ever expect procuring the originals. When recently visiting the galleries of Rome, Florence, Paris, &c., I observed that there were a large number of painters engaged copying works of art,—artists who are, perhaps, for the most part incapable of originating anything themselves, although they can reproduce on canvas the thoughts of others, in a like manner as an instrumental performer of music can render perfectly the compositions of the greatest musicians, although himself unable to compose a single bar. These copies, I know, can be procured at a very reasonable rate; and I therefore do not see that the 500l. voted by Parliament can be better expended than in the purchase of two or three good copies of well-known great works of art."

This is very good advice, and we trust that it will be followed, not to the exclusion of original works of art presently, as they may be obtainable, works even of a much lower order of art than the great creations pointed at above, but as the best means of obtaining at moderate cost a substantial and educationally valuable nucleus of a national gallery. A competent person should be employed to obtain the copies, to ensure their being good, and the name of the copier should in all cases be preserved. The value and interest attaching to the copies would often be increased by the reputation afterwards obtained by the copier as an originating artist. We should be glad to see steps taken to provide perfect copies of the world's masterpieces for cities and towns even much nearer London than Sydney.

THE NEW LIGHTHOUSE OFF NORDERNEY.

ONE of the most dangerous parts of the German Ocean is the low-lying coast of East Friesland, the north-western portion of Hanover. The low-coast country lies below the level of the sea, and is protected by embankments and dykes, similar to those of Holland. It is lined with small islands and sandbanks, the latter generally visible at low-water, but offering innumerable hidden dangers to the navigator at high-tide. One of the largest islands is that of Norderney, a fashionable bathing resort in summer, surrounded by numerous shoals. At low-water it is connected with the mainland by a slip of land, along which carriages may be driven without danger. That part of the Friesian coast is therefore full of perils, especially when a nor-wester is blowing, to the fury of which the coast is especially exposed, and the need of another lighthouse, to fill up the gap between the beacons of Borkum and Wangeroog, has been long felt.

That object has at last been accomplished, and the new lighthouse off Norderney is now ready, and will begin to guide the numerous vessels passing along the coast on the 1st of October next. The stonework of the structure is 200 ft. high, and forms an octagonal column on a proportionately high substructure of 20 ft. square. The weights of the clockwork moving the lighting apparatus, weighing about 3 cwt., are protected by a column, which, with the broad, commodious stairs, takes up the interior space of the tower from top to bottom. The lighting apparatus, on the platform of the tower, one of Fresnel's first-class, consists of a lamp of five burners and twenty-four refractors. The lamp is fixed, but the refractors are movable, making a complete revolution round the lamp in exactly four minutes—240 seconds. Observed from a distance, the most powerful reflection, called the "blink" by sailors, is therefore seen every ten seconds, which gradually decreases again and then increases to a powerful white light. Rolls round the tower protect the apparatus against the rockings of the tower in stormy weather. The clockwork goes sixteen hours without winding up. The cost of the Fresnel apparatus is 3,450l. The total sum expended for the lighthouse, including a substantial house for the attendant, is 30,000l., or 150l. per current foot of masonry. A submarine telegraph connects the lighthouse with the telegraph station on the island and the German telegraph net.

FROM SCOTLAND.

The Price of Coal and the Gas Supply.—At the last meeting of the Glasgow town-council, the Lord Provost, in referring to the cost of manufacturing the gas for the supply of the city, remarked that he was sorry to say the difficulties of the gas committee last year had arisen from the exorbitant price of coal. The miners, as they were all aware, had, by creating an artificial scarcity of coal, sent up the price to such an extent as, he thought, had injured their own interest, because it had not only been the means of bringing in a great many additional competitors, but it had also checked the export of coal, and very seriously injured the whole industrial trade of the country. The Glasgow gas commissioners were, like all others, suffering from that artificial scarcity, and he found that they paid for coals this year no less than 70,779l. more than in 1871-72, and 27,285l. more than they did in 1872-73. The price of coals in 1871-72 was 13s. 6d.; in 1872-73 it was 17s. 10d.; and for this year, 20s. 4d. In addition to that, believing that the consumption of gas would go on with the increase of the town, they increased their producing power so as to furnish to the extent of 11,000,000 cubic feet of gas per day. Instead, however, of the town consuming 11,000,000, there had been no increase in the consumption of gas, but rather a falling off of about 5,000,000 cubic feet, as compared with the previous year. This was accounted for by the brightness of the weather and the short hours of the workmen. He went on to say that they had great trouble with their coal contracts. In these circumstances, seeing they had a deficiency of 14,000l., they did not think it would be desirable to make any alteration at present in the price of gas.

Peat Manufacture.—Mr. James Walker, Superintendent of Works of the Highland Peat Fuel Company, South Morar, has addressed a letter

to Mr. Thos. Sloan, one of the directors, an extract from which cannot fail to interest those who are watching the various attempts to utilise peat as fuel. Mr. Walker says:—"I see it stated as the result of the experience of the Dumfriesshire Peat Fuel Company, that their manufactured peat dried faster in the open air than under shedding. I am astonished at this assertion, and I think it right to let you know that our experience here is exactly contrary. For example, on the 29th of July last, I had on shedding cleared out and the fuel spread on the moor. Subsequently I had the shedding filled with fresh macerated peat. Thereafter the weather became broken and showery until the 19th August, when having to despatch a cargo of our manufactured peat, I was able to procure a quantity of well-dried fuel from the shedding; whereas I could not get any fit for shipment from the lot that had been exposed in the open air, although it had been manufactured so much earlier, and was even partially dry when exposed to the open air. The shedding in which peat fuel will not dry quicker than in the open air in the variable weather of Great Britain must be faulty in construction. The other drawback experienced by the Dumfriesshire Company is stated to be the lightness of the peat. If the raw peat was of inferior quality it would certainly be light, but even inferior peat should be much heavier, when macerated and condensed than it would be when made into fuel in the ordinary way without maceration. The manufactured peat from our works will compare favourably with most coal, as any one who examines it will immediately perceive. I am glad to say that our large machine continues to work splendidly. The enormous quantity passed through daily taxes all our powers to supply the trays on which the fuel is placed. I am sorry for the unsatisfactory experience the Dumfriesshire Company have had. They need not be alarmed at the fall in the price of coal. It is not likely that such a great quantity of peat fuel will be produced for many years as to come into competition with coal. The condensed peat fuel, however, will always command its own consumers, and will be found preferable for many purposes to any other fuel. At all events, it can produce it at a handsome profit even if the coal were lower priced than it is likely to be."

Piping for Dundee Waterworks.—At a meeting of Dundee Water Commissioners last week, there were three offers to supply piping under the new Act, by which additional works are to be executed. The meeting accepted the lowest offer—that of Messrs. Edgington & Sons, and D. Y. Stewart & Co., Glasgow, at the sum of 28,034l. 9s. 7d. This embraces the laying of pipes from Dronley to Dundee.

THE METROPOLITAN DISTRICT COMPANY'S NEW RAILWAY TO HAMMERSMITH.

By the new line of railway in continuation of the Metropolitan District Company's line, direct to Hammersmith, recently opened, as we have already mentioned, the District Company has a railway communication direct between the Maiden House station and Hammersmith, and the journey is performed in little more than twelve minutes; whereas the present route by the Metropolitan, via Moorgate-street, Farringdon-street, and King's-cross, occupies almost double the time. The new line, which does not exceed one mile and a quarter in length, commences by junction with the District Company's line between the Earl's-court and Addison-road stations, and is carried forward to the east side of Broadway in Hammersmith, entirely through an excavation. And here it may be said that the gravel upon which the contractors came to be said to be the finest and most valuable which has yet been found around the metropolis. Two bridges cross over the line—an iron girder bridge at North-end, Fulham, and a stone bridge of two arches a short distance from the Hammersmith terminus. The station at Hammersmith is a large and very commodious structure, arranged and fitted with every regard to an extensive traffic. The elevation of the station is a prominent feature on the east side of Broadway. It is built of white Suffolk brick, with stone dressings, the elevation at each end being brought forward to the line of street, whilst the central portion, with two entrances, forms a colonnade. From the booking-offices, on each side of which there are waiting and refreshment rooms, the platforms are reached by three flights of stairs.

6 ft. in width. The stairs are fitted with "Hawksley's patent tread," the invention of Mr. T. Hawksley, C.E., which has only recently been introduced in railway and other structures. Its advantages are the durability of the surface of the stairs combined with safety and freedom from slipping. There are three platforms, 15 ft. in width and 350 ft. in length, all covered in to their entire length. They are all paved with asphalt, and coped with Staffordshire blue brick. The extreme width of the station is 95 ft., there being a double line of rails on one side of the central platform, and a single line on the other. There is also an intermediate station at North-end, Fulham, with two platforms, 250 ft. in length, covered in to the extent of 65 ft. The contractors for the whole of the works are Messrs. Kelk & Lucas.

THE TRAMWAY COMPANIES AND THE PAVING OF PUBLIC THOROUGHFARES.

A QUESTION of considerable importance has just been settled as to the powers possessed by the Board of Trade over vestries and local boards with regard to the paving of public roads used by the tramway companies. The London Street Tramway Company, on the lines which they are now laying down along the Kennington Park-road, Newington-batts, Newington-causeway and Great Dover-street are using granite cubes. The Newington vestry required the company to substitute wood for stone, to which they declined to accede, appealing against the vestry's requirement to the Board of Trade, who in their turn decided against the vestry, and gave their sanction to the Tramway Company laying down the granite cubes, which they proceeded to do in carrying out the works. Thereupon the vestry resolved upon taking steps in Chancery to obtain an injunction against the company, at the same time disputing the jurisdiction of the Board of Trade, and contending warmly against the Government Board having power over them with reference to the pavement of the streets and roads within their district, as a vestry supposed to have absolute control over such roads. Before, however, filing a bill in Chancery, the vestry clerk advised that the opinion of counsel should be taken as to the powers of the Board of Trade. The opinion of the Hon. Mr. Thesiger, together with that of a counsel practising at the Chancery bar, has been obtained, which is to the effect that the Board of Trade has jurisdiction in the matter, and power over the vestry, to approve of the mode of construction of tramways proposed by the companies, with regard to the materials intended to be used in the pavement of streets along which such tramways are laid. With this opinion before them, the vestry, at their meeting last week, decided that it was not advisable to take any proceedings in Chancery to obtain an injunction against the company. The result of these proceedings, therefore, seems to indicate that so far as the action of tramways is concerned, the powers of vestries are limited as to the pavement of streets.

SOUTHPORT WINTER GARDENS AND AQUARIUM.

IN an account of this admirable institution in the *Builder* of September 19th, 1874, the names of eleven persons or firms connected with its construction are given, and I have no doubt but that it was by the merest inadvertence that the writer omitted to make up a round dozen by mentioning that at the commencement of the work I had the honour of assisting in it in some small degree when I was consulted about it; and by a similar accidental omission, doubtless, the author of the description did not make up "a baker's dozen" (thirteen) by stating that one of the most important parts of the entire thing,—no less than the planning and providing of the machinery for keeping in motion the water in the aquarium, is due to Messrs. Leete, Edwards, & Norman, of 366, Euston-road, London. This firm has of late years given much attention to aquarium engineering, and they have, in a satisfactory manner, carried out work in the aquaria at the Crystal Palace, Vienna, Naples, and elsewhere. They are also in treaty for similar work in many other aquaria now projected or in contemplation. The portions, particularly stated, which Messrs. Leete, Edwards, & Norman executed at Southport, are the two steam-engines, with the pulleys and shafting

connected with them, the vulcanite air and water-pumps (Forbes & Edwards's patent), and portions of the vulcanite pipes.

The general plan adopted in the Southport aquarium consists of the following threefold arrangement:—

1. A circulatory system, in which the water is continuously pumped from a large dark reservoir into tanks containing the animals, these tanks having an aggregate capacity smaller than the reservoir. The water flows from tank to tank until, having reached the last, it falls into the reservoir, and is thus used without being changed, though Southport is on the sea. This plan is the best known one.

2. A circulatory system in which the water is continuously pumped from the dark reservoir into show tanks containing animals, only the water does not flow from tank to tank, but falls from each tank, possessing its own overflow, direct into the reservoir. This plan is not so effective as the first, but when as at Southport it is applied to comparatively small and shallow tanks, possessing a large aerating surface, its defects are not so much felt as if the tanks were larger and deeper.

N.B.—In addition to the lower reservoir there is at Southport what is termed a high-level reservoir, which, however, does not materially interfere with the general working and results.

3. A system whereby no water, but only air is pumped through the water from the air-pump before named, and conducted through a tube opening near the bottom of the water in the tanks. This is the least advantageous and most wasteful mode of imparting motion to the water, as I explained in my article in the *Builder* of July 25th last. This article has been since expanded into a pamphlet of twenty-four pages (with your permission), and it is sold in the Crystal Palace Aquarium, price 2d.

As these three plans are all at work in one building at Southport, means will be thereby afforded for easily testing their respective efficiencies, and provision has been made for converting, when needed, the entire mode of operation into the first and best one. This, I think, will ultimately be done, when more experience has been gained.

It will be remembered that in the *Builder* article of July 25th, I commented on the fact that properly aerated water can never become stale in aquaria, if to be "stale" means to be unfit for the respiration of animals which breathe it. Since then I have obtained some living whitebait, which are only the young of the common herring, and also some young pilchards, and both are now living, feeding, and growing in our Crystal Palace sea-water, which is sparkling transparent and colourless, though it has not been changed, nor yet even filtered, since it was obtained four years ago. The life of these little fish, and of all the herring tribe in aquaria, hangs on so very frail a thread, that it is snapped asunder by an inconceivably small disturbance of condition. Their permanent maintenance, therefore, affords a very delicate test of the efficiency of any aquarium. They are also kept in the Manchester Aquarium.

W. A. LLOYD.

NEW GAS WORKS AT DEWSBURY.

THE Corporation of Dewsbury having bought the rights and powers of the Dewsbury, Batley, and Heckmondwike Gas Company, are about to construct new works at a cost of about 50,000l.

The works, which are to be erected at Savile Town, will be placed on a plot of land about ten acres in extent. When the works have been extended to their utmost (at least so far as present contemplations go) the corporation will be able to manufacture three million feet of gas per diem. In connexion with the present works a retort-house, 220 ft. in length, and capable of producing one million feet of gas per day, will be built near the large tank; and on the oblong side of this, running parallel with it to the same length, a coal store, capable of containing 3,000 tons, will be formed. It is understood that the corporation is about to give instructions to their manager to advertise for tenders for the construction of the purifiers required in the works; for the building of sheds for the storage of oxide of iron; and for the erection of a large tar-well, capable of containing 1,000 tons of tar and ammoniacal liquor. Besides the gas-works proper, tenders will be required for the erection of offices for the weighmen and engineers, and workmen's houses (one being for the foreman of

the works, and three cottages), station meter-house, governor-house, and permanent smiths' shops, as well as for several store-rooms, boiler and engine houses. There are at present about 100 men—excavators, bricklayers, quarrymen, &c., on the job. Mr. George Biddle, the borough surveyor, is the architect for the buildings; Mr. A. D. Carter, is the draughtsman and assistant engineer; and Mr. Richard Broderick, late superintendent of the Dewsbury, Batley, and Heckmondwike Water Works extension, at Dunford-bridge, is the clerk of the works; and the whole is under the management, superintendence, and direction of Mr. Charles Arthur Craven, the manager of the Dewsbury and Batley Gas Works, and by whom the new venture has been designed.

HELP TO GOOD WORKMEN.

SIR,—A hint as to the method I have adopted with some of my men when asked by them for an extra 1d. or 1d. per hour may perchance be useful to employers of labour. Masters, as a rule, I believe, do not object to pay extra money where the man is worth it, and where they know it will tend to increase the home comforts of the man. What they do object to is to be helping in making the fortune of the adjoining public-house. If I consider either of my men worth an extra 1d. or 1d. an hour beyond the rest (and the men soon find that out themselves), I say to him about as follows:—"Well, Jim, I don't object to give you another 1d. on the condition that you continue to draw the same amount as now at the pay-table on Saturday, and the amount of the extra 1d. (say 56 hours, making 4s. 8d. per week) be placed by you in the Post-office Savings Bank." Jim brings me his bank-book every Monday morning to show that he has kept up his payment, our conditions mutually being that if he fails to pay in any one Saturday the next week he forfeits his claim to the extra wage of 1d. I find this system answers; not on one single occasion have I found a payment missed since I commenced it, now some six months ago. The consequence is some men have already 5l. or 6l. to their credit. C. E. R.

P.S.—The Post-office Savings Bank not taking odd money, the amount paid in is generally 5s.

OPENING OF NEW SCHOOLS AT GRIFFITHS TOWN, MONMOUTHSHIRE.

THESE schools were publicly opened on the 14th of September by a treat to the school children. The buildings stand upon an elevated site, facing the Monmouthshire Railway and Canal, and can be well seen from either of these places. They are a simple Gothic structure, with but little attempt at ornamentation. The buildings generally are of hard Pennant stone from Glen Forest and Abergavenny, with Bath-stone dressings, the timber-work of red pine, all internal work stained and varnished. The schools accommodate 90 boys, 90 girls, and 110 infants, allowing 9 superficial feet per child, and including master's house, boundary walls, and all necessary offices; cost, a fraction over 6l. per child, which, considering the difficulty of getting materials on site, is exceedingly low. The contract was taken, and has been well carried out, by Mr. William Jones, builder, Newport. Mr. E. A. Lansdowne was the architect.

DECORATION OF THE NOTTINGHAM MECHANICS' INSTITUTION.

RECENTLY the committee of the Nottingham Mechanics' Institution advertised for designs for the decoration of their large hall, at the same time offering prizes of 20l., 15l., and 10l. for the three best. Some twelve or fourteen firms responded to the advertisement from various parts of England, and after the designs had been critically examined by an official from Kensington Museum, the first premium was awarded to Mr. Crossley, decorator, of Newark, and his design was adopted, and has now been carried out by him. The room is a parallelogram, with circular ends, having fourteen circular-headed clearstory windows, and the same number on the ground-floor. The ceiling is divided into equal panels, converging to centres at each end. The style of decoration and colouring adopted is Italian Renaissance. The panels of the ceiling are of a pale blue, with a rich border of light vellum colour on a gold-coloured ground, with angle ornaments of a rich gold

colour on a warm red ground. The raised beams or styles are painted a lighter vellum, with ornaments in gold colour springing from a central boss of gold. Round the whole of the ceiling is a goliath ornament in neutral green, crimson, and gold, which has a pleasing and decided effect. Between this ornament and the wall cornice is a cove 9 ft. deep. This is divided into squares and oblong panels, with gold grounds, upon which are painted elaborate ornaments, with cherubs, vases, water-fowl, &c., life-size, in white cameo. The cornice below is picked out in vellum, crimson, and reds and gold, with a fringe of turquoise blue and gold colour. The wall beneath is of a green grey.

THE RECTORY NURSERY ESTATE, EAST DULWICH.

THE Rectory Nursery, in Crystal Palace-road, East Dulwich, comprising an area of nine acres in extent, and which has been celebrated for about half a century as one of the finest in the metropolis, is about to be broken up, and laid out for building purposes by its present owner and occupier, Mr. Weller. The whole of the valuable stock of plants, flowers, fruit, and other trees, are announced to be disposed of, after which the estate will be laid out, and the making of the new roads and sewers commenced, preparatory to building operations being proceeded with. Nothing but handsome villas and high-class mansions will be allowed to be erected on the estate, and the several roads will be laid out in harmony with this intention. One of the intended roads will be called "Holly Grove," extending from Crystal Palace-road to Lordship-lane, and planted on each side with trees. Another road is to be called "Rectory-road," with villas, the buildings being confined to one side of the road only, the land on the opposite side being laid out with shrubs, plants, and flowers. The preliminary work of laying out the roads and constructing the sewers will be proceeded with during the ensuing autumn.

THE SANITARY STATE OF NEWQUAY, CORNWALL.

THERE has been one distinguished victim to the pest which has this year made Newquay a place to be avoided. Among the visitors who contracted typhoid fever while there, was Mr. Stephen Freemantle, brother of Lord Cottesloe. He has now died, and his death is causing widespread regret among university men. The sanitary authorities of Newquay have a charming watering-place to look at—there is scarcely any more attractive on the whole Cornish coast; but they have no drainage or sanitary arrangements worthy the name. Again and again have they been warned of their condition; but the warnings have been unheeded, and this summer there has been quite an epidemic of typhoid fever. Three years since Mr. Robert Morgan was sent down to make an official inspection. He recommended that a scheme should be prepared showing the lines of main sewers throughout the district, with an intercepting tank, and an outfall carried to low-water mark of ordinary spring tides, and that as far as possible the use of cesspits should be abolished.

THE CHURCH OF ST. DIONIS BACKCHURCH, FENCHURCH STREET.

THE Ecclesiastical Commissioners have, under the power of the City Improvement Act, decreed the removal of the church of St. Dionis Backchurch, Fenchurch-street. This church, which was originally built in 1298, was burned down in the Great Fire of 1666, and rebuilt, from designs furnished by Sir Christopher Wren, in the year 1681. It contains many objects of archaeological interest; amongst others, a monument, the costumes painted in colours, erected to the memory of Sir Arthur Ingham; and another to the memory of Sir Thomas Rawlinson, one of our greatest biblioplists and antiquaries, at whose death the sale of his works occupied the whole of twenty-five weeks. In the vestry of the church are preserved four large two-handled brass syringes, which were at one time the only sort of machines used in London for the extinction of fires. The living will be affiliated to Allhallows, Lombard-street, to which church the mural tablets, monuments, &c., will be removed. The bodies deposited within the walls will be removed to the City of London Cemetery, Ilford.

SHEFFIELD SAW-MAKERS.

SIR,—I have read a paragraph in the *Builder* entitled "A Hint to Sheffield Saw-makers." It warns us that our old enemy, Harry Diston, of America, as he is styled, is about to take the bulk of the saw trade away from Sheffield.

It would appear that the secret of success is that Mr. Diston does not employ any Union men, and that they are so steady that they work from Monday morning to Saturday afternoon, and from year's end to year's end. If that is the way they work in America, I for one have no desire to go there; because they cease to become men and are mere machines. We are not much afraid of all the trade going to America.

He tries to make it appear that we are driving away the trade from the town, because we demand such high wages. The fact is we have a list of prices which we have worked for the last thirty years, and have never asked for an advance over that list, but have often worked considerably under it.

We are given to understand that American-made saws are all made by machine. Now it is a fact that, at the present time, all the busiest firms in Sheffield are those who manufacture hand-made saws. I have more to say, but, I think, this will suffice at present.

WILLIAM ROBERTS,
Secretary of the Sheffield Saw-makers' Union.

SANITARY INSPECTORS.

I was much interested by the able article in the *Builder*, in reply to the query "who were fit and proper persons to be appointed Sanitary Inspectors?" What chance, however, is there for any professional man, when men are appointed as follows?—

	Area.	Pop. 1871.	Salary.
Bodmin Union	88,981	19,776	100l.
Truro	92,211	41,722	100l.
St. Austell	57,446	31,194	100l.
St. Columb	78,693	16,799	80l.

A horse is to be kept, and the inspector required to devote the whole of his time to the duties of his office! As a natural consequence, none but retired masons, bankrupt tradesmen, or such like, who have failed in business, are put in here by the instrumentality of friends, or because they will do it at a mere nominal figure, which pleases a Board of Guardians better than any other qualification as a rule. It clearly proves, as far as I can see, that the carrying out of the Public Health Act was placed in the wrong quarter to get it done intelligently and effectively.

WILL any correspondent of the *Builder* kindly inform me if there is any use for decomposed porphyry, and if it is of a salable nature? I have several thousand tons on my estate.

PORPHYRY.

DAMPNESS IN STRONG ROOMS.

SIR,—I shall feel greatly obliged if any kind reader of your valuable publication will tell me how to cure a strong room of dampness. The room is about 10 ft. by 12 ft., and 9 ft. high; the walls are 2 ft. 6 in. thick, formed of 8 in. slabs of stone, bricked up on either side with mortar of shell-lime and river sand. The roof is vaulted; the floor asphalted; the door of iron; and there is a single ventilating tube always open to the outer air, 2 in. in diameter. The room has been finished now fifteen months. It is attached to a jeweller's premises, and silver is invariably tarnished if looked up for a few hours. As every outlet renders the room more easily pregnable, it is important to have as few as possible. The temperature varies from 84° to 90°.

Madras.

SLAUGHTER-HOUSES.

SIR,—In the notice of the Slaughterhouses Act, in last week's *Builder*, the writer says, "By section 3 the sanction of the local authority (i.e., the Metropolitan Board of Works) is made a necessary preliminary to the renewal of any licence." I venture to think that you will find that that section only applies to the establishment of "new" of the offensive businesses named, and not to the renewal of licences. The meaning of the establishment of a business is explained in the 13th section. The law respecting the renewal of the present slaughterhouse licence is unaltered by the Act, and no sanction was needed, if there are to be such businesses in London at all, when the 55th and 56th sections of the old Building Act were taken out of the way, as they are by section 14. All the sanitary machinery of Vestries and District Boards remains untouched in respect to these renewals.

But with regard to the establishment of new businesses, the sanction of the Metropolitan Board of Works is necessary, and that having been given, the justices are to grant the first licence "as a matter of course." That arrangement appears to be made necessary in order to prevent conflicting jurisdictions; but the licence once granted, there appears an awkwardness in allowing the Metropolitan Board of Works, without a sanitary staff, as well as the Vestries and District Boards with all their san-

tary appliances, to show cause against the renewal of these licences for businesses legally established anew, as is provided by the 10th section. I see no middle, beyond this, likely to arise.

CHAS. LARSEN, Clerk to the Vestry of Chelsea.

HOARWITHY BRIDGE COMPETITION.

SIR,—I can endorse all your correspondent, "Not the Man of Ross," said last week. I also competed for this bridge, and my design was based upon information contained in a page of note-paper. By the end of this month the directors will have had five months to consider, and although I have written to Messrs. Minett & Co., to whom the designs were to be sent, I have been vouchsafed no reply.

Your correspondent is even better off than myself, do not know who the directors are. I should think your correspondent's ideas as to the law are right.

Perhaps some other of your readers have competed, if so, they might give us their experience.

WUX WUX.

THE ROCHESTER COMPETITION.

The following letter has been addressed to the town clerk of Rochester, and should have the attention of the corporation:—

CASTLE GARDEN ESTATE, ROCHESTER.

SIR,—I have received the conditions as to competitive designs for these houses, and in reply may I ask you attention to the following statement, and that it may be laid before the committee (if any) having charge of the matter?

Had you instructed an architect to prepare the designs advertised for, his charges would have been somewhat as follows:—

1. Detailed drawings, specifications, &c., for gates, railing, &c. to park, work costing, say 300l. as a minimum, 4 per cent.	£12 0 0
2. General drawings, and outline specification, &c., for first house on plot 1A, to cost 1,000l., 2 per cent.	20 0 0
3. Ditto ditto for second house, presuming it to be somewhat similar, 1 per cent.	10 0 0
4. Ditto ditto for first house of terrace on plot 1B, to cost 1,000l., 2 per cent.	20 0 0
5. Ditto ditto for the other eight houses, to cost, together 8,000l., presuming they are similar to the first as site permits, 1 per cent.	80 0 0
6. Ditto ditto for house on plot 2, to cost 500l., 2 per cent.	10 0 0
7. Ditto ditto for first house on plot 3, to cost 800l., 3 per cent.	24 0 0
8. Ditto ditto for other three houses, to cost together 1,500l., presuming they are similar, 1½ per cent.	22 10 0
	£194 10 0

This 194l. 10s. is by no means a maximum for the work required, a further per centage might probably also be charged by reason of the works not being intended to be carried out under the architect's superintendence. Many men would on that ground decline accepting the retainer.

With these facts before you it is unnecessary for me to point out more particularly the gross inadequacy of sums offered for the same work (300l., 200l., and 100l. Total, 600l.—with the possibility of another 100l. making in all 700l.), especially as it includes the privilege of selecting from several sets of designs, when nearly 200 would have been paid for one set alone.

It amounts to but ½ per cent. on the 14,000l. to be expended, while the work is of such a nature as to necessitate a distinct and different set of drawings, &c., for each of the seventeen erections.

Upon these grounds, therefore, may I ask your reconsideration and amendment of the published conditions? I feel sure you cannot be exactly aware of the labour required in complying with them.

R. L. P.

FROM MELBOURNE.

THE fourth annual exhibition of the works of pupils in the various schools of design associated with the Technological Commission was opened on 1st of July, in the annexe attached to the Public Library. There are in existence twenty-two schools of design, and of these nineteen are represented. The following are the names of the schools and the number of pupils attending each at the quarter ending December, 1873:—Sont Melbourne (Emerald-hill), 150; East Collingwood, 100; Hotham, 92; Richmond, 62; Sont Richmond, 78; Fitzroy, 81; Prahran, 48; Kilda, 35; Girls' School, St. Kilda, 41; Ballarat City, 190; Ballarat East, 92; Sebastopol, 38; Sandhurst, 50; Creswick, 34; Geelong, 38; Girls' School, Geelong, 46; Clunes, 73; Preston, 61; Brunswick, 28. The exhibits are equal in number, if not superior in point of ability, to those sent in at last year's exhibition. They include a great diversity of subjects.

The increase in the number of the members of the various trade societies of the colony has been so great that the committee of the Trades' Hall have felt it incumbent on them to erect more commodious premises. On the 26th of January last, Mr. John Cairn, M.L.A., laid the foundation stone, and on the 26th June the main portion of the building was thrown open for public inspection. The new Trades' Hall is situated at the corner of Lygon and Victoria streets, Carlton, the principal entrance being in the latter street. It has a blue-stone foundation, with the upper

structure of brick, which when furnished will be cemented. The building can claim no particular style of architecture, the limited funds at the disposal of the committee precluding them from anything on a costly scale. The erection of the whole building when finished will cost about 9,000*l.*, and upon that part completed 3,000*l.* have now been expended.

The usual half-yearly meeting of the Rockingham Jerrah Timber Company (Limited) was held recently at the offices of Messrs. James Service & Co., Melbourne. The reports from Western Australia were of the most encouraging kind, orders for timber being offered from nearly all parts of the world. The Cape of Good Hope, Mauritius, New Zealand, South Australia, and Western Australia are all large consumers of the jarrah, and its peculiar character ranks it in the first class as a timber for railway or sea works. The mill works were reported to be in excellent working order, and a new locomotive engine, made for the company at Fulton & Co.'s foundry, in Melbourne, had been shipped to Western Australia. The company will now have two locomotives and about thirty timber wagons. The company have already spent about 30,000*l.*, and expect to earn sufficient during the next year to plate the whole of their wooden tramway line.

MONUMENTAL.

Monument for Paisley to Alexander Wilson, the Poet and Ornithologist.—The heritors of the Abbey Parish of Paisley have met in the Abbey Church to consider a request by a number of subscribers for a monument to perpetuate the memory of Alexander Wilson, the poet and American ornithologist, for permission to erect a memorial at the corner of the recently-improved burying-ground in Old Smithills-street. The sanction of the heritors was given. The monument, which will be 17 ft. in height, will consist of a bronze statue of the poet on a granite pedestal. It is the work of Mr. T. G. Mossman, Glasgow.

A Statue for Derby of Mr. Bass.—The local public are informed by the *Derby Advertiser* that a project is on foot for commemorating in some suitable manner the services rendered to the borough for many years by their senior M.P., Mr. Bass. The proposal, says our authority, has gradually assumed a definite form. "The most fitting shape the memorial could take, because the most public one, would be a statue; and if a site could be found for it in front of the Free Library and Museum, which Mr. Bass's generosity will have enabled the town to possess, that would be the most suitable place for it. We understand that the Mayor intends very shortly to convene a meeting to consider the matter, and the proposal will then be made to pay for the statue by public subscription," restricted to one guinea.

New Monument at Rome.—A monument bearing the names of the men killed in the fighting at the taking of Rome on the 20th of September, 1870, has been unveiled. The Minister of the Interior and all the civil and military authorities attended the ceremony, and the Mayor of Rome delivered a speech, which was received with loud cheers of "Long live the King." A large crowd and a great number of national guards were present.

CHURCH-BUILDING NEWS.

Radstock.—A new church at Writhlington (Radstock) has been opened for Divine service. The building, which is in the Late Decorated style, and will accommodate one hundred persons, has been constructed on the site of the old parish church of St. Mary Magdalene, by Messrs. J. & F. Brown, of Frome, builders, the amount of the contract being 1,800*l.* The walls of the building are of local white limestone, with Bath-stone dressings, and at the west end there is what can best be described as a semi-tower, which is built into the wall, and on the top of which is a turret containing two bells. On the south side is a porch and the only public entrance to the church. The eastern window is a stained one, by Horwood, of Frome; the remaining windows, with one or two exceptions, coloured ones from the old building,—being of cathedral glass. In the interior, the eastern wall is cased with Bath-stone, in which are three untrefol panels with carved spandrels sunk to form a reredos. In the centre panel is a marble false cross, and Tudor roses in marble occupy the side panels. The roof is an open one, the

frame being of stained deal, and the seats in the building are of similar material.

High Wycombe.—The parish church is to be restored. The edifice, in the opinion of Mr. Street, R.A., who has reported upon it, is the finest, as well as the largest, in Buckinghamshire. The present building was erected in the reign of Edward I., upon the ruins of an older church, although the tower, which in its dimensions reminds one of the campanile of a large cathedral, was not put up till 1522. So much as 10,290*l.* will, according to the architect's estimate, be required for the contemplated scheme of restoration, which does not as yet include the dilapidated parapet and pinnacles of the tower. Of this sum 6,000*l.* have been already contributed or promised. Lord Carington, the patron of the living, gave 1,000*l.* to the fund.

Pirton.—An effort is being made to obtain subscriptions for the restoration of the parish church of Pirton. Plans have been prepared by Mr. J. L. Pearson, who has furnished a report setting forth the absolute necessity of something being done to preserve the building from decay. One portion, indeed, he reports in a dangerous condition.

Oldcomb.—A meeting of the churchwardens and others interested in the restoration of the parish church has been held, at which a proposal was submitted from the incumbent, the Rev. G. Bale, to the effect that the church be restored according to plans by Mr. A. W. Blomfield, which involve the entire rebuilding of the chancel and nave, the lengthening of the latter, and the building of two transepts and an organ-chamber, at a cost of 2,130*l.*, the cost of which (beyond subscriptions of societies and the public) he undertook the responsibility of providing. It was unanimously resolved that the offer be accepted with gratitude, embracing as it does a restoration which has long been needed.

Fryestrop.—The reconstruction of Fryestrop church has just been completed upon the original foundations, the old walls upon the north and east sides being allowed to remain. A new vestry and bell-cot have been added, the former occupying the corner found by the nave and north transept, and the latter the apex of the western gable wall. A plan not very uncommon in old Pembrokeshire churches, and producing a very good effect, has been adopted with regard to the floor which is made to rise with a gradual slope from West to East. The internal fittings, floors, windows, doors, and roofs have been designed in a simple early style, by the architect, Mr. E. H. Lingen Barker, so as to suit the locality and materials, no clue to the original design being obtainable. The floor of the chancel has been laid with encaustic tiles by Mr. H. C. Webb, of Worcester, while the passages in the nave and transept consist of Peake's terra-metallic tiles, with a few glazed ones intermixed. The reredos is a rather elaborate design in Bath stone, and glazed figured tiles, from Godwin's manufactory, at Lurgaville. The wrought-iron and brass work have been supplied by two Birmingham firms, Messrs. Thomason & Co. and the Messrs. F. T. & A. Barratt. The roofs are all open timbered, plastered between the rafters, covered with Bangor slates, and crested with Peake's buff ornamented ridge tiles, with crosses above the gable ends in the same material and color, from Mr. J. K. Cooper's Works at Maidenhead, there being no stone copings adopted. The only features of antiquarian interest have been carefully preserved. These consisted of a hagniscope, two square-headed recesses in the east wall of the chancel, and a Norman font in excellent preservation. The internal dimensions have not been altered, and are as follow: nave, 25 ft. by 14 ft.; transept, 12 ft. by 13 ft. 8 in.; and chancel, 19 ft. 4 in. by 13 ft. 6 in.; from which it will be seen the various parts were in good proportion. The accommodation is for 120 (exclusive of extra space for chairs), instead of 42 as heretofore. The contractors were Messrs. T. & J. Lloyd, of Haverfordwest.

Hanley.—St. Luke's Church, Hanley, after having been closed for cleaning and enrichment, has been re-opened for divine service. The alterations made in the appointments of the church are extensive. A new organ, the cost of which, several hundreds of pounds, has been defrayed by Mr. Henstock, of High-street, has been erected by Mr. Stringer, of Hanley. A chancel screen, surmounted by a cross, has been presented by the Rev. J. Hilton, curate in charge. A new organ-chamber has been erected, and space provided for the robing of the clergy and choristers. The walls have been painted, and they are now decorated with texts of

Scripture. The ceiling of the chancel has been painted blue, with gold stars, and the woodwork throughout has been cleaned and varnished. Mr. R. Hammersley was the contractor for the additional building and the choir-stalls, and Mr. J. Scarratt for the painting and decoration. In addition to the organ and other offerings, there have been spent on the church about 300*l.*

Southampton.—The addition of an aisle to the north of St. Matthew's Church, left until the needs of the parish warranted such an enlargement or rather completion of the edifice,—for it is but part of the original design, and finishes the structure as a whole,—is now in progress under the hands of Mr. H. I. Sanders, builder. The estimated cost of the undertaking is 800*l.*, nearly half of which is already subscribed, and the additional 200 seats thus provided will be found very convenient in a church whereat already large congregations attend. The vicar, the Rev. J. Bullen, it may be stated, had no idea of completing the church so soon after its erection until some unknown friend started the movement by a donation of 200*l.*; but now it is hoped that in two or three weeks the roof of the new portion will be on, and the consecration take place some time early in November.

Bishop Burton.—A new reredos has just been added to the church of Bishop Burton, from designs by Messrs. Clayton & Bell, of London, and constructed of Messrs. Powell & Son's vitreous material, the whole being wrought together in a mosaic of small pieces with cement. The structure, from the nature of its composition, is considered imperishable. The reredos forms part of the restoration of the church, the cost of which is provided by the late Mr. F. Watt.

Northampton.—At a meeting of the St. Giles's parishioners it was proposed that the report of Mr. Law presented by the committee be adopted, and that they be requested to appeal to the parishioners and the public for subscriptions to repair the chancel and the North and South chapels of the church, and to provide the necessary fittings for the chancel at an estimated cost of about 2,500*l.* Arrangements were then made to obtain subscriptions and carry out the work. It was resolved that subscribers should be requested to pay the moiety of the amount they intended to give by the ensuing Christmas and the remaining half by next Midsummer, and that the work should not be started before a certain proportion of the amount required had been received. Mr. Law, however, was desired to procure tenders at once. Several gentlemen put down their names as subscribers, the total amount subscribed on the spot amounting to 315*l.*

DISSENTING CHURCH-BUILDING NEWS.

Meadow Hall (Sheffield).—A new Primitive Methodist chapel, at Meadow Hall, has been opened. The chapel, which is situated in Bard-road, is a plain building. The material used in its construction is a rough local stone. The basement story, consisting of a schoolroom, rises above the level of the street, and the chapel is approached by a flight of steps from either side of the elevation. The dimensions of both rooms are 46 ft. by 37 ft., the chapel being 21 ft. in height, and the school-room 12 ft. The chapel is capable of accommodating about 250 persons, and accommodation is provided in the schoolroom for about 300 children. The total cost of the building and furniture will be about 1,000*l.*

Earl's Barton.—A new Baptist chapel has been opened here for divine service. The building is of Gothic architecture, and is erected on a site facing the parish church. The front is constructed of Duston stone, with Bath stone dressings. The side walls are of local stone, and the back is of brick. There are side and end galleries; the side being arranged for the children of the Sunday-school, and the end for the choir and senior scholars. The front of the galleries is open woodwork, and it is intended to add to the effect of this by putting behind drapery of scarlet. The roof is of the open kind. The walls are at present in an unfinished state. The seats are of modern description, and for the most part are of pitch pine. The rostrum is constructed of pitch pine, and is ascended by two flights of steps, the balustrades of which are executed in wrought iron. The evening lighting is effected by ten pillar duplex lamps, the standards of which were made by Mr. Mather, of Wellingborough. A minister's vestry adjoins the chapel, and is approached by a convenient side entrance. The chapel is heated by

the hot-air process, and the heating chamber is erected underneath the vestry. The whole has been effected at a cost of something over 1,300*l.*, and towards that sum upwards of 500*l.* has been contributed. The architect is Mr. Edward Sharman, of Wellingborough, and the contractors are Messrs. Burditt, of Wellingborough, and Messrs. Knight & Smooc, of Barton.

Clapham.—A new chapel belonging to the Wesleyan Methodists of Clapham has been opened for divine service. It is the only edifice connected with this religious body in the district, and has been erected to supply a manifest want which has been felt for some time by those of the inhabitants who belonged to this denomination. To meet the deficiency, a site in the High-street was purchased, and pending the construction of the chapel, a temporary place of worship was opened in 1872, which had a congregation of about 120 persons. A school-room was finished in September, 1873, and used for services, and the attendance increased to nearly 300. The chapel itself was built by Mr. James Weir, architect. It is of Gothic architecture, with a spire 130 ft. in height, and is composed of Kentish-rag stone. At its extremities are rose-windows, filled in with painted glass. The chapel is capable of holding 1,000 persons. It will cost 10,000*l.*, part of which will be defrayed by the building fund of the denomination, and the rest by subscription. About 3,500*l.* remain to be raised.

Leeds.—The new Congregational church at Heron Court has been opened for divine service. The original plans have been as closely adhered to as possible. The church is 60 ft. long, 37 ft. wide, and 32 ft. high from floor to ceiling. The seats are all cushioned alike. Gas is laid on, and the chapel is lighted with star lights from the ceiling, and brackets along the sides. Above the rostrum, facing the entrance, are the organ-gallery and choir seats. The organ is being renovated and extended by a local gentleman. The church will be heated by means of hot-air pipes, which are incomplete. They are being supplied by the Albion Iron Foundry Company. Only a portion of Heron Court has been utilised for the purposes of the church; there yet remains a large extent of the work originally laid down by the promoters to be carried out, but when completed the building will present church, schools, and residence all combined, surrounded by extensive grounds. Mr. W. T. Foulkes, of Birmingham, is the architect, and Messrs. T. & H. Brown, of Rugeley, are the builders engaged.

Nottingham (Lincoln).—The foundation-stones of the New Independent Chapel in Newark have been laid. The old chapel, which was considered inadequate for the accommodation of the congregation, has been converted into school-rooms, in which 600 children are accommodated. The front of the new edifice will be faced with Yorkshire parpinto and Bath stone dressings. The new building will be in the Transition Early English character, comprising central gable, perforated parapet, and five-light traceried windows with single-light traceried windows beneath, divided by pinnaced buttresses, &c. Over the wing to the right will be the tower spire, rising to a height of 120 ft. The interior is divided into a nave and two side aisles, formed by pillars and moulded arches. The ceiling will be formed into parallel apartments by molar ribs rising from carved corbels. The cost of the new building is estimated at between 7,000*l.* and 8,000*l.*, the contractor being Mr. Thomas Loveles, and the architects Messrs. Bellamy & Hardy, Lincoln.

Stafford.—The Baptist chapel, having been closed during the past three months for extensive alterations and improvements, has now been re-opened for divine worship. The building, which was, perhaps, as unsightly, uncomfortable, and barn-like in appearance as it could well be, has, under the hands of Mr. Chalmers, architect, and Mr. Arthur Gee, builder, &c., been completely transformed. A gallery has been erected at the entrance, underneath which are two large classrooms; the old rostrum has been removed, and a modern platform erected, at the back of which is a new baptistery, 9 ft. long, laid with white Minton tiles. A portion of the chapel has been repewed, and improvements have been made in the lighting, warming, and ventilation of the building. The open roof has been ceiled in, and the walls and ceiling have been decorated. The whole of the decorative work has been done gratis, and is the gift of the builder, Mr. Arthur Gee.

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Ormskirk.—Mr. Roddis, of Birmingham, has just completed a sculptured reredos for the Benedictine Church of St. Anne, Ormskirk. The design consists of five canopied niches, carved, containing statues of St. Scholastica, St. Gregory the Great, St. Benedict, St. Augustine, and St. Placidus, each statue bearing its own emblematic attribute. The materials used are Caen stone, Sicilian marble, and clouded alabaster. The flat surfaces of the latter are engraved in diaper designs, and charged with pale gold. The whole has been executed from the designs of Mr. Edmund Kirby, architect, Liverpool.

Eston.—A school-chapel has been erected and opened for the Roman Catholic portion of the inhabitants of South Bank, near Eston, who, until recently, had to use the drill-shed of the local volunteers. The new school-chapel occupies a corner site on the New Middlebrough-road, South-bank. The internal dimensions are 70 ft. by 27 ft., and 37 ft. to the bridge. The chancel is 20 ft. by 18 ft., and 32 ft. high; sacristy, 13 ft. by 11 ft.; and class-room, 15 ft. by 17 ft. The whole of the main roof is open timber, pitch-pine, stained and varnished, plastered between the spars, and coloured blue. The chancel-roof is of pitch-pine also, groined with diagonal boards, and varnished. The chancel is lighted by four lancet windows, filled in with quarry glass, diamond pattern. Externally, the building is faced with red-press bricks, having buttresses and stone dressings, with the bell turret in the east gable, and a niche for a statue. Internally, the nave is divided into two bays, with seven recessed arches on each side. The whole of the seats are reversible, and may be used as desks, and have been supplied by Mr. Redmayne, of Sheffield. The altar, which is of pitch-pine, was built by Mr. Sexton, of Middlebrough. The panels are filled in with chromos, representing the Crucifixion, and the Martyrdom of St. Peter, St. John, and St. Mark. The chancel will be separated from the nave during school by a rood screen having movable shutters. Accommodation is provided for 450 persons. The cost of the building, exclusive of furniture, is a little over 1,500*l.* The whole of the works have been carried out from designs and under the superintendence of Mr. Carr, architect, Middlebrough.

Middlesbrough.—Amongst the largest and most complete in every respect of the schools here (partly now used as a chapel) are the St. Mary's (R.C.) Schools, which have just been erected in the heart of the town, and opened for use. The site is that of the old windmill, which stood immediately to the rear of the old St. Mary's Schools. The mill was demolished, and on its site now stand the buildings of the new schools. The building consists of three stories. On the ground-floor is the girls' school, the dimensions of which are 81 ft. by 26 ft., and 14 ft. 6 in. high. There is an adjoining class-room, 15 ft. by 18 ft., with teachers' room attached. The first-floor is the boys' school, of similar dimensions and equipments to that of the girls. The accommodation in each room is for 306 scholars. Above the boys' school, and occupying the third story, are rooms specially intended for the accommodation of the Middlebrough Catholic Association. Five rooms are appropriated for the use of this club, namely, a library, reading-room, amusement-room, and refreshment-room. In the angle of the building there is a tower about 100 ft. in height, in which is the staircase, by means of which access is gained to the upper schools and rooms. The building is erected principally of red brick, in the Early Gothic style of architecture. The total cost of the erection of the premises, exclusive of the furnishing, will be about 2,000*l.* It is intended to use the girls' school, on the same floor, in connexion with the older schools, as a temporary chapel during the time that the proposed adjacent new Catholic church is in course of erection.

Havant.—A new church, to be dedicated to St. Joseph, is in the course of construction at the west end of the town. It consists of a nave and aisles 56 ft. 6 in. in length, the width of the nave and aisles being 18 ft. and 9 ft. respectively, and a chancel 18 ft. 8 in. in length by 17 ft. 6 in. wide. The presbytery is also being erected at the north-east end of the chancel. The walls of both church and presbytery are of flint with stone dressings. The high altar for the church is being executed by Messrs. Farmer & Brinley, of Westminster-bridge-road, and represents

incidents in the life of St. Joseph, carved in stone, with marble pillars, the tabernacle being in alabaster. Mr. Stallard is the builder, and Mr. Farmer clerk of the works.

SCHOOL BUILDING NEWS.

Widnesfield.—About the beginning of last year the Education Department sent to Widnesfield a notice showing the deficiency of school accommodation in that parish, and stating that unless some steps were taken to provide for the deficiency, a School Board would have to be formed. The deficiency was shown to be such that a school for 170 children was required at Mosely Hole, one for 170 children at Wednesfield and New Cross, and one for 140 children at Wood End. The Rev. W. Stephens (the vicar) and various of his friends, being desirous of avoiding the necessity for the formation of a School Board in the parish, they have undertaken to build the three schools required. The memorial stone of the school at Wood End was laid by the Countess of Dartmouth. It is to form a branch of the Wednesfield School, and the proposal is, that it shall be kept for young children and infants, the older pupils attending the schools at Wednesfield. The accommodation will be as required, namely, for 140 children; and, towards the cost, grants have been promised by the Education Department, the National Society and the Diocesan Society, and donations have been promised. The land upon which the schools will be built is the gift of the Duke of Sutherland. The erection will be by Mr. Hollason, of Wolverhampton, according to the plans of Mr. John Bate, jun., of Wednesfield.

Wimborne.—A set of schools for boys, girls, and infants has been opened near the Wimborne Railway Station, in order to meet the requirements of the Government Inspector to provide additional accommodation for the children in the parish. Among other speakers at the meeting was Sir Bartle Frere. The schools will contain nearly 400 children, and have been built by means of voluntary subscriptions, as a School Board was not thought advisable in the parish.

Norbury, near Bishop's Castle.—The school in this village, built by the late Mrs. Scott, of Stourbridge, has been formally opened. The school is built of Norbury and Bath stone, on the plain west of the Stretton Hills, where it is conspicuous for a long distance. It is not the first new school built by the same family in Shropshire, a school of almost equal pretensions having been previously built by Mr. J. C. Addicks, Scott at Rathingshope.

Miscellaneous.

The Sanitary Condition of Lostwithiel.

A report on the sanitary condition of Lostwithiel has been presented to the Rural Sanitary Authority of the Bodmin Union by Mr. T. Mudge, medical officer of health. In this report he says:—"Our inspection includes Lostwithiel proper and the portion of the town in the parishes of Lanlivery and St. Winnow. We find in both the latter no drainage, foul offensive deposits of black filth near and about the houses, an open leat receiving the contents of how drains, privies, slaughter-houses, and other offensive matters, and, in fact, everything that ought not to be in a sanitary view. In Weale Town there are twenty-three houses without a closet or privy of any description. Many of the houses having gardens, and a supply of earth being so easily obtained, earth-closets will prove to be of the greatest advantage. The water supply is poor, the spring where any pure water is to be had being a considerable distance from the houses, and the stream very small. River water is used for some purposes. . . . It is easy to account for the great mortality that has existed here from measles, scarlet fever, small-pox, and other zymotic diseases. By the adoption of improvements planned by you, inspector a great saving of human lives may be effected, and a large amount of suffering and poverty also prevented."

The Sewerage of Lincoln.—Notwithstanding the strong opinion expressed by several members of the Town Council that Lincoln is one of the healthiest cities in the kingdom, we have to record the fact that fever is at the present time rife amongst the inhabitants.

Lead in Aërated Waters.—Dr. Milne thus writes to the *Glasgow News*:—"During the present week I have completed the examination of seven other samples of aërated waters obtained in Glasgow, the result being that lead was found in all of them. The following are the amounts found:—A sample of lemonade manufactured in Glasgow gave '2 grain per gallon; a sample of lemonade (no label on bottle, gave '05 grain per gallon; another sample of lemonade (no label), gave '4 grain per gallon; a sample of gingerade (no label), gave nearly '1 grain per gallon; a sample of soda-water, manufactured by a well-known Glasgow firm, gave no less than '6 grain, and a sample of lemonade from the same firm gave '05 grain per gallon; lastly, a sample of soda-water, also manufactured in Glasgow, gave rather over '05 grain per gallon. While the use of some of the waters mentioned above ought certainly to be condemned, that of one or two of the others is, perhaps, open to less objection. It is well known, however, that in the peculiar condition of the system known to toxicologists as idiosyncrasy an amount of lead which, under ordinary circumstances would be without effect, may produce marked symptoms of poisoning. There is, I think, no doubt that, as regards some of the samples referred to, the contamination occurs during the manufacture; and I quite agree with a correspondent who says "that there is no reason why aërated waters should not be manufactured entirely free from lead," a suggestion which I commend to the notice of the makers of these beverages."

Water-supply, Galashiels.—Two rival companies are proposing to supply Galashiels with water. One of them, says the weekly *Scotsman*, is, we believe, the same company that proposed to supply water to Edinburgh from Manor, and has Mr. Stewart for engineer. This company proposes to bring water to Galashiels from Lugate; but the exact terms have not as yet been made public. A proposal from another source was issued on Friday week, in which it is contemplated to bring water from Caddon, at the estimated cost of £5,240*l.*, exclusive of compensation for the abstraction of the water and for land. This is to supply forty gallons per head per day to 20,000 inhabitants. The proposed clear-water basin is to hold 3,000,000 gallons, and the town cistern 300,000 gallons. The proposal is, to draw the water from a stream at a point in the neighbourhood of Windydoors, and to convey it along the slopes of the Caddon and Meigle hills to the distributing reservoirs situated above the Windyknowe-road on the 600 ft. contour Ordnance survey. The quality of the water is stated to be unexceptionable, and to be derived from a gathering area of eight square miles of almost wholly uncultivated land. The length of pipe-track is 64 miles. Mr. Bell is engineer for this scheme.

Proposed New Public Hall for Tonbridge. The town of Tonbridge has been *en fete*, on the occasion of the laying of the foundation-stone of the new Public-hall of the Tonbridge Public Hall Company, on a suitable site, at the upper end of High-street. The capital of the company is £10,000*l.*, and the estimated cost of the building is £9,093*l.* The building, which will be erected from plans prepared by Messrs. Cattermole & Wade, architects, of Ipswich, will be in the Gothic style of architecture of the Decorated period. The building will have a frontage of 61 ft., and at the upper end there will be a tower 74 ft. in height, with an aperture for clock, and at the top of the tower will be an iron cresting. The great hall will be in the rear of shops, and 24 ft. from the High-street, so that the noise arising from traffic, &c., will be shut out; it will be 69 ft. by 39 ft. 6 in. wide, with platform, under a eaves, 20 ft. 8 in. by 10 ft. 3 in., and, taking the gallery into consideration, it is computed that the hall will accommodate 700 persons. The hall will be lighted on either side by five windows, 8 ft. 6 in. from the ground; there will be no sun-lights. The heating will be by means of a hot-air apparatus. The builder is Mr. Samuel Woods, Weybridge; Mr. N. E. Trevena, clerk of the works.

A Memorial Church.—The foundation-stone of the new church about to be erected as memorial of the Rev. George Fisk, late vicar of Liverpool, was laid last week by Lady Emily Foley. The edifice will accommodate 800 persons, the cost being estimated at between 6,000*l.* and 7,000*l.* It is in Gothic style, from the designs of Mr. Barry, of Liverpool.

Lamp-Lighting Extraordinary.—Some engineers in Baden have contrived an ingenious piece of mechanism, which has already been adopted in some of the public buildings and streets in Heidelberg. The object, says the *Globe*, is to provide for the simultaneous lighting of all the gaslights of the town. This has been done both in Paris and with us at the Albert Hall, by the use of an electric wire; but the German engineers have invented a method more simple and durable. Their apparatus can be affixed equally to all gas-jets, and it is made to act, not by any special mechanism, but simply by the increased pressure of the gas, which is always laid on from the gasometer when the lamps should be lighted. The one act of turning on the gas at the main ignites it at all the burners fitted with the new apparatus. When the pressure is diminished at the main the gas can either be totally extinguished or let down to a thread. It is chiefly in the lighting of the streets of a town that the invention will be of practical use. Directly the gas is turned on, the whole city will be simultaneously illuminated, and when in the early morning the pressure is reduced the light may be totally extinguished or gradually diminished. The pipes must be better laid than they are in London!

Kill 'em Alive!—A receipt for the destruction of insects, which, if it be one-half as efficacious as it is stated to be, will prove invaluable, is published by the *Journal of Chemistry*. Hot alum-water is the suggestion as an insecticide. It will destroy red and black ants, cockroaches, spiders, chintz bugs, and all the crawling pests which infest our houses. "Take two pounds of alum and dissolve it into three or four quarts of boiling water; let it stand on the fire till the alum disappears; apply it with a brush, while nearly boiling hot, to every joint and crevice in your closets, bedsteads, pantry-shelves, and the like. Brush the crevices in the floor of the skirting or mop boards, if you suspect that they harbour vermin. If, in white-washing a ceiling, plenty of alum is added to the lime, it will also serve to keep insects at a distance. Cockroaches will flee the paint which has been washed in cool alum water."

Belgian Competition in the Iron Trade.—Mr. C. W. Milne, Exchange-buildings, Birmingham, sends to the local *Post* a note received by him from Hull, stating that a Belgian firm, the Acoy Plant Company, has carried off from English competitors a contract for 2,000 tons of iron for Rotterdam; and that other Belgian firms have received orders for 3,000 tons of machinery plant, also for Holland; the whole of which, according to precedent, should have been ordered from English houses. This diversion of trade is, he adds, attributed to the still unsettled state of the English markets. Our own Admiralty, we may add, apparently contemplate inviting Belgian ironmasters to compete for the iron required in the Navy yards. At least they have sent over Mr. Russell, the Superintendent of Contracts, to investigate the Belgian iron markets.

Cork School of Art.—About two years since an instance of the success of Cork students was recorded when Mr. Jeremiah Mullins carried off the silver medal of the Guild of Coachmakers, in open competition with the artisans of the United Kingdom, and last year at the Technological examinations, under the Society of Arts, Mr. T. Mullins was awarded a scholarship of 50*l.*, entitling him to attendance at the Queen's College for scientific instruction. In the *Journal of the Society of Arts* just issued, appears a further instance of the success of the Cork students, viz.:—In carriage building, Mr. Jeremiah F. Mullins, first Elementary, with a prize of 5*l.*; Matthew Mullins, second advanced. In steel manufacture, Thomas Fleming and James Pulvertaft, second Elementary.

Ventilation of Cottages.—The Rural Sanitary Authority of the Wheatenhurst Union have done good service by issuing a public notice calling the attention of owners of cottages and others to entries in reports which they have received from their medical officers of health. Dr. Eschely, officer of the Haresfield district, states with reference to cottages in that district:—"One fault is very common,—the bedroom windows not being made to open, rendering it impossible to ventilate the room properly, and, in case of illness, debarring the patient from the fresh, cool air, which is so essential, and often rendering the office of nurse or attendant both disagreeable and dangerous."

Something Like a Granary.—In the resuscitated city of Chicago, amongst other gigantic buildings just completed is the granary of Armour & Dole, which is named the New Chicago Elevator. It measures 312 ft. by 100 ft., is 62 ft. high, has thirty bins, holding 1,500,000 bushels of corn, and floor capacity for 250,000 bushels, making a total capacity of 1,750,000 bushels. There are twenty-two elevators or hoists, with twenty-two 500-bushels hopper scales. The building cost 300,000 *dols.* for the work and materials alone. The nearest granary in England approaching the above is we believe at Newark, but the Chicago one is double the size. The wheat is stored for export to this country, but owing to our own bountiful harvest Chicago will have some difficulty in selling it this year.

Middle Temple Library.—Travellers on the Thames Embankment will observe alterations and improvements in the general structure of the library. The flues have been a continual source of annoyance. To obviate this a number of huge and unsightly iron tubes were, a short time ago, carried across the roof of the library, quite spoiling its appearance. These, after all, have turned out useless, and now the Benchers, at a cost of over 1,000*l.*, are engaged in running up new stacks of stone chimneys, springing from buttresses, to a height of 27 ft. above the battlements, and 3 ft. above the ridge. Two new windows are being constructed. The works are being carried out by Messrs. Patman & Witheringham, under the supervision of the Clerk of Works to the Benchers of the Middle Temple.

School Board School for Chiswick.—A new building has been erected by the London School Board in the parish of Chiswick. Although the parish is a large and opulent one, and affords many educational advantages, there is one portion of it lying backwards towards the Brentford road, which is in so unsatisfactory a state as preemptorily to demand action on the part of the Board. The new school-house is situated close to the railway, on which trains run every few minutes, and this, it is thought, may prove some disadvantage. Arrangements will be made for opening the new buildings, which are nearly completed, with as little delay as possible.

Swindon.—Messrs. Deacon & Liddard, of the Vale of White Horse Repository, at Swindon, have just added considerably to their premises. The new stabling is 28 yards long, 13 yards wide, and is capable of standing forty-four horses. Mr. W. H. Read was the architect. The ventilation is mainly from the roof by turret-like ventilators. The ventilation can be governed to suit the temperature. The stalls are of pine, lined with elm, a non-splintering wood, where horses might possibly kick. The contract has been carried out by Mr. George Wiltshire, of Swindon. Other additions and improvements have also been made.

The Embankment at Westminster.—The preliminary operations, with a view to the construction of an embankment, are being carried out on the cleared portion of the ground which reaches to Wood-street, and the outer piles are being driven down preparatorily to the fixing of the coffer-dams. A large number of men are employed on the work, which is being actively pushed forward. The outer wall of the embankment will run almost in a straight line with that of the terraces of the Houses of Parliament. Eventually, the embankment will be extended to Lambeth-bridge.

Election of Inspector of Nuisances at Launceston.—At a meeting of the Launceston Sanitary Authority, held at the Union Work-house on Saturday, Mr. J. C. B. Lethbridge in the chair, the election of an inspector of nuisances for the sanitary district of Launceston Union, with the exception of the Local Board of Health district, was proceeded with. There were nine candidates, and after several rounds Mr. William Coombe, jun., of Launceston, was elected at a salary of 35*l.* per annum! Area, 87,877 acres; population, 17,142 in 1871.

Builders' Machinery.—At the Manchester and Liverpool Royal Agricultural Society's show, held this month at Staleybridge, Messrs. F. W. Reynolds & Co., of Southwark-street, London, were awarded the society's silver medal for wood-cutting machinery. They also took a silver prize medal at the Bellevue show, held at Manchester; and the Northamptonshire Agricultural Society awarded them a bronze medal last week.

The Pottery Tree of Para is one of the curiosities of Brazil. The stem does not exceed a foot in diameter, and it grows to the height of 100 ft. But the peculiarity of the tree does not consist in its configuration, but in the nature of its wood and bark, which contains so much silica that they are used by potters in the production of earthenware vessels. The bark contains more silica than the wood, and in preparing the bark for the potter's use it is first burnt, and the residuum is pulverised and mixed with clay. An equal quantity of the two ingredients produces a superior ware. The fresh bark cuts like soft sandstone, and when dried it is brittle and hard.

Manchester Art Exhibition.—The annual exhibition of paintings has been opened at the Manchester Royal Institution, and shows a great improvement upon its predecessors of some years past. The number of works offered for exhibition was about 1,600, many of which must have been rejected solely on account of the impossibility of finding room for more than 700. The collection includes Miss Thompson's "Red Call," which is fully appreciated in Manchester.

Proposed Aquarium for Eastbourne.—It is rumoured that Eastbourne is to receive another addition to its numerous attractions, in the shape of an aquarium. The promoters of the project, it is said, have visited Eastbourne, secured a site near the Baths from the Duke of Devonshire, and the plans are in preparation at the hands of Messrs. Carrey, the Duke's town agents.

Deterioration of Coal.—Mr. Varrotrass has made some important experiments on the effects of exposure to the air on coal which show that the loss in weight sometimes amounts to one-third, and that the loss of power is much greater even than that. The loss of weight is due to the slow combustion of the volatile parts of the coal, of which the proportion gradually diminishes in comparison with that of the carbon, ashes, and sulphur.

Battersea Burial Board.—Mr. Albert Thomas Ackerman, who for the past seven years has been one of the Charge Officers of the Surrey County Lunatic Asylum, Putney, has been elected superintendent to the Battersea Cemetery. This is the first alteration that has occurred since the Government Inquiry took place some few weeks since.

London International Exhibition.—A lecture on ancient and modern bookbinding will be delivered to the members of the Working Men's Club and Institute Union, on Saturday, (this) 26th inst., in the West Theatre of the Albert Hall, by Mr. Henry T. Wood. After the lecture, the visitors will inspect the collection of Examples of Bookbinding in the Exhibition.

Proposed Gymnasium for Shrewsbury.—A movement has been set on foot in Shrewsbury for establishing a public gymnasium for the town, and the largeness of the attendance at a public meeting which has been held in the Music Hall Buildings, to take preliminary steps in the matter augurs well for the future success of the movement.

A New Blind Cord.—Mr. Leedham Binns, Okeham, near Bradford, has invented a blind-cord which is without joint of any kind, and he is thus enabled to do away with the old-fashioned rack and pulley, having registered a very simple invention in its place, one which will not get out of order and can be guaranteed to last for years.—*The Dropper.*

The Highest Spire in Europe.—Strasbourg Cathedral is now begun. It no longer has "the highest spire in Europe." The new church of St. Nicholas, Hamburg, has just been finished, and the great cross was placed on the summit. The total height is 472 ft. This is called 6 ft. higher than Strasbourg.

Wood's Patent Mortar, Cement, and Concrete.—This specification, dated 7th October, 1873, describes forming mortar, cement, and concrete, by combining slag, sand, or granulated slag with iron ore and either quick lime or hydraulic lime or cement, or in lieu of iron-stone or iron ore refuse pyrites may be used.

Outbreak of Typhoid Fever at Walker.—At the monthly meeting of the Walker Local Board, Dr. Lownds, medical officer of health, said that typhoid fever was spreading in the district.

TENDERS

For building new premises, for Messrs. Debenham, Tewson, & Farmer, at Nos. 1 and 2, Bucklersbury. Mr. J. Whitehead, architect:—

	Including Fittings.
Ashby & Horner	£3,205 0 0
Macey	7,089 0 0
Turner & Son	7,644 0 0
Brown & Robinson	7,489 0 0
Hill, Higgs, & Hill	7,489 0 0
Faulkner	7,280 0 0
Richard	7,225 0 0
Kelly, Brothers	7,120 0 0
Scrivenor & White	6,902 0 0
Kelly	6,894 0 0
Church	6,887 0 0
Mortar	6,729 0 0
W. & F. Croaker	6,514 0 0
Somerville & Smith	6,438 0 0
Merritt & Ashby	6,404 0 0
Brass	6,388 0 0
Newman & Mann	6,370 0 0
Bland	6,174 0 0
Levy	6,159 0 0

For rebuilding the Fleet Tavern, Fleetwalk, Hampstead. Messrs. Cumming & Nixon, architects. Quantities supplied:—

Hill, Higgs, & Hill	£3,493 0 0
Gumma & Sons	3,237 0 0
Downs	3,196 0 0
Carter & Son	2,967 0 0
Hart	2,860 0 0
Cullum	2,795 0 0

For alterations and repairs to the Victoria Hotel, Coe's place, Hyde Park-gardens. Messrs. M. Nab-Son & Prichett, architects:—

Moreland & Nixon	£588 0 0
Hosowski	615 0 0
Blackmore & Morley	427 0 0
Walton & Son	427 0 0
Temple & Forster (accepted)	424 0 0

For new mission chapel, Tottenham-square, Kingsland. Mr. H. H. Bridgman, architect:—

Haght (accepted)	£240 0 0
------------------------	----------

For three new shops, High-street, Camden-town, for Mr. Charles Slade. Mr. H. H. Bridgman, architect:—

Haght (accepted)	£240 0 0
------------------------	----------

For alterations at the Queen's Arms, Blackney-road, for Mr. B. Phillips. Mr. Edward Brown, architect:—

Thomson	£194 0 0
Morrison	194 0 0
Blackmore & Morley	193 0 0
Impey (accepted)	172 0 0

For alterations and repairs at the Van Trump, Bethnal-green-road, for Mr. Arno. Mr. Edward Brown, architect:—

Blackmore & Morley	£138 8 6
Merr	134 3 0
Pringle (accepted)	120 13 6

For alterations at the Duke of Wellington, North-street, Whitechapel, for Mr. Argent. Mr. Edward Brown, architect:—

Impey	£268 0 0
Palmer	247 0 0
Pringle	213 0 0
Hearle	214 0 0
Blackmore & Morley	169 0 0

For proposed new ward for children, at the Infirmary, Salisbury. Mr. John Harding, architect. Quantities supplied by Messrs. Williams & Taylor:—

Adey	£7,761 0 0
Flowman	4,484 0 0
John Crook	4,195 0 0
Thornton & Conduit	4,168 0 0
Cole	3,988 0 0
C. C. Crook	3,883 0 0
Bull & Sons	3,610 0 0
Wagner	3,773 0 0
Hall (accepted)	3,700 0 0

For schools, master's house, Board-room, offices, and boundary-walls, &c., at Brynmawr, Breconshire, Wales, for the Llanelly School Board. Messrs. Alexander & Hemman, architects. Quantities supplied by Mr. Charles Hemman:—

Everal	£7,840 0 0
Jones & Allen	7,110 0 0
Messrs. Davies	6,900 0 0
Welsh & Son	6,800 0 0
Foster, Brothers (accepted)	6,300 0 0

For new police-station, at Batina, Moomouthshire. Mr. W. P. James, architect. Quantities supplied:—

Hawkins	£3,750 0 0
Everal	2,730 0 0
Coleman, Brothers	2,690 0 0
Foster, Brothers	2,335 0 0
Jones	2,187 0 0
Phillips	2,106 0 0
Thomas	2,051 0 0
Burgoyne	1,985 0 0

Accepted for works at Crookford's, St. James's-street, for the New Liberal Club. Mr. C. J. Phipps, architect:—

Newman & Mann	£1,585 0 0
Carlton Pierre Work to Chelms, &c.	£370 0 0

Plumbing.

Smeaton	£170 0 0
---------------	----------

Kitchen Apparatus, Hot-water Supply, Steam Boilers, Baths, &c.

Jeakes & Co.	£1,368 0 0
--------------------	------------

Decorations and Painting.

Bell	£660 0 0
------------	----------

Sunlight and Gaswork.

Strode & Co.	£73 0 0
--------------------	---------

Lights.

Waygood & Co.	£118 0 0
---------------------	----------

For the reconstruction of the Worcester Theatre. Mr. C. J. Phipps, architect:—

General Builder's Work.

Newman & Mann	£2,735 0 0
---------------------	------------

Wood & Sons 2,349 0 0 |

Wells 2,347 0 0 |

Dixon (accepted) 2,000 0 0 |

Decorations.

Bell (accepted) £250 0 0 |

Act Drop and Part of Scenery.

Gordon & Harford (accepted) £100 0 0 |

Sunlight and Gaslights.

Strode & Co. (accepted) £65 0 0 |

For the erection of a new warehouse, on the site of No. 57, Knightbridge-street. Mr. John Wimble, architect. Quantities supplied:—

 Hoare | £1,697 0 0 | Newman & Mann | 1,536 0 0 | Croaker | 1,497 0 0 | Scrivenor & White | 1,478 0 0 | Mortar | 1,458 0 0 | Faulkner | 1,446 0 0 |

For alterations to No. 68, Knightbridge-street. Mr. J. Wimble, architect. Quantities supplied:—

 Hoare | £704 0 0 | Newman & Mann | 688 0 0 | Scrivenor & White | 630 0 0 | Mortar | 617 0 0 | Croaker | 596 0 0 | Faulkner | 586 0 0 |

For sundry works, in alterations and repairs, to the Theatre, No. 57, Knightbridge-street, City. Mr. J. Wimble, architect. Quantities supplied:—

 Newman & Mann | £195 0 0 | Scrivenor & White | 186 0 0 | Mark | 436 0 0 | Brown | 420 0 0 | Thompson & Smith | 420 0 0 | Edis & Son | 410 0 0 |

For new school, in Summer-road, Lambeth, for Messrs. B. & W. Phipps, architects. Quantities supplied by Mr. W. F. Meakin:—

 Edis | £9,038 0 0 | Newman & Mann | 8,089 0 0 | Cooper | 8,850 0 0 | Pritchard | 8,591 0 0 | Wood | 8,218 0 0 | Ferry & Co. | 8,100 0 0 | Brass | 8,380 0 0 |

For alterations at No. 51, Burners-street, Oxford-street, for Messrs. Schreyer & Co. Mr. E. C. Robins, architect. Quantities supplied:—

 Newman & Mann (accepted) | £2,090 0 0 |

For alterations and additions at Downes Burry, Storey-road, Watercock-hill. Mr. S. Hewitt, architect. Quantities not supplied:—

 Newman & Mann | £425 0 0 |

For stables, coachhouse, and alterations at Wellington Lodge, Surrey, for Mrs. Lumb. Mr. C. A. Beazley, architect. Quantities supplied by Mr. F. F. Mallett:—

 Adams & Sons | £1,325 0 0 | Coles | 1,238 0 0 | Hide | 1,260 0 0 | Nightingale | 1,239 0 0 | Haskell | 1,398 0 0 | Real | 1,203 0 0 | Newman & Mann | 1,193 0 0 | Bays & Ramsay | 1,169 0 0 |

For pulling down and rebuilding Nos. 12 and 13, Paul in the city of London, for Mr. Sadler. Mr. P. Channon, architect. Quantities supplied by Messrs. R. L. Curt. Sons:—

 Perry & Co. | £2,650 0 0 | Rider & Son | 2,620 0 0 | Conder | 2,429 0 0 | Brown | 2,427 0 0 | Bland (accepted) | 2,163 0 0 |

For branch establishment, at Margate, of the Lay of the Boat and Dumb, Old Kent-road, London. Quantities by Mr. C. A. Gould. Messrs. Drewe & Bower, architects:—

 Bushell & Sons (accepted) | £15,000 0 0 |

For building a hall and offices, at Margate, for the Ancient Order of Foresters, Court Hunterian No. 2. Messrs. Drewe & Bower, architects. Quantities supplied by Messrs. Gardiner, Son, & Theobald:—

 Farnham & Son (accepted) | £2,175 0 0 |

For additions to the Junction Hotel, Didcot, Berkshire, for Mr. E. Wells, M.P. Messrs. Drewe & Bower, architects:—

 Jones (accepted) | £220 0 0 |

For a convalescent home, at Margate, in connexion with the Orphan Working School and the Alexandra Orphan for Infants, for Mr. Joseph Soul (founder). Messrs. Drewe & Bower, architects. Quantities by Messrs. Gardiner, Son, & Theobald:—

 Coles & Son | £2,344 0 0 | Boden | 2,080 0 0 | Farnham & Son | 2,058 0 0 | Bushell & Sons | 1,885 0 0 |

For drainage to fifty fire cottages, at New Swindon. Mr. W. H. Read, architect:—

 Adams & Co. | £450 0 0 | Dorset, Son, & Co. | 385 0 0 | Dunmore (error of 331) | 353 0 0 | Groome | 350 0 0 | Hamblyn (too late) | 330 0 0 | Drickson | 321 0 0 | Bennett & Holley | 287 0 0 | Riley | 243 0 0 | Peacock | 241 0 0 | Potter | 225 0 0 | Seed | 225 0 0 | Forshaw (too late) | 208 0 0 | Haynes | 192 0 0 | Wiltshire (accepted) | 190 18 0 |

The Builder.

[VOL. XXXII.—No. 1652.]

Maiden-lane, Covent-garden.

THE ordinary course of London streets is no exception to the general rule of decay, and houses that once were inhabited by gentry are divided into offices or bedrooms for the poor; but in some few instances streets recover their lost position, and the growth of Maiden-lane from a common alley to a handsome street is a most remarkable example of this improvement. Covent-garden was for many years the fashionable district of London. It then became a famous place for trade; and after a period of decay it has now revived as the home of literary businesses and offices, and most of the houses are being rebuilt.

A few years ago Maiden-lane was a narrow passage, and no thoroughfare. Its roadway, which was just capable of allowing a wagon to pass along, did not extend the whole length of the lane, and the Southampton-street end was entirely paved. Now the mean houses are being handsomely rebuilt, and those on the north side placed farther back, so that in time the lane will have become one of the best streets in the district. The paved portion was added on to the lane when Bedford House was pulled down, and Southampton-street built, in the year 1704. About seventeen years ago, the Queen and the late Princess Consort having expressed their intention of visiting the Adelphi Theatre, it was found necessary to continue the roadway throughout, so that the royal carriages, after setting down their distinguished occupants at the stage-door, might pass through the lane into Southampton-street. The Duke of Bedford, however, would not allow the lane to be used as a thoroughfare, and he set up a bar, which has now been removed. Maiden-lane is called in the early rate-books of the parish "Maiden-lane behind the Bull Inn," and this name still remains a Bull Inn (or Bullin) court. It has been associated with the names of numerous distinguished persons from an early period in its existence, and one of its first inhabitants was the famous engineer, Sir Cornelius Vermuyden. He lived here during a portion of the time that he was engaged on the drainage of the great Bedford level. This distinguished man, to whom England is under the greatest obligations, after having reclaimed many thousands of acres of swamps, morasses, or overgrown, muddy lands, and inaugurated the modern system of embankment in this country, is supposed to have gone abroad and died a poor, broken-down old man, after having been forced to convey to strangers the extensive lands that he had reclaimed and won. Mr. Smiles has given an interesting account of Vermuyden in his "Lives of the Engineers." He was a Fleming by birth, and came to England in 1621. In this year he recovered land from the Thames at Dagenham,

and was afterwards employed at Sedgemoor, Malvern Chase, and Hatfield Level. In January, 1629, he was knighted by Charles I. for his services, and in 1630 he commenced the drainage of the Bedford Level. While the whole country was torn by the excitement of the Civil War, Vermuyden's energy was entirely devoted to the success of this great undertaking, and his sole concern was how to raise funds wherewith to pay his peaceful army of Dutch labourers in the fens. In 1642 he published "A Discourse touching the Draining the Great Fennes lying within the several Counties of Lincoln, Northampton, Huntingdon, Norfolk, Suffolk, Cambridge, and the Isle of Ely." These improvements were not made without great dissatisfaction being expressed by the inhabitants of the fens, who objected to their loss of common-rights, and also to the settlement among them of a colony of foreigners.

Satirical songs and ballads written against the fen-drainers were common. One entitled "The Powte's Complaint" commences,—

"Come, brethren of the water, and let us all assemble,
To treat upon this matter which makes us quake and tremble;
For we shall rue, if it be true that Fens be undertaken,
And where we feed in fen and reed, they'll feed both beef and bacon.

They'll sow both beans and oats, where never man yet thought it;
Where men did row in boats are undertakers bought it;
But, Ceres, thou behold us now, let wild oats be their venture,
Oh, let the frogs and miry bogs destroy where they do enter."

Another attacks the Dutch in the following strain:—

"Why should we stay here and perish with thirst?
To th' new world in the moon away let us goe,
For if a Dutch colony get thither first,
Tis a thousand to one but they'll drain that too!"

The matter was taken up by the enemies of the King, and Oliver Cromwell, the member for Huntingdon, was not ashamed to fan the flame and to stir up the discontent at numerous public meetings. Vermuyden is believed to have died soon after 1656, and there is a tradition that his last days were spent in the poorhouse at Belton; but this has been contradicted.

To return to Maiden-lane, the celebrated Archbishop Sancroft lived here both when Dean of York and Dean of St. Paul's. In 1663 Dugdale addressed a letter to his "much honoured friend Dr. Sancroft, Dean of York, at Mr. Clarke's house in Mayden-lane neere Covent-garden." The chief glory of the place, however, is that it was here the patriotic Andrew Marvell refused the bribe that Lord Treasurer Danby brought to him from the King. On April 21, 1677, he dated one of his letters to his constituents at Hull from his lodgings in Maiden-lane, and although the scene of the Lord Treasurer's visit is stated to have been "on a second floor in a court in the Strand," it is believed to have been these same lodgings in the lane. The picture of that room, with its contrasted occupants, the pickings of the muton bone, and the borrowed guinea, will always be cherished by those who can appreciate purity in the midst of political and moral corruption. The oldest chemist and druggist's shop in London is that of Messrs. Godfrey & Cooke, whose business was established in 1680 in Maiden-lane. The laboratory occupied a portion of the ground upon which the new Roman Catholic Church is being built, and its garden extended as far as the Strand. The old entrance-gate existed in the lane until quite lately. When Southampton-street was built the shop was opened there and the laboratory was connected with it. Ambrose Godfrey Hanckwitz, F.R.S., the founder of the business, was originally an assistant to the great philosopher Robert Boyle, under whose instructions he succeeded in obtaining an ounce of solid phosphorus. That non-metallic element was discovered by Brandt in 1689, and on October 14, 1680, the Hon. Robert Boyle deposited a sealed packet with the Secretary of the Royal Society in which his ex-

periments were recorded. This was not opened until after his death, when it was printed in the "Philosophical Transactions." In 1733 Hanckwitz himself communicated a paper to the Royal Society on "Phosphorus urinae," in which he wrote, "I know myself to have been for these forty or fifty years, that is ever since I left the laboratory of my master the Honourable Mr. Boyle, the only person in Europe able to make and produce in any quantity the true solid phosphorus." The laboratory in Maiden-lane became a fashionable resort, and Hanckwitz astonished and delighted his visitors by the performance of various popular experiments. There is a print of the laboratory with a portrait of Hanckwitz by Vertue, which is dated 1718. In 1724 "An Account of the new Method of extinguishing Fires by Explosion and Suffocation, introduced by Ambrose Godfrey, of Covent-garden, Chymist," was published, from which it appears that Hanckwitz was sometimes in the habit of dropping his foreign-looking surname. He died in 1741, and was succeeded by his nephew Ambrose Godfrey, who tried his uncle's invention for extinguishing fires in 1761 in a building specially erected for the purpose. Godfrey continued the business for many years, and increased its reputation. On March 14, 1797, he died at Shaftesbury Home, Kensington Gravel-pits, and shortly afterwards the business passed out of the hands of the family. The present firm of Godfrey & Cooke gave up the business in Southampton-street a few years ago, but they still continue that in Conduit-street.

In the seventeenth and eighteenth centuries, when men wore wigs and ladies built elaborate erections upon their heads, the profession of hairdressing was an important one, and Covent-garden became the head-quarters of the experts. The signs partook of the character of the neighbourhood, and Voltaire when he came over to England, being one of the lions of the season, took lodgings at the *White Peruke* in Maiden-lane. Turner, the great painter, was the son of a hairdresser, and was born on April 23, 1773, in his father's house, which stood on the left-hand side of Hand-court, a narrow place on the north side of Maiden-lane, entered by an iron gate. The door of the house was under the archway.* Turner was baptised in the parish church of St. Paul on the 14th of May, where his parents had been married on August 29, 1773. Professor Ruskin contrasts the boyhood of Giorgione at Verona with that of Turner in Covent-garden, and he sees the influence of the market and its surroundings in the pictures of the latter. Turner lived with his father here until 1800, when he was elected an Associate of the Royal Academy. Then he moved to Harley-street, and afterwards to Queen Anne-street. The old man left his barber's shop, and was afterwards employed to do a servant's work in his son's gallery. Bunell Thornton, a well-known author in his day, and joint editor with the elder Colman of the *Connoisseur*, was the son of an apothecary in the lane. John Ireland, the author of "Hogarth Illustrated," was originally a watchmaker in Maiden-lane, but his taste for literature and art drew him away from his business. Beloe, in the "Sexagenarian," relates the following anecdote of Ireland before he left Maiden-lane. He was once in his shop at a very early hour in the morning, little expecting a customer, when an old man, of very mean appearance as to dress and person, presented himself and desired to see one of the most valuable watches in his possession, and one that without any consideration of price he could conscientiously recommend. Ireland produced a repeater of which he thought very highly. The old man, after

* A sketch of the house will be found in our volume for 1861 (xix.), p. 579.

taking a few minutes to examine it, inquired the price. "Fifty guineas."—"Is that the lowest?" "It is." The money was paid at once, and the old man (on leaving the shop, gave his card of address. He turned out to be the celebrated miser, Elwes, and he frequently called afterwards in Maiden-lane to express his satisfaction with his purchase. Ireland was acquainted with Hogarth's widow, whom he assisted in the disposal of the artist's prints, and from whom he learned many particulars of Hogarth and his works, which he turned to good account in the book which he published under the auspices of the Boydells. He died in poor circumstances near Birmingham in 1808. One of the last residents in the lane of any note was Proctor, the sculptor of "Ixion at the Wheel," who died poor in a house on the north side. Maiden-lane has been greatly favoured by artists, and two societies that were worsted in their contest with the Royal Academy held their exhibitions here for a time. The Free Society of Artists exhibited their pictures in the years 1765 and 1766, in a portion of the warehouse of Mr. Moreing, an upholsterer, but in 1779 they expired after having exhibited in several other places. The Incorporated Society of Artists of Great Britain fitted up a studio and opened an academy on the south side in the year 1770, but they made their last public appearance at Spring-gardens in 1791. William Woollett, the engraver, was their secretary. Mundy's Coffee-house, a noted place in its day, was kept by Jack Mundy, a sporting and betting character, who previously lived in Round-court, Strand, which was partly in the Bermudas and partly in Porridge Island. Junius in 1772 directed Woodfall to send two copies of the collected edition of his Letters to Mundy's to be left there for him. The instruction is contained in the following curious letter, dated March 3:—"Your letter was twice refused last night, and the waiter as often attempted to see the person who sent for it. I was impatient to see the book, and I think I had a right to that attention a little before the general publication. When I desired to have two sets sewed and one bound in vellum, it was not from a principle of economy. I despise such little savings, and shall still be a purchaser. If I was to buy as many sets as I want it would be remarked. Pray let the two sets be well parcelled up and left at the bar of Mundy's Coffee-house in Maiden-lane, with the same direction, and with orders to be delivered to a chairman, who will ask for them in the course of to-morrow evening." The Cider Cellars, a tavern and singing-hall, which existed for more than a century on the south side of the lane, was opened about 1730, and is mentioned in "Adventures Underground" (1750). It is said to have been built on the site of the house where Nell Gwynne acted as waitress, and dealt out "strong waters to the gentlemen." The tradition of this popular character having lived hereabouts finds expression in the sign of the Nell Gwynne Tavern in Bullin-court. The Cider Cellars was a favourite resort of Professor Keweenaw, and was long frequented by stagers out at night as a place for suppers after the theatres. The company could listen to the utterances of "Sam Hall," and other comic singers, while they regaled themselves with devilled kidneys, oysters and welch rabbits, with cigars, glasses of brandy, and of London stout. The place continued to drag on a miserable existence until after the completion of the first half of the present century. In its latter days it was the temporary home of the Fielding Club, which consisted of literary men and men of pleasure who needed a place of resort late at night.

The stage-door of the Adelphi theatre is in Maiden-lane, and as we have already mentioned the Queen has honoured this dingy place with a visit. A few years ago was to be seen by the side of the door a huge iron pump-handle fixed in the wall. This was intended to pour a large volume of water upon the stage in case of fire, and tradition states that it was fixed in its position after an actress had been burnt to death in sight of the audience. The old Adelphi theatre was built on speculation by John Scott, a colour-maker, and was originally called the *Sans Pareil*. It was opened on November 27th, 1806, and the entertainments consisted of a mechanical and optical exhibition, with songs and recitations. It was afterwards known as the Little Adelphi, and became a great success when Pierce Egan's "Tom and Jerry," dramatised by Moncrieff, was brought out, with Wrench as *Tom* and John Reeve as *Jerry*. The piece was acted for the first time on November 26,

1821, and soon sent the town mad with excitement. In July, 1825, Terry and Yates became joint lessees, Terry being backed by Sir Walter Scott, who in consequence lost a large sum of money. Between 1828 and 1831 the elder Charles Mathews leased the theatre in conjunction with Yates, and gave those "At Homes" which so thoroughly delighted our fathers. The Adelphi has long been the home of a special class of melodrama, and has been famous for its long runs. The most noted of its pieces is the "Green Bushes," of which the story goes that a man left London while it was being acted, and after travelling round the world returned to find it still occupying the stage. He might have done so again since then, and if he should return next week he would find it again being played, with the original actresses in the principal part. John Reeve obtained his reputation at this theatre and the fame of Wright, Webster, Madama Celeste, and Paul Bedford is intimately connected with it. We have not mentioned the famous oyster-norms, nor the stained glass works at the corner of Southampton-street, nor the Charity School in Hand-court, but we think we have said enough to show the interest of Maiden-lane. It is a long history for so mean-looking a place, but a street that contains a church, a synagogue, and a theatre, can hardly be called insignificant.

SITE, AS IT CONCERNS THE BUILDER.

THE special points at which architecture comes in contact with the sister arts of painting and of sculpture have not unfrequently been the theme of the lecturers. Indeed, men whose zeal outruns their discretion have but too often entered the arena as champions for the superior claim of one or other of the three sister pursuits to be considered as the most important. Into any such dispute we decline to enter. Questions of the kind can only arise from want of true acquaintance with the spirit of art. It is not that a man knows more of architecture, but that he knows less of sculpture, or of painting, that leads him to use such an expression as that the former is, *par excellence*, the fine art. And so with regard to either of the others.

But it is a matter eminently instructive to inquire, not so much into the relations which, in individual instances, the craft of the artist who deals with form occupies with regard to the craft which deals with shadow or with colour, or into the mode in which the attention may be duly divided between the useful and the beautiful, as into the principles which underlie all such relations. There is such an ideal conception as that of the artist faculty, or gift; apart from its method of expression. Before education came to be regarded as a commodity to be supplied in a certain quantity, of a given price and quality, and as one which nine men out of ten are able, more or less saleably, to manufacture on demand, there were certain advantages mingled with the disadvantages of a state of things so utterly unfashionable. Three hundred years ago, education was, before all things, a tradition. Self-education, in the sense of acquiring an unpractical and superficial knowledge of a subject, by the perusal of popular guide-books and hand-books, was then undreamed of. We are not about to contrast the ideas now held,—more fully on the western shores of the Atlantic than in Europe,—of the capacity of any man, on a few months' notice, to fit himself for the functions of physician, divine, politician, engineer, advocate, or any other special branch of human study, with those expressed, by the greatest master of the English language, of the character of,—

"A scholar, and a ripe and good one;
Exceeding wise, fair spoken, and persuding;
Lofly and sour, to those that loved him not,
But, to those men that sought him, sweet as summer."

Yet we wish to point back to the time when, special excellence only being conceived to be the result of special training, pursued for a defined time, under prescribed conditions, the intellect was less in subjection to the manipulative power than is now, too often, the case. In the time when Italy made an effort to rise to something of the eminence which had formerly been attained by Greece, the idea of the artist, pure and simple, was far more faithfully embodied than we now conceive to be desirable, or even possible. World Michelangelo have been most discontented,—if the Pope had enforced him to limit his study to one art, in order that he might attain higher excellence in its mastery,—to be

ted and bound to sculpture, to painting, or architecture? Or by which of his polyglot accomplishments, as engineer, musician, painter, sculptor, or architect, would Leonardo have elected that his name should have been exclusively characterised, as a legacy to posterity?

The subject which has suggested these reflections, is one of the duties which the architect is sometimes called on to discharge, which may, on the one hand, be extremely simple and easy, but which, on the other hand, may sometimes defy the instincts of genius. We speak of the choice of site, or selection of position and aspect, viewed with reference to design.

In a country which is meted and parcelled out as is great part of the England of to-day, the power of choice and selection, as to site or aspect, which an architect is at liberty to exercise, is often extremely rare. The greater amount of building, exclusive of repairs and renewals, now annually carried on in the country, is urban or suburban. In such building but little choice is often left as to site,—a street is set out, or a plot of ground has been bought on which a house or houses are to be built. The ordinary rules as to access, light, drainage, a ventilation, are such, in these cases, as to leave very little freedom to the architect. It is rather by the convenience of his internal arrangements, and, perhaps, by some original idea, effect in the elevation, that he will strive to assert his professional merit, than by the prime choice of plan. When it is not for him to choose the site, he may say,—why trouble him by the assertion that ability to choose, and make the best of, position, is so great an artistic gift?

But even in the lowest and most contracted range of urban building, the care to be given to the treatment of site is of primary importance. Such care is an essential element of the sanitary character of a building. Questions of aspect, of ventilation and drainage, and of permanent dryness and dampness in building, although not to be reduced to consideration of site alone, can never be adequately solved without ample preliminary study of this condition of a building. The manner in which, for want of such care, a house may be said to stand in its own light, or to block up its own access, or in some way to be far from the best arranged building which might be designed in the locality, is only truly known to those who have suffered from these easy bits of misadventure. Again, people are very little aware how thoroughly the question of site may be of yards, rather than of furlongs,—of inches almost, rather than of yards. We can speak from personal experience in this matter, in the charming little watering-place of Arcaachon, in the South of France. There in two villas, the garden of each of which descended to the shore of the bay, the soil of both of which was identical, the limiting lines of the properties parallel, the size and general amount of accommodation identically the same, and the localities within 100 yards of each other, the ordinary temperature was, in a hot summer, by fully 10 degrees of Fahrenheit in the maximum heat of the day. The one was so arranged as to catch the least movement of the sea breeze, and to be as far as possible shielded from the sun. The other had summer-houses and bath-houses placed in the garden as to cut off the breeze from the windows of the house. A sort of catch trap for heat was contrived in the plan of the villa, with its wings and offsets; and the result was what we have stated.

Again the question of site is one of yard, geologically speaking. Who has not lived, or visited, in a house of which certain rooms were hopelessly damp? How often is it the case especially in old rambling country-houses, that there are floors or walls in which water seems to forego its proper nature, and torise and congregate, at its own will, in spite of whatever may be done to repress it? Sometimes the cause may be found to be the position of the building at the junction of two geological strata. On hill sides this not unfrequently occurs. In the lofty hills that form a panorama round London, to the north and north-west, are to be found some of the most healthy, as well as the most beautiful building sites in England. A fine bed of gravel underlies the rich turf; and gives delightful elasticity to the air. All parts of this range may be thought to be alike, and nothing would be more natural than for a person who wished to purchase a plot of land, in order to build himself a house, to select the sloping side of the hill so as to obtain shelter, by its crest, from the keenness of the north wind.

We have in mind a property thus situated, on a very lofty elevation, but some 60 or 100 feet lower than the summit, where a mansion was erected in which expense was not spared, and which, not only in its elevation, but in the unusual elegance of its plan and arrangements, was a credit to the architect. The grounds were laid out in appropriate lawns and shrubberies, and the place was intolerably damp! How was this, at such an elevation, with a fall below its foundation that would have swallowed up the Thames? Simply because the outcrop of a layer of clay, under the gravel that formed the summit of the hill, occupied this precise locality. So that, in fact, the house was built on the edge of a subterranean, invisible lake; which rose with every shower; overflowed, as a matter of course; and kept the whole place in constant—not hot, but cold water.

Now here a proper geological examination of the site would have prevented all the mischief. The slightest indication—a ridge of moss in the turf; the presence of iris; a rush in the meadow;—damp stain on a lawn, or on a path in the garden—would have told of danger. By timely examination, either the pervious stratum would have been tapped, by opening an adit in the clay sill; or the position of the house, with regard to the junction of pervious and impervious strata would have been changed; or finally, the site would have been pronounced radically unfit for building, except with great precautions, such as foundations of concrete and of asphalt. But if, as probably was the case, the only objects regarded were, central position in the grounds, or the sake of tranquillity; or level, with reference to command of view on the one hand, and the shelter of the crest of the hill on the other; the geological nature of the spot resented itself for the neglect, and a noble house was seriously damaged, or even made permanently uninhabitable, for want of a careful examination of the details of the site.

If we now turn to some of our most ancient and important buildings, we shall see how site has been regarded, and also how it has been disregarded, by our ancestors. Or rather, perhaps, we ought to say, how certain considerations, which now have very much weight, do not appear to have possessed the same weight in the judgment of past generations.

We refer to the matter of damp. We think that it is far from impossible that the constitution of the Englishman of to-day is more easily and unfavourably affected by damp than was the case in the time of our ancestors, especially of our remote ancestors. We are aware that the ordinary mode of viewing the case is, that we now pay more attention to hygienic considerations than was formerly the case. That this is, in some cases, true, we are not about to deny. Neither can it be denied that such attention has been forced upon us by sharp and severe punishment. But as to fancying that either the average builder of a house, or his family, or the more careful projector of a noble and costly mansion, is now more at home with what we may call the selection of natural exuries, more observant of the slight indications given by Nature, more careful to build, or plant, or dwell, exactly where the step is the most elastic, the air most pure and bracing, or soothing, as wished for the constitution, and the natural advantages of site more perfect, than was the case in the reign of Queen Elizabeth,—the case is certainly very far from proven. If we were to point to any period of time, since the overthrow of the Roman Empire, when the art of men was taxed to render most luxurious the appliances of life, we should name the era of the House of Valois in France, and of the House of Medici in Florence and in Rome. Nature was then solicited, than at almost any other period familiar to the historian of taste, art, and luxury. That the architects, the physicians, and the graceful and worthless idlers of those days should have been ignorant of the effect of climate on the human constitution and habit, we take to be simply impossible, as well as in contradiction to the literature of the time. Yet, how many a stately mansion, built or rebuilt in that period of history, has a low damp site, such as now renders it deserted? Earlier yet, we find such various foundations as Fontaines Abbey, the *Maison Dieu* at Arundel, the Priory at Haverfordwest, and many others that will recall to the memory of our readers, perched on the very margins of streams, in flat, rich, valleys, in which, if monks were now resident, the rheumatism would save them the necessity

of any other penance. And in times yet more remote, before a steeple had been built, or an abbey founded, the Gauls and the Britons who resisted the relentless arms of Julius Cæsar, had their strongholds in the midst of swamps. The selection of sites for monasteries, and the yet earlier selection of natural fastnesses, seem to indicate that the less artificially nurtured natives of the island were, in those days, far less liable to injury from damp, and that the rude vigour of their health could afford to laugh at conditions which no one now can with impunity encounter.

With respect to the importance of site, regarded as a matter of security and defence, the greatest change which has occurred from the very commencement of the art of building (so far as relics exist in proof) to the present day, has occurred within the past quarter of a century. That change is entirely due to the enormous increase in the projectile power of artillery,—an increase which can, by no means, be regarded as having attained its limit. In 1868, a Whitworth gun of 9-in. calibre, threw projectiles weighing 250 lb., for distances exceeding 11,000 yards. The weight of this gun, which has never been equalled in range, was 14 tons 8 cwt. Guns of 25 tons weight, and 11-in. calibre, are now commonly constructed in Prussia as well as in England; and experiments are in progress as to guns of 35 tons weight. The results of this enormous increase in the power of projectiles has been, as we pointed out long ago, to reduce many positions that were once considered impregnable, to a second rank; and to leave to many fortresses of the second class, no further importance than that of affording security against a *coup de main*. A hill which, as dominating all the country round for three or four miles, was formerly secure against attack, except in the form of a regular siege, if it is commanded by a more lofty eminence at a distance of four or five miles, is now under a crushing fire. Thus a site like that of Genoa, which was self-contained and commanding during the wars of the middle ages, has now no military character whatever, unless its defenders be in possession of the surrounding heights. Again, a fortress like Gaeta, which owes much to its isolated position, but of which all the actual defence is the work of the builder, loses its old fame from the fact of being readily approachable by sea, and thus subject to the fire of a heavier artillery than may chance to be within its walls. When, however, we find united, isolation, dominant position, and defences of the nature of earthworks, as at Gibraltar, or even at Dover, the position, if held by a competent soldier, and properly provisioned and maintained, may yet be accounted impregnable.

The history of our chief architectural sites, for castles and defensive residences, is thus one of considerable interest. The oldest of all seem to have been stockaded marshes; or, rather, these are the earliest to which little light history gives applies. We have prehistoric sites, which might even now be selected with satisfaction by the architect. Such pre-eminently is Stonehenge; on a position equally admirable for its picturesque beauty, for its healthy exposure and choice of level, and for its military aptness for defence; such, perhaps, more remarkably than any other castle that can be readily named, is the proud security of Arundel. Whether we may think that the hardy soldiers, who won land and lordships by following the banner of Duke William of Normandy, were not without the *arrière pensée* that a convenient port of embarkation, for a return to their Continental neighbours, might some time prove convenient; and that with such view they fortified, so to speak, the back-doors of their new manors; or whether we should consider that the exigencies of internal defence, in times when the Vikings were on the seas, led to the fortification of seaward castles, it may now be difficult to decide; but, whoever it was, Norman, or Saxon, or Briton, who first walled or stockaded the proud bluff now crowned by the royal towers of Arundel, he chose a site almost unrivalled for its strength, as well as for its beauty. Over all the fertile plain through which the Arun makes its way to a sandy beach, and far out over the broader surface of the sea, those battlemented turrets frown, and the folds of the great banner on the keep may be seen to float in the breeze. It has been reserved for the present decade to witness the discrowning of Arundel by the hands of its own lord; not, indeed, that any mischance has happened to the fine structure itself. We could only wish that others of our ancient

castles, notably including Windsor, had been repaired with equal taste and truth of architectural feeling. Wholly habitable, and yet shadowed by the ivy of its ancient and ruinous keep, Arundel satisfies at once the imagination and the rational judgment. But close by the tarred gateway of the castle, tower and spire have sprung from the southward portion of the ridge,—those of a building described at length in our pages,—which reduce the baronial keep to a second rank in architectural dignity. The great tower of the Cathedral of St. Philip is as yet only a little way above the basement. The 80,000*l.* already spent on this noble church will, we hear, be doubled before this part of the plan is finished. But even now the *flèche*, which rises from the roof of the nave, towers so far above the keep of the castle as to suggest a symbolic meaning by its comparison.

For site, Arundel is unique. Conventual buildings cluster round the southern part of the church, and hide it from the immediate vicinity; but at a few miles' distance the lofty nave, and grand window of the south transept, tower so high above the roofs of schools and chapter-house, that the fine church seems to be visible to her very feet. If we look at the church alone, we are struck with a sense of architectural grandeur; when we glance northward from its pinnacles to the ivied keep of the castle, upheaving its giant flagstaff, we are oppressed with a certain feeling of melancholy. We speak of course from the æsthetic point of view alone. We can well imagine that the last of those venerable birds, the large *Grands Ducs*, or horned owls, which for centuries have nested in the keep, sailing forth on its shadowy wings, and perching on the habitable parts of the castle when death or misfortune was impending over the silver lions of the dual line of Norfolk, broke its heart with shame and grief at finding its long dominant eyrie reduced to a second rank, in point of lofty command of the landscape.

COUNTY SCHOOLS AND EDUCATION.

The small treatise put forth by the Rev. J. L. Brereton under the title of "County Education,"* has for its main object the suggestion of a greater extension in counties of medium-class schools, combining a good general education with a due regard to economy of working and of charges. Considering the farmer occupying from 200 to 300 acres as the "midmost man in England," about equidistant from the two extremes of English society, and as a more numerous body than any other of those comprised under the general term "middle classes," the author thinks an extension of medium-class schools, suited both to the educational wants and to the average income of these classes, a great desideratum. There is at present, he considers, far too large a gap between the first-class public schools and the elementary ones, which it is necessary to fill up. He protests against the assumption of many who are interested in education, that the extension of the public schools on the one hand, and of elementary schools on the other, is destined to absorb, from above and below, all the children of the land. "It would be a great misfortune if pride and poverty were thus to divide the nation into those who pay so much the more for appearances, and those who pay so much the less through subsidies." With a view of influencing the development of this intermediate class of school, Mr. Brereton gives statistics as to the probable or possible scale of expense in three grades of middle-class county school, based in a great measure on his own experience, obtained in the capacity of chairman of the Board of Directors of the Devon and Norfolk county schools, and the Cambridge County College.

We will not now go into these questions in detail, but we may refer those who are interested in the subject (which means all thoughtful people), for a good deal of valuable information and suggestion which ought to lead to something definite. That there is such a want as Mr. Brereton suggests is indicated by the fact that some of our old "grammar-schools" are showing a tendency to degenerate, as some people consider it, into commercial and middle-class schools; in other words, are involuntarily complying with the chief demand made on them.

The book is illustrated by plans and views of

* County Education: a Contribution of Experiments, Estimates, and Suggestions. By the Rev. J. L. Brereton, Frebendary of Exeter, &c. London: Bickers & Son.

schools of the class advocated, either already built or proposed, among the former are included Norfolk County School and Cambridge County College. These are all planned and designed by Messrs. Giles & Gough, architects. The former of these is not yet in occupation, but is intended to be ready for it by Midsommer of next year. The plan is simple and good, and the external appearance satisfactory; and the author is justified in pointing to it as a school-building giving a very good result for the outlay,—13,000*l.*, or 50*l.* per boy. This, however, is intended as a "first grade" county school; the proposed "third grade" county school, the experiment which Mr. Brereton now wishes to see tried, would be calculated on a much more economical basis than this, to meet the wants of those of the farming classes who cannot pay more than 20*l.* per annum for a boy's education, and would find it more convenient to pay less. To render a school self-supporting at a less rate, Mr. Brereton suggests the possible combination of the industrial system, in the shape of farm schools; but admits the difficulties in the way, arising from the almost universal association of the industrial system with pauperism or crime.

Some remarks on the evils of a too systematic State interference in education, and the danger to be apprehended from any threatened extension of the already great army of State teachers (p. 72 *et seq.*) are well worth attention. The evil of a universally prevalent bureaucratic educational system would go far to outweigh an advantage to be derived from State supervision and subsidy.

Mr. Brereton has been long an active worker in the educational vineyard, and what he has to say claims attention.

THE SOCIAL SCIENCE CONGRESS.

The Earl of Rosebery, as President of the Social Science Association, delivered the opening address on Wednesday evening last, in the City Hall. We confine ourselves to a few of the more salient passages:—

There are probably few places to which an Englishman can point with more pride than to Glasgow, none, perhaps, which a Scotsman can regard with so much. I suppose that there are in this city over 500,000 inhabitants, that her rental amounts to two millions and a half, that the shipbuilding of the Clyde is supreme in the world. How long has it taken to produce this immense result? What is the origin of this great population? Whence dates this easy predominance in shipping, this vast collection of material wealth? Two centuries ago Glasgow was officially described as "a very neat burgh town, consisting of four streets." At that time she possessed twelve vessels, carrying 957 tons. In the year 1718, little more than a century and a half ago, the first Scottish ship which ever crossed the Atlantic—a vessel of 60 tons—was launched in the Clyde, which has since witnessed the building of the Cunard line of steamers. And as for her rental of two millions and a quarter, it has been computed that the rental of the whole of Scotland did not, a century ago, exceed one million sterling. We could not, indeed, have chosen a more suggestive scene for our Congress, or one where social science should be more dear. For here we have a great material result rapidly produced by the exertions of a vast labouring population; and no one, surely, in considering this Congress and its functions (as to which, indeed, I should wish to say a word presently), can avoid seeing that the most vital and perpetual question before it is the well-being of our working-classes; a vital question, because on the apt solution of it depends the commercial supremacy, the political solidarity, nay, the very existence of empire. To my mind, a body like ours has no more direct or important duties than the attempt to raise the condition of the nation by means which Parliament is either unable or disinclined to apply. Here we have an illimitable field of operations. Parliament can give a workman a vote, but it cannot give him a comfortable home. Nor can it sift and exhibit the many contrivances which may be placed before him of bettering himself, of increasing his capacities and enlarging his enjoyments. All this lies within our province, and it is work incalculably more important than the great mass of our Parliamentary legislation. In this city we are surrounded by a great aggregation of humanity—seething, labouring, begrimed humanity; children of toil who have made Glasgow what she is, and alone can raise and

maintain her; not mere machines of production, but vehicles of intelligence, mixed in nationality and various in opinion. You cannot appeal to them by common feelings or uniform interests. They are there a dark and mighty power like the cyclopean inmates of *Ætina*. I must honestly avow my conviction, though to those who see how many there are who profess to represent and understand the working classes it may seem rash, while to others it will seem a truism, that this vast labouring population of ours has not made itself, its wants, its creeds, and its interests sufficiently intelligible to many of us. How, indeed, if it be otherwise, is it, that the problems connected with their condition have advanced so little towards solution? How is it, otherwise, that each political party claims with equal certainty, and on every point, to possess the sympathy and the confidence of the working man? How else is it that when the working class makes its voice heard on any question, it comes upon us like thunder in a clear sky? I avow myself no exception to the rule; but for that very reason, perhaps, I can conceive no subjects more interesting than those which relate to the welfare of our labouring population. Perhaps, then, you will allow me to disregard the ordinary precedent upon these occasions. The opening address of this Congress has commonly surveyed the present position of those questions with which your Society is accustomed to deal, or which it watches with interest. But speaking, as I do, in the presence of so many who in the various sections will discuss such subjects with the ripe authority of knowledge and experience, I should feel it presumptuous in me to poise a light sentence or hazard a shallow conjecture, where my hearers can for themselves sound the very depth and, perhaps, approximate solution. I will therefore, if you please, attempt to-night to take stock, in some degree, of the various means by which it is sought to raise the condition of the working classes; a group of subjects some of which appear under different divisions in your programme, but which are intimately, I had almost said solemnly, connected together; and I would do so rather as a sign of humble interest in them, than with the slightest pretension of having anything original to advance.

It would not be difficult, and it would be painfully instructive, to draw out a diurnal catalogue of facts to prove how little the splendour of our civilisation differs from the worst horrors of barbarism. And yet, after all, we can only come to the hackneyed conclusion that the sole remedy for this state of things is education, a humanising education. It is not a particularly brilliant or original thing to say, but severe truth is seldom brilliant and original. There is a noble passage in De Tocqueville, known probably to all, and too long to quote here, which points out that knowledge is the arm of democracy; that every intellectual discovery, every development of science, is a new source of strength to the people; that thought, and eloquence, and imagination, the divine gifts which know no limit of class, even when bestowed on the enemies of the popular cause, yet serve it by exalting the natural grandeur of man; and that literature is the vast armoury, open to all, indeed, but where the poor, who have hardly any other, may always find their weapons. These, I say, are features of education which all recognise, though some may profess to dread them. But there is a general expediency behind. Take the case of machinery. The winter nights of 1830 were bright with blazing riots. No farmer in the southern counties felt his stacks safe. There was a time of terror in England and of retribution: "In Kent," says Miss Martineau, whose name terminated the eloquent address of your late president, and which, indeed, it is not easy for any such discourse to omit, "there were gibbets erected on Penenden Heath, and bodies swung there in the December winds,—bodies of boys about eighteen or nineteen years old, but looking much younger; brothers, who had said to each other on arriving at the gallows, 'That looks an awful thing.'"

Again, take the Luddite riots of 1812 and 1816, where cunning and furious mobs nearly stamped out lace manufacture at Nottingham. The broken frames and the burning riots were ignorant protests against machinery. Well, intelligence has marched a little, and what is the case now? What do the Associated Masters—no unduly partial authority—affirm? "The accuracy of this statement is manifest from the fact that the operatives are now the earnest advocates for improvements in machinery;

whereas, twenty years ago, it was no uncommon thing for them to strike at the factory where they were introduced." Here it seems to me that we can put our finger on definite and tangible progress due solely to increased intelligence. Take another case which shows the need of it. Wages were never probably so high in England as in 1873. Nine years before an increasing spirit traffic paid 9,692,515*l.* to the excise. In the last financial year, the excise receipts from spirits amounted to 14,639,562*l.* I am not one of those who are appalled, certainly not surprised, by this expenditure. But see how it strengthens the argument. A man who has little but natural instincts to guide him comes into a fortune, and at once procures himself an increased quantity of what has been in smaller doses an enjoyment and a solace. Has he been educated to find his amusement elsewhere? If one of us should succeed to a large fortune to-morrow, we certainly should not spend our inheritance in drink; but the difference, I venture to say, is one solely of culture. Well, my contention is, that in an educated country, among a nation educated, not in Shakespeare and the musical glasses, but so instructed as to be able to find amusement outside the public-house and skittle-alley, a great increase in wages would not have been followed by so enormous an increase in the consumption of spirits; and an enormous consumption of spirits means an enormous amount of crime and pauperism. The assertion is capable of proof which is almost direct. . . .

We require, if we would remain what we are, a special education of two kinds. The first I would venture to urge, with the more confidence as your memorial on the subject has done so much, is general instruction in economical principles. The science of political economy is not at this moment, perhaps, in particularly good odour. It is fashionable for people who pride themselves on being warm-hearted to flout political economy; though I think that those who have heard Mr. Fawcett speak, or who have read the "Autobiography of John Stuart Mill," would deny that political economists are bloodless beings. But, in spite of easy asseverations, the fact of direct utility remains. Take the case of strikes. Strikes are only one development of that slow but gigantic process by which, all over the world, capital and labour are readjusting their relations, and that supreme tendency in this age, of men as well as of nations, towards glomeration. In the first blush of conflict they may have disturbed our trade; but with a larger intelligence based on economical principles, is it not certain that each side will discover that their prosperity must be mutual, and their interests inseparably entwined? Again, consider for a moment. Strikes are rare in Germany; in Wurtemberg, where every individual in the kingdom above the age of ten can read and write, they are unknown. It is true that, in the United States, owing perhaps to sudden commercial crises that have occurred there, they are on the increase; but it must be honourably remembered that the executive committee of the New York Tailors' Union, in 1869, announced the termination of their strike, and at the same time their determination to abjure strikes for the more valid support of co-operation. What are the bloodiest and most perilous strikes whereof we have record? Surely the strike of the Belgian miners in April, 1869; and the strike at Creusot of January, 1870, which was suppressed by bayonets, and which anticipated the Commune. In both countries 80 per cent of the population are unable to read or write; from both countries proceed the wildest economical theories. Is it fanciful to see a connexion between these facts; to believe that a comparatively slight knowledge of economics, truths would prevent venacious strikes, or at any rate to hope that the day may come when the relations of capital and labour may be largely improved by the teaching of political economy in our public schools?

See the effects of technical education in one simple case. Switzerland is hemmed in with mountains, her climate is unfavourable, her soil is limited, her one resource of water-power is precarious and expensive; she has no coal and no harbours; yet she threatens the silk trade of Lyons, and takes the ribbon trade of Coventry. Her exports of silk alone rose in the eleven years between 1860 and 1871, 147 per cent. In quantity, and 132 per cent. in value. Can any cause be assigned for this but the complete and special education which she gives in primary schools, and practical schools, and trade schools, and secondary schools, and cantonal schools, all

topped up by the great Polytechnic Institute of Zurich? The Swiss manufacturer lives simply, he is a master of his business, and his workmen, with whom he is in perpetual contact, respect him for this. Master and servant have often been at the same school learning their craft; they know it thoroughly, and though it is said that the English operative will get through in ten hours as much work as a Swiss will in twelve, yet, judging by results, we may believe that the technical knowledge of the one brings him on a level with the physical capacity of the other. And the mention of Switzerland leads me to say, that technical instruction is needed as much by the master as the workman.

Mr. Scott Russell, in his interesting book on technical education, points out with great force how the practical ignorance of the master may earn him the contempt of his men; the ignorance and the distrust produce the middlemen who still further estrange the two parties, and the result is complete want of sympathy on both sides, with all the evils that that want implies. The master becomes a remote figure-head, the interest of the workman in his work passes away, the honour of perfection and the pride of finish. Hence there originate those modern contrivances which designedly suppress superiority in order to produce a dead level of wage for the good worker and the bad, contrivances which may serve the temporary purposes of strategy, but which strike at the root of character. "In the end," says Mr. Russell, "men cease to care for excellency or inefficiency of work. They end by treating with the same masters for mercenary terms; they cease to him who cannot appreciate good work. You shall pay us all alike, and they are right; where men are paid unequally, by the mere favour of a foreman, middleman, or manager, or by mere whim of an unskilled master, promotion is but another name for favouritism, and is most unjust to the best man. But this forced equality reacts again upon skill, and takes away all direct encouragement to personal superiority." In another branch of technical education we are almost entirely deficient,—I mean a rational education for commercial pursuits. The German clerk who comes to England astonishes our merchants, not merely by his mastery over two or three languages, but by his mastery of the principles and rationale of his business. In a nation like ours it would be supposed there would be ample means of instruction in commercial principles and practice. As a matter of fact, there is but one professorship of the principles of commerce in the United Kingdom, and that has neither endowment nor scholarships. It is probable that technical and commercial education will have to be provided by the State in England; it is more than probable that it will not be provided till our eyes have been opened to its necessity by grave and painful facts.

Union, as a principle (and union of some sort must, of course, precede co-operation) is the great watchword of our age. Nowhere has the multiplication of unions been more extraordinary than in the United States. The very names of some of them are quaint enough—the Advocates of Justice, the Knights of Honor, the Sons of Toil, the Brethren of Labor, the Sovereigns of Industry. But incomparably above these towers the gigantic association of the Patrons of Husbandry, commonly called the Grange: a great agricultural, co-operative, independent union. Its progress has been amazing. The first grange or lodge was formed in the last month of 1867; there are at this moment 20,500, with 1,311,226 members. At the end of the year it is certain that they will have 30,000, with two million members. The order is practically identical with the agricultural population of six states, and with two-thirds the farmers in ten others. In Missouri alone there are said to be 2,150 Granges; they are making way in Canada. Pennsylvania began the year with six lodges, and at this moment she has 800. Why this enormous increase? The answer is simple, for it is alleged that membership adds not less than 50 per cent. to the income of the Grangers. The California Granges have their own fleet, and ship their corn direct to Liverpool, by which they saved two million dollars in freights in the year 1873. Their vessels bring, as return cargoes, tea, sugar, coffee, silk, and other commodities, which are retailed to members at cost price; and a system is being organized by which their ships shall return with loads of every foreign article which the members may need. They are thus an

independent mercantile nation. But they are more. They have a social, religious, and political, as well as a co-operative aspect. They have a secret pass-word, renewed annually, Grange banks, Grange plough manufactories, Grange grocery stores, besides Grange poems and Grange burial services.

Besides the facilities of railroad and tramway, other efforts have been made to solve in some degree a difficulty. There are the buildings erected by the Peabody trustees, where, however, some inconvenience is said to be caused by the rule that no work may be done at home. Nor is it quite clear that the tenants are of the class for which the houses were intended. Then there are several building companies which not merely provide excellent dwellings, and thereby raise the character of the other houses in the neighbourhood, but which pay fair dividends besides. Thus the Metropolitan Association pays an average dividend of $5\frac{1}{2}$ per cent. The Improved Industrial Dwellings Company pays 5 per cent. The London Labourers' Dwellings Society pays 5 per cent. The Artisans' Labourers and General Dwellings Company pays 6 per cent. This last Association has built the Shaftesbury Park township, which was inaugurated under brilliant auspices this year. There are no public-houses or beershops on that estate, but the demand for the cottages, some 100 in number, far exceeds the supply; and the success of the undertaking has been so great that the directors have just bought another property in Harrow-road, which will accommodate 14,000 more inhabitants. "While Parliament," writes the manager, "is discussing these questions, I venture to submit that we have practically solved the problem." Nor can I disagree with him.

In New York, the difficulty of getting good houses for the poor is greater, if possible, than here. The houses are built by great landlords, most of them large owners of real property, who lease them to middlemen, who in their turn sublet them at an enormous profit. The owner gets 6 or 7 per cent. for his outlay, the middleman makes from fifteen to thirteen more out of the tenants. The consequence is that rents are enormous, and in the opinion of many eat up the difference between the wages of unskilled labour there and the same wages here. It is melancholy that such a state of things should exist in a city which offers so many attractions to the thrifty artisan; and knowing as I do how many good hearts and heads in New York are perpetually ready to assist in any scheme which may benefit their poorer neighbours, I cannot doubt that some method will be devised of bettering the present condition of affairs. There are so many men in America who bequeath their fortunes to philanthropic objects that it seems a pity none should have devised money for the formation of a township like that at Shaftesbury Park. It is only fair to add that the case of New York is exceptional. It is greatly overcrowded, owing to the immense number of immigrants, who, landing there, proceed no further. In Philadelphia things are much better. An excellent system prevails there, by which landlords build neat small houses, and let them directly to working men for about 6 per cent. on the investment, with the privilege of buying outright at the original cost within a certain number of years. In this way there has grown up in that city a large class of small freeholders, who are probably the most prosperous body of their class in the world, and a very backbone of strength and order in the commonwealth.

Another great effort is being unobtrusively made for the comfort of the population. The enjoyments of club-life, which have such an attraction for the Anglo-Saxon race, are being extended to the artisan. The admirable promoters of this movement believe, and with fair reason, that as public-houses offer social attraction to the tired workman irrespective of drink, so clubs are the most formidable competition which the public-house can have. "When every man," they say, "has a club and institute within reach, where he can find better society and more varied recreation than at the tap-room, he will leave the latter for the former." In Wisbech, with a population of 12,000, there is a club with 700 members, with extensive buildings, comprising a gymnasium, a hall, a clock-tower, and a library, with 1,069 deposited last year in its savings-bank 4641, in its coal-club, with classes of music and of science and art. It is said that there is a visible difference between the private homes of those who are members and those who are not. In Dundee

there is a club of 1,000 members, with interesting discussions on public affairs, with lectures of a high class on social and political topics, with an almost ghoul-like appetite for blue-books. Beer is here supplied, and there is no abuse. The achievements of these clubs (and I am only giving specimens) stir one like the records of great victories. Experiments on a smaller scale, but equally interesting, are the two clubs at Brighton founded by costermongers and hawkers, with the object, to use their own words, of raising their class "out of the gutter." There are at least 555 working-men's clubs in England and Wales, and twenty-four in Scotland, embracing altogether about 32,000 members. Here surely is a definite social agency with indefinite possibilities. Nor must we forget the savings-banks, where those who believe that the sole result of high wages is more drink should notice that in the past year the numbers of depositors in the Post Office savings-banks increased by 120,000, and the amount of deposits by 2,000,000, making the whole number of depositors a million and a half, and the total of deposits 21,000,000. Moreover, this does not represent the whole amount of thrift, when it is remembered that the Scottish banks allow interest on small deposits.

There is a higher ground for this legislation with us than with any other nation, and one on which every topic I have urged to-night rests for support. The conditions of life in this country are rapidly reversing themselves. Wealth is doubling itself, and increasing the population; greater care in management and subtlety in mechanical appliances are diminishing, and must further diminish, the proportion of persons employed, especially in agriculture: here is the problem, daily a greater population, daily in all probability less work, which means less subsistence. We are shut up by the sea with our surging myriads; a source of strength if guided and controlled; if not, an immeasurable volcanic power. Many of them must go forth to people the world. Our race has colonised and colonises, has influenced and influences, and in future ages seems likely further to colonise and influence, a great part of the habitable globe. So great has been our field of operations, that we can only view it with awe. It has been, and is a great, destiny for this country to sway so mightily the destinies of the universe. But the great privilege involves a sacred trust. We must look to it that the fertile race we send forth to the waste places of the earth is a race—physically, morally, and intellectually—equal to its high duties. At present we will not compel our children to be educated, however rudely; at present, in one of our cities, nearly a quarter of the infants born die before they are one year old.

EXHIBITION OF SANITARY APPLIANCES GLASGOW CONGRESS.

THE first thing on Wednesday morning the collection of sanitary and educational appliances in the drill-hall was inaugurated. The Lord Provost said they opened to-day the 18th session of the Social Science Congress, which, he was glad to say, was to be held in their own city. The first part of the programme was to inaugurate this Sanitary and Educational Exhibition, and he sincerely trusted that from the arrangements that had been made it would neither be the least useful nor interesting of the various departments of Social Science. If any one complained that subjects discussed at Social Science Congresses were not of a practical nature, and that there was nothing tangible about them, he was sure that if they came to this exhibition they would be convinced there were many subjects of very great importance. The object of this Exhibition was to show to the public the appliances invented for the promotion of the comfort, health, and convenience of the people. In tracing the past history of invention we met with what was really very striking and wonderful. We found that in the lapse of time the spinning-wheel was gradually transformed into the spinning-jenny, the common hand loom into the steam powerloom, the small hand mill for grinding corn into the large and splendid steam mill, the pump-well appliance into the pipes conveying water from the splendid reservoirs of the Gravitation Water Companies; the tallow candle and lamp had given place to the splendour of gaslight; the hand-sewing with the needle had given place to the sewing-machine; and he might add further that the photographic artist, arresting the light, applied it to form a pleasing figure

splendid building, or the beautiful and interesting landscape. It would be easy to refer to what had been done in reference to locomotion, shipbuilding, electricity, &c., but it was quite unnecessary. He thought, however, that while much had been done a great deal remained undone. Thousands of our population were becoming victims to disease and death from inhaling the poisoned air of unwholesome homes. This was particularly the case in large towns, where the population was huddled together in dense masses. It was only during the last few years that this department of social science had attracted the attention it required; but he was glad to say that it was now taken up not only in this city, but was becoming a question of importance in every town throughout the kingdom. Very intimately connected with this matter was that of the disposal of the refuse and sewage of large towns, which was also becoming an important subject for consideration; in fact, it was almost the question of the day. The subject of ventilation, which had been for some time neglected, was now becoming the object of great consideration, and it could not obtain too much attention. He was glad to find so many minds turn towards it, and so many appliances in the present exhibition calculated to promote effective ventilation. The more this was promoted the more would it conduce to the health and advantage of the community. With regard to the drainage, there had been a complete revolution in the system, the ordinary built drain-pipes having given place to glazed pipes, the benefit of which had been most apparent. In plumber-work, he thought much required to be done; and, as to the emission of smoke, he was glad that the subject was receiving some attention, and the greater the preventive measures introduced the more would they conduce to the health of the cities where such measures were adopted. He advocated an extended use of the bath as a means of preserving health, and proceeded briefly to allude to the details of the Exhibition, and finally declared the Exhibition open.

Mr. Chadwick, C.B., moved a vote of thanks to the Lord Provost for opening the meeting. He said that however important might be their discussions in the Health Section on the part of practicality, they must depend upon the mechanical appliances such as those exhibited around them. He had the honour of opening the Health Section of this Association in 1860 when it met here, and he came back to Glasgow, and was sorry that he could not bring with him a compliment of large progress having been made in that department in the interim. The death-rate still remained one-third in excess of what it might be in Glasgow, and what it was in the metropolis; and he thought it therefore required immediate attention, and the use of the excellent appliances now displayed to bring about a better state of matters. Such had been the progress made in sanitary science that they could now contract in the building of towns for a given death-rate; and sanitary science properly consulted would now enable them to construct for the working population of Glasgow habitations where the death-rate would be just one-half of what it used to be here. In modern dwellings, built with all sanitary appliances, the death-rate is 15 in the thousand, while in Glasgow, it was 32, 33, and 34. Now, surely it was time for them to bestir themselves to remedy this fearful state of matters. He advocated the use of concrete in the erection of dwellings as being less absorbent, and might be erected at half of the present cost. He regretted the absence of any specimen of concrete structures in the exhibition, and drew attention to various appliances shown,—of improved stoves, which greatly increased the heat of apartments, and that at much less cost of fuel; of apparatus whereby drainage would be improved, and smells prevented both inside and outside of dwellings, which would be a great improvement in some of the wynds of the city; and then referred to Lord Shaftesbury's model dwellings which had been put up at one-third less cost than on the ordinary system, and asserted that such buildings would certainly greatly reduce infantile mortality.

Mr. Godwin, F.R.S. (editor of the *Builder*), in an able and exhaustive address, seconded the motion. He regretted that the exhibitors had not been able to finish their work in time, as it would certainly detract from the usefulness of the exhibition. He contended that the Health Section was the most important for the city of Glasgow, as indeed it was one of the very greatest questions now before the world. He trusted that the inhabitants generally would

visit and carefully inspect the various exhibits in that place; and not be content with merely saying they were very clever and useful, but adopting them,—not be content to see their children dying in large numbers before their time. He approved of concrete buildings, and trusted that an effort would be made to get rid of the prejudice against them, pointing out that this would best be attained by getting workmen to make them properly. He mentioned approvingly Messrs. Craig's cisterns, and noticed the diagram of Clyde water exhibited, which he thought was almost sufficient to account for the high death-rate. In London 17 in the thousand died, while in Glasgow this quarter the number was 28,—so that 7 persons in the thousand in the year died simply because they lived in Glasgow, and not in London. He thought that was very dreadful, and that it had no business so to be. The school-fittings were worthy of notice, as having an important bearing on education; and he was glad to see Mr. Doulton had brought some sanitary ware from Lambeth, which was both ornamental and useful. He desired that the question of health might become so absolutely the important question of the city, that every proposition of the Town Council or other authority would be supported by the public, and that regardless of expense; for they might be certain it would be cheapest in the long run.

The motion was carried unanimously.

The Lord Provost, in acknowledging the vote of thanks, said he would be sorry if it went forth that they were one of the worst towns in kingdom in regard to sanitary affairs. He might inform them that great efforts are being made for remedying the evils that existed; but he thought it was unfair to compare Glasgow with London, where there were such a large proportion of aristocracy and wealth to the working population. The better comparison of Glasgow would be with Manchester. He did not want to excuse the sanitary condition of Glasgow, but he would like them to know that every effort was now being made, and would be made, for remedying the great evils existing from overcrowding, and adopting every appliance that could be conducive to the health of the people.

The opening proceedings then terminated.

THE LOCAL GOVERNMENT BOARD, AND WORKHOUSES, SCHOOLS, AND INFIRMARIES.

The Local Government Board have of late urged upon more than one London Board of Guardians the necessity of erecting new workhouses, schoolhouses, and infirmaries, not only with regard to sanitary measures arising from the insufficiency of cubical space and bad architectural designs, but to prevent paupers becoming the progenitors of another race of paupers through insufficient buildings. Several unions, like Lambeth, Poplar, Chelsea, and St. George, Hanover-square, &c., have (or intend to do so) expended immense sums in the erection of new institutions; and the rich provincial towns have alike built almost palatial prisons for the poor, and it would be difficult to point out any county where the inspectors of the Local Government Board are not endeavouring to make work for builders, and thus improve the condition and comforts of the poorest of the poor.

There is, however, a few miles from Hyde Park-corner, a workhouse at Isleworth, belonging to the Brentford Union, and since the year 1861,—four years longer than the Siege of Troy,—the Poor-Law Board and the Local Government Board have pegged away at the Brentford guardians to improve their workhouse. Two inspectors, Mr. Henley and Dr. Monatt, have held a conference at Brentford, and the observations made by those officials are applicable to all public institutions in England, and point out what the Local Government Board require of architects to workhouses, infirmaries, and schools.

Dr. Monatt said he would not consider the question of cubic space of Brentford workhouse, because if the air of a ward were sufficiently rapidly renewed, it mattered not whether a child had one or another cubic space; but they might place him or her in as large a cubic space as they liked, and if they did not renew the air it would be prejudicial; it would stint growth, and that would act on the mind. The rooms required the maximum amount of air, of light, of space, and of all cheerful surroundings, which they could bring to bear upon the children for their proper instruction and training. In the "building up"

of the children of the poor, they had two conditions to follow: one was to train them to earn their livelihood, and to put them in a condition to live without relapsing into the pauperism from which they had emerged. Was it possible to do this in a low-pitched room in which they could not increase the amount of door space or window space, particularly in those seasons when doors and windows could not be kept open without children suffering from chilblains and cold? children of the poor brought very good material to work upon. Their low vitality required great attention. He would like to see more playgrounds, and more scenes of cheerfulness. An immediate economy in confining the space would not be an ultimate economy, as they would come the progenitors of another race of paupers. The gentlemen of Brentford had resisted successfully all changes in this direction for four years. He had always been acquainted with Brentford as having three kings. Here he found a multitude of kings possessing a tenacity of purpose which would not allow itself to be controlled and bullied. If the buildings were sufficient they should be made so. It was of use to try and force a quart into a pint; it could not be done. He did not consider that the Government requirement of 300 cubic feet of air for each child was sufficient. In the Deptford School, at Chelsea, they had 600 feet. In the end a committee was formed to take up proposed new buildings into consideration.

"CLEARING AWAY" AT LIVERPOOL.

The spire and lantern of St. Nicholas's Church, built about eighty years ago, from a design of Harrison, of Chester, in imitation of the well-known lantern at Newcastle-upon-Tyne, form a prominent and interesting feature in views of Liverpool. Every inhabitant of the town would miss it, and grieves to miss it; and yet it appears that its destruction is threatened, and without any necessity for the step. Mr. Samuel Huggins has published a letter strongly deprecating the proposed removal, and it is to be hoped that it will be listened to. Mr. Huggins adds:—"I do not see that the destruction of this interesting pile, which is to Liverpool what the cathedral is to our old diocesan cities, and should be deemed as sacred, is at all called for; but, on the contrary, I feel convinced that all rational schemes for increase or extension of the avens of the town, as well as for facilitating approaches to the river from every direction, can be carried out and completed without touching it. I never yet heard of anybody who had any serious intention of crossing the river being stopped by his or her progress by St. Nicholas's Church."

GAS.

THE Metropolitan Gas Companies, threatened by the authorities, have evidently combined to take the wind out of their sails, in the meantime, by a reduction of prices, instead of a more of the threatened increase.

The Gas-Light and Coke Company were those who took the initiative, and have promised to reduce their charges for the year 1875 to 3s. 6d. per 1,000 cubic feet. This company has declared the maximum dividend of 10 per cent., showing a balance, moreover, of more than 34,000 carried over to the next year.

The Phoenix directors, while stating that the increase of price to 4s. 6d. was not sufficient to come, somehow, to the conclusion that they should reduce their price to 4s. 2d. The net amount of their profit for the past half-year has been 34,511*l.*, and they declare the following dividends:—On the 20*l.* dividend shares, 10 p. cent. per annum, 27,000*l.*; on the New Stock 7 p. cent. per annum, 7,425*l.*; on the capitalised stock, 5 p. cent. per annum, 3,600*l.*; total, 38,025*l.*

The Crystal Palace District Gas Company report states that the balance of profit and loss owing to the serious depreciation in the value of coke, and the effect of the high price of coal had been insufficient to pay the full statutory dividend. But this had been anticipated and provided for in the balance carried forward from former half-years. If this had not been the case the only alternative would have been to have increased the price of gas to the consumer. The rental was steadily increasing, and the dividend at the rate of 10 p. cent. per annum was declared.

It is to be hoped the authorities will not swerve from their declared intentions.

THE BALFE STATUE AT DRURY LANE.

THE statue in memory of Balfé, to which a number of friends and admirers of the composer have subscribed, has been placed in the vestibule of Drury-lane Theatre, where his first successes were earned, and was unveiled on the 25th ult. by Sir Michael Costa, before a large party of those interested in the deceased musician, either by personal friendship or artistic appreciation. An address was delivered by Mr. Gruneisen, who sketched the composer's career.

The statue, as we have before mentioned, is the work of M. Malempré, who was a pupil of Baron Triqueti. It might have been thought more suitable that the memorial statue of an English musician should have been entrusted to an English sculptor. Putting that apart, the subscribers and friends who gave the commission are to be congratulated on the result. The figure assumes the attitude a little too commonly given by sculptors to the portrait statues of those who have been authors, either in letters or in music, with the right hand holding the pen, as if about to write, and the left supporting the manuscript. As no one would willingly write in this uncomfortable position, we must suppose him hastily altering a score at rehearsal, as, indeed, we have seen him do. The character and expression of the face are so marked and decisive as almost to stamp it as a likeness, and those who only remember the composer through his public appearances, will have no difficulty in crediting the testimony of his intimate friends that it is a most faithful portrait. The sculptor has availed himself of the folds of a cloak, rather than coat, to give dignity and amplitude to the statue, which is a very satisfactory addition to the architectural dignity of the Drury Lane entrance-hall.

ART CONGRESSES.

It is somewhat surprising that the Congress idea which has taken such hold of the public mind and been so successfully carried out in varying directions of human knowledge and inquiry has, as yet, in no distinctive shape been applied to Art. We have before, in a general way, in our remarks upon the late Architectural Conference, and in a *resumé** of some of the topics then under discussion, touched upon the extreme suggestiveness of this subject, which has only to be named for it to become at once apparent that Art, in its many-sidedness and numerous branches, would afford the most fruitful and interesting matter for presentation at a Congress.

The advantages attending the Congress system would seem to be peculiarly applicable to the present position of Art in this country. It is not too much to say,—notwithstanding the extraordinary patronage which has been bestowed upon art in recent years, and the high prices which have fallen to the lot of some contemporary artists,—that caprices of fashion and "getting up a name," have had a good deal more to do with this than any steady, intelligent appreciation of art as such, and very little that love and enthusiasm which becomes in time an unerring instinct for what is true art and what is not. Alongside of all the *furors* which occasionally sets in for certain phases of art, and favourite artists, it must be evident to those who give themselves the trouble to think that there is a deplorable amount of apathy in the public mind as to all which concerns real art, and often a total indifference, as well as lack of discernment, as to what is endured and passes current for the best art, be it painting, sculpture, or architecture. Now, the special characteristics of a Congress are admirably adapted to such a state of things. To arouse interest; to focus thought from all quarters—not only those purely professional; to procure a general audience of interested listeners; and, through the publicity given to the papers read, and the discussions entered upon, by the press, to reach the widest possible area of influence, is precisely what is wanted for art-matters, if they are to become something more than the delight of the *dilettanti*, and something other than unintelligent, nine-days' wonders, to which people rush at the dictate of fashion, as is now so notoriously the case. We except from these remarks the thin streak of genuine art-lovers and thinkers, undoubtedly to be found in epochs of real culture, as now. It is, however, but too true that the professional journals devoted to art have but a limited circle

of readers to whom their subjects are something of a speciality, and that the many valuable works which are born of the thought and devotion of the highest minds to art have a perhaps more limited circle of influence.

The most valuable results, then, of such Congresses would lie, on the one hand, in bringing together in the most comprehensive manner the best representatives of current thought on artistic topics, which could not but have a tendency to create a greater community of views and aims than now characterise the professions devoted to art; and thus it might be hoped that fresh points of departure for more assured progress would be reached. The other, and equally important, element, would lie in the contact with interested audiences,—for people will listen where they will not read or think for themselves,—who would thus be drawn on into that lively and intelligent appreciation of art which is so much a desideratum. Of nothing is it more true than of art that it does not exist for itself, but lives most when it seeks to shed abroad its truly elevating and refining influences over the most extended area, and finds that response in the nation at large which is its due, and the need at which it aims.

The interest attaching to artistic topics certainly could not be less than that which has been evoked in Congresses having before them very univerting and unpromising subjects, but which, nevertheless, have been a marked success. It is, however, difficult to conceive what class of subjects could yield a more varied or attractive programme than the artistic, and the model hitherto pursued of dividing the Congress into sections would furnish all that could be desired for distributing the interest over a wide field, from the most professional to the most popular aspects which such subjects fortunately embrace.

The machinery and working of the Congress system are now so well known that it is unnecessary to point out the steps for organising an Art Congress. If taken in hand by some of the associations now existing for the promotion and encouragement of the fine arts, we cannot think the task would be found a difficult one, or that the results would be dubious; on the contrary, we believe it would be attended with the most gratifying success. It is equally unnecessary to point out that in the subjects to be embraced it would be an *embarras de richesse* which would meet us; which might also be said as to those who might be called on to take part in the deliberations of such a Congress, so numerous and able are the votaries of art at the present time among its professors, thinkers, and writers. A host of names at once arise who could lend a surpassing interest to the practically inexhaustible series of subjects which the history, biography, and technique of art would furnish.

It would probably be found a very desirable feature of such congresses that they should be held successively in all the different centres of the intelligence and population of the country. That in addition to the Metropolis, Edinburgh, Liverpool, Manchester, our University towns, &c., would welcome such Congresses with the liveliest satisfaction is certain; and if at any time could be combined with them something similar to those admirable Fine-Arts Exhibitions which did such unique honour to Manchester and Leeds it would add greatly to their service and attraction.

There is so much about the whole subject which suggests itself that it seems superfluous to pursue it into further detail. We have only entered upon it in a skeleton manner, believing that its importance is such, and so likely to be recognised, that nothing more is necessary. That a good service would be done to the cause of genuine art in this country by such gatherings we cannot for a moment doubt, and that many of the adverse influences which now injuriously disfigure and divide true art-interests amongst us would be softened down, if not removed, is not the least important hope which may fairly be indulged.

We have opened our pages of late very considerably to the presentation and discussion of propositions in relation to the best means of giving a greater homogeneity to the conditions attending modern art progress—more especially in regard to architecture—and among these, generally, the applicability of something of the University system to art, or specifically as to architecture, the establishment of Colleges, as possibly the one means to which circumstances now point as likely to meet and overcome the accumulated evils which have long pressed with

almost unendurable force upon the capable architects amongst us, who find themselves tied and bound by the almost hopeless aspect of the present condition of things. All such suggestions, however, are of course open to objection and present many and peculiar difficulties. Whether such propositions are destined to be realised in any shape or form, or whether the times are ripe for any movement in advance of the heterogeneous, uncertain, and unsatisfactory conditions under which art subsists amongst us may perhaps be doubted. But as a *via media* entirely free from the objections started to more specific proposals, and as susceptible of embracing many of the objects thereby sought to be attained, we have thought that the suggestion of Art Congresses would open a way, valuable in itself, and as providing an arena for the consideration of the many problems which yet await solution in regard to the whole status of art in this country. It may, however, safely be assumed that such gatherings would form a meeting-place for all concerned in art-progress, whether as thinkers or exponents; and that the influence brought to bear upon the general public could not but have the happiest effect in elevating their perception of an interest in art to something more than a mere gregarious exhibition-going, and to its proper conception as a region of abiding and refining intellectual pleasure which is at present the rare possession of the few.

A RAMBLE ABOUT PEEBLES.

ON one of the brilliant days of last week we found ourselves, while as yet the sun was not high in the heavens, issuing from the door of the Tontine Hotel, in the pleasant little town of Peebles, which, in the early days of the late Lord Henry Cockburn, was so inanimate and dull, that in speaking of it he used to say, "As quiet as the grave or Peebles." Some five-and-twenty years ago railway enterprise discovered the romantic beauty of the surroundings of the sleepy town, and sent the iron lines into its very heart. Villa after villa rapidly arose on the undulated slopes and heights, whence the Tweed, the silver Tweed of the Romans, could be seen glittering on its way to the sea. The narrow windows of the shops and the "half doors" over which their proprietors used to loiter or slumber, wearily waiting for customers, and the sign-boards, 3 ft. by 2 ft., gave way to frontages that would not disgrace Oxford-street. All was changed. The "oldest inhabitants" shook their heads and prophesied gloomily of the change. We have known Peebles for more than twenty-five years, and have watched the improvements with a pleasure not unmingled with regret.

We leave Peebles behind, and make our way westwards. Scarcely have we done so, when we come in sight of the ruins of the church of St. Mary, founded by King David, that "sore saint for the crown," and the only church, with the exception of St. Cross, founded by Alexander III., that remains of the fifty churches that existed in the end of the fourteenth century. Around the grey tower of St. Mary are the graves of long-forgotten lords, and knights, and ladies. Most noticeable are the resting-places of those who held the Cameronian faith, who are buried with their heads to the north and their feet to the south. The Cameronian faith has passed away, and the grave-mounds of those who held so sternly to it are almost level with the surrounding turf.

About a mile further west we come to Neidpath Castle. The date of its erection is unknown. Its very existence was unknown except by those who lived in its neighbourhood, until the cannon of Cromwell made it famous. The more ancient part of the castle has tumbled in huge masses down to the margin of the Tweed, proving by their size and coherence that the ancient builders knew the secrets of cement. By a narrow corkscrew stair we ascend to the top of what remains of the later portion of the castle. Through all the Borderland no finer panorama can be beheld, which we must not stop to describe. Neidpath was one of a chain of towers, from the battlements of which the smoke rose by day and the beacon flashed by night, to telegraph to Tweeddale that the hordes of the English Border-men were on their way north to plunder and slay.

Still westwards, and with the Tweed flowing 100 ft. below us, we pass one or two stately trees, all that remains of a noble forest that was gambled away in a London hell by the then proprietor, the Duke of Queensbury,—the notorious "Old Q." This transaction so shocked

* Architectural Colleges, p. 665, ante.

the feelings of Wordsworth, that he dedicated a withering sonnet to its infamy. A mile further on, and we descend to the margin of the Tweed; there is no bridge, but an obliging baker who is about to cross carries us over in his cart. A short walk brings us to a huge stone, connected with which there runs the legend that, "once upon a time," an old woman with a very irascible turn of mind, was driving her sheep home; as they proved recalcitrant she implored the Father of Evil to turn them into stone. Her wish was granted, and the old woman shared in the change. The stone is evidently a fallen monolith. On it are several mysterious cup marks which are found on other monoliths, and are still a puzzle to archaeologists. The church of Manor Valley is in sight. In the little burying-place adjoining, the body of the "Black Dwarf," better known in the district as "Bowed [crooked] Davie Ritchie," was laid to rest, but not for long. His legs not longer than those of a two-year old child, his amazing length of arm, and his gigantic strength excited surgical curiosity, and one night when the little hamlet adjoining the churchyard was buried in repose, his remains were reinterred. A drawing of his skeleton may be found in the collected essays of John Brown, M.D., of Edinburgh. We pay a non-antiquarian visit to a courteous miller, and are regaled with a homely meal of oat cakes, cheese, and milk, on the strength of which we reach the Woodhouse farm. We are beckoned to enter the house by the farmer himself, as we shortly discover. He has much to tell us of "Bowed Davie," he also refreshes us, and then we enter his inner room and are shown the chair of the Dwarf. Being permitted, we sit down. The seat is scarcely as high as a hassock; if it were deprived of its back it might be useful in those "drawing-room entertainments" which consist in an athlete tossing trembling children from the soles of his feet to the palms of his hands and back again. Adjoining the farmhouse are the two cottages; under one roof, in which the Dwarf and his sister lived. They each consist of one apartment, and the lintels of the doors are so low that we have to bend ourselves double in order to enter. These cottages stand on the site of two that were built by the Dwarf, his materials being huge boulders and turf. All that remains of his handy work is a low wall surrounding his little garden, every stone of which could hardly be raised to position by the united strength of two ordinarily strong men.

Further up the glen we go, and reach the Ship-stone, a huge boulder of more than a hundred tons weight, and visible at a great distance. There are some peculiar tracings on the stone, but whether the work of the glacier or of human hands, or both, we cannot say.

Retracing our steps towards Peebles, we cross the stream of the manor which gives its name to the valley, and ascend the steep side of Kadmir Hill. We have hardly commenced our climb when we come upon the remains of a Roman road, whence it came or whither it led was a nut which Gordon the Scottish antiquary could not crack. We ascend further, and then scramble over a ridge of large rough stones, then up among grass and heather, then over another ridge of stones, more grass and heather, and we stand on the summit. Looking around we see that these ridges of stones form an inner and outer circle, the ruined ramparts of a British (?) camp. Whoever were the builders no position could be better chosen, for it commands a view of the three valleys which encompass it. Looking westward from the centre of the camp we see the cone-shaped top of Tinto Hill, which in its turn beholds the rugged summit of London Hill, commanding a view of the counties of Ayr and Dumfries, and the far-off sea; looking eastward the grand proportions attract our notice, and further and still further east Ettrick Pen and the Eldons, the Hiresel, and the Steep of Norham. All these mountains are crowned with the remains of ancient fortifications, and their garrison could in a brief space of time send an alarm across Scotland from sea to sea.

Kadmir is said to be a corruption of Caed an-mohr (the place of the great battle), the legendary proof of this is that a clear and copious spring in the immediate vicinity of the camp is named the Red Well. At this well we eat our sandwiches with relish and rest for a while. Down the opposite side of the hill we go. At the foot we come to some nearly obliterated remains of earthworks which the Peeblesians name Randie's Walls, from their having formed the

boundary of some land that belonged to a "randie" (a quarrelsome woman); in reality they were the position occupied by Randolph when he laid siege to the castle, now no more, of Peebles. Fact and fiction are strangely blended. A few steps more and we cross the bridge of Peebles, which for hundreds of years, along with that of Berwick, were the only bridges that spanned the Tweed between its source and its commingling with the ocean. The old bridge of Peebles still remains, but about fifty years ago was widened.

We ascend the steps of the Tontine Hotel. Our day of antiquarian ramble is ended. We sit for an hour or so gazing on the stars as by twos and threes they rise above the dark mountains, and then, wearied and worn, we retire to rest, and are lulled to slumber by the music of the Tweed that murmurs beneath our window glittering in the moonlight.

THE FINSBURY PARK AND HIGHBURY RAILWAY.

THE new junction line which the Great Northern Railway Company are constructing from the Finsbury Park Station of the main line to the North London line near Highgate, is now almost completed, and will be opened for traffic during the ensuing month, when the Great Northern Company will be enabled to run their trains to the Broad-street station. The new line is two miles and a half in length, and joins the North London line by a junction between the Highbury and Canonbury Stations. There are some peculiar engineering features in the construction of the new line, which runs both on the east and west sides of the main line, and also crosses under it. On leaving the Finsbury Park Station, what is called the "up" line runs partly on a viaduct of twelve arches, along the east side of the main line, for a distance of about three-quarters of a mile, at which point it joins the "down" line, which has been constructed on the west side, passing under the main line by a skew bridge, 230 ft. in length. It may be interesting to state that this bridge was constructed and carried underneath and across the whole of the company's main lines and sidings, consisting of eleven sets of metals, without interrupting the traffic, the work requiring a considerable amount of engineering skill and caution. The abutments of the bridge are of brickwork, supporting a flooring of iron girders. After passing under the bridge the line is carried forward for about a quarter of a mile on an embankment, and thence through a cutting, passing under a bridge which carries Park-road, Highbury-hill, over the railway. This bridge is also skew-formed, and 130 ft. in length. At about a mile and an eighth from the Highbury junction the line enters a tunnel, which is carried under Highbury crescent, Highbury-place, and Highbury-mews, and after emerging from the tunnel, which is three-quarters of a mile in length, the line proceeds through a cutting to its junction with the North London line near to the Highbury Station. The extreme depth of the tunnel from the ground-surface at Highbury-crescent to the railway-level is 50 ft. The face of the tunnel is lined with blue Staffordshire bricks. The works include the construction of a new road, connecting the Seven Sisters-road, with Stroud-green-road, and two new iron bridges over the Seven Sisters-road, the span of the bridges being 87 ft. and 80 ft. respectively, together with two similar bridges over the Stroud-green-road, each 72 ft. span.

For the additional traffic expected at Finsbury Park Station, the station has been entirely reconstructed, and very much enlarged, so as to afford greatly increased passenger accommodation. The principal frontage of the new station, which is 400 ft. in length, and 30 ft. in height, is built upon arches, the spaces under the arches being formed into booking-offices, parcel-offices, waiting-rooms, and other apartments for carrying on the traffic. A subway under the several lines, carried entirely across, 12 ft. in width and 12 ft. in height, and well lighted, from which there are four staircases, leads to the several platforms. The platforms, four in number, are each 500 ft. in length, and their width is 28 ft., 32 ft., 35 ft., and 40 ft. respectively. The two widest platforms will be set apart for the main line proper traffic, and the other two will be for the general local traffic; and that to and from Broad-street over the North London line. To each platform a lift is provided for the removal

of luggage to and from the company's lines. All the platforms are roofed over two-thirds of their entire length, and each is fitted up with waiting rooms for first, second, and third class passengers.

The whole of the works have been designed by Mr. Johnson, the company's chief engineer, and carried out by Mr. Joseph Firbank, the contractor, under the superintendence of Mr. J. Claringbull, the resident engineer.

FROM GLASGOW.

Merchants' House and Bank of Scotland, Glasgow.—The Dean of Guild Court, which is the local authority for sanctioning the alteration and erection of buildings, at a recent meeting approved of the plans for the erection of a new Merchants' House and the extension of the Bank of Scotland in George-square, Glasgow. The new buildings will extend from the present premises of the Bank of Scotland to West George-street thence westward to St. Vincent-lane, passing under the east side of the latter. Of the entire frontage of 240 ft. to George-square, about 68 ft., in addition to the 80 ft. already owned by them have been acquired by the directors of the bank, leaving about 100 ft. for the eastern section of the Merchants' House. The architectural character of the existing bank premises will, as far as practicable, be maintained throughout. The proposed addition will terminate near the centre of the square, and at that point the building will be carried four stories high, being one story above the blocks on either side. Although the new arrangement will not at present result in giving additional bank accommodation, the new premises will be so arranged that while, in the first instance, they will prove suitable for offices and warehouses, they can eventually, if necessary, be converted into the tanning and other departments. The extensive block of buildings which will constitute the property of the Merchants' House are intended to be three stories in height, with basement floor and attic. The north-east corner of the new portion of the building will be surmounted by an ornamental tower rising to a height of between 120 ft. and 130 ft., whilst on the north-west there will be a tower of smaller dimensions. From West George-street, which will form the principal frontage, there will be two main entrances, one leading to the private and public offices of the company, and the other to the hall, 64 ft. long by 33 ft. broad, situate on the second floor. A number of retiring-rooms for ladies and gentlemen will communicate with the hall; whilst on the eastern side there will be a neat orchestral gallery. The proposed accommodation may thus be briefly described:—On the first floor, a public office and a series of private rooms; on the second, the hall above-mentioned, a board-room, secretary's room, and a number of private rooms; and on the third, the offices of the head clerk, two public offices, and several smaller rooms. Building operations have already commenced. The buildings formerly occupying the site have been demolished, shortly to be substituted by a range of edifices which will be a credit not only to the architecture of this locality, but to the whole city. The architect for the Merchants' House is Mr. John Burnet, and for that of the Bank of Scotland, Messrs. Campbell, Douglas, & Sellars.

Mossbank Industrial School.—In October last the main building of the above institution, situate at Hogganfield, near Glasgow, was destroyed by fire, the damage being estimated at from 9,000l. to 10,000l. The ceremony of relaying the foundation stone has just taken place. The original structure has been entirely removed, except the two end wings, and it is proposed now to re-arrange it on the block system, the connection being by corridors on the ground-floor. When the structure is rebuilt, there will be accommodation for about 400 inmates. In addition to the main block, a large range of workshops has been erected, and a separate building, containing class-rooms, is in contemplation. It is estimated that the cost of rebuilding the institution will be 8,867l., and the directors, it is satisfactory to learn, have sufficient funds in hand to cover this outlay. The structure, which will be of a very plain description, will be built of brick. Messrs. Campbell, Douglas, & Sellars, the architects of the original building, have prepared the plans.

Proposed Statue in Glasgow to Dr. Livingstone.—An energetic movement has been set on foot by some influential citizens of Glasgow to erect

a public statue to Dr. Livingstone, whose birth-place is situated within a few miles of the city, and who, as is well known, was educated at the local university. Glasgow has already much to boast of in the number of its public statues to distinguished Scotsmen, and it has been felt that the city would lie under a stigma were no effort made to add to the number some substantial memorial of the distinguished African explorer. Some time ago when the London Geographical Society instituted a search expedition for Livingstone, it was resolved to raise in Glasgow the sum of 1,000*l.* to aid the object in view. The subscriptions amounted, however, to between 1,400*l.* and 1,500*l.* It has just been resolved to apply the balance of 500*l.* since remaining in the bank as the nucleus of a sum of 500*l.* to be raised for procuring a statue of Dr. Livingstone. A subscription list has been opened, and at a meeting last week it was stated that seventy gentlemen had promised to give the maximum subscription of 5*l.*, so that there is every probability that the project will be carried to a satisfactory issue. No decision has of course been come to as yet as to the details of the work.

IMPROVEMENT AT GLASTONBURY.

The borough surveyor, Glastonbury, Mr. J. Ayres, writes as follows:—

"Between two and three years since, you published in your widely-circulated paper some letters from a correspondent, which contained some very disparaging statements respecting the health and sanitary condition of our town."

"At the same time I also wrote to you on the matter, giving you what I considered to be a fair statement of the facts, which contradicted several of the statements in question. I also informed you that we were then busily engaged carrying out a thorough system of drainage, and that time, that system has been completed, and after a working test of twelve months, has produced the most satisfactory results, the sewage being conveyed a distance of a mile from the lowest part of the town; and in addition to this, the Town Council have completed the water-works, and provided the inhabitants with an endless supply of the purest water."

"I have much pleasure in forwarding to you a local paper with the medical officer's report presented at the meeting of the Town Council."

"We are very glad to hear what has been done, but by no means admit that the remarks to which Mr. Day refers were exaggerated. We trust that they proved useful."

"The report from the Medical Officer of Health, Mr. Purnell, states that 'the annual death-rate is less than 9 per 1,000,' and says, 'I feel that the present healthy state of your town mainly due to a purer supply of water, a better system of drainage, sewer ventilation, and other well-directed sanitary efforts of your Board.'"

"The inhabitants, however, must not fancy on this that they have done all that is necessary. It is the first quarterly report only, and proves nothing. They must wait for longer averages. Glastonbury is a charming place, and with proper care will be one of the healthiest."

NAILMAKERS.

THE FELICITIES OF NAIL-MAKING.

In the reports just issued of the inspectors of factories, some peculiar information is given as to the nail-makers of the Black Country and its operations. It appears that one peculiarity of the nail districts is, that it not infrequently happens that the nail-makers are compelled to idle during a great part of their time in consequence of the want of iron. They visit the rehouses punctually where the iron is to be distributed, but there they are obliged to wait until it is convenient for the masters to serve it to them. The result of this, it is pointed out, is, that many would-be industrious men are driven to the public-house merely because they have nothing else to do. Again, the nail-maker sometimes acts on the caprice or real necessity of the master, inasmuch as when he arrives home from the iron, a message may reach him from the master stating that nails of a different size are those for which the iron was served out, and required, thus necessitating a change of iron, and compelling the unfortunate nailer to go in search of the iron of the required size by which he is sometimes at a pecuniary disadvantage.

It is further mentioned that a still greater grievance is that, through some caprice of the master nail-maker, he will not purchase nails from the smaller manufacturer when he knows the latter is hard pushed for money, the result being that the small maker is driven to some truck-master to dispose of his nails, when, in the end, the first nail-master buys the identical nails from the dealer in truck. Yet another grievance is the price paid for the labour of women and children. These, it appears, after a time are as expert in their work as most men-nailers; but few masters give the same price for the women's and children's work as they do for the men's, it being alleged that they get an extra profit by thus beating down the price, as all the nails of the same sort are mixed together when made, and sold at the same price. The only actual loss is suffered by the nailer; or should there be any difference in the quality of the nails the buyer also loses to some extent. The factory inspectors state, that their experience of the nailers is, that they are, as a class, indolent and improvident, though there are many respectable and intelligent people amongst them who declare that "they have to work fifteen hours a day to make a decent living." It would seem, however, that the week's work of an ordinary nailer is generally reduced to four days. Sunday, of course, is a *die non*, so far as his work is concerned. On Monday, he collects iron and orders for nails; Tuesday he frequently idles away; while on Saturday he takes to the nail warehouses the proceeds of the week's labour, which are then weighed. During the other days of the week the work is carried on very actively, the operations being carried on almost night and day to make up for lost time, and it is complained that the female and even junior members of the family are required to perform their part in this system of hard labour. Generally speaking, the nail-makers seem to be susceptible of great improvement in their condition.

THE AGGREGATE MILEAGE OF CONTINENTAL AND FOREIGN RAILWAYS.

The entire length of the railways in different countries in Europe (apart from the United Kingdom) is shown in a very interesting Blue Book which has just been issued, and which gives the present mileage of railways in the various countries named. It will be seen from the figures that in all the countries referred to the work of construction has been mainly carried on since the year 1850, the mileage at the close of the last-named year being of a very limited character. The returns in the Blue Book are brought down to the close of 1872. In Germany there were, in 1850, 3,637 miles of railway, which in 1872 had been extended to 12,701 miles. The proportion constructed by the State, as compared with that effected by private enterprise, is a noteworthy feature in the returns. More than one-half of the lines constructed in Germany were carried out at the expense of the State, and the remainder by private companies. The entire length of lines in France, in 1850, was 1,899 miles, 1,689 miles of which were constructed by private companies, against only 209 miles at the expense of the State. In 1872 this mileage had increased to 10,847 miles, which was mainly carried out by private companies. In Russia there were only 634 miles of railways in 1860, whereas they had increased to 7,000 miles in 1872, nearly the whole having been constructed by private companies. There were only 802 miles of railways in Austria in 1850, but in 1872 they had increased to 3,724 miles. The whole of this expansion was due to the enterprise of private companies, the State not having expended anything in the construction of the various lines. In Hungary the railway mileage in 1850 was 138 miles, which in 1872 had been increased to 2,151 miles, all by private companies. Spain, in 1850, was almost entirely without railways, having in that year only 17 miles, but in 1872 the railways in that country had expanded to the extent of 3,980 miles, chiefly the result of private enterprise. The railways in Portugal were limited to 81 miles in 1850, but in 1872 they were 439 miles in length. Italy had 265 miles of railway in 1850; in 1872 they had increased to 4,087 miles, private companies alone having effected the construction of the extended lines. There were 109 miles of railway in Holland in 1850, and in 1872 they had increased to 1,043 miles. Here the State

largely contributed, having been instrumental in the construction of 614 miles. Sweden furnishes a remarkable instance of the absence of railways in 1850, there being only 4 miles of railway in that year, whereas in 1872 there were 1,198 miles, nearly the whole having been constructed by the State. Switzerland had only 16 miles of railway in 1850, but in 1872 it had 1,000 miles. Denmark in 1850 had only 20 miles, which in 1872 had increased to 540 miles. In the year 1860 there were only 41 miles of railway in Turkey, which in 1872 had increased to 142 miles. The returns show that Greece is almost entirely without railways, having had none down to 1870. In that year a line of 6 miles in length was constructed, and that is all the railway accommodation of which that country can at present boast. The above statistics show that the aggregate length of railways in the several countries indicated, down to the close of the year 1872, was 48,213 miles, and that about four-fifths of this mileage, or about 40,000 miles, were constructed between 1850 and the date down to which the returns are made out.

OPENING OF A NEW RAILWAY STATION AT BOLTON.

THE London and North-Western Railway Company have just completed the erection of a large and commodious new station at Bolton, at a cost of 40,000*l.*, which has been opened during the present week. Hitherto the station accommodation of the London and North-Western Company at Bolton has been very limited and defective, but as new lines are now in course of construction which will place Bolton in more direct communication with both Liverpool and Manchester by the London and North-Western Company's system, a large addition to their existing station accommodation at Bolton has become necessary.

The new station, which is situated in Great Moor-street, one of the principal thoroughfares in the town, covers an area of upwards of three acres in extent. In front of the entrance to the station buildings, the elevation of which is of stone, there is a spacious area, surrounded by a glass abutment and covering, projecting from the walls of the station. There are two entrances to the station, one on the right and the other on the left side of the building, leading to the arrival and departure platforms respectively, which are reached by two flights of steps. On the ground-floor are the booking-offices, adjoining to which is a large waiting-room, 56 ft. by 36 ft. At the rear of the booking-offices are the station-master's offices, and rooms for the inspectors, together with commodious parcel offices, 25 ft. square. The railway level is considerably above the floor of the booking-offices, and the steps on the left-hand side of the station buildings lead to a spacious covered carriage-shed, 320 ft. long, and 100 ft. wide, which is spanned by a roof of iron and glass, in two bays, supported by 16 large cast-iron moulded columns and principals. On the departure side of the platform there is a large and handsomely-fitted refreshment-room, together with kitchens and every culinary requirement; and there are also four waiting-rooms, each 21 ft. by 14 ft., and consisting of first and second class ladies' waiting-rooms, a first-class gentlemen's, and a general waiting-room.

The general contractors were Messrs. Knight & Pilling. The ironwork was supplied by Messrs. De Burgh & Co., of Strangeways, Manchester.

Edinburgh Parliament House.—The law courts and other departments of the Parliament House of Edinburgh are being thoroughly renovated, advantage having been taken of the recess to carry out so desirable an improvement. The great hall is being thoroughly cleaned, the thick dust being cleared from the walls and the historic portraits there suspended. It was found difficult to remove some of the paintings, owing to their large size, and the height at which they are hung; but at length the work was accomplished by Mr. Smith, of Frederick-street. Mr. Brodie, sculptor, is superintending the cleaning of the statuary. Among the minor improvements, it may be mentioned that double doors have been attached to the outside and inside of each of the courts in the Outer House, similar to those of the Inner House Courts. In the first division of the Inner House more room is being provided on the judges' bench, by a re-arrangement of the book-shelves.

OLD BROMPTON.



"THE HOOP AND TOY."

THIS was a brick and timber building of the latter part of the fifteenth or the commencement of the sixteenth century, situated in an angle of Brompton-lane, about a mile and a furlong from Hyde Park-corner. The place was sometimes called Bell and Horns-lane, sometimes the Old Brompton-road, retaining much the same primitive condition and rural aspect up to the year 1850.

Passing westward from Brompton Church, an old brick saddle-backed and buttressed wall, on the right-hand, enclosed Brompton Park, Fleming House, Cresswell Lodge, &c., to Gore-lane. On the left a hedgerow shut in Harrison's Nursery-ground from the road. At Gore-lane the little hamlet of Old Brompton commenced, and perhaps its most picturesque feature was the old inn under description, embowered in the trees, and lying on your left.

Although Lysons, in his "Enviroms of London," thinks there is no warranty for the Protector Cromwell having lived in Cromwell House, situated a little distance hence, nevertheless it was traditional that he would frequently ride this way in returning from Hyde Park, to avoid observation, and as a route less subject to interruption; whilst the tradition has it that he has refreshed himself and his horse at this same hostel.

It was a neighbourhood of fresh-smelling garden-grounds and shady and pleasant places, where the nightingale might be heard in the still spring evening, after the April shower had freshened the opening leaf-buds, and the moon threw long shadows from the trees across the winding and narrow lanes.

Pleasant and quiet "Old Brompton," favourite retreat of the children of the drama and music, a change was about coming over you in 1833 when the first sale of plants took place at Harrison's nursery, and the stock of young trees were removed from that portion of it which afterwards became Thurlow-square and Thurlow-place. Firstly there came rumours of a proposed line of railway to Bristol, which was looked upon generally as a wild and impossible scheme; nevertheless, permission was asked for measurements to be taken on the several properties, till the entrance to London was determined upon by the then promoters, at Paddington.

Soon after this the sites of Pelham-crescent and Onslow-square were marked out, the hedgerow which screened them from the road was thrown down, and the ground excavated for foundations.

The narrow lane (Love-lane) which ran from the Admiral Keppel in the Fulham-road to the aforesaid Hoop and Toy remained for some time



intact, as but one side of it (the present Pelham-street) had been built upon. Many of the trees of the hedge-row were to be seen in the gardens of the houses in this street as recently as 1863.

The old coaching system had as yet received no check. Portsmouth, Chichester, Godalming, Guildford, Richmond, Fulham (omnibuses were common to the latter at this period) ran their trams as usual, but you might reach Fulham from London in less than two hours now. The "Rocket" or the "Red Rover" was periodically upstart, and the horn of the Portsmouth mail was heard night and morning.

Up to that time the lovers of a pipe and glass, or a game at bowls, might still enjoy the rusticity of the Hoop and Toy; or as evening closed in, and the long, quaint old parlour looked more mysterious through the wreaths of tobacco smoke, speculation would exhaust itself on the events which a first instalment of "Reform" had brought about. Among the guests might frequently be seen the late Sir Richard Birnie.

As yet Old Brompton was undisturbed. The carrier's cart trotted slowly through the hamlet (for there was no Parcels Delivery then). "Cowper House," "Angel's garden," and Gibbs's nursery remained intact, and the same occupants were in Burleigh House as had listened to Haydn's charming canzonettes or sonatas when he had been their honoured and admired guest.

In 1844-45, however, the idea of making another Belgravia of Old Brompton became evident, and down came the cottage villa residences, one of which, Ash Cottage, had been the residence of the popular Vestris some years prior to this date.

The lemons and the punch-bowls disappeared

from the old projecting bar of the Hoop and Toy; the old chestnut tree, and the elm which grew through the roof of the stables vanished, and Old Brompton was to be Old Brompton no more.

As yet the scheme for a great Exhibition, only been mooted at the Society of Arts, years later the wondrous World's Fair took place in Hyde Park.

The late Prince Consort, who might be occasionally seen riding through these lanes, doubtless looked upon the spot as a desirable for the New Schools of Art. In due course time, the Brompton Boilers, as they were called, the adjacent ground became the property of the Commissioners, and nothing could excite the pleasurable anticipations of the people at the proposed Exhibition of 1862. When, alas! cloud came over all. A calamity as unexpected as it was deplored, had taken place, and events could have produced a more painful universal regret. Magnificent as the Exhibition of 1862 was, it fell short of the fairy-like creation of its predecessor.

In the application of iron and glass to so vast a structure, there was an especial charm in the lightness of construction, and the fortune of the spectator whose place was in that transept of the 1st of May, 1851, remembers a combination of effects which has never been surpassed, which time will not dull in his remembrance.

When the branch of the Metropolitan Railway to Kensington had been determined upon, alterations in the neighbourhood became rapid. At this station, as also at Gloucester-road, mansions speedily arose, and gradually every sign by which Old Brompton might be identified was swept away.

At the commencement of Cromwell-lane, which wound through garden grounds to Kensington, was situated Brompton-vale, a little group of wooden tenements, the gardens which were filled with fruit-trees and flowers. The backs of the houses of Cromwell-road and Cromwell-place occupy a portion of this site, and in the substantially covered ground of present time, there are few who can realise the transformation of that rural and sequestered nook "remote from towns," to the present thriving neighbourhood of the Cromwell and Exhibition roads.

In the present Hoop and Toy there is nothing to remind us of the quaint old hostel of Old Brompton, and the railway which has started the rural divinities from their haunts.

But few of the visitors who troop from South Kensington station to inspect the collection of art-treasures will dream of the retirement and repose which existed even twenty years since, one mile and a furlong from Hyde Park corner.



BRADFORD DISTRICT BANK.—MESSRS. MILNES & FRANCIS, ARCHITECTS.

BRADFORD DISTRICT BANK.

The business of the Bradford District Bank has recently been transferred to their new premises at the corner of Market-street and Booth-street, Bradford, of which we give the accompanying illustration. The new building has been erected from the designs of Messrs. Milnes & Francis, architects. Its style is Italian, and the elevation is divided into two principal "orders"; the lower and more massive one being an adaptation of the Roman Doric, with square-headed windows, somewhat deeply recessed, those on the Market-street frontage measuring in the clear opening 16 ft. in height, and 7 ft. 9 in. in width. The doorway at the corner of the two streets is flanked by two three-quarter fluted and enriched Doric columns supporting an entablature of the same description. The jambs and lintel, with its frieze and cornice, are of polished granite. The second division or order comprises both the first and second floors, and consists of three-quarter attached columns after the Corinthian model, between which the office windows (all with square heads) appear. Over all comes the main entablature, which is returned round the upper columns, and of which the frieze is enriched with moulded cantilevers, carrying up the line of support to the pedestals above in the parapet. The stone for nearly the whole of the exterior was supplied by Messrs. Riddiough & Co., of Greendale Quarries, Spinkwell. At the corner of the building, carrying up the circular plan of the angle, is a round cupola, which is a novel and prominent feature in Bradford street architecture. Its drum, or lower part, stands clear of the roof and parapet to a considerable height, and is divided vertically into narrow panels by a repetition of small but effective pilasters sixteen in number, which support a festooned frieze and cornice. The roof is of wood covered by tapering styles, and covered with lead. The height from the causeway to the top of the copper terminal is about 100 ft.

The banking-room is entered through a lofty vestibule or porch, triangular on plan, the outer entrance to which is open all day and closed at certain times by a large wrought-iron gate, raised and lowered by machinery in the basement. This gate was made by Messrs. Richard & Co., Coventry. Between the porch and the banking-room, are swing-doors of oak, intended for daily use, and a massive sliding iron door, for use at night, the outside of them, raised and lowered in the same way as the gate. The machinery was made by Messrs. Barnett & Co., on passing into the bank, we see a spacious and lofty room, 22 ft. high, excellently lighted by large windows on two sides. The otherwise enormous wall space is broken up and rendered decorative by groups of marble pilasters (Embossed red) upon Genoa green bases, ranged all over the room at intervals to suit the windows. Corresponding with these the ceiling is divided to main and subordinate panels, moulded and enriched in "carton pierre" made by Mr. Boelender, of London. Around the walls, forming part of the entablature, run an architrave and enriched frieze, and the lines of the pilasters flow are carried up to and united with the lines of the ceiling by cantilevers. The woodwork of this room is entirely of wainscot oak, refully got up and put together, and not overdone with polish. The surface is 4 ft. high, and returned round all the pilasters and other glazings, in bold panel work. Behind certain parts of this surface (which are indicated by the an fretwork of the panels), are situated the water-pipes, which, in conjunction with the free fire-places, will no doubt secure ample warmth in the coldest weather. All the doors of the room have, in addition to the ordinary shutters, fluted oak jambs, arranged pilasterwise, with carved capitals and trusses, frieze, and cornice. The carving of these portions has been done by Mr. Dark, of Leeds. The fireplaces are of black Belgian marble, with granite sills. Lewis's patent hot-air chambers have been used in connexion with these, and certainly their work very well, throwing into the room a higher level (when the valves are open) a strong current of fresh warm air. The floor is of the counter is of oak, and, in the public hall, of encaustic tiles. The basement contains a heating apparatus, fitted up by Messrs. Bolton & Breat, the hydraulic hoist for raising coals and ashes to the higher part of the building, the coal-stores, and the apparatus for raising the iron doors before referred to. The floor of the whole basement is laid with cement concrete, instead of flags, by Messrs. Marr & Co.,

and is intended to be waterproof and damp-proof. The walls are also waterproof, and though the notorious Bradford Beck runs so near and the surrounding sand and soil are not by any means free from water, the cellars appear to be already very dry. The floors throughout are constructed with rolled iron beams and joists filled in with concrete, and boarded over. The contractors for the various works have been Messrs. J. & W. Beaudant, masons and joiners; Messrs. Cliff's trustees, ironfounders; Mr. Charles Nelson, plumber and glazier; Mr. B. Dixon, plasterer; Mr. Thomas Nelson, slater; and Mr. Henry Briggs, painter. Messrs. C. Smith & Sons, of Birmingham, supplied the locks, which are of most ingenious construction, and door furniture, most of it being of bronze metal. The stone carving was done by Mr. C. Abbey; and Mr. J. R. Stewart has been the clerk of works.

SIR CHRISTOPHER WREN
AND INIGO JONES IN IRELAND.

It would be satisfactory to know whether the practice of these two great English architects extended to the sister kingdom, or whether they merely supplied designs for the works there attributed to them, without passing into Ireland. There were two public buildings of note built in the last years of the seventeenth century in Dublin; one known as the "Tholsel," a Corporation building, and judicial, which existed to the commencement of the present century; and the other the present Royal Hospital at Kilmalsham, intended to serve as an Asylum for Disabled and Superannuated Soldiers,—a sort of Irish Chelsea Hospital.

The Tholsel was erected about the year 1683, and the first stone of the Royal Hospital was laid on the 29th of April, 1680, by the Duke of Ormond, the then Lord-Lieutenant of Ireland. The ceremony of laying the second stone was gone through also, the honour falling upon Francis, Earl of Longford, the then Master-General of the Ordnance. In some of the works and "views" treating upon Dublin, we are told that the Royal Hospital was designed by Sir Christopher, and in others it is asserted it was erected after a design by Inigo Jones. James Gandon, who though by birth an Englishman, yet by practice was an Irish architect *par excellence*, and to whose ability Dublin owes the best of her public buildings, says, in an essay he wrote on "The Progress of Architecture in Ireland," "the architecture of this building (the Tholsel) was in the style called King James's Gothic, yet from the largeness of its component parts, it possesses a picturesque appearance, and was the first noble work in Dublin that was decorated with statues, having one of Charles II. and James Duke of York (James II.). The Royal Hospital at Kilmalsham was also building at this period. The design of this building was attributed to Inigo Jones, but on what authority this conjecture is founded does not appear, and of the truth of the assertion there are strong doubts, inasmuch as Jones died on the 21st of July, 1651, thirty-two years before the commencement of the building. Whoever was the architect of the building, it would be very desirable to have it recorded; for though it possesses no superior merit to justify the superior hand of that great master to whom it is attributed, it evidently claims the originality of this having been one of the first specimens of regular architecture in the country." James Gandon is well entitled to speak, although the little literary labour he executed falls far short of the genius he displayed with the pencil. We have a view of the Old Tholsel of Dublin as it existed in the last decade of the eighteenth century before us, and although the design is not above criticism, it would not be unworthy of Jones or Wren. In a word, we dare to add that in many of its features it is a Wren-like structure, inferior perhaps to many of the great architect's creations, but superior to some, Temple Bar and one or two of the City churches included. We agree with James Gandon in his belief that Inigo Jones was not the architect of the Royal Hospital, taking into consideration the period assigned, and the date of the architect's death. We point, therefore, both to the Royal Hospital and the Old Tholsel of Dublin, which existed opposite Christ Church Cathedral, as the work of Sir Christopher Wren. Both buildings exhibit in their design and construction many similar features that are to be found in connexion with Wren's edifices. Sir Christopher Wren, if not very fond of, was certainly

not adverse to, statuary or statues. St. Paul's and some of his other buildings display his taste in that respect, and in wood-carving as well. If Sir Christopher Wren passed into Ireland, Grinling Gibbons seems also to have followed in his wake, for we have splendid Irish oak carvings and elaborate stucco work at the Royal Hospital in Dublin as we have elsewhere, where the architect of St. Paul's and the clever Dutch carver have been. In fact, the carvings at the Royal Hospital, Kilmalsham, have been long attributed to Gibbons. In Malton's "Views of Dublin," published in London, 1794-6, the Tholsel is described; and, while it is admitted, "notwithstanding its present Gothic appearance and incongruity with the generally received rules of architecture, it is even at this day, in the opinion of the artist, a picturesque object. . . . Its ornaments are in singular but bold, masterly style, and with the statues of Charles II. and James his brother, which are very good and in perfect preservation, have a pleasing and not unhandsome appearance." These statues have been preserved from destruction, and may be seen inside Christ Church Cathedral. They formerly occupied niches similar to the niches at Temple Bar, on either side of the central windows over the portico of the Tholsel. When we remember what was thought of Gothic architecture, and how it was described by writers in the last century and early in the present, we do not wonder that the Dublin Tholsel was described as having "a Gothic appearance and incongruity," but on looking at the only engraved plates of the building we have, or that we believe exist, we fail to discover how it could be described as a kind of Gothic edifice. The form of the building was nearly square, 52 ft. in front by 68 ft. in depth. It had a main entrance, semicircular-headed, under a portico supported by two Roman Doric columns, one on either side of the ascending steps. Two other circular-headed openings, corresponding in height and character with the main doorway, one on either side, are shown, each of the three arches being faced with architraves springing from impost mouldings, the said mouldings being continued across the front and jambs. Thus the bottom or ground story was divided into three apertures or openings looking into an open hall. This open hall was spacious, and within it sprang four columns (similar to the two without), which supported the floor of the upper story. On either side of the circular-headed window in the upper story were two square-headed ones, the niches over the statues being placed between the inner ones of these and the central window. The central window and companion niches were each flanked by pilasters and surmounted by architraves, the impost moulding taking the circuit of the niches. The incongruity consists in the somewhat odd assemblage or block of members packed upon the capitals of the outside columns, and the heavy entablature or cornice that is made, with the addition of consoles or scroll blocking, to support the projecting balcony over the main entrance.* There is a balustrade to this of open work, with something like the city arms in the centre. The Royal arms, lion and unicorn, crown the top of the building. The building, notwithstanding some incongruity of detail, is really picturesque. It might be uncharitably supposed, from a first sight of the old building as it exists on paper, that the columns were got out too short, and the finish over the main entrance was a matter of necessity with the builder, whoever he was. Be that as it may, we are strongly inclined to believe that the Tholsel was designed by Sir Christopher Wren, and modifications occurred as the building progressed.

Returning to the Royal Hospital, Malton, in his "Views," gives us an engraving of the north front. The north front is the principal, and, unlike the style of the rest of the building, which is of brick, two stories, with a third in a very high roof. This front is of stone, but of common rank, except the ornamental portions.

* It might be more critically correct to say that a species of Ionic frieze is placed over the arches of the Roman Doric capital, the members of the cornice being the only portion of the entablature carried across. The cornice is also continued in the main building, acting as a string-course between the ground and succeeding story. A second look at the engraving reveals the fact that an alteration must have taken place between the date of the building and the published sketch, as two of the square-headed windows show mullions and a transom, while the two on the opposite side are the ordinary modern sash-lights. A similar cornice to that alluded to is continued across the top of the building, acting as a string-course between the blind attic story or paneled parapet acting as such.

It exhibits a projecting centre, decorated with four Corinthian pilasters and pediment. It has a doorway, also adorned with pilasters and a semicircular pediment, displaying above it the arms of the Duke of Ormond, and on either side of this is a large arched window. From this centre rises a steeple, betraying some of the features of Wren's steeples, the lower story of which is a square tower, with an arched window on each side, covered with a heavy entablature, and an urn at each angle. The second division is of less diameter, which contains the clock. The whole terminates in a short spire, with ball and vane. The sides of the building have large circular-headed windows, nearly the height of the walls. The gallery within, which leads to the chapel, runs along the south side of the hall, and is supported by brackets of carved oak representing various figures as large as life. The ceiling here is very massive, divided into three compartments, the central one being occupied by the dial of a clock, about 10 ft. in diameter. The chapel of the Royal Hospital is extremely imposing. The large east window is ornamented with painted glass, and underneath there is, or was, a communion-table, beautifully carved, stated to be of Irish oak; and here there is a coved ceiling, divided into compartments, showing some of the finest stucco-work to be found in Ireland. To cut short our description, we will merely add further, that the whole pile is 306 ft. long by 288 ft., with an interior courtyard 210 ft. square. This is surrounded on three sides and part of a fourth by a piazza, 13 ft. wide, formed by fifty-nine arches, affording a covered passage to the dining-hall in the centre of the north front. The hall is 100 ft. by 50 ft., and has the lower half of its walls wainscoted with oak. The Royal Hospital contains between twenty and thirty full-length portraits, including several monarchs, viceroys, chancellors, chief justices, and primates, from the founders down through a series of years in its history.

We have entered into some details concerning the style and decoration of these two Dublin buildings, because the general English reader is but slightly acquainted, if acquainted at all, with their history and architecture. One can no longer be seen or examined, except in print; but the other exists still, and is worthy of an examination in this respect.

ANTIQUITIES IN INDIA.

MR. GRANT DUFF, M.P., in his address at the recent Congress of Orientalists, said it was in 1860 that the promotion of archaeological surveys was recognised as the duty of the Government of India, and General Cunningham did a great deal of useful work as Government head of the archaeological survey. In 1866 the survey was stopped, but it was recommenced in 1870 by the Duke of Argyll, who reappointed General Cunningham, and many large cities were explored. The general divides the remains into groups, six of Hindu styles and eight of Mahomedan styles; the former for periods ranging from 1,000 B.C. to 1750 A.D.; the Mahomedan being from 1191 to 1750 A.D. The president observed upon Mr. Beglar's views upon the Kubb Masjid as to the question of Hindu or Mahomedan architecture. After some further remarks on the character of the buildings, the president gave an account of the discovery in 1873-4, by Mr. Beglar, of some remarkable ruins at a place called Bharabut, nine miles to the south-east of the Suthra Railway Station, 120 miles south-west of Allahabad. The place is called Bharad, and is believed to be the same as the Boudotis of Ptolemy, and is the site of an old city which sixty years ago was covered with jungle. Here there stood a stupa 68 ft. in diameter. A number of pillars have been excavated, and among the scenes represented are upwards of a dozen of the Buddhist legends called Jataka, all relating to the former births of Buddha, and these have all appropriate inscriptions. These remains are most interesting, as showing what was the dress of all classes in India during the reign of Asoka or about seventy years after the death of Alexander the Great. The Queen of India is represented in all her finery, with a flowered shawl or muslin sheet over her head, with massive ear-rings and elaborate necklaces, and a petticoat reaching to the mid leg, which is secured round her waist by a zone of Koru strings, and a broad and highly ornamented belt. Here is also the soldier with short curly hair, clad in a long jacket or tunic tied at the waist,

and a dhote reaching below the knee, with long boots ornamented with a tassel in front, and armed with a straight broadsword, the scabbard being 3 in. wide. The standard-bearer is on horseback, bearing a pole surmounted by a human-headed bird. The king sits on an elephant escorting a casket of relics; horse and elephant trappings are given in detail. Everywhere is to be seen the peculiar Buddhist symbol which crowns the great stupa at Sanchi. It forms the drop of an ear-ring, the clasp of a necklace, the support of a lamp, the crest of the royal standard, and the decoration of the lady's broad belt and soldier's scabbard. General Cunningham assigns to these ruins the age of Asoka, which is 250 B.C., but it is useful to be cautious in fixing a date. Besides these discoveries there has been an important survey made of the rock temples of Western India by Mr. Burgess, who had brought to Bombay fifty-four photographs, between twenty-five and thirty inscriptions, about forty ground-plans, sections, drawings of columns, &c., and forty sketches of sculpture. Mr. Grant-Duff, in conclusion, expressed the hope that this work would be continued now by those who had succeeded the Duke of Argyll in the Government of India. The duke had left the Government on the fall of the Gladstone Administration, just at the time when the deficit which had been left to him by his predecessors (though by no fault of theirs) had been cleared off, and it was to be hoped that now these valuable archaeological surveys would be continued.

CHANGEABLE ENGLAND.

DEAR BUILDER.—I write in contrition and deep humility of spirit, in that I, a miserable unit, do presume to hint the things that should disquiet millions. You are a practical being; very well. I will present my lucubrations in the disjointed style they most affect, and leave your practical mind to discover and draw out the sense, if any. In the first place, is not the glorious British nation the richest and most liberal in the world? I put this firmly and concisely, and although there is much to be said on both sides of the question, there can be no manner of doubt as to the final answer; therefore, I do not pause for a reply. I proceed. Is she not recognised in her men of science as the pioneer of progress, the leader, the investigator, the discoverer? Now there are not two sides to this question, and I again proceed. Is she not distinguished by a—professed at any rate—admiration, and even in some cases appreciation, of all that is admirable in the world of art, fostering and encouraging the development of those higher feelings, those inspired promptings, that find their difficult expression in a poem, a picture, a statue, or, most wondrous creation of the mind of man, a grand and glorious building, the combined offspring of all these, the arts? O Builder, need I say it? here would I pause. But why? Do I doubt my country's will? Alas! no; it is but to point the way, and, right or wrong, she follows, childlike; but why? I dally. Granted the art, the will, the means, all and everything that can accomplish the fulfilment of—ay—"a poet's dream." Why, then, the fulfilment is the end: a new story, a new picture—bah! a new toy; yea, it is even so. England, the parent of all those solid virtues that made the homes of her sons more enduring in their happiness than rocks,—England, the friend of the whole human race,—is no better than her sisters in this, that she cannot be faithful to the creations of her own sons, of her own genius. Can this be said? Yes, and it can be proved: the favourite of the hour, and then neglected, disliked, and limbo,—limbo until the last sad moments of decay attract the sympathy of some antiquary who sheds a tear and groans over a dying monument of art. The groan is contagious, so is the tear, and a host of howling idiots soon surround the miserable scrap of petrified brains. It matters not that the art shall or shall not have been true, the brains may have been but of a pudding head: it is enough that a forgotten or obsolete style and manner have been fished out of the past to be repaired and renovated, pieced and patched into gentility, and presented for a second time to the admiring gaze of the great British public. Somewhere about this point, if you have read so far, I should expect you to mutter "Bosh!" and conclude I am coming to the threadbare subject of restoration, its use and abuse. By no means; in fact, it is the other way. Have yet a little patience, and permit your learned correspondent to tell his story in his own way: the moral will appear, as usual, in a

general sort of admonitory accusation, that will be launched at the head of—this is not at all usual,—no one in particular. And here permit your correspondent to state, once for all, that his remarks must be taken in the abstract; they are not aimed at any popular object or special topic of the day: they are not aimed, *par exemple*, at Temple Bar, poor son! and yet, *en passant*, here is a sad and mournful sight indeed, not because he stands there upon crutches, in *extremis*; no, because he must come down (regrets are useless) but because even in his death-throes, the one thing that might have held our old friend at least harmless till the end has been neglected, to wit, a few good sound ties to prevent the archer from spreading: and yet the poor wretch stands on timber toes that will probably help him down with a run, after the fashion of the delusive support of a rotten stick. This is a long parenthetical thesis. Pass on! pass on! and behold on every hand the fruits of labour and of pain, colossal works of men long gathered to their last home, side by side with the more modern growths that have sprung up under the hands that I prove to-day. Pass on, O Builder! and as they grow behold them crumble away, a sight sad as the *immortelles* on a tomb, a sight that, like these, conveys my thought. We are great, wealthy, liberal: so great and so liberal that we are sinful in our waste and carelessness; that in the strife after our new toys we suffer the old ones to go away for lack of brooms and ladders.

PROTEUS.

DAMAGE TO RESIDENCES BY COAL MINING.

THE damage caused to some villas in Bellhaven-terrace, Wishaw, by the underground workings, is somewhat peculiar. A fall in the earth in this extensive coal-mining district is a frequent occurrence, but usually when a site for building purposes is in prospect, care is taken by those owning the mine to leave "steeps," large pieces of coal, here and there, sufficient to support the ground above. Those who have the management of the pit under Bellhaven-terrace do not seem to have adopted sufficient precautions in this respect, and last week serious damage resulted to two large villas. Another house began to give way, but fortunately the workmen underground succeeded in getting the ground propped up before any serious damage ensued. The wall in front, however, is cracked in several places. One of the other villas, built by Mr. Skedd, grocer, has three large rents up the gable, one of them about 1 1/2 in. in width, besides around the window and every room inside, the stones at corners of the ceiling have separated from each other. In the wall around the house and garden cracks about 1 in. wide can also be seen, as the washhouse is damaged in addition. In another house, occupied by Mr. Hendry, doubtless entertained for the safety of the buildings, a strong wind it is feared would easily separate it. The house is seriously damaged inside as well as outside. Workmen have been engaged night and day propping up the underground rock and should they succeed in keeping up the ground before further damage ensues, the buildings may yet be secured by cement. The property has been visited by a large number of persons out of mere curiosity.

PORTLAND CEMENT SIDE WALKS.

IN making use of concrete for side walks everything depends on the proper combination of the ingredients, and the preparation of a suitable foundation.

The American Commercial Times gives some particulars of work of this kind done in the State under the Pelletier patent, a French invention long in use in Europe. It has been extensively employed in Washington, in connexion with prominent public buildings, and has been introduced into Philadelphia, Baltimore, and Chicago, and being used in the walks surrounding the Post-office, New York. The work is being done under the direction of Gen. G. W. Cook, of Washington. The Portland cement, which forms the basis of the concrete, is imported by Messrs. John C. Gostling & Co., of Gracechurch-street, London. This firm have an extensive establishment in England for the manufacture of cement, of which they ship large quantities to various parts of the world. The sand and gravel used in the combination are brought from the eastern part of Long Island, and the ingredients

are mixed upon the Post-office premises. The walk is laid about 4 in. thick, the lower half consisting of four parts of sand and gravel to one of cement; the upper half of two parts of sand and one of cement. With these materials is combined a certain percentage of iron filings, or ground slag, and when the walk is laid, the surface is washed with a solution of muriatic acid, which has the effect of closing the pores of the stone, and making it beautifully smooth. The material is laid in an unbroken sheet, and it hardens with great rapidity.

WANDSWORTH DISTRICT.

The Board of Works for this district and the medical officers of health have published their reports. Those of the latter show upon the whole a fairly satisfactory state of things, though there are parts of the district quite the reverse. An open ditch on the Priory Estate, Roehampton, which receives the drainage from Dr. Wood's Lunatic Asylum, containing as it does about 100 inmates, is properly stigmatised, though proceedings to abate the nuisance have failed.

The medical officer of health for Putney, included in the district, remarks on "the desirability of the constituted authorities endeavouring to obtain from the Legislature increased and well-defined powers of dealing with dilapidated house property, and of purchasing and demolishing such houses as may be certified by competent judges as being unfit for human habitation. A few such places, it is known, are to be found in this parish, and there are unquestionably other premises offering great obstruction to the traffic of the public streets as to constitute them nuisances of the worst kind. The overhanging and dilapidated houses situated at the entrance of Windsor-street, and abutting on the High-street, are of this character, and would assuredly benefit the parish immensely by their demolition, since one of the principal thoroughfares and public roads would be at once opened up, that is now so obstructed and so narrowed as to render all vehicular passage through it, at certain times, positively dangerous."

GREAT TERMINAL STATION AND HOTEL FOR GLASGOW.

FOR some time past large bodies of workmen have been engaged in taking down a number of houses in the neighbourhood of St. Enoch-square, Glasgow, which is the site for a new railway terminus and hotel, to be built by the Union Railway Company. Both will be on a most extensive scale, as befits the city of Glasgow. Several new thoroughfares will be opened up, the most important of which will be an entirely new street parallel with Argyle-street, the principal street in the place. The station buildings will have a frontage in St. Enoch-square of 200 yards, and will go back to Dunlop-street 200 yards. In fact, the whole of the east side of the square will be absorbed, with the exception of the building at the north-east corner occupied by Messrs. Mackenzie, publishers, and the aspect of this part of Glasgow will, by the demolition involved, be completely altered. The actual building operations have just been commenced.

The plan contemplates the expansion or widening of the present viaduct from the Old Wynd westwards, over Stockwell and Dunlop streets, and the extension of the existing station into St. Enoch-square. The new station will practically be formed to the same level as the present one, the sidings, arches, and platforms being brought carried upon arching, in order to save space available for stores, cellars, as well as for railway purposes. The whole of the site and platform west of Dunlop-street, up to the station buildings facing St. Enoch-square, will be covered in by a roof of one span, 80 ft. high and about 200 ft. wide, and of a style and character similar to that at St. Pancras. In the station arrangements it is further contemplated to have extensive platform accommodation, with access from a large booking-hall, entered by an approach from the square. Along the northern platform, which is parallel to Argyle-street, a range of buildings will be constructed, provided with the requisite accommodation for a great terminal station, such as luggage and cloak rooms, parcel office, a telegraph and traffic manager's office, waiting-rooms, guards', porters', and lamp rooms, and superintendent's offices on the platform level; whilst on the floor above there will be con-

structed a spacious board-room, and apartments for the executive of the railway company. Carriage-ways will be made on both sides of the station; that on the north side ascending by an inclination from the square to the level of the platform opposite Maxwell-street. It will be then carried level for 80 yards, descending thereafter by a roadway to the level of Dunlop-street, thus providing a new street parallel to the great thoroughfare of Argyle-street. In this way the station will have the advantage of being in close proximity to that great artery of the city without being directly upon it. Along the south side of the station a carriage-way will be constructed, rising from Dunlop-street to the platform level, also opposite Maxwell-street. This carriage level will be specially used for cabs waiting the arrival of trains; but vehicles may pass either directly in front of the booking-hall into St. Enoch-square, or, if going eastward, in Dunlop-street and Jackson-street. The carriage-way and the booking-hall will, of course, be on the same level as the platform.

It is likewise proposed to erect a hotel entering from the north-west corner of the general station buildings. It will have a large entrance-hall with vestibules, dining-rooms, refreshment-rooms, and other apartments, all in direct connexion with the station platform. On the floor above the platform level there will be in this hotel committee and other rooms for business purposes. The bedrooms, of which there will be 160, will be principally situated over the booking-hall and station offices, fronting the square and the new approach to Argyle-street. The general kitchen accommodation and the cellarage will be under the platform level.

The designs have been prepared under the superintendence of Mr. Blair, the engineer of the City Union Railway.

PUZZOLANA AND FIRECLAYS.

SIR,—In reading the article in your paper of the 26th ult., I was much struck with the similarity of the analyses of "Puzzolana" as there given and the Buckley Mountain fire-clays, which are as follow:—

	Black.	White Lead.	War-rant.	Best Blue.	Yellow Rock.
Silica	56.72	53.75	72.15	58.25	76.63
Alumina	39.21	5.83	18.78	35.81	10.03
Oxide of Iron .....	...	...	0.56	2.00	11.24
Organic Matter and Water	4.16	0.21	2.66	3.2	1.68
Lime	0.41	...	...	0.32	...
Magnesia	0.83	...	4.6	...	0.89
Loss .....	...	0.21	0.71	0.3	...
	100.36	100.00	100.00	100.00	100.47

I think they would be more correctly called fire-stones than fireclays, as they are all as hard as most stone, and have to be blasted by gunpowder, and broken with hammers before grinding. The clay could be bought for about 9s. a ton unground, and 13s. a ton ground, which would, I think, be much cheaper than the prices quoted in your article, as carriage to any part of England would be much less than from Leghorn and Civita Vecchia.

JOHN M. GIBSON.

THE PERA AND GALATA TUNNEL AT CONSTANTINOPLE.

THE works of this enterprise are fast assuming form, and at the terminal stations, Teké, for Pera, and Rue Yeni-Djami, for Galata, as also in the tunnel itself, every indication is now apparent of the "Metropolitan Railway" soon becoming an accomplished fact, and carrying to and fro constantly during the day its freights of passengers and merchandise. A few days back a Ministerial party inspected the station at Galata and the railway carriages there, and then proceeded through the tunnel, brilliantly lighted on the occasion, where a trial was given to the steam-engines which turn the drum wheels winding the wire ropes by which the trains are pulled up and let down the rails. Edhem Pasha himself put the wheels in motion, and the apparatus worked with the most perfect ease and success, and almost noiselessly. The whole of this machinery has been constructed at the well-known Great Foundry in France. The members of the Board of Works then descended the tunnel to Galata, and, on leaving, warmly congratulated M. Gavand on the advanced stage of the undertaking. The stations are in course

of completion, and the second line of rails within the tunnel is being laid. Within a month it is hoped the line will be in thorough working order and ready for public traffic. The diameter of the drum-wheels is so large that thirty turns will suffice to bring up a train from Galata to the Teké. Gas will not be employed in lighting the tunnel, for fear of accident. Oil lamps will be used; but the carriages themselves will be well lighted. A new street will run from the Grand Rue to the Teké terminus. A square will be formed between the Pera terminus and the monastery of the Dancing Dervishes, recently renovated and embellished, and omnibuses and hackney cabs will be stationed on this square for the convenience of passengers.

INDIAN BUILDINGS.

THE death of the Hon. Narayan Wamdeo, member of the Bombay Council, who was killed by the falling of his house, has attracted special attention to the insecurity of most of the modern buildings in Bombay and the other Presidencies. In the great commercial capital of India, however, the existing state of affairs seems to be such as to excite real alarm. The last monsoon wrought an immense amount of damage, and the people have now taken fright, so that it is probable that the existing state of affairs will be remedied. At present there is no Act or code of bye-laws in force by which a man can be compelled to build his house strongly and substantially. It is true that under the existing Municipal Act the intending Bombay builder must submit a plan of his proposed house before commencing its foundation for the approval of the Commissioner, showing the height of the ground-floor over the road, and the position of the privies. But if the Health Officer is satisfied upon these two points, the Commissioner has no power to refuse his sanction to the proposed building, no matter what doubts or misgivings he may have as to the design proposed; nor has the Municipal Executive Engineer power to interfere during construction, no matter how glaringly even elementary architectural laws are outraged, so long as the foreman in charge can run up the edifice without an immediate accident. Nobody can forbid the use of undersized timbers and walls of worthless materials, and the native mind is quick to take advantage of the fact. Of course this state of things has not passed unnoticed, and within the last nine years three complete Building Acts have been drawn up for the approval of the Bench of Justices; but the house-owners, who are in many cases natives, having been accustomed to build as they choose, would not consent to any rule or authority being imposed upon them. They could not see that building is an art only acquired after long practice and study, and believing that any ignorant "maistry" who could build a wall or put up a post perpendicularly must also be able to construct a house, rejected, as an interference with "free trade," any regulations fixing the thicknesses of walls, and the minimum sizes of posts and beams. The consequence is that when the monsoon comes, the rain soaks and softens the masonry, and rots the wooden supports. It also penetrates the quadruple layer of roof tiles (which even in dry weather weigh two tons to the 100 square feet) to such an extent as to double their weight; and, above all, it softens the foundations, and causes the whole building to sink. The local architects, several of whom have been trained in the best British schools, and are members of the Institute or Association, of course, provide against this state of affairs in proportion to their intelligence; but there are architects and architects, and in India the difference between them is even greater than it is here. The native constructor goes on in his old fashion, and when the native merchant employs him does his work thoroughly, *à la mode Indienne*. He is the very humble servant of the owner, who, perhaps, in the first instance, builds a house two stories high, with walls sufficiently strong for that height only. In a few years, business of the proprietor having prospered, he adds two more stories over the existing walls, and is then very much surprised to find that his walls crack, his foundations sink, and that if he does not rebuild *de novo*, his house will tumble over his head. In other instances, having pulled down his house, he commences digging his foundations next his neighbour's party-wall, which he does not think of shoring up. Of course, the wall bulges out, and falls, and he is

greatly vexed when he is cast in an action for damages, which is sure to result among litigious Hindoos. And this is the ordinary state of affairs, and not the exception to a general rule. These things have occurred over and over again, and will continue to occur until the authorities have power to enforce a more careful system of building. There is no great difficulty in the way, and if the Anglo-Indian phlegm were sufficiently stirred, a great improvement might speedily be effected. In India, a member of Council is more thought of than a bishop, and now that one has been killed, there is a chance that somebody who has influence will take the matter in hand. But if the death of Narayan Wasudeo will not awake the Hindoo community, nothing else will.

GYPSUM DIGGING IN SUSSEX.

WHILE the sub-Wealden exploration has been exciting great interest it is singular that another important investigation, almost on the same spot, viz., a search for gypsum, should have escaped public attention. The works are situated in the midst of a wood, about four miles from Battle, in a valley through which a small stream runs. On the hill-side nearest Battle the sub-Wealden boring works are situated, which are now at a temporary standstill. On the other side of the valley is a large wooden structure similar to that in which the boring is carried on, and it is here the requisite machinery for the new work is erected. At the present time five men are employed on the work. The shaft is now nearly 90 ft. in depth, and is lowered about 18 in. daily. It is over 20 ft. in circumference, and is lined with brickwork 12 ft. down. The promoters expect that the coveted mineral will be reached in about two or three weeks' time, provided the work is proceeded with continuously, the depth they expect to go being 180 ft. Considerable interest is manifested in the undertaking. If the gypsum is found to the large extent that is expected, an extensive new field of labour will be opened, as it is believed the seam extends over a considerable portion of East Sussex. Gypsum is used principally for the manufacture of plaster of Paris, and the refuse can be utilised as manure for the land. The mineral is a crystalline substance, composed of lime, in union with sulphuric acid and water. Its colours are grey, white, and yellow; but different varieties of it have different hues.

A LARGE COTTON MILL AT BOLTON.

A LARGE new mill erected at Daubhill, Bolton, for the firm of Messrs. Tootal, Broadhurst, Lee, & Co., cotton manufacturers, has been formally opened. The firm previously possessed mills at Daubhill, giving occupation to 1,500 persons,—in addition to works at other places, and this new mill will need an additional 1,000 hands to fully work it. The new premises comprise an enormous weaving-shed, 278 ft. long and 235 ft. wide, which is stated to be the finest in Lancashire. It will contain 1,200 looms, and give employment to some 600 weavers. Adjoining this shed is a new structure three stories high. The top room, which is 278 ft. long and 34 ft. wide, will be used for what are termed "dressing" operations, namely, putting the yarn in the condition in which it goes to the weaver. The second story, which is of the same dimensions, is to be used as a store-room, whilst the bottom floor is divided into three portions,—a weaving-room, a pattern-room, and a mechanics' shop. At the east side of this structure the mill is in four stories, two rooms of which have been used for winding and warping. In addition to the space for storage afforded by the above-mentioned room, there is also very spacious collarage under the shed, which will hold a vast amount of cloth and yarn. The new mill has been over two years in building, the first brick being laid on the 14th of January, 1872. Mr. George Woodhouse, of Bolton, is the architect, and the building is in the Italian style of architecture. A prominent feature of the mill is a tower on the north side, fronting the London and North-Western Railway Company's line. This tower is 90 ft. high, with a flat platform, from which a flagstaff ascends to the height of 60 ft. The chimney-shaft attached to the new premises is 55 yards high. No expense has been spared in the erection of the mill, and now the premises comprise probably the largest cotton manufactory in Lancashire. Messrs. R. Neild & Sons, of Manchester, were the original contractors, and

by them the work was sublet to other tradesmen. Messrs. Hick, Hargreaves, & Co., have applied the boilers, engines, and mill-gearing. The two engines are of an original character, and are described as the first of their kind erected in this country. They are after the fashion of steam-boat engines, and are described as compound, with the cylinders placed vertically over the main shaft of the mill. One of them it is intended to work at high pressure, and the other at low pressure, the steam for the former passing into the cylinder of the latter. Combined the two possess power equal to 400 indicated horse power. To give some idea of the vast dimensions of the works, we may add that the distance from one end of the buildings to the opposite end,—in a straight line,—is 380 yards. The area occupied is 71,000 square yards, while the cottages belonging to the firm, which are situated in the neighbourhood of the mill, cover 20,000 square yards more.

A good company was present to see the mill formally opened, and witness the ceremony of "christening" the engines. Later on in the day the firm generously took the whole of their workpeople to Belle Vue gardens, Manchester, and gave them a substantial repast, free of cost.

TELEGRAPHIC PROGRESS.

A REMARKABLE improvement in telegraphy seems to have been discovered simultaneously in Bavaria and in the United States. The German inventor is Herr Hencker, of Munich, and his "Electro-magnetic Copying Apparatus," as he calls it, has been already secured by a Frankfurt banking firm. This apparatus, it is said, without the aid of a telegraphist, can transmit writing in different languages, signatures, portraits, plans, &c., to any distance, with perfect resemblance to the original in all points. Among other exploits of this wonderful invention it telegraphed the opening speech of the Singers' Festival, which took place lately, as printed, surrounded by garlands of oak and laurel; also bills of exchange, Government despatches in cipher, messages in Greek and Hebrew letters, an arrest-warrant with portrait of the person "wanted," and a map as used by generals in time of war, with the intended movements of the troops marked out upon it. An impression of the object, writing, drawing, &c., is taken in a prepared ink on a sort of silver paper, which is rolled on a revolving cylinder and forwarded to its destination without further visible aid! The American rival is Mr. Edison. His discovery relates to that form of apparatus known as the automatic or chemical telegraph, in which signals are made and recorded by causing the electricity to pass through paper, the latter being saturated with a chemical substance which changes in colour when the current acts. In the ordinary working of this form of telegraph the electricity is sent over the line-wire by a key, in the usual manner, and passes through a pen, stylus, or lever, which has no movement, but simply rests upon the paper, the latter being moved by a weight or clockwork. No magnet and armature are used. The salient feature in Mr. Edison's present discovery is the production of motion and of sound by the pen or stylus, without the intervention of a magnet and armature.

SCAMPED CHURCH WORK.

ON the occasion of laying the foundation-stone of a new church in Victoria Park, Manchester, the Bishop of Manchester said,—The cost of churches had very much increased in the last twenty-five years. It was once thought that they could build a church substantially, and in conformity with the true principles of architecture, at the rate of 10*l.* a sitting, but now they found that Board schools cost 14*l.* per child, and this church when completed would cost 20*l.* a sitting. He only hoped that the committee had secured the services of a contractor on whom they could depend, for it grieved him to hear, as he continually did, of the shameful manner in which churches got "scamped." He only heard on the previous day of a church which he consecrated, and which was built at a large expenditure of something like 13,000*l.*, and seated 700 people, from which the roof would have to be stripped of every tile, which were worth nothing, and yet the best price was paid for the material. He did not know what the building trade was coming to. He heard the same complaints everywhere. He thought those concerned in the trade should

really look to it for the sake of their own character, and let no scamped work of any kind come into a building, secular or ecclesiastical, which had been honestly and liberally paid for. If people were prepared to take a contract at a "scamped" price, they had no right to expect first-class work; but if they were prepared to pay the best price for the best materials and work, then they had a right to expect to have what they were prepared to pay for. Sometimes the fault, however, was the architect's. He was told the other day of the roof of a church which was collapsing. That was an architectural fault, and not a builder's.

CARBONIC ACID AS A MOTIVE POWER.

Sir,—In your number of the 12th ult., I read an article headed "Carbonic Acid as a Motive Power." The idea is not a new one, and (speaking from memory) I believe that some evidence of this will be found in the Records of the Patent Office some fifteen or twenty years ago. At that period many experiments were made to ascertain whether a valuable motive power could not be obtained from the conversion of carbonic acid in a liquid state into gas, and they appeared to prove that by this means power could be produced at a much cheaper rate than by converting water into steam, provided all serious practical difficulty could be got over. The difficulty was that the expansive force resulting from converting liquid carbonic acid into gas was so great that it will burst the strongest vessels made to contain the gas when so made. Messrs. Beins have got over this difficulty, their invention will probably prove a great success, but, as the owner of a steam-engine, which cannot give so much way to cosmopolitan views as to play very fervently that the new invention may prosper.

DRAINAGE OF LAKE FUCINO.

THE drainage of the Lago Fucino, in the Abruzzi, which baffled the ancient engineers, has been quietly achieved by the men of to-day. *The Pall Mall Gazette* gives an interesting account of the works:—

"The excavations made in the course of the explained the causes of the ancient failure. The engineering of the Romans was defective, the calibre of the tunnel was insufficient, and varied considerably in different parts, and the level was very irregular. It would seem that the work was what we should now call 'scamped' to a considerable extent. Narcissus, Claudius' director of works, had many other things to attend to, and, suffering from gout, was unable to undergo the labour of inspecting personally the progress of the works in the remotest portions of the tunnel. This is, no doubt, the explanation of the fact that while the two ends of the tunnel are admirably finished, the excavation towards the middle has been done clumsily and carelessly. The consequence of all this was, of course, that what with the mud of the lake effecting lodgments here and there, instead of being carried through, and the sides and roof falling in for want of proper support, the Roman emissary was always in a chronic state of chronic. Meanwhile, though the lake occasionally felt the tendency on the whole was to rise, and in 1810 it had risen eleven metres in thirty years. In length in 1852 a company was formed to effect the drainage at their own risk, with the condition of all the land actually recovered from the lake. Difficulties, however, arose, and the scheme would have fallen to the ground like predecessors but for Prince Torlonia. He already held one half of the shares, and he boldly took up the other half, thus becoming in person the company. He immediately put the work in the hands of Montricher, the engineer of the Durance canal, who submitted two plans to him. One was the restoration, rectification, and enlargement of the Claudian emissary, which he guaranteed to drain the lake completely, but not to protect the lower parts of the basin against inundation in times of excessive rains. The other was to pierce a new tunnel, of much greater bore, and constructed to last all time, and carry off any amount of flood. With equal spirit and wisdom Prince Torlonia chose the latter, and for eight years perseveringly pushed on the work, in the toothless difficulties of one kind or another. A critical period Montricher died, and at one time

process looked so doubtful that it was a saying in Italy, that 'if Tolonia did not drain Fucino, Fucino would certainly drain Tolonia.' At length, under M. Bermont, the successor of (Grotcher, the passage of the water was effected, and the peasants of Avezzano, who were, and no wonder, sceptical as to the result, had to admit that 'this time Fucino was really in the move.' Since then the work has proceeded steadily, and Fucino has been gradually changed into a broad fertile plain.

The lake was said to be 35 miles in circumference, and to be within a mile of the town of Avezzano, where travellers wishing to visit the ruins on its shores are advised to hire a boat. The existing lake is little more than a tarn, nearly 3 miles in circumference, which lies in the eastern part of the basin, opposite the village of San Benedetto, and a good hour's drive from Avezzano. The grand sheet of water is represented by a vast plain, as level and as green as billiard-table, already on its western sides rich in vines and maize.

Across this plain, nearly from east to west, stretches the line of the canal by which the water is led to the mouth of the emissary. Here, by three sluices, set in masonry as massive as any Roman work, it passes with a den roar, the parking groves of old Fucino, to a vast square out-stroke basin, at the farther end of which it rushes under a fourth sluice and plunges into the bowels of the mountain. Prince Tolonia himself is not the only person who has been by this great work. The entire gain in land amounts to nearly 45,000 acres, but of this more than 6,000 are the property of individuals of the communes, being either land which has been totally submerged for many years past, or which was flooded three years out of every four.

OPENING OF THE BIRMINGHAM MUSEUM OF ARMS.

A VALUABLE collection of the arms of all ages and nations has been opened in Birmingham. The Mayor (Mr. Joseph Chamberlain) presided at the ceremony, and speeches were delivered by Mr. Buckley, the chairman of the trustees of the Prof House, Mr. J. Goodman, and Mr. W. C. Aitken. The Government have presented seventy or eighty specimens of arms, together with a case exhibiting all the processes of manufacture of the Enfield rifle, but it was the spring of last year the main bulk of the arms were purchased. They were collected in Italy by the Cavalier Caltandra, a member of the Italian Parliament, and their collection was the work of twenty years of his life. They were offered for sale some years ago, when they were exhibited at the palace of Prince Carignano, and eventually they fell into the hands of Mr. Marshall, of Leeds, who purchased them in competition with Prince Napoleon. The latter wished only to select a portion of them. By Mr. Marshall they were sold to the wardens of the Birmingham Prof House. The collection supplies a complete history of the manufacture of firearms, from the earliest use of portable arms in the fifteenth century down to the firearms of the present century.

Mr. Goodman, at the close of an address at the opening, in course of which he gave an interesting account of the Museum, said:—I know, Mayor, that you look forward to the day when Birmingham shall possess a museum worthy of this great town, in which all her leading manufactures can be illustrated. I know it is wished that in the extension of the Oratory buildings now in course of erection, some may be appropriated for such a purpose, but that provision is made, I hope,—although of course cannot speak on this point for the wardens of the Prof House, nor can the wardens of the present day speak for their successors,—that this collection may be handed over to the town, and may, I trust, form not an unworthy example for other trades to follow.

Mr. Aitken, in course of his address, said:—The Mayor believed that museums in Birmingham should be free, and in most instances this is a perfectly correct view to take. But this is not the case at present be free under existing circumstances. Though the museum is fitted for the gun-trade specially, every metal-worker in Birmingham—every man in any way interested in the working of metals—ought come and get a lesson. Here they might see hints of the greatest possible value, making by machinery was the order of the day. Here they might see some real, honest,

straightforward work, and there were always men in existence who, seeing such work, would go away improved and gratified thereby. They had very little said—too little, he thought—from higher quarters; and, considering the importance of the gun trade, they had a right to look for much more. He had yet some hopes that Birmingham would join together in one great effort to make their museums much more useful and much more efficient than they now were. Let them take the simple fact that in 1873 900,000 persons visited the museums in Birmingham. This year, from his own particular observation, he could say that the re-arrangement of the Art Gallery had had a good effect upon the attendance. He believed the average of the month, instead of being 240,000, was nearer 350,000 in the Art Gallery alone, and by promoting such institutions they were promoting an instructive and delightful means of amusement.

We hope that, when the new Corporation buildings are completed, Mr. Goodman's idea will be carried out, by an offer being made by the Prof House Wardens to make over the museum to the town. We may then come to see established an institution worthy of the Birmingham industries—one which shall even rival the celebrated Conservatoire des Arts et Métiers of Paris. We thoroughly sympathise with Mr. Aitken's view that it would be legitimate and that it is desirable, to bring some pressure to bear on the Government to induce it to afford substantial assistance in establishing such museums as that which has been opened at Birmingham.

BRICKS, OLD AND NEW, IN SHEFFIELD.

I HAVE often been struck with the shattered appearance of some of our modern brick buildings, says a correspondent of the *Sheffield Independent*. Last year, in Rockingham-street, before the fronts of some houses could be pointed, many of the bricks had to be out, and others inserted in their place. But let a person turn to some of our older brick buildings of seventy or eighty years old, and what a contrast! He beholds every brick in their fronts free from the slightest decay. Take those in more exposed situations, as at the corner of Wheelon-street and Broad-lane, Red-hill and Broad-lane, corners of Solly-street and Cornhill, also those at the top of Brocco-street. In the centre of the town, the shops in Bank-street and round the corner into Smig-hill, Parker's Bank, the front of the Angel Inn, and some shops in High-street, I have been told that the bricks in the respective fronts were made by a person named Glaves, and my informant states he could point out all the buildings erected with Glaves's bricks. Could any one give an account of the brickmaker Glaves?

REMOVAL OF THATCHED ROOFS.

A CASE of some general importance has been decided in the Borough-court, Galashiels.—Baillies Roberts and Messer on the bench. In 1872 the Police Commissioners of Galashiels adopted a general resolution to have all thatched roofs within the burgh removed, and amongst other notices to individual proprietors one was served on Mrs. Brodie, Lea-street. The first notice, served on the 15th day of November, 1872, Mrs. Brodie did not comply with, within the meaning put on it by the Commissioners. The thatched roof was not removed, but the adjoining house was taken down and rebuilt, and a clear space 4 ft. wide left as entry between. The new house, also, was roofed with slate, and the gable raised considerably higher than that of the building whose place it took. A fresh notice to have the thatched roof removed was served on the 15th day of August, 1873, and was likewise disregarded, and the sundry intimations and correspondence on the subject, it was resolved to prosecute Mrs. Brodie under the provisions of the 48th clause of the General Police and Improvement (Scotland) Act, 1862, which enacts:—

"That it shall not be lawful for the owner of any building having at the date of the adoption of this Act a roof covered with thatch, or made within the meaning of this Act, and contiguous to or adjoining to any other building, to suffer such covering to such roof to remain for a longer period than seven years after such adoption of this Act, unless with the consent in writing of the Commissioners, &c."

The Procurator-Fiscal, Mr. Lees, contended that if the thatched roof was so near as to be dangerous to the "contiguous" property it came within the meaning of the Act. He did not think that the circumstances of a 4 ft. entry being between the two houses placed it beyond the scope of the statute. Mr. Bailliesford at some length argued that his client, Mrs. Brodie, had complied with the Act. There was positively no danger, and the insurance company exacted no higher premium on account of the position in which the house now stood. The clause was a highly penal one, exacting excessive penalties, and the word "contiguous" was to be taken in its true and literal meaning, viz., touching. Under the 48th clause, also, the proceedings should have been taken within three months from the time the facts became known. Baillie Roberts said the question whether the magistrates had power to compel Mrs. Brodie to remove

this thatched roof depended a good deal on the interpretation of the word "contiguous," and the best authorities held that it meant touching,—adjoining, or against. He must accept that as the meaning of the Legislature in framing the clause. There was a clear open space of 4 ft. between the buildings, and the gable was a defence against fire. He held that the magistrates had no power to order its removal. Baillie Messer concurred. He was not so certain as to the meaning of the clause as Baillie Roberts, but would give Mrs. Brodie the benefit of the doubt.

THE SLAUGHTER-HOUSES ACT.

Sir,—I find, by referring to the sections of the Act, cap. 67 of 37 & 38 Vict., that Mr. Lahee is perfectly correct in his reading,—applying only to the setting up of "offensive" businesses anew,—of the sole sanction of the Metropolitan Board and the matter-of-course issue of licences by the justices. As it affects objections on sanitary grounds to the powers thus conveyed, no plan, however, can be urged in mitigation of the apparent mischief pointed out in the *Builder* of the 19th of September. The grave faults of situation and construction, to which Dr. Duffield has repeatedly called attention as damning features of nearly all existing slaughter-houses are likely to be passed unnoticed by a body destitute alike of sanitary advisers and sanitary functions, and dealing only with the common details of structural stability and separation; as also are all such cases as were noticed by that gentleman in his report to the Kensington vestry, Sept. 23, where the premises are situated in mews (three in a cluster), and children learn lessons of brutality from witnessing the semi-public slaughter of a bullock. It is difficult to imagine any justification for these things. The contamination of fresh meat by the ammonia ever present where horses and cattle are kept, needs a peculiarly constituted mind to contemplate without nausea. J. T. D.

ALTERATIONS IN THE WORKHOUSE OF ST. PANCRAS.

THE Visiting Committee have reported that Mr. H. H. Bridgman, the architect, has submitted plans of the proposed alterations in the workhouse, together with the estimate for same, and which contains the various suggestions made by the inspectors of the Local Government Board and their architect, Mr. Savage. The committee recommended the Board to report to the Local Government Board as follows:—

"That the Guardians have carefully scrutinised the plans, and approve of the proposed infants' and lying-in wards in the place of the existing block known as the infants' nursery, and that they are prepared to carry out this portion of the plans. The Guardians found that the plans, as first proposed by them, have been completely reorganised under the influence of the consultations with your inspectors and architect, and that these alterations would, if carried out, involve an additional outlay of 6,000l. The Guardians, therefore, do not feel justified in incurring this large extra expenditure; they are, however, not unwilling to carry out their original plans, which would not involve so large a cost. The architect's estimate of the total cost of carrying out the plans so revised is 20,000l., and the Guardians are not prepared to spend so large an amount upon these alterations and additions, and they would therefore be glad if the Local Government Board would reconsider and approve of the plans originally contemplated by the Guardians in order that the works may be proceeded with without delay."

After some discussion, the report was adopted.

TOWN HALL COMPETITION, HASTINGS.

THE designs received were inspected by the committee having charge of the matter. Thirty-five sets of plans have been sent in, many of them from the neighbourhood of London. As no charge was made for the preliminary statement and ground-plan, no less than 230 applications were made for copies; and as only 150 were printed the others could not be supplied. The mottoes, as well as the plans themselves, are kept secret until the decision of a competent authority has been given.

Sir,—It is to be hoped that the committee will seek professional assistance in arriving at a decision on the respective merits of the designs this week submitted, and for two reasons.—First, from the particular issue it is evident that the committee have considerably underestimated the cost of the work, which, instead of being only 12,000l. as stipulated, will, in all probability, amount to nearly double that sum; and, secondly, from a professional advice, the committee may adopt an erroneous estimate. Second, the suitability of the various designs for such a building can be best judged by an architect familiar with this class of work; and as it is apparent from the tenor of the instructions that the committee have a desire to act with strict impartiality, the best additional assurance they can give competitors of this desire is to adopt this plan.

A COMMITTEE.

SCHOOL BOARD SCHOOLS.

Driffield.—These schools have at last been completely finished, and opened. The attendance of children was good, and the schools promise to be of great benefit to the town. They consist of an H-shaped block, comprising girls' school at the north angle, boys' school at the south angle, and infants' school in the centre, with spacious and separate playgrounds, and requisite out-buildings. The interior arrangements and furniture are complete and convenient with regard

to health and comfort, and are warmed by Haden & Sons' patent apparatus, steam pipes being conveyed through all the different rooms. The girls' and boys' schools are capable of accommodating 250 children each, and the infant school, 200;—total, 700. The master's house is detached, with garden and conveniences. The buildings were erected from designs by Mr. J. H. Paul, of Manchester.

SCHOOLS OF ART.

Opening of a School of Art at Barnsley.—A School of Art in connexion with the South Kensington Museum and the Barnsley Mechanics' Institute has been formally opened by the Mayor at a large meeting in the schoolroom, Church Field. The school owes its origin to a bequest of 1,000*l.* left by the late Mr. Harvey, of Barnsley, some six or eight years ago. A drawing class has for some time been held; but Mr. W. Jones, for some years assistant teacher of the South Kensington Museum, has been appointed, with the nucleus of a salary of 100*l.* per annum, guaranteed by Mr. T. E. Taylor, J.P., Mr. F. W. T. V. Wentworth, Mr. S. J. Cooper, and others. Prizes are also to be given to the most deserving pupils by the manufacturers of Barnsley and other gentlemen.

The Proposed New School of Art Building for Macclesfield.—Meetings of the joint committees of the School of Art and the local Useful Knowledge Society, have been held, to arrive, if possible, at a definite understanding as to a site for the proposed new School of Art. The president of the Useful Knowledge Society, Mr. Brocklehurst, M.P., was in the chair. A proposal was at first entertained for making available as a site some portion of the plot recently purchased at a cost of 1,500*l.* by the corporation. Subsequently that idea was superseded by the proposal to add to the Useful Knowledge Society's building, on a line with the new Free Library which is about to be erected; and so that the various educational institutions—the Free Library, the School of Art and Science, and the Useful Knowledge Society, would be in immediate contiguity. At the meeting the only difference of opinion seemed to be as to the best mode of carrying out the scheme, whether the Useful Knowledge Society could not more advantageously arrange for the sale of its premises lying nearest to the Free Library (including the librarian's house and news-room) rather than the portion now represented by the projecting bay window, over which the billiard-room and present School of Art are situated. Eventually it was resolved to submit the plans drawn out by Mr. Stevens, architect, and Mr. Pierpoint, to a meeting of subscribers; and that plans should be prepared, showing how far the other suggestion would meet the requirements of the School of Art and Science, be submitted to the same meeting of members, for their final consideration and approval.

ACCIDENTS.

Fall of Roof at Carlisle Station.—The buffer of a carriage came into collision with the buffer of the post-office van with such force as to dash it against one of the iron pillars which support the roof of the station. The pillar was broken by the force of the collision, and about twenty-five square yards of the roof,—consisting of glass, wood, iron, and slates,—fell down with a loud crash. The porters were sufficiently warned of the impending fall by the crackling of the materials of the roof, and they all got clear away before the fall took place. There was a post-office clerk in the van, but he escaped without injury, though a heavy iron beam fell upon the top of the van, and crashed through its roof. Fortunately, there was nobody on the platform, and no person sustained any personal injury. The debris fell upon the railway in such a way as to cover the through lines, and create a block in the way of through traffic; but so as to cause very little interruption to the business of the station. As the station must all come down in a couple of years, any repairs made now will necessarily be of a temporary kind.

A Grinding-wheel Accident.—John Wase, working at a grinding-wheel in Sheffield, was at his employment, when the stone upon which he was grinding suddenly broke, and one piece struck him on the head, severely fracturing his skull. The grinders are so indifferent to danger that only the same morning the owner of another wheel applied to the police to see if they had power to prevent some grinders who rented

his place from setting up a stone which was clearly cracked, although he had protested against it.

A Printing-office Blown Up.—A fatal boiler explosion is reported from Blackburn. At the printing-office of Mr. George Aspdren, King-street, the men and apprentices, seven in number, had resumed work just after dinner when the boiler exploded, like the firing of a cannon; the bricks and debris flew in all directions, and some people who were passing had a narrow escape. The beams and slates of the roof in some instances, it is said, were blown a quarter of a mile. The printing-office was rendered a complete wreck. One man was buried under the ruins, and a second who was taken out has since died. Others, it is believed, will not recover.

Accident to a Theatre.—The roof of the Patelli Theatre at Ravenna, Italy, fell in a few nights back, and the entire building is now in ruins.

CHURCH-BUILDING NEWS.

Grappenhall.—The series of services to inaugurate the re-opening of Grappenhall Church, after undergoing restoration, has commenced. The work of restoration was commenced nearly two years ago, by Messrs. Paley & Austin, architects, Lancaster. The church has been entirely re-roofed, and the clerestory raised. The whitewash and plaster which covered the pillars and interior walls have been removed, and the stone-work now stands out sharp and defined. On one of the pillars near the south-west entrance the date of the last restoration which the church underwent (1539), is carved in quaint figures. The tower has been opened, and a new chamber with oak floor constructed for the use of the ringers, who were previously in view of the congregation. This arrangement, and close proximity of the organ, entirely blocked up the western entrance, but the organ having been removed to the north transept, the chief obstruction to the ingress and egress of the congregation no longer exists, and part of the space is occupied with the old Norman baptismal font. When first discovered it was in some danger of being destroyed by the workmen. The material is the red sandstone of the country; and carved in low relief there runs around it an arcade of semicircular arches, without other ornament. The capitals and bases of the columns are large and clumsy, and all the arches—even those on the same side—are not equal either in height or width; and it would seem as if the country mason who had made the font had worked impromptu and without a plan. It must have originally stood upon a broad square base; but no traces of this were found, and it had probably been long destroyed. The dimensions of the font are:—From end to end outside, 2 ft. 7½ in.; from side to side outside, 2 ft.; height outside, 1 ft. 6 in.; depth of basin, 10 in.; from end to end inside, 1 ft. 10½ in.; from side to side, 1 ft. 3 in. The whole floor of the church has been excavated, and concreted. The north transept and chancel have been rebuilt; and the choir instead of singing at the back of the congregation, as formerly, now occupies a position in the chancel. The old east window has been replaced by a new one. The square boxed pews have all disappeared, and their place is now occupied with rush-seated chairs, having small ledges at the back for holding books. This arrangement is, however, only a temporary one, and as soon as there are sufficient funds in hand the interior of the church will be fitted up with modern oak benches. Considerable additions have been made to the organ by the builder, Mr. F. W. Jardine, of Manchester, and a new oak case-work constructed from a design furnished by Messrs. Paley & Austin. The church is heated with hot-air apparatus. The contract for the work connected with the restoration was undertaken by Mr. Robert Fairhurst, of Whitley. The contractor for the stonework was Mr. John Holland, of Northwich. The sum of 3,500*l.* has been expended upon the work, and it is estimated that an additional 600*l.* or 700*l.* will be required to re-seat the church, put up a new clock in the tower, and carry out one or two other minor alterations.

Wine in Small Space.—At the newly-built "Royal Hotel" in Bridge-street, Blackfriars, the cellars are fitted with Messrs. Farrow & Jackson's iron wine-bins. These combine strength with lightness and economy of space.

Miscellaneous.

Inauguration of the Purbeck Cement and Stone Company, Limited.—At the Corn Exchange, Wareham, the men employed at the mines at Kimmeridge, as also those engaged in erecting cement works at Wareham, were lately entertained at supper by Dr. Stephen Emmens. Dr. Emmens was a candidate at the last election for the representation of the borough. In the course of his address, he said: "This district has hitherto remained comparatively stagnant. What you are doing on that heat over there will, I think, teach your landlords a lesson,—a lesson which they require,—a lesson which will be no unkind one,—it will teach them their duty. To speak more particularly with respect to this enterprise, you are all aware that a company was established here through the exertions of some of the inhabitants of Wareham. I refer to Mr. Roe, Mr. Beer, Mr. Hobbs, and other gentlemen now around me. Beginning has been made in the utilisation of one very important mineral,—the cement and stone which abound on the Isle of Purbeck. That mineral will be a source of considerable wealth and prosperity to this locality; it will lead to a large increase in trade, it will give employment to a large number of men, and I think I may add that so long as the company remains under the control of its founders at the present managers, the employees will find themselves fairly and honourably treated. I therefore propose that company should meet with the support which it ought to receive, it will stand second to none in regard to either mining and commercial success or industrial enterprise. I therefore propose 'Permanent success and prosperity to the Purbeck Cement and Stone Company,' and in submitting the toast I would associate the name of Mr. John Beer, sen., to whose efforts so much of that success has been already well owing."

Canon Vaughan on "Co-operation."—On Sunday, a special service (attended by about 700 members of the Grand United Order of Odd Fellows) was held in St. Martin's Church, when the Rev. Canon D. J. Vaughan preached a sermon on "Co-operation." The edifice was densely crowded. The Canon's text was Psalm cxxxiii. 1, "Behold how good and how pleasant it is for brethren to dwell together in unity." In course of his address, which was full of good and wholesome advice, he said it is impossible to shut our eyes to the evils and dangers of the present state of things. And I fear that this is a growing evil. The working-classes are more a class by themselves than they were thirty years ago; there is less sympathy now than there was then between employers and employed; in other words, there is less of that feeling of brotherhood, less of that dwelling together in unity, of which the Psalmist speaks so admirably in our text. I do not ask what the blame lies. There have been faults, doubtless, on both sides. I am only concerned with the fact itself. It is a wide-spread complaint that English labour is not so efficient as it used to be; that it is more slovenly; that there is more idling over it. I certainly fancy that, far as out-door labour is concerned, one sees more men at work pipe in month than one used to see some years ago. One cannot but rejoice that the hours of labour should be shortened. But what if we are to have not only shortened hours, but less work done in the hours? Or that be for the real good of the labourer? I am positive that it cannot. The apostle's rule depend upon it, is the rule of sound sense, as well as of Christian principle: "Whatsoever ye do, do it heartily, as to the Lord, and not unto men."

Unveiling a Statue of Marquis of Downshire, near Belfast.—The ceremony of unveiling the statue of the fourth Marquis of Downshire, erected in a prominent position at Hillsborough, took place in the presence of a great concourse of people. The Duke of Abercorn, Lord Lieutenant, unveiled the statue. He said they were there to do honour to the memory of a distinguished nobleman and a friend of his own, who was held in the highest esteem by a people who knew him. It was as much in his private as in his official character that he performed the ceremony, for the deceased marquis had been one of his earliest and most attached friends, but who had been cut off in early life. The Lord Lieutenant and a party of friends dined with the dowager Marchioness at the castle, and subsequently left by train for Omagh.

Slaughter-house Licences.—A step of the highest importance to those engaged in the supply of meat in the metropolis was taken by the vestry at Kensington at their meeting on the 23rd ult. Dr. Dudfield, the medical officer of health, who was instrumental in introducing several important regulations passed at session, and which have now come into operation, called special attention to the subject. He stated that many of the slaughter-houses in the parish were structurally unfit for the purpose. He advised the vestry under their powers to adopt the following eight regulations for a slaughter-house:—1. That it must have an independent entrance apart from any house or shop. 2. The building to be open to the roof, or to have no inhabited rooms over it. 3. It should be well ventilated and properly lighted, so that the slaughtering may be done, as always should be, with closed doors. 4. It should have walls and flooring of smooth and impervious materials. 5. It should be well raised with stoneware glazed pipes, and the drains permanently trapped. 6. It should have attached to it ample and separate lavage, constructed with a due regard to sanitary and other requirements. 7. It should be effectually separated from any lair, stable, dung-pit, water-closet, &c., so that the meat may not be exposed to any offensive effluvia. 8. It should be of adequate size, and should not be used for any other purpose than that for which it is licensed; particularly it should not be used as a stable, air, or cart-shed. In order to obtain a *locus standi* before the justices, and to avoid undue pressure upon slaughter-house proprietors, the vestry decided to give notice of formal opposition to each applicant; but allow the applications to be adjourned to enable the necessary alterations in buildings to be made. This temporary course will be highly approved by the slaughter-house keepers.

Fireproof and Unalterable Colours.—Dr. Kosch, of the Chemical and Technological School at Vienna, has made an interesting discovery, which consists in the fact that certain colours may be made fireproof, and may thus be used for painting on china in precisely the tones required. The inventor has prepared a palette with which his coloured enamels may be used like ordinary oil colours, and may be painted in every conceivable combination of tints without being in the slightest way altered by the action of fire. Dr. Kosch at the same time makes use of a specially prepared enamel, which he spreads over the surface to be painted on, and by which the irregularities and porosities of the porcelain are so thoroughly concealed from view as if they were covered with this smooth fine linen. The importance of such a surface medium will be fully understood by all who are practically conversant with the difficulty of preventing the regular and undue absorption of colour which has hitherto stood in the way of producing plastic and carefully-toned effects of colour on porcelain. Another and scarcely less interesting invention for which Austrian art is indebted to Dr. Kosch is the fusion of gold, silver, and platinum with bronze, by which the most gorgeous effects are produced.

The Cemeteries in the Crimea.—The condition of the British graves in the Crimea, whatever it may have been when they were brushed over for official inspection and report some years ago, appears from detailed information by an English looker, which appears in the *Gibraltar Chronicle*, to be now not only disgraceful, but disgusting and brutal; and, by comparison with the state of the French cemeteries, which are kept in order by a resident old French soldier, who is, of course, by the successive French Governments for doing so, the British must look as they had been some poor miserable barbarian contingent, who had helped the great French people, in a small way, to subdue the Crimea. And all from the British Government's greed of the cost of keeping an old British soldier in the Crimea to look after the cemeteries. A sum has been granted for repairs, it seems, but a negligent guardian is what saves the French graves from disrepair and disrespect.

The Drapers' Gardens.—A Draper states that the ground-rent of 15,000*l.* per annum, which will be obtained by the Drapers' Company for their garden, is to be applied to the erection of a suitable building, in which to maintain and educate at least 300 girls and boys, children of poor clerical men, half-pay officers, and other professional men in indigent circumstances.

New Cemetery for Dronfield.—A vestry meeting of the parishioners of the Townships of Dronfield, Coal Aston, and Unston, has been held at the Town-hall, Dronfield, for the purpose of receiving the recommendation of the Local Burial Board, with a view to making choice of a site for the proposed new cemetery. Mr. H. May, the chairman of the Burial Board, stated that of the several sites in the market, one which had been offered by Mr. J. Addy, was considered by the Board to be by far the most suitable. The site he referred to was situate near Badger's colliery, and about 250 yards from the turnpike-road to Unstone. It consisted of eight acres, and Mr. Addy had offered it at 150*l.* per acre. The cost of making the necessary approach to it from the high road would not be much more than 100*l.* as the stone required for the fences would be found in the land. It was a little removed from the population, and on a slight elevation. It was resolved unanimously by the meeting, that the Board be authorised to contract for and purchase the eight acres of land offered to the Burial Board by Mr. Addy, at the price of 150*l.* per acre, subject to the making by the Board of a road from the said land to the Sheffield and Chesterfield turnpike road.

Lead Poisoning in France.—The great need of France just now is a band of honest tinkers. Her *démoneurs*, says the *Morning Post* correspondent, are fast sapping the vitals of her population, by the practice which has grown up in the hardware trade of using lead in the tinning of all kinds of cooking utensils. Lead is considerably cheaper than tin. You constantly hear people wonder what's the matter with them. Their legs tingle and suffer from a sense of weight; their heads ache; the fits of arrant stupidity, which are long and frequent, are not to be accounted for by migraine or neuralgia; the blood is hot, yet it seems to flow sluggishly; the appetite is bad, the throat uneasy, the teeth have an uneasy sensation of looseness, the lumber region is affected with a dull pain, and the memory becomes slippery. Such are the symptoms of lead poisoning, and the abundance of stews and the great use of tinned pans promote the evil, which many conceive to be a mere idea.

Working Men's College, 45, Great Ormond-street, W.C.—The winter session of this college will commence on Thursday, October 8th, by a general meeting, open to the public, of the teachers and students, at which the Right Hon. James Stansfeld, M.P., will deliver an address. The chair will be taken by the principal, at half-past eight. This college, founded by the late F. D. Maurice, in 1854, has now completed twenty years of useful and successful work. It is exclusively for men. The subjects taught comprise art-antique and still life, casts and natural objects, Latin, Greek, French, German, arithmetic, algebra, geometry, physical geography, and geology; also elementary classes in reading, writing, and arithmetic. The fees are very moderate.

State of Labour in the Country.—The *Labour News* says the home labour-market is still unsettled by reason of uncertainty in some of the principal branches of industry. In Durham the dispute as to a reduction of wages to vast numbers of colliers has been made a matter of arbitration, and the same course has been adopted with the cotton operative strike at Bolton. In the Forest of Dean the strike is over; but in North Wales the quarriesmen are again dissatisfied with the arrangements suggested by the employers, and an importation of German labourers has been mentioned. Throughout the country masons are very much in demand, and in many remote districts building operations of all classes are difficult to obtain.

New Approach to the Thames Embankment.—A memorial has just been presented to the Chancellor of the Duchy of Lancaster (Colonel Taylor, M.P.) by the inhabitants of the royal precinct of the Savoy upon the subject of a new approach to the Thames Embankment from the Strand. The want of a more convenient approach in that locality has been long and seriously felt by the public, and has obstructed and delayed all improvements to the surrounding property. The petitioners have sent a copy of the memorial to the Metropolitan Board of Works, in the hope that their suggestions will be favourably considered.

The Trades Movement.—The Dundee slaters have struck work because their employers refuse to sign an agreement guaranteeing three months' employment.

Yorkshire College of Science.—This college, which has been established to supply instruction in those sciences which are applicable to the manufactures, engineering, mining, and agriculture of the county of York, and also in such arts and languages as are cognate to this purpose, is to commence operations in Leeds in the course of next month. On the Board of Governors are most of the leading gentlemen in the county. Four studentships of 25*l.* per annum from pupils from Yorkshire connected with the cloth-working trade, and four of 30*l.* per annum for pupils out of Yorkshire, have been founded by the Clothworkers' Company, London.

Strong Mushrooms.—A correspondent writes:—“A tradesman residing in the centre of the High-street, Worcester, observed the other morning that a square stone on the pavement adjoining to his cellar-grating had been lifted out of place, and as a neighbour had not long before been robbed by thieves entering his premises by raising a stone of the pavement, he became somewhat alarmed, and sent for the police. After an examination the stone, which weighed over 80 lb., was raised, and it was then discovered, not that a thief, but three mushrooms, had caused the displacement. The mushrooms were fine specimens, 6 in. in diameter, and with unusually thick stems.”

A Co-operative Association of City Clerks.—At a meeting held in Queen-street-place, it has been resolved to form a society for the benefit of City Clerks and their families, to be called the “Clerks' Club and Co-operative Association.” It has been decided to deal at first only in provisions and articles of daily consumption, as business in drapery, hosiery, and other articles could at any future time be added, if necessary. The scheme is to be extended as opportunity and means offer into a central club, and also dining and coffee rooms for men engaged in City houses.

Pottery Ware in Greece.—An earthenware and china manufactory has been established in the city of Athens, and is chiefly conducted by Englishmen. The manager is Mr. Henry Tunkinson, late of Burslem, from whom Mr. W. E. Pollard has received an interesting account of an entertainment to the workpeople given by their employers (Messrs. Bolanachi Brothers) in celebration of the drawing of an oven of printed and china ware. The banquet was served up in the Eastern fashion, and there was an abundance of choice wine and fruit; the repast also included three sheep roasted whole.

Annual Trade-Union Congress.—During the past three days meetings have been held in London for the purpose of drawing up the programme for, and making the final arrangements in connexion with, the seventh annual trade-union congress, to be held in the Concert-hall, Lord Nelson-street, Liverpool, on Monday, January 18, 1875, and the following days. The programme has been decided upon, and copies, with invitations to the congress, were to have been posted last evening to every trade society and trade council throughout the whole United Kingdom.

Metropolitan Improvements.—Tenders were opened at the meeting of the Metropolitan Board of Works for the construction of a bridge over the Metropolitan Railway, in Farringdon-road, to carry the intended new street from Oxford-street to Shoreditch. The highest was for 21,000*l.* and the lowest 18,250*l.* The Board went into committee on the subject, and, after a short discussion in private, it was decided that the question should be deferred for a week.

The Ivory Trade in the White Nile.—According to the *New York Herald's* Khartoum correspondent, Colonel Gordon had issued a proclamation creating a Government monopoly of the ivory trade on the White Nile, and it is believed that this measure will be the means of putting a stop to the traffic in slaves. He has been assigned the control of a large district in the interior, and it is stated that his chief aim is the extirpation of the slave trade.

A Paste.—An excellent paste for fixing labels on glass, wood, or paper, may be prepared by dissolving eleven parts, by weight, of common glue, soaked a day before in cold water, seven parts of gum-arabic, and some rock-candy, in fifty-six parts of water, at a gentle heat, with continued stirring until the mass is uniform. Labels brushed with this and dried will adhere firmly if simply moistened with saliva when used.

Purification of the Thames.—At the fortnightly meeting of the Twickenham Local Board, Mr. E. H. Donithorne, J.P., in the chair, the surveyor reported that the works necessary for diverting the sewage from the Thames had been commenced, and were progressing satisfactorily. The contract for the first portion was signed and sealed. At the same time Dr. Moore, of Chiswick, was elected medical officer of health for one year, at a salary of 50*l*.

Foreign Honours.—His Majesty the King of Portugal has lately nominated Sir Digby Wyatt as a "Chevalier" of his Order of the Conception of "Villaviciosa,"—a distinction rarely conferred for other than military merit, even in Portugal.

A Memorial Tablet is to be erected at Battersea to the memory of the late Rev. J. Soule. The design is by Mr. R. Lloyd Williams, architect, selected in competition; Mr. S. Horner is the sculptor. The tablet is to be paid for by public subscription.

The London School Board.—The first meeting of this body after the recess has been held in the new offices on the Victoria Embankment, Westminster. This was the first meeting at the new offices, which are not yet completed.

The New Art Gallery for Liverpool.—The foundation-stone of the new Art Gallery, which is to be erected at the expense of the present mayor, Mr. A. B. Walker, at Liverpool, and will cost 20,000*l*, has been laid by the Duke of Edinburgh.

Society of Engineers.—The first ordinary meeting of this society for the session 1874-5, will be held on Monday, the 5th of October next, when a paper will be read on "Mechanical Puddling" by Mr. Perry F. Nurse.

Hospital Saturday.—The Directors of the Crystal Palace have arranged for a *Fête* for Hospital Saturday, on the 5th of October next. The arrangements are said to be of a magnificent nature.

Abolition of Bridge-tolls.—The Metropolitan Board of Works have resolved to confer with Government with a view to the promotion of a Bill for abolishing tolls on all metropolitan bridges.

Drainage of Dorking.—The Parochial Sanitary Committee of Dorking have accepted a plan for the drainage of the town, prepared by Mr. Birch.

TENDERS

For extension of the Hanover-terrace Schools, for the Brighton School Board. Mr. Thomas Simpson, architect. Quantities supplied:—

		Deduction if Portland Cement Facing.
Kemp.....	£1,350 0 0	430 0 0
Bruton.....	1,090 0 0	70 0 0
Hindess.....	1,380 10 0	35 0 0
Lockyer.....	1,145 0 0	45 0 0
Nash & Co.....	1,038 0 0	28 0 0
Barnes.....	1,237 0 0	40 0 0
Chesman & Co.....	160 0 0	30 0 0
Botting.....	910 0 0	50 0 0
Spreadborough & Fieldwick.....	890 0 0	60 0 0
J. & A. Stenning (accepted).....	870 0 0	40 0 0

For the erection of a new bank at Hackney for the London and County Banking Company. Mr. Chancellor, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Rider & Son.....	£5,850 0 0
Brown.....	5,700 0 0
Corder.....	5,450 0 0
Hill, Higgs & Hill.....	5,140 0 0
Dove, Bros.....	5,750 0 0
High (accepted).....	5,250 0 0

For erecting villa at Hole Farm-road, Hastings, for Mr. E. Dobell. Mr. Henry Carpenter, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Wood.....	£1,310 0 0
Hughes.....	1,320 0 0
King.....	1,290 0 0
Vidier.....	1,362 0 0
Howell.....	1,255 0 0
Parks.....	1,240 0 0
Womersley.....	1,160 0 0

For the erection of factory, cottage, and stable building, Marsh Gate-lane, Stratford, for Messrs. T. H. Harris & Sons. Mr. J. J. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Kulby.....	£2,454 0 0
Morter.....	2,450 0 0
Rivet.....	2,448 0 0

For additions to Plaistow Schools, Bromley, Kent. Messrs. George & Vaughan, architects:—

Arnaud.....	£804 0 0
Payne & Baiding (accepted).....	800 0 0

For stabling, &c., Farnborough, Kent, for Messrs. Fox & Sons. Messrs. George & Vaughan, architects:—

Arnaud.....	£2760 0 0
Booker.....	740 0 0
Payne & Baiding (accepted).....	704 0 0

For Bromley Cottage Hospital. Messrs. George & Vaughan, architects:—

Greenwood & Son.....	£1,800 0 0
Arnaud.....	1,740 0 0
Payne & Baiding (accepted).....	1,463 0 0

For new bar-fittings, New Tanners Arms, Grange-road, Bermondsey, for Mr. Wintle:—

Blandford & Jones (accepted).....	£107 5 0
-----------------------------------	----------

For the erection of monastery, St. Joseph's Retreat, Highgate. First contract. Mr. Francis W. Tasker, architect. Quantities supplied by Messrs. Batterbury & Huxley:—

Linzell & Son.....	£9,980 0 0
Newman & Mann.....	9,987 0 0
Copclard.....	9,930 0 0
Kilby.....	9,643 0 0
Patman & Fotheringham.....	9,436 0 0
Bangs & Co.....	9,316 0 0
Manley & Rogers (accepted).....	9,387 0 0

For the erection of stables at Stamford-hill, for Mr. H. Hobson. Mr. Theodore K. Green, architect:—

Coldwell.....	£2348 6 0
Hicks.....	18,500 0 0
Smith.....	797 0 0
Woodward.....	757 0 0
Simpson & Baker (accepted).....	689 0 0

For new church at Leicester, for the Rev. F. G. Buraby. Sir George Gilbert Scott, architect:—

Horsman.....	£13,768 0 0
Booth.....	13,650 0 0
Jackson & Shaw.....	12,800 0 0
Dove, Bros.....	12,575 0 0
Wood & Sons.....	12,550 0 0
Kirke & Co.....	12,500 0 0
Lovaday.....	12,380 0 0
Halliday & Carr.....	12,300 0 0
Grimwood & Sons.....	12,280 0 0
Past.....	12,240 0 0
Neal & Sons.....	12,125 0 0
Herbert.....	12,097 0 0
Collins & Cullis.....	11,800 0 0
Foster.....	11,287 0 0
Osborne, Brok.....	10,199 0 0

For St. Nicholas's Church, Colchester. Sir George Gilbert Scott, architect:—

Thompson.....	£14,986 0 0
Brown.....	13,310 0 0
Bell & Son.....	13,185 0 0
Jackson & Shaw.....	13,059 0 0
Roberts.....	13,050 0 0
Dove, Bros.....	12,675 0 0
Grimwood & Sons.....	12,507 0 0
Everett & Son.....	12,454 0 0
Collins & Cullis.....	12,413 0 0
Lee.....	11,992 10 0
Saunders.....	11,890 0 0
Grimes.....	11,463 0 0
Dobson.....	10,873 0 0

For warehouse, 131, Queen Victoria-street, for the Investment Company. Mr. J. Wimble, architect:—

Hill, Higgs & Hill.....	£5,940 0 0
Falkner.....	5,775 0 0
Brass.....	5,587 0 0
Newman & Mann.....	5,536 0 0
Screener & White.....	5,398 0 0
Kilby.....	5,365 0 0
Lawrance.....	5,243 0 0
W. & F. Crocker.....	5,167 0 0

For the erection of a new brewery and chimney-shaft, &c., for the City Brewery Company, Lechliffe. Mr. G. G. Somell, architect. Quantities supplied by Messrs. Curtis & Son:—

	Building.	Ironwork.
Sackree.....	£5,750 0 0	4960 0 0
Low.....	5,505 0 0	1,030 0 0
Brown.....	5,660 0 0	1,068 0 0
Clark.....	4,795 0 0	938 15 9
Dakin.....	4,731 0 0	869 0 0
Thorneloe.....	4,730 0 0	1,018 16 8
Gimson.....	.....	1,013 0 0
Smith & Wood.....	.....	1,008 18 9
Head.....	.....	938 15 0
Buxton & Thornley.....	.....	873 0 0
Carter.....	.....	827 0 0
Croskey.....	.....	820 0 0

* Accepted.

For alterations and repairs to Pixfield, Bromley, Kent. Mr. W. J. Tanner, architect:—

Hurrows & Brooker.....	£351 0 0
Payne & Baiding.....	549 0 0
Larke.....	518 0 0
Arnaud (accepted).....	498 0 0

For additions, &c., to Powis Lodge, Bickley, Kent, for General Parr. Mr. Henry Currey, architect:—

Payne & Baiding (accepted).....	£354 0 0
---------------------------------	----------

TO CORRESPONDENTS.

S. H.—W. C. A.—Dr. L.—F. H. J.—Inspector—G. O.—J. P. T. M. R. (shall head)—C. F. (thanks)—H. R. J. C. (more assistance is insufficient)—J. W.—W. A.—R. P. S.—R. T. K. G.—Competition.—F. M.—H. H. R.—J. T. D.—J. C. T. S.

We are compelled to decline pointing out books and giving addresses. All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

	Situations Wanted.	Situations Vacant.
Six lines (about fifty words) or under.....	2s. 6d.	1s. 6d.
Each additional line (about ten words).....	6d.	6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to readers in any part of the United Kingdom at the rate of 12*s*. per annum in advance.

Halfpenny stamps accepted for payment under 5*s*. Any larger sum should be remitted by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to DOUGLAS FOURDRINER, & Co.

Advertisements cannot be received for the current week's issue later than **THREE o'clock p.m.** on **THURSDAY**.

The Publisher cannot be responsible for Tenders, MONIALS left at the Office in reply to Advertisements, and strongly recommends that Correspondents should only be sent.

Bath Stone of best quality.

RANDELL, SAUNDERS, & CO. (Limited). Quarymen and Stone Merchants. List of Prices at the Quarries and Depôts. Also cost of transit to any part of the Kingdom, on application to Bath Stone Office, Corsham, Wilts. [Advt.]

Asphalte.

Seyssel, Patent Metallic Lava and White Asphalte. M. S T O D A R T & C O. Office: No. 90, Cannon-street, E.C. [Advt.]

Whitland Abbey Green Slates.—The Quarries are now fully opened out, and are producing Slates in all sizes, and in any quantity, sound, and of choice green tint.—For samples and further particulars, apply to the MANAGER at the Quarries, Narberth-road, R.S.O. [Advt.]

Patent Selenitic Cement, with double the usual sand, is much stronger than ordinary mortars. Plastering finished in much less time at less cost. Excellent substitute for Portland cement. Concrete at less than half its price.—6 Whitland Belvedere-road, Lambeth, S.E. [Advt.]

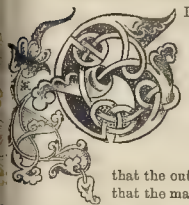
Bills of Quantities, Specifications, &c. Lithographed by ROBT. J. COOK & HAMMOND, 29, Charing-cross, S.W., with accuracy and punctuality. Plans and Drawings Copied, Traced, or Lithographed. [Advt.]

PERFECT DAYLIGHT.
WHY BURN GAS?
CHAPPUIS' REFLECTORS
IMPROVE NATURAL DAYLIGHT AND SUPERSEDE GAS.
P. E. CHAPPUIS,
PATENTEE AND MANUFACTURER
No. 69, FLEET STREET, LONDON.

The Builder.

VOL. XXXII.—No. 1653.

Glasgow, and its Improvements.



GLASGOW received the Social Science Association with warmth and earnestness, and the Congress, from most points of view, has been a successful one. Let us hope

that the outcome will be good: that the many valuable thoughts and suggestions which were

dictated during the week will not fall disregarded, but that practical good will result from them. Such as is said during the discussions is absolutely lost, except so far as it may go to mould the opinions of those present. The reporters, to the extent of their light, pick up such bits here and there as they may think best, the easiest to shape, but the greater part of the talk, good and bad, goes for nothing. The address of the president, the Earl of Rosebery, was interesting and useful, as our readers have seen, and his lordship has displayed his ability in other ways during the week. It was a mistake, nevertheless, to place so young a man at the head of the Congress, and should be avoided on another occasion. The President of the Social Science Association should be able to speak with the weight which years and experience give. All credit, however, to Lord Rosebery for the manner in which he discharged the duties of the office. We shall hear more of him, and good of him, hereafter.

Our present business is with Glasgow, where many considerable improvements have been made since we visited and examined it some years ago. Still we are bound to confess that, after what we have heard in London of the results of the Glasgow Improvements Act, we looked for something more than we found. With great wealth and intelligence in parts there is an enormous amount of ignorance and poverty in Glasgow. Go from the wide, handsome, though somewhat monotonous streets into the wynds and courts of the high-street, Tron-gate, and elsewhere; ascend the frightful "common stair," and you find an after room filled with a population in a condition of health which forbids the hope of either happiness or morality. Of forty children whom we saw something, scarcely one seemed to possess more than half a life. If the average death-rate last quarter was 28 in the thousand, there are parts where it is at least 50 in a thousand. The people of Glasgow will say they have heard all this before for years. No doubt: and therefore the more shame that the thing can yet be said. There are men in Glasgow fully alive to the importance of sanitary improvement, the condition of their city, and the necessity of carrying out with vigour the powers they possess. At the same time there is such apathy, much disinclination to spend money in pursuit of what they fancy a problematical good, and the sanitary reformers need all the support from without that can be given to them. Premature death and preventable sickness cost Glasgow thousands a year. A six-penny rate may be grumbled at, but what is that compared with doctors' bills or the life of those we love? And it is quite certain that those who cannot be allowed to fester and rot with the others above suffering also. The laws of health are inexorable. If we disregard them we must inevitably fall.

A valuable paper was read in the Health Section by Bailie Morrison, chairman of the Committee of Management of the Glasgow Improvement Trust, on the "High Rate of Mortality in Glasgow," in which he described the measures taken by the municipal authorities to reduce it. The pith of this we may usefully print. It was written in reply to the question,—"In what way can healthy dwellings for working-men be erected, in lieu of those removed for the purpose of carrying out sanitary or municipal improvements, or for other purposes?" The reply is an epitome of the measures adopted by the municipal authorities of Glasgow to remove evils of the greatest magnitude, and ameliorate the condition of the lower classes, as principally carried out under the "Glasgow Improvements Act, 1866," in the hope that these experiences may be the means of assisting other cities similarly situated.

The high rate of mortality in Glasgow has long been a source of the deepest regret, and has engrossed the attention of the civic authorities, more or less, for the last thirty years. It arises from a variety of causes, the chief of which Mr. Morrison set forth, and afterwards described the condition in 1865 of what may be designated "Ancient Glasgow," covering an area of about 88 acres in the centre of the city, where a population of 51,304 was packed together at the average rate of 583 persons to the acre, in upwards of 10,000 houses, the walls of which were permeated with disease. The population of the whole city in 1865 was 423,723, so that fully 12 per cent. occupied houses unfit, in every sense of the word, for human habitation, rapidly spreading moral and physical deterioration. The death-rate over the whole city was, as might be expected, 32·8 to the 1,000, which increased in 1869 to 34 to the 1,000, and the average death-rate of the 88 acres specially alluded to was 39·64 to the 1,000. These figures still, however, fail to convey an adequate idea of the rapidly-increasing over-density. The Improvement Scheme comprises 40 areas, in the worst of which, and in portions of the others, the population was housed at the rate of 1,000 to the acre, or 640,000 to the square mile. In these plague-spots and feverdens the death-rate was as high as 52·21 to the 1,000 in 1865. In 1870, before demolition commenced, it rose to 70 in the 1,000.

The powers under existing public legislation were totally inadequate to enable the authorities to remedy evils of such magnitude; and after an abortive attempt by several public-spirited citizens to deal with the worst portion of the evils at their own risk and expense, which failed through want of compulsory powers of purchase, the Corporation, with the consent of the inhabitants, applied for a special Act of Parliament to purchase the properties, paying fair compensation to the heritable proprietors, on the footing of a compulsory sale, the value, falling arrangement by private negotiation, to be fixed by arbiters or a jury. Plans were prepared, showing the properties to be taken, and Parliamentary notices, in the usual form, were served on all the heritable proprietors whose property was needed, none of whom opposed the Bill. The value of the property scheduled is upwards of 1,500,000*l.*, and the preamble of the Act narrates:—

"Whereas various portions of the City of Glasgow are so built, and the buildings thereon are so densely inhabited, as to be highly injurious to the moral and physical welfare of the inhabitants, and many of the thoroughfares are narrow, circuitous, and inconvenient, and it would be of public and local advantage if various houses and buildings were taken down, and those portions of the said city reconstituted, and new streets were constructed in and through various parts of the said city, and several of the existing streets altered, and widened, and diverted, and that in connexion with the reconstitution of these portions of the city, provision was made for dwellings for the labouring classes who may be displaced in consequence thereof."

The trustees are the members of the Town Council, and the operations are managed by a committee, who report their proceedings to the

general trustees. The compulsory powers of purchase are confined to the properties scheduled, and there is no power to remedy evils of a similar character in any other portion of the city, except the general provisions of "The Public Health (Scotland) Act." The Act was passed in 1866, and the purchasing of the property needed commenced with vigour; but it was 1870 before any improvements of an extensive character could be begun, the trustees finding that if they proceeded with reconstruction before having acquired at least the greater portion of the property, they would materially increase the value on themselves. The operations, when completed, involve the purchase and demolition of upwards of 10,000 houses, which no structural alterations, however extensive, could make healthy residences; the gradual removal and spreading of the population resident there; the laying off the ground in open spaces, and formation of forty new streets to be cut through the centre of the districts; removing sanitary evils and affording commercial facilities; and the resale of the surplus lands for the erection of modern buildings, subject to the conditions, provisions, and restrictions of "The Glasgow Police Act, 1866," and the authority of the Dean of Guild Court.

For the purposes of the Act the trustees are authorised to borrow 1,250,000*l.* on the security of the assessment and property acquired by them; and as a proof of the monetary confidence in the measure, loans to an extent far in excess of their requirements have been freely offered them at a lower rate of interest than is usually paid in Scotland on heritable security. The sum originally estimated to be assessed, as the cost of the improvement, involved an authorised tax of 6*d.* per pound on rental for five years, and 3*d.* per pound for ten years; but the operations of the trustees have been carried out more successfully than was anticipated, and the rate of taxation has been reduced as follows,—6*d.* per pound for one year, 4*d.* per pound for four years, 3*d.* per pound for two years, and 2*d.* per pound for eight years. This difference of the assessment produces about 177,000*l.* less than the trustees would have received under the original scale, but the sum at their disposal will be sufficient for the purposes of the Act. It will thus be seen that these evils, many of which were the growth of centuries, fell to be remedied by the ratepayers during fifteen years; and Mr. Morrison thinks that the dissatisfaction freely expressed on this point had reasonable foundation, and that it would have been more equitable to have extended the period of assessment over a longer series of years at a lesser rate.

The assessment for city improvement is in addition to a tax of 2*d.* per pound for general sanitary purposes, so that the ratepayers expend about 40,000*l.* per annum in their attempts to ameliorate the condition of the people, and lessen the high rate of mortality.

Although possessed of compulsory powers, and entitled to take possession of the properties under statutory notice, the trustees deemed it politic to purchase the properties, as far as practicable, by private negotiations. The various proprietors, or their agents, were waited on by an *employé* of the trust, and offers solicited; on obtaining which the property was inspected and valued by two of the trustees, with competent assistance, and, on their report, the committee either accepted or declined the offer made. As a proof that these negotiations have been fairly conducted on each side, it was mentioned that up to 31st August upwards of 1,000 tenements had been purchased, at a cost of 1,241,353*l.* 17*s.* 9*d.* Only sixty-four of these were referred to arbiters, and even of these many were *pro forma* rendered necessary for the personal protection of trustees or agents, in the absence of beneficiaries, or from some other unavoidable cause. The changes to be effected will extend over a

period of probably not less than twenty to twenty-five years. Although the time is limited during the trustees must either acquire the property or serve notice of their intention to do so, there is no limitation as to the period of reconstruction, which can only be proceeded with gradually.

It was feared at one time, said Mr. Morrison, that the dispersion of the low class population might have a tendency to spread crime and disease, and was a most dangerous experiment. None of these fears have been verified; on the contrary, the police and sanitary inspectors have repeatedly certified that the whole condition of the population displaced has been improved, and, although paying higher rents in other districts of the city for houses worthy of the name, they are themselves satisfied of the advantages of the change.

The Committee of Health, elected by the Police Board in 1870, and the officials under their charge, have been of the greatest assistance in these changes. Without close supervision the pulling down of buildings would not have spread the population, who cling to their old haunts as long as possible, and the density would have been intensified by overcrowding of two or more families in one house, to the detriment of the health of all; but the supervision of the sanitary inspectors, and the prosecutions before the magistrate for such practices, have reduced this to a point so low as almost to imply extinction shortly.

Baillie Morrison urges that the general powers conferred by the Legislature on municipal and local authorities might, with great propriety be extended, especially the privilege of compulsory purchase of properties, the removal of which would tend to control the spread of epidemics, or which, in the opinion of the medical officer of health, were permanently unhealthy. He is further inclined to advocate that municipal and local authorities might be allowed, should they deem it necessary, to erect buildings of a better class in lieu of those removed, where needed, to accommodate the population dispossessed, such a clause being permissive and not compulsory, as in clause 23 of the Glasgow City Improvement Act.

As a rule, however, it is not judicious for an elected body, changing periodically, to undertake the erection of buildings which demand close attention for successful prosecution, and such a course is calculated to check private enterprise, which, in all ordinary circumstances, is usually sufficient to supply the wants of the community.

In Glasgow, for example, 3,085 houses have been demolished by the City Improvement Trustees, displacing an estimated population of 15,425; to provide for which, and the natural growth of the city, 26,794 houses have been erected within the municipal boundaries, under the provisions, conditions, and restrictions of the Glasgow Police Act, under the authority of the Dean of Guild Court, from the 19th of June, 1866, to the 31st of August, 1874, which are estimated to accommodate 133,970. This does not include the numerous buildings in the immediate outskirts of the city. And yet we saw great overcrowding in the city.

The propriety of erecting dwelling-houses for the working-classes from the funds collected by taxation has been often discussed by the trustees, and invariably negated by large majorities. The only exception being the erection of male and female lodging-houses as a measure of self-defence for protection of health.

With the laudable intention of mitigating evils, a committee was appointed and an association formed, to erect lodging-houses for the loose, floating population; and it is worthy of remark that the gentlemen who faced these evils in 1847, at their own risk, and have erected and managed several of these lodging-houses successfully for twenty-seven years, were the most prominent in attempting, on a much larger scale and at considerable personal risk and trouble, the renovation of Glasgow from 1860 to 1866, prior to the passing of the Improvements Act, the lord provost, Sir James Watson, being chairman, and the late ex-Provost Blackie one of the directors.

The present accommodation afforded under the management of this association is about 600 nightly.

The importance of these institutions was very soon recognised by the municipal authorities, and on the application to Parliament, in 1866, for the City Improvements Bill, power was asked and granted for the erection and manage-

ment of such public lodging-houses by the City Improvement Trustees. They have built and furnished only two yet,—one for males, capable of accommodating about 300 nightly, and the other for females, accommodating about 100 nightly. In each there is a large day-room, lavatory, &c. Each inmate has a separate bed, in small detached compartment, for their exclusive use. Great attention is paid by the matron and superintendents to cleanliness and ventilation. The charge was originally 3d. per night, but increased lately to 3½d. per night, including use of large cooking-ranges, &c. They are so managed as to be self-supporting, including 5 per cent. interest on the capital. The houses are inspected, at least once a fortnight, by members of the committee in rotation. The accommodation, though very plain, is superior in every respect to the low-class dens superseded. The stringent rules for maintenance of order are rigidly enforced.

With reference to an inquiry as to whether they had ever had any fever or epidemic disease in the lodging-houses, the secretary was able to state that they had had none whatever.

In 1873 the Town Council of Glasgow promoted a second Bill, which was sanctioned by the Legislature, for further improvements in other districts of the city, which involves the purchase of property to the value of 250,000l. for demolition and reconstruction.

Mr. Morrison says in conclusion,—“Many may be discouraged, and think the efforts to reduce mortality and crime have not succeeded. In estimating this, however, it should be kept in view that before these operations commenced the strong tide of disease and crime was rapidly increasing, and that if we have only checked its growth and arrested its progress, we have done a noble work. All the results beyond that are a mere indication of greater benefits in the future. The greatest obstacle to progress is the vice, ignorance, or apathy of the class sought to be benefited, and as education spreads their co-operation will be secured.”

We sincerely hope that the Improvement Committee will receive the earnest and continuing support of their fellow citizens.

SOMETHING MORE ON FURNITURE.

ANONCE of the publication of the catalogue of furniture at South Kensington, we promised to return to the subject, and comment a little more in detail upon the merits and demerits of some of the typical styles of furniture illustrated in that collection. Attention to the subject of furniture design is certainly required at present, if the average quality of design is to be permanently improved. In one sense no doubt it will be said that we are in the midst of a revival of taste in furniture, and that the very existence of the collection in the Kensington Museum indicates this. But, in fact, this revival, if it be one, is in very few hands, and even as far as it extends, is not by any means unassailable on the score of refined taste. There is among wealthy people a growing penchant for filling their rooms with elaborate furniture of some special type, such as the taste of each leads him to prefer, and this has given rise to the design and manufacture of certain styles of furniture, as a special branch of the cabinet-maker's art. But this fact does not much affect the general style of work to be seen in shops and in dwelling-houses. Except in the collections of one or two well-known makers, who have given systematic attention to the production of a high class of furniture, it is very rarely that we come across anything which recommends itself as original, graceful, and effective. Plenty of fairly good workmanship there is; not so much, however, as there should be, for good honest workmanship is one of the things which the public do not habitually care to pay for now; they prefer the cheap and rickety. But even where there is workmanship of a first-rate order, it is too often expended on designs which are no designs at all, but merely a putting together of familiar forms and tricks of design and detail, long since become vulgarised by incessant repetition, and often not good at the outset.

Artistic furniture may be effective and pleasing principally in two ways; either as being constructed and put together on pleasing “lines” (to use a shipwright term), and with the principal points emphasised by appropriate decoration; or it may be the vehicle for a display of art workmanship and design of a high type, and not practically related to the uses and ends of

the object which furnishes opportunity for this display. This is the case where, for instance, carved figure subjects are introduced, representing definite histories or characters. A good many of the finest of the older examples of furniture existing are of this class, specimens which would naturally be protected and transmitted with more care than the less valuable works showing ordinary decorative treatment only. However desirable it may seem to apply the highest art possible in embellishment, it is necessary to consider the intention of the article to be adorned, and not to overweight a thing of purely practical use with decoration of so high a class as to convert it into an *objet de luxe*. A book case, sideboard, or cabinet, which is partly an object of show, will thus bear a much higher type of decorative addition than a chair or table, fittingly susceptible of, as a rule, the figure decoration, and should be treated with respect to decoration, and not be introduced where it is liable to be knocked about or to appear as if doing the menial office of supporting a part of the structure.

If we examine the specimens at Kensington in which high art is achieved or attempted, we find them mostly of the class of object just referred to,—cabinets, dressoirs, &c. One thing which strikes us on examining these is the variation in the excellence of the figure design in work of the same date and of equal excellence in other respects. The French furniture of the date of 1560 and thereabouts, the work of Bachelier and others, of which there are several very fine specimens, shows us figure designs generally of much spirit and originality, sometimes natural, sometimes grotesque. The latter are nearly always fanciful and effective; but the natural figures are in many cases disproportioned, with a tendency to over-largeness of the heads especially, and a curious roundness of outline. Yet in one dressoir (4,051) of the same group, and date which present these characteristics we find figures of a much superior order, and the centre panel with the group of Mars and Venus is almost the best and most artistic bit of carved design in the collection, and shows the hand of an artist. It is surpassed in finish and in delicate correctness of modelling by the figures in the two panels of the modern cabinet of Messrs. Fouldois (2,692), but these latter have not the force and freedom of the older specimen. In the Flemish and German work, as we observe in our previous article, the figure subjects have a more dramatic character and a more living interest than in most of the French work; the distinction being very characteristic of the two nations; the serious German mind adopting sacred history or the more important of the classic legends as subjects; the more volatile French mind contenting itself merely playing with the figure as an ornamental accessory. The thought of the Flemish figure-carver went beyond his power of execution, as in the grand Flemish retab (1049) believed to have been originally by St. Bavon's at Ghent, where the figures are modelled, the hands all too large, but the expression on the faces, full of variety and pathos, and the bold carving of the masses of figures in relief, with the treatment of the broad deep folds of the drapery, combines to produce a great effect in this remarkable piece of work. An exception in the matter of execution is the ebony cabinet of the seventeenth century, called “Dutch” (No. 1,651), but evidently wrought under the influence of French or Italian taste. The crowd of figures in low relief on the front are for the most part beautifully executed, and the whole work deserves great attention as an example of high-class decoration suitably applied; the steel-like glitter of the lights of the polished ebony is very effective also. The unsophisticated Dutch taste of that period is probably better illustrated by the large ebony cabinet near to this, and remarkably fine in design and general treatment, though rough enough in detail. In the Italian work of the sixteenth and seventeenth centuries we see to a great extent the same rather conventional and merely decorative use of the figure which characterises the French cabinet-work, but with a finish of design and execution to be expected in the country where figure design reached the highest point it has attained since the Greeks. A remarkably fine Italian example is the cabinet (No. 24), a quasi-architectural composition, with fluted and carved shafts on an architectural subbase. Here the Cupids at the sides are admirably executed, but they are very much the kind of thing after all which is the stock-in-trade

of decorative designs; other interest they have none. Yet, in the delicacy and finish of the Italian decorative design, somewhat wanting in power and conventional in taste as it usually is, we recognise an art far more in keeping with the associations of cultured and civilised society than the pseudo-Gothic of which we have seen so much lately; and in such an example as the mirror (7,226), with the sliding panel, showing a female head in profile, we are compelled to confess the supremacy of Italian art. There is scarcely anything in the furniture collection to compare with this noble and grand head, which seems like the epitome of the spirit of Florentine art, and raises "furniture" into the region of the ideal.

The figure-carving in modern furniture has no great a tendency to degenerate into mere necessary decoration without meaning. It seems to be enough that it is a figure, and is respectively correct; but we have always urged, and continue to urge, the employment of the figure decoration with a definite meaning and motive, and not as a mere conventional accessory, especially not in those worn-out forms of "terminal" gures, with expressionless features and scroll terminations, which, "classic" as they may be thought, are surely a very poor method of using the designer, and a very poor method of using the human face divine. In one most remarkable and elaborate work, that cabinet, also by Fournauds (No. 721), purchased at a cost of 2,750*fr.* from the Paris Exhibition of 1867, a most brilliant effect is produced by carving the figures in light-tinted wood, let into the panels. Here the figures have a definite design and meaning, representing the characteristics of various arts, the four quarters of the globe, &c., though perhaps not with great speciality of character, but sufficiently so to evoke interest. The piece referred to is a remarkable specimen of constructive polychromy in woodwork; the woods employed being box, lime, holly, pear, walnut, and unstained mahogany.

Leaving the subject of figure-carving, we find the general decorative treatment of furniture several distinct principles or types prevalent in different times and places. One of the most generally prevailing, however, is what may be termed, or less considered as the architectural manner of designing furniture. As we observed in our former remarks, the application of architectural features to furniture is on critical rounds a mistake. A cornice supported by engaged columns, and with the usual Roman break of the architrave and cornice over each plume, is, when applied to a cabinet, a copy of a feature had originally, in a position and material to which it is still more unsuitable. We must admit, however, that some very capital work has been done in this architectural manner. A particularly fine specimen is to be seen at Kensington in the Jacobean cabinet by Mr. Millais, and placed in the south part. The execution of all the details—columns, cornices, and pediments, is most finished; perhaps a little too much so, giving the whole a somewhat hard appearance. There are, however, methods of applying architectural forms to cabinet-work, so as to use them, by modifying their character and proportions, all the appearance of being originally designed as cabinet features only. This is very well understood by some of the French makers of the sixteenth century, better, indeed, than by any other class of workers in the art. Of this, some of the dark oak cabinets of about the date of 1550-70 in the collection show admirable examples.

We may specially mention one numbered 4,049 (from St. Lo, Normandy), where features are used for instance, which are, if it were, reminiscences of columns, but reduced to short and squat proportion, and a cluster-like outline precisely suitable to the material in which they are executed and the positions they occupy. The cornice of No. 7,218, again, is no imitation of a built-up architectural cornice, though having the same general proportion to the substructure. It is treated in a entirely different and perfectly suitable, as well as effective, manner. This point should be particularly studied by furniture designers; for the finish of a work of the cabinet kind at the present time is a difficult point, and, in an immense majority of cases, is got rid of by adopting (not imitating) a form peculiar to masonic architectural design.

The execution of this sixteenth-century French furniture, crisp, bold, and not polished up as in modern work, leads one to doubt whether the high finish characterising much modern work,

French especially, is really any addition to the artistic value of the work. The old cabinet-carver left the process of carving, almost the tool-marks, perfectly visible on his work. The modern ornamental carving is sand-papered, polished, and finished up till it almost loses the appearance of having been ever cut out, and assumes the rounded polished surfaces of moulded ornament, or of forms which have grown naturally into their present aspect. There is a charm about this high finish, and we would not say that it is not the most suitable in some situations,—in a luxuriously furnished drawing-room, for instance; but comparing the bold and effective result obtained in the old work, the extra labour on polishing and finishing does not always seem to hold a proportionate value. It destroys surface tone very much, and weakens the spirit of the work, and may avail, too, to cover many deficiencies in the carver's craft, which thus has not the same stimulus to excellence as when the effect depends wholly on the use of the tool. The modern Gothic movement in England has led to a resumption, to some extent, of the tool-finish of old work; but its advocates talk as if this were something peculiar to Gothic work, whereas it is as fully illustrated in much old Renaissance work as anywhere else.

The merit of the design in more every-day and practical classes of furniture depends in a great measure on their suitability of treatment. The supports of a table, for instance, are most satisfactory when treated purely as supports, and not metamorphosed into figures or festoons, which have no relation to their position. In this respect the Dutch ebony cabinet before mentioned, and one or two of the old French tables (Nos. 7,216 and 7,221 especially), are good examples, where the supports are admirably treated so as to present effective forms, and with just enough surface ornament to relieve without weakening them. In the matter of chairs, we have to steer between old-fashioned clumsiness and awkwardness, and new-fashioned fineness. There are many fine types of chair in existence which are little used now, partly because modern habits have become so luxurious and lounging; otherwise there is, perhaps, none which combines ornamental appearance, suitability, and sound construction better than the well-known old Venetian chair, of which there are a good many specimens here, formed out of three solid slabs of wood, shaped, pierced, and carved for the seat, back, and front support. These are the chairs, however, of an aloof and dignified society, not given to lounging and reclining. The favourite seats of any period have a good deal of character; and any one who observes the large, deep, amply-cushioned chairs which fill our furniture shops now, might draw his conclusions as to the love of ease and indulgence in modern society. What is noteworthy about these Venetian chairs, and some other old Italian types, is the picturesqueness of the construction, which at once gives a character and outline, rendering it effective in mere form, independently of added ornament. There is something much more piquant and interesting in these than in the mere quadrupedal chair of modern times, standing on four sticks. A curiosity in chair ornament is to be found in the Italian chair, No. 7,192, where the arms finish in a large knob, with a necking, worked out of the solid, and with a loose moulded ring left round the necking, evidently also worked out of the piece, and ingeniously separated by undercutting. The device is ingenious, but not worth the trouble that must have been expended on it.

The prevalent form of the leading lines in furniture has a most important effect on its character, and has varied very much in different schools. In a general way the prevalence of tolerably straight lines and rectangular forms gives the best results, as most in keeping with the nature of the materials used. In the best old Italian, French, and English work, though the outline is always sufficiently broken up and varied by carving and ornamental detail, the main lines are nearly always rectangular and straight. The superiority in effect of this work over the Louis Quinze collections of unmeaning scrolls is incontestable. In observing characteristics of shape, however, we cannot but be struck with the broad distinction between furniture of Oriental origin, or of the Oriental type, and that of the West and North. In the former, colour and surface decoration form the main portion of the ornamental treatment; the outline sinks into insignificance, and the cabinet, table, or other object becomes a mere square, flat-sided, straight-legged box, leaving the largest

possible undisturbed surface for colour and inlay. The Spanish and Portuguese work, which, owing to Moorish influence, exhibits a great deal of the Oriental type of art, illustrates this. The Portuguese cabinet No. 782 is a very typical instance, absolutely square and, we may say, without design in form, but covered with symmetrical inlay ornament of a very good type. Another from the same country (777) shows a combination of ebony and ivory in an inlay diaper pattern, simple, but very effective as a whole; and an Italian inlaid cabinet (7,222) is ornamented with geometrical arrangements on the same principle, though more elaborate. The curious Spanish cabinet (294*a*) illustrates what inlay cannot so well do; it is a representation of the animals entering the ark, with landscape indicated by conventional trees and conventional birds in them: the result is characteristic, but absurd. Inlay is a beautiful and remarkably durable style of ornament, but it needs to be used with judgment, and not taken out of its true use as a means of flat surface decoration. Attempts at perspective in inlay are usually entirely unsatisfactory. The peculiar type of inlaid work practised at one time in Italy under the name of *tarsia*, and in which the effect is produced by woods giving different shades of the same tone, and further discriminated by being placed in opposite ways of the grain, is capable of very interesting and beautiful results, and has a higher interest than ordinary inlay, as being less of a mere mechanical process, and partaking more of the work of the artist in light and shade. The specimen No. 7,399, representing the interior of a press containing ecclesiastical utensils, is a misuse of the art, an application of a laborious and delicate process to a subject not worth it. But the sitting female figure in *tarsia* on the panel (No. 5,785), is a noteworthy piece of work, very fine in the composition and in the treatment of the drapery, and in the manner in which the grains of the different woods are made to overlap and run into each other, so as to produce a softened and rounded effect. The features are not quite successful, and one may doubt whether the face could be adequately treated in this process, except in profile; but it is, within certain limits, a truly fine and artistic process, and derives much effect from the manner in which the outline and shading partially loses itself in different lights, so that the design appears to come and go on the surface. The delicate effects which can be got by this process, and its great durability, would render it worth taking up again for designs of a high class; but only for such.

As we have observed, when colour decoration is an object, form becomes secondary; and we have seen a great deal of illustration of this in recent English furniture. A demand for colour has led to the frequent employment of a stiff angular type of design, very uninteresting in form, and only valuable as the field for coloured decoration by means of tiles or painting. Our opinion of the overdose of tile ornament in furniture has been more than once expressed in the course of criticism on the annual array of furniture in the International Exhibitions. Of the painted furniture, we can only say we wish it were not so often of a very unrefined type. Kensington Museum possesses a specimen (in the south court) of the result of the combined design of a well-known architect and an eminent artist; the cabinet decorated in colour, and painted by Mr. Poynter, with the "battle of the wines and beers." The authorities seem to set great store by this; we feel compelled to pronounce it a very inartistic affair, unpleasant in outline, and really tawdry in colour,—a thing we should hope very few persons of any pretension to good taste would wish to see in their sitting-rooms. There is something, of course, in Mr. Poynter's figure-decoration; but, on the whole, we cannot help feeling it a pity that so excellent an artist lent his name to a rather foolish joke.

In contradistinction to this square, painted style, we are now offered in some quarters the revival of the furniture of the Queen Anne and Georgian period, of which Chippendale and Sheraton were the leading makers. Of this school there are one or two good specimens in the Museum, such as the dressing-table (635), the decoration of which is only painted, unfortunately, not inlaid; but which in form is very characteristic of the school, as well as of the social period which Tennyson so happily characterised as the "tea-cup times." This type of furniture revels in curved lines and surfaces, really unsuitable, as we have before said, to wood

construction, and which, in fact, seem designed to create difficulties of execution in order to overcome them. There is much to be said for this school of furniture design, however. Its execution is nearly always first-rate; and articles which appear slight are so well made and put together as to have a fair chance of outlasting more bulky-looking objects. There is much fancy and elegance in its forms, as particularly in the specimens just referred to; and it deserves, also, the praise of being a purely original type of furniture design, not imitative of anything else, and not dependent on the reproduction of forms properly belonging to architecture. In this respect it is far superior to some of the most belauded modern Gothic furniture, with its shafts and arches, and imitations of tiled roofs, &c.; and if somewhat wanting in dignity, it has at least elegance and refinement to recommend it. We are willing to take this opportunity of mentioning that a well-known spirited firm of furniture makers, Messrs. Morant, Boyd, & Blanford, are giving some attention to this type of furniture, and have made some very able and successful reproductions of it. Without wishing for mere reproduction of any pure style, we should be glad to see the undoubted merits of this style recognised, if only to lead to a little reaction against what may be termed the ostentatious clumsiness and inelegance of a good deal of work which is put forward in so confident a manner as "Gothic," but which really has not much affinity with the best type of Gothic furniture.

Of work in which beauty or coolness of material constitutes the value, rather than design, we are not without specimens in the Museum, which unfortunately seem to be the chief attraction to the majority of visitors. We could deplore the purchase for the Museum of the elaborate and costly cabinet by Wright & Mansfield (548), glittering as it is with polished satinwood, gilding, and Wedgwood plaques. As for any design there is in it, this might have been sketched out in ten minutes, for it is nothing but a repetition of common-place details put together without thought or meaning. Of the same class of mere material excellence are the French Pompadour console tables, with their twisting and sprawling masses of gilt scroll-work. The Venetian gilt furniture of the last century, bequeathed by Mr. Barker, and the elaborate cabinet and pier glass of Messrs. Jackson & Graham (7,247) are more refined specimens of work, of which, however, the interest is merely in their general glitter and sumptuous appearance. The latter work is splendidly executed; but the gilt caryatide figures and the enamel painted pictures are valueless in any high art point of view, and the details are a meaningless combination of incongruous forms. And in general we should be inclined to say that gilding, *en masse*, is the enemy of artistic furniture. It is a means of creating a sham value for work which has little real value. Good figure-carving, indeed good carving of any kind, is spoiled by wholesale gilding, which destroys the effect of light and shadow. It is much better applied partially to ornament to relieve and heighten its salient points, than as a general coating plastered over the whole, and producing a mere "bullion" beauty. This conclusion is borne out by the fact that almost all the wholly gilt furniture in the Museum belongs to an inferior type of work artistically. When a man has made something worthy of study as a design, and for its own sake, he does not want to cover it with gilding, to blunt the edges and destroy the shadows of the work. Gilding is a very good servant to the decorator in every branch, and the worst possible master.

Among new specialties of material those interested in the matter should notice the modern Danish cabinet in the South Court, composed of ebony, polished steel, and tortoiseshell. The ebony forms the main part, the steel being let in as mouldings and in the capitals of the pilasters, and the tortoiseshell (crimson and green) in the panels. The art value of the design is not great; but it is suitable for exhibiting the materials, and the effect of the combination is very rich, and would be highly valued by painters as a background or accessory in interior scenes. The execution is admirable.

While valuing new effects in material very much, however (and they are often suggestive of new design), we are more in want of originality and artistic feeling in design and execution. We have several types of furniture being practised now by designers and makers. There is the straight-lined and square ebony (or

ebonised) type, generally ornamented with tile inlay, and tolerably satisfactory in effect, but not very artistic in outline or in detail. There is the bulky, somewhat homely, style of Gothic oak furniture, with carved panels, of which an excellent example from the design of Mr. Taverer is in the Museum. There is the rabid Gothic style, painted in all the colours of the rainbow, of which we have expressed an opinion. And now there is this "revived Classic" or Georgian style. The latter is too wanting in mass and dignity to be quite satisfactory; most of the others too deficient in grace of line and construction. But all of them have a character, and in this respect stand out from the mass of contemporary furniture, which, like Pope's "most women," has "no character at all." And it is character and originality of fancy which give interest to a piece of furniture, not beauty of material, nor even of workmanship, though the latter is a *sine qua non*. It is the total want of originality or definite character which makes the gilt scrollings of the Pompadour period so uninteresting; it is the presence of fancy and originality in the outline and putting together which gives grace to the Chippendale and Sheraton furniture in spite of its weaknesses of style, and a much higher interest to the fine and picturesque work of Germany and France in the fifteenth and sixteenth centuries. And that is what we want to see more of in modern furniture; the perception that real intellectual interest may be imparted to such objects of practical use, not by the selection of costly and expensive materials, but by the exercise in each of them of individual thought and fancy, instead of the mere repetition of any fashionable or customary type. The highest achievements of the art must always be expensive; but within certain limits it is as cheap to make a good design as a bad one, and we should feel almost more interest in seeing the average type of furniture design varied and improved, in forms accessible to the less wealthy classes, than in the costly elaboration of a few picked specimens. It is possible, no doubt, to do without artistic furniture. It is not a necessity of life. But it is no unimportant element in realising that kind of beautifying of every-day life and of common things, which is an end not to be despised, and which it is the province of art to provide for.

THE EXPLOSION ON THE REGENT'S CANAL.

If one of those iron monsters which have of late been constructed in the naval yards of private English builders for the navies of foreign powers had returned to our waters, glided up the Thames, and opened a bombardment upon London, we question whether four-and-twenty hours of its fire would have caused more material damage than did the explosion which shook the entire metropolis at a few minutes before five a.m. on the 2nd current. Had the evil been wrought of the set purpose of man, and under the malign pretext of war, the national humiliation, anguish, and wrath would, doubtless, have been a hundredfold that actually experienced. As far as loss of life, or limb, was concerned, the damage probably would have been greater, although even here a doubt may exist.

In all cases of sudden calamity the first instinct of mankind is self-defence. The language of that instinct has been expressed, in words never to be forgotten, by the great Poet of Humanity. "Thou canst not say I did it," is the expression of sudden fear rather than the voice of conscience. It is not to be wondered at that when a calamity is of so vast a magnitude, the fear of personal responsibility should be almost the first motive to make itself apparent. It precedes in time—although we may well hope that it will be only a transient phase in the public mind—the warm outflow of that kindly and charitable feeling on the possession of which our countrymen may with justice be congratulated. Nor are we about to say that it is unreasonable. "To be just before we are generous" is an ancient adage of great respectability. It may be regarded, by some of us, as a somewhat commercially-framed maxim,—but let that pass. It is essential, in a highly complex state of society, for persons to know, not so much their own rights, as the rights of others with regard to themselves.

Therefore it is that, with the very earliest notice of the calamity are mingled the tidings "the insurance companies are not responsible." They usually except explosions. The Canal

Company denies responsibility. The question further arises, whether owner or occupier is to make good the loss, as far as buildings are concerned. As to furniture, the incidence appears to be on the owners of it alone.

With regard to any responsibility on the part of insurance companies, it is, in the first instance, a legal question, to be decided on the express language of the policies of insurance. As a general rule, insurance is against fire; and, in such cases, it would be unjust, even if it were possible, to throw upon the parties to a contract, intended to apply to a conflagration, an *onus* arising from a totally different source. In case of fire breaking out, in consequence of the ruin (a misfortune which very generally supervenes in case of earthquake), the damage from actual consumption would probably lie at the door of the companies. Then there are cases of special insurance; as, we believe, in case of plate glass, in which the fact, and not the cause, of damage, is contemplated by the contract. In such cases, we conceive, the insurers' claim would hold good. But that also is a legal question, although a simple one, hinging on the express terms of the contract.

As a matter of public policy, any successful attempt to throw upon any insurance company, the *onus* of a calamity not contemplated in the scale of charges, would be a public misfortune, and evil. In a case like the present, it might lead to the bankruptcy of many a company, and thus only spread wider the desolation occasioned by one fatal moment. Even if this were not the case, the inevitable effect would be the raising of the rate of fire insurance all over the kingdom. At all events, no company which, after such a lesson, failed to take proper measures in self-defence for the future, would deserve to retain, or to earn public confidence.

The Canal Company may be said to be protected by the very magnitude of the evil. If it were at all possible to make that body liable for the damage occasioned on its premises, the result would simply be the extinction of the body of proprietors. The whole of the property would be swallowed up, and the traffic would have to be carried on for a syndicate of creditors. The public would again be the sufferers, as well as the innocent proprietors. Still, the notice may be cited, "*Fiat Justitia, Ruat Cælum*." That is true; but the question remains to be solved, what justice is.

The question as between the owners and the occupiers of the houses is one more pressing and more widely felt in its urgency than either of the preceding. It is one as to which we feel that it does not become us now to offer an opinion. It must be settled, now and for ever; and as it will, no doubt, be settled by competent authority, we prefer to await that decision. In this patience we trust that the sufferers will follow our example, and not allow angry feelings and minor contention to follow public and terrible calamity as the vultures and dogs congregate on the morrow of a battle.

It has, however, been our great principle borne up in our columns as a banner, that it is criminal not to prevent preventable calamity. It has been chiefly with regard to preventible disease, and to neglect of proper sanitary precautions and remedies, that we have had to urge this important practical truth. But it has a wider, if not a universal, application. And in questions of criminality, there is not only the legal, but the personal part of the matter to be considered. There can be no crime without an criminal, even if the agent find himself unexpectedly involved in that terrible category.

We are not referring to any degree of blame, more or less, that may attach to the men in immediate charge of the fatal cargo. While matters are under legal investigation, it becomes the press to preserve an absolute silence on anything that may have a personal bearing. And the poor fellows in question have passed, from the scope of human censure and human justice, even had they deserved to encounter it. The worst that can be suggested against them, so far as we are yet aware, is, that a pipe may have caused the explosion.

But are we to glide back into the old helpless groove of unavoidable accident, and no one to blame? or, are we to make of the poor men, so rapidly swept from life, not so much scapegoats as sin-offerings? We do not want to crowd our plain English-speaking columns with foreign words. But there is another legal maxim which must be quoted in its own language,—"*Judex damnatur quoniam nocens absolvitur*." The judge is condemned when the

wrong-doer is absolved. Who is the wrong-doer in this case?

We think that the English public must take the blame on its own shoulders. If this be so, it is well that it should be distinctly understood. Nay more; we may rejoice if this should prove to be the case, and that for two reasons. First, because a conviction of the fact should tend to relax our purse-strings, to stimulate and to direct that healthy, blessed, current of private beneficence, which is ever welling out among us,—directed sometimes to noble, and sometimes to mistaken or even unworthy objects; but never failing, we trust, to be at least singly blessed.

The other reason is, that if we find it to be our own fault, as a people, that preventible mischief occurs, it lies in our own power to amend the fault, and that without delay.

Will any one question whether the word preventible is, in this instance, rightly employed? In our view there are calamities,—few, but prevent,—which are beyond the scope of human prevention. Absolutely unpreventible indeed, there is, we may say, only one. That is earthquake. No human provision is there of much avail. For, if certain countries may be avoided as being the very home and nest of earthquakes, geology shows us that no part of the earth possesses an immunity from that terrible visitation. It is, at all events, a question of time and of cycle. Volcanoes are limited in the range of their destructive power. "Lightning and tempest, plague, pestilence, and famine," all have their appropriate shields, or precautionary measures. Science, in the order of Divine Providence, offers a great boon in reply to the pity on this subject; and although absolute immunity from these sweeping master calamities is not yet given us, we can do much to protect life and property from lightning and tempest, to choke and trample out plague and pestilence, and so to draw on the wide-spread countries of the earth, on which bad seasons are always local in their limitation, as to secure us from any great danger of famine.

If any one will argue that the explosion of 4,000 lb. of gunpowder, within the area of the metropolis, is a natural misfortune, or an event which should not have been rendered impossible by a sane legislation, we decline to attempt to convince him. From three to twenty-two barrels, or from 270 lb. to 1,980 lb. of powder, are the charge allowed by military rules for the hasty demolition of a magazine. Is it creditable to the civilisation of the day that it should be possible to fire off double that quantity in the very bosom of the capital?

The fact seems to us to be, that, in this terrible calamity, we see one of those *contre coups* which result from our excessive dislike of interference with our personal liberty. There is no doubt that we owe very much of our national independence, and even of our national grandeur, to this strong instinct of an Englishman. But there is also no doubt, in our minds at least, that we are apt to err on the wrong side, and to be stupid and rash when we think that we are sturdy and independent. We have, in fact, admitted that much, in principle, by recent legislation. We have endeavoured, as far as Acts of Parliament can do so, to check the personal liberty (which has been so long possessed and acted on by our miners, to destroy their own and their neighbours' lives. We have interfered, to a very wide extent, with the Englishman's right to do what he will with his own, in the matter of the education of our children. Our statute-book is now framed upon the broad principle that public safety, or even public welfare, overrides private right. It behoves us to see that this sound and salutary principle is so carried out, that the possibility of causing terrible calamities should no longer be left to the convenience of carrying companies, or to the intelligence, the care, or the self-denial, of their servants.

We are not now to be told what is the danger attendant on massing together large quantities of explosive, or of highly combustible matter. Gunpowder, gun-cotton, dynamite, petroleum,—these dangerous elements are well known. Certain precautions are usual with regard to them. Such, for instance, is the situation of a powder-mill at a distance from human abode, and the prohibition to let any one enter the precincts with nailed shoes, or iron-shod staff. But what is the wisdom of the law, or of the administrative arrangement, which can prevent the manufacture of powder within our towns as a source of danger, and yet allow of its being stored in bulk, or even carried in

dangerous quantities through our streets? We acknowledge danger. We admit both our right and our duty to guard against it, and then,—we half do so. We send the powder manufacturer to the marshes of Essex or the downs of Surrey, and then we allow the common carrier to convey the death-dealing conductor of stored-up power through our highways, in leaky kegs, in company with petroleum, and in quantities which, in exploding, can shake London as with an earthquake. We are not using a mere figure of speech. We speak from personal experience of the effect in the city of Naples, of the great earthquake which, in 1857, killed, it was said, 30,000 persons in Calabria. The damage done at the centre of the district that felt the shock was greater, but that suffered at Naples was as nothing compared to the shock of the 2nd of October.

One practical result, then, of this great calamity must be the framing of a well-considered Act of Parliament to prevent the possibility of its repetition. We trust that this measure will not be left to any amateur initiation, but will be at once taken in hand by the Government. The maximum quantity of any explosive substance which may be conveyed in the same cart, boat, or other carriage, or train of carriages or boats, or which may be deposited at any time within the limits of any town, or in any place other than a magazine expressly constructed for that purpose, should be accurately defined; and any person or persons who in any way infringe or aid in the infringement of these provisions should be subject to a sharp personal penalty not within the power of a magistrate to mitigate. Ignorance of the contents of packages should not be allowed to be pleaded in bar of this penalty, which should apply equally to all concerned,—packers, consignees, or carriers. In addition to this, the character of vessel in which it should be alone allowable to place gunpowder, or other explosives, to be specified by the Act, should be fixed by law. That would at once stop two sources of danger. It would prevent leakage (which must have occurred previously to the recent explosion), and it would prevent ignorance of the contents of a powder-vessel. We abstain from giving any opinion as to the absolute prohibition of well-made wooden kegs, but we strongly call attention to the propriety of the exclusive use of copper vessels.

An Act of Parliament of this nature,—framed so that a plain man could read and understand it, free from legal jargon, and leaving no option as to its enforcement,—backed with a good premium for any evidence of the infringement of the law, would be a national advantage for which, if we have paid a terrible price, that price will not have been altogether thrown away.

There are several important questions on which an accurate knowledge of the details of this terrible explosion may throw valuable light, if they are carefully collected. The quantity of powder fired is known, or at all events ascertainable. A knowledge of the extreme range at which damage was done, and of that at which the explosion was felt or heard, with different degrees of distinctness, will be a very valuable contribution to our knowledge of explosive power. Again, the question of direction, whether as regards the set of the wind or the intervention of trees or buildings, it is most desirable to settle. For example, it will be of interest to know how far the area windows, or those below the level of the ground, escaped destruction, when the upper windows of the house in which they are found were destroyed. Also, to what extent windows facing the explosion were broken, while those at right angles or oblique to it escaped. It so happened that, in the year 1856, two very formidable explosions occurred in the city of Naples, which the recent event calls to mind. One was that of a powder-magazine at the entrance of the port, the other that of a steam frigate, the *Carlo Tero*, in the harbour. The first occurred between 11 a.m. and 12 a.m., the second between 11 p.m. and 12 p.m. In each case, one of the first phenomena which struck those who hurried through the streets to learn the cause, was the covering of the footways with a fine white sand, or gravel; being in fact the window glass of all the windows in the streets, shivered to dust in its fall on the solid lava pavement. The evening explosion extinguished all the gas in the city. It occurred on Sunday night, and the great opera-house of San Carlo was full of people. The effect of that sudden thunder-clap, and the instant extinction of the brilliant lights of the theatre, will never be forgotten by those who were present.

One phenomenon attended these two explosions

in Naples, which may be well worth the attention of the medical profession, and of those whose nerves have suffered from the shock of the 2nd of October. To many persons, in the fiery climate of volcanic Naples, the effect of the first shock was very serious. For two or three days the barbers were fully occupied in bleeding their customers,—blood-letting being the first resource of the Italian when he is frightened or affected by any shock. But the sense of some impending danger seemed to brood over even those who were not driven to the doctor or the barber. With the second shock, this cloud seemed to lift. Instead of producing an accumulated effect, it seemed to counteract that of the first. We offer no theory on the subject. It was matter of common attention at the time.

Another point of very unexpected occurrence is the difference of the effect produced on herbivorous and on carnivorous animals. The noble collection of the Zoological Society were very near the centre of the explosion. The lurid blaze must have been witnessed by many of the animals; the terrible shock felt very sharply by all. The fact that more mischief was not done to the cages and buildings, and especially the immunity of the glass windows of the receptacles for the serpents, reflects the highest credit on the constructors of those edifices. Had the venomous reptiles escaped, or even some of the larger carnivora, the terror, if not the actual damage, ensuing, would have been very great. Among the animals, however, the sense of fear seems to have been most predominant in the herbivorous genera. Horses, both in the stables and in the streets, suffered much and long from terror. A young red deer was absolutely paralysed by fright. Nothing of the same kind is stated with regard to the larger carnivora. It may be suggested that, in these animals, the emotion of rage is excited, when, in the vegetable species, the effect is the production of fear.

Observation of this kind is not mere matter of curiosity. It may be of essential value to therapeutic science. We cannot but couple with the above a remark very recently made as to the different effects of the poison of foxglove on herbivorous and carnivorous animals. The action of this principle is specific on the heart; but is totally different in these two great groups of beasts. It is from indications such as these that some of the brightest triumphs of medical skill and science have sprung; and the importance of making accurate and detailed observations of all results of rare and striking phenomena cannot be over-estimated.

The first point, however, is aid and relief to the sufferers, especially those of the poorer class, who must have found themselves suddenly almost homeless. We cannot doubt that national support will be called forth by what is nothing less than a national calamity. The inhabitants of London had a rightful claim on the science and civilisation of the nineteenth century, for protection against so frightful a calamity. Never was there a great blow which, when we descend below that class whose education might have been supposed to be enough to lead them to watch over the common safety, by attending to legal and administrative precautions, fell on more entirely unoffending sufferers. As to this, the movement already in progress is such as to promise a guarantee. We can only add one voice here to a full chorus. But in succouring those who are in need of aid, noble and grateful as is the task, let none of us forget that it is our own house that is yet in danger. Let none of us rest till the law is put in water-tight working condition for our protection. It would be a great satisfaction to the public mind if the Government would at once announce its intention to bring in the protective measure now so loudly demanded by common sense. It could do no harm, but some good, if some of our friends in Parliament, who are already honourable for their exertions in defence of public health, would announce their intention to submit such a measure to Parliament failing such action. But, on all accounts, the best initiation would be that of the Government, and we shall anxiously await some notification of the intentions of the Ministry.

The Post-Pillars.—A correspondent requests us to call on the Post-office people to paint out the red colour which has been given to the letter-pillars in the streets of London. We are not disposed to do anything of the kind: they brighten up the streets,—as poppies in a field of corn.

THE SANITARY STATE OF LEEDS.

THE Leeds Social Improvement Society have presented a much-needed memorial to the Town Council of Leeds, on the disgusting and unhealthy state of the town. The deputation who presented the memorial, was headed by the Vicar of Leeds, and Mr. Edward Baines, vice-president, and other officials of the society. In the appeal occurs this passage:—

"The following are special instances of nuisances, specimens only, it is to be feared, of what exist in other parts of the borough upon which the committee wish to lay stress, as fully accounting for the excessive prevalence of epidemic diseases in our midst and our high death-rate. Examples under each head of complaint are given at the end of this memorial:—

1. The filthy state of the privies, and the spaces round them, in the lowest parts of the town.

2. The absence of proper accommodation for children in these privies, which causes the pavement on either side of the crowded courts and yards to be covered with horrible filth.

3. The foulness of the ashpits, many of which are open to the air, while others of the most enormous size, capable of holding the accumulations of many months, notwithstanding the unanimous condemnation passed upon such places in every official report which has been made for the last five-and-twenty years.

4. The existence of dwelling-houses and sleeping apartments immediately over ashpits,—a state of things which the committee believe to be expressly forbidden by Act of Parliament.

5. The broken and uneven condition of the channels leading to the gratings in many of the yards, which prevents the flow of dirty water, &c., while the interstices between the cobbles form so many receptacles for refuse and decaying vegetable matter.

6. Open spaces between and around dwelling-houses, which are full of every possible kind of abomination, and are a disgrace to any civilised community.

7. The dangerous and dirty condition of the closed cellars under existing dwelling-houses.

8. Houses belonging to the Corporation, adjoining the pig-market, which are unfit for human habitation, in consequence of the damp and bad smells. These houses are let to a very low and disreputable class of tenants.

9. The disgraceful state of a large open space owned by the Corporation, where whole streets have been pulled down, and the vacant land allowed to become a depot of every kind of filth, and a scene of immorality and debauchery both by day and night.

While the Leeds Social Improvement Society most earnestly invite the attention of the Corporation to these grave evils, they also venture to suggest some of the remedies which might, in their judgment, be immediately applied.

In conclusion, the committee of the Leeds Social Improvement Society cannot but express the deep regret with which they, in common with many of their fellow-townsmen, have seen, that while the erection of large public buildings and the beautifying of the business parts of the town have been provided for, the poorer districts have been comparatively neglected, and they therefore respectfully, but strongly, urge upon the Council the duty of at once undertaking the less showy but far more necessary work of carrying out those sanitary improvements which are questions of life and death to thousands of the inhabitants of the borough."

Appended to the memorial there was a schedule of nuisances under each head referred to in the memorial.

What progress have the Town Council of Leeds made since we pointedly drew their attention to the disgusting state of their town in 1860? In a leading article of December 22nd, 1860, we said:—

"Leeds, speaking broadly, is a filthy and ill-contrived town. In some of the streets it is impossible for a person unaccustomed to impure air to remain for even a short time without becoming sick and ill. The streets are overpowering, and the sights equally so. The paucity of private accommodation is such that in the side streets and open places no delicacy whatever is felt concerning compliance with the necessities of nature; so that even young persons verging into manhood and womanhood have become from habit totally indifferent to the sense of decency in this matter. In many of these streets there is no superficial drainage. If the street be concave, the rain and slops soak down the middle to some lower level; if convex, the liquid refuse runs to the side of the road, near the pavement, and not infrequently overflows the latter. Some of the streets in the neighbourhood of Quarry-hill and the York-road are without any road pavement whatever. A week ago the cart-ruts in the roads were 9 in. deep, where the mud was solid enough to allow an impression in it being left; and in others the cart-road was a narrow channel of liquid mud. Add to this, that with a few exceptions the streets are narrow, tortuous, and badly lighted; and that the air is filled with factory smoke; and that side of the picture, it will be seen, is not an attractive one. Yet Leeds is wealthy and flourishing, and has spent money liberally and nobly."

We then go on to show the immense sums expended on public buildings and works, and enter more fully into the insanitary state of the town, thus ending:—

"We have surely said enough to show that great changes are needed in Leeds, and we earnestly call on the right-thinking, intelligent, shrewd, and wealthy inhabitants of the place to set about the work. Millionaires of Leeds! You are your brothers' keepers."

Fourteen years have passed since we had a good deal of Leeds dirt thrown upon us for thus venturing to say what we did then say; and now, in the face of a sanitary committee which was certainly appointed by the town council, and whose expenses have not been grudging, or, at least, which have increased from 4,000l. or 5,000l.

a year, to 25,000l., we find the right-thinking and more intelligent appealing to that same town-council to "set about the work," as if nothing had ever yet been done. And we now find the local press using just such strong language as was used fourteen years ago in speaking of the present state of things. The *Mercury* thus speaks:—

"Yet among the inhabitants of Leeds will not be inclined to echo the sentiments of the memorial presented by an influential deputation to the town-council yesterday. For a considerable time past the public interest in the health of the borough has seemed to slumber, and the death-rate has remained at its usual level. . . . Within easy reach of the centre of the town, almost within sight of the wayfarers in Briggate, there may be found dens so loathsome that it is impossible to give any detailed description of them in the columns of a newspaper. The passer-by who chanced to penetrate into one of these horrible places finds himself in a courtyard, the broken pavement of which rocks with liquid and vegetable refuse, and with impurity of every kind. His eyes are pained by the filth which is everywhere to be seen around him, and his nostrils are assailed by stenches compared with which the smells of Cologne are positively sweet. If he inquires into the habits of those who dwell in these miserable spots; if, for instance, he looks for the conveniences without which life becomes intolerable, the results of his investigations must simply appal him. . . . It is no exaggeration to say that all sense of cleanliness and of physical and moral decency must be destroyed among the residents in many of the places named in the schedule attached to the Social Improvement Society. . . . But what is to be the remedy? There is, however, one point not alluded to in the memorial, which we cannot allow to pass unnoticed. This is, the duty of every Town Councillor to interest himself personally in this grave question of the public health. . . . We fear that we do no injustice to the Town Council as a whole when we say that this is the course by means of which many important suggestions and many urgent complaints are brought before the notice of the public. We have given the Council credit for its desire to aid in the sanitary improvement of the town; but we are bound to say that this desire can never be realised unless the Councillors individually feel the full weight of the responsibility in this matter. The happiness, the health, the moral welfare, and the very lives of thousands of the fellow-townsmen depend upon their action in this matter."

Is the memorial of the Leeds Social Improvement Society to be quietly shelved? That is the question.

NEW BOARD SCHOOLS IN LIVERPOOL.

THE new schools in Chatsworth-street, Liverpool, Gothic in style and carefully arranged, were opened on the 5th inst. They are to accommodate 1,000 children, and have cost about 8,500l. There are two infant schools for 200 each on the ground-floor, containing school-rooms for ninety-five, one class-room for forty-five advanced infants, and two infants' class-rooms for thirty each, fitted with galleries, and capable of being thrown together by movable screens. The senior boys' school for 120, with schoolroom for sixty and two class-rooms for thirty each, is also on the ground-floor. The remaining portion of the ground-floor is occupied by the committee and master's room and the caretaker's house. On the first floor of the Sophia-street wing are the junior schools for boys and girls, for 180 each, containing schoolroom for 120, with two class-rooms for thirty each, also fitted with movable lifting-screens. Each junior schoolroom is divisible into two by a lifting-screen. There is also a boys' drawing-room. In the Chatsworth-street wing is the senior girls' school for 120, with schoolroom for sixty and two class-rooms for thirty each. A mistress's room, with lavatory and water-closet, adjoins the senior girls' school, and also a girls' drawing-room. Lavatories and cloak-rooms distinct from each other are provided for each set of schools. There are three separate entrances to the playgrounds for infants, girls, and boys, and three main staircases. The angle of the building is carried up as a gable tower, and in this are the bell and a cast-iron tank holding 3,750 gallons, supplying the building by 3-inch cast-iron main supply, fitted with hydrant and hose in case of fire. The rooms are lofty, very light, and well ventilated, the ground-floor being 14 ft. 6 in. high, and the first floor, 18 ft. high. The whole of the upper part of the sashes are hung on swivels. There are also about seventy ventilating-valves—the patent of Messrs. Lawson & Handsforth, of Halifax—in the outer walls, and each school and class-room has a separate extracting-fue from the centre of the ceiling, to remove at all times foul-air and gas. The buildings are heated by Mr. Harlow's patent boiler and hot-water pipes, and each room possesses in addition an open fireplace. Doors of communication between the separate schools, with pass-keys, are provided in each floor for ready supervision. The sound-proof lifting-screens, of which there are six in the building, are an invention of the architect, Mr. T. Mellard Reade, of Liverpool. They open

the full width of the room, and half the height, and each is worked by a small winch and hand-fitted in the side casing. The advantage of these screens over those commonly used is that they give, when lifted, a free and uninterrupted view. The wall dividing the two junior schools has also an opening in it, 8 ft. square, fitted with sound-proof doors, and by this means a margin lantern screen can be fitted up in it, and the whole or one of the junior schools utilised for the audience, the magic-lantern being in the schoolroom. Each main façade is faced with Lancashire shoddies, with Woolton stone-drillings. The whole of the joiners' work is pine. The sole contractors were Messrs. Burroughs & Son, of Leycester-street, Liverpool. The clerk of the work was Mr. James Peers.

HASTINGS TOWN-HALL COMPETITION.

THE plans for the new hall are causing considerable discussion in the Council. Last Friday quite a disturbance was created at the public meeting because Alderman Howell, as chairman of the Town-hall Committee, insisted upon making a statement as to the plans without giving previous notice. The dispute was without point of order.

On Wednesday afternoon a special meeting was held to "consider" the designs and "select" therefrom. Mr. Russell (builder) said that, on fifteen or sixteen of the plans sent in stated that the design could be carried out for 12,000l. (including the foundation). Mr. Hill (Fowling Hill, architects) declared that, having spent a good deal of time over the plans, he could give one which could be carried out for the same named. One or two very inferior designs might be carried out for a little more. He thought would put the Council in a fair position if it employed a professional man to report on all the plans, as to how far they could be carried out for the stipulated amount; and he moved that that effect.

Mr. Alderman Ross moved an amendment that all plans which did not state they could be carried out for 10,000l. should be excluded from the competition. The two motions were discussed at length, and Mr. Alderman Howell, building mentioned that two public buildings which had carried out in the borough had only cost 3d. to 4d. per cubic foot. Some of the plans were estimated as high as 9s. per foot.

Mr. Hill's motion to call in professional assistance to ascertain the cost of each plan, according to the prices mentioned by the competitors, was carried by a large majority. Mr. Hill proposed that Messrs. Batson & Hunt, quantity surveyors, of London, should be employed; and a proposal that Mr. Card (of Lewes), the county surveyor, who had been the arbitrator on the designs for the Aquarium, should be called in, met with general favour, and was unanimously adopted. The plans are not to be publicly exhibited until after the Council has come to a decision.

SIR.—It is to be regretted that the committee appointed to consider the thirty-five designs submitted for the building intend to observe such strict secrecy in the proceedings.

I think the experience of most of your readers will show that in competitions which have been decided full publicity has been given to the proceedings connected with the adjudication; and as it appears to be the desire of the council in this case to do strict justice, I think it would be very useful that full opportunity should be at once given for the public inspection of designs.

Still more desirable is it, however, that the advice of some eminent architect should be obtained in the matter, and that he should make his selection from the whole of the drawings sent in, and not, as sometimes has been the case, from a few previously chosen by the committee. It would give the best of all guarantees that the merits alone of the designs will determine the decision.

I believe all honourable competitors will agree with me in these views, and trust they will express them, so that the committee may be induced to adopt a course which I feel confident is the only one that can ensure a satisfactory result.

A COMPETITOR.

Sussex Iron.—An effort is being made, says the *West Sussex Gazette*, to restore to the county the ancient iron works that formerly abounded, but which disappeared on the use of pit coal from the North for iron-smelting. Impossible as may seem, the revolution of time is operating to bring again the splendid deposits of iron in Sussex once more into notice. The iron deposits of the Wealden district are among the most extensive in the United Kingdom; and although perhaps, not the richest in the percentage of metal, are most valuable for their purity.

PURE AIR, PURE WATER, AND PURE SOIL.

On Monday last, Dr. Lyon Playfair, M.P., as President of the Health section of the Social Science Congress then sitting at Glasgow, delivered an address, a portion of which we give. Instead of allowing garbage to be freely piled or applying it to plant life, which is its natural destination, we dig holes close to our own, and cherish the foul matter in cesspools under conditions in which air cannot enter freely, therefore the most favourable for injurious refaction. We forget the experience of our fathers, that every cesspool has its own peculiar evil spirit residing within it, and we are surprised when the demon emerges, especially at night, and strikes down our loved ones by typhoid fever or other form of pestilence. We go a step further in the hygiene of rivers, and do throw the foul matter into them, which simply themselves into our once beautiful rivers, though in many cases they are used as a beverage by people lower down in the stream. And when they remonstrate with us, surely wolves, growl at the poor innocent who lower down the stream, because they get to drink our abominations. This country is gloried in her beautiful rivers, but they are not more open ditches, which pollute the districts through which they flow. Rivers in their natural state contain dissolved air sufficient to cleanse and destroy any accidental organic contaminations. This purifying power of air dissolved in water is essential, because no water, either in rivers or springs, could otherwise be pure. All sources of water are ultimately tainted from rain, and that is never pure, because it washes out organic impurities from the atmosphere. At the same time it carries down air in solution, so that it brings with it the natural antidote. The air-purifying power is, however, limited, and is altogether insufficient for streams polluted with town sewage and manufacturing refuse. In them you get no free oxygen, for that has been used up in the first small portion of impurities poured into the streams. Take, for instance, the beautiful Clyde, which ought to wash, but which is, this great city. I have analysed its waters miles above and miles below Glasgow. Long before it reaches the outskirts of the city it is already fouled, but after passing Broomie, its condition is abominable. My friend Angus Smith has analysed the waters in its course, and has found these pollutions even in the water of the beautiful sea-bathing resorts which are so much frequented by the upper classes of the city. The self-purifying powers of rivers, and even of the sea pouring in its tides to dilute them, has no chance against the mass of abominations which large towns pour them. But there is no longer an excuse for them doing so, for there are now various effective and well-matured processes for purifying the water before the water is ultimately discharged into the river. You cannot take out these contaminations from the river itself, but you can prevent their being put in. The only mode of restoring our great rivers to their present condition of open ditches to their natural purposes of watering and purifying the districts through which they flow is to prevent polluted matters being poured into them. Parliament must enact for this country the same commandment of the Egyptians, and you shall not pollute rivers." They have already said so to the latter in regard to air. In 1871 was a student in Glasgow, I remember the tall chimney of St. Rollox used to vomit out noxious vapours, destroying vegetation and annoying the inhabitants. I had some small influence in persuading the late Lord Derby to pass an Act forbidding the pollution of air, and I am glad that the Messrs. Tennant and all other soda manufacturers are glad that we forced them to cleanse their acid fumes. Well, I say, with great deliberation, and after full study of the subject, that our knowledge in regard to the purification of drain waters, whether these concern town sewage or manufacturing refuse, is abundant and practical, and that all municipalities and manufacturers should now be provided by heavy penalties from fouling rivers. Compulsion would be a positive benefit to them. I may remind you that the present Prime Minister has lately told a deputation that he is very interested in this object. I hope that he is destined to do for water what his former

friend and political chief, Lord Derby, did for one of the many impurities in air. Such a triumph of sanitary legislation would be worthy the great State doctor who has taken as his motto "Sanitas sanitatum omnia sanitas." If he achieves the purification of our rivers, I am sure that I can promise him from this Association, and, indeed, from all political parties in the State, an amount of applause which can best be expressed in the words, if not in the meaning, of Macbeth, when he says,—

"Come, Sir, despatch; if then couldst, doctor, cast
The water of our land, find its disease,
And purge it to a sound and pristine health,
I would applaud thee to the very echo
That should applaud again."

Mr. Disraeli has obviously thought much about subjects of public health, as evidenced in the wise observations of Mr. Phœbus in "Lothair." When, then, in his celebrated Manchester speech, he pledged himself that a Conservative Government would devote special attention to sanitary subjects, I believe that he expressed a deliberate and mature conviction. But, hitherto, probably from the force of circumstances, we have had promises only without their fulfilment. Surely another session cannot pass without a serious attempt at sanitary reform, when we recollect that the Prime Minister of England is the same orator who used the following remarkable words: "I think public attention ought to be concentrated on sanitary legislation; I cannot impress upon you too strongly my conviction of the importance of the Legislature and Society uniting together in favour of these important results. After all, the first consideration of a Minister should be the health of the people."

In the recent progress of hygiene nothing has been more clearly proved than that diseases are largely propagated through foul water, and recent investigations seem to point to the unpleasant circumstance that the germs of disease chiefly come from the excreta of men as they enter into a state of putridity. Whole villages and streets in large towns have been stricken with disease by portions of human excreta finding their way into water. Take the fever epidemic in London last year. A dairy company used the water of a well which had received the drainage of a person infected with fever, this drainage having percolated through the soil to the well and contaminated it in the usual manner in which well-water is so constantly fouled. Hundreds of persons, among whom were some of my relations, were stricken down by the milk polluted with this impure water. Take as another example the case which has happened while this address is passing through the press. A large public school, supported by national subscriptions, is thoroughly wrong in its hygienic arrangements. In its cisterns are foul waters, and close to its playgrounds are filthy cesspools. A most distinguished sanitarian, Dr. Austie, visits it, and is lost to the world and to science during his inspection. Let us hope that the sacrifice of this precious life may lead to much sanitary improvement in our public schools. When the virus of disease enters the body in a state of solution, it is in a state most favourable for development. And as water is the common vehicle for removing impurities from dwellings, it becomes especially important to prevent waste water from entering into any source of water supply which is to be used for drinking or any other domestic purpose. But what is the condition of many towns, such as London itself? They are situated on rivers from which their water supply is derived, and it may be, and often is the case, that hundreds of thousands of persons pour in their abominations into the river before it is used for the town lower in the stream. London in this way has to drink all the foul drainage of about a million persons above it in the stream. The people cannot realise this nastiness, or they would not tolerate it for a day. Glasgow is happily situated in this respect, for it receives the pure and soft water of Loch Katrine. If London had such a source of supply, I believe that it would stand as a model in its death-rate to all the towns in the kingdom.

From what I have already said you will observe that the natural purifiers, on which we should rely in combating the pollution of our cities, are, a free supply of untainted air, unpolluted water, a porous soil, the pores of which are open, and not filled up by undrained waters; and, let me add, a healthy vegetation in the squares of our towns to help to purify their atmospheres, and to pour into them life-giving oxygen. It is the want of these conditions

which makes both town and country dwellings unhealthy.

In ancient as well as in modern hygiene, the importance of an adequate ventilation of streets and houses was well known. It was also a matter of recognised experience that even efficient ventilation of these would be of little use unless the ground on which they were built was also ventilated,—that is, drained of underlying water,—so that the air might penetrate and circulate freely through the porous soil, in order to disinfect it from the continually accumulating *débris* of a crowded population. A few years since, while wandering amid the ruins of Cæsar's palace at Rome, I was stricken with the well-known fever of that city, and during my convalescence I had ample time to speculate on its causes. Those of you who have been in Rome will recollect how shallow now is the depth of the Tarpeian rock, and how deep down below the level of the surrounding streets are the floors of the forum and ancient temples and palaces. All that is above them is the organic and inorganic *débris* of thousands of years, which, when stirred up and coming in contact with oxygen, begins again to decay, and continually emits those exhalations which find their expression in the Roman fever. The same is the case on the site of ancient Jerusalem. I remember to have read somewhere, that when a shaft is sunk to the base of the Temple, the decaying matter of many past generations is set into action, and quickly destroys the wood with which the shaft is lined. Unless, therefore, the soil upon which a city is built is well drained and ventilated, the dwellings of the city cannot be healthy. It is not in fevers alone that the influence of the soil is apparent. Probably consumption itself, that great scourge of this country, is a chronic zymosis, or disease like many of our fevers, arising and communicable from like hygienic deficiencies. It is greatly mitigated by drying and ventilating the soil, as well as by ventilating the dwellings. After the sewerage of Salisbury had been made effective, the deaths from phthisis fell 49 per cent., in Ely they fell 47 per cent., in Rugby 43 per cent., and in Banbury 41 per cent. Dryness and elevation, and well-ventilated rooms, are powerful means to prevent, as they are to retard, consumption. In the last generation the average period of that sad disease was two years. Now, according to Dr. Williams, it is eight years. With pure air in the soil and in the dwelling, let us hope that the succeeding generation will point to it as a rare disease instead of as one of the most common maladies of this country.

Free ventilation around the houses, as well as within them, was enjoined by the ancients, but was as much neglected by them in practice as it has been by the moderns. Zeno ordered, after a long neglect, that houses in Constantinople should be 12 ft. apart all the way up. His orders were disobeyed, but fire in Constantinople has repeatedly done for it what fire has done in London. Ancient Rome, like modern Glasgow, became very bad with its closely-built houses, and at last they were ordered to be 5 ft. apart, and not more than nine stories high. Augustus limited their height to 70 ft., and Trajan to 60 ft. We do not know how many people lived in these houses, or how many congregated on an acre. But we do know some facts as regards our own population. Taken on an average all through England, the towns are less packed with houses and people than one could have anticipated. In primitive countries, where the savage lives on the produce of the chase, there is one inhabitant to each square mile. In the time of our Saxon ancestors in this country, there were five houses to each square mile, and probably about thirty inhabitants. Good but high-handed Queen Elizabeth was so horrified with the gigantic growth of London, although it then contained only 160,000 people, that she forbade the erection of any more buildings within three miles of London and Westminster, and she prohibited the division of a house into tenements for various families, "because [I quote her own words] great multitudes of poor people inhabiting small rooms, and those very poor, and such as must live by begging, or worse means, being therein heaped together and in a sort smothered, with many families of children and servants in one house or small tenement, it must needs follow that, if plague or sickness came amongst them, it would presently spread through the whole city and confines." Well, does this not sound like modern lecturing in the crowded city of Glasgow, where noble and gallant efforts, however, have recently been made to mitigate

the evil, and with a large promise of success? In Queen Elizabeth's time there were fifteen houses and eighty-three people to the square mile in the whole of England. Now there are seventy-three houses and 390 people. In all the English towns—excluding the rural districts—there are 713 inhabited houses, and 4,061 inhabitants to a square mile. That gives nearly an acre to each house containing six persons. You see, therefore, that the area of a town is far from being wholly occupied. But just compare that with large parts of Glasgow before the passing of its Improvement Act in 1866. Instead of six people to an acre, which is the urban average in England, there were districts with 600 people to the acre, 50,000 people being huddled together on eighty acres. In 1871, when the census was taken, only 5½ per cent. of all the families in Glasgow had more than four rooms, or, in other words, 94½ per cent. of the families had such insufficient accommodation that in no case had they more than four rooms, and in most cases fewer. Edinburgh has 78 per cent. with this scant accommodation, and 22 per cent. with the superior, and its rate of mortality is 25·7. If you now compare by a simple rule of three the relative density of population with the relative mortality of Edinburgh and Glasgow you will find that the increase of mortality in Glasgow nearly corresponds to its increased density in population.

The four towns of largest mortality in Scotland,—Paisley, Dundee, Glasgow, and Greenock,—have such dense populations that from 93 to 94 per cent. dwell in houses with four rooms and under. Notwithstanding the efforts made in Glasgow and Edinburgh to improve the house accommodation of the poor, the latter often defeat the intentions of those who build capacious houses, because they overcrowd them with lodgers. The working man does not spend the same proportional amount on rental that the middle-class man does, and is apt to try to decrease his weekly house payments by adding lodgers to the other inmates, who are already amply sufficient for the accommodation provided. If a room be adequate in its cubical contents of air for one person sleeping within it, yet it may be wholly inadequate for two or more persons. Although the amount of air required by an individual for respiration is comparatively small, yet he fouls so much air both by carbonic acid and organic exhalations that a large quantity of air must pass through an apartment to keep it sweet. If the air contain even one cubic foot of carbonic acid to 1,000 cubic feet of air it is vitiated air in an apartment. Now, to keep pure air in a room, from 2,000 to 3,000 cubic feet should be allowed to pass through a chamber every hour for each person sleeping or living in it. I need not trouble you with the data for this assertion. It is not a large enough allowance for hospitals or for rooms where there are exhalations of the sick. And unluckily the prevailing impression is that a far smaller amount of air suffices. In schools, for instance, often not one-fifth the amount of ventilation is given which is requisite for health.

Our rooms would become intolerable if it were not that there are natural, though insufficient, sources of ventilation beyond our control. The walls and mortar, though not transparent to light, are transparent to air, and through them is constantly passing an interchange of vitiated and pure air. Brick is, however, more porous to air than sandstone or limestone, and Scotch houses are not so easily ventilated by natural means as English houses. Indeed, were it not that the mortar which joins the stones happens to be readily permeable to air, stone houses would be in a bad condition. Of course it is obvious that the fewer persons there are in a house or room the greater becomes the superficial area of the building to each individual, and the more efficient the uncontrollable ventilation. Still air is of little use in ventilation, for the origin of the word *ventus*, wind, indicates that there must be air in motion. There are only two practical modes of producing this in our dwelling-rooms. We must either admit the external air when it is in motion, or we must produce movement by an elevation of temperature, such as fires, within the room. As the pernicious effect of draughts on susceptible persons depends on an abnormal cooling of the body, the task of the ventilator is to obtain efficient change of air without chilling one part of the body more than another. In modern hygiene nothing is more conclusively established than the fact that vitiated atmospheres in our dwellings and their surroundings are the most

fruitful of all sources of disease. The exceptions to this statement are easily explained. Thus, in the wretched dwellings and filth-polluted premises in the islands of Scotland, you would expect to find a large rate of mortality, when in reality it is comparatively small. The reason is that during the day the inhabitants breathe pure air, and during the night it circulates freely through their badly-constructed cabins, neutralising the foulness in which they are content to live. But in great cities like Glasgow there is no ozone-bearing air within miles of any part of it, and the houses are built of materials which render natural ventilation difficult. Then comes the packing up of the population into an incredibly small area, and the death-rate tells the woeful result. There is no subject to which I look with more interest than to the results which may be expected from the vigorous effort which the municipality of this city has made in recent years to mitigate this evil. The example is already telling on London, and I hope that the efforts of my friend, Mr. Kay-Shuttleworth, and others, will be crowned with success next session, and that we will see a large effort to improve the dwellings of the poor in the metropolis. Light and air are as necessary to the dwellers in cities as they are to the trees of a forest. There you see trees, pining for air and light, push their branches in the direction of every inlet. In their struggle for existence many are dwarfed and come to nothing; a few, stronger and more robust in constitution, push aside the weaker, and appropriate the essential conditions of life to themselves. If the forest be under skilled care, the forester, with his pruning-knife, cuts down the weak saplings, and leaves sufficient space for air and light to those of promising growth. But in an overcrowded city, grim Death with his scythe exercises little discrimination, and cuts down all those who come within its fell swoop. I have only alluded to the physical evils of overcrowding; but the moral evils are greater still. Although there is an excessive rate of mortality in overcrowded districts, there is no lessening of the population by such unhealthy agencies. A crowded and unhealthy district, with all its inevitable consequences of low morals and low intelligence,—where the condition of human beings is scarcely above that of animals,—where appetite and instinct occupy the place of higher feelings,—where the barest means of support encourage the most improvident and early marriages,—is not the place where we shall find a diminishing or even stationary population. For the early unions in such places are followed by early offspring, and although more than half that offspring may be swept away by disease during infancy, yet nearly a third of it will grow up in spite of all the surrounding evils, to follow in the steps of their parents, and in their turn to continue a race, ignorant, miserable, and immoral as themselves.

RITUALISM AS AN ART INFLUENCE.

MR. GLADSTONE'S remarkable utterances on the wide subject of "Ritualism," in the *Contemporary Review*, take us, in spite of the pressure of things present, fairly into the past, and into its then special mode of art action. It is most surely a subject of lasting and vital interest, and can never cease to be so, while human nature is constituted as it is, and while it has in it, as a constituent part and portion of it, a love, and liking, and craving, for a something more than a mere "utility." It is this want that is at the foundation of Ritualism, and the disturbing cause of so much. The subject in itself is well worth a little discussion whenever opportunity offers; and Mr. Gladstone's clever and learned paper on it, emboldens us to again glance at it in an artistic sense. It is full of right curious matter, interesting to artists and architects especially. It is in reality worth almost any amount of discussion, if only to understand through it, the use made by the older artists, draughtsmen, and sculptors, of the then prevailing "Ritual," whatever that might happen to have been, or in whatever style of art it might have been embodied.

It would be a very difficult thing indeed to find the best, or even the most primitive starting-point of Ritualism, for the further back we go, the more often do we seem to meet with it. In the antique religions Ritualism was all in all. The appeal made to the religious faculty, and to the sensibilities of human nature, was made almost universally through it, and those doubtless to whom ordinary and quiet motives could not

touch, were compelled through it to join the crowds filling the old temples.

Where shall we begin?—where first find the mystery-loving crowds who, in the morning of the world, and long before its written history commenced, invented or fell into the idea of Ritualism? It is hard to answer this question with any degree of certainty, for, in spite of our learned inquiries, we really know nothing, little more than nothing, of the early history of the world, even in historic times. Where, indeed, history first commenced to record its events in any form is a mystery. The old Bible records so loved and so venerable, are here and there without doubt illustrated by written scrolls, wall paintings, and sculptures; but then at the same time it is found that there are of these material records, not a few which reach farther back in the past, and sometimes tell of people, and languages, and doings, not to be found in the Hebrew records. Then, again, those nationalities which are noticed must have had a long pre-existence, as had old Egypt, not in a state of savage barbarism, but must at the time they were spoken of have already had a "history," and a long one. Egypt in the days of the Patriarchs was a mighty empire, with all the apparatus of a settled and well-organised Government, and with a pompous ceremonial and court etiquette, and with a complicated and highly elaborated ritualistic religion. I might, therefore, well start with Egypt, and affirm that the old Egyptian invented Ritualism, at least, religious Ritualism, and was the first man in the world to make practical use of this then so useful element,—a so fertile an element of discord. But Egypt is not alone in the old world. There was, as are quite certain, India; far away, indeed, from Egypt, but in pretty nearly the like state of civilisation, or advance, or progress, or way, this life's work, or whatever other word or phrase which may best express the idea, is strange enough state of the world, hardly now days to be realised, even in imagination. Egypt and India were alike in every many particular. The walls of the temples of India are covered from base to roof with ritualistic records and pictures of religious ceremonial, quite as complicated and elaborate in detail as any to be found in the huge temples of Karnak and Luxor. Indeed, the ideas sought to be expressed were pretty much the same, but how differently were they worked out, each in its own special way. As to who was the eldest born, who can tell? Sometimes the one and sometimes the other finds its advocate. Certain it is that they did not borrow Indian architecture and sculpture from another; each one the growth of its own soil and men. The "Ritual" of each as portrayed on its temples' walls, roofs, and columns, are equally—as one of the learned doctors of the Oriental Congress remarked—"out of the human heart" primitively. But how diverse and individualised in mode of representation. "Ritualism" is everywhere, all the world over; and it puzzles even Mr. Gladstone, with all his industry and varied knowledge, to find out a spot on earth's surface, in the old days, wherein it was not. The subject grows as you look at it, and were there not other strange and isolated nations fully as "Ritualistic" as either of these? It was and yet is China, a vast empire, with history stretching back into the misty past, far back as to be beyond all indication of a beginning. It would seem always to have been so now is,—a barbaric Ritualism and artistic formality ruling it well nigh absolutely. I need not go on, for to do so would be to round the world. It was the art faculty of human nature which did the work in some times so strange and striking. In architectures, sculptures, wall paintings, and in written books we yet see evidences of it; and our museums of art, what are they but stores of specimens and proofs of it? And how can we miss the Middle Ages, even in the momentary glance? They seem to have had concentrated in them all that could well be thought of and done in the way of Ritualism, in the broadest possible sense and definition of the term. We in this age yet borrow and continue to dream of them, and when Mr. Gladstone found so lovingly enthusiastic, or grows so angry about things as they are, it is the Middle Ages indeed that have supplied him, with small liberality, with the subject matter. Human nature is very weak, that is certain; and it is impossible properly for the very strong-minded, and the most utilitarian, to do other

rise than pause before and admire such a display of Middle Age "Ritualism" as may be seen in the processional triumphal progress of the fiddle Ape Emperor, Maximilian! The subject is fertile and indeed endless, and might be pursued to almost any length, and we are but to glance at it. In the old days—no matter where—Ritualism, or rather the idea of it, preceded, and indicated the way to, the material embodiment or expression of it. This is which confuses not a little the whole subject matter, and, in reality, puzzles Mr. Gladstone. It makes the definition of the term sufficiently perplexing; so much so, indeed, that it all but betrays Mr. Gladstone's powers of word definition. What is Ritualism and Ritual? he asks. And he thus explains it—It is, as now understood, "the unwise, undisciplined reaction from poverty, from coldness, from barrenness, from weakness; it is overlaying purpose with adventures and obstructive incoherence; it is the caricature of the beautiful; it is the attempted substitution of the secondary for the primary." Such is broadly his definition of the term, and, and a surprising one it is. It may serve to show how the change as ideas retire, or advance—become new, or get to be obsolete. It is a text to ponder over, and is worth any amount of thoughtful consideration; and most certainly artists, if by none else. We do but hint at a definition of the word in its broadest possible sense, that of the outward artistic expression of mental conception; but that mental conception must necessarily be clearly defined, and delineated first. It is wonderful to think how many things were done in old-fashioned days, with such simple-hearted directness, and openness of purpose. Now-a-days, as Mr. Gladstone says, the "purpose" is commonly last, sometimes, one had almost said, not at all. In the old days purpose was first—and that makes all the difference between them.

It is not to be forgotten, and Mr. Gladstone, his survey, has not forgotten to remind us of that "Ritualism," in its broadest sense, is in any wise confined to religious or church matters; but widens itself even to common and every-day costume. Indeed, it is somewhat strange to find how *comprehensiveness* the term may come in skilful hands. The Church, whatever it may indicate to different minds, is and is not to be more or less "ritualistic" or expressive. Ritual surrounds Royalty itself everywhere. It must be good to be seeming and in, and still more to be artistic and pleasant, and suggestive to eyesight. It is certainly, as Mr. Gladstone has suggested, at the primary costume worn both by men and women,—not excess of ritual observance in common life and affairs that is to be feared. It is rather, it is to be feared, a giving to more vision and love of change what ought to be, as in the old Greek days, the result of artistic thought and expression. What a change would it be which should bring about really artistic and appropriate dress! not borrowed from the past, nor from the old Greek, nor from the Middle Ages; but from that all-fertile source of so many modern requirements in the first place, growth out of bald utility, and the product of artistic taste, and knowledge, and feeling for the beautiful and appropriate, and we might even add the "comfortable,"—no small element in it. This it is that is worth, worth, some careful thinking over, and in time, to be practical action. It is a much prouder subject than very many suppose, and no small human loss comes of its continued neglect. And there is another point of no small interest and importance touched on by Mr. Gladstone, which we could have heartily wished he had said on. It is what we might perhaps name "ritualistic colour." Mr. Gladstone thinks that "party of costume" is right. A costume of ceremony is necessary, and is even a guarantee of conduct. It is as much connected with discipline and self-respect as a uniform for the army. It has gone through not a few strange changes, this "colour" Ritualism, and was condemned, he says, by the change in lay dress, a very singular one,—to a nearly exclusive use of black, or, in other words, the total absence of colour in costume. Would that he had pursued the curious subject a little further; for, what is the cause, we may ask in order, of the almost total supremacy in male costume of the all-prevailing black, or dingy brown, or dingy something, which, but a little off, you cannot tell from black? Why could not female costume be as uniform as male

costume in sombreness and blackness? Each changing season as it comes round witnesses some startling change in the bright colours of women's attire, from head to foot, from top to toe; and we have good cause sometimes to wonder at the lengths to which Dame Fashion goes with fashionable and court costume. Ritualism in costume! But in male attire it is all the reverse of this. Colour is never dreamed of. All is negative; and it is not even the secondary, and hardly the tertiary, colours that get the ghost of a chance. Why is this? Can any throw any light on this strange state of things? We could have wished that this perplexing phase of "Ritualism" had a little further light thrown upon it. It is well worthy of a little thought and inquiry, and Mr. Gladstone has done well in helping it on.

SAND.

The following is one of a series of scientific and practical examinations into the qualities and effects of the various materials which constitute cements and mortars made by engineers and others in France.

Sand is generally produced by the disintegration of rocks having a granitic base, or of calcareous compounds. It is also produced by the action of water on deposits, and on the debris which it carries off.

The primordial element of sand is quartz. Rocks composed of feldspar and mica cemented together by natural affinity produce many varieties; some are derived from gneiss, protogine, or talcose granite, sienites, &c., or are entirely calcareous; lastly, others are mixed with volcanic sand, but which do not possess any of the qualities of puzzolana.

Sand is designated as coarse, middling, fine, and very fine.

It is considered coarse when the grains have a diameter of 2 to 3 millimètres; that is to say, 2.25lbs to 3.25lbs of an inch; and it is called fine when the grains do not exceed 1 millimètre. That which exceeds the former diameter is called gravel.

Besides river and sea sand, we have that which is found away from water sources, which are known as fossil sands, of the plain, or quarry sand; but these must be distinguished from the true fossil sands, which are called *arènes* in France.

Fossil sand is far more irregular in the grain than either river or sea sand; it is far more gritty when the grains are strongly compressed between the fingers; quartz and granite dominate in their composition.

Near the sea are found large dunes or hills of shifting sand; the most extensive of these deposits in France are near Dunkirk. In the districts near the coast there are also extensive plains in which the sand is mixed with various proportions of earth, and which form the sterile wastes known as the Landes. In addition to the department which takes its name from them, Landes exist also in Sologne and many parts of Brittany.

In the composition of mortar, sand forms the inert matter; it exercises no chemical action on the lime, the puzzolanic constituents, and the mortars with which it is mixed; its action is purely mechanical, and consists in the aggregation of the grains by the aid of the lime and cements, which perform the part of mordants, or active agents of cohesion: it follows that the sand of which the grains are the most angular and the angles the sharpest are preferable to those with rounded grains, or of which the asperities are less numerous.

The various kinds of sand should be harsh to the touch, gritty to the fingers, exempt from earthy matter, which causes disaggregation of the mortar by humidity; and for the same reason, though to a less degree, marly or clayey sand should be rejected.

In the case of sea sand, the first thing to be done is to get rid of the salt. The presence of salt, however, may be very useful in certain cases.

It is of great importance to take careful note of the various results obtained by the use of different kinds of sand found where works are being carried on; some kinds contribute powerfully to the cohesion of mortars, in combination with certain kinds of lime, while others are the causes of disintegration. Experiments of this kind cannot be too numerous or too carefully conducted.

M. Vicat instituted a series of experiments in order to determine the effect of the coarseness

or fineness of eminently silicious sands, or the resistance of mortars, and arrived at the conclusion that for use with eminently hydraulic lime sands rank as follows:—1, fine grain; 2, sand with mixed grain and sharp angles; 3, coarse sand; while in the case of moderately hydraulic lime the order is reversed, the coarse standing first, the mixed second, and the fine grain last.

Results since obtained with other kinds of sand have fully borne out M. Vicat's conclusions.

The mixture of lime and sand is the more complete, the aggregation the more intimate, in proportion to the roughness of the grains; river sand, which has been a long time extracted, and left on the banks for many months, and which has its surfaces corroded by the action of natural agents, are beyond all question the best; but those of the quarries, which are best when their composition is very silicious, offer much the same advantages in practice.

Mortar made from quick-lime and coarse sand is the most durable; fine sand acts best with hydraulic limes. In the case of hydraulic mortars, the definite setting with middling-sized sand being fixed at 100, the proportion will descend as low as 50 with gravel, and even lower when it is very coarse.

Quarries and silicious sands are insensible to the most powerful compression. This quality has caused them to be sought for paving-work; and they are preferred before all others for foundations, and in all cases where great pressure has to be considered.

PROPOSED BUILDING ON STOCKWELL GREEN.

WITHIN the last few weeks it has transpired that steps have been taken by a number of builders to appropriate Stockwell-green as building land, and the attempt has evoked strong opposition on the part of the inhabitants of Stockwell and Brixton, who urge that the Green, having long been regarded as one of the open spaces in the metropolis, it would be injurious to the health of the district to allow it now to be built upon. It is further objected to on the ground that the houses erected upon it would be uninhabitable, as they are proposed to be built in very close proximity to each other, back to back. The proposal has occupied the attention of the Lambeth Vestry, who are taking steps to prevent its being carried out; and at the meeting of the Metropolitan Board of Works last week, Mr. Fowler drew attention to the matter, contending that as it was one of the open spaces in the metropolis, the Board, as the conservators of such open spaces, were called upon to take immediate steps to prevent the Green, as one of the lungs of London, from being destroyed by the erection of buildings upon it. The matter was referred to the solicitor to the Board to report to the Works Committee what steps in the interest of the inhabitants could be taken.

THE NEW BRIDGE OVER THE METROPOLITAN RAILWAY AT FARRINGTON ROAD.

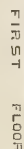
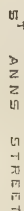
THE contract for the new bridge to be carried over the Metropolitan Railway at Farringdon-road, in constructing the new street from Oxford-street to Shoreditch, has been taken by the Darlaston Bridge and Roofing Company, South Staffordshire. The amount of the contract is 18,250*l*. The new street, after intersecting Hatton-garden, will cross Farringdon-road near Clerkenwell-green.

THE MARGATE DRAINAGE COMPETITION.

THE Town Council has taken the course we suggested, and invited the authors of the two plans selected by Sir Joseph Bazalgette, marked "Economy" and "C. E." (neither of them wholly satisfactory), to submit in competition amended designs, with the view of one of them being selected for the work. The object of secrecy is now at an end, and we find it intimated at the last Council meeting that Mr. Lewis Angel is the author of "Economy," and Messrs. Gotto & Besley that of "C. E."

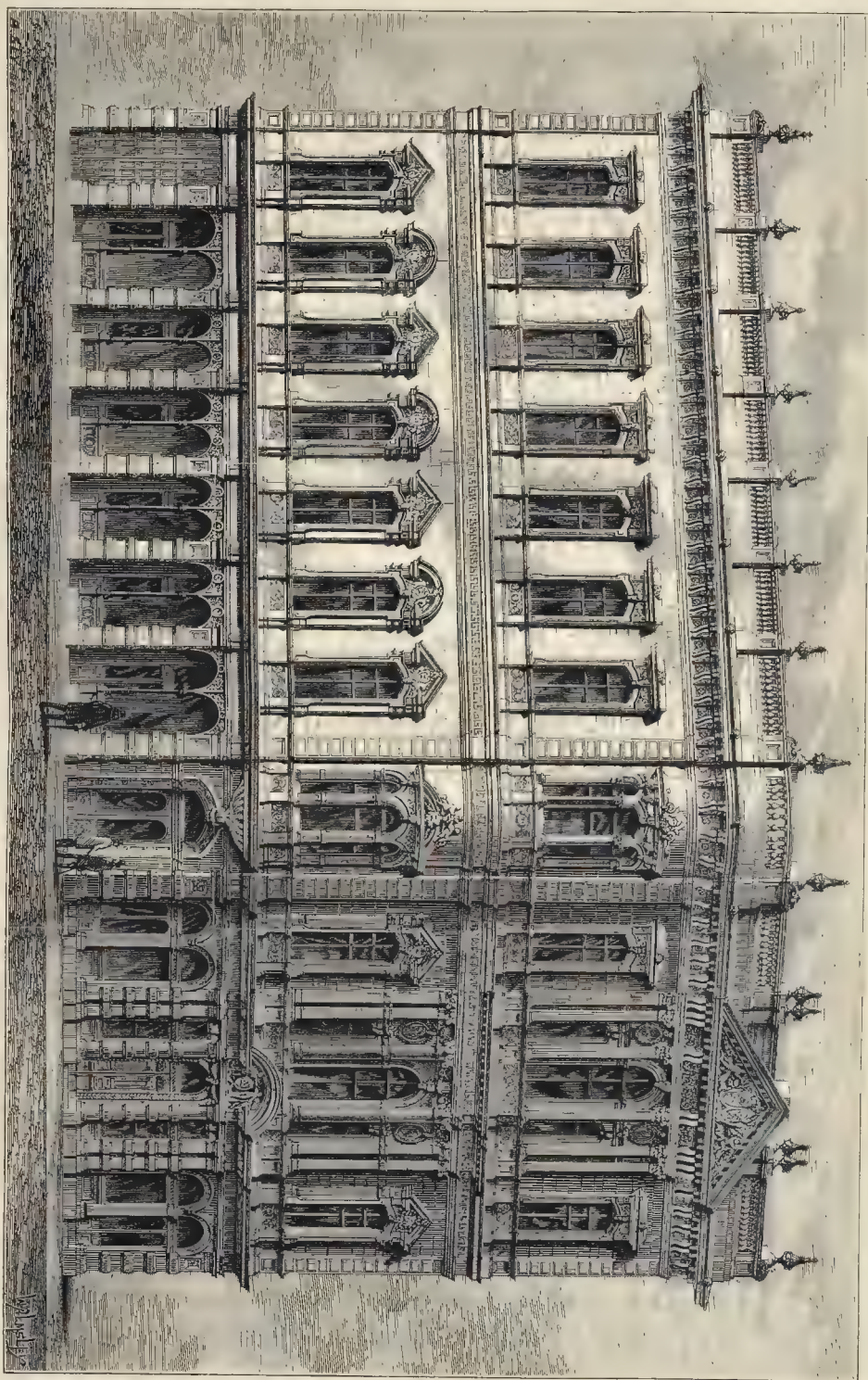
Sir Joseph Bazalgette's fee for examining and reporting on the plans was one hundred guineas.

The Kirkcaldy Masons.—The operative masons of Kirkcaldy, who struck work for weekly instead of fortnightly payments, have had their terms conceded them.



MANCHESTER CONSERVATIVE CLUB-HOUSE.—*Plans*

A vertical scale bar labeled "SCALE OF FEET" with markings from 0 to 60. The scale is oriented vertically, with 0 at the top and 60 at the bottom. Major markings are at 0, 10, 20, 30, 40, and 50. Minor markings are at 5, 15, 25, 35, 45, and 55. The scale is used to measure the vertical distance between the top of the profile and the bottom of the profile.



MANCHESTER CONSERVATIVE CLUB-HOUSE.—MR. ROBERT WALKER AND MESSRS. HORTON & BRIDGFORD, ARCHITECTS.

THE MANCHESTER CONSERVATIVE CLUB-HOUSE.

THE Manchester Conservative Club-house, which is now in course of erection from the joint designs of Mr. Robert Walker and Messrs. Horton & Bridgford, occupies a site at the corner of St. Ann's-street and Cross-street, with an elevation towards the former of 68 ft. in length, and towards the latter of 106 ft., both faced with Yorkshire stone. The architecture is Italian in style. A bay window carried through the one and two pair floors will mark the junction of the St. Ann's-street and Cross-street façades. The club will occupy the whole of the one-pair floor, together with all the floors above; a portion also of the ground floor and basement.

The large dining-room is on the first floor. It will be a lofty room in three divisions, separated by detached columns, the end division being 25 ft. wide, and the central division 36 ft., and in length altogether about 98 ft. It is entered through a glazed ornamental screen direct from the principal staircase, and will occupy the whole length of the Cross-street frontage. In the rear and to the right of the principal staircase is the luncheon-room, with serving-room at the back; this serving-room is also in immediate communication with the dining-room. The library, which is entered from the staircase on the left, is lighted on two sides, and in extent will occupy the greater portion of St. Ann's-street front on this floor.

Two billiard-rooms on the second floor, each for two tables, and lighted from the top, with the addition of side-lights, will take up the whole length of the St. Ann's-street frontage and a portion of the return in Cross-street; on this floor, adjoining, is a large private dining-room, which can, if required, be used for a private billiard-room, with a smoke-room beyond. In the rear and over the luncheon-room are two private dining-rooms, with still and service-rooms at the back.

Over the principal staircase, on the three-pair floor, are the members' dressing-rooms, complete with bath-room, having private staircase in close communication with principal staircase. Closets and lavatory for the use of billiard-rooms, &c., are provided on a mezzanine floor in the rear, between the one and two pair floors. The steward's private rooms are on a mezzanine floor in the rear, between the two and three pair floors. Spacious and conveniently fitted-up lavatories and W.C.s, with cloak-room, are provided on the ground floor in direct communication with the principal staircase, as also a committee or waiting room.

The kitchen department is on the three-pair floor, occupying the whole of the floor over the private dining-room and smoke-room on the two-pair floor, and also the steward's private rooms in the rear. A cart and tradesmen's entrance is provided at the end of the Cross-street front, and also a receiving-room, with hoist and staircase to kitchen floors and basement. The flooring throughout will be fireproof. The space on the ground floor, towards the two fronts is arranged so that it can be let off for shops and offices, and the basement for vaults. The contract has been let to Messrs. Neill & Sons, of Manchester, for 21,473l.

OLD CHELSEA CHURCH.

For several weeks past, the Chelsea Vestrymen have been engaged upon the question of the restoration of the monument erected to the memory of Lord and Lady Dacre, in Chelsea Old Church.

At the meeting of the Committee of Works last Tuesday, Mr. J. Birnie Philip, sculptor, reported that the tomb could be cleansed for 14l., but it would cost 110l. to place it in proper repair.

Mr. Richard said they were under an obligation to the authorities of Emanuel Hospital to keep the tomb clean. He considered that if they did the repairs, the Vestry would establish a very burdensome precedent, and he suggested that the estimate should be submitted to the authorities of the hospital. He was anxious that the Vestry should do their part, and that was to cleanse it alone. Four years ago the governors of the hospital visited the tomb, and were satisfied.

Eventually it was resolved to act up to the opinion of Mr. Philip, and restore the tomb at the expense of 110l.

SOCIAL SCIENCE.

We have reported at some length a few of the most important addresses delivered at the Glasgow Congress, and would do so in other cases, but space fails. We take, however, in addition, a few disjointed utterances:—

Art-Teaching.

Lord Napier and Ettrick in the course of his address as president of the Education department said the National Art Training School commands a large area of selection and incomparable facilities for instruction. It would quickly form teachers in sufficient numbers and of unquestionable competency for the schools of art, if the schools would remunerate and retain the teachers. The question of maintenance is really the only difficulty. It is entirely in the hands of the community. The Government will do its part, but in conjunction with local effort. The art schools cannot be made efficient without a generous provision for accommodation, apparatus, and models, for permanent instructors, for occasional lecturers, for the exhibition of art objects of a high class, for the institution of bursaries to enable the best students to complete their education in the centres of artistic life. In all or many of these particulars our schools of art are meagrely provided. The benefactions of the rich, the co-operative subscriptions of the poor, are alike needed, and they would provoke a liberal response on the part of the Science and Art Department. I have observed that the schools of art in Scotland are in a stationary or retrogressive condition. Of the ten which exist and are reported on by the Department, six are in one respect or another declining, four only show signs of improvement. There is no doubt, I presume, of the impartiality with which the incentives of the Department are meted out. We must, therefore, refer the stagnation of art teaching in this country to other than official causes. The cause is simply this—that England was earlier in the field, that she possessed for a time some of those facilitious advantages which were valuable once, but which are now comparatively inoperative. Scotland is still most renowned for works of utility and strength. She can supply the world with engines and with ships, but she cannot weave a yard of brocade, mould a statuette, or paint a china vase. In cotton fabrics and works of metal we do not go beyond mediocrity in taste, and the woollen manufactures which attain such an excellent quality have, except in the article of carpets, been rather the vehicle of traditional patterns than of true art design. If we compare the productions of those countries where technical education is most general with those countries where it is less practised, we do not find that the communities which are most taught work best. The facts may be admitted. Few who are familiar with South Kensington and Bethnal Green will deny that decorative fabrication was, in the seventeenth and eighteenth centuries, more careful, more delicate, more durable, more beautiful, and more inventive than the work which is done at present; and it is equally certain that the French far surpass in design and execution the Germans and Swiss, who make the greatest efforts for industrial training. But we must not admit that the modern forms can be set aside because former periods had without them. Former periods had their own methods, both of a coercive and stimulative character. The art school is the only substitute for the old forms of industrial training which the impatient spirit of this age would tolerate, and it is a valuable means toward the attainment here of that refined industrial culture which the French workman possesses in a conspicuous degree. It would, indeed, be lamentable if any time were lost, if any means were neglected, for the higher education of English labour; for there never was a period when so many influences conspired to give us confidence of success. I believe that I am not affected by national partiality when I assert that there is a vein of taste in the English mind superior to that which exists in other industrial communities, excepting France. The English mind is deficient in fertility of invention, in vivacity, in the conception of grace of movement; but it is not prone to what is fantastic, florid, laboured, and vulgar. I do not say that under the pressure of competition and the appetite for novelty there are not many examples of those vices in our productions; but they are not the natural growth of the soil. Compared with the productions of Germany, Belgium, and Switzerland, there is a temperate

cast in the taste of England. Such was the character of our old manufactures, and it will never be difficult to restrain the English fancy within the bounds of harmony and reserve. With regard to executive aptitudes, it will scarcely be disputed that the average standard of English work remains superior in solidity and finish. Notwithstanding the relaxation of the old regulations of industrial training, notwithstanding the facilities of locomotion and emigration, and the temptations to indulgence which might have tended to unsettle the working classes and impair their powers of application, the individual Englishman still exercises in the most arduous departments of labour a sustained energy which is unrivalled among his Continental competitors. The human agent is undegenerate in vigour and susceptible of the highest culture. If we turn from the British workman to the market for British industry, we find that it combines in an unprecedented measure all the advantages which belong to patronage with those which belong to popular consumption. It is favourable alike to quality and quantity; it never was so critical and it never was so vast. It may scarcely be expected that British production in the category of art manufacture will obtain an increasing share of the market in those countries which are themselves industrial. Protective restriction and national predilection will give an advantage to the native producer, but the age is characterised by the rapid formation in vacant regions of civilised communities possessing great powers of purchase, and the love of luxury which attends the easy accumulation of wealth. These communities are invariably in a preponderant degree of English origin. The first relations of traffic are often with England; their tastes and habits must involve some preference for British commodities. It depends upon the morality and vigilance of our capitalists, on the self-control, intelligence, and culture of our artisans, whether we are to secure the markets of the future world, or to see the sceptre of production and commerce pass into other hands.

Trade Unionism.

Mr. A. Taylor Innes read a paper on "Trade Unionism: its Limits and its Future." There had, he said, been much discussion as to the origin and future of trade-unions. Their origin had been traced to the old crafts or guilds, and there was at least, in his opinion, a striking relation between the two. Both were founded on an artificial fact,—the division of labour,—and both were and proposed to be monopolies; but they differed not only in the fact that the old crafts were legal monopolies, while the modern societies were only voluntary, but in respect of the old guilds having embraced both masters and men. In olden times a master was skilled in his craft; now he was only a man of capital. Under the influence of this important change in their constitution the old associations crumbled away, and their modern representatives arose. Strictly speaking, he submitted there was no such thing as a trade-union of unskilled men. *Bona fide* unions were unions of men skilled in a particular branch of industry. It was a fact anticipated by theory and illustrated in practice, that excessive action on their part reacted on each particular trade, sending capital away to other countries or industries. So long as trade-unions adhered to the spirit in which they had hitherto professed to meet capital, so long any mischief their acting might be supposed to cause would be limited, local and temporary, and the system being one of self-acting checks, would be incapable of producing constitutional or revolutionary disturbance. In looking at the necessary limitations of the present system, it might occur to some that they hoped too much, and to others that they feared too much, from it; but, at any rate, it might suggest moderation on both sides. At the congress of labour held abroad in recent years, the contrast between British and foreign labour theories came out strongly, and it was important to lay stress on that at present. The whole toleration which trade-unions had received within the last century from law was founded upon the plea that they respected not only the rights of property but individual freedom, and a maintenance of this equipage was sure to be insisted upon in future.

Mr. Barry said he was the representative of the International in London, and the determination of that body was that they would not cease their operations throughout Europe until they had abolished the employing class,—all privileged and distinct classes. He recognised the

equality of man as the only true basis of society, and the International were resolved to apply this to the economic conditions of life. Mr. Barry having alluded to the recommendation of the International to federalise all the trade-unions of the world,

Lord Houghton said that gentleman's statements would seem extravagant to most Englishmen; but they were not considered so on the Continent. Whatever position an Englishman took up with regard to the question of labour, there was this essential difference between his opinion and that of the foreign workman generally, that although he submitted often to certain things he never gave up or abnegated individual liberty. The whole question between a civilised country and a savage one was that in the former there was a working-class, which had accumulated certain wealth that came to be called capital, and was redistributed in the form of labour. He should like to know from the previous speaker at what point they were to stop this accumulation. It was very well to say that there was an infinite difference between a man who made 500*l.* and the Marquis of Westminster. Nevertheless, he (Lord Houghton) did not know where the line was to be drawn. He hoped to see the time come when working men would understand that all the capitalist could pretend to have was the wages of management, he being, in truth, the employed instead of the employer. If this were the case, it would be found that the whole question would turn upon two points—the one, what were the proper wages of management; the other, how far these wages should be allowed to continue, or whether it was advisable for the good of society that there should be any forcible stoppage—a redistribution. Give to the employer such wages as his enterprise, power of management, &c., deserved, and then the matter of wages came to be a question between them and the consumer. If working men could only be got to regard the capitalist as their manager, they would immediately come to the conclusion that the latter was or was not the proper medium between them and the consumer. He did not believe that if a body of workmen were fairly brought face to face with their employer, they would say that on the whole the latter got too large a share, or at any rate, if they did, such surplus or distribution would benefit the workmen much. The difference in wages depended upon the condition of trade, and if any one thought that by a possible human arrangement these economic conditions could be disturbed, he would find himself under a delusion. These conditions were not made by man, but by a law which it was perfectly impossible for any man, or any society, or any legislature, or any trade union to obviate.

England in Competition with Europe.

In the department representing Economy and Trade, Mr. John Matheson read a paper on the question, "How can this country best prepare itself to meet the increased competition arising from the spread of manufacturing industry in Europe?" He pointed out that although our trade was still paramount in extent, yet that of other countries was advancing at a greater rate of progress, especially in textile fabrics, upon which hitherto we had so largely depended. He showed that the extension of machinery over the whole area of civilisation, as well as other circumstances, had equalised wages, the price of living, and the *modus operandi* of production all over the world. He strongly objected to restrictions on labour such as were contained in the Factory Acts, and he asserted that England was alone in so limiting the labour of adults. In conclusion, he condemned strikes as having been productive of much mischief, and he urged that working men were quite mistaken in supposing that by such measures they could either permanently increase their rate of wages, or that the increase they had already gained was due to that source.

Mr. George Potter denied that the trade of the country was declining, and said that the bugbear of foreign competition was made far too much of by Professor Fawcett and others. Of late years our foreign trade had enormously increased. He disputed the allegation that trade-unions were designed to force strikes, and set labour against capital; on the contrary, they were only intended to secure that the rate of wages should not fall below that to which workmen were fairly entitled.

The Lord Provost of Glasgow spoke in support of the views of Mr. Matheson, and, in illustra-

tion of the evil of strikes, said it was a well-known fact that combinations of that kind had driven the ship-building trade of London from the Thames. (Loud cries of "No, no.")

Mr. G. Potter.—May I inform the Lord Provost that there never has been a strike in the ship-building trade on the Thames.

Mr. Lloyd Jones addressed the meeting on behalf of the working men, and asked what it was that the merchants and manufacturers desired. This country already possessed a trade infinitely beyond that of any other on earth, and did the employers wish to have labour so cheap that they would secure an absolute monopoly?

Mr. George Howell alluded to the small proportion of the recent increase in the price of coal which had been received by the working miners. In addition, hundreds of thousands of tons of slack accumulated at the pits had been sold by the masters for prices ranging from 3*s.* to 10*s.* a ton, and the men who had produced it received nothing.

Mr. MacLagan, M.P., admitted that the workmen had only got a small proportion of the increase in the price of coal; but it must be remembered that the increase was due to the scarcity of the article, and that this had been brought about by the systematic restrictions of the men in the matter of output.

Reclamation of Waste Lands.

Mr. Jackson, local secretary, read a paper sent by Mr. John Somerville, of Lochgilphead, on "The Reclamation of our Waste Lands, especially those of the Scottish Highlands, is a Moral Duty, and has become a Political Necessity." He spoke of the large number of acres in the United Kingdom capable of profitable reclamation, tons of thousands of which were situated in the Highlands, and which were abandoned to marsh and bog. Dairy and other produce were so dear and scarce in the Highlands, that they had to be imported at great cost, and labour was dear to the employer, and unremunerative to the labourer, from the excessive rains of the country, which cultivation would mitigate. In the midst of that undeveloped wealth, the people endured pinching want. With these home advantages, we imported during the last year cereals and breadstuffs to the extent of nearly forty millions sterling. He referred to the social condition of the Highlanders, and pointed out the physical, social, moral, and political advantages of cultivation, and sketched a scheme for carrying into effect these advantages through the means of a Joint Stock Land Company, suggesting that the estates bought should be divided into small, middle, and large farms, and re-sold, whereby he was convinced that the company would probably pay a moderate dividend.

Mr. C. Moenachaya, landed proprietor in Madras and ex-judge, said that if the necessity for bringing waste land into cultivation was so great in a country like England, which was pre-eminently wealthy among the nations of Europe, where arts and manufactures and mining had made unequalled progress, and where cultivation wherever it was carried on, was carried to a high state of development, and where some might consider it a very questionable advantage to replace all the extensive deer forests and large shooting-grounds with verdant fields of corn, barley, and wheat, the necessity was increased a thousandfold when the case of India was considered. It was a very poor country—a country which was subject to periodical ravages of famine, where the people lived almost exclusively on the agricultural produce of the land; where manufactures and trades, if they existed at all, were in a state of comparative infancy. There were several millions of acres of land in India, so admirably suited for cultivation, that they would amply repay the labours of the cultivator. The reason for a large portion of that land lying in waste was to be found in the oppressive character of the land laws of India. In Southern India, extension of cultivation simply meant extension of pauperism. They had to pay two-thirds of the rental of the land, and often more, as a land-tax to the Government, and he asked them to consider whether it would show any great prudence to embark in such an enterprise. He earnestly requested the section that if any steps were to be taken in connexion with bringing the waste lands of this country into cultivation, measures should be taken for the reclamation of the extensive waste lands in India, which was part and parcel of the British Empire.

Mr. George Potter argued that the land which was presently devoted to game and deer forests should be made come-at-able for the sustenance of the people.

ENLARGEMENT OF ST. MICHAEL'S CHURCH, CHESTER-SQUARE.

ST. MICHAEL'S CHURCH, which stands at the west end of Chester-square, Piccadilly, is at present undergoing an extensive enlargement. It already accommodates a congregation of 1,200 persons, and the extension will give space for an additional 400, thus providing room for a congregation of 1,600. The enlargement will be effected by extending the area of the church on the east side, from north to south, to the extent of 20 ft., involving the enclosure of the space within the churchyard, on each side of the chancel walls. The enlargement necessitates the taking down the whole of the chancel, together with the walls of the church on the north-east and south-east sides, and the preliminary portion of the work is now being carried out, the other portions of the church having in the meantime been partitioned off in order that the services may not be interfered with during the progress of the alterations. In addition to the structural extensions, a large new porch will be erected at the west end of the church.

The architect is Mr. Thomas Candy, and the contractors are Messrs. Hill, Higgin, & Hill, the amount of their contract being 6,200*l.*, but this does not represent the entire outlay, which, including some intended repairs of the external walls, together with the rebuilding of the organ and internal decorations, is estimated at about 9,000*l.* The alterations are being carried out under the superintendence of Mr. J. D. Brown, as clerk of works. The stained-glass windows will be executed by Messrs. Clayton & Bell.

EXTENSION OF THE NORTH PIER AT BLACKPOOL.

AMONGST the many improvements which are in succession being carried out at Blackpool, one of the most favourite Lancashire sea-side resorts an important extension of the north pier is about to be effected. The intention is to extend the pier, and form it into an irregular octagon, with a diameter from north to south of 125 yards, and by increasing the area towards the jetty, and also landwards, a proportionate diameter will likewise be obtained. On the north side a pavilion, capable of accommodating 2,000 persons, will be erected, for the purposes of concerts and other entertainments; and on the south side a series of shops, lavatories, and wind screens, will be provided, and also a promenade, to be used on payment of a moderate charge. The estimated cost is 15,000*l.*

GOVERNMENT OF LONDON.

LORD ELCHO has undertaken, at the request of the Metropolitan Municipal Association, to bring in a Bill, in the coming session of Parliament, for the reform of London government. It is sought, with a view to unity of action, and efficiency and economy in administration, to establish one general municipal government for the metropolis, such as Liverpool, Manchester, and other large towns already possess.

The following Memorial to be presented to Mr. Secretary Cross is in course of signature:—

"The respectful Memorial of the undersigned Ratepayers and others in the Metropolitan shire,—"

That the present government of London is inadequate, and less municipal than the government of the smallest corporate town in the empire, and far less protective of the interests of the inhabitants in the control and supply of gas, water, and other important matters, than the government of Liverpool, Manchester, and the other large corporate towns.

That a portion of the metropolis known as the City has for centuries enjoyed municipal institutions, to the immense benefit of its citizens; and your Memorialists venture to urge that the most effective municipal government that could be established would be the extension of the powers and duties of the Corporation of the City of London over the metropolitan area.

That it was clearly intended in the establishment of wards without the City, as Farringdon Without and Bishopsgate Without, that such wards should extend over the increasing town area outside.

That Parliament has supplied the metropolis only with powers of parochial action, rendering general action on questions affecting the whole metropolis impossible, excepting in matters by special enactment intrusted to the Metropolitan Board.

Your Memorialists respectfully represent that it is desirable that all powers enjoyed by the City of London, and by Liverpool, Bradford, Bristol, Hull, and other large towns, should be conferred on the metropolis by such changes in its government as will give unity and greater powers, and cheaper and better government."

BAD BUILDING.

STR.—I see you have quoted from the *Sheffield Independent* a communication having reference to the brick buildings in Sheffield, some of the oldest brick buildings not having a decayed brick—those of seventy or eighty years old, and in very exposed situations,—whilst in those of a more recent date the bricks are crumbling away. The bricks of the former were made by Glaves. He had the clay dug out and thrown up to be exposed to the frost of the winter months, and then in the spring made it into bricks, and his clay was not mixed with any other substance; whilst for the bricks in the buildings of more recent date the clay was dug out, mixed with large quantities of earth, and made into brick as soon as possible. Let a person visit one of these modern brick-yards and see bricks of this description spread out to dry: they look like earth itself, or rather dirt; they appear like the sun-dried bricks of Egypt held together by straw. Having said this of the bricks of modern date, I would notice the other peculiarities of such buildings, as everything in their erection is on a par with the bricks composed of such rubbish.

The mortar is like dirt scraped out of the lanes in the immediate neighbourhood. (There is a good mortar used in Sheffield, composed of suitable quantities of lime and furnace cinders, for use for building and plastering, made in a mortar-mill by grinding.) The plastering appears to have little lime and less hair, for large pieces fall off and expose the bare walls. I have seen a locality in which houses are run up by the street, halfway between Sheffield and Rotherham, in which the bricks are exposed to the extent of a square yard,—mind, these are new houses, occupied by their first tenants. The doors, from their being made of green wood, have so run in that I could put my hand between them and the doorstep. In one house, in quite an opposite direction, I have seen a cupboard skelowed in all directions 6 in. away from the plumb. The yards to some of these houses are not much wider than one of the rooms. There is an erection under one roof; at each gable end is a privy, and in the middle a midden the size of the two privies,—of which I shall say no more, except that those who planned such ashpits, whom full ought to be made to empty them. I could point out another locality in which houses have been built by the street in which the gable ends are only 5 in. thick,—a half a brick; and what makes one gable-end the more glaring is, there is a passage underneath the end house, and a brickyard disused at the front of the gable end. In Sheffield, it is said, "such houses hold one another up, and if they were built singly and alone they would tumble down." In another locality, I have seen the roof stripped of the slates,—from its blue slates, I presume,—from being nailed with iron, instead of copper nails. These houses have a shabby-genteel appearance; some are double, with bay windows; others nothing but single houses, with "saloon kitchens," i.e., a lean-to of but one story, that projects outwards about one or two yards. These contain a sink-stone and set-pot, with a back and also a middle door. I have seen some lots of property in a different locality in which each house has a small kitchen taken from a small room, the upper stories being over both: these kitchens contain a sink-stone, at the other side a set-pot, a middle and a back door. A stout man washing his face would have some difficulty not to rub his elbows against the sides of the walls, whilst his wife, in washing, when using the tub, has to stand in the doorway of the middle or back door. The houses have been so built as to conform to the Act of Parliament: these thus meet the requirements of the Act, as all houses in Sheffield must have the semblance of double houses. A good single house of the old type is far better, both for health and convenience, than such "improved dwellings for the working classes." These mushroom erections, of course, are run up by speculating builders,—men without capital, and little credit. As the inevitable consequence, their houses, as soon as "finished" are thrust into the market by some auctioneer. Many of these speculating builders are, to the rest of the trade, like the og in the manger in one of *Aesop's* fables, who cannot live themselves, and therefore try to prevent others from living, and acquiring a notorious reputation. I could point out one of such men, who, in a great measure, has been the cause of land at 3d. a yard being raised to

1s., as it did not signify to him what he was charged, as he well knew that not he, but other persons would be the sufferers,—that much-abused class, the bankrupt's creditors. I had a conversation about this man with a retired builder, who said he did pay a something to the pound; but he knew one worse (these were close neighbours). His creditors came upon him for payment: they thought they were sure of payment, having two lots of property on hand, the first just finished. They went to one man who they thought was a creditor, who coolly told them they could take the finished property by paying off the mortgage. The creditors, after some deliberation, came to the conclusion not to finish the other property. The builder applied to a manager of a public company for a situation, which he obtained, where he has been ever since, and he has never been troubled about his liabilities. Another speculating builder has failed no less than six times. The question naturally presents itself,—What will become of the erections run up by the jerry builders, and how long will they last with safety to those who may inhabit them in future years? They will soon wear out, like a man in a consumption; or, to use a Sheffield phrase, will have at some time to be pulled down to save their lives, and rebuilt afresh. Would you allow me to throw out the suggestion for those who buy new, or build property, to be careful as to what they purchase, and in the selection of whom they employ to build; in a word, to have dealings with none but men of character and good reputation? I will close by saying a word in favour of good bricks: it is that they are the most durable and the best protection against fire. This was seen in the great fire of Chicago; buildings of granite were shivered into splinters, and marble fronts were speedily turned into quicklime. It must have looked very singular to see large public buildings divested of their fronts, whilst their inside walls remained intact.

T. C. HINCHCLIFFE.

NEW CHAPEL OF LUTON HOO PARK.

THE chapel of Luton Hoo, the residence of Mr. Gerard Leigh, in Bedfordshire, has been opened.

The chapel opened occupies a portion of the north wing of the old mansion. The original chapel was destroyed by the fire which consumed Luton Hoo (then the property of the late Marquis of Bute), some thirty years ago, a chapel noted for its foreign woodwork, illustrated by Mr. H. Shaw. The rest of the house was restored in a surprising way some years ago by the present owner, but the north wing was only roofed over, and, though externally complete, was internally a mere vast barn, without flooring or divisions of any sort. This has now been reinstated, a considerable portion of the wing being converted into a chapel, and space being found for a large number of rooms in addition. One of the features of the Hoo was the corridor which led half through the length of the house; this has now been continued on to the north, paved with marbles, and at its northern end formed into a vestibule or ante-chapel to the chapel. The chapel, in internal dimensions, is about 25 ft. by 70 ft., and is terminated at the east end by a semi-circular apse. Round the western half it is seated with stalls, with carved oak canopies. The floor, which is an arrangement of marble and tiles, rises by six steps to the altar. The apse is ascended and lined entirely with alabaster, and its domed vault is painted with a large figure of our Lord, on a throne surrounded by saints. Among those on His left are SS. Ethelreda, Agnes, Helen, and Katherine, whilst on his right are SS. Peter, Paul, Stephen, and John the Baptist. The whole of the windows are filled with stained glass, which, owing to the delicacy of the drawing, and the sparing use of colour, is some of the most successful work of Messrs. Clayton & Bell. The subjects are from the life of our Lord, and figures of the Apostles. In the ante-chapel windows are figures of the four doctors, Ambrose, Gregory, Jerome, and Augustine, and of Daniel, Ezekiel, Jeremiah, and Isaiah. The ceiling of the chapel is a moulded flat wooden ceiling, divided into panels, embellished with gold and colours, the subjects the heads of the Prophets and Apostles, and monograms being introduced in the principal panels. Over the ante-chapel is a gallery entered from the bedroom floor, fitted up, like the chapel, with stalls. Provision is made for the access of tenants and servants from the exterior by a

staircase leading from the north courtyard to the ante-chapel. An organ, built by Mr. E. Jones, of Fulham-road, is placed in a recess or chamber on the north side of the chapel. The reredos is to be a sculptured crucifix, with St. Mary and St. John, on which Mr. T. Woolner, A.R.A., has now been for some time engaged. The whole of the works have been carried out from the designs of Mr. Street, R.A. The painted decorations are by Mr. Daniel Bell.

THE WORK DONE BY THE LONDON SCHOOL BOARD.

At the meeting in which the Board opened their new offices on the Victoria Embankment, Sir Charles Reed, the chairman, made a general statement as to the work done by the Board. He said:—

"We decided in 1871, upon the best evidence we had, that it was our duty to provide school accommodation for at least 112,000 children. We decided that 100,000 places should be provided at once. Before we entertained the question of building for our own convenience and comfort we had already arranged for the erection of 100 schools,—ninety-nine built by us and one being purchased, having been built by others,—providing accommodation for something like 80,000 children. I am now able to announce that sixty-five of those new schools have been opened, giving accommodation for 81,987; that thirty-five more schools are now being built to give accommodation for 29,736; and that the Board have taken steps to secure sites for thirty-four more schools with accommodation for 24,000; making a total up to this time arranged for by the Board of 131 schools with accommodation for 138,930 school places. It is due to our architect to say that thirty-seven of these schools have been planned by him. Twenty-eight schools, prior to Mr. Robson's appointment, were planned by outside architects. Our estimate in 1873 was 112 per head for these schools; but by a statement recently presented by the chairman of the Works Committee, which I believe is fairly correct, it will be seen that the first sixty-three schools have not cost us more than 91.13s. 4d. At any rate, we may fairly say [that the estimate of 1873 has not been exceeded; and including all extras and legal charges, the cost will not be more than 101 per head. Now I think this must be satisfactory to the Board when they know that in provincial towns, like Bradford, the cost is double that which has been incurred by the School Board for London.]"

The average attendance at all efficient schools in London has been increased by the Board from 171,769 in 1871 to 256,391 in 1874. This gives an increase in all efficient schools in London,—Board schools and voluntary schools,—as follows:—Increased accommodation about 100,682 places; increased school roll, 134,582; and increased average attendance, 86,534. This shows an advance upon the year 1871 of 50.37 per cent.

THE WALKER ART GALLERY, LIVERPOOL.

THE foundation-stone of this new art-gallery, of which we gave a view, plan, and particulars in the *Builder* of 13th of June last, has now been laid by the Duke of Edinburgh. Mr. Sherlock and Mr. H. H. Vale are the architects. The cost will be 20,000l.—a gift from the Mayor for the present year, Mr. Alderman Walker. The edifice will be of the Corinthian order of architecture. The centre of the front will face William Brown-street, where there is a portico of four fluted columns, with carved capitals, approached by a flight of twelve steps. The façade extends 70 ft. to the right and left of the portico, making a frontage of 180 ft. But we must refer to the full particulars already given on page 500 of the present volume.

THE WORKS AT THE TUNNEL UNDER THE MERSEY.

THE preliminary operations in connexion with the construction of the proposed tunnel under the Mersey, between Liverpool and Birkenhead, are being carried forward by the driving of a test "heading" under the bed of the river between the Lancashire and Cheshire shores. On the Birkenhead side the shaft has already been sunk to the required depth of 98 ft. and the tunnel heading of 9 ft. in diameter has been driven to the extent of 100 yards in length. From what has already been effected, the engineers, Messrs. Brunles & Fox, state that the peculiar kind of red sandstone, through which the tunnel will pass, is the best kind of rock for such a purpose; and that the "faults" are specially advantageous, being filled up with material that makes the rock more impervious. They add that this sandstone, at the depth of the Cheshire shaft which has been sunk, is the same solid and hard description of stone so frequently penetrated in the various engineering works in the town of Liverpool and the neigh-

bourhood, and is in every way adaptable for the successful formation of the tunnel. On the Liverpool side the shaft for the heading has been constructed near George's Dock, and on this side of the river a gradient of one in forty will take the tunnel very deep below the bed of the river, leaving at least 35 ft. of rock between the top of the passage and the bottom of the water. On the Cheshire side the middle of the river-bed will be reached with an incline of one in thirty-seven. Messrs. Brunel & Fox consider that the heading can be driven in fifty-five weeks, and that the full-sized tunnel and all the works can be completed within two years. The tunnel itself under the river will be 1,300 yards in length, but the entire length of the railways in connexion with it on both sides of the river, will be a little more than three miles. The estimated cost of the heading is 50,000*l.*, and of the tunnel and railways in connexion with it 600,000*l.* The subscribers towards the 50,000*l.* for the heading are to have it returned when that portion of the work has been accomplished, and, in addition, are to receive a similar sum in paid-up shares in the company.

CONSECRATION OF THE CATHEDRAL OF ST. ANDREW, INVERNESS.

The cathedral of St. Andrew, at Inverness, in connexion with the Scottish Episcopal Church, has been consecrated with great ceremony. The foundation-stone of this cathedral was laid in 1866, by the late Archbishop Longley, Primate of All England. It was opened for public worship on the 1st of September, 1867, by the late Bishop Wilberforce, all the Scottish bishops taking part in the proceedings. A debt of 6,000*l.* then existed on the building, and thus the ceremony of consecration could not be performed. Within five years this debt has been wiped off. The total cost has been about 20,000*l.*, and to this has to be added about 5,000*l.* value of gifts to the church. This cathedral at Inverness is, as yet, the only building of the kind connected with the Scottish Episcopal Church, but a second, and on a much grander scale—that of St. Mary's—is, as our readers know, at present in course of erection at Edinburgh.

EXHIBITION OF SANITARY APPLIANCES, GLASGOW CONGRESS.

The report in our last number of proceedings at the opening of this Exhibition (p. 823) was printed without the revision of the editor, and an expression was used with reference to the observations made by him on the occasion, out of place in these pages.

The reporter misunderstood Mr. Chadwick's remark with regard to the houses in Shaftesbury Park. So far from saying that they "had been put up at one-third less cost than on the ordinary system," he urged that if they had been built of concrete, instead of in the ordinary way they are, one-third of the cost might have been saved and the houses would have been drier.

There were 170 exhibitors, and many of the objects sent were of an interesting and useful character. The collection was visited by a number of persons, but scarcely to the extent it deserved. The site was a little too far from the centre of the city, and the approach to the building was atrocious.

STATISTICS OF RAILWAY EXPENDITURE.

An interesting statistical statement of the total capital expended on railways in works up to June, 1874, and also the capital expended during the past half-year, has just been published, from which it appears that the aggregate capital expended on the twenty-two leading railways mentioned below, to June last, amounted in round numbers to nearly 470,000,000*l.*, and that the total outlay during the last half-year in works on the same railways was 8,539,243*l.* Thus the total capital expended on the Bristol and Exeter line to June last was 5,211,763*l.*, and during the last half-year, 56,876*l.*; on the Caledonian line during the same periods respectively, 25,278,713*l.*, and 556,324*l.*; Furness, 4,261,645*l.*, and 208,112*l.*; Glasgow and South-Western, 8,420,954*l.*, and 221,569*l.*; Great Eastern, 28,699,002*l.*, and 137,794*l.*; Great Northern, 22,502,563*l.*; Gt. Western, 49,892,251*l.*, and 576,626*l.*; Lancashire and Yorkshire,

26,208,933*l.*, and 657,282*l.*; London, Brighton, and South Coast, 18,155,003*l.*, and 177,673*l.*; London, Chatham, and Dover, 19,973,091*l.*, and 472,219*l.*; London and North-Western, 61,588,928*l.*, and 977,653*l.*; London and South-Western, 18,363,473*l.*, and 274,526*l.*; Manchester, Sheffield, and Lancashire, 15,609,556*l.*, and 374,680*l.*; Metropolitan, 7,882,631*l.*, and 76,114*l.*; Metropolitan District, 5,405,225*l.*; Midland, 47,763,523*l.*, and 1,513,863*l.*; North British, 23,814,218*l.*, and 210,505*l.*; North-Eastern, 48,180,468*l.*, and 966,560*l.*; North London, 3,763,359*l.*, and 23,890*l.*; North Staffordshire, 7,394,111*l.*, and 114,569*l.*; South Devon, 3,645,846*l.*, and 60,118*l.*; and South-Eastern, 19,063,322*l.*, and 73,895*l.* The disparity in the cost of construction of some of the several lines is also noteworthy. For example, the outlay of the London and North-Western Company in works to June last, with a mileage of 1,578*l.*, was 61,588,928*l.*; whereas the Great Western, with 1,510 miles, or only 68 miles less, was 49,892,251*l.*; the London and Brighton, with 359 miles, the London and South-Western, with 669 miles, and the South-Eastern, with 323 miles, cost each from 18,000,000*l.* to 19,000,000*l.*, whilst the London, Chatham, and Dover, with only 127 miles, cost 19,973,091*l.*, or about 157,000*l.* per mile, as against only about 60,000*l.*, the average cost per mile of the London and Brighton and the South-Eastern lines. The construction of the Metropolitan, 13 miles in length, cost upwards of 555,000*l.* per mile, and that of the Metropolitan District, 7 miles, about 770,000*l.* per mile.

CHURCH OF ST. NICHOLAS, LIVERPOOL.

SIR,—In the *Builder* of last week there is a paragraph headed "Clearing away at Liverpool," in which reference is made to a letter by Mr. Samuel Hoggins, deprecating the removal of St. Nicholas Church. I think he has found what is usually termed "a mare's nest." I have never heard of such a scheme, which if it had been entertained by any of the public bodies of the town, I certainly should have done. It is possible that some hare-brained projector may have suggested it, but it needed no protest against it. The *vis inertia* itself, to say nothing of the municipal impunctuality, would be a sufficient safeguard. I am not aware of any possible reason, either aesthetically or for public convenience, which would require the removal of the structure. I do not think it is in any greater danger of removal than St. Paul's Cathedral.

The tower and lantern were not erected eighty years ago as the paragraph states, but fifty-five years ago, in 1819. The lantern, which is a very beautiful design, is not an imitation of that at Newcastle. The "motif" may be the same, but the working of it out and the proportions are different.

J. A. PICTON.

SANITARY MATTERS IN THE COUNTRY.

Biggleswade.—The reports, to the Rural Sanitary Authority, of Dr. Prior the Medical Officer of Health, and of Mr. D. Miller, the Inspector of Nuisances, show the usual bad state of things, and superabundance of nuisances which must render the duties of these officers most onerous and troublesome. Typhoid fever had broken out in the village of Biggleswade, and the medical officer reports upon that. It was clear, however, that the first case came from Nottingham, with a tramp, but it soon attacked others in overcrowded and otherwise defective dwellings, where six cases are reported on. The inspector of nuisances reports that he has served sixty-six notices requiring abatement of existing nuisances in the parishes of Biggleswade, Potton, Sandy, Bedford, Clifton, Blunham, Arlesey, and Eversham.

Carlisle.—Fever has for some time been epidemic here, and there seems to be no abatement. Sanitary meetings of residents have been called by Dr. Elliot, and held in the Town-hall. Dr. Elliot thought that if the town was inspected by members of the corporation and inhabitants, dividing themselves into sections, it would conduce to the general health. This is being done with good will, and it is to be hoped benefit will follow from it. Many of the local clergy were present. Complaint was made that no proper public steps had been taken till now in dealing with the disease. 130 persons had died of it already.

Preston.—Some revolting disclosures, respecting the bad sanitary condition of the lower class

of dwellings in the town of Preston, were lately made during the hearing of two cases before the borough magistrates. Steps are being taken to make the houses tenable, and the cases meantime have been adjourned.

Stone.—From Dr. Ballard's report on the sanitary condition of Eccleshall and Trentham, it appears that the immediate occasion of his inquiry was a record in the quarterly report of the Registrar-General of four deaths from fever in Eccleshall sub-district. Dr. Ballard learned that a serious outbreak of enteric fever had taken place at the village of Barlaston in the Trentham district, and he therefore extended his inquiry to that place. In the village of Mill Meece, at one of a pair of old stone-built houses, several cases occurred. There was no proper drainage of these houses, leading to the pollution of the well water, and a privy used by the people of both houses was in a foul state and badly constructed. The whole of the village was practically undrained, and there were accumulations of filth and offensive sewage close to the dwellings. The privy accommodation was generally unwholesome, and in one instance consisted merely of a hole dug in the earth, with an imperfect wooden shed covering it. At Chebsey, where another of the deaths occurred, the disease did not spread; but on a former occasion some years ago, when enteric fever was introduced into the village, it spread very extensively. Since that time nothing had been done to improve generally its sanitary condition. Parts of the village were entirely unprovided with any means of drainage, and in other parts the drainage provided was of a very imperfect and inefficient character. The village abounded in nuisances from sewage matters and in excremental nuisances. At Barlaston he found that enteric fever had occurred in five houses between October and the time of his visit. It was most probable that the fever spread in consequence of the common use of a well in very close proximity to a cesspool receiving the domestic slops from all the houses, as the well could scarcely have failed to become polluted. The privies were also badly constructed and unwholesome from accumulations of excrement in and about them. The drainage of the part of the village about Barlaston-green was very inefficient. The Rural Sanitary Authority should immediately put into operation the powers it possesses to procure the proper sewerage and drainage of the villages of Mill Meece, Chebsey, and Barlaston, and the disposal of their sewage in such a manner that it shall not be a nuisance. In all these villages inquiries of a detailed character should be made by the medical officers of health into the wholesomeness of the existing privy accommodation, and where necessary privies should be reconstructed so as to render them wholesome. In his opinion earth-closets might in most cases, if not in all, be judiciously substituted for the arrangements now in use. The medical officers of health should also inquire into the water supplies of these villages, and where there may be found to be any danger of the pollution of the wells from soakage into them of slops, liquids, or excremental matters proper steps should be taken to obviate the source of danger to health.

Cirencester.—From a report of the medical officer of health, Dr. Bond, to the Urban Sanitary Authority, on the sanitary condition of the town, it appears that the chief requirement at Cirencester is a supply of good water. The supply from the wells is defective, in quality especially. The efficiency of the sewers is more than doubtful, and in some places there are no sewers. An extended system of sewerage is necessary, as well as plenty of water, for flushing. Irrigation is suggested. A more complete system of "dry conservancy" is considered quite feasible, however, in the meantime; but there is no difficulty as to the outfall at Cirencester.

Insanitary Condition of Sedgley.—A special meeting of the Upper Sedgley Local Board of Health has been held to consider the steps to be taken to stamp out the present visitation of typhoid fever in the district. Mr. Homer presided, and there was a full attendance of members. The chairman, in opening the proceedings, said, the unenviable notoriety which the Board had attained, together with the lamentable calamitous results of the factions and parsimonious spirit which had actuated them, must have been a source of regret to all. Of water, there was a totally inadequate supply. He had seen from four to twenty houses without a single supply of water, and the cruel shifts the inhabitants of these houses were put to, had a

doubtedly served to induce the fearful outbreak of fever which was now raging. Even the water available was for the most part impure, in consequence of there being a total absence of sewers, drains, and closets running over in the immediate vicinity of the wells. Dr. Ballenden, Mr. Walker, and the Rev. J. J. Booker, had informed him that the outbreak of fever was in a great measure attributable to the inadequacy of the water supply, and the impurity of that which was obtainable. As to the removal of nuisances, in many instances the owners or occupiers of property were unable to dispose of their night-soil; and again, disputes took place amongst tenants as to whose turn it was to empty the middens, and thus criminal delay was occasioned. People could not wonder that men living in these places flew to drink and the public-house. In Robert-street there were twenty houses with one dilapidated closet, no water, and four visitations of fever. If the Government inspector were to visit that district in its present condition, the first order issued would be for a comprehensive system of deep sewers, which would simply mean bankruptcy for them. Time would show who were the true and who the false economists. After several gentlemen had spoken, it was resolved unanimously, "that the inspector do commence forthwith to examine all the known places where nuisances exist, that he take the cause of this calamity, and exercise the powers vested in the Board by the Nuisances Removal and the Sanitary Acts, without delay." It was pointed out how necessary it was that they should have the assistance of a medical officer, and that Dr. Ballenden should be asked to accept the post till the next meeting of the Board, when, no doubt, a medical officer would be appointed. Dr. Ballenden said he should be very happy to assist the sanitary committee, who had agreed to commence their inspection forthwith.

LEICESTER LECTURE-HALL AND SCHOOL OF ART COMPETITION.

It was resolved by the Town Council, on the 9th ult., to carry out the plan submitted by Messrs. Shenton & Baker, of Leicester, subject to a suitable tender being obtained for the stipulated sum of 5,300l.

To Mr. Hames, of Woburn-place, London, was awarded the second premium, of 20l. Five sets of drawings were sent in.

TRAFALGAR SQUARE.

Sir,—There being some prospect of a change to the stony aspect of the most central of London squares, I venture to protest against the proposal of planting shrubs round the Nelson Column. This would hide its proportions, and be every way objectionable. If the lions require more protection from rough usage, a most fitted with water would be more suitable, and might be supplied from the waste of the fountains. With regard to the square itself, no change will be satisfactory that does not provide a grand flight of steps opposite the portico of the National Gallery, and so dispense with the present double flights at the corners.

I should occupy too much space were I to describe at length all that could be done towards making the square equal to its important place amongst open spaces. Trees, fountains, terraces, grass, flowers, shrubs, and above all statutory are required to finish suitably what ought to be made the finest place in London. This would cost much money, but after all, I may be the least of the difficulties. Surely nothing very much better than Leicester-square is possible.

J. W.

THE TRAMWAY COMPANIES, AND THE PAVING OF THOROUGHFARES.

Sir,—From the notice on this subject in your paper, our readers will have learnt that the Newington Vestry have failed in their attempt to get wooden blocks substituted for stone along the new lines of the London Tramway Company. No system of setting tram-rails in asphalt has yet been successful financially, as the asphalt against the rails is, throughout its entire length and breadth, rigid and unyielding, and therefore liable to constant fracture and decay by the constant movement of the rails under the weight of the cars. In view of the various tramway routes, made and proposed, we may conclude that their only choice of a pavement lies between noisy granite and dirty macadam. I am able to point to a successful alternative for some time in use at Cleburn. Here, vestry, tramway company, and paving contractors, were at loggerheads for a long time, each naturally

objecting to be saddled with the cost of the constant repairs to the asphalt through which the tram-cars ran. A compromise was at length arrived at, and last Christmas a composite pavement was laid, which seemed to have met all requirements most satisfactorily.

It consists of a single set of granite cubes laid lengthways along both sides of each rail, and occupying a width of 4 in. on each side of it. The whole remainder of the road between the cubes is laid in asphalt as before, and this simple modification of the previous paving appears to have contented all parties. The Vestry and the public get the benefit of the clean and noiseless pavement. The contractors are spared the inconvenience of doing constant small repairs, and the Tramway Company are saved from all annoyance on the subject.

As this plan may be easily adopted elsewhere, I venture to bring it to the attention of your readers.

R. J. H.

PIPE LAYING.

Sir,—Permit me, through the medium of your valuable columns, to ask the following question: Is it practicable to lay stoneware glazed socket-pipes under water without any protection, with the exception of that afforded by the natural bed of the water?

CLERK OF WORKS.

"JERRY BUILDINGS."

At the Balford Borough Court, Fletcher Armstrong and Peter Dow, of Lower Broughton, were summoned before the Mayor and Mr. J. F. Mart, for constructing ten dwelling-houses, the floors of which had six joists 7 in. by 2 in., instead of 7 in. by 2½, which is the width prescribed by the Balford Corporation.

Mr. Wheatly, Deputy Town-clerk, prosecuted on behalf of the corporation, under the 22nd Section of the Sanitary Improvement Act, 1871. The defendants are builders of a block of property consisting of ten houses called "Industrial Dwellings" situated in Pendleton-street, Chorlton-on-Medlock, Manchester.

The facts of the case were proved by Mr. Fowler, borough engineer, and Mr. Young, the building inspector, of Balford.

Mr. Fletcher Armstrong, one of the defendants, appeared, and said that he and his partners were merely the contractors. Mr. Lord, he said, was the architect of the property; it belonged to a gentleman named Caldecott. The specifications indicated 7 in. by 2½ in., and it was by these they had worked. On receiving a notice from the surveyor, they sent to the architect's office, but he was out of town and did not come home until last week. They were perfectly aware of the bye-laws, because they had built a large quantity of property of their own, and they never did anything of the kind on their own property. We are only the contractors for the work, and we have been working under the instructions of the architect.

Mr. Mart (to the Deputy Town-clerk): Do you press for heavy damages?

Mr. Wheatly: Yes, because the defendants knew the law and transgressed it. We have now 400 or 500 dwelling-houses being constructed within the borough. There were 2,400 dwellings built in the borough during the past year, and this case shows how the dwellings of the poorer classes are being constructed.

Mr. Mart: You will be fined 10l., but if any other case of this kind comes before us the fine will be much heavier.

ASPHALTE CLEANSING COMPETITION.

Sir,—In the latter part of last year an advertisement appeared in your columns, which emanated from an amalgamated committee of the several asphalt companies of London, termed the Central Asphalt Committee, offering a premium of fifty guineas for the best ideas for cleansing the London asphalt, the corporation having, through Mr. Hayward, condemned the pavings in their present state as the most deteriorated and least suitable for London traffic. There were, I understand, between fifty and sixty competitors, and among the contributions some beautifully-prepared designs, and others being nicely thought out and constructed models. Some thirty or so of them were selected by the secretary, and placed at the Society of Arts, who kindly gave their rooms for their exhibition. Since that time nothing has been heard of the matter, except what could be gathered from the clerk's official letters in answer to mine; and on calling, I learn that the committee is dissolved, the secretary, of course dismissed, or drafted back to whence he came, and now twelve months from the time the matter first cropped up, we do not seem any nearer to a settlement than we did in March last.

I hope you will be able to find room for this letter, as in justice to myself and other competitors, it is surely time that the thing was decided; for apart from the waste of time, money, &c., I, at least, should like my contributions back again intact, which I think is rather improbable after they have been taken to the Adelphi and back to the City, and now I suppose kicking about in the offices of the Val de Travers Company.

COMPETITOR.

DAMPNESS IN STRONG ROOMS.

Sir,—I have no doubt the dampness in the strong room, about which your correspondent "C. T." writes, is caused by the moisture suspended in the atmosphere being condensed by contact with the cold walls, floor, and ceiling of the strong room. The atmosphere being 84° or 90° of, of course, be capable of suspending a great quantity of moisture. If the dampness arises from this cause ventilation would not remove it. The only way of preventing it seems to me to be either to dry the atmosphere, warm the walls, ceiling, and floor, or else to cover them with boarding or felt, or with boarding covered with felt or baize, and so prevent the atmosphere coming into contact with the cold interior. It may be that the strong room has never been thoroughly dried since building; if so, this would increase the dampness. If the dampness is caused by

the state of the atmosphere it would be worse when the atmosphere is full of moisture, and no doubt would be at times quite dry. When "C. T." cures it, it would be interesting to know by what means he succeeded.

J. S.

WASHABLE CEILINGS.

Sir,—Can any of your correspondents suggest a material with enamelled surface, not too thick or heavy, to be affixed to the ceilings of places of business (where much gas is burnt), that could be easily washed or cleaned, and so avoid the interruption of business, as well as the dirt and confusion, caused by the use of whitewash?

F. R.

ACCIDENTS.

Fall of a Building in Lambeth.—A building in Marlborough-street, New Cat, in the course of erection for the School Board, has fallen in. The building is situated near the workhouse, and at the time of the accident five men were engaged on the scaffold, and others on the lower portion. All at once the men observed the walls bulge, and the wing, which is three stories high, fell, burying several men under the ruins, who have received more or less severe fractures and other injuries.

Fall from a Scaffold in Gateshead.—An inquest has been held by the Newcastle coroner on the body of James King, a labourer, who died in the Newcastle Infirmary. The deceased with other three or four workmen were carrying a large stone, weighing about 5 cwt, on the scaffolding of a new church at Gateshead Low Fell, when one of the planks broke, and the deceased and another workman fell into a cellar, a depth of about 24 ft. He died in about an hour and a half after being admitted to the Infirmary. The jury returned a verdict of "Accidental death."

Fall of a School Roof.—The roof of the Christian Brothers' School, Mountjoy-street, Dublin, fell in while sixty scholars were on the benches. Several were seriously hurt, but no deaths were expected to occur.

FROM SCOTLAND.

Edinburgh.—A memorial window to the late James Moncrieff Melville, W.S., of Hanley, has been erected over the gallery in the north aisle of St. John's Episcopal Church, completing the range of stained-glass windows on that side of the building. The design, which has mosaic crystalline colours, contains in the centre light an illustration of our Lord holding in one hand a book with the inscription "Alpha and Omega," and in the other a cruciform sceptre. The background is a deep ruby with graduated clouds, upon which the figure stands. The two side lights are illustrated by angels bearing texts. Messrs. Ballantine & Son are the artists, and we believe they have also in hand the corresponding window in the south aisle, which is to be placed there to the memory of Dean Ramsay. When that is done the entire series of windows in this church will be completed.

Moffat.—It is proposed to erect a hydropathic establishment in Moffat, at a cost of about 40,000l. A large amount of the capital has already been subscribed, and a suitable site has been acquired for the building.—The directors of the Bank of Scotland are to erect a spacious building for their branch bank at Moffat. The cost of the building, inclusive of site, will be about 4,000l.

Elgin.—The rise in wages and the prices of building materials have effectually put a stop to building in Elgin. Scarcely a house is at the present moment in course of erection in the town, says the local *Courant*, whereas in former years it was no uncommon thing to see two or three going up at one time in every other street. Families can be named by the half-dozen who wish to come to settle in Elgin, and are only kept away by sheer want of house accommodation. The deficiency at the present time is chiefly in the larger class of houses, not one of which is to be found unoccupied, furnished or unfurnished. However, a proposal has been mooted for making up for the lack of private enterprise by the establishment of a Joint-Stock Company. A scheme has been thought of whereby a great deal could be done in the way of building superior dwelling-houses with a very moderate amount of capital.

The Artisans' Institute.—The inaugural services of this association will be held on Wednesday next, the 14th instant. Premises have been secured in Castle-street, Upper St. Martin's-lane.

CHURCH-BUILDING NEWS.

Clewer.—The opening of St. Stephen's Church, Clewer, has taken place. The style of the building is Early English. The chancel is 30 ft. in length and 20 ft. in breadth, and since its opening a Decorated groined roof has been added to it. The east wall has been stencilled to imitate a reredos, which it is contemplated to provide hereafter. These stencillings consist of the initials "X.P.C." and "I.H.S." in alternate spaces right and left of an altarpiece, representing Christ carrying a lamb, painted by Mr. W. Strange. This is surmounted by the words, "The Lord is in His holy Temple. Let all the earth keep silence," which extends in one line across the wall. Above this there is one lancet-shaped window. The communion-table, or altar, is some few inches from the wall, against which a super-altar, with marble top, is fixed. The steps approaching the altar will be laid with Minton's mosaic tiles, in pattern. In the original building there was an archway opening from the chancel; but this has been filled in, and sedilia and credence-table now occupy the space. The choir-stalls are at present of plain stained deal; but this is also regarded as temporary. The chancel is separated from the nave by a large arch, filled in with a carved oak screen, surmounted with a large cross, the whole at present being plain wood; but this will receive a varnish. The decoration of the roof and the east wall has been carried out by Messrs. Harley & Fisher, of London. The nave, into which from the chancel there is a descent by two or three steps, is 72 ft. in length, and 24 ft. wide, the side-aisles being each 10 ft. wide, giving a total width of 44 ft. The height of the nave to the pitch of the roof is 52 ft., and the side-aisles, which are covered by a lean-to roof, are 34 ft., the outer walls being 14 ft. high. The aisles are separated by an arcade of pointed arches, which support the clearstory windows, which are in pairs over each arch. The shafts of the pillars are of Forest of Dean stone, and the caps, bases, and arches of Bath stone. The entrance to the nave is by doors at the east and west ends of the north aisle. In the western wall are a row of lancet-shaped windows, surmounted by a rose-window. In the outer walls of the aisles there are a series of lancet-shaped windows. The church is seated with plain stained deal forms, with backs, and rush-bottomed chairs. The aisles are laid in cement; but the complete plans contemplated its being laid in Minton's tiles. The roof is open, and is composed of plain oak. The whole of the interior is stuccoed. On the south side of the chancel, which communicates with the chancel and with the south aisle, is an incomplete room, intended for the vestry. The door in the south aisle is incomplete, but some carving is contemplated. An organ is said to be very urgently needed, and 300*l.* is the sum proposed to be expended upon it. The building is of stock bricks, with Bath stone dressings for windows and doors. There is a bell-turret springing from the junction of the nave and chancel. It is surmounted by a finial and weathercock, the total height being 90 ft. from the ground. The building will be enclosed by an iron railing, of the same character as that in front of the House of Mercy. The architect of the building is Mr. W. Woodyer, of Graffham, Guildford; and the works have been carried out by Messrs. Wheeler, Brothers, of Reading, contractors, under the superintendence of Mr. J. Walker, clerk of the works. The church will be lighted with gas. The heating arrangements are by Messrs. Remington & Co., of Skipton, Yorkshire, and there are open gratings in the nave through which warm air will find its way into the building from the piping concealed beneath. With reference to finance, it is stated: "By the kindness, chiefly of two friends,—one of whom gave 3,000*l.*, and the other 1,200*l.*, to which was added the less considerable but very valued help of others,—we were enabled to commence building the nave of the church." The contract was for 4,327*l.*; but there have been many extra expenses,—viz., sittings, gas, heating, &c.,—leaving a debt of at least 800*l.*, which (unless some unforeseen help comes) must fall as a burden upon the offertory. About 1,000*l.* are also needed to complete the vestries and the rest of the church as originally designed.

Hastings and St. Leonard's.—The new church of Emmanuel, on the West Hill, has been consecrated. Mr. Skeller was the architect; Mr. J. Howell, the builder; and Mr. Murray, clerk of the works.

Moseley.—The new church of St. Anne, at

Moseley, Birmingham, has been consecrated by the Bishop of Worcester. The church has been built at the sole cost of Miss R. Anderson, of Moseley, Wake Green, on a site given by Mr. W. F. Taylor, of Moseley Hall. It is in the Early English style of architecture, situated near the top of Park Hill, adjacent to the Moseley-road. The building will furnish accommodation for 400 persons—251 in the nave, 50 in the north aisle, 66 in the south aisle, and 30 in the chancel. The cost of the church is between 6,000*l.* and 7,000*l.*

Marston.—The church of St. Paul, Marston, and the burial-ground attached thereto, have been consecrated by the Bishop of Chester. The architect was Mr. Douglas, of Chester, and the contractors were Messrs. Joseph & John Beswick, Knutsford. Mr. Walter Edwards discharged the duties of clerk of the works. The edifice affords accommodation for between 300 and 400 persons, the whole of the sittings being free, open, and unappropriated. It is built in the early Gothic style of architecture, and consists of nave, north aisle, chancel, organ-chamber, and vestry, the entrance-porch being on the north side, and a low spiral tower at the west end, with a baptistery underneath. The building is of brick, moulded ones being used for the piers, arches, windows, and doorways. The whole of the structural timbers of the roof are dressed and exposed to the church. The nave is separated from the north aisle by an arcade of four arches executed of bricks. In the construction of the pulpit, which is placed at the north side of the nave, timber of a light colour has been used, in the front being a representation in paint of St. Paul preaching at Athens. The windows consist of cathedral glass of various tints. The centre light of the east window is composed of stained glass, portraying the conversion of St. Paul; and it is also intended to fill the side lights with glass bearing illustrations of incidents in the life of the Apostle.

Books Received.

Railway Curves: a Complete, Practical, and Easy System of Setting out Railway Curves with Accuracy and Despatch. By JOHN LEAN, C.E. Kent & Co., Paternoster-row. Mr. LEAN is a practical engineer, and here gives to students, in a very little book, the rules which have served his purpose in everyday work, and which will well serve them likewise. He includes formulae for calculating angles of intersections for permanent way fittings, and setting out switches and crossings. The next edition may be improved by a little further revision: for example, the tangent line, on which much depends, is not lettered in Figure 1.

VARIORUM.

"The Last of the Derwentwaters."—Such is the title of a paper read to the Keswick Literary Society by Mr. J. Fisher Crosthwaite, a distinguished member of the Cumberland Archaeological Association, now printed in an octavo pamphlet, and illustrated with much judgment by Mr. E. J. Grayson, the local secretary. The subject-matter is beyond our province; and, as Southey properly held, it is even at this hour an unpleasant theme. Nevertheless, the day has arrived at which we must not permit a disagreeable sentiment to interfere with the great work of historical criticism and authentic research; and we must therefore thank Mr. Crosthwaite for his monograph. The main object of the paper is to rescue from oblivion memories of the ancient parish of Crosthwaite.—Owen Jones's "Grammar of Ornament." We are glad to see that Mr. Quatrich is publishing this valuable work in monthly parts, at 2s. 6d. each, to be completed in 28 parts.—In the *Art Journal* mention is made of Michelangelo's house in Paris:—"The Casa Buonarroti, taking a prominent place in the personal history of the artist, obtains corresponding position in the programme of proceedings: within this house, indeed, the minor as well as the major details of a life may be filled in. And it is easy to imagine how the innate love for relics which has been planted in the human heart will be gratified when the visitor is allowed to see, or even to handle, the sword, the walking-sticks, the slippers, the writing-table which Michelangelo used or wore in Florence. It is a little disappointing that few, if any, of the instruments of art have come down to us, and I cannot but think there

must have been indifference, or even worse, in dealing with the contents of the Roman studio. It is true that we have here sundry inscriptions, urns, and other small pieces of ancient sculpture, found in the atelier after death; but what would we not have given for the chisel and the mallet wherewith it is said that Michelangelo, at the age of sixty, and with a body announcing weakness, made more chips of marble fly about in a quarter of an hour than would three of the strongest young sculptors in an hour, a thing almost incredible to him who has not beheld it. The contemporaries and immediate survivors of even the greatest of men are proverbially unconscious of the conditions of posthumous fame, and of the demands which in the course of centuries may be made by posterity."

Miscellaneous.

Large Ironworks. Some of the largest ironworks in the world are in the North of England. The works of Messrs. Bolckow & Vaughan, at Middlesbrough and Widdow Park, are specially entitled to take rank in this category, and it is rather a notable fact that the firm who initiated the iron trade of Cleveland should, within twenty years of that event, have become what is believed to be the largest iron-making concern in the world. The capital of the company was fixed at 2,500,000*l.*, and 1,000,000*l.* was paid for the purchase of the properties and stock. Since then the nominal capital of the company has been increased to 3,410,000*l.* In addition to the blast-furnaces at Middlesbrough, Eston, and Widdow Park, the rolling-mills at the former and the latter places, and the great mines at Eston and Skelton, it holds,—with perhaps only two, or at the most three exceptions,—the largest coal royalties in the North of England, and carries on large steel-works in Manchester. Upwards of 16,000*l.* are paid weekly in wages and salaries, and over 12,000 hands are employed. The company raise about 1,500,000 tons of coal per annum, and from their Eston mines alone they are now producing between 700,000 and 800,000 tons of ore yearly. Of the 250,000 tons of pig-iron which they annually produce the company convert nearly 100,000 into rails, plates, bars, and other descriptions of manufactured iron. They have within the last few years acquired extensive royalties in Spain, and from their mines at Bilbao they raise large quantities of hematite for the conveyance of which to their Middlesbrough works they employ a fleet of steamers of their own. Messrs. Bolckow & Vaughan's establishments produce general machinery, castings, fire-bricks, and rolling stock; and the number of wagons which they own and employ in connection with their numerous works and collieries is something fabulous.

Mechanical Vibration Retarding Rust.—At a recent meeting of the American Association for the Advancement of Science, Professor S. S. Haldeman, of Harrisburg, read a paper with the above title, of which the following is a brief abstract:—When railroad bars are piled beside a road they soon become rusted, while those forming the tract are but little subject to oxidation; and when a rain of some hours' duration falls upon rails when in a state of rest, as upon Sundays, when trains do not run, they soon exhibit rust. This would seem to indicate that the chemical combination mechanical vibrations may interfere with the molecular arrangement of the elements. The accuracy of these casual observations should, however, be submitted to the test of experiment. In the discussion which followed this brief communication it was suggested that possibly the oil employed upon locomotives might be more or less spread in a thin film over the rail in use, and thus prevent their oxidation. This view was earnestly combated by other speakers, the suggestion of Professor Haldeman bore reference to a fact in physics. Molecular vibrations tended to prevent rust. A saw hung unused, would soon become rusty; if used, it would keep bright. This was a general experience with tools.

Blacktoft.—Construction of a Pier.—The Aire and Calder Navigation Company are now engaged in the construction of a pier at Blacktoft, on the Yorkshire coast of the Humber. The pier is being built of very great strength and will be 180 ft. long.

A Relic Shrine.—In the church at Marcol, Lorraine, which still retains several very beautiful and remarkable relics of the twelfth and thirteenth centuries, there has lately been discovered a relic-shrine, which must formerly have stood before the high altar, but which now occupies an altogether inappropriate position. This small *chef d'œuvre* is cut out of a fine white andstone, and is in the form of a church with five naves; it is 75 centimetres in length, 31 in breadth, and 35 in height. Each compartment of the shrine is externally in the form of a niche, and ornamented with rich mouldings. On one of the long sides, in bas-relief, is represented the oration of Christ by the three kings; in the other, Christ in the centre, with Peter and Paul in the right, and John the Evangelist and John the Baptist on the left. On the short sides are represented, respectively, the glorification and the annunciation of the Virgin. The sculptures are almost entirely intact, and of masterly execution. Several groups appear to be exact copies of sculptures in the Cathedral of Rheims, so that it may be concluded the little monument originated in that town. The workmanship is of the beginning of the fourteenth century, to which time the sculptures of Rheims belong. It is further remarkable that the shrine shows traces of painting and gilding. This art-work, with the permission of the Ober-Präsident of Alsace-Lorraine, will be restored and placed again in a proper position in the church of Marcol. In the same church has also been discovered a bell, of the sixteenth century, with the inscription:—*Zu Marcel gnädich bin ich. Maister Conrat von Vich gos mich. Anno 1508.*

The Metropolitan Gas Question.—In the report of the Common Council last week, Mr. Shaw, chairman of the Gas and Water Committee, called the special attention of the Court to the question, and to the manner in which it now affected the citizens, demanding, as he thought, serious consideration and prompt action in the public interest on the part of the Corporation. The Gas and Water Committee had presented an elaborate report to the Court on the whole question, especially as it affected the citizens. They recommended that they should be authorised to confer with the Board of Trade with a view to bringing the several matters upon which they had reported under the more immediate notice of the President, and of inducing him to take steps to remedy the evils adverted to, or, if necessary, to favour the introduction of a measure to remedy the abuses existing under present legislation. Mr. Shaw concluded by moving the adoption of the report of the committee, and that the committee be instructed to do whatever steps they might think necessary to ensure a satisfactory supply of gas to the citizens. The subject gave rise to a discussion, and the motion of Mr. Shaw was adopted almost unanimously.

Decoration of St. Paul's Church, Stafford.—This church has been re-opened for Divine service. The walls of the nave and transept are tinted a reddish purple; the principal timbers of the roof are stained and varnished; and the rafters are picked in vermilion. The greatest display of the decorator's art, however, is reserved for the chancel. Here, the dado is a blue ground, embellished with fleur-de-lis, crests, monograms, and various other symbolical signs, finished in green and gold. The walls above the dado have a cream-coloured ground, speckled with gold, purple, and vermilion. The dado and the diapered walls are separated by a gold ground, having a band of vermilion and so on. The roof of the chancel is adorned with gold stars upon a sky-blue ground; the beams and rafters are picked in light buff, and the rafters in vermilion. The space upon each side of the east window contains a large scroll on a cream-coloured ground. The sittings throughout the church have been cleaned and varnished. The work has been carried out by Mr. Arthur Gee and Mr. William Hollis.

American Society of Civil Engineers, New York.—A committee of this Society has been appointed to investigate the necessary conditions of success, and to recommend plans for, first, the best means of rapid transit for passengers; and, second, the best and cheapest methods of delivering, storing, and distributing goods and freight in and about the city of New York; with instructions to examine plans, and receive suggestions such as parties interested in the matter may choose to offer, and to report on or before the 1st day of December, 1874.

New Harbour at Boulogne.—A commission appointed by the French Government to inquire into a plan for a projected deep-sea harbour at Boulogne has just held its first sitting at that port. The plan has been designed to overcome the objections to a former scheme, which was rejected by the Council General of the Ports-et-Chaussées, on the ground that it would cause the silting up of the present harbour, and the total estimated cost of carrying it out is 12,500,000 fr., which amount the South-Eastern Railway Company has obtained Parliamentary sanction to expend in improving harbour accommodation on the French coast. The new plan comprises a main pier 1,400 metres in length; a stone jetty, 100 metres to the west of and parallel to the steam-pier; an extension of the present east jetty 1,200 metres; stone breakwater, 300 metres long; and the reclamation of a large portion of the foreshore. The Boulogne New Harbour Company ask for a concession for ninety-nine years, at the expiration of which period the property will revert to the State, and the possession in perpetuity of the reclaimed land. The length of the new harbour will be over three-quarters of a mile, and the width upwards of one-third of a mile.—*Galignani.*

Memorial of the Duke of Kent.—It is stated that her Majesty intends erecting a monument in memory of his late Royal Highness the Duke of Kent in St. George's Chapel, Windsor Castle. The site selected by the Queen is the south-western corner of the nave, beneath the south aisle, and including what was formerly known as the Beaufort Chapel. The Beaufort tomb has been removed, and the walls are being restored. Some little time previous to the visit of the Belgian volunteers to Windsor Castle her Majesty had erected in St. George's Chapel a white-marble memorial, a bas-relief, of his late Majesty Leopold, King of the Belgians. The sculpture was executed by Miss Durant, and it was affixed to the wall at the end of the south aisle close to the Beaufort Chapel. Within the last few weeks the Leopold memorial has been removed to Claremont Church (Essex), Claremont House having been the residence of Princess Charlotte, the late King's Consort, the site which it occupied in St. George's Chapel being required for the Duke of Kent's monument.

The Reconstruction of the Liverpool Landing Stages.—At a meeting of the Liverpool Dock Board, a report was read from Mr. G. F. Lyster, the dock engineer, in reference to the reconstruction of the landing stages. He recommended that the timber cross-beams of the original stages be superseded, and transverse beams of wrought iron introduced instead. This arrangement would obviate the necessity of having any timber whatever in the main structure, with the exception of the outside fender and rubbers. With regard to the deck, he expressed his opinion that greenheart timber laid as thin as would be consistent with strength would be the most suitable material either for the general traffic on the stage or to meet the varying undulations to which a structure of such great length must necessarily be subject. Abreast of each bridge special provision would be made by means of deep girders for the ready separation of the deck in case of another fire. After a short discussion the report was adopted.

Dunstable Town-hall, Plait-market, and Corn-exchange.—The new building which has been erected by the Dunstable Corporation for the purposes of a Town-hall, Plait-market, and Corn-exchange, has been formally opened for these several objects by the mayor, Mr. E. Lockhart, in the presence of a large company of townspeople and visitors. The new structure, says the *Bedford Times*, is an enlargement of the old Town-hall, which was erected in 1803 by the Duke of Bedford, to whose family the property had belonged for three generations, and the purchase of the site was negotiated by the present Corporation through the Commissioners of Woods and Forests. The architect is Mr. Henry Elliott, of London, son of the late Mr. Wm. Elliott, of Dunstable, and a native of the town. The upper room is used as a magistrates' court, while the large hall beneath is to serve as a Plait-market and Corn-exchange. The whole is surmounted by a clock-tower over the entrance.

Wood Paving.—We are informed that the Patent Ligno-Mineral Paving Company, Limited, have obtained the contracts for wood-paving lately advertised for tender by the Corporation of Hall.

Society of Engineers.—At the first ordinary meeting for the session, Mr. Macgeorge, in the chair, congratulated the society on their first meeting this session, and expressed his regret at the loss of Sir William Fairbairn, an hon. member of the society, in whose place Dr. Siemens was elected. They had also to deplore the loss of Lieut. Bigsly, R.E. During the vacation members of the society visited London-yard Works, East Greenwich; the Imperial Gas Works, Bromley; the Dacey steamship *Castalia*, Frost's Rope-works, and Henley's Telegraph Works. Mr. Perry F. Nursey then read a paper on "Mechanical Puddling." The author, having expressed his strong opinion in favour of mechanical as contrasted with manual puddling, gave an historical account of the efforts which have been made in America and this country in the direction of mechanical puddling.

The Water Supply of Pontefract.—The first brick has been laid in Pontefract Park by the Mayor in connexion with the new reservoir to supply the town and new military centre in future with water. The tank about to be formed in the bed of the Park-hill is intended as a storage of water, the town hitherto being entirely without water between ten o'clock in the evening and six in the morning, as the present waterworks are quite inadequate to the demands. The excavations have been completed by the contractor, Mr. Isaac Marsh, of Castleford, and are capable of storing 360,500 to 400,000 gallons of water, which will be forced through pipes from the present works to the reservoir. The contract for laying the pipes, &c., is being carried out by Messrs. Speight & Sons, of Leeds.

Saxon Remains.—It is stated that the investigations in the marsh at Cookham, by Mr. William Donald Napper and Mr. Alfred Henage Cocks, have been rewarded with success. On the 14th ult. a tamulus was opened, and found to contain, besides other objects of interest, the skeleton of a Saxon warrior. The figure lay facing the north, 2 ft. 6 in. from the surface of the mound, which rises to about 3 ft. from the present level of the marsh, and is surrounded by a well-defined ditch. Covering the right shoulder was the umbo or boss of a shield which, in all probability composed of wicker or hide, had itself long since perished. The umbo, which is a very fine specimen of early Saxon ironwork, is about 6 in. in diameter and conical in form, being surrounded by raised bolts, and with what may have been a spear-point rising from the centre.

London Association of Foremen Engineers and Draughtsmen.—At the monthly meeting of this institution, held at the City Terminus Hotel on Saturday last, Mr. Joseph Newton, C.E., in the chair, Sir David Salomons, bart., read a paper on the "Electric Telegraph." By aid of a variety of apparatus, beautifully constructed, many experiments were shown illustrative of the author's observations, which were both practical and theoretical in character. At the close of the meeting, the chairman congratulated Sir David on his possession and successful cultivation of scientific tastes. In the course of the sitting the Rev. H. Solly explained the plans and principles of the Artisans' Institute which is about to be opened in Upper St. Martin's-lane, and invited the Foremen Engineers to support it. The meeting was a crowded one.

Carlisle Victoria Hall.—The Victoria Hall, the larger of the two new public halls in course of erection in this city, is now rapidly approaching completion. The whole of its constructive features are complete, and all the work now remaining to be done consists almost entirely of internal fittings. This is being pressed forward in order that all may be ready for the opening night on Monday, the 26th of this month, when the Choral Festival is to take place. Before opening the hall, the directors of the Public Hall Company purpose having a careful inspection made of the building, in order that no doubts may be entertained as to its security.

Powder Magazine.—Public attention should be directed to the extremely dangerous position of the Powder Magazine abutting closely on Kensington Gardens, and to a public roadway running by the Serpentine, concerning which we have before now spoken. A more ill-considered position could not be selected for such a purpose, one requiring comparative isolation, and casing.

The Chapel Royal, Savoy.—The little building known as Savoy Chapel, which lies in a back street off the Strand, has recently undergone repairs, which have improved its internal aspect. The chapel is the property of the Queen as Duchess of Lancaster. The organ has been repaired. The walls have been repainted, and the various inscriptions retouched; while the pulpit has been moved a step or two into the chancel—an arrangement which has made room for a couple of pews designed for the use of the Chancellor of the Duchy. A work on the subject of the Savoy Palace is being prepared by the Rev. Mr. White and Mr. Loftie, the chaplain and assistant-chaplain respectively of the chapel. A suggestion has recently been made as to the addition of a painted window. This chapel appears to be always undergoing restoration.

The Proposed Skeldergate Bridge, York. A meeting of promoters of the scheme for the erection of a new bridge over the river Ouse at Skeldergate-ferry, has been held, the object being to form an association to assist in carrying out the project. Unlike the meeting of the opponents to the scheme held on the previous evening, the presence of the citizens generally and the representatives of the Press was welcomed. Mr. J. Close moved—"That an association be formed for the purpose of carrying out the resolution agreed to at a public meeting of the citizens held in the Guildhall on Friday last; that those gentlemen now present form the nucleus of such association, with power to add to their number; and that Mr. T. Wood be requested to act as secretary." After some discussion the motion was unanimously adopted.

Monument at Torres Vedras.—A large monolith will shortly be transported from the quarries of Pero Pinheiro to Alhandra, on the Tagus. The stone is destined to form part of a monument to be erected on the ancient lines of Torres Vedras, to commemorate the famous stand made there by the British and Portuguese forces under Wellington, by which was frustrated the second French invasion of Massena in 1810. The lines are still clearly traceable, from Alhandra on the Tagus to Ericeira on the Atlantic. The design, as traced by Senor Cascaes, represents a column with a statue of Hercules, clad in the lion-skin, with club in hand. On the pedestal is the inscription in Portuguese, "Lines of Torres Vedras," and the Latin motto "Ne plus ultra."

The New Barracks at Normanton, near Bristol.—The work connected with this establishment, which is to be the headquarters of the Derby military centre, has now commenced in earnest. The contractors are Messrs. Parnell & Sons, of Rugby, who have carried out many extensive works, and the men are now engaged in making the excavations for the foundations, having commenced during the present week. The work has been delayed owing to the contractors, who sent in the lowest tenders, having declined to carry them out. The building and drill-ground will cover an area of 10 acres. Captain Parnell, of the Royal Engineers is the superintending officer, and the amount of the contract is between 46,000l. and 17,000l.

The Regent's Canal a Sewer.—The public are not perhaps aware of the dangers encountered by living on the banks of the Regent's Canal. Pestilential exhalations are occasioned by the passage of the steam togs and barges, and it appears that ever since the Zoological Gardens have been in existence the Society have used the canal for sewerage purposes, having no proper drainage of their own. Attempts have been made to compel the Zoological Society to construct proper sewers for the outlet of the filth from the caged-up animals, urinals, &c., but without effect. Let us hope now that some legislative interference may be instituted. It is also said that many houses are drained into the canal.

The Severn Tunnel Scheme.—This great undertaking, which is to connect South Wales with the West of England by a continuous line of railway, is beginning to assume a practical form. The preliminary shaft which the directors of the Great Western Railway caused, at a large expenditure of money, to be sunk, having satisfied them that the strata through which the tunnel will have to pass are satisfactory, the board is now preparing to drive a 6 ft. heading at the Portskewett end. They have accordingly advertised for tenders for the completion of the first 750 yards of this heading. The tunnel will doubtless take some years to complete.

Smoke Nuisance.—At the Eddisbury Petty Sessions, Mr. Falk, owner of the Meadow Bank Salt Works, Over, was summoned for permitting a nuisance. Mr. H. Bennett, Sanitary Inspector, said the defendant had forty chimneys on his works, and they averaged about 15 ft. high. His observations showed that there was from them a continuous issue of smoke for fifty-eight minutes down to twenty-two minutes. The Bench fined the defendant 8l. 10s., and costs, 8s. 6d., being at the rate of 5s. a day for each chimney.

Drawing for All.—It was resolved at the last meeting of the London School Board, that systematic lessons in drawing be given in all the Board schools, so that all the scholars might have an opportunity of learning the same, and that it be referred to the School Management Committee to consider and report as to the arrangements necessary for carrying this resolution into force. We congratulate Mr. Lucraft, who brought about this decision.

St. Alban's Abbey.—At a meeting of the National Committee for the Reparation of St. Alban's Abbey, held on Saturday, Lord Verulam in the chair, it was resolved to proceed with the work westward from the tower as far as St. Cuthbert's screen, so as to render that portion of the building, which until lately was used as the parish church, again available for divine service. Nothing has yet been done beyond what is necessary to keep the fabric from becoming a ruin.

New Goods Station in the City.—The Midland Railway Company are about to erect, on the site of the old Whitecross-street Prison, at a cost of 130,000l., an extensive goods station and range of warehouses, forming their City goods depot. The warehouses, built of red brick, with Portland-stone dressings, will be amongst the loftiest buildings in the City, the total height being 80 ft.

Sale of Cyfartha Ironworks.—Messrs. Crawshaw, the great ironmasters of Cyfartha, in South Wales, have recently disposed of their business to Messrs. Williams, the largest copper smelters in Cornwall, for the sum of one million sterling. The deposit-money has already been lodged, and the transfer will take place without delay.

Crewe.—The chief stones of the Heath Memorial Primitive Methodist Chapel at Crewe have been laid. The building will be in the Norman style of architecture. Mr. W. Mossford, of Crewe, has the contract for supplying the stone-work.

TENDERS

For Camberwell New-road Catholic and Apostolic Church. Messrs. John & John Belcher, architects. Quantities by Mr. T. B. Isaac:—

Stinson	25,647 0 0
Cunder	2,493 0 0
Colls & Sons	9,470 0 0
J. & F. Coleman	8,888 0 0
Dunstan & Co.	8,830 0 0
Thompson	8,493 0 0
Jarrett	8,238 0 0
Brace & Sons	7,790 0 0
Gregory	7,733 0 0
Brad, Jopling, & Co.	7,630 0 0

For board-room and registrar's and other administrative offices, in the New-road, for the Guardians of the Poor of the Parish of St. Marylebone. Mr. Henry Saxon Sael, architect. Quantities supplied by Mr. R. Grigg, Messrs. Lansdown & Pollard, and the architect:—

Garrad & Smith	27,800 0 0
Atchison & Walker	6,845 0 0
Temple & Forster	6,814 0 0
Wall, Brothers	6,595 0 0
Chapell	6,461 0 0
Simson & Baker	6,400 0 0
Staines & Son	6,150 0 0
Brace & Son	5,995 0 0
Bangs & Co.	5,911 0 0
Brad, Jopling, & Co.	5,900 0 0
Crockett (accepted)	5,860 0 0
Lovell	5,287 10 0

For hospital, at Grantham. Mr. R. Adolphus Caine, architect. Quantities by Mr. Heelis:—

Nightingale	25,598 0 0
Longley, junr.	6,450 0 0
Pattinson	5,122 0 0
Rudd & Son	5,000 0 0
Foster	4,832 0 0
Challens	4,635 0 0
Hobson & Taylor (accepted)	4,465 0 0

For alterations, &c., to Mr. Crake's residence, at Eastbourne. Mr. R. K. Blessley, architect:—

Peeries	2,765 10 0
Vidler	719 10 0
Skinner (accepted)	626 15 0

For levelling and draining a new cemetery at Godwin, Derbyshire. Mr. S. J. Barber, architect:—

Marsh	2,351 10 0
Shaw	324 16 0
Fretwell	312 0 0
Palmer (accepted)	275 0 0

For erecting four houses, being the second portion of the west wing of the London Foresters' Asylum, Heath. Mr. W. F. Potter, architect. Quantities by Mr. C. R. Griffiths:—

	Houses.	Boundary Wall.
Bader	21,011 0 0	238 0 0
Woodward	927 0 0	40 0 0
Gammou & Sons	923 0 0	42 0 0
Gray	888 0 0	38 0 0
Saber & Son	850 0 0	34 0 0
Larke	840 0 0	38 0 0
Knight	747 0 0	33 0 0
Ellingham	720 0 0	30 0 0
Barton	670 0 0	36 0 0
Vickery (accepted)	655 0 0	38 0 0
Clark	641 10 0	33 0 0

For the following schools for the Barton-on-Trent District School Board. Messrs. Giles & Brookhouse, architects. Quantities supplied:—

School at Hodinglow:—	£2,631 18 7
Neale & Beach	2,400 0 0
Smith	2,278 18 0
Wileman	2,222 0 0
Bowler & Beck	2,201 0 0
Potter	2,195 0 0
Mason (accepted)	2,130 0 0

School at Stratton:—	
Neale & Beach	£1,601 7 8
Wileman	1,578 0 0
Haddield	1,533 0 0
Smith	1,300 0 0
Maddocks	1,278 0 0
Mason (accepted)	1,266 0 0

School at Uxbridge-street:—	
Hunter	£3,215 0 0
Maddocks	3,130 0 0
Bennett	3,075 0 0
Mason	3,060 0 0
Wileman	3,038 0 0
Champlain	3,035 0 0
Haddield	2,890 0 0
De Ville	2,874 0 0
Smith (accepted)	2,790 0 0

For new club-house in the King's-road, Brighton, for the Brighton & Clifton Company (Limited). Mr. Thomas Lanson, architect. Quantities supplied by Mr. B. H. Nunn:—

Servener & White (too late)	£14,968 0 0
Bass	14,838 0 0
Waldram & Co.	14,890 0 0
Manley & Rogers	14,826 0 0
Dave, Brothers	14,795 0 0
Browne & Robinson (too late)	14,760 0 0
Newman & Mann	14,720 0 0
Lockyer	14,370 0 0
Merritt & Ashby (too late)	14,300 0 0
Cheesman & Co.	14,078 0 0
Howard	13,970 0 0
Barnes (accepted)	13,770 0 0
Eldridge (withdrawn)	11,630 0 0

For the remaining portion of the new workhouse, Derby. Messrs. Giles & Brookhouse, architects:—

J. & E. Wood (accepted)	£22,000 0 0
-------------------------	-------------

For reservoir and engine-house for the Waterworks Company, High Wycombe. Mr. J. Wilson, engineer:—

Hook & Oldrey	£1,460 0 0
---------------	------------

For new stable and coach-house, for Mr. Howgate Westbourne-crews, architect:—

Hook & Oldrey (accepted)	£270 0 0
--------------------------	----------

For alterations to house, dairy, &c., at Uxendon Farm, Wembley, Harrow, for Mr. Land, Mr. W. Green, architect:—

Hook & Oldrey (accepted)	£220 0 0
--------------------------	----------

For Christian Mission Hall, Hackney. Mr. G. Jackson, architect:—

Payne & Stanger	£1,564 0 0
Dabbs	1,400 0 0
Lewis	1,390 6 0
Mason & Briley	1,335 0 0
Jefferson	1,275 0 0
Hes	1,250 0 0
Loss	1,170 0 0

For Barbican Chambers, London. Mr. C. Stonor, architect:—

Nightingale	£3,484 0 0
Merritt & Ashby	3,355 0 0
Bangs & Co.	3,231 0 0
Craib	3,232 0 0
Shurmer	3,093 0 0
Perry & Co.	3,098 0 0
Elkington	3,025 0 0

For stabling, loose boxes, cottages, &c., at Hamme Smith, for the London General Omnibus Company (Limited). Mr. P. Tosh, architect. Quantities by Mr. A. J. Boulton:—

War	£8,774 0 0
Stephenson	8,504 0 0
Taylor	8,500 0 0
Hart	8,291 0 0
Williams	8,200 0 0
Cowley	8,077 0 0
Martin	8,074 0 0
Payne & Manago	7,888 0 0
Temple & Foster	7,700 0 0
Mason & Bristow	7,525 0 0
Garraud	7,463 0 0
Sax	7,348 0 0
Turrell	7,210 0 0
Chamberlain	7,160 0 0
Lewis	7,000 0 0
Parsons	6,884 0 0
Gill	6,846 0 0
Crockett	6,825 0 0
Atchison & Walker	6,785 0 0
Payne	6,559 0 0
Niblett & Son	6,565 0 0

The Builder.

VOL. XXXII.—No. 1654.

Manchester Exchange and Town Hall.



THE new buildings for the Manchester Exchange, designed by Messrs. Mills & Murgatroyd, architects, were illustrated some time since in our pages. The work is now nearly approaching completion; the greater part of the new-room has been in occupation by the subscribers for some little time, and the whole will be finished and opened on the 19th inst.; that is the date named for completion, at least, no formal opening ceremony is contemplated. There will still be work to be done in getting the offices on the upper floors ready for occupation, but this does not affect the main portion of the interior in which the business of the Exchange is carried on.

The new room is of imposing size, and on the whole has a fine effect, whatever may be thought of some of the detail. What may be termed the wall-design of the room, consists of "order" and an attic; or we may perhaps call the upper part a "clearstory," to borrow a nautical term. The order is represented by large columns of red Cork marble, unfluted, with foliated capitals and metal bases; these were made in Berlin, and are excellent specimens of casting, and very good in design. Deep cornice, frieze, and architrave, carried all round over the columns, give a strong horizontal line, about three-fourths of the height of the floor, and over this the space on the long sides is pierced with semicircular-headed windows, with shafts between them, the corresponding space at the ends being occupied by a wall arcade. The windows are filled with lightly-stained glass, with borders and an ornamental centre. The ceiling has a deep cove supporting a soffit, and the portion is divided by transverse soffits into three compartments, the centre one covered by a large dome, and the end compartments by smaller domes. The large dome is vaulted as a coffered dome, with the coffers filled with ornamental glass of the same type of design as that in the side windows; it looks very heavy, as it rises of course from the ceiling and not from the walls; in such a case it is better to treat the dome as a skylight rather than as a solid structure. Care has been taken to furnish a tolerably adequate basis for it, so as the eye is concerned, by the large brackets which interrupt the cove opposite the angles of the dome.

The domes are sprung from the rectangular compartments of the ceiling on nearly flat pendentives; the space between the pendentives, forming a long low panel on each face beneath a central arch, is filled with symbolic subjects, given in outline, representing in the centre dome Commerce, Science, the Arts, &c.; and in the other domes the four Seasons; the end compartments only of the smaller domes being painted in a landscape, and the side ones filled with conventional floral ornament. Messrs. Harwood, of Manchester, are the contractors for the decoration;

but the designs in the interspaces of the pendentives are by Mr. Thomas. The base of the dome bears the inscription, from the book of Proverbs, "A good name is more to be chosen than great riches, and loving favour rather than silver and gold;" or to that effect. One gets rather tired of this cant of painting up such texts in places of business. Every one on the floor of the room will be occupied in the pursuit of riches, and what is the use of denying it on the ceiling?

A reading-room, on a mezzanine floor, runs the whole length of one side of the great room, with an excellent light, and a compartment at the end further shut off as a writing-room. Every convenience in the way of accessories, retiring-rooms, &c., is provided on a liberal scale throughout. The telegram stands, besides other ornamental ironwork in the way of lamp brackets, have been supplied by Messrs. Smith, of Birmingham; but the pendent chandeliers, for lighting the large room, are supplied by Mr. Rigby, of Manchester; these are patent paraffine lamps; the rest of the lighting is by gas. The grates and mantel-pieces, and the ornamental wall tiling, are supplied by Mr. Pattison, of Manchester; and the majority of the ironwork of construction by Messrs. Fairbairn. The ornamental glass is by Mr. Edmundson, of Manchester.

The portion of the ground-floor next the exterior is mostly occupied by shops, which are commodious and well lighted, and are already mostly let. A portion of the upper floors, behind the large room, will be let as offices; but this part is not so forward as the rest. The remainder of the floor is occupied by two extensive dining and luncheon rooms, taken by the Liverpool and Manchester Restaurant Company (Limited). One of these is finished and opened; it is lighted entirely by gas, no daylight being available, but looks none the worse on that account. The line of a street which formerly went across the centre of the site, at right angles with Market-street, is retained in this floor, which it traverses, from an open entrance at one side of the present building; this forms one access to the restaurants, which are on each side of it; but its more important use is as an access for carts laden with goods to the back of the shops. Below this floor, which is about on a level with Market-street, are two stories of vaults, let, or to be let, as wine-cellars. The space under the flight of steps in Cross-street, leading to the principal entrance, is utilised as a smoking-room in connexion with the restaurant, and below this are the kitchens. The site has certainly been made the most of in regard to a remunerative return for capital expended. A hydraulic lift is provided in the building; a wind-dial will be formed in the new-room, connected with a wind-gauge on the roof; and an electric clock furnished by Mr. Ritchie, of Edinburgh, will give the time to all the clock-dials fixed in different parts of the building. The whole of the work has been carried out under the immediate superintendence of Mr. Grimes, as clerk of works.

The other great public building, which will form the central architectural feature of Manchester, the Town-hall, is now in a tolerably advanced state. The exterior is nearly complete, except the tower, to which a considerable portion has still to be added. The contract for internal work was taken last Whiteautide by Messrs. Clay & Son for 93,000*l*. We shall find an opportunity of noticing the building in detail when completed; but in its present "shell" state, it presents much for admiration, and is at least fully worthy of its architect's reputation. The masterly manner in which Mr. Waterhouse has combined all the multifarious requirements of the plan, on an irregularly-shaped site, in a perfectly simple and symmetrical scheme, was admired by all who studied the competition plans

at the time; and it strikes one even more when looking at the building in execution. Coming in at one of the circular angle staircases, we see the main corridors stretching in both directions, giving direct access to every part, and reducing to real simplicity of plan the apparently picturesque disorder of angles and windows and bridged passages, which we see on looking into the courts from the windows of the inner side. The corridors are vaulted, in some places plastered, but in the leading thoroughfares finished with a parti-coloured masonry filling of Bath and blue Forest of Dean stone in bands of varying width. Terra-cotta has been used in the production of horizontal bands of decoration on the walls of the corridors and elsewhere. An excellent point in the building is that the inner courts are not, as is so frequently the case, left almost bare of architectural treatment, but are studied and finished with the same care as the exterior; special decoration is to be applied in some of these courts, in the spandrels of arches, which are at present left with a brick face, until the method of treatment is decided upon. This decorative treatment of the inner courts is as it should be; for nothing is more ill-judged than to give a building a highly decorative exterior, and then leave those who are living and working in it nothing to see but bare blank walls by way of a view from the inner windows. The circular staircases are an admirable piece of work, both in design and execution. The building is in that manner of Gothic treatment which its author seems to have finally made up his mind to, and which he has to some extent invented for himself; a manner which is not highly picturesque in detail, but has a sterling common-sense look about it which will probably always be recognised as satisfactory and appropriate in its way, whatever changes of taste we may go through. Of the success of the central feature, the tower, it is impossible to form an opinion, of course, till its completion. The difficulties of vaulting have not been overcome, in the angles formed by the junction of the staircases and passages, here any more than elsewhere. The work is admirable; but twisted lines and varying curves in the ribs testify to the impracticable nature of this system of roofing except under the simplest conditions of plan, in despite of its long and illustrious pedigree.

One or two new buildings, approaching completion, near an angle of the town-hall, constitute recent additions to the architectural aspect of the neighbourhood of Market-square, which, where the town-hall is complete, will form, with the Prince Consort Memorial and the, at all events, highly respectable average of style in the buildings surrounding it, an architectural centre such as few modern towns in England possess. Of the new buildings referred to, the one at the angle of the square, and therefore most prominent, is fortunately the best; it is by Mr. Redmayne, of Manchester. It appears to be intentionally assimilated to the style of the town-hall.

MR. GLADSTONE ON ENGLISH TASTE.

In the paper in the *Contemporary Review*, already noticed, in which Mr. Gladstone endeavours to discriminate the distinction between "Ritualism" and "Ritual," are some remarks on the attitude of the English mind in regard to art, generally as well as specially, which may interest some of those to whom the main subject of the paper would have only a partial attraction, if any. In the course of criticism upon a rather narrow subject, the author gets occasionally on ground of wider interest. Regarding ritual as the marriage of the outward to the inward, he is led to remark on the deficiency of the English nation in regard to the perception of the harmony which should exist between ideas of order and fitness, and their outward expression. Mr. Gladstone says:—

"As a people we are, in the business of combining beauty with utility, singularly un instructed, unaccomplished, maladroit, unhandy. If instances must be cited,

they are not far to seek. Consider the unrivalled ugliness of our towns in general, or put Englishmen to march in a procession, and see how, instead of feeling instinctively the music and sympathy of motion, they will loiter, and stroll, and straggle; it never occurs to them that there is beauty or solemnity in ordered movement, and that the instruction required is only that simple instruction which, without speech, Nature should herself supply to her pupils.

"Quid fecerint, ipsi nullo didicere magistro."

Take again,—and as it is to strike for once at the softer portion of the species,—the dress of Englishwomen, which, apart from rank and special gift or training or opportunity, is reputed to be the worst in the European world, and the most wanting alike in character and in a lapidation. Take the degraded state, in point of beauty, at which all the points of design, and all industrial production, had arrived among us some fifty years ago, in the iron age of George IV., and before the reaction which has relieved many of them from disgrace, and raised some to real excellence.

But, indeed, in too many cases, our repentance is almost worse than our transgressions. When we begin to imbibe the conception that, after all, there is no reason why attempts should not be made to associate beauty with usefulness, the manner of our attempts is too frequently open to the severest criticism. The so-called beauty administered in portraiture as doses of ornamentation sometimes running to actual deformity. Quantity is the measure, not quality, nor proportion. Who shall now compete with the awakened Englishwoman for the house of hair built upon her head, or for the measureless extension of her dragging train? Who shall be the rival of some English architect in encumbering their work with an infinity of pretentious detail in order to screen from attention inharmonious dimension and poverty of lines? Or that I may without disguise direct the charge against the mind and spirit of the nation, embodied in its Parliament and its Government,—what age or country can match the practical solecisms exhibited in the following facts and others like them? Forty years ago we determined to erect the most extensive building of Pointed architecture in the world, namely, our Houses of Parliament, or, as they are called, the Palace of Westminster. We entrusted the work to our most eminent Italian architect. Once was pretty well, but once was not enough. So, twenty years ago we determined to erect another vast building in the Italian style, namely, a pile of public offices, or, as some would call it, a Palace of Administration. For this we committed the erection of it to our most experienced and famous architect in the Pointed species. Thus each man was selected for his unacquaintance with the genius of the method in which he was to work. The who can wonder in circumstances like these, that the spirit and soul of style are so often forgotten in its letter; that beauty itself unlearns itself, and degenerates into mere display; that for the attainment of a given end, not economy, but profusion of means, becomes our law and our last; that in the Houses of Parliament, dispersion of the essential parts over the widest possible space marks a building where the closest concentration should have been the rule; and that the Foreign Office, which is a workshop, exhibits a staircase whose no palace of the Sovereign can match in its dimensions?

The observation as to the English method of walking in procession is characteristic enough. It is one form or evidence of the essentially unmusical nature of the English mind, taking the epithet in its widest sense, as the want of perception of rhythm and tune—a deficiency which is the explanation of peculiarities of national character or action which might, superficially considered, appear much less connected with it than they really are. In regard to the remarks bearing more particularly on architecture, it is some consolation to find one eminent politician at least who can see the absurdity of such solecisms as are referred to in the case of two of our most important architectural works. Few persons in England probably realise how impossible in the great days of Italian art, for instance, would have been such a putting of the wrong man in the wrong place, such a selection of an artist for mere reasons of State, or (still more absurd) of a style for similar reasons. The style of the Foreign Offices depended, not on the judgment of the architect, or even of the people or any body of them, but on the personal prejudices of Lord Palmerston. The wonder in the case of the Foreign Offices is that so practically-minded a man as the cheery Premier of that day should not have seen, at least, the absurdity of compelling an architect to work out of his own chosen style, and in one which he had always disliked and protested against. At the same time there is this to be said, that an artist of the widest ability and culture will be likely to succeed, to be original, in whatever groove he is compelled to adopt. In this respect the "Westminster Palace," whatever its defects, is a lasting testimony to Barry's versatility of power and that innate taste and feeling which directed him; and it may very well be questioned whether any Gothic architect to whom the building could at that time have been entrusted would have made on the whole so good a thing of it; or whether there is any one to-day among the Gothic ranks who could improve upon it in the best qualities of its design, though the detail might be improved. The mistake, on principle, in giving such a building to a Classic architect, is as great as Mr. Gladstone says; but he overrates the actual loss in that particular case, and certainly overrates the deficiencies of plan in the building.

The wider charge against us as a nation, for the peculiar and questionable character of our "repentance" for having neglected art, is certainly borne out by facts. We are constantly meeting, in public and in private life, with examples of this kind of florid and over-acted determination to be artistic and to evince a taste, and nothing is more calculated to cause despair to those who would fain see refinement, than beauty in our daily lives and surroundings, than the constant endeavour to obtain these, in a blind kind of manner, by expending much money and labour in ornament and show of decoration, without thought as to its fitness, or the most effective way of using it. There has been a partial practical opposition to this from some few of our architects, and one or two have never given into it at all. But in the main we have now a kind of revival of the spirit of parade and ostentation, as compared with that of our middle-age architecture, which is, in some sort, a repetition of the ostentation of Roman imperial architecture and ornament, as compared with Greek. In our own case this bad and vulgar taste is, however, that of the members of the middle classes, who are rising in wealth and importance and in habits of luxury, without culture and refinement to direct them. The architect of the present day is almost compelled to take his taste from them, or to conform to theirs, at the risk of losing success and reputation. The little quiet and refined work that is done is mostly for amateurs of another class. It will take a considerable time to correct this notion of the beauty of show and costliness in the average English mind, and to build up a taste for real beauty and its great constituent, "fitness." In regard to these subjects, the author of the "Ritualism" paper is in a certain sense a middle-class man without middle-class taste; a man of the people with a taste formed on associations higher than those of the people generally. The essay referred to is essentially anti-Philistine. We are grateful to Mr. Gladstone for criticism of this tendency, even when delivered but en passant. We only regret that his voice and influence have not often been brought, openly, to bear on such matters, during his days of more direct public power and authority.

GLASGOW AS IT WAS.

JOHN GIBSON, a worthy native and baillie of Glasgow, who probably was acquainted with the family of the Jarvies of the Salt-market of the capital of western Scotland, and who may in his boyhood have beheld the stalwart form of the Red Macgregor, claims in his history of his native town a high antiquity for its foundation. He writes, "Glasgow in the Welsh language, as well as in the Gaelic, signifies a grey smith. The only inference that can be drawn from this is that some spot of this most ancient city was in former times, before the establishment of the bishopric, the place of residence of some blacksmith who had obtained a name in his profession, and from him it got the appellation of Glasgow, or the habitation of the grey smith." The worthy baillie is somewhat dubious as to this grey smith, for he honestly acknowledges that, "In treating of the antiquity of Glasgow, probability or conjecture must supply the place of evidence, as authentic records with regard to its foundation are not to be procured." Thus, 100 years ago, wrote the baillie concerning his native town. Twenty years afterwards, Mr. Andrew Brown, of Edinburgh, wrote a somewhat bulky history of Glasgow. He disposes of the derivation of the name in a summary fashion:—"Glasgow, we are told by some, is a Gaelic word, signifying grey smith, and got its name from a person of that profession, who had his residence on or near the place where the bishop's castle afterwards stood. Others say Glasgow in that language signifies the Greyhound Ferry. Glasgow, we are also told, signifies the Dark Glen." Bidding the rather mythical smith farewell, we turn to the belief, that while the Romans maintained possession of North Britain, they had a station on the spot on which Glasgow is now built, and being within the Wall of Antoninus, which crossed Scotland from the Forth to the Clyde, a few miles to the north of Glasgow, it was included in the province of Valentia, and retained by the Romans until their final expulsion from Britain. St. Mungo carried on what the Romans had begun, by increasing the number of houses, and afterwards establishing a cell and a religious fraternity at Glasgow. The city continued to be little more than a religious establishment;

indeed, from the end of the sixth to the commencement of the twelfth century there is no historical mention of the place. In the year 1116 David, Prince of Cumberland, refounded the see; and having, in 1124, succeeded his brother, Alexander I., on the throne of Scotland, he promoted his chaplain, Achauns, in the bishopric. In 1165 Pope Alexander III. issued a bull commanding the faithful to visit the Cathedral of Glasgow, and in 1180 the town was erected into a royal burgh.

Travelling quickly over the centuries, we get some strange glimpses of the social life of Glasgow. In 1583, the kirk-session appointed some ash trees in the churchyard of the High Church to be cut down to make forms for the folk to sit on in the kirk; women were ordered not to sit upon the forms, but to bring stools with them. Intimation was made that "no women, married or unmarried, should come within the kirk-door to preaching or prayer, with their plaid about their heads, neither to lie down in the kirk on their face in time of prayer with certification that their plaids be drawn down, or they be raised by the beadle." The beadies were to have staves for keeping order in the kirk, and were to receive 4d. for each marriage and 2d. for each baptism. At a meeting of the town council in 1609 the provost alarmed the council by informing them that the magistrates had been charged in the sum of one hundred pounds by the clerk register for the book called "Regium Majestatem," and that they were in danger of seizure for debt, as the council could not officially advance the money; but the provost dispelled their fears by telling that he "had borrowed the sum (81.6s. 8d.) from William Burn, an merchant burgess." In 1610, the town council enacted that there should be no middens (dunghills) on the fore streets, nor in the flesh market, or any other market, under a penalty of 13s. 4d.; and in the same year ordained that the lepers of the hospital should go only on the causeway-side near the gutter, and should have "clapperis (clappers) and a cloth upon their mouth and face, and should stand afar off while they receive their alms, under the penalty of being banished from the town and hospital. In 1649, the kirk session intimated that any person knowing any point of witchcraft or sorcery against any one in the burgh should inform the ministers or magistrates of the same. In 1684, a number of Covenanters were hanged in the town, and their heads stuck on pikes on the east side of the gaol. In 1698, the Glasgow magistrates granted an allowance to the gaoler for keeping warlocks and witches imprisoned in the Tolbooth. In 1717, the Convention of Royal Burghs passed an Act prohibiting persons from trading in Glasgow unless they resided eight months of the year within it.

We now come to the volume written by John MacUre, and dedicated "To our most High and Mighty Prince, John Duke of Argyle," &c. &c. This book we see Glasgow as it was 140 years ago. With the following flourish MacUre, registration clerk of the city, commences his treatise:—"In the nether ward of Clydesdale and shire of Lanark stands deliciously on the banks of the river Clyde, the city of Glasgow, which is generally believed to be of its bigness the most beautiful city of the world, and is acknowledged to be so by all foreigners that come thither. This is rather loud boasting, and would be laughable in the extreme were it not for the qualifying phrase—"of its bigness." In MacUre's time Glasgow must have been "deliciously situated." It possessed three public parks: Craig's Park "nobly beautified with a statelike grove of fir-trees"; and the New Green, which "was adorned with pleasant galleries of elm-trees." This green is fenced on the south side by the river Clyde, and "hath all the summer time betwix 200 and 300 women bleaching of linen cloth." Likewise there is a lodge built of freestone in the midst of the Green for a shelter to the Herd who waits upon the horses and cows that are grazed therein.

The third park, or Old Green, was smallest in size: "within this Green is the rope-works which keep constantly about twenty men at work. On the west end of the Green were the glass-works."

"In the city there is plenty of water, there being sweet-water wells in several closes (alleys) of the town, besides sixteen public wells, which serve the city night and day as need requires, all with pumps in them for drawing the water."

Now for its "delicious situation"; and what a change is here! "The city is surrounded with

corn-fields, kitchen and flower gardens, and beautiful orchards abounding with fruits of all sorts, which, by reason of the open and large streets, send forth a pleasant and odoriferous smell." We can judge of its "bigness" when we are informed that "there are eight ports or quays within the city, and ten principal streets, with seventeen lanes or wynds." Thus far John MacLure.

One hundred and forty years pass, and what is Glasgow now? One of the leading commercial cities of the world. The Clyde, once scarcely navigable by the smallest of fishing craft, is, through dredging and embanking, been rendered able to bear to the quays the largest of sea-going ships. Instead of its "four mills," huge factories, with their tens of thousands of spindles, are busily at work. The little boy who old scientific toys at the gate of the old university of Glasgow has, in a certain sense, created the city, whose bounds have since the days of John Mac Ure, been enlarged; but beyond these bounds there are no pleasant roards, no sweet-smelling gardens; they have taken place to roaring furnaces that all day darken the sky with their smoke, and send a lurid glare down the night. The Wizard of the North has unwittingly done much for Glasgow. Thousands of tourists from all lands every year make their way to Glasgow as a certain point from which to set out for the scenes over which he has flung the glamour of romance. Not forgotten as an element of success must be the untiring energy of the citizens themselves.

GLASGOW NOW.

LOSS OF IMPROVEMENTS—TWO YEARS' BUILDING.

FROM a statement made by Bailie Morrison, at the annual meeting of the Glasgow Improvement Trust, it appears that the total properties purchased by the trustees numbered upwards of 1,000, and amounted in value to £1,241,353. The expense incurred for the land in cost of land, construction of sewers, gaswork, interest, &c., amounted to £2,263,141. Overrun was represented by the sum of £33,100. The total sum expended by the Trust up to the present time was £3,777,927. The total expenditure in the course of a few months would be £1,437,261, as there were items which did not appear in the annual statement. To that also would have to be added properties till to be purchased. There were forty different areas: very few of these areas were completed—perhaps not more than five or ten,—but in the thirty remaining areas there were properties till to be acquired. The purchase of these had been postponed in consequence of difference of opinion between their proprietors and other circumstances. The value of these might be assumed at £200,000, so that there was still involved an expenditure of £1,637,261, to complete the improvement scheme. The original Parliamentary estimates, were in round figures £400,000, so that they were apparently a quarter of a million in excess of the Parliamentary estimates, and of the cost of the scheme. Up to the 31st August the cash sales effected by the commissioners amounted to £201,860, and the sale of ground amounts at twenty years' purchase to £12,392, making together £14,452. The sum borrowed on mortgage by the commissioners was £1,033,991. 6s. 1d. The Bailie then proceeded to describe the operations of the trust in various districts of the city, comprising Main-street, Gorbals, and the area bounded by Stirling-road, Bell-street, High-street, and Albion-street. The last-named district he found out would improve in value when the boundary streets were widened, and when the Midland and North-British Railway had opened their extensive stations in High-street; but the committee were alive to the fact that as proprietors of more than a million's worth of property, it would be better to sell at fair rates than to hold on, and they accordingly proposed to sell the property in the area named. In selling the ground in Main-street, Gorbals, the committee had reserved to themselves the right to three "articles." One of these was represented to be the first, or one of the first, engines made by James Watt when a working tradesman in Glasgow; the second consisted of the Old Elphinstone Arms in Main-street, Gorbals; and the third was the Hammerman's insignia. He should be glad if those articles were removed to the City Museum, or entrusted to some safe custodian. The operations in progress included the erection of the pavilion at Bridgeton Cross, which, with the exception of

the clock, would, he expected, be completed by the end of the next week. The work, in his opinion, reflected great credit on the contractor. It was intended that a turret-clock should be placed on the top of the pavilion, to be kept lighted at night, and the arrangements were such that the same jets which illuminated the clock also lighted the interior of the pavilion. Here, likewise, it was intended to erect two drinking fountains. With regard to prospective work it was intended to open up the whole of Main-street on the west side, and, considering the large stake they had in the Northern district, it was likely the committee would endeavour to face the difficulties in the way of improving that part of the city. With reference to the development of the scheme of City Improvement, while, financially, one-third of the project was off their hands, yet it must be kept in view, that although the committee had sold a large portion of the property acquired, the demolition of such property had been little more than begun. For instance, the Havannah property (situate in a low and dirty portion of the city) was sold, and would be demolished; but at the present time only a limited proportion of the population had been displaced. Main-street, Gorbals, was in the same condition. So that the sanitary advantages so far derived from the scheme could not properly be estimated as anything like one-third. He would put them more nearly at one-sixth. They had demolished 3,058 houses, which at the rate of five persons to the house, would mean the displacement of 15,425 people. When, however, the whole of the demolitions were effected, they would be better able to judge of the sanitary effects. Already an appreciable improvement had taken place, which assertion the Bailie proceeded to prove by a reference to the death-rate, density of the population, and other matters of which the Registrar-General had presented returns. In the course of a discussion which followed this statement, Mr. Waddell suggested that means should be adopted to prevent the erection of back tenements too near the front ones, as, if that practice was not checked, it would lead to the necessity for a new improvement scheme in Glasgow. It was eventually decided that an assessment should be laid at the rate of 2d. in the pound.

At the usual meeting of the Dean of Guild Court, which supervises the erection of new buildings in Glasgow, the Dean of Guild (Mr. Playfair), whose term of office is about to expire, made an interesting statement as to the business which had occupied the attention of the Court during the last two years. It appeared, from the dean's remarks, that the number of applications before the Court for the formation of new streets was 33; applications for the erection of new buildings, 778; for alterations of buildings, 358; and cases from the Fiscal, 101 (during last year alone); making a total of 1,169, nearly the whole of which had been disposed of. The new buildings sanctioned by the Court consisted of,—dwelling-houses of one apartment, 2,419; two apartments, 4,323; three apartments, 1,580; four apartments, 407; five apartments, 80; six apartments and upwards, 46; single shops, 657; double shops, 383; churches, mission-halls, and schools, 49; warehouses, stores, and workshops, 442; alterations in buildings, 358. The aggregate value of all the property was estimated at £2,556,364. Having thanked the officials, the Dean said he thought it would be admitted by all connected with, or who had practice in that Court, that its constitution was admirably adapted to meet the business brought before it. The procedure was inexpensive, prompt, and upon the whole gave satisfaction to the public and the profession generally. This was apparent from the circumstance that only five, or at most six cases were appealed against in the Supreme Court, and by the ultimate decisions of that court affirming, in every instance, the decision of the Dean of Guild Court, excepting one, and that only partially altered as to one of the findings. He hoped it would long remain an efficient tribunal, for it would be an evil day for Glasgow were that Court overthrown. Had the Court power, he could suggest that the application of the law which now obtained as to dwelling-houses should be extended to warehouses and workshops,—he meant in having a fixed minimum of free space in front of the windows of such buildings, where many persons spend the greater part of their existence. It was true that by the Police Act of 1866 the Court had authority to see that proper ventilation was observed in such

buildings, but this discretion was so arbitrary, that no specific rule had been adopted, whether having regard to the nature of the business conducted in the respective buildings, or to the number of persons employed.

SOCIAL SCIENCE.

WE continue our selection of passages from papers read at the Glasgow Congress.

Pollution of Rivers.

General Scott, C.B., read a paper on the subject, replying to the question, "What should be the extent of immediate legislation to restrain the pollution of rivers?" In the course of it he said:—Whilst fully persuaded that, in inland towns at least, irrigation or filtration through large masses of earth will prove to be the most satisfactory means that can be adopted for the ultimate purification of sewage, I entertain a strong conviction that it would be a serious error, in the present condition of the question, to force its adoption universally; and indeed I doubt whether it should be made compulsory in any case until greater experience of its effects than we at present possess has been gained. So long as there is a possibility of the House of Commons upsetting, as in the Birmingham case, well-devised measures for irrigation, on the representation of the injury that might be inflicted on landowners, the country cannot be looked upon as being ripe for insisting upon the complete purification of sewage water.

It is not correct to assume that Royal Commissions have proposed irrigation to the exclusion of all other modes of dealing with sewage. There is undoubtedly "a mistake here," into which local authorities are only too prone to fall when an excuse is wanted for doing nothing. The early reports of the Royal Commissioners to inquire into the best mode of distributing the sewage of towns point out clearly what may be reasonably expected to be done, without reference to irrigation, for the amelioration of the condition of rivers; and state the grounds on which they make their recommendations.

If "the chief part" of such evils is to "be obviated by arresting merely the solid matter in suspension in the liquid," why should so simple an expedient have been so long neglected? Is it not, indeed, intolerable that local authorities should for the last sixteen years, with this report before them, have persisted that they are at a loss how to make any improvement?

With the evidence before us, it is absurd to assert that local authorities are without guidance, and to argue that, because they cannot be sure whether this or that would prove the more economical method of dealing with their sewage, they should be allowed to sit with their arms folded, and wait for something to turn up to relieve them of the cost of doing what they ought to set about at once.

Except in small country places, it would manifestly be advisable that provision should be made not only for compelling the removal of the solids from sewage, but for their deodorisation by lime or some other equally efficacious means.

In considering whether legislation should be carried further than to make it imperative to remove the solids from sewage-water, it must not be forgotten that the use of precipitants secures the triple advantage of complete precipitation of the suspended matters, the more or less complete deodorisation of the deposit and the liquid effluent, and the removal from the liquid of more than one-half of the dissolved nitrogen, which is its most offensive element.

We have the greatest authorities on the subject (agriculturists, chemists, medical men, and engineers) all concurring in recommending as a preliminary to the ultimate and complete purification by land the very processes which Royal Commissions have declared to "offer remedial measures of a very satisfactory character." What possible objections, then, can town authorities have to offer to the adoption of a precipitation plan, or, at all events, of a subsidence system, excepting those suggested by fear of increasing the rates? The argument that they do not know the degree of purification which may hereafter be required of them has little weight when it is seen that some method of removing the solids, which cannot be accomplished without depositing-tanks, is the first thing to be accomplished in any case. And the Government might, without any fear of having to retrace its steps or modify its decisions, confi-

dently make a stand here, and enact that, excepting in heavy thunderstorms, no sewage shall be cast into any river or stream if it contains in suspension more than a certain amount of matter per gallon. Might it not safely go so far as to adopt the decision of the Parliamentary Committee on the Birmingham Sewerage Bill, and enact that, in the vicinity of dwellings, "no sewage be put upon any land without having been previously defecated in tanks"?

This would compel the adoption of either precipitation or irrigation and earth filtration, or both, and the stumbling-block of a standard which cannot always be attained will be done away with. It should be borne in mind, too, that though irrigation is, when well carried out, a complete remedy, perfect management cannot always be secured in practice. In such cases of failure the previous precipitation proves an important safeguard. Sewage farmers, even with severe penalties before their eyes, will certainly turn the sewage into the nearest brook when their land is in danger of being waterlogged in wet weather. They will run the risk of detection and possible penalty rather than encounter a certain evil in the loss of their crops. And even if farmers could be relied on to do their duty, other causes of failure intervene. We read in the Reports of the Rivers Pollution Commissioners that, at Banbury, "The soil tends to crack in dry weather, thus giving the sewage direct access to underground drains, and thence to the river, before it has been properly acted upon by the soil." They found that, at Norwood, the "removal" (in the month of January) of offensive nitrogenous organic matter was partially arrested, "and indicating that during a severe winter the purification of sewage upon non-absorptive clay-soil may be seriously interfered with." They found, also, "exceptionally impure water" from the Norwood farm at other periods of the year, and at Croydon, as at Norwood, during frost the purification "became markedly impaired."

Now, to provide against such cases preliminary clarification would be a valuable adjunct, and for the reasons given it might, as I believe, be enforced without hardship, in all cases in which purification of sewage by irrigation would be liable to create a nuisance, as well as in cases where irrigation is not adopted.

General Scott deduced from the reports of the Royal Commission now in the hands of all those really seeking information and guidance:—

1st. That "a great and manifest good" will be effected, and "the chief part of the nuisance arising from the discharge of sewage into rivers and streams may be obviated by simply arresting the solid matter in suspension in the liquid."

2nd. That in the removal of the solids "even the slightest risk of nuisance may be entirely obviated," and the condition of the effluent much improved, by the adoption of a process of precipitation.

3rd. That these objects can be secured "consistently with a fair expenditure of money falling on those who ought in justice to bear it," and at a cost "such as town populations may reasonably be called upon to meet."

4th. That towns which are intending to resort to irrigation and intermittent downward filtration will, by the adoption of a precipitating process, purify the sewage on a much smaller area. And when to these considerations is added the following:—

5th. "That sewage irrigation cannot be carried out from the utilisation point of view without storage tanks," and that the liquid is, in the generality of cases, preferred by the farmer when freed from solids and stinging compounds—it becomes difficult for towns to show just cause why they should not be preemptorily and at once restrained from the further contamination of rivers by the sedimentary matters of sewage.

In conclusion, he asks this question:—Since the simple measures recommended by the Royal Commissioners will "greatly mitigate the existing evils"—(I use their own words)—"practically rid us of the danger and nuisance of town sewage," may we not reasonably hope that a Ministry which has promised sanitary legislation will listen to an urgent appeal to have these measures enforced? There would be no necessity that legislation should altogether stop at this point. When all the offending towns in the country have been compelled to comply with a low standard of purity, a higher one may be attempted with some chance of success. To insist upon absolute, or nearly perfect, purity now, however, would end in leaving matters as they are.

Domestic Economy.

Mrs. E. M. King, whose scheme of co-operative housekeeping has been the subject of discussions at the British Association, read a paper on "The Science of Domestic Economy." The object of the paper was to show that domestic economy could be raised into a science equal in importance to political economy, and that the domestic arts could not be rightly performed until this was done. Social economy covered the whole field of economics, of which political and domestic economy were the two parts. Political economy related to the production and distribution of wealth; domestic economy to its distribution and consumption. The former had received the attention of great philosophers, the latter received no attention; first, because the domestic arts or duties had been thought too simple to need the aid of science; and, second, because no money value had been attached to the performance of these arts. There was an ever-growing demand for a field of remunerative work for women. Why not make their own field remunerative? Ladies do not become servants for the reason that there was no possibility of rising from that position. Through a knowledge of domestic economy such a possibility would be created. The need of science and art in one department of domestic work cooking had been fully admitted, but exclusive attention had not been given to that subject. The idea that every woman should know how to cook was a mistake, offending against the economic principle of the division of labour. The head of the domestic establishment, she would have to be an engineer in the largest sense of the term. Referring to woman's dress, she observed,—"Women, it is said, and I think rightly, appear to be almost, if not entirely, destitute of the inventive or original faculty. The reason for this I apprehend to be that as yet they have had no world open to them in which the inventive powers were required; and men must also remember that they never could have found leisure for the discovery of sciences, nor for the invention of arts, if women had not in the beginning attended to all the various and incessant cares of domestic life. Men have been able to create paying trades only through women having done these works before they became trades without pay. There is another special feminine art which, as an art, has never yet been practised. Ladies may be surprised when I say that this is dress. There is enough money and enough valuable material, but no art, still less science, is there to guide this expenditure. I am not one of those who declaim against dress: all nature is beautifully dressed; and there is no reason why man, the only animal left to provide and select his own covering, should not seek to gratify his highest sense of beauty in his attire. But beauty sought at the expense of usefulness is altogether a mistake. Dress, in the first place, should be adapted to the different climates and temperatures in which it is required to be worn; second, adapted to the body upon which it is to be worn, impeding no motion, confining no muscle, cramping no vital organ, and also not tending to waste any of the physical forces of the body by being of superfluous weight; and third, and lastly, it should be adapted to gratify our sense of beauty. To combine both use and beauty in dress would require a considerable knowledge both of science and art. With men's dress it is apparent that use and convenience have alone been studied; the desire for beauty has been completely ignored. Neither beauty of form nor of colour has been sought, and the result is usefulness and convenience to a great degree, but absence of beauty, or what may be called negative ugliness. Women seem to have desired only beauty in dress, and have attained some little, a preciation of proper colouring, but having been ignorant or careless of adapting it to the use, convenience, or health of the body, their method of dress is not only harmful, but the beauty of their natural form has been quite lost sight of. The result is a ridiculous caricature of the figure, producing not only negative, but positive ugliness. We can see this in every fashion but the one our eyes are accustomed to in the present. This deforming of the figure by dress may not be caused by women's deficiency in taste or artistic perception; but owing to their ignorance of the structure and functions of the body, a knowledge of fitness or appropriateness, which is the true foundation of beauty, was not possible to them. Moreover, in the department of taste women have very little control. It is trade which regulates and stimulates fashion,

and women in their dress may be said not to be guided by the rudder of their own good sense or taste, but to be blown about by the variations of the trade winds.

On the Epidemic in Golden-square, A.D. 1854. Mr. W. J. Cooper, in a paper on this subject, said,—Macaulay records that, east of Regent-street, opposite Conduit-street, was a field not to be passed without a shudder by any Londoner. There, in a place far from the haunts of man, had been dug a pit, into which the dead carts had nightly shot corpses by the score. It was popularly believed that the earth was deeply tainted with infection, and could not be disturbed without imminent risk to human life. The *Lancet* of September 16 states:—"The plague-pit alluded to by Macaulay is situated within the area bounded by Argyl-place, King-street, Tyler-street, Little Marlborough-street being directly over the pit. In excavating for sewers sometime since, the ground disturbed was found to consist of black decayed animal matter mixed with bones. On discovering this, precaution was taken not to remove more of it than possible. In the spring of 1854, excavations were made on this very spot, and this hoard of infection was laid open for months to 'breathe out contagion to the world.'"

It may prove fortunate for a future generation that the belief in the pernicious effect of sewer-gases is gaining ground, and that in the course of time some sound efforts will be made to prevent the formation in the sewers of this deadly and subtle poison. It is only two years ago last August that a professor of hygiene, of University College, stated publicly that sewer-gas was harmless; it is to be hoped that experience has since improved his knowledge in that respect. In the Public Medicine Section of the British Medical Association at Norwich this year, I was glad to observe that the tendency of discussion showed that medical officers of health were quite alive to the dangers arising from all foul emanations.

That the Golden-square outbreak was aggravated, encouraged, and reached its culminating point from such causes, I have no doubt, and my opinions are shared by those whose professional vocations obliged them to reside, at the time of the epidemic, in the heart of the plague-stricken locality. It is not surprising, after the facts I have described, that wells should be discovered containing polluted water; but, I am convinced that the fact of the opening of the plague pit, and other sewer excavations, thus adding impurities, for six months previously to the outbreak, to an atmosphere already tainted with the usual amount of sewer emanation, so lowered the vital tone of the inhabitants, that they fell easy victims to the cholera poison and its powerful allies, the products of decomposition. If the timely warnings had been taken, and preventive measures carried out, the horrors I have depicted, and to which I was to some extent an eyewitness, would, in all probability, never have occurred.*

ROMAN IMPERIAL PROFILES.

Mr. J. E. Lee, of Torquay, has arranged and overlooked the publication of a series of lithographed profiles of the Roman Emperors,† enlarged from coins by Mr. C. E. Croft, artist, of the same neighbourhood. The editor is quite right in saying that such a collection would be highly interesting, supposing that the profiles in their enlarged form are reliable. It cannot be denied, however, that in regard to this we are open to a double chance of error; the possible incorrectness of the coin as a likeness, in the first place, and the modification of the features and expression in the process of enlarging from a coin generally small to begin with, and mostly worn and effaced, to some extent, by wear when in use, or decay afterwards. The editor admits, indeed, that the artist has intentionally corrected defects in the representation and drawing of the eyes, which are common in the effigies of Roman coins; but this, as he says with some reason, "can hardly be called a departure from the original."

On the whole, however, the aspect of these profiles leads to the conclusion that they were,

* Our own investigations at the time served to show that the disease was spread by the use of water from one particular pump into the well of which sewer matter had entered. It is too late now, however, to re-open the inquiry.—Ed.

† Roman Imperial Profiles: being a Series of more than 100 Hundred and Sixty lithographic Profiles enlarged from Coins. Arranged by John Edward Lee, F.R.S., F.G.S. Longmans, Green, & Co.

in their original form, tolerably faithful representations of their originals. A peculiar protection and rotundity of the chin in the majority of cases gives, on hastily turning over the book, a certain appearance of family likeness to the various heads, which, as empire in those days was anything but hereditary, suggests the idea of a degree of conventional treatment. But it is easier to conclude that this was a usual type of Roman chin, than to imagine that features so characteristic and marked, as in the heads of Pompey, Trajan, Nero, Vespasian, Valerian, and Titus, should have been evoked in any degree of the inner consciousness of an artist in his, especially as some of them are anything but flattering; and one of the strongest instances of likeness occurring, between the heads on plates 121, 122, and 124, is between emperors who really were connected by family.

It is curious to compare some of these heads, with their characters in history, with which in some instances they seem as much at variance, as in other cases they are markedly in accordance. Compare the heads of Pompey the Great and Nero, and "which is the justice, which is the thief?" Though, after all, the head of the tyrant, in spite of its handsome features, has a sat, sensual look not out of keeping with the miserable name he has left. The head of Cleopatra must certainly be a likeness, and that of Antony too, with its long fleshy nose and full under-lip and chin, the type of a self-indulgent nature; and one cannot look at the likeness of Lepidus without recalling the lines in Shakespeare, who followed Plutarch in these characters;—

"This is a slight remarkable man,
Meet to be sent on errands."

and the scene on board Pompey's galley, where he triumphs got so foolishly drunk. Brutus is a head we should not like to trust ourselves to,—revelish and decidedly unsympathetic. The heads of Agrippa and Augustus are grand in type, but look a little more conventional than some of the others. The contrast between the physiognomy of Antinous and Marcus Aurelius, the handsome voluptuary and the religious philosopher, is, like that between Nero and Pompey, suggestive as to the relation between moral and physical excellence. The head of Aurelius would certainly be styled a weak one, though very amiable. Postumus was a provincial (of Gaul), who rose from the ranks, and his plough-tail origin is in every line of his face. Among other notable heads is that of Titine, whom one would take to be a kind of Marshal Bazaine of his day, carrying on war with due regard to the comfort of the general, but a man who would have his way. The heads of Hadrian and Domitian are remarkably fine, the latter showing no indication of his worse than unamiable qualities; Hadrian is such a head as Titian would have liked for a portrait. Vespasian has the look of an eminent French savant, and Elagabalus is a head that might have come out of Exeter Hall. A short note as to the parentage and life of each emperor is appended to a collection which affords a good deal for interesting reflection, if it be admitted, as we are inclined to think, that a considerable portion of the portraits, at least, are probably fairly representative. The particular coin which is the authority for each is named.

CHURCHES AND THE CHURCH CONGRESS.

On the day devoted by the Congress to a consideration of the adaptation of the fabrics to the wants of the times,

Mr. Beresford Hope said,—"We have in England inherited a priceless treasure of old religious buildings from our Church in its unreformed condition, and as happily the English Reformation involved no breach of continuity—as it purified but did not reconstruct—these churches in the main have served right well for our present use. Still there arose those differences between the older and newer Church of England which ought to make a church provided for this generation something different from one which had been built for the Middle Ages. The modern English church ought, he said, to be simple in its plan and congregational in its working arrangements. The church intended to supply the claims of English use must be broad in proportion to the number for which it is intended; for if the nave be narrow, it must also be so much too long, that many would be thrust out of ear-shot and eye-shot of palm or altar service. There was no reason, beyond the prejudice which such a

novelty might excite, why at times one should not construct a circular or a polygonal nave. The Temple Church was precedent enough, and the glorious deacon of St. Gerson, Cologne, would hold a goodly multitude. There were no more congregational naves anywhere than the octagon of Ely and the dome of St. Paul's. Breadth in an oblong church might be reached in more than one way. The simplest was a very wide area and no aisles. He quite accepted the plan in its own place, but no one, he hoped, would desire to see aisles altogether disused. He had had no time to discuss the question of chairs or benches—both are good in their respective ways. Generally speaking, the choir, a chancel proper, ought not to be much elevated above the nave. Practically the rising of it would be found inconvenient for those hearty congregational services to which he was looking. If, however, the chancel ought to be but very little raised above the nave, still it ought to be clearly distinguished from it, and this distinction the Church of England offered in her ceremonial orders, and carried out in her practice. Generally, he would say, that the architect who did not conceive that the altar was the crown of the church, and who did not believe that the holy mysteries celebrated there exceeded all other acts of worship, so the altar should exceed all other parts of the church, so the richest resources of art should converge there, the line of sight from every part of the church converge there—that man had mistaken his craft, and never would succeed in building up a worthy House of God.

Mr. Street, in a paper on the subject, urged that the old churches had been built for services different only in detail from ours. Their great object was the celebration of the Eucharist; all other wants were made merely accessories. Scarcely a single change was required to adapt them to our offices. Our cathedrals had been less altered than any in Christendom, yet their use might often be improved. They had existed only for choir services, and a better adaptation of their magnificent interiors to the wants of the day would invite the removal of all modern pews and seats from the choir, the separation of the clergy from the laity, the removal of the close screen which so often divided the nave from choir, and the erection of open screens in their place. The removal of the close screen was the one serious alteration required, for while it was allowed to remain great shifts and contrivances had to be resorted to in order to substitute some other plan for the use of the nave. Surely, even for special services in the nave, the service was most natural and most edifying which was said before the altar, and it was seldom worth while to have two distinct and separate arrangements for services in the nave and in the choir, as at Westminster Abbey. Then, again, why should not we more often use the aisles of a cathedral for processions? Cathedrals were built, he added, for the daily service of Holy Communion, and it would be a wise thing in his opinion to encourage the formation of guides to say their prayers in some side chapels or aisles. As to the parish churches he thought they should be considered with a view to the glory of God and not the comfort of the worshippers, screens were used aesthetically, as lending an air of mystery to the chancel, and sometimes the removal of a tower was needed in the adaptation of an old church to modern uses. The restoration of the old lofts on the top of the screens would, he thought, be as useful as it would be ornamental. One difficulty in dealing with old churches was their frequently inconvenient shape, of which the commonest example was the old crumhorn. Where the chancel was large, and cut off from the nave by small tower-arches and large piers, he should suggest a good plan to adopt would be to use the chancel-altar for important services (where, with the assistance of the choir, the service might be heard), and to provide a second altar in the nave, in a side chapel or in a transept, where the daily celebrations of the Holy Communion might be had, with the advantage to communicants of being gathered near the altar, and being able to see as well as to hear. Another alteration which was sometimes necessary, was the arrangement of an altar and choir-seats at the east end of the nave, or under the central tower for the principal services, and of the old altar in the chancel for the low or daily offices. Wherever placed, he might add, the altar should be protected by gates in the screens, not only at the west, but also at the sides of the choir and chancel.

The Rev. W. Chadman, with respect to the fabrics of our churches, maintained that the

great and true attraction was the proclamation of the pure word of God. He did not think that such proclamation could be carried out in Roman Catholic structures, and he prayed that from every verge of Papistry the fabrics of the Church might be preserved.

Professor Donaldson charged Mr. Hope with having omitted all reference to the Lord's table. Which had the more honoured significance, he would ask, the table of the Lord or the altar of the saint? The speaker denounced reredoses and baldachinos.

COVERING IN COVENT GARDEN MARKET.

An improvement, which has long been desired, both on the part of the public and the market tradesmen, is now being carried out at Covent-garden Market. The spacious open area of the south side of the market, extending from east to west, to the extent of nearly 200 ft. in length, and about 60 ft. in width, is receiving a roof, which will promote the convenience and comfort of those using the market. The contractors who are executing the work, which is being carried out at the cost of the Duke of Bedford, the owner of the market, are Messrs. Gabbit & Co. The covering consists of a roof formed of iron and glass, in a single semicircular span of about 80 ft. in width and upwards of 50 ft. in height from the ground to the apex. The covering is carried on twenty circular ribs of iron, springing from iron columns on each side of the market, 20 ft. in height. A framework of iron, 10 ft. in height, above the market walls, in divisions 4 ft. in width, with a circular head, is also carried up above the columns. This space will be left open for ventilation purposes, and the roof will lap over it on each side to the extent of 4 ft. The glass covering, of which the roof will be largely composed, will give light to the interior of the market. The work is being prosecuted without at all interfering with the business of the market, by the aid of a travelling stage, moving on wheels, and along a tramway, which has been erected on the spot for the purpose. Four of the circular iron arches or spans have already been fixed in their places, and the work is being rapidly carried forward.

THE LIMA AND PISCO RAILWAY.

The contract for the construction of the Lima and Pisco Railway, Peru, 145 miles long, tapping the rich and productive valleys and sugar plantations between Surco Chorrillos, Lurin, Mala, Coaylla, Canete, Chinchua Alla, and Chinchua Maja, and connecting the important towns of Lima and Pisco with the now flourishing shipping ports of Callao and Pisco, on the Peruvian coast, has been taken by Mr. Robert Walker, contractor and engineer, of Victoria-street, Westminster, the Peruvian Government having granted a concession, giving the land and guaranteeing 1,040,000l. towards the work, which will be proceeded with forthwith, and the railway will be completed in three years.

OPENING OF NEW MUSEUM AND LIBRARY AT WELSHPOOL.

The ceremony incidental to the opening of the Powisland Museum and Library at Welshpool has taken place in presence of a large number of promoters and well-wishers of the undertaking.

The museum building, which is situated in Church-street, has not much that can be called ornamental, but it is not unworthy of the use to which it will be put. The museum is under the "wing" of the Powisland Club. The new building consists of a wide entrance-porch leading into the museum, which is 42 ft. long by 26 ft. wide, and 27 ft. in height to the ridge of the roof, from which it is lighted, the walls being designedly left unbroken for the reception of wall-cases, and the exhibition of works of antiquarian interest. The roof internally is open-timbered, and plastered under the spars, the walls being coloured a light grey tint, and the fittings being painted a dead black or ebony colour, fully to display the objects of interest they contain. The exterior of the building is Gothic in style, and built entirely of light yellow brick, the cornices and other features being of moulded brick, and the external entrance-door of oak with hinges. The tympanum in centre of front arcade contains a carved representation, by

Norbury, of the arms of the club, which is presented by Mrs. Maurice C. Jones. It is intended, when funds permit, to erect a porch and an additional room on the east side of the present front. The works have been carried out under the superintendence of Mr. David Walker, the honorary architect, by Mr. Edward Williams, builder, of Newtown; and the total cost, exclusive of fittings, will amount to about 450*l*.

Earl Powis, in addressing the meeting at the inauguration, said, before he moved the adoption of the report, which had just been read, he must congratulate them upon the completion of the new museum. It was a great thing for an institution like that to have a freehold, a local habitation of its own, and that it would not be subject to the casualties of a yearly tenancy. This security made those who had curiosities more willing to deposit them in the museum for the public benefit, and made others take more interest and pride in their museum. He was agreeably surprised when he came there that day and saw the handsome room in which they were assembled, and which had been erected through the energy of Mr. Maurice Jones, to whom the society was under the greatest obligation. The museum they had opened that day was most useful in the study of antiquities. The curiosities exhibited appealed to the mind, and enabled them to realise and understand things in a way they never could by lectures, oral instruction, or by reading history. He made a passing reference to Eisteddfodau—musical gatherings peculiar to Wales, and which might be said to have set the example of the great English festivities. In melody there was no tune which had so captivated the English ear as "God bless the Prince of Wales." He had said that antiquities were practically the history of a country. They enabled them to understand the habits of a people much better than books did, and at a time, too, when books did not exist, and manuscripts had not survived. After referring to the researches of Belzoni and Mr. Layard, the discoveries in Herculaneum, Pompeii, and the palaces of Granada, his lordship said all classes were benefited by the progress of art. What kind of a day's work would a man have been able to do with the implements they saw in that museum, and which men used 700 or 800 years ago? After some further very interesting remarks, his lordship referred to the Act which enables rates to be levied for the establishment of free libraries, and which was limited to towns of 10,000 inhabitants and upwards. He said he thought they had that day seen the completion of a very good work.

THE PROPOSED BUILDING PROJECT ON STOCKWELL GREEN.

THE question of covering Stockwell-green with buildings, which we noticed in last week's *Builder*, continues to occupy the serious attention of the inhabitants of the district, and the feelings of excitement and opposition to the project are daily becoming more intensified; but it seems probable that, unless arrangements can be made with the alleged manorial owners of the green, the chances of its being built upon since the year 1802, this has not existed as a public right, but as the result of arrangements with the representative owners of the green, carried out by a committee of residents for the general benefit of the inhabitants; but that these arrangements are now in danger of being set aside in consequence of the owner, or lord of the manor, Mr. Appach, having sold the green for 3,700*l*. It is stated that Mr. Appach came into possession of the land under a deed of gift by Lady Grant, his aunt, who made him a present of it, and that certain leases in connexion with it having just expired, the owner has exercised his power of selling it. On the other hand, it is urged that the land was a piece of the waste of Stockwell-common, and that it probably might be found that no title could be shown by the parties proposing to build. It is suggested that the only way to get over the difficulty is to purchase the manorial and other rights in the green, and that the Metropolitan Board of Works is the only public body to do so, and that their effecting such purchase would secure the retention of the green for the benefit of the public. It is contended that if the green should be covered with houses, which will probably be small in consequence of the peculiar formation of the ground, the character of the neighbourhood will

be entirely changed, and rents will go down. A petition has been in course of signature to the vestry, from householders and landowners, urging upon the vestry to make every exertion to preserve the green, on the ground that the great deterioration in the value of property which has already arisen from the building of the Smallpox and Fever Hospital in the locality would be very much increased by the green being used for building purposes.

We have received the following communication from a solicitor, dating from Broad Sanctuary, Westminster, the signature of which, written with that noble disregard for the time of others which distinguishes some members of the legal profession, is illegible:—

"Sir,—My clients, Mr. John F. Honey and Mr. John Cobeldick, have drawn my attention to a statement in your paper of the 10th inst. headed 'Proposed Building on Stockwell Green.' They feel that you would not willingly allow them to be prejudiced by the assertion therein contained, 'that the houses erected upon it would be uninhabitable'; and they request that you will either withdraw the assertion, or give them your authority for making it."

The statement in question was mentioned as one of the assertions made by those who object to the scheme, and is not ours to withdraw. Moreover, if it were correct, as reported, that the houses would be built "back to back," we should be bound to endorse the opinion expressed, no matter who was prejudiced thereby.

OPENING OF THE SOUTHPORT CAMBRIDGE HALL.

THE Cambridge Hall, Southport, the foundation-stone of which was laid about two years ago by the Duchess of Teck, has been formally opened by the Right Hon. R. A. Cross, M.P., the Home Secretary. The ceremony was made the occasion of a general holiday, the shops being shut, and the town decorated.

The new hall, according to the *Liverpool Journal*, has been erected at a cost of about 25,000*l*. The building stands on a plot of land on the easterly side of Lord-street, immediately contiguous to the new wholesale market at the back, and the town-hall on the left-hand side. The extreme dimensions are 131 ft. from end to end, and 86 ft. from front to back. The principal entrance in the centre of the Lord-street front is protected by an arcade extending between the tower at one end and the projecting pavilion at the other, and by a projecting carriage porch, with stone pillars, octagon bases, carved caps, and out segment arches, surmounted by a cornice and blocking. The entrance-hall is the largest apartment on the ground-floor, its length (inclusive of the staircase) being 53 ft. by 35 ft. wide. It is divided into bays by three arcades of pillars, with enriched caps and bases similar to those outside. The floor is formed with encaustic tiles, and the wall and ceilings are coloured. On the right-hand side of the hall is the mayor's reception-room, 36 ft. by 25 ft., with a retiring-room attached. On the same side are large retiring-rooms for ladies and gentlemen, and at the extreme back are the general lavatories, &c. The approach to the principal floor is by a flight of stone stairs, 11 ft. wide, with perforated balustrade. This leads on to a promenade corridor, 86 ft. long, divided from the stairs by pillars and balustrade, and lighted (as well as the stairs) by stained-glass windows, by Edmundson, of Manchester. The five chief windows have emblazoned on them the Royal arms, and the coats of arms of her Royal Highness the Princess Mary of Cambridge, Duke Teck, Lord Skimmerdale, and the arms of Southport. The floor is laid with encaustic tile, which has been provided by Messrs. Malkin, Edge, & Co., of Burslem. Parallel with this corridor, and communicating with it by three large doorways, is the assembly-room, 120 ft. by 50 ft., with a large orchestra platform at the Town-hall end, and galleries on the three other sides. The galleries are not supported with pillars, but with cast-iron brackets which project from the walls, and bear the wooden beams, which are all exposed to view. The decoration of the ceiling and walls is simple. The ceiling is curved, and the curved beams are carried by carved stone corbels and dwarf pillars. The tones of colour adopted are based on the autumn tints. The whole of the ground floor on the left of the entrance-hall is let to the Postmaster-General as a postal and telegraph office, and the public entrance is from beneath the loggia in Lord-street. The pre-

mises comprise a public office, 60 ft. by 44 ft., postmaster's office, operating-room, battery-room, a large room for the postman, and residence for the porter. The whole building is heated by Mr. Hoyle, of Accrington. The front of the building and the tower and angipavilion are built of Longridge stone, tooled. The height to the top of the blocking is 40 ft., the height of the angle pavilion is 90 ft., that of the tower 127 ft. The four figures on the sides of the tower are from the chisel of Mr. Alfred Norbury, of Liverpool. They are intended to illustrate the early British, Roman, Saxon, and Norman periods of English history as represented by Caractacus, Julius Cæsar, Edward the Confessor, and Alfred. The central portion of the front design is very simple, and consists of an arcade of seven semicircular-headed windows, surmounted with a stone cornice and blocking; the centre being accentuated by means of a mansard turret with a storied dormer. The spandrels between the window heads are relieved by four medallions, representing the seasons.

The building is surrounded by a fine garden. A stone parapet wall, with ornamental iron railings and piers with lamps and griffin standards, has been placed within the line of the public boulevards. Large openings admit from these into the grounds, which are laid out with broad walks and grass and flower beds. In the centre of the gardens, immediately in front of the Cambridge Hall, is a stone fountain, sunk 3 ft. below the level of the ground, and guarded at the four corners with vases and carved stone infant figures. Flanking this, opposite to the Town Hall and the houses in Rose-hill, are two large circular terraces, each with a central well, and with bedding-planters. The old steps to the Town Hall have been altered and greatly improved in appearance. The architects of the whole were Messrs. Malkin & Tuke, of Bury, and the builders, Messrs. Heward, of Southport.

THE NEW MUNICIPAL BUILDINGS FOR READING.

THE chief stone of these new buildings has been laid in the presence of a large number of spectators. The new buildings will adjoin the Town-hall. They will afford accommodation to the principal officers of the Corporation, as well as provide a council chamber and suite of rooms much needed to meet the increasing requirements of the borough. The architect is Mr. Alfred Waterhouse. The style of architecture will be Gothic, and the buildings will be of local grey brick with red brick dressings, relieved with red terra-cotta from the neighbourhood of Warwick. There will be no stonework whatever in the buildings. Having to keep within the boundary line of the street, the building is very much cramped, but, notwithstanding this difficulty, the architect has succeeded in utilizing the space at his disposal. The principal feature in the structure will be the entrance-tower, which will supersede the present entrance to the Town-hall. It will be 60 ft. high to the top of the cornice, and 100 ft. to the finials. The portion of the buildings facing the Market-place will be three stories high, and that facing Vastern-street two principal stories, with the hall-keeper's residence above. The council chamber will be 36 ft. long by 25 ft., and 24 ft. high, with a carved ceiling. In this room there will be a spacious gallery for the public, the dimensions being 37 ft. by 12 ft. deep. The bay-window will be 18 ft. by 4 ft., and access to the gallery will be by a separate staircase from Vastern-street. There will be a lift in connexion with the gallery, for the purpose of hoisting coal. Access to the tower will be by a flight of steps 9 ft. wide. There will be three doorways, two of which will be for the public. The old council chamber has been shortened, and will be used as a committee-room. On the ground floor in the direction of the Market-place will be two rooms for the town clerk, and rooms for the deputy town clerk and borough surveyor; also four strong rooms for deeds and muniments. Over the town clerk's offices will be a large committee-room, and above it five rooms for the hall-keeper. In the tower will be a clock-chamber, affording room for a carillon of bells for playing tunes. The roof of the building will be high-pitched and covered with tiles. The total cost is to be 8,465*l*. Messrs. Parnell & Sons, of Rugby, are the contractors; and Mr. Bottrill, is clerk of the works.

NEW BATHS, WASHHOUSES, AND
LAUNDRY FOR PORTSMOUTH.

THESE baths will help to swell the list of similar buildings, now in course of erection throughout London and the country, and will be an additional proof of the impetus which of late years bath-building has received. The site of the proposed buildings is in a densely-populated district, near the railway station. It is about a mile distant from the sea, and occupies a central position between Landport, Southsea, Portsea, and Portsmouth.

There are some buildings now on the site, which were formerly the waterworks for the supply of the town; they were afterwards used as a brewery and known as the "Lion Brewery," from which last they are to be converted into baths, washhouses, and laundry. The old massive walls of the buildings are in good preservation, and the well of spring water which still remains intact, will it is anticipated prove a source of great advantage and profit. For years the want of baths situated within easy access of the whole town, and at a cheap rate of charge, has been much felt. A number of gentlemen have now formed themselves into a company in order to meet the public requirements, with full confidence in the success of their undertaking.

The plan of the buildings is as follows. On the ground floor is the tepid swimming-bath for men. It is 38 ft. long and 28 ft. wide, and will hold when filled 40,000 gallons of water. Thirty dressing-boxes are provided for the bathers, with a stage and spring board for diving. The bathroom, which is lofty, will be lighted by two large semicircular windows, filled with stained glass in geometrical patterns, and colour will be freely used in the decoration of the walls. At the back of the buildings are the men's first and second class private baths. The washhouses for women occupy the front and main building.

The chief feature of the place is the central position of the ticket-office, so placed in order to economise labour by enabling one official to do the work of two or three. He can distribute tickets to the bathers on one side, and to the women using the washhouse on the other; while from the front the washing for the private laundry is received from the carts, and hoisted by a lift to the first and second floors. These are entirely set apart for washing, drying, mangling, ironing, and sorting for the private laundry.

The room for disinfecting linen will be outside the building, and away from the laundry. A house for the superintendent is also provided for over the main entrance to the baths.

The works will be executed from the plans and under the personal direction of Mr. Alfred A. Hudson, architect, Southsea.

THE DISCOVERIES AT ST. MARY'S
CHURCH, DOVER.

IN aid of the restoration of the tower of St. Mary's Church, Dover, Canon Puckle delivered a lecture in Dover last week, which considerably interested his hearers. The reader after describing what had been found during recent works, said the inference was unavoidable—the thing stood to tell its own tale; there was an antecedent fabric altogether to the old tower that they all thought was the ancient part of the church—supplying the evidence upon which they now built their conclusion that they had got to the very early Christian times, that there had stood there a very old church indeed before ever the Norman portion of this old Norman-faced tower of St. Mary's was thought or heard of. Here the lecturer exhibited a diagram, showing the style of work in pre-Norman times, and then observed that as soon as he saw what the architect had discovered he felt convinced that there was very clearly something antecedent to the old Norman tower. There were a few features about the Anglo-Saxon times that were well worthy of a few moments' attention. What they found here exactly corresponded with what they had in the interior of the church. He had a tedious controversy with the archaeologists of the country, who did not believe that there were any remains of Anglo-Saxon work—and it was all mistake; that the best we had was only something of Norman times; that the Anglo-Saxons never thought of building of stone; that they built their fabrics chiefly of wood. The lecturer showed by the aid of diagrams the way in which the Anglo-Saxons built of

stone, and said it was customary for them to use stone, and therefore the old argument about wooden buildings fell entirely to the ground. He did not believe they ever used wood except where wood was to be had for nothing and stone could not be got at all, or if got the people had not the skill to deal with it. The old Anglo-Saxon church was not fit to build anything else upon, and therefore in order to make all secure and to preserve the work for future generations, they were obliged actually to pull down the old Anglo-Saxon church, stone by stone, every one of them being numbered and put away, and then, when the rebuilding took place, the old Saxon church went up, stone by stone, and bit by bit, exactly as it was taken down, and notwithstanding its removal, there was now the very identical church which the old Anglo-Saxons built and left for future generations. When they got to the bottom of the foundation they came upon a very curious thing: these Anglo-Saxon fellows had made their beginning upon old Roman baths. They were a bathing race, and here were the old baths, with all their appurtenances belonging to them. Another diagram was here shown, explanatory of the foundation as described. Others followed, showing the style of arches, &c., and the gradual progress made in the style. If they were right in their inferences, and understood what were the tone and spirit of the old Anglo-Saxon work, they were prepared to understand that St. Mary's Church in all probability stands on an old Anglo-Saxon church. He was quite in a position to prove that the building that stands there is exactly and positively part of a building long anterior to the superstructure of the tower, and upon these facts he thought he might be permitted to exercise a bit of imagination, and conjecture here what he believed was the original form of the church that stood there in that little narrow neck of Cannon-street. Canon Puckle then exhibited a rough sketch of what he believed was something like the original Anglo-Saxon church that stood where St. Mary's now stands, and, alluding to the "secular canons" of St. Martin's, said there the inhabitants had the origin of the name Cannon-street, and he hoped when the next revision of the names of the streets took place the name would be spelt in the proper way—Canon, and not with two ns—because the street took its name entirely from the connexion of the secular canons with the little Anglo-Saxon church which stood where St. Mary's now stands. Asking himself the question why he had taken so much trouble to get at all these details, he said there was something in it not only pleasant for those who were interested in the place to be able to point to a certain spot which had great interest attached to it, and say, "Yes, there is a link of connexion between you and the very earliest ages of your history"—there was a still deeper interest than that, because everything was of importance which made a link between ourselves and the earliest ages of our history, considering what our country has passed through. Remember that in these Anglo-Saxon days it was absolutely impossible to carry any appeal to Rome. When they found the spirit of the people was such that they would not for a moment hear of any foreign interference, not only with regard to civil but also religious and spiritual rights,—recollecting the name of St. Augustine, the great Italian monk, who came over here with the high pretence of Christianising the lower part of the country,—when they found resisted from his day onwards all that interference which in after days developed itself with such fatal consequences,—when the people kept themselves most carefully to their own original connexion with the Eastern church, of which all our own system had been clearly handed down to us,—when after a little while the mission of St. Augustine failed as it did,—when they recoiled, too, how the great wave flowed back to Kent and Sussex, and gave us what we now have,—then he thought there was more than common interest in tracing anything that carried us back to those times, whether civilly or spiritually concerned. The lecturer then entered upon the Norman period, showing by the aid of diagrams the extension made by the Normans to the church, and alluding to other buildings in Dover and the neighbourhood which were supposed to have been erected about the same time (including the alterations of the Dover Castle), which was somewhere between the time of Henry I. and Henry II. He pointed out as a peculiarity of the architecture of this period that the row of arcades on the right of the church are

19 in. higher than those on the left, showing that no rules were used and no attention paid to uniformity,—just in the same way as in Dover Castle Church there was not a single parallel or a single angle alike. Coming then just beyond the Norman time to that of Henry III. there was a still larger extension. The Normans had destroyed the old Anglo-Saxon walls, and the early English destroyed the Norman walls. Those were the very busiest times of early English days, and about the end of the reign of Henry III. the great hospital of the Maison Dieu was built, where distressed pilgrims were tended by Sisters of Mercy, or "Beguins," to which name Biggin-street owed its origin. Canon Puckle then proceeded to relate the discovery, during the excavations in St. Mary's, at about 12 in. below the surface of the original pavement close by where the font now stands, and immediately opposite what would have been at the time of the Anglo-Saxon church the altar of a sort of huge sea-chest, which, on being opened, was found to contain a most perfect military figure—a handsome face, with a moustache and military beard; it was shrouded in a mass of fine linen which had turned perfectly black with age, and there within every fold of the linen and about the whole body was the most exquisite perfumed matter in the shape of embalmings that anybody could ever hear of. It was a sepulchre more than royal; the embalmings was only such as we read of in the New Testament, being of costly and most exquisite beauty. The body was so securely preserved that even when the air got to it it made no alteration in the features; it merely caused a little external hair to drop off. The rest was purely preserved and remained so during the time the body was open for examination. It was not kept open long, but there was no other change that took place. When a little pinch of the perfume was placed upon a trowel and set alight, it spread over the entire church and filled it with a perfume as if twenty cascades had been set flowing. The question arose—who could this have been? Who was it likely to have been? Who was buried in this royal manner? He put himself in communication with an old friend of his in the British Museum, who came down immediately, took his notes, and returned, and shortly afterwards the body was replaced in the position in which it was found. There were only two persons that his friend could conceive would answer to the form and stature of this body—namely, one King Stephen and the other a favourite of the Queen of Scots, who was known to have died at Dover. It was perfectly absurd, however, to think about the latter, because the sepulchre was far older than the period of the Queen of Scots, and then again it was not likely that any common person could have been buried in such a style of embalmings. The whole style of the thing carried them back beyond the Middle Ages, and therefore the only reasonable supposition was that it was King Stephen, who was said to have died at Boulogne, and his body carried to Faversham at the desire of his Queen. No doubt the body was placed in consecrated ground in the old Anglo-Saxon church of St. Mary at Dover with a view to its being removed at some future time to Westminster or elsewhere; and the chest being only 12 in. below the surface confirmed this view. Therefore, when they put all these facts together there seemed no other conclusion than that this very startling sepulchre, which took place under the roof and just under the shade of the tower of St. Mary's, was that of King Stephen. It was disputed whether Henry IV. was buried in the Black Prince's chapel in Canterbury Cathedral, until the late Dean of Canterbury and the canons and others banded themselves together, and under authority of the Dean, went and satisfied themselves that the body was in the tomb there. He believed nothing could disprove that, under the pavement of St. Mary's Church, there were the remains of certainly not an interesting sovereign of England, but still of one of the line of Royal sovereigns, and thus there was an historical connexion between the town of Dover and the Royal line of England.*

The Society of Antiquaries of London.
The removal to Burlington House, Piccadilly, will shortly be effected. It is hoped that the new Library may be rendered available for the use of the Fellows by December 1st.

* The Dover Standard contains a full report of Canon Puckle's lecture.

TRAFALGAR SQUARE AND OTHER SPACES.

The rumour that the Duke of Northumberland is desirous of doing something for the embellishment of Trafalgar-square in connexion with his sale of Northumberland House to the Metropolitan Board of Works, and the formation of a new street and approach to the Thames Embankment through its site and grounds, has received a good deal of notice in the general press, and a variety of suggestions have been offered as to the proper thing to be done in regard to the square. Some of these have been so *outré*, that any thought of their being carried out is calculated to excite alarm, and it seems desirable to offer a few general remarks upon the architectural aspects of the question. A mania seems to have set in for "grass-plats" and "bedding-out," &c., of which we have had some deplorable instances, as those in the neighbourhood of the Houses of Parliament, where instead of the completion of the quadrangle of New Palace-yard by the architectural features intended by the architect, and which were everything almost to the unity, beauty, and cohesion of his plan as to its landward façade, we have had to be content with a continuation of railings and lamps, within which are distributed in patches "grass-plats" and "sub-tropical" plants, for the most part presenting a mournful illustration of the fatality which seems to burke the fairest architectural prospects in this country. It is but just to the memory of the late Sir Charles Barry to say that it was *not* the insuperable difficulties of the changes of level in the locality which led his admirable and picturesque scheme for finishing the "Houses" in that quarter to be abandoned, but the concession to a railway company, whose tunnel would interfere with the designed erections; and it is only just to say that Mr. Edward Barry got out some alternative designs, which, while not so extensive as those of his father, were far ahead in effect of the railings which he was at length compelled to put up. If after the turn matters took in Parliament a handsome stone Gothic screen and gateway had been substituted for the originally intended buildings it would have been some substitute for their loss, and served almost as well the absolute necessity of breaking the gaunt aspect of the Clock Tower, which would not have been apparent had Sir Charles Barry's design been adhered to.

While on this topic, and before returning to the subject of Trafalgar-square, we would also say that the necessity for the destruction of the shrubs and trees of the inclosures of "Parliament-square," while the works of the railway company were being carried through them, has been but little required or compensated by the present flat arrangements of grass-plats and beds, and the forest of surrounding lamps. Surely it would have been possible to have had raised beds of sufficient elevation for good shrubs to take root and grow, which would have formed admirable surroundings and backgrounds for the statuary presumably intended to be erected there; but which, however, will now have to be viewed in connexion only with the prim formalities of "bedded-out flowers" one part of the year, and the empty bare earth the remainder. A little naturalness of shrub and tree is infinitely preferable to all this; and flowers then come in as pleasing adjuncts, but fall of effect when their repetition in profusion, and in set geometrical patterns, is the prevailing feature.

In taking up the question of Trafalgar-square,—which has its theoretical and practical aspects,—it must be at once admitted that the erection of a gigantic column in proximity with other buildings and columns, was a fatal mistake; the only result being that the latter are necessarily dwarfed into an undue insignificance, from which they cannot possibly be redeemed by any allowable increase of size or by any method of treatment. It is very unlikely, however, that a removal or re-arrangement of the Nelson Monument would ever be attempted.

That a very noble building, however, of large proportions, should "crown the steep" and occupy the place of the present National Gallery is a *sine qua non*, and we are compelled to believe that the allowance of the excrescences of the works now going on in the rear to appear so obviously above the line of the present building can only be a sly method of forcing on the question of the re-erection or remodelling of the present façade on a nobler scale.

We turn, then, to the actual condition of the square or plaza as it is, and the proposals for its

alteration and embellishment; and here not the theoretical, but the practical,—and that only to a very limited extent—can have place. It should be remembered that this matter came definitely under view at the time of the competition a few years back for a new National Gallery, and that most of the competing architects comprised in their designs some rearrangement of the area of the square; and it is possible that some of the few suggestions we think appropriate at the present juncture may have been more or less anticipated.

Without any very great outlay there are, then, a few things which could be done as forwarding that improvement of the square, which *must* take place when a new National Gallery is erected, or any finer, nobler building in its place. In the first place, we would remark that the whole character of the square is necessarily so entirely architectural that little in the way of "flowers" or "gardening" could find appropriate place. Art has its own province, and cannot delegate its functions to another source of beauty without derogation of dignity; and to eke out its own shortcomings by an appeal to nature is, after all, but to expose its poverty. The principle is an unsound one. Where art is dominant, nature is but subservient and ornamental, and *vice versa*. Among the streets and buildings of a great city, it is art which has to gain a victory in beauty, however pleasingly relieved by nature. We will presume that no interference will be attempted with the Nelson Column or other existing statues, or the surrounding buildings, beyond keeping in view, what we trust is certain, the erection sooner or later of a National Gallery of noble proportions. The first prominent architectural need of the square, as it now is, is to be relieved of its present "boxed in" appearance, and this could be greatly effected by substituting for the perpendicular wall of granite on the north side facing the National Gallery an unbroken flight of terraced steps between the two pedestals for statues, round which at the sides steps already pass. This would open up the square immensely, and add materially to its appearance of area. The present vacant pedestal might well be occupied by an equestrian statue of the Queen, or the late Prince Consort; either of whom is more than equally entitled to such an honour, as encouragers of the fine arts, with the late George IV. The flanking boundary walls of the enclosure, instead of being as now closed-up inclines of granite, should descend in horizontal stages, and be balustraded; this again tending to give a more open appearance to the square. Vases with flowers, or lamps, would be appropriate terminals for each stage of boundary wall thus treated. In itself this treatment is always an effective one.

Whether or not it would be desirable to place shrubs between the projecting portions of the stylobate of the Nelson column upon which the lions rest could be a matter of experiment; we should scarcely think it; but if so, a handsome low grill, as is so much the custom in France, where flowers are introduced in connexion with architectural compositions, would be requisite. The paving of the square in an ornamental manner,—say, of a tessellated pattern,—would also certainly be preferable to the present dingy dead level of asphalt. With these alterations might also be combined lamps of an ornate classical design. It would, of course, be possible to add much to the appearance of the square by making the fountains play in connexion with groups of statuary. Great improvements might be effected in the fountains themselves, which, apparently from a deficiency of water, lack all that foaming, gushing appearance which a fountain ought to possess, and for which a mere sprinkling, however ornamentally arranged, is a poor substitute. The play of the wind, too, upon water in motion of insufficient volume produces undignified and even ridiculous aspects, and, in the present instance, too often creates a nuisance by giving to the square a most unpleasant "sloppiness."

We have been led to make these remarks as to Trafalgar-square because we think that any idea of merging its pronounced architectural character too much into an affair of gardening, should be strongly deprecated. The square has already elements for grandiose effects, depending on architectural and statuesque combinations, and these should not be lost sight of, and cannot be supplied by walks and beds of flowers, which seems to be the notion prevailing in regard to the projected "embellishments" of the square. The transformation of Leicester-square, for which all have so much reason to be thankful, does not

by any means seem to be a model to be followed for square decoration, but rather an experiment not altogether satisfactory, and having a somewhat toy-like and inadequate appearance which should be avoided; and we are not sure but that something of the Continental plaza, or open space, with trees planted round, seats, and a really fine central group of statuary, would have been preferable.

We would include in these notes a remark upon the quadrangle of the British Museum. The building, which is really noble, though of a severe type of grandeur, would gain life by the introduction of external groups of statuary, for which it has abundant points, on the skyline at the base, and in the quadrangle, where also with excellent effect might be introduced trees and shrubs and flowers. The latter remark would also apply to the Park front of Buckingham Palace, the dreary aspect of which would be greatly relieved by some statuary,—say two groups in central parts of the enclosure, and a few trees at regular intervals following the line of railing, so as not unduly to interfere with the openness of the space for necessary uses on State occasions.

Sir,—A letter in last week's *Builder*, in reference to the laying out of Trafalgar-square, reminds me that your journal contains one from me on that subject. It must be several years since. The chief alteration suggested in that was the paving of the whole area, which should include the lions and columns, with black slate, and filling it with water, to convert the fountain into islands of flowers, &c. The reflection and apparent depth of the water would give elevation to the Gallery, and produce, I firmly believe, a most magnificent effect. The water could be let off if the area of the square were at any time required. W. C. T.

BILLINGSGATE MARKET.

In the course of a few days the first stone is to be laid of the new Billingsgate Market, about to be erected from the designs of the City architect, Mr. Horace Jones. Our engraving represents the south front of it, facing the Thames.

The total area of the market when reconstructed will be about 40,000 ft. superficial. The basement, extending over the whole site, will be groined and vaulted; brick arches on piers carrying the general market floor on the Thames-level. The basement, some 24 ft. in clear height, will be used as a shell-fish market, and will be approached by stone staircases in the middle of the Thames-street and river fronts.

The general market on the Thames-street level will have three-fourths of its large area devoted to salesmen's stands; the remainder being devoted to fourteen shops and warehouses for salmon and other salesmen, on the east and west sides of the market respectively, the large area of which they will front. Two large taverns at the south-east and south-west extremities of the river front complete the accommodation on this floor. The market will be covered with louvre glass roofs, affording ample light and ventilation, carried on lattice girders of 60 ft. span. The height to the roof-plate will be 31 ft. 6 in., and to the ridge 43 ft.

Above this market will be a gallery, having an area of some 4,000 ft. superficial, approached by stairs from the staircase-halls at the north and south ends of the building; this will be used as a market for the sale of dried fish, and will be lighted and ventilated in a similar manner to the general market.

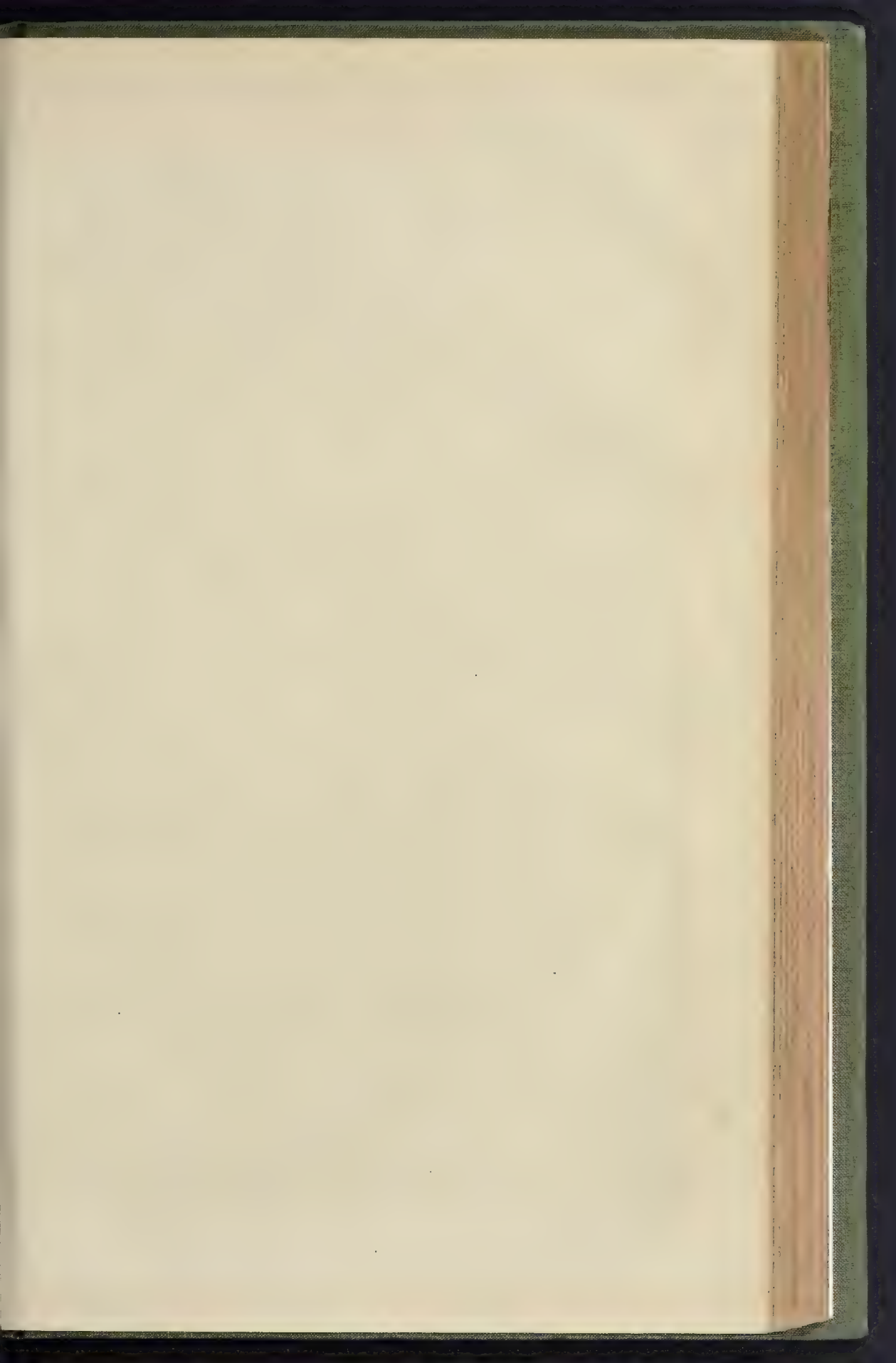
The design is Italian in character; and the materials will be Portland stone, with polished grey granite plinths throughout, with yellow brick facings between the upper windows. The columns supporting the heavy roof girders are of iron, and about 31 ft. in height.

In another Number we shall give a plan of the market.

MARGATE DRAINAGE COMPETITION.

At a recent meeting of the Town Council, the following resolution was passed:—"That the plan of 'Economy' be selected as the one entitled to the first premium subject to the author (Mr. Lewis Angell) making such alterations therein, without further charge, as may be necessary to embody the suggestions of Sir Joseph Bazalgette, and render it capable of passing the Local Government Board."

The first premium is 200 guineas.





NEW BILLINGSGATE MARKET: SOUTH SIDE, FRONTING THE RIVER THA



ED BY THE CORPORATION OF THE CITY OF LONDON.—MR. HORACE JONES, ARCHITECT.

THE SEWAGE OF TOWNS.*

WHENEVER persons congregate together forming villages, towns, or cities, an artificial state of things arises which demands special measures to be taken for their convenience, comfort, and health. The larger the place and the more dense the population, the greater the necessity for immediately and completely removing all decomposing or polluting matter from it. It is rarely possible to obtain sufficient water for a large town without going to a considerable distance and to great expense for it, and when used for ordinary domestic purposes, whether it be culinary, household cleansing, or washing purposes, or the vehicle for carrying away the alvine discharges, or for any other purpose, artificial means must be adopted for conveying it away. Provision must likewise be made for the removal of the rain falling upon the site of the town, and some method must be adopted for the scavenging or removal of the more solid waste materials produced in more or less quantity in every town.

The best method of removing all decomposing matter from the site of a town must be admitted to be that which performs its work most efficiently, most conveniently, most expeditiously, the least costly, and gives the best results in sanitary point of view.

So far as the drainage of a town is concerned will be admitted that three things are necessary in order to secure the health of the inhabitants:—

1. The effectual drainage of the surface.
2. The drainage of the subsoil.
3. The means of conveying away the polluted water.

It is not now necessary to enter into such details as relate to a system of sewerage, as the expediency or not of constructing one or more sets of sewers to deal conjointly or separately with the sewage, rain, or subsoil water, but we will confine our attention to some matters in dispute at the present time as to which is the best method of conveying away the excreta and other noxious and decomposing matters from the sites of towns.

In approaching this question, in the opinion of the author, too much stress is at present laid on agricultural rather than on the sanitary aspects of the matter. It is on this account chiefly that a variety of schemes have been proposed and put in practice for collecting the manurial excrement of the population with a view if possible to realise a profit therefrom. In deciding such questions the authorities of towns should consider that there is more to be gained by a perfect system that shall preserve health and lessen the risk of death, than by any system, however remunerative, if there are good and sound sanitary objections to it.

Various dry methods of collection have been proposed, such as the "Eureka" or rail system, recently adopted at Hyde, in Cheshire, now in use at Rochdale, Manchester, and other places; modifications of this system as introduced by Mr. and Mrs. Morrell; the earth-closet system, which being used as the means of deodorising and fixing the manurial property in the faecal matter. Carbon has of late been proposed and used as a substitute for earth with similar chemical appliances; and Captain Liernur'sumatic system of collecting the faecal matter.

Of all the dry methods, the pneumatic appears to be the most simple, cleanly, and expeditious, approaching nearest to the water system in regard to receiving the alvine discharges in pots, and removing it through pipes byumatic action. In these respects, therefore, it is certainly a very great improvement on the "Eureka," or rail system, or the earth-closet system, both of which, but especially the former, necessitates the carrying backwards and forwards of filthy and disgusting matter.

Experience has now amply demonstrated that neither the Eureka, the earth-closet, nor other systems can be considered remunerative, as all dry systems require the faecal and other decomposing matter to be left in the midst of the population, producing it for a certain period, and increasing the risk of producing or aggravating a certain type of disease. The promoters of dry systems advocate them as a panacea for all the evil connected with the subject of sewerage; but, unfortunately, not one of the dry systems that have been introduced can make the necessity of a system of drains and

sewers in a town. Considering, therefore, that water is required to be brought into a town for a variety of purposes unconnected with the conveyance of the alvine discharges; that it is delivered under such pressure that with properly constructed drains and sewers it becomes the mechanical agent which will bear away innoxiously and harmlessly not only all faecal discharges, but the refuse of wash-houses, slaughter-houses, and manufactories, which cannot otherwise be dealt with; it does appear, in the author's opinion, that after incurring the expense of procuring water and providing drains and sewers for conveying this water after use from the sites of towns, the most should be made of it, and that it is unnecessary and wasteful, after paying the cost of water which has the required mechanical power, to employ expensive auxiliary systems to remove the excreta and other matters by manual and horse labour, which can be more safely and expeditiously removed by water-carriage. It is generally considered that a water-closet entails an increased cost in the shape of water. At first sight this appears a reasonable assumption, but experience has shown that with proper appliances no greater volume of water is needed for sanitary purposes in a water-closet town than is now found necessary in towns which have no such appliances. The following table of ten water-closet towns, and ten middenstead or dry-system towns may be taken to show the result. The average volume of water used in the water-closet towns is 31·6 gallons per head, while the average volume used in middenstead towns is 35·7 gallons per head:—

Names of Water-closet Towns.	Quantity per head.
Alnwick and Canonsgate	30
Barnet	30
Croydon	56
Liverpool	26
London	29
Penzance	25
Plymouth	40
Uxbridge	20
Warwick	30
Watford	30

Average..... 31·6

Names of Middenstead Towns.	Quantity per head.
Atherton.....	40
Ayr	38
Bradford	26
Bacup	33
Glasgow	50
Lincoln	30
Malton	40
Ormskirk.....	40
Perth	30
York	30

Average..... 35·7

In the case of water-closet towns, the largest quantity used, viz., 56 gallons per head, is at Croydon. This quantity is due to an error in the fittings, which was permitted when the works were first constructed. It has been amply demonstrated by practical experience in Croydon, that with proper appliances 15 gallons per head per day is sufficient water for all purposes, and this, too, in a district in which the number of water-closets greatly exceeds the number of houses, many houses being fitted with two or more water-closets.

One objection has been raised to the water-carriage system, and that is the difficulty of extracting or utilising the whole of the fertilising elements contained in sewage. When it is considered that up to the present time it cannot be shown that any profit has been made, but, on the contrary, a loss is incurred by removing the faecal matter of towns by the dry or other systems, the cost of collection, manipulation, storage, interest, and principal on capital employed more than absorb the intrinsic value of the article collected. It is of little importance through what channel the loss is incurred. In point of economy the water-carriage will bear favourable comparison with any other system, and taking into account, what must not be ignored, that all water which has once subserved the uses of man should undergo some system of purification if it has again to be used, it will be seen that where the dry systems are in operation, in addition to the loss in collecting the

faecal matter, the impure water will require treatment almost equal to that necessary for sewage, containing the whole of the alvine discharges. In considering the question of the disposal of the sewage, either of water-closets or other towns, the analyses by the Rivers Pollution Commissioners show that, except a slight excess of organic nitrogen and carbon, the sewage of middenstead or dry-system towns contains quite as much polluting matter as that of a water-closet town. In many towns that have a dry system of conservancy the sewage is really fouler than in a town that has a water-closet system. This is due in part to manufactories, and also to the fact that where dry conservancy is in operation only a small proportion of the whole of the faecal matter of the population is secured; the other portion by some means or other is lost, and eventually finds its way into the sewers.

The case as between dry conservancy and water-closets stands thus:—In every town in which a dry system of conservancy is used, the town authorities entail a large outlay in collecting, manipulating, and dealing with the faecal matter as separate from the sewage proper. They do not escape having to deal with the polluted liquid at the outfall, which requires just as much care and treatment as if it contained the faecal matter of the population, its chemical constituents being almost identical, and the polluting matter almost as great as in the case of a water-closet town. If, therefore, any process of treating the sewage of a water-closet town is unsuccessful, and entails an expense upon the constituency, it naturally follows that a double expense is incurred by those towns which adopt two systems, the sewer system, which is absolutely necessary for carrying away the foul water, and the system which deals with the alvine discharges of the population by some separate method.

Much of the want of success and non-progress in sanitary matters of late years are due to erroneous expressions that sewage is a material of great value, and until means or modes are known for securing this value, authorities are unwilling to take steps for promoting schemes of sewerage as they appear to be more impressed with the idea of possessing some hidden treasure, which, by the way, cannot be found, rather than facing the difficulty, and looking at the question from a sanitary point of view, and taking the profit that will be realised by the prosecution of works of sewerage or arising from the saving accruing from the prevention of the loss of health or premature death from preventable disease. From the author's experience it would appear that it is the most profitable to a town to adopt the water-carriage system in its entirety; the treatment of the sewage at the outfall as one, although of primary importance, yet should have secondary consideration, having regard to the health and prosperity of the district to be treated. That sewage has a value cannot be gainsaid. That value, however, differs immensely in different localities. The value assigned by chemists to manures of this class universal experience shows is not its commercial value. The farmer finds in practice that it pays him better to purchase high-class manures, or manures which have been specially prepared, for particular crops. Bulky manures never realise, commercially, the value assigned by the chemist. As an example, for farm-yard manure valued by the chemist at 15s. per ton, a farmer would rarely give more than a third of this amount. Night-soil, which has also been valued at 15s. per ton, seldom realises more than 3s. per ton. The full value of sewage, whether applied directly to land or manufactured into a portable manure, can never be realised unless fortified with the several ingredients it lacks. Liquid sewage is a manure poor in phosphate but rich in nitrogenous compounds, while manufactured sewage manure is poor in nitrogenous compounds and potash.

Much as is the sanitary good derived from the sewerage of towns, and which will take place as long as sewerage works are properly carried out, it cannot be denied that a large number of the streams of the country have been polluted with the sewage of towns, the refuse of manufactories, the foul water from mines, &c., so much as to become unfit for subserving the purposes of man, and in some cases for the watering of cattle. In a sanitary point of view the evils arising from the pollution of streams cannot always be directly traced; yet there can be but little doubt that foul decomposing matter cast into the streams of the country causes disease, and is baneful in

*By Mr. Baldwin Latham, C.E. Read at the Social Science Congress at Glasgow, Oct. 1st.

its effects on the health of the inhabitants living on their banks, especially upon such as are compelled to use such water for dietetic purposes. It is, therefore, necessary that works should be carried out and measures taken to purify the sewage discharged into streams used to furnish a supply of water in districts below. Various attempts have been made to effect the complete purification of sewage, and on this point the interests of both the sanitary reformer and the agriculturist are one, as the complete purification of the sewage means the abstraction of the whole of the decomposing and fertilising elements, which, if completely effected, will produce a great sanitary good. The question of the purification of sewage is one that must arise, and is totally independent of the system of collecting the faecal matter now in operation in some towns. It has been conclusively shown that, with a dry system of conservancy, sewers and drains are necessary, and that sewage is produced which needs as much purification as in the case of a water-closet town. The fear at the present time is, that there may be too much generalising, and an attempt made to lay down defined standards of purity which are to be made universally applicable, but which, under many circumstances, are totally unnecessary, and would lead to immense expenditure and serious loss to many communities. There are circumstances in which a high standard of purity is absolutely necessary, and, on the other hand, others in which the crude sewage may be most advantageously and economically got rid of by being discharged into the sea; and between these two limits there are gradations of purity required. When high standards of purity are required, experience shows that they can only be obtained with certainty when sewage is applied to land, and in other cases where land is unavailable, a limited recourse must be had to chemical treatment.

The processes which have been proposed for treating sewage may be said to be of two descriptions, viz., artificial and natural. The artificial process includes both the mechanical and chemical treatment, while the natural process may be put down as irrigation and intermittent filtration. Of the materials which have been used for the mechanical treatment of sewage, it is hardly necessary to speak. It is admitted that such treatment can only be considered as an auxiliary to the chemical or natural processes, or to both conjointly.

Of the chemical processes, the *lime process* is the oldest, having been patented in 1846 by Higgs, and is probably, when efficiently carried out, one of the most successful in clarifying sewage. Lime acts on the sewage as an astringent, and coagulates the albuminous matter present in the same way as wine is clarified by isinglass. Lime also acts by neutralising the free carbonic acid, which abounds in fermenting sewage, and which holds some of the earthy salts in solution, the lime added in this process being converted into a carbonate, and precipitated in the deposit. The lime used in the treatment of sewage should always be perfectly fresh. To sewage of ordinary strength about 16 gallons per gallon are required.

Treatment of Sewage with Salts of Iron.—In the lime process the action of the acids in the sewage upon the materials used produces precipitation, but in the application of the various forms of iron it is the action of the alkalies of the sewage that produces precipitation. When a salt of iron is added to sewage a precipitate is formed, composed chiefly of peroxide of iron, which is separated by the ammonia and other alkalies of sewage into an extremely flocculent precipitate, which drags down the suspended matters. The oxide of iron has, moreover, an affinity for organic matter; therefore a portion of this matter which is in solution is carried down with it; the salts of iron also carry down the phosphoric acid present in the sewage. Iron salts also act as a deodoriser, as sulphuretted hydrogen is removed by being converted into a sulphate or sulphide of iron. Iron is an antiseptic, and will preserve organic compounds from speedy decomposition. The first patent for the treatment of sewage with salts of iron was taken out by R. Dover, in 1851.

Magnesian Processes of Purifying Sewage.—The action of magnesian salts on sewage is complex, but the resulting precipitate is probably one of the most valuable of all precipitates that do not derive their direct agricultural value from the agents used, as both phosphoric acid and ammonia may be precipitated in small quantities. The salts of magnesia that have

been proposed for the treatment of sewage are phosphate of magnesia, superphosphate of magnesia, chloride of magnesia, nitrate of magnesia, sulphate of magnesia, burnt and slackened magnesian limestone, carbonate of magnesia, sulphate of magnesia, and carbollite of magnesia. Mr. T. J. Herapath's process, which was tried some years ago at St. Thomas's, Exeter, is an example of the magnesian processes. It was not remunerative, and was abandoned. In a patent taken out by Dr. Angus Smith and Mr. McDougall, in January, 1854, they state, speaking of magnesia, "It has the property of rapidly separating the two substances, which constitute manure in urine, sewage, and other organic refuse matters, but it was not used for that purpose because of its inefficiency as a deodoriser." "These substances are phosphoric acid and ammonia, with which magnesia combines to form the ammonio-phosphate of magnesia, a scarcely soluble compound of great value as a manure, and well known to chemists." They add, however, in their patent,—"The facts relating to the action of magnesia on substances containing phosphoric acid and ammonia have been for some years familiar to chemists, and therefore we do not claim its use as our invention."

Alumina Processes.—The alumina processes for purifying sewage have been in use for many years. In France it has been largely used as a means of purifying water for domestic purposes. When salts of alumina are added to the sewage for the purpose of producing a precipitate, the alumina decomposes the bi-carbonate of lime, which gives rise to the formation of sulphate of lime, which, with sulphate of potash, remain in solution while carbonic acid is evolved, and a hydrate of alumina being precipitated in a flocculent form, drags down various mechanical impurities. Alumina also combines with the phosphoric acid, and is precipitated, and most of the phosphates of the sewage are secured. Alumina also enters into combination with certain organic compounds producing insoluble matter, which it precipitates. This latter property of alumina is so well known, that it is largely used as a mordant for fixing colours, as it combines with cotton, wool, &c., with such affinity, that washing will not remove it. When lime is used as an adjunct to precipitate sulphate of alumina, it deprives the latter of its acid when it becomes insoluble in pure water, and is precipitated as a hydrated oxide of alumina, which envelops the suspended impurities, dragging them down with it. This precipitate forms a sort of gelatinous substance, which is readily dissolved in solution of soda and potassa: hence some portion of the alumina remains in the effluent water after treatment. Professor Way and Dr. Voelcker have shown that clay (the base of alum) has the power of absorbing chlorine salts: therefore, when this material is used for precipitating sewage, a small amount of chloride of sodium will be removed from the sewage. The ingredients necessary for the successful carrying out of the alumina process are so universally distributed over the country, and are so cheaply and easily procurable, that this process will commend itself on this account. This process was first patented by H. Stothert in 1852.

Phosphate Processes of Treating Sewage.—In the phosphate processes a material of considerable agricultural value is used, consequently it is supposed that a manure of great intrinsic value is secured in the precipitate. Although the precipitate undoubtedly has a greater value than the precipitate produced by any other process, increased value is not derived from the sewage but from the ingredients added to it, and in the addition of these fertilising ingredients they suffer a degradation in value by admixture with the inferior material precipitated from the sewage. Moreover in all the phosphate processes it is necessary to add phosphates to the sewage in a soluble form, which is usually done by dissolving phosphate of lime or some mineral or fossil phosphate in acid. This addition of acid greatly increases the value of the phosphates, but when applied to sewage the acid has to be neutralised and the phosphates are again precipitated in a less valuable form; in fact, this process of passing soluble phosphates through sewage causes them to lose 25 per cent. of their value. On account of the degradation in value of the phosphates, and also on account of the materials lost in the process, this system of clarifying sewage can never in the author's opinion be made commercially successful. The process is however advantageous, for it may be

used very successfully in clarifying sewage previously to its application to land. It is now well known that sewage is a manure poor in phosphate and potash, and rich in nitrogenous compounds, and that owing to the nitrogenous compounds present being so disproportioned to the other ingredients of value, in utilising the other ingredients most of the nitrogen is lost; consequently sewage in its normal condition can never be fully utilised upon land, so it has been proposed to fortify it with the ingredients it lacks, and for this purpose the phosphate processes of treating sewage have been commended. From what has been pointed out it is clear, if we wish to get the full value of the phosphates, it is better to place them direct on land rather than in the sewage; but as a set-off against the degradation in their value, the addition of phosphates to sewage deodorizes and clarifies it so as to diminish the risk of nuisance arising from its application as a manure. As a precipitant, the phosphates act like alumina and salts of iron, and they are rendered soluble by an acid which is either neutralised by the alkalies of the sewage, or by the addition of an alkali when an insoluble precipitate separates from the sewage, which drags down the suspended matter present. In the simplest form, if bone or bone-ash is treated with sulphuric acid, a soluble superphosphate of lime is formed; but if the acid is neutralised by caustic lime, insoluble phosphate of lime is precipitated. If phosphate of alumina is dissolved in acid, it will be rendered soluble; the addition of lime neutralises the acid, and the phosphate is again precipitated as an insoluble phosphate of alumina, and the same action takes place when other earthy bases combine with phosphoric acid; the precipitated phosphates, however, are of more value than the original insoluble phosphates, as they are supposed to be brought into that state which they would naturally assume on being applied to land; but in no case are they so valuable as in the intermediate state just after they have been treated with acid. The principal object which has been sought to be achieved by more than one phosphate process, is the abstraction of ammonia from sewage by a process long known to chemists. It consists in the application of phosphatic and magnesian salts which have the power of combining with ammonia as before referred to. In practice this has never been found to entirely succeed with sewage, and the reason for it is, that this triple salt readily dissolves in water containing common salt or salts of ammonia. It is also soluble in water charged with carbonic acid. There is nothing particularly new in the modern phosphate processes which were thoroughly investigated some years ago by Sir J. Murray, M.D. and in 1849 a paper was read before the British Association by Dr. Buckland, then Dean of Westminster, who, after tracing the formation of coprolites, and showing that clay, marl, &c., were the agents used by nature to absorb phosphoric acid produced in the process of decomposition, he suggested that these agents should be used for absorbing the phosphates of sewage by combining with them, and so deodorising the sewage. The first patent for phosphate process was taken out in 1858 by G. L. Blyth, consulting chemist to the General Board of Health, and since that period a large number of patents have been secured.

Many other processes have been proposed for treating sewage, such as materials for absorbing, evaporating, freezing, &c., and the precipitant in turn have been proposed to be manufactured into manure, fuel, as well as converted into food for cattle.

Of all the processes which have been adopted for the purification of sewage, there is no process equal in efficiency and permanency to the application of sewage to land. All the chemical processes have hitherto failed to completely purify sewage under favourable circumstances, and fail entirely at times in treating an action not only varying in quantity, but an extremely variable in quality; and it is therefore most difficult to carry out any chemical process which requires an exact amount of chemical ingredient to be added to sewage of an unknown quality quantity; but in the irrigation system, increase of quantity or variation in quality is readily adjusted. Irrigation pure and simple is almost entirely independent of seasons, and in some cases intermittent filtration through land or artificial filters may be adopted, but it is desirable to have with intermittent filtration areas, the success of which is due to atmospheric air contained in the interstitial spaces in the soil, they show

be, in some cases, protected from the weather, so that in continuous wet weather the soil shall not be deprived of the air necessary for the oxidation of the polluting matter contained in sewage.

The author is aware that it is impossible in the limited space of a paper of this description to completely elucidate the subject, or supply the details of works of sewerage or modes of purifying sewage, and the paper must therefore be looked upon simply as a *résumé*, the object of which is to open up discussion on the all-important point of town sewerage.

LECTURES AT SOUTH KENSINGTON.

The first of the sixth course of forty lectures on Historical Development of Ornamental Art was delivered by Dr. G. G. Zerffi, in the Lecture Theatre, South Kensington Museum, on Tuesday afternoon, at three o'clock. Referring to his recent visit to Paris, the lecturer said that he had found the works of English students compared favourably with those of the French with regard to technical skill and precision, but on the field of imagination we were surpassed by the French. The reason of this was to be found in our neglect of the higher branches of mental culture and our want of general education. This was daily becoming more universally recognised. Professor Huxley, Drs. Gull, Ferrier, Dickinson, and others had dwelt on the necessity for general education in their addresses to the medical students, and on all sides not only in professions but even in trade a higher degree of mental training was being required. If the students in art extended their studies in a right direction there could be no doubt that in time they would equal their French brethren in originality and fertility, and might even surpass them if once the imaginative were cultivated as carefully as the technical. Art students must remember that in these material days it became their sacred duty to nourish the glowing light of fantasy, and throw a halo of beauty over reality through artistic productions, thus proving man's higher faculties in a world in which matter was obtaining so prominent a position. The lecturer proceeded to describe the influences leading to the growth of art, and concluded his address with an explanation of the correct meaning of the terms "sublime" and "beautiful."

REBUILDING OF CHELSEA HOUSE.

CHELSEA HOUSE, the town residence of the Earl of Cadogan, at the angle of Cadogan-place and Lowndes-street, is being entirely rebuilt, the mansion externally having already been almost completed, and the interior works are proceeding. It is intended to have the building ready for occupation about February next. The new structure, which is built of Portland stone, is about 65 ft. in height, with two prominent elevations facing Cadogan-place and Lowndes-street respectively. The building consists of two ground floor and three lofty stories, with dormers. The elevation facing Cadogan-place contains the principal entrance, with projecting bay-windows carried up to the second-floor windows, surmounted by a balustrade, and immediately adjoining another portion projects several feet beyond the main face of the elevation. The style is dwelling-house Italian. Mr. Young is the architect, and the contractors are Messrs. G. Trollope & Sons.

WATER SUPPLY AND RIVER POLLUTION.

Waste of Water in Liverpool.—At the last meeting of the Liverpool Town Council attention was called to the enormous waste of water consequent upon fires. This waste was not occasioned simply by extinguishing fires, for which the Corporation was bound to provide, but by the use of water by the salvage companies after a fire was extinguished. An instance was mentioned in which, for sixteen days after a fire had been put out, water was used to the extent of millions of gallons by the salvage companies. It appeared that an annual sum of £504 was paid to the Corporation by the insurance companies for the use of the water, but this was characterised as a paltry amount, and totally insufficient. No action was taken upon the question of enforcing a larger payment for the water used.

Deficient Water Supply at Wallsend.—At the

last monthly meeting of the Wallsend Local Board, Mr. J. Giles asked if the Board could not take any steps to bring pressure to bear upon the Newcastle Water Company to get a better supply for Wallsend? There had been a little on Sunday night, but none from the Sunday previous, and there was a five days' interval before that. Mr. C. Adams asserted that, from the overcrowding in the district, and the dirty habits of the people, he feared that there would be a sad epidemic in Wallsend at no distant date, if there was not a speedy improvement in the water supply. Mr. C. S. Swan, referring to Mr. Newall's paper, which had been read at Newcastle, said it would take two years to bring water from Ullswater, and what would they do in the meantime? The project would take a million and a half of money. The chairman suggested the formation of a water company at Wallsend. Mr. C. S. Swan and Mr. R. W. Swan spoke of several springs in the locality; and Mr. W. Turner stated that there was a flow of good water thirty fathoms down, in the neighbourhood of the "Gas Pit." Mr. Adams corroborated the statement, and added that, before they were supplied by Whittle Dene, it had been proposed to erect a small engine to pump up the water for the inhabitants. The movement had the support of the late Mr. Buddle. The subject was adjourned.

The Pollution of Ullswater.—A correspondent of the Field describes the repulsive appearance of the lake running from the Greenside mines, whose milky waters, impregnated with lead, can be traced like a white riband down the lake as far as Cherry Holme Island. Along the course of the stream vegetation is destroyed, and tree after tree is withering away. The destructive effects on the fish, with which the lake was at one time thickly stocked, are well known. The Greenside Mining Company ought, he thinks, to be compelled to dispose of the detritus of their ore-washing in some way that shall not poison the waters of the lake. He also considers that in course of time the health of the town of Penrith, which is partially supplied with water by the river Emont, will become injuriously affected by this lead poison.

KENSINGTON SLAUGHTER-HOUSES.

An important announcement was made at the meeting of the justices of Kensington division for the renewal of slaughter-house licences. An application by the clerk to the vestry (Mr. G. Harding) and the medical officer of health (Dr. T. Orme Dudfield), that the applications stand over for three months (without prejudice), to enable compliance to be given with the by-laws which the Metropolitan Board of Works must frame in the interval, was declined. Thereupon opposition was offered to the renewal in every case which did not show a due regard for structural and sanitary requirements. The justices overruled the objections, but intimated that no future neglect of such wholesome regulations would after this year be tolerated by the bench.

The requirement that licensed premises shall be so situated as to preserve the meat while setting from offensive effluvia means a step for the protection of the public health; and the sooner the condition that such premises be properly lighted from the roof is made binding, shall we be able to repress the epidemic of brutality to which children are trained from tender years by witnessing the slaughter of sheep, pigs, and bees in sheds with open doors.

INFECTIOUS CABS.

Sir,—The case which has been in several papers of the unhappy man who was conveyed to the Charing-cross Hospital in a cab, and from thence to the workhouse in another, in a most filthy state, induces me to appeal to you,—who have always shown yourself so ready to aid in all schemes for the general good, and expose in your paper all neglect of sanitary laws,—to ask you to make public (should you consider it a good one) a suggestion for preventing all such unpleasant risks as may, and probably do, occur from the transmission of diseased or filthy persons, from places to place, in conveyances which are for the use of the general public. My idea is, that at every cab-stand there should be stationed cabs for the service of the different hospitals and infirmaries, with the name of the respective establishments in whose employ they

are on the back of the cab; and that a heavy fine should be inflicted on persons removing any who are sick, dirty, or unfit for conveyance in a public vehicle which has not a hospital name on it.

These cabs should be in the pay and under the supervision of the hospital authorities, and be easy and roomy, with proper accommodation for the removal of the sick and suffering.

ATTCAS.

WASHABLE CEILINGS.

Sir,—In reply to your correspondent on the subject of washable ceilings, I have been thinking that perhaps floorcloth or millboard might be strengthened with wire-work or wood lattice-work, or that thin sheet metal might be used, embossed a little, to strengthen it.

S. I.

The Farnley Iron Company suggest the use of white glazed fireclay tiles, similar to those used for the Albert Hall, South Kensington.

DAMP STRONG ROOM.

Sir,—Your correspondent "C," who complains of damp in his strong room, may effect what he wants by depositing a quantity, say half a bushel, of quick lime on the floor of the room, or he may put it into a box without the lid. The lime must be removed from time to time as it slakes and gets saturated with the damp.

ROBERT McDERMOTT.

POST PILLARS.

Sir,—You agree rightly with regard to the colour of the pillar-posts, as lately painted; but a simple decoration in the shape of a band, in black or dark colour, at the top and bottom, would greatly improve them.

G. S.

THE RAINFALL.

Much has been written and said on the subject of the drought of the past summer, and as it may now be considered to be over, it may interest some of your readers to know that, notwithstanding this has been an extraordinarily dry year in regard to the fall of rain, not only in this country but in India, America, and other parts of the world, there is reason to believe that the general flow of the rivers of England has not been affected to the extent that may be supposed, or the amount brought down to a lower discharge than that of any previous year.

I have lately taken the opportunity of examining and studying a series of gaugings on a small river in the eastern part of England, that now extend for more than twenty years back; and I find that in taking the years divided into periods from October 1st to September 30th, and comparing the mean annual flow of the river referred to during these periods, the flow during that period just past, viz., October 1st, 1873, to September 30th, 1874, has been by no means the lowest during the last twenty years.

The same period in 1858-59 gave a considerably less mean annual flow. The period 1854-55 was also somewhat less. The periods of 1864-65 and 1863-64, however, gave a higher discharge respectively, but by a very small additional quantity. The next in consecutive order was the period 1870-71, but here a jump took place, and the flow increased by a larger quantity.

The total rainfall in the district where the gaugings were taken, in the foregoing periods, was as follows:—

In 1858-59	24.32 inches.
" 1854-55	22.06 "
" 1873-74	19.00 "
" 1864-65	23.29 "
" 1863-64	19.24 "
" 1870-71	25.80 "

It will be seen from the above that the lowest flow has not occurred in that year in which there was the lowest rainfall. And from the deductions that have been made from these observations, it appears that in those rivers that spring out of the chalk, or pass through, and whose springs are thus supplemented from the cretaceous formation, the flow is frequently more affected, for a greater quantity or a less, by the rainfall of the previous year than by the rainfall of the year passing.

It is, therefore, very probable that unless we

should have a copious winter rainfall the lowest flow in those rivers, such as the Thames, Wand, Colne, Wey, Lee, &c., and in the deep chalk springs that supply them, will occur in one of the autumn months, probably September, of next year, and will not have been in this.

NATH. ST. B. BEARDMORE.

OLD-FASHIONED RACK AND PULLEY FOR BLINDS SUPERSEDED.

I HAVE removed all my racks, and have attached the pulley by an S hook to the eye of one of Hodg's indiarubber door-springs, the other eye of which is fastened below to his usual brass hook. It answers admirably; the line is kept well stretched, no matter how the weather varies. It is quite a comfort to get rid of the rack bother.

H. T. E.

ST. NICHOLAS'S CHURCH, LIVERPOOL.

SIR, I am glad to learn from Mr. Pictou's letter in the last number of *The Builder*, that the church of St. Nicholas, Liverpool, is in no danger of being pulled down. But it was distinctly stated, a few weeks ago, by the *Liverpool Mercury*, not in a letter, but in an apparent editorial article, that "part of the churchyard of St. Nicholas would be taken away, and the church rebuilt." At this announcement I was really alarmed, and with good reason, having had some experience of the British indifference to objects of architectural interest and beauty in Liverpool, in which, as Mr. Pictou well knows, there is too much disposition to sacrifice such objects if supposed to stand in the way of some fancied utilitarian improvement. It was the appearance of another letter in the *Mercury*, approving of the scheme in question, which induced me to appeal to the *Builder*.

Mr. Pictou denies that the Liverpool St. Nicholas's Church is an imitation of that of Newcastle. Though I believe the design of the former was suggested by the steeple at Newcastle, I am very ready to admit its claim to be considered an original composition; as the lantern, unlike the Newcastle example, rests directly on the tower, in the manner of that of St. Ouen at Rouen. Mr. Pictou's praise of it confirms my opinion that it is the most poetic architectural structure of its class in the town.

As to its date: knowing it to have been erected some time in the teens of the present century, I said, in my letter, that it was built about sixty years ago, which sixty somehow was changed to eighty in printing.

SAMUEL HIGGINS.

HASTINGS TOWN-HALL.

SIR, The proceedings of the council, recorded in your last impression, and in the local journal, show how desirable it is that professional advice should be taken in the selection of designs, as many members supported the opinion that the competition should be limited to those who had asserted their compliance with the single stipulation as to cost.

It did not clearly appear if the County-Surveyor, who is to report on the designs, is to limit his attention to cost, or if he is to advise on the relative merits of the designs as to arrangement and composition, and the importance of securing professional advice as to all these matters is my excuse for again venturing to trespass on your space. As these latter points can be determined only by special knowledge and training, will I am sure, be no disparagement to the County-Surveyor to say that it would have been more generally acceptable to competitors had one of the eminent architects referred to in the course of the discussion been retained in the matter.

A COMMITTEED.

PROPOSED ERECTION OF A FEVER HOSPITAL IN BROMPTON.

At the last meeting of the Metropolitan Asylums Board, the Board proceeded to consider a uniform plan for the permanent reconstruction of the Hampstead Asylum, submitted on 26th September last.

Mr. Currie, in moving that the plan be approved and adopted, and forwarded to the Local Government Board for their sanction, said the present building at Hampstead was in a dilapidated state, and it was desirable that a new building should be erected which would serve the purpose of a school for imbecile pauper children and the reception of aged imbeciles, and when necessary to be used in the event of an epidemic breaking out, for the reception of patients suffering therefrom. The cost was estimated at 80,000l. There was no asylum for the reception of fever patients in the north of London.

Mr. W. H. Wyatt said if it were proposed to erect a new building, and not utilise a brick of the present buildings at Hampstead, they might as well build it in a fresh place. He thought the best spot would be at Brompton, on the ground belonging to the managers, and leave Hampstead for the reception of fever cases.

Dr. Cortis objected to building on the site at West Brompton. It would be better to sell the land, for which they would realise a sum of money which would half erect a new building.

An amendment was moved and seconded, that

the report be referred back to the committee to consider the desirability of erecting a new building at West Brompton, on land belonging to the managers, instead of at Hampstead.

After some further discussion, both the motion and the amendment were withdrawn, and it was resolved, on the motion of Mr. E. H. Currie, that the whole matter be referred to the General Purposes Committee for consideration, and to report what further accommodation was necessary for paupers for whom that Board was called upon to provide.

THE WANDSWORTH BOARD OF WORKS NEW BUILDINGS.

WE hope an authoritative contradiction, or satisfactory explanation, of the following, will be given. It is from the *South London Chronicle*—

"Before the Wandsworth Board of Works adjourned last week, it was stated that all the joints of the hot-water piping had given way, and that in order to make the pipes serviceable, the whole of them would have to be taken out. The case seems to be one of those at which unprofessional men can only express the utmost astonishment. The new Board-room was completed not six months ago, and the contractor has not even yet been paid the whole of his claim, and yet the elaborate system of hot-water pipes, which was supposed to have been done in a workmanlike manner,—whatever that now means,—which cost a good price, and which was left and passed as though ready for use, is found to be worthless. To our untutored minds, the workmen seem all through the job to have tried their hardest 'how not to do it.' Mr. Z. D. Berry, the eminent hot-water engineer, of Westminster, has been consulted, and he, after examination, seems to be of opinion that not one of the joints was properly finished. In order to get at the pipes, the workmen have had not only to take down the iron screens let into the walls, but had to break the walls all through the job; and as if to render their job thorough, it seems that the builders built the pipes into the brickwork, so that to get at the pipes it has been necessary to damage a large portion of the brickwork, and actually to cut fire-wood joints, some of which were laid directly across the pipes. The matter is left with the committee: all the committee can do is to order the necessary works to be done; these will cost 100l. Doubts are expressed in some quarters upon other points connected with the new building; and it is said that before long it is probable that the Board will have to sanction further outlay to remedy defects or supply deficiencies."

WESLEYAN CHAPEL AND SCHOOL-ROOM, SOUTH NORWOOD.

THE plans of Mr. Alex. Lander, architect, of London and Banbury, were selected in a limited competition. The tender of Mr. Smith, builder, of South Norwood, has been accepted, and a contract entered into for the sum of 4,620l. The foundation-stone of the school-room was laid in September, by Mr. T. Matthews, of Shooter's-hill. The memorial-stones of the church were laid on Wednesday, October 14th, 1874, by Messrs. R. Waterman, of Oroydon; W. W. Baynes, of West Oroydon; T. R. Crowley, of Kensington; and J. Marsden, of Bolton.

This is one of the churches inaugurated by the Lycett Provincial and Metropolitan Church-Building Fund, and is intended to seat 1,020 persons.

The premises comprise the church, a large school-room, four convenient vestries, and a ministers' vestry. It will be built of bricks, with freestone and other dressings.

The clerk of the works is Mr. R. Gribble, of Barnstable.

CONTRIBUTION OF MINE MANAGERS, AND "THE BUILDER."

It appears that mine-owners and their managers, in the North of England, have to thank *The Builder* for drawing their attention to "overcrowding," "want of water," and neglect of common decencies, on their estates; for at a meeting last week of the Consett Local Board of Health, Mr. Liddell, one of the "sewerage" of the Consett Ironworks, complained of the Board's recent prosecution of tenants for overcrowding. People, he said, were now afraid to keep lodgers, and it was with the utmost difficulty he procured men to carry on the ironworks. He considered that the inspector was carrying out the new Act too rigidly. To the evident astonishment of Mr. Liddell, the chairman of the Board (Mr. Jenkins), who happens to be the general manager of the Consett Ironworks, rose, and with some warmth of feeling, said he entirely disapproved the complaint just made by one of his managers. He had been horrified at reading in *The Builder* that so much overcrowding, filth, and immorality existed at their own doors. He had since found that the London papers had understated the facts. He quite approved of the action taken

by their sanitary inspector, and hoped that he would continue to bring the delinquents to justice, even though the whole of the ironworks should be stopped. He believed, however, that the overcrowding did not result so much from a want of house accommodation, but simply from a desire on the part of the Irish to get together in order that they might be jolly.

The complaints in the *Builder* are evidently bringing forth good fruit, and Mr. Jenkins is a man of courage to be willing to stop his ironworks, employing some 10,000 hands, rather than that sanitary measures should be defeated; but it is rather singular how managers and owners of coal and iron mines could live near or pass through villages of abomination, in every way, without seeing, smelling, or hearing the state of affairs.

SCHOOLS OF ART.

The Dorchester School of Art.—The annual meeting of this institution took place in the Town Hall. The walls of the room, as also the front of the platform, were set off with a large collection of drawings in pencil, chalk, sepia, water colours, and oil,—the productions of the pupils,—and these attracted general attention. The chair was occupied by Mr. John Floyer, M.P., the president of the school, also present being Mr. W. E. Bryner, M.P., the Mayor and Mayor-elect of Dorchester (Mr. and Mrs. G. J. Gregory), and other influential persons.

After the president had addressed the meeting, the hon. secretary (Dr. Robinson) read the report, which stated that during the past year the school had been attended by sixty-two students. The committee congratulated the school on Mr. Turner's favourable report. The committee hope some means may be devised of procuring a building solely for school of art purposes. The report was adopted.

ACCIDENTS.

Accident at the Midland Terminus Hotel.—Dr. Hardwicke has held an inquest at the Midland Terminus Hotel, St. Pancras Station, Euston road, on the body of Mr. Charles Stewart, aged 33, a member of the firm of Messrs. Barbon, Brothers & Co., merchants, Manchester. The evidence showed that Mr. John M'Millan, a Widener, and deceased, came down the principal staircase of the hotel together, Mr. M'Millan being slightly in advance of deceased. On reaching the first floor landing, where there is a sudden dip in the balustrade of the staircase, Mr. M'Millan heard a noise, and on looking round saw the deceased falling midway between the balustrade and the flooring of the main corridor beneath. Deceased had received a fracture of the skull of such magnitude that with the exception of 3 in. it extended entirely round the head. Death was almost instantaneous. Mr. M'Millan stated that deceased was perfectly sober, and no question arose as to the dangerous state of the balustrade, which was viewed by the jury as considered exceedingly so at the place where deceased fell, there being a sudden dip of 4 in. The coroner said that mere architecture must give way to public safety, and the manager stated that the architect had said it might be altered. A verdict of "accidental death" was recorded.

Fatal Scaffold Accident.—Mr. Laughlin held an inquest at St. George's Hospital on the body of Mr. John Newington, a builder, of Omburgh-street, Falmouth, aged 51. Deceased was upon a scaffold erected at a house in Stanhope gardens, South Kensington. He was in the act of giving directions to his workmen, and while standing upon a board it tipped up, throwing him to the ground upon a heap of bricks and rubbish. He was picked up in a state of insensibility and taken to the hospital, where he was found to be suffering from a fractured skull, dislocation of the collar-bone, and other injuries. He died from the effects of the injuries. Deceased before his death said there was no blame attributable to any person, and that the board had got accidentally shifted. The jury returned a verdict of "accidental death."

Scaffolding Accident at Brandling-place, Newcastle.—An inquest has been held touching the death of Thomas Marshall, thirty-eight years of age, a bricklayer. The deceased, who was working along with other men on a scaffold, was being to lift a large stone, when some of the supports of the scaffold gave way, and they were all precipitated to the ground. On being picked up he was found to have received serious injuries.

which necessitated his removal to the Newcastle Infirmary, at which place he remained until his death. A verdict of "died from injuries received by a scaffold giving way" was returned by the jury, who were of opinion that there had been a defect in the timber of which the scaffold was constructed.

Ladder at Rotherham Parish Church.—An accident has occurred at Rotherham parish church, which is undergoing extensive repairs. A labourer was ascending a ladder to the chancel, when a portion of the brattice-work fell upon him, and knocked him off the top. He fell to the ground, a distance of 25 ft., when picked up was found to be seriously injured. His face was besmeared with blood, and several bruises were on his head and shoulders. The man's injuries are supposed to be internal.

Explosion at Lymm.—An explosion of gas occurred at Lymm. Miss Rowlinson, assistant Mr. E. Brown, grocer, was opening the branch pit at Booth's-hill, when she perceived a strong smell of gas. Mrs. Samuel Broady, a neighbour, started a match, when immediately an explosion occurred, dislodging four bricks out of the roof, breaking several bottles, and yet, strange to say, the window itself entirely escaped, whilst outside the lead over the window was entirely shattered. Mrs. Broady was much injured about the head and neck.

CHURCH-BUILDING NEWS.

Wakesley.—The church here has been remedied. Prior to the restorations which have just been completed, the tower window was almost obliterated, the mullions having been cut out and the space partially built up with brick, and a small door underneath it for the use of bell-ringers. It has now been restored to original character, and only needs a little leaded glass. It is a perpendicular window, with two mullions and a four-centered arch. The jambs of the window were there, and in good condition; the head was broken, but not dilapidated. The doorway has been closed, and the entire tower pointed and restored to original character. The coping is almost entirely new, though the old and curious Early English pinnacles have been retained. Passing to the north aisle, we find that the westernmost window, the north aisle, the head of which had been moved and a wooden lintel supplied in its place, has been restored. The arch inside has been restored in character with the other, the north side of the chancel, in a line with the north aisle, there is an entirely new organ case with arches, one opening into the choir and the other opening into the north aisle. These arches are both of a Decorated character, the inner members being supported by carved corbels, and each arch having hood-mouldings with foliated bosses as terminations. The north side of the organ-chamber there is an Early Decorated window, with soft of Early Perpendicular character. At the end of the chamber is a door, also of a Decorated character, opening with the rest, for the minister and choir. Nothing has been done to the chancel, which it is in a most dilapidated condition, and is in very great need of restoration. The architect included in his plan of the restoration the cost and estimates for the entire restoration of the chancel, together with its extension to its original dimensions, as it was quite evident it had been shortened some 10 ft. The plan also includes the substitution of a high-pitched roof for the present one. But this portion of the work does not belong to the parish, and there are to be some difficulty about carrying out the alterations proposed. It is hoped that soon difficulties may be overcome, and the restoration effected. It has not been necessary to do anything to the roofs, save to clean and revarnish them, as new ones were put on by the same architect some five-and-twenty years ago, and are still almost like new. The inside of the edifice has also undergone a restoration. The walls, which were formerly plastered, have been cleaned and re-painted. The jambs, &c., of the windows have also been cleared of the old paint, and restored throughout. The gallery at the west end has been removed, the tower arch thrown open and restored. The formerly filled up with brickwork, and covered over. A new ceiling has also been put in the belfry floor. The arches and piers have been cleared of their whitewash and colour, and the whole of the church has been re-

seated with pitch-pine seats, the seat-ends having mouldings and carved pateras. The old seats were of the old-fashioned, pen-like character. The passages are paved with black, red, and buff tiles. The south chapel has been restored and fitted up with seats similar to those in the body of the church, though of a less ornate character, for the use of the children. The chancel looks very dilapidated in contrast with the rest of the church. The work of restoration has been carried out by Mr. Geo. de Ventry, from the plans and under the superintendence of Messrs. E. F. Law & Sons, of Northampton, at a cost of about 1,500*l.* towards which between 1,200*l.* and 1,300*l.* have already been subscribed. The estimated cost of the chancel is 520*l.* The mouldings on the arches of the south aisle are terminated with carved heads, while the terminations on the north side have never been carved. These the architect and builder have agreed to do at their own expense. The church is warmed by the apparatus of Porritt, of Bolton, Lancashire.

Arundel.—The old parish church of St. Nicholas, at Arundel, which has been closed for some time during the process of restoration, has been re-opened for the performance of Divine service. The work was entrusted to Sir Gilbert Scott. Under Sir Gilbert's directions the galleries which hid the proportions of the arches in the nave have been removed; and pews have been swept away in favour of oak benches. The oak roof and the external stonework have been restored, the contractors for these works having been Messrs. Wright Brothers & Goodchild, of Craydon. The organ has been removed from under the tower to the north transept, and it has been restored, improved, and added to, by Mr. Corps, of London, at a cost of 450*l.* The instrument now sadly wants a case. In connection with this work a controversy sprang up between the vestry and the Duke of Norfolk, relative to the collegiate chapel to the eastward of the tower. The archway opening into this chapel is now roughly blocked up with brickwork, but it is hoped that his Grace having now asserted and sustained his right to this chapel, will remove this disfigurement from the church. There being no chancel, a low wall has been built to enclose a space for the choir, who are accommodated with carved oak stalls, executed by the Messrs. Robinson, of High Holborn. Beyond this space is the sanctuary, which is paved with encaustic tiles, from the works of Mr. Godwin, of Lurgardine, and separated from the choir by rails of burnished brass. The altar is approached by three marble steps, the sanctuary terminating in a semi-hexagon, two sides of which are filled with light ironwork, while in the centre is a reredos. This is of carved oak, painted and gilt, and stands upon an alabaster pedestal. There are five compartments; the central and largest containing a representation of the Saviour, seated as King of the World; in the two on either side of this are represented the Virgin and St. John the Baptist, while the two outside compartments are as yet blank, but will probably be filled with paintings of St. John the Evangelist and St. Peter. The reredos is surmounted by a cross. Messrs. Farmer & Brindley have executed the carving, and Messrs. Clayton & Bell the painting of this work of art, which we understand cost 250*l.*, and is the gift of the Marchioness of Bath, who besides gave the sum of 1,000*l.* towards the general restoration. The whole of the work undertaken by the Restoration Committee has involved an expenditure of 7,000*l.*

Llanelli.—The new church of All Saints, Llanelli, has been consecrated. The new church is situated in Goring-road, about a mile from the station. The architect is Mr. G. Street, R.A., of London; and the builder, Mr. Thomas Williams, Llanelli. The plan is cruciform, and the style Early English. Its present length is 110 ft. by about 45 ft., and in its present condition it will accommodate 600 persons, but at a future time it is intended to add 80 ft. to the nave, and thus give accommodation for 200 more. The building is of native stone, with Bath stone dressings, and comprises a nave, two aisles, north and south transepts, choir, north chancel aisle, and vestry, with a tower (not yet finished) on the south side. The chief entrance is on the south-west side; there is also an entrance near the tower. The roof of the nave is gabled, that of the choir is vaulted and lined with polished oak, the roof of the chancel being of stone with stone arched bearings. The chancel has a five-light window filled with plain glass, which it is hoped will soon be replaced with decorated glass. The stalls in the choir are of carved oak, of the same pattern

as the pulpit, which is supported by a carved stone pillar. The chancel is raised two steps above the ordinary floor, and is separated from the nave by a stone screen, with fancy railwork and gates above it. The chancel floor is of encaustic tiles, from the manufactory of Mr. Godwin, of Lurgardine, and the floor of the nave and aisles is of wood. The nave is separated from the aisles by three arches on each side, and the area is furnished with chairs. The chancel and transept will be lighted with gas coronas, and the nave and aisles with brackets. The baptistery and font are at the west end. The latter, which is of coloured marble, with carved stone ornaments, is the gift of the teachers and scholars of the Sunday school. The organ is by Messrs. Hill & Son, of London, and is placed beneath the tower.

Tuxford.—The old parish church of Tuxford is now undergoing restoration. The whole of the plaster has been removed from the wall of the north aisle, the stonework repointed, new lights inserted in the windows, and new mullions where the original were decayed. A few decorations have also been placed on the exterior. Much yet remains to be done; both externally and internally.

DISSENTING CHURCH-BUILDING NEWS.

Bridlington-Quay.—A new Baptist chapel has been opened here for divine service. The foundation-stone of the edifice was laid in October 1873. The cost of the chapel, including the land, is 3,400*l.*; towards which the church has raised, by the sale of the old chapel, and by bazaar and subscriptions, 1,000*l.*, leaving 2,400*l.* to be raised by the committee. This amount has already been reduced to 1,793*l.* A tower and spire rise at the south-east angle of the front; the total height, when finished, will be 98 ft. The edifice is built of yellow brickwork, ornamented with coloured bricks, arranged in bands and patterns, while the windows and dressings generally are executed in Whitley stone. The windows are glazed with cathedral tinted glass, arranged in various geometrical designs. The east gable, facing Quay-road, consists of a large five-light window, with traced head. Entrance is gained through a recessed and arched double doorway, the arches being supported by stone shafts with moulded bases and carved caps. The vestibule is paved with tiles arranged geometrically. The chapel is in the Early Decorated style of Gothic architecture, and comprises a nave 75 ft. long and 34 ft. wide, with shallow transepts, which are divided from the nave by arches of parti-coloured bricks, supported on octagonal pillars of stone, with moulded caps and bases. It is capable of accommodating 440 persons on the ground floor. At the east end is placed a gallery, which will hold 65 persons; access is gained by the tower staircase. The seats are open benches of red deal, with cut ends and paneled framing. The pulpit and Communion framing are executed in pitch pine, French polished; at each angle of the pulpit there are small shafts with carved caps, the panels are cusped and perforated. It is lighted by means of coronas, suspended from the ceiling. The warming is by Haden's system of warm air. The baptistery is lined with Maw's blue and white tiles. The roof is open timbered, with framed trusses and curved ribs, and is plastered between the rafters. All the woodwork exposed to view is stained and varnished. The minister's and general vestries are at the west end of the building, over which is the orchestra, opening into the chapel by a large moulded brick arch springing from carved stone springers, with moulded stone label. The school is intended to be erected behind the chapel, and will be of the same style of architecture, consisting of a large room 50 ft. by 40 ft. Mr. Samuel Musgrave, of Hull, is the architect, under whose superintendence the work has been done. The contractor was the late Mr. John Rennard, of Bridlington-Quay. Sub-contractors: glazing and gasfitting, Mr. Oliver; staining and varnishing, Mr. Bullock; heating, Mr. Haden, of Trowbridge.

Tork.—St. Saviourgate Chapel, York, has been reopened for divine service, after having been closed during the last five weeks. A series of internal alterations has been effected under the superintendence of the Messrs. Atkinson, architects, of this city, the chief of which is the removal of the organ from its old station at the rear of the Communion space, and behind the pulpit (at the north end of the chapel), to the gallery immediately over the entrance to

the build g. For this purpose the gallery has been enlarged, the effects of which are the rendering of the vestibule to the chapel more convenient and commodious, the space formerly occupied by two pews in the body of the chapel being thus appropriated. The large pew extending across the north end of the chapel, used by the choir, has also been removed, and in its place an open screen has been erected, separating the north transept from the body of the chapel. Behind this screen is the Sunday-school accommodation during teaching hours, the children being placed in the organ gallery during service. The tradesmen who have carried out the alterations were Mr. Brown and Mr. Coulson, joiners' work; Mr. Pearson, painter; and Mr. Postill, organ-builder.

Shrewsbury.—The re-opening of the Congregational Church, Abbey Foregate, after being closed for some weeks for the re-decoration of the interior, has taken place. The panels of the ceiling have been repainted a light grey colour, with maroon cornice, lines and centre. The ceiling over the organ is of the same tint, with a different pattern of scroll-work. The walls are a light cream colour, relieved by a Grecian border on painted buff-colour margin. The iron pillars supporting the galleries are a deep maroon colour, relieved by vermillion and grey tints. The panels under the organ-gallery bear Scriptural texts. The woodwork has been all polished. The organ has been entirely rebuilt by Messrs. Nicholson & Lord, of Walsall. The organ-case has been raised 2 ft., and the side wings each extended 1 ft., and six large front pipes added.

VARIORUM.

"The London and North Western Panoramic Guide" (Bemrose & Sons), edited by R. Kemp Philp, with some maps, gives a description of the principal objects of interest over the main line and chief branches, and all for 6d.—Everyone has heard of "Lloyd's," but may not know how the institution grew up. *Cassell's Magazine* says,—"Of all the queer ways by which men have immortalised their names, there are not many queerer than that by which a certain Mr. Lloyd appears to have done it, and to have done it most effectually. Little or nothing is known of this worthy, except that some time during the last century he kept a coffee-house in or near Abchurch-lane; and as he had the good fortune to be largely patronised by shipowners and captains, 'Lloyd's Coffee-house,' or the abbreviated 'Lloyd's,' came in course of time to be the recognised rendezvous for all who were in any way interested in shipping matters. Mr. Lloyd died nobody knows exactly when, and his coffee-house has long since disappeared; but his name still shines in letters of brass at the Eastern end of the Royal Exchange, and is familiarly known in the utmost ends of the earth. So curiously has the name of the lucky coffee-house keeper come to be identified with shipping interests, that it has in many instances been adopted by various Continental associations; while it is said that there are still people who believe that he is the great potentate in shipping matters, and who occasionally write to M. Lloyd, London."—We get some hints on cleaning glass from the *Household Guide* for October:—"As a rule it is not well to use soda for washing table-glass, for unless at once rinsed off it roughens the surface and destroys its brilliancy. In some cases, however, where the articles are greasy, as in butter-coolers or cream-jugs, some agent of this kind must necessarily be used, but it should at once be well rinsed off with cold water, and the article wiped; a little soda or soap may be employed, but wood-ashes are less prejudicial, and give greater brilliancy. Generally, in washing glass, cold water alone is sufficient; it should be wiped with a clean linen cloth, and afterwards polished with a wash-leather. Decanters should be washed with cold water only, and if this is done frequently, cold water alone will be sufficient; a dirty decanter will spoil any wine which is put into it. If decanters should, however, become at all encrusted, they may be cleaned by washing with barleycorns or broken egg-shells, but the best though not in appearance the most cleanly method of scouring them, is that of putting into them a little of the 'flue,' or other dust and rubbish swept up in bed-rooms, which has the property of fetching off any sediment from the glass. A little of this, with water and well shaking, will soon restore transparency, and the decanter must, of course, afterwards be well rinsed. Lamp-globes and chimneys ought to be

washed with soap or soda once a week, when in constant use; and these must be most carefully dried, or they will inevitably crack when warmed by the flame of the lamp."—Mr. Wyld, always prompt, has just published the first Map of the Fiji Islands, which have lately become invested with interest. There are 255 islands in this group, of which 80 are inhabited. The total area of square miles is 7,403, and the number of acres 4,738,350. The largest island is Viti Levu, which embraces 4,112 square miles. The heights of the mountains are given, as well as the names of the towns, villages, and districts.

Miscellaneous.

A Bradford Warehouse.—This is the age of big things in Bradford. Messrs. Law, Russell, & Co.'s new warehouse in Vicar-lane is one of the largest and most commodious, and is thus described by the local *Observer*. The site occupied by the new building is at the corner of Vicar-lane and Field-street, and it was the last piece of ground available for such a warehouse on the new level. The shape of the site somewhat resembles the quarter of a circle, and on this account required exceptional treatment. Externally the only architectural feature is the portico which, with the balconies alone, extends to the full height of the building. The successive cornices are supported by fluted columns, with elaborately carved capitals. The Vicar-lane elevation presents a plain ashlar front, with circular-headed windows on the ground-floor, while the Field-street side is simple wall-stone. Opening into Field-street is a gateway 17 ft. wide and nearly 20 ft. high. This is hung with a pair of wrought-iron gates, which enclose a covered courtyard. All the gas-brackets and similar fittings, which are in bronze, as well as the entrance-gates, have been supplied from the Midland Architectural Ironworks, Coventry. The building contains seven floors, each of which covers an area of over 9,000 square feet. The heights of the various rooms are as follow:—Basement, 13 ft.; ground floor, 14 ft. 6 in.; first, second, third, and fourth floors, 13 ft. 6 in.; and fifth floor, 11 ft. to the spring of the roof. The total height from the level of Field-street to the top of the parapet is 91 ft., while the dome adds 17 ft. more to that. There are about 1,678 lineal feet of counters, or nearly a third of a mile, while the floor space is extensive. The architects were Messrs. Lockwood & Mawson. The work has been done by Messrs. A. & A. R. Neill, contractors, under the superintendence of Mr. Dilworth, clerk of the works.

Church Fire in Aberdeen.—At about a quarter past eight o'clock last Friday night one of the most alarming fires that have occurred in Aberdeen for many years broke out in the Established East Church, one of the finest and largest ecclesiastical edifices in Aberdeen. It was built between the years 1834 and 1837 from designs by the late Mr. Simpson. The fire broke out in the roof, close to one of the sunlights, and very shortly afterwards the flames burst out with alarming force. The roof, which was of oak, and partly covered with lead, burned with great rapidity, the liquid lead running down the slates, and igniting the roof in every part. Within about thirty minutes the roof fell in with a crash, and the interior of the building soon became one mass of flame. It was a long time after the arrival of the fire-brigade before the engines could be got into working order, and by that time all hope of saving any part of the fabric was at an end. The efforts of the fire-brigade, naval reserve, and military were then directed to confining the flames to the East Church, but the heat was so intense that the steeple of the West Church, a very old structure, and connecting the two together, became ignited, and before thirty minutes had elapsed was one mass of flames. The steeple contained a very fine peal of bells, erected about fifteen years ago, and they were entirely consumed. Twenty minutes after the fire had seized upon it, the steeple fell with a tremendous crash, and the flames still raged with great fury, forcing their way into the aisle of the church, called "Druin's Aisle," where were several monuments and other ancient memorials of rare value.

Architectural Association.—The Session will be inaugurated as usual with a *conversatione*, to be held at 9, Conduit-street, on Friday evening, the 30th inst.

Dedication of the New Masonic Hall, Liverpool.—Lord Skelmersdale, the R.W.P.G.M. for the western division of Lancashire, has held a Provincial Grand Lodge in the new Masonic Hall, Hope-street. In addition to the ordinary annual business, the proceedings included a festival for the inauguration of the new hall. The Provincial Grand Master having taken his place on the throne, Bro. H. S. Alpess, P.G.S., delivered an address, in which he pointed out that for some years past, as Freemasonry has progressed in Liverpool and the neighbourhood there had been a continually increasing objection to the holding of the lodges in public-houses, and it was resolved to erect a Masonic hall which would be available for a number of lodges. The building which they obtained, however, was soon found inadequate to meet the requirements of the still rapid increase of the order, and another new hall became absolutely necessary. In fact, the old building was occupied by different lodges every night in the year, and the progress of Masonry was literally stopped by the want of ample accommodation. The Masonic hall committee, therefore, took the matter in hand, and the Liverpool brethren readily responded to the calls which were made upon them. In twelve or eighteen months they raised 8,000*l.* towards the building. On behalf of the brethren, he wished to say that they had to thank the architect (Bro. Danson) for the excellent accommodation he had provided for them, and there could be no doubt that with such improved accommodation the order would still further increase in Liverpool.

Coal-Boring Operations in India.—The Indian papers contain the following interesting particulars of coal-boring operations in the Nizam's dominions:—"On the right bank of the Godavary, some eight or ten miles below the town of Budhrachellum, and about four miles from the bank of the river, extensive boring operations have been carried on under the supervision of Mr. Heenan, superintendent of the Nizam's coal-fields. In one bore-hole a good seam of coal was struck at about 320 ft. from the surface, also two thinner seams at a lesser depth of a fair quality of coal. The Singareni coal-field has also been explored by borings, and it is found to contain four very extensive seams which are superior in quality to any yet found in India. In one of the borings the lower seam was found to be over 40 ft. in thickness. Mr. Heenan has put a shaft down to the upper seam and a large quantity of coal has been excavated, which is on its way to Bombay in order to be compared with English coal. Boring has also been put down about midway between Singareni and the Godavary, where in every probability coal will be found. A very close examination has been made by Mr. Taylor, coal-viewer to H.H. the Nizam's Government, and Mr. Heenan, of the carboniferous formations lying in this district, and several places have been found where in every likelihood large deposits of coal will be discovered."

The Production of Lock and Mortise Bricks.—In speaking of the productions at the Sarn Terra Cotta Works, near Westbury, Salop, the *Shrewsbury Chronicle* says:—"On the score of ingenuity, one of the most prominent features is the process by which the lock and mortise bricks are obtained. The machinery itself will be readily appreciated when the fact is borne in mind that the bricks, while producing workmanship infinitely superior in appearance to walls built with pressed bricks, being tongued, grooved, and locked at intervals and at each angle, are also stronger than the common hand-made brick besides possessing the additional recommendation of effecting a saving of two-thirds in the materials used. These lock and mortised bricks it may be added, are capable of extensive and varied uses, and are invaluable where space or height, with solidity, are an object. Their importance is especially noticeable when required for the building of, or sustaining and retaining, on bankments, sea and other walls, quays, and river frontages; as also in the erection of shafts, the construction of brewers' vats, and, in a word, the formation of all works to which bricks can be applied. The company also produce Kough's universal ventilators. The mechanism applied is of a unique description; and it is necessarily exclusive."

Gift of a Library and Museum to Hereford.—A free library and museum, the gift of Mr. J. Rankin, of Bryngwyn, has been opened here.

The New Smithfield Police-station.—The new Smithfield police-station, which has been erected by order of the City Commissioners at the junction of Cock-lane and Snow-hill, is now on the point of completion. It is the largest in the City, and is built in three blocks of red brick, with stone facings. In addition to the usual accommodation for prisoners other buildings contain dormitories of sixty unmarried soldiers, rooms for eight inspectors, and married quarters for two sergeants with families. In the basement is the heating apparatus for disseminating warmth throughout the building, the kitchen, mess-room, and housekeepers' and soldiers' rooms; on the ground-floor is the charge-room and inspector's room, the master-room, 29 ft. by 28 ft., and the instruction-room for drilling and other purposes, 34 ft. by 22 ft. On the first-floor are two recreation-rooms, bath-rooms, &c., with dormitories for twenty men. A similar number of dormitories have been added upon the second and third floors. The top of the building is flat and covered with asphalt. The plans are by the City architect, and the works have been carried out under the supervision of the clerk of works, Mr. L. Bell, by Mr. E. Turner, foreman to Messrs. Higgs & Hill, contractors. The name of Bridewell Police Station will probably be adopted for the new building. The old prison, erected about 1560, and demolished in 1862, being the first of its kind, all other buildings constructed on the same principle have been called Bridewells.

An Impostor.—At the weekly meeting of the council of the Charity Organisation Society, a letter was read from the Reading Charity Organisation Society, stating that a man calling himself John Burton had applied to them for means to procure tools to enable him to work at his trade, that of a carpenter. He referred them to a builder in London, for whom, he said, he had worked for a month. They had communicated with the reference, and had been informed that he had not had any man of that name in his employ, but that from the description given he did not doubt that the man in question had worked for him for a week under the name of Winslow. He had begged for work, stating that he had not had any good for a long time. He said his tools were away, but that if the builder would write a note to say he would employ him he could get them. He stopped work after a few days, saying that his brother-in-law had come to fetch him, and that he must go home to Birmingham; but he was seen hanging about after this. The leading society desired to put the London committees on their guard, as it seemed as if this man made a practice of trying to get tools from charitable agencies. Burton is a little above middle height, is bald-headed, has a little hair on his face, and looks half-starved. He is apparently about fifty years of age.—*Charity Organisation Reporter.*

The Water Supply of Newcastle-upon-Tyne.—A letter from Mr. E. Brown, of Newcastle, to the chairmen of the Sanitary and Water Committee, was read at last meeting of the Town Council. The writer said that observing that Mr. Newall proposes a scheme for supplying Newcastle and the district with water from the Lsawater Lake, which is estimated would involve an expenditure of a million of money, he submits that this enormous outlay is quite unnecessary, inasmuch as an ample supply of pure and fit water can be obtained at one-fifth of the expense, and he has every reason to believe on that point. He referred to the scheme proposed by Mr. Bewick, C.E., of Haydon Bridge, and himself, for impounding the rainfall in the basin of the Northumberland lakes Crag, Green, and Broomlee, being a total area of sixty square miles; thence, by gravitation, to Whittlesea, a distance of eighteen miles, with a fall of 10 ft. Since 1868 the Hallington reservoir has been constructed, thus shortening the distance of water will now have to be brought twelve miles, with a fall of 230 ft. The town may thus be supplied with eighteen million gallons per day, and this without taking into account the present sources of Hallington and Whittle Dene.

Temple Bar.—It is suggested by Mr. W. Redwell that the Bar should "be carefully run down—every stone numbered to satisfy the dilettanti—by such conscientious men as Messrs. Lawrence, and let it be rebuilt with necessary abutments at the City boundary the Embankment, this Embankment to be re-forward called the Royal Avenue, or the Royal Approach; the Sovereign there to enter City on State occasions."

Undoing a House.—The Paris residence of the late Duke of Brunswick, now in course of demolition, in the Avenue Friedland, was an extraordinary house. At the front gate was a metal button, and a visitor would have to press this. It instantly set a number of bells ringing in violent commotion. Admitted into the garden, you still found yourself excluded from the house. Another button had to be touched, and that done, you found yourself in an unfurnished hall. There was no staircase communicating with the upper rooms where the duke slept. More buttons had to be pressed, and at last you found yourself sitting in an arm-chair, and raised by a hydraulic lift apparently to the living-rooms which the duke used to occupy. By an ingenious mechanism, and touching a button, a panel in the wall was removed, and entrance gained to each room. The strong-box nearly killed the workmen who endeavoured to open it, for it sent off a mitrailleuse-like discharge. The Duke de Trevisio has bought the house, and has stipulated that all the treasure discovered in it shall belong to him.

Want of Ventilation in Churches.—A correspondent of the *Lincolnshire Chronicle* states what is hardly credible in reference to a modern church in that city. He says:—"I should very much like to ask whether there is any provision for ventilation in St. Martin's Church. Not that this is the only church in the city concerning which the same inquiry may be made; but it is one of the newest, and, at least in new churches, one might expect to find some trace of modern enlightenment on the subject of vitiated air. That, as a matter of fact, it is not ventilated, appears to be beyond question. So far as I can discover, the windows do not open, but are immovably built into the fabric, hermetically sealing the building when the doors are shut; there are apparently no means of exit at the top for foul air, nor of ingress at the basement for fresh. I was there the other Sunday evening. There was a large congregation; multitudinous guests burning; doors shut soon after the commencement of the service. As an inevitable consequence, the atmosphere quickly became vitiated, and continued to get more and more so, until, before the end of the sermon, the effect to any one aware of the mischief, and how easily it might be avoided, was almost intolerable."

Inauguration of the Trowbridge Waterworks.—The inauguration of the Trowbridge Waterworks has taken place amidst much joy and festivity; the illumination and decoration of the centre of the town far surpassing its appearance on any previous occasion. There was a fountain erected opposite the George Hotel, and Mrs. R. P. Long, of Rood Ashton, performed the ceremony of turning on the water, amid the cheers of thousands of spectators. The beautiful bells of the old parish church ringing forth their merry peals, and the band of the 2nd Wiltshire playing festive music. The water from the fountain in the Market-place was thrown to the height of about 80 ft., and, by means of lime-lights, was made to appear of various colours. The steeple of the church was illuminated, and by means of a pipe attached to it the water forced itself almost as high as the top, so that there is now no doubt about there being a plentiful supply. The workmen who had been employed on the works, to the number of seventy, were entertained to dinner, under the presidency of Mr. H. Tomlinson. The vice-chairs were occupied by Mr. C. Tomlinson, Mr. Bowen, and Mr. Watts.

New Harbour at Dover.—Government, it is said, will, early in the next session of Parliament, introduce a Bill for the speedy execution of a plan which has been recently agreed upon between the various public departments for the construction of a large military and general harbour at Dover. The original scheme of a huge harbour was to extend from the South Foreland to the Admiralty Pier; but the harbour which the Government have now resolved to construct will only cover an area of about 400 acres, and a depth varying at low-water of spring-tides from 1 to 6 fathoms. It will serve at once as a packet harbour, a coaling station for men-of-war of all sizes, a commercial harbour, to be used subject to the payment of tolls, a depot for munitions of war, and a harbour of refuge on a small scale. It is expected that the Bill will pass without opposition by the end of March, and that the works will be actually commenced by June next at the furthest. These works will cost, as nearly as possible, a million sterling.

Dealing with Old Church Brasses at Ash-bourn.—At the local petty sessions, September 26th, Thomas Spencer, grocer, &c., Ash-bourn, was charged with purchasing some old metal, knowing the same to be stolen. The metal consisted of brasses, which, at the restoration of Okeover Church, about sixteen years ago, was missed. Albert Lees, miller, of Mill Dale, deposed that his brother gave him the metal produced, and on the 25th of August he took it to Spencer's shop to sell. Spencer gave him 3s. for it. For the defence, it was not denied that the brasses were stolen from Okeover Church, but there was no proof of guilty knowledge, it was urged. The magistrates gave the accused the benefit of a doubt, and discharged him with a caution. Some portion of the missing brasses was found about sixteen years ago in a soft-water cistern on the premises then occupied by a pawnbroker. At the petty sessions, Thomas Spencer was summoned under the Metals Act for buying brass under 55 lb. weight. He pleaded guilty, and was fined 14. and costs.

Mr. Stansfeld at the Working Men's College.—The general meeting of the Working Men's College has been held at the institution in Great Ormond-street, under the presidency of Mr. Thomas Hughes, M.P., the president. There was a large attendance of members and supporters of the college. The chairman explained that this meeting usually took place at the commencement of the academic year, and that it was the custom to get some gentleman of eminence not specially connected with the college to address the students. On the present occasion they had secured the services of Mr. Stansfeld, who took great interest in the education of the working classes. Mr. Stansfeld then addressed the meeting, and, after some other gentlemen had also done so, the business of the evening terminated with the usual vote of thanks.

Chester Cathedral.—A correspondent of the *Church Herald* complains of the statement that there are "two candles" upon the altar of Chester Cathedral. He says: "Such is the case as far as the appearance goes, but the truth is that 'the candles' are merely tubes of white china, through each of which a gas pipe is conducted! I happen to know this," he says, "from having been in the Cathedral last Christmas, about a quarter of an hour before the daily evensong, and witnessed the lighting of 'the candles.' When first lighted they had the appearance of what they really are—gas lamps; but the verger turned them down, till the flame was no bigger than that of an ordinary candle. To some this may seem a small matter, but surely it is not seemly that gas-pipes should be carried through the altar, and that a deception should be practised with regard to 'the candles.'"

Outbreak of Fever near Sheffield.—The sanitary authorities of Ecclesfield, a village a few miles from Sheffield, summoned the proprietors of a paper-mill for failing to comply with an order of the local court to abate a serious nuisance. The mill, it seems, stands on a small stream, along the side of which rows of houses have been erected for workpeople. The stream above the mill is quite pure, but the water after passing it is choked with refuse and poisonous matter coming from the manufactory. The water is converted into a black liquid, and emits noxious gases to such an extent that a serious outbreak of fever has been the consequence. There have been eighteen deaths from fever within a very recent period in the houses on the banks of the stream, and there now are sixteen cases of fever within a radius of half a mile. The defendants were fined 10l. and 10s. costs.

Enlargement of the London Hospital.—The Governors of the London Hospital, White-chapel-road, are engaged in carrying out an extensive enlargement of that building, which will almost double its present accommodation. In aid of this object the Grocers' Company have presented the authorities with a donation of 20,000l., to be expended in the erection of a new wing to be called "The Grocers' Wing." This wing is from the design of Mr. Charles Barry, and has a frontage of 120 ft. and a depth of 40 ft., each floor being detached by a lobby. The building will, when completed, afford bed accommodation to 200 additional patients. Adjoining this wing and fronting East Mount-street, a post-mortem room and mortuary, surmounted by a ventilating shaft and water-tower, are being constructed at a cost of 10,000l.

Fall in Prices.—The comparison in prices between this year and last continues to be most instructive as to the great change in favour of the consumer which has occurred in the twelve-month. The fall in wheat is from 64s. 2d. to 46s. 9d., or more than 27 per cent.; in coals from 34s. to 24s. 6d., or 29 per cent.; in Scotch pig-iron, from 108s. 6d. to 85s. 6d., or 21 per cent.; in copper, from 84l. to 78l. 10s., or 7 per cent.; in tin, from 126l. 5s. to 93l. 10s., or about 25 per cent.; in cotton, from 8½d. to 7¼d. per lb., or 10 per cent.; and in wool, from 20l. to 18l. 5s., or 8½ per cent. These are immense differences in the prices of the chief articles of food for the masses and of the leading raw materials of manufacture, and all are favourable to the more profitable working of trade.—*Economist.*

New Training College for Darlington.—A new training college, under the auspices of the British and Foreign School Society, is now in course of erection at Darlington. There are forty-one of these colleges in England and Wales, with accommodation for 3,094 students. Encouraged by a subscription list of nearly 4,000l. from friends in Darlington, the committee of the Society bought a site for a permanent institution close to the town, and a building, which will cost about 15,000l., to accommodate about seventy-five resident female students, and be ready at Michaelmas next year, is partially erected. When the erection is finished, the Government grant and the fees of the students will, it is expected, make the institution almost self-supporting.

Excavations at Grey Abbey, Belfast.—Some recent excavations at these remains (lately mentioned by us) made at the suggestion of Mr. Phillips, to discover the foundations of the western buildings have been successful. The entire foundations of the west wall of the cloister garth have been laid bare, also the remains of one or two intersecting walls and patches of rough pavement. What buildings these remains may have been connected with cannot be said with certainty, but it is thought they belong to the "Domus Conversorum," or lay brothers' building. The foundations are more than 3 ft. thick, and the pavement is composed of the most part of unhewn land stones of considerable size.

Abolition of Second-class Carriages.—The Midland Railway Company have issued a circular announcing a very important change, and one which will prove of great interest to the travelling public. From the 1st of January next the company will abolish the existing second-class fares on their system. All trains will therefore be composed of what are now styled first-class and third-class. It is further notified that the rates of passenger-fares will, from that date, be 1½d. per mile for first-class, and 1d. per mile for third-class. There being, as already explained, no second-class. This makes an important reduction in fares, chiefly in the first-class.

Signalling Railway Trains in Motion.—The recent Exhibition in Glasgow included a novelty in the application of electricity to the purpose of signalling to and from railway trains in motion. This is effected in the model by laying between the rails insulated metal rods which remain in contact with a battery placed on the engine. The inventor, Mr. G. E. Pritchett, F.S.A., architect, believes that had this apparatus been in practical use on the Great Eastern Railway, the Thorpe accident would have been averted, as the station officials, on discovering their mistake, could have arrested the erring train while it was hurrying on to destruction.

The Cheltenham Sewage Farm.—The sewage farm has this year been let by tender, instead of, as usual, by auction, the tenders sent in in response to the Board's advertisement being considered sufficiently satisfactory to warrant this departure from the usual rule. The amount tendered is an advance on the receipts for any year hitherto, and it is a noticeable fact that the only lot upon which there has been a falling off from the price given the first year is a small field of 6 acres broken up for ryegrass. The average per acre for the four years has been—1872, 6l. 12s. 3d.; 1873, 6l. 8s. 4d.; 1874, 6l. 8s. 4d.; 1875, 6l. 15s. 7d.

A Monument to Liebig, the Chemist.—The Academy states that nearly 100,000 marks have been collected in different parts of the world for the monument which is to be erected to Liebig at Munich.

The Late William Jordan.—A red granite tomb has been erected over the remains of the late William Jordan in the old churchyard at Bushey. It bears the following inscription:—

WILLIAM JORDAN, F.S.A.
Born at Kelsy, April 10, 1782; died at Bushey, July 11, 1869.
Founder of the *Literary Gazette*, and its editor for 34 years.
Erected as a tribute to his memory by his friends, and Associates in the Society of Noviomagus, 1874.

Mr. Durham, A.R.A., undertook the supervision of it on the part of his brother members of the club.

Free Roads and Bridges.—At the next meeting of the St. Pancras Vestry, the following motion, which has been placed on the paper of business by Mr. Westacott, will be discussed:—"That the Metropolitan Board of Works be requested to consider, at the same time as the subject of freeing the bridges over the Thames from toll is before them, whether some steps could not be also taken to free the roads of the metropolis, by the removal of the barriers and gates now situate on the Bedford and such other estates in the metropolis." The existence of these barriers is quite a discredit.

The Projected Beach Baths at Brighton. The Town Council of Brighton, by a majority of twenty-one to nineteen, have agreed to a resolution of their Works Committee to grant to a proposed company a lease, for ninety-nine years, of a considerable portion of the beach east of the chain-pier for the erection of baths. The town can only give a lease of eight years, it appears, of any part of the fore-shore, which reverts to the Admiralty. The price of the ninety-nine years' lease is 150l. a year; and a proviso is made for the acquisition of the projected baths by the Corporation.

The Leicester-square Fountain.—On the recommendation of the Parks, Commons, and Open Spaces Committee of the Metropolitan Board of Works, that "the fountain in Leicester-square be closed until the 1st of May next," it was stated at the last meeting that the water bill for supplying the fountain for three months, when it was playing for six hours a day, was 250l., and that to work it for four hours per diem per annum would be 1,000l. It was decided to close the fountain until the time recommended.

The Fern House for Peel Park.—In reference to the question of the acceptance of the fern-house offered to the park committee by Mr. Agnew and other gentlemen, we are given to understand that the committee were unable to accept the offer made, principally on the ground that the condition of requiring payment of the public for admission to the fern-house would be contrary to the spirit of the park trust deed, and that the expense would be rather burdensome.

Proposed New Vestry-hall for Kensington.—At the last meeting of the Kensington vestry, the Law and Parliamentary Committee reported recommending the vestry to offer the Charity Commissioners a sum of 7,000l. for the site of the Kensington National School, Kensington High-street, adjoining the vestry-hall, for the erection of a large hall in which to hold public meetings. After some discussion, the report was adopted on a show of hands by a large majority, and a division failed to alter the result, the numbers being—for, 47; against, 10.

The Watford Public Library.—The Public Library with School of Science and Art at Watford, the first one erected in the county, was opened on Wednesday last, the Right Hon. the Earl of Verulam, the lord lieutenant of the county, officiating. The design is of the Gothic style (brick with stone dressings), by Messrs. Sedgwick & Son, architects, Watford. It contains on the ground floor subscription reading-room, book-room, youths' institute, and committee-room. On the first floor are the School of Art and the School of Science.

The Restoration of Tewkesbury Abbey. It has been determined that the stonework internally be cleaned and pointed; that the gallery be taken down, and the organ removed; that all pews and seats be removed, and new seats erected; that the position of the stalls and choristers' seats, and of the pulpit and reading-desk, be altered; that the glass in the chapels be removed; that the whole of the floors, both wood and stone, be taken up, levelled, and re-laid.

Chelsea New Bridge.—A meeting of inhabitants of Battersea was held on Wednesday for the purpose of taking measures to obtain the speedy abolition of the toll on the new Chelsea Suspension-bridge. It was resolved that a committee should be appointed to ascertain on what terms the Government would part with the bridge, and to communicate with the Metropolitan Board of Works with the view to purchasing

The Royal Aquarium, Westminster. The directors of the Royal Aquarium and Summer and Winter Garden Society have appointed Mr. Bedford, of Abingdon-street, Westminster, their architect; Mr. W. A. Lloyd, their naturalist; and Mr. Bruce Phillips their secretary. We may suppose from this that the shares have been taken up, and that the undertaking will be proceeded with.

Warwick Water Supply.—The plans prepared by the engineer, Mr. E. Pritchard, C.E., for the Hasleley Water Works have been deposited with the Local Government Board, by the Town Council, who have applied for permission to borrow between 17,000l. and 18,000l. for such works. It is expected that an inspector will shortly attend in Warwick from the Board for the purpose of holding an inquiry.

The Liverpool Art Club.—The members of the Liverpool Art Club have entertained Mr. E. M. Ward, B.A., and Mrs. Ward, at dinner. A conversation was afterwards held, during which the fine collection of rare etchings now on view at the club-room were inspected by the visitors and others with great interest. Mr. and Mrs. Ward were received with much cordiality.

The Proposed New Workhouse for Sheffield.—Mr. Basil Cane, the Poor Law inspector, and several members of the Sheffield Board of Guardians have visited the site at Pitsmoor, selected for a new workhouse. The site, it is said, contains about forty acres, and the price is 15,000l. Mr. Cane expressed his approval of the site.

Oliver Cromwell.—Messrs. Cox & Sons, of Southampton-street, Strand, have lately cast at their Bronze Statue Foundry, a colossal statue of Oliver Cromwell, by Mr. Matthew Noble, and which is now on view in their show-rooms, Southampton-street, previously to its being despatched to its destination.

The Accident Insurance Company has published a complete list of the claims and compensations paid each year for fatal and other casualties insured by them under their policies. The total amount of compensations paid since this business was first commenced at Bank-buildings has reached the sum of 370,000l.

Building Land, Dover.—Last week Messrs. James B. Terson & Son sold by auction, at the Royal Oak Hotel, a piece of building land in Biggin-street nearly opposite Pencester-street, containing an area of about 6,000 square feet. It realised 440l.

Stapden.—A three-light geometrical window has lately been fixed in this church to the memory of the late Mr. Charles Bass. The window was designed and executed by Messrs. Cox & Sons.

TENDERS

For Christ Church, Beckenham. Messrs. Blashill & Haywood, architects. Quantities supplied by Mr. D. Calvert Nichols:—

	Nave, &c.	Chancel.	Spire.
Waldram & Co.	£5,150	£1,152	£714
Masley & Rogers	5,120	1,151	710
Browne & Robinson	5,100	1,110	700
Brass	4,888	1,150	750
Hill, Riggs, & Hill	4,840	1,000	700
Gascoigne & Sons	4,850	1,016	673
Dave, Brothers	4,855	940	650
Crosley	4,797	1,017	625
Hucker	4,700	1,066	634
Gammox & Sons	4,396	873	557

For alterations, &c., to shop-front, No. 98, Fulham-road, South Kensington, London, for Mr. A. Chase. Messrs. Ebbetts & Cobb, architects:—

Perkins	£383	0	0
Wagner	286	0	0
Walker	185	0	0

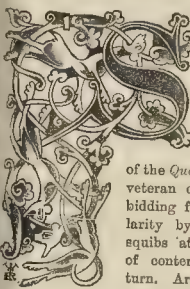
For house on the Enville estate, for the Right Hon. the Earl of Stamford and Warrington. Mr. T. Smith, architect. Quantities by T. C. and J. P. Sharp:—

Rivara & Sons	£2,950	0	0
Nelson	2,939	0	0
Wood & Sons	2,760	0	0
Guest (accepted)	2,387	0	0

The Builder.

VOL. XXXII.—No. 1655.

"The Hope of English Architecture."



OME of our readers may remember the explosion of wrath against the modern architect which appeared some little time since in the pages

of the *Quarterly Review*. That veteran oracle seems to be bidding for increased popularity by firing periodical squibs at the whole circle of contemporary artists in turn. Architects, poets, and painters have been successively vilified, with a uniform combination of acerbity and blundering, which suggests the idea that the same "sweet and cunning hand" has conducted all these attempts at demolition; and now the architect's turn to be cursed has come round again, and the thunders of the *Quarterly* are once more launched at his head, in an article (in the October number) purporting to be a review of Mr. Fergusson's "History of Modern Architecture," which, however, is merely an excuse for a repetition of the former attack on any one who is weak enough to make a drawing of a building, and of the apothecosis of the British workman as "the hope of English architecture." The article is, in substance,

"Of that which went before, the brother":—

contains the same kind of reckless assertion, without proofs, and the same violent and inconsiderate class prejudice; but the writer has been even less careful of his "guard" than on the former occasion, and has allowed zeal so far to outrun discretion, as in more than one instance to have satisfied himself in a sufficiently edifying manner.

The text of the article is Mr. Fergusson's now well-known denunciation of all post-Renaissance architecture as a worthless sham. A criticism which places modern architecture on an entirely different footing from ancient, and recognises in the productions of a system less true, simple, and genuine, than that which governed Greek and Gothic architecture, is so far, perfectly rational and justifiable. To say, however, that because the works of the modern period are produced upon a faulty principle, therefore they are all artistically worthless, is quite another thing; and Mr. Fergusson himself, though he loses in words say this, or something very like it, practically contradicts himself by devoting a large and laboriously compiled book to the illustration of this despised phase of architecture, and by bestowing on many of its examples liberal and well-merited praise.

The author of the "History of Modern Architecture," however, as we observed, in this case merely furnishes a pretext or occasion for the disquisitions of the Reviewer, which have for their object the introduction to the public of "the master workman," rightly described as being at present "a mystery," inasmuch as he is, to a great extent, the segment of the Reviewer's own mind. The avowed object of the article is to give in little the history of "the workman" as the originator of all that is true in art, from the temples of Egypt and Greece to the latest temple of the true architectural spirit among us, of which more anon.

All history tells us that in every scene, or kind, or period of art, whenever it was true, original, and great,

the workman was the master. His often questionable social status did not in the least affect his dominant position in the world of art; and if we go to Athens where art reached its ancient climax, and inquire what were the value and condition of an architect in Greece, Plato has furnished us with a complete reply. He says that "you could buy" (*πρῆσαι*) "a common builder" (*τίκτορα*) "for five or six minas at most, but a master workman" (*ἀρχιτέκτονα*) "not even for ten thousand drachmas, for there are few of them even among all the Greeks!" Thus in Plato's time—and he was born but three years after Phidias had died—the master workman might in common conversation be referred to as a slave," &c.

The Reviewer's object is to show that men like Phidias held merely the rank of a "builder's foreman" of the present day; accordingly, it is convenient to him to translate *πρῆσαι* into its blunt literal meaning, "to buy," though it must be obvious that it is here equivalent to "hiring" or "engaging." Our readers will perhaps remember that this very passage was adduced on the occasion of the previous article in the *Quarterly*, as proving exactly the contrary, viz., the superior status and education of the architect in Greece. To which conclusion the quotation most naturally lends itself we leave to the candid reader. At the close of the next paragraph we have another specimen of the writer's powers of twisting evidence. He quotes from Plato again:—

"The master workman does not rule himself, but is the ruler of workmen. He contributes knowledge, but not manual labour, and may therefore be justly said to share in theoretical science. But he ought not, when he has formed a judgment, to regard his functions as at an end. Like the calculator, he must assign to the individual workmen their appropriate task, until they have completed the work."

Nothing, we should imagine, could be much clearer in its bearing than this. The *ἀρχιτέκτονα* was the mind of the work, and directed the hands; and that the word was used in the same sense as the modern "architect" is evident from the fact that in the original Greek, as with us, it acquired the secondary meaning of an "author" or "contriver," just as we commonly speak of a man being "the architect of his own fortunes." From this, however, the *Quarterly* Solon deduces the conclusion that the person spoken of was a working foreman. "Four such persons," he observes, "were engaged on the foundations of the temple of the Olympian Jove at Athens." "If we imagine, then, a dozen architects employed on the foundations of the Law Courts, we shall recognise the difference between the ancient working foreman and the modern architect."

To persons who do not understand or reflect upon the matter, this last turn may seem specious, no doubt; but the Reviewer quite forgets the immense difference between building a Greek temple and building Law Courts. It may be very possible that the Greek architect was more on the works than the modern one is, and that he did not make elaborate drawings beforehand; but the refined lines and proportions of the Greek temple must have been set out in some way before they could be accurately worked and built: the only real distinction between drawing them to a small scale first, and setting them out full-size, piecemeal, without any preliminary drawing, is that the former process saves much time afterwards, and tends to ensure general correctness. We call attention to this because (as will be seen) the making of architectural drawings is one of the deadly sins in the Reviewer's eyes. But as to the "twelve architects at work on the Law Courts," is it possible that it has never occurred to our critic that an intricate building of that kind must be minutely planned beforehand, and that it can only be made coherent in all its parts and working by the predominance over its arrangement of one contriving head? The plan of the Greek temple, with its one cell, was a very simple affair; but the mere planning of a great modern building is itself a work of the greatest difficulty, requiring the close attention and abstraction of its author. And since the modern architect has such far

larger demands upon his powers of contrivance it is neither unnatural nor unfitting that he should be less at liberty to take an active part in the carrying out of the work than the Greek architect, if this be so; but for this opinion, for the statement that Ictinus and Callicrates "built" the Parthenon with their own hands, there is simply no evidence whatever, one way or the other. It suits the Reviewer's purpose to take it so, and that is all.

When we come to the Gothic period, our instructor shines even more luminously. One moment his *beau idéal* seems to be the unconcerned indulgence of each workman in the caprice of the moment:—

"Changes of detail or of plan are prompt, open, and decided; and at once, without the painful preparation of the schoolroom or the office clerk, the utterance is given, and a new line of poetry is in a moment added to the refined beneficent enjoyment of the world."

This last bit of twaddle means, we suppose, that the Medieval workman made no bones of cutting an arch short at one side, or placing a window out of centre with the gable, if it came handy at the moment. But at the end of the next paragraph we read of the Duomo at Pisa that—

"The stones seem cut and fixed in some instinctively harmonious way, each by a separate workman, yet in perfect and spontaneous concert with a general design."

Who made the "general design" (as such things do not make themselves) the Reviewer does not take the trouble to tell us. But he makes amends by his eloquent description of the work of erecting a monastery on the island of Ramsay, in Huntingdonshire, "in the reign of Edgar," under the superintendence of one *Æthelthun*, the "master-workman." The monastery was built at the expense of Aylwin, lord of the island, and *Æthelthun* was chief of the workmen, "and he made a fine building of it."

"He set out the plan of the foundations, and dug out the ground. The central tower of the church, however, began to crack, and *Æthelthun* had to report the failure to Aylwin, who agreed to find the money for the restoration. The labourers approached the tower by the roof, and, going stoutly to work, raised it to the very ground, dug out the treacherous earth, made the foundation sure, and again rejoiced to see the daily progress of the work." *What a contrast all this is to our present condition and practice!*"

Truly, we should think so! In the present day the "architect" would have examined the foundation first and discovered if it was stable, and have concreted it if necessary; if he had neglected this, and the tower fell down, would any committee or body of shareholders be pacified with his assurance that he had worked at the digging of the foundations with his own hands? We trow not.

Subsequently to this a considerable portion of the article is taken up with excerpts from Mr. Street's book on "Gothic Architecture in Spain," in which that gentleman has given instances in the history of Spanish architecture of the designer of, and constructor for, the building being one and the same person; from which it is supposed that the author of the book is convicted of being entirely misled by words, and of not perceiving that there was no such thing in existence as an architect in the modern sense at all. Of the inference really to be drawn from these and other similar records much might be said. Passing over an attack on Giotto, for having "designed" the Florence Campanile, instead of allowing it to grow of itself out of the combined whims of the workmen employed, we come to a violent attack upon Cologne Cathedral; a building with which, in comparison with the best production of French and English architecture, we have never felt very much sympathy. In the eyes of the Reviewer, however, the sin of the west front of Cologne consists in the damning fact that a drawing of it has been found. "Some years ago an ancient vellum drawing of Cologne Cathedral was discovered. This was perhaps the

original design, or a contemporary copy, and its *labouration and completeness well account for the elements of the building.*" The last sentence is delightful in itself, but more so in comparison with one which we shall have to compare it with just now. We may notice, before proceeding, the remark in reference to the quotation from Schiller made by the architect to the workmen at the resumption of the work at Cologne:—

"Let praise be to the workman given,
But the blessing comes from Heaven."

"With us," says the Reviewer, "the drawing-master," not "the workman," gets "the praise," and so, it seems, "the blessing does not come." Now the Reviewer has no right to pretend that he has Schiller on his side, for throughout the poem in question,—"The Lay of the Bell,"—the "master" is represented assigning the orders to the workmen, and as the person who does the thinking and contriving. This is actually prominently brought out in one verse, where it is remarked that the apprentice, or labourer, is free of his task (the mere hand-work) when the stars come out and the vesper-bell rings, and he "knocks off work"; whereas the master's cares are never at an end.* Schiller recognised that the head-work was really the hardest of all, and was not to be sneered at by the hands.

A paragraph or two further, we find Mr. Fergusson's somewhat exaggerated rejoicings over the church at Monsta (in Malta), built by a man whose great virtue seems to have been that he "could neither read, write, nor draw," quoted and enforced; though it suits the purpose of the Reviewer to omit the confession Mr. Fergusson felt compelled to make, that the builder of this church required some experienced hand to correct his details for him; a confession which is at direct variance with the whole theory of architectural design upheld by the *Quarterly*. Turning the page, we come on the most interesting point in the article, the mention of "the latest instance of true building master-workman-ship."

"The Portcullis Club, 83, Regent-street, Westminster, is a working man's club in the strict sense of the word. The ground on which it stands has been purchased."

The last words are italicised by the Reviewer; what the peculiar point of them is we do not understand, although we fully agree that it was a very wise step. However, to proceed,—

"The materials of which it is built have been paid for, and the labour has been found by the working men themselves, many of them working till twelve o'clock at night. Not only so, they have been their own architects. The white of the plans and elevations have been beautifully drawn by one of the members; and thus the little feast is not more satisfactory and respectable than the Charing Cross Hotel or the Royal Academy facade."

In this latter sentence the italics are our own. It thus appears that while a drawing for a large building made by an architect is a ridiculous and contemptible proceeding,—while the very fact of the existence of a drawing accounts for the miserable architectural character of Cologne Cathedral,—the very same process carried out by a working man for a small building in a back street becomes a special virtue and a matter for praise. We leave this specimen of the logic and *ambiguity*—we might almost add foolishness—of the Reviewer to speak for itself. We may say, however, that we had the curiosity to go and inspect this wonderful building, which the Reviewer probably thought himself safe in alluding to, as one with which few of his readers were likely to be acquainted; and we advise those who believe in the *Quarterly* prophet to go likewise. If they are disappointed to find there the same imitation of well-known features of past styles with which we are all familiar, distinguished only by the coarseness and clumsiness of application which might be expected, they will, at least, be able to appraise the value of the *Quarterly* architectural criticism, and will probably concur with us in thinking that the proclamation of this as the best recent example of the true architectural spirit is one of the most absurd and impudent assertions that ever discredited the pages of a respectable Review.

One word more: first as to the *Quarterly* article; next as to ourselves. Supposing that the premises of the Reviewer are correct, in regard to the character and office of the architects of old work (a point on which neither he nor

any one else has any means of precise knowledge), this argues little in regard to to-day. The individuality of the artist is much more strongly asserted in every art, in modern times, than in the antique and mediæval periods, when the *Iliad* or the *Nibelungenlied* grew up, for all we can discover, as poems of the nation rather than of the personal poets. And the class of buildings to be carried out now are of a far more intricate character, and require far more thought and contrivance in regard to plan (which is the basis of design) than was the case in either of the great periods of past architecture. But even omitting that practical consideration, and regarding the architectural part alone, we may safely put the case, as a *reductio ad absurdum* for the Reviewer, whether any one (except himself) would pretend to assert, in regard to the much wished-for beautifying of Trafalgar-square by a grand building on the site of the present National Gallery, that such an end would be most likely to be worthily attained by entrusting the work to the combined efforts of a band of masons, without a directing head, and with the special stipulation that they were not to make any drawings?

For ourselves, we beg leave to say, as speaking on behalf of the professional body thus thoughtlessly attacked, that the few points in the scheme of the *Quarterly* which we believe are essential, are only what have been advanced in our own pages over and over again. We have repeatedly urged that the architect should be as much on his building as possible when it is in progress; that he should not undertake what he could not personally look after; that he should be enabled to improve his design as he went on, if necessary; and that every workman who executes anything in the building beyond mere mechanical construction, should have credit by name for his own work: the architect simply remaining the directing spirit of the whole. Further than this, the change (if it really is so great a one) between the position of the modern and the mediæval architect, is simply due to a necessary refinement in the division of labour, without which the work of the modern world could not possibly be carried on. As to the statement that the "working men have no respect or sympathy with those who call themselves their chiefs," i.e., the architects, it is absolutely false in regard to the best specimens of the two classes. Where an architect shows himself to be a mere man of pens and paper, and knows little of and takes little interest in the work he is responsible for, a good workman will not of course feel much respect for him. But wherever an architect understands and takes warm interest in his profession, no man will be more loyal to him than a good working man, or more ready to acknowledge his authority and carry out his directions; nor do we believe that the best of the working men in the building trades would by any means accept the *Quarterly* as the exponent of their feelings or wishes.

Had the article in question been the offspring of a genuine enthusiasm, we should have referred to it in a different spirit. We consider it to be no such thing, but simply a bid for a sensation, which would not be worth serious refutation, except for the undue importance which thoughtless readers attach to anything which has the prestige of a well-known periodical to support it.

BUILDING, AND THE PRICE OF FOOD.

The relation existing between the density of population and the price of food, is one of the most interesting subjects for investigation in the whole range of social science. To all those engaged in any way in the building trades, or interested in the investment of money in building-ground or property, it possesses extreme importance, inasmuch as it is one of the elements of the permanence, or transitory nature, of the value of such investments. From a sanitary point of view it is hardly less important. The price and quality of food exert a direct influence on the health of the poorer classes of consumers. It is difficult, from the want of statistics prepared with the definite aim of illustrating the point, to connect the price of food definitively with the death-rate. It is also matter of no little difficulty to ascertain how far a deterioration in ordinary health, and power of healthy activity, is gauged by the death-rate. But the reference to these moot points is enough to show the extreme value of any positive information that may be thrown upon the general question.

Some such data have been recently brought forward for discussion by our French neighbours. The figures which they cite have a double interest. They may be the elements of comparison between Paris and Paris, and also between Paris and London. The usual citation of French weights and measures, though the outcome is, of course, readily accessible to English readers, yet requires some little thought. We readily appreciate prices quoted in pence per pound; we have to reflect when they are expressed in francs per kilogramme. It may be as well to note, as an aid to this statistical study, that the price of one franc per kilogramme is almost exactly equivalent to that of 3½d. per pound.

That low price, or indeed 4 per cent. below it, was paid by our neighbours as the wholesale price of butcher's meat, between 1831 and 1835. This price, of 96 centimes per kilogramme, was a reduction on that which had ruled from 1810 to 1815, which was 1 franc 6 centimes per kilogramme, or 3-8d. per pound. From 1850 to 1853, cheapness was on the increase, and the price of butcher's meat sank to 91 centimes per kilogramme, or just 3d. per pound. Since that time, however,—which means since the commencement of the artificial impulse given to the building trade in Paris, by the renewal and enlargement of the city under the auspices of the Second Empire,—prices have steadily risen. From 1860 to 1863, the average rate quoted is 125 centimes; by 1870 it had risen to 140 centimes; and, in the present year, butcher's meat commands a wholesale price of 1 franc 79 centimes per kilogramme; being almost exactly double the price obtained in 1853.

A rise of from 3d. to more than 6½d. a pound does not, however, represent the whole additional cost of this prime necessary of life to the economic Parisian. The retail profit has to be added, and that, moreover, not *pro rata*, but in a rapidly augmenting ratio. Thus, 15 per cent. was the retail allowance in 1850-53—or at least 15 centimes on the price then ruling, of from 96 to 91 centimes. By 1870 this profit of the retailer had increased to 80 centimes per kilogramme, and it is said to have annually augmented since that time.

We must remark, in passing, that the price which is causing grave discomfort in Paris, is only some two-thirds of that which rules in our country markets. On the very day on which the above prices have been cited, we find the best beasts selling at Nottingham market at 10s. 6d. per stone, being equal to the rate of 9d. per pound, while live mutton at Romford fetched 8½d. per pound.

We have thus the two separate comparisons rendered possible; first, that of Paris prices between the years 1853 and 1874; and, secondly, that of Paris prices of the present year with those prevalent in our own country.

There is no manner of doubt that these prices, as regards the city of Paris, are subject to an artificial element of increase, to which we have, happily, no parallel in England. We refer to what is called the *octroi*,—a duty levied, in France and in Italy, on all articles of food brought for consumption into the principal towns. Nothing could be more obnoxious to the feelings of an Englishman,—nothing more hostile to those ancient English laws which regulated the rights of market and of sale,—than this duty. Its magnitude alone is serious. The annual expenditure of the municipality of Paris, including the interest on the large and rapidly-increasing municipal debt, is stated at some seven millions of francs, or not less than 280,000l. This large sum is principally derived from the *octroi*.

It may be said that this sum must be raised, by some means or other, in order to avoid a civic bankruptcy. This plea cannot be negatived. But it has two sides. It points to the effect of an unnatural stimulus being given to building. So long as the enlargement, the improvement, or even the ornamentation, of a large city only keeps pace with the augmenting prosperity of the citizens, it may be called self-supporting. It is to the municipalities of the Middle Ages, and to the noble pride and princely merchants of Italy, the Medici and others, took in adorning the houses in which they passed the greater portion of their lives, and carried on their wide-spread water-pipes, that we owe very much of that which is most precious in architecture. The feeling was akin to that which devoted such cost, skill, and loving care to the rearing of churches and cathedrals.

* Bis die Glocke sich verkühet,
Lässt die Strege Arbeit ruhn.
Wie im Laut der Vogel spielt
Mag sich Jeder gutten thun.
Winkt der Sterne Licht,
Liedt der Erde Rhyth,
Hört der Dörch die Vesper schlagen;
Meister moss sich immer plagen.

We rejoice to see a development of the spirit in our own day. We have, at various times, spoken of London as in course of reconstruction,—we might extend the remark. Throughout the length and breadth of great part of England there is hardly to be found a parish so poor as to suffer its church to remain in decay. The efforts of the past quarter of a century in church reparation, as well as in what may be called commercial and domestic luxury of building, have been extraordinary.

But all this, or by far the greater part of it, is self-sprung, self-contained, self-supported. It is precisely where any artificial stimulus has been given, that the results of new building are unsatisfactory. If, then, we conceive of municipal building, not only as being stimulated from political motives, but as actually involving a sensible increase in the rates, without the rate-payers' will, we shall be better able to realise the grievance of which the Parisians are now complaining.

The more serious, however, than the actual amount, is the moral effect, of the *octroi* duty. It is inconceivable that it should be submitted to by any people who have a strong passion for personal liberty. The maintenance of the *octroi* in France is a proof of the truth of the remark, that so long as the vanity of the Frenchman is soothed by the sense of equality,—so long as he feels that no one of his brethren is more privileged than himself,—he is profoundly indifferent to restrictions on his liberty. Let a restriction, however slight, press on a class, and it is instantly resented as intolerable. Let it press on all alike, and it is accepted with extreme philosophy.

The moral, or rather the immoral, effect of the *octroi* is twofold. First, it is a strong inducement to smuggle. As to the amount of smuggling of this nature in France, we cannot speak of personal knowledge. In one of the great capitals of Italy there are persons who may be said to combine the functions of the smuggler and the insurer; that is to say, they will contract to deliver objects liable to the *octroi* within the city, less a certain part of the proper duty. They smuggle them in; but the bribes to the officers, and the profit to the smuggler, have to be set off against the economy effected by the rogery.

In Lisbon, the temptation to smuggling is not limited to creating such a special industry. It has attacked the blue-ribboned nobles. It may be well known to our readers that, in Portugal, the mule is a very beautiful animal, and the carriages of the Royal family and great nobles are often drawn by four mules, which are far more costly than horses. One of these equipages, a splendid turn-out, with blazoned panels, three mules, servants, four mules, and the marquis within, was stopped, within our remembrance, at the gate of Lisbon; and, under some pique, misarrangement, or mistake of some kind, actually searched by the insolent collectors of the *octroi*! His excellency the owner had descended to the small economy of smuggling in the vegetables for his own dinner. It proved, in that instance, a costly economy, for the whole equipage was seized and confiscated,—with the exception of the servants!

An Englishman, on his first acquaintance with what we may call the *octroi*-ridden countries, is usually much struck with the extreme insolence of the public servants, whether civil, municipal, or belonging to the railway companies. The way in which railway passengers are treated, on many lines with which our readers may be familiar, will at once come to their remembrance. They are compelled to waste time by an altogether unnecessary early arrival at the ticket-hole. They are driven into pens, when they have been allowed to purchase their tickets. They are driven from pen to pen, or from pen to platform, with an imperative "*Vite, vite!*" on the part of the *employés*, which makes an Englishman long to take summary and not undeserved vengeance on these officials. All this insolence is fostered and augmented, if it is not entirely originated, by the institution of the *octroi*. Habits of perpetual interference with privacy, independence, and comfort, are thus engendered. Clothed in the brief authority of the officer of the fiscal service, the toll-collector and his myrmidons learn to bully,—the population, at large, learn to submit. One remarkable exception is, however, to be remarked. Let a sword-case figure among your luggage, and all is polite attention; while the man who may have carried his rudeness to your wife or daughter, to an extent possible only to certain classes of officials,

salutes you, on perceiving the important package, as "*Mon Général!*"

But while the *octroi*, apart from the good reasons for designating it as an impost obstructive to national welfare, has thus a definite influence in the augmentation of prices, within towns, it is not enough to explain an augmentation of nearly 100 per cent. in twenty years. Prices have advanced in this country, and indeed throughout Europe, during that period; but not by any means in such a ratio as that. If we rate the increase of prices in London at from 25 to 33 per cent. within the same period, we shall probably be near the mark. But a rise from 10d. to 1s. per pound, is not to be compared to arise from 91 to 179 centimes per kilogramme, in the same time.

The rate of increase of inhabitants in London, as we have before had occasion to mention, is such as to double the population in a space of forty years. This rate is rather on the increase than on the decrease. The rate of increase in Paris has, no doubt, been materially affected by the siege, and, generally speaking, by the war. From 1861 to 1866 the increase in the population (including St. Denis and the environs), was from 1,951,000 to 2,150,916 souls; or a little more than 10 per cent. in five years. This rate, rapid as it is, is considerably below that prevalent in London. The increase in the price of food, on the other hand, may be said to have been from double to three times as much in Paris as in London. If the same causes alone were operating, in both cases, the phenomena ought to be very different. In fact, they would be entirely reversed. In so far as the increase in the consumption of so great a centre of population is attributable to natural causes, prices ought to have been more stationary, during the twenty years in question, in Paris than in London. They have been, on the contrary, much more rapid in their rise in the former city. The cause, therefore, must be sought in some artificial or incidental element of increased cost.

These questions are, no doubt, complicated by the circumstance, that the supply of gold poured into the markets of Europe, during the period under review, has been, as compared with previous centuries, abnormally large. Thus the purchasing power of gold is held, by many writers, to have sunk considerably; so that increase of price is, to that extent, only nominal, and not real.

But [this consideration can not be held to affect the comparison which we have attempted to draw. The intercourse between the money markets of the various European capitals is now so intimate, and so rapid, that the value of coin finds a ready level. Whatever difference may be due to the purchasing power of gold in the interval from 1853 to 1874, that power cannot be taken as appreciably different in France and England in the same year.

There are, moreover, two facts which serve to indicate that we may very readily over-estimate the effect of the yield of Australia and California, in lowering the purchasing power of gold, by rendering that commodity more plentiful in the market. As to the abstract principle, that increased production has such a tendency, no doubt can be entertained that the view is sound. But it is one thing to admit a general principle, and another to gauge its effect. To do this, it is requisite to take into account all influences operating in the adverse direction, as well as all that tend to assist or to exaggerate the effect under discussion. Now, with regard to the latter, it may be very reasonably held that the wide extension of banking facilities,—more remarkable in France than even in this country,—the more frequent use of cheques as a mode of payment, and the general tendency, in all business, to make payment rather a matter of account, regulated by the pen, than an actual handing over of gold and silver from one person to another,—has done far more to make money plentiful, or easy, than the actual number of sovereigns added to the circulation could have done. Therefore, much as the increase in currency supplied by the Australian and Californian gold may have affected prices, we must suppose the total effect to be much more than that due to the increase in the metallic currency alone; because the increase in the paper, or account, currency, which has accompanied that metallic increase, has been even more striking in its influence.

It has, therefore, to be borne in mind that an increased plenty of money may have an effect contrary to that expected if we merely consider

gold as a commodity. A commodity it is, no doubt; and as such, is subject to the laws affecting all commodities. But it is also something more. It is the life-blood of the entire commercial system. The effect of abundance of money in stimulating activity of all kinds is so great that the question may well be raised, whether the tendency of an increase is not rather to reduce the value of commodities by stimulating their production, than to reduce it, because measured in a more abundant medium of circulation. In support of this view, it may be remarked, that when money is what is called "*tight*,"—that is to say, when any commercial or political alarm induces a certain amount of hoarding; when men are less free in parting with their money, which has the same practical effect as a diminution of the quantity of money in circulation,—sellers are not always found to submit to sacrifices. That expression is one of constant occurrence in such times; but sellers are, in fact, apt to hoard their commodities, as well as purchasers to hoard their cash: so that, while regarded from one point of view, increased plenty of money ought to raise the nominal price of articles of sale; regarded from another point, it tends so far to increase the production of commodities of all kinds as to reduce their normal price.

That the balance of all these various monetary forces is not so remarkably decided as is usually considered, may be shown to be the case by comparing the relative prices of gold and silver. We will not speak of countries where the question is complicated by the use of a double standard, but will take the simple case where gold alone is legal tender, except for small sums. Here the disturbance in purchasing power of which we have been speaking is equal to, and even more than, one per cent. per annum, over the fifth part of a century. The great augmentation of supply has been that of gold. Silver, while also sent into the market, has not received such a stimulus in production as has resulted from the discovery of new auriferous districts. The silver used for our silver currency in this country, in crowns, half-crowns, florins, and minor coins, has been kept down in weight,—that is to say, that a pound of silver has been coined into sixty-six shillings instead of sixty shillings, the par weight,—in order to prevent the withdrawal of silver coin from circulation; a fact which has been known to occur, on any slight increase of the market value of silver as compared with gold, when sixty shillings weighed a pound Troy. The fence or hedge, thus raised to keep the silver coinage out of the melting-pot, is thus a difference of somewhere about 10 per cent. But we are speaking of a change to the extent of 20 per cent. in the purchasing power of gold. It is thus tolerably certain that if the rise in price of butchers' meat, from 10d. to 1s. per pound were due altogether to the fact that the quantity of gold thrown into circulation had been abnormally increased by the Australian and Californian supplies, our silver coinage would have disappeared. Its value would have been undisturbed, as compared with that of gold, and it would therefore greedily have been absorbed by the dealers in bullion.

We hope that we have shown that these questions of disturbance in price, while far from being so simple as it is the fashion to call them, repay careful study, and point valuable lessons. That work of all kinds, notably builders' work, produces mischief when artificially stimulated, as well as when artificially repressed, we think is one unquestionable outcome of the study of the course of market. Another point, and one of extreme interest to the farmer, as well as to the consumer of meat, we have only enough space left to indicate,—not to discuss. It is this,—taking the nominal price of meat at 179 francs per kilogramme, or say at 6½d. per pound, in Paris; and at 9d. per pound in the English markets (speaking of the price to the wholesale purchaser), what is the actual difference to the consumer? In other words,—how many pounds of French beef or mutton are equal, in their flesh-producing and force-producing elements, to a given number of pounds of English beef or mutton? The question well deserves consideration. If no disturbing elements came into play, the reply would be that nine pounds of French beef did not contain more good nourishment than six pounds and a half of English beef. Well aware, as we are, of the general superiority of the latter, we are not prepared to admit such a disproportion as this. Still, for all matters of price, there must be a

distinct reason. It will be a subject of extreme interest in social economics to compare the chemical with the monetary worth of beef, mutton, and other elements of domestic consumption in the various countries of Europe, as well as at different periods of time.

THE EARLY SCOTTISH PAINTERS.

THE fine arts only flourish in times of peace. In time of war the allurement and excitement of the field absorb the youth and talent of a country; glory and honour may be found there, and the calm retreat of the studio has no charms for him who is possessed of manly vigour. The artist is then at a discount, the people are too deeply interested in the strife to give much heed to his works, and the wealth of the land is directed in a different course altogether than towards the fostering and support of the fine arts.

In no country was this state of affairs more clearly defined than in Scotland prior to the union. A small country with a thinly-scattered population, she had to struggle against mighty odds in order to maintain her independence, and the intervals of peace were too short to permit of the growth of the national taste. The only art then shown was in the matter of architecture. Buildings were absolute necessities, paintings rare and perishable luxuries.

At the close of the sixteenth century appeared George Jameson, the first Scottish painter worthy of the name. He was the son of an architect in Aberdeen, a city which has since kept up its reputation as a fosterer of artists. It is probable that the nature of his father's calling may have given him a predilection for art, for we find that he left his native city for the Netherlands, to study under Rubens, and became a fellow-student with Vandyck. This association produced a similarity in their works, so much so that Jameson's portraits have frequently been mistaken for the work of Vandyck.

When thirty-four years of age Jameson returned to Aberdeen, where he married and settled. Historical and landscape painting he found unremunerative; he therefore devoted himself to portrait-painting, in which branch of art he attained a position such as induced him to remove to Edinburgh.

Upon the occasion of the king's visit to the northern metropolis in 1633, Jameson was employed to superintend the decoration of the city. Some pictures which he had painted for the occasion attracted the attention of Charles, who commissioned Jameson to paint a portrait of himself, which gave so much satisfaction to the king that he presented the artist with a ring from his own finger.

Allan Cunningham says of Jameson:—

"That he stands at the head of the British school of portrait-painting there can be no question; nor had England an artist of her own worthy of being ranked above him in his own walk before the days of Reynolds. When we consider the circumstances of the painter and his times, his want of instructors and models, and the various difficulties which the fanatical prejudices of that dark age must have presented to the cultivation of the graceful arts, it is impossible not to admit that Scotland has all reason to be proud of George Jameson."

In regard to his style, Walpole remarks:—

"He was one of the most esteemed of Rubens's scholars, and painted in the broad, thin, transparent manner. His excellence consists in delicacy and softness, with a clear and beautiful colouring; his shades are not changed, but helped by varnish, with little appearance of the pencil. He had much of Vandyck's second manner, and to Sir Anthony some of his works have occasionally been imputed."

Allan Ramsay, son of the poet, was born in Edinburgh in 1713. At an early age he displayed a love for art. In 1736 he went to Rome to perfect his studies, and, after remaining there for a period of three years, he returned to Edinburgh. Desirous of wider scope for his abilities he went to London, and there he met with so much success that he was appointed Court Painter to George III. He was a man of considerable learning, and of him Dr. Johnson remarks:—"You will not find a man in whose conversation there is more instruction, more information, or more elegance, than in Ramsay's." When on a visit to his native city, he took an active part in the formation of the "Select Society," the forerunner of other societies which have made their mark upon the literature of the country. Ramsay was the author of several pamphlets, which have been collected and republished, and he carried on a correspondence with some of the most eminent men on the Continent, which he was well qualified to do, being proficient in several foreign languages.

Ramsay revisited Rome several times; upon the last occasion with the view of recruiting his health, which was considerably shaken from the effects of an accident. After a residence of some years in the Eternal City, he died on his way home, at the age of seventy.

As to his qualities as a painter, Northcote says:—

"Now and then we find tints and sketches which show what he might have been if his hand had been equal to his conceptions. I have seen a picture of his of the Queen soon after she was married, a profile and slightly done, but it was a paragon of elegance. A professor might despise it, but in the mental part I have never seen anything of Vandyck's equal to it."

Alexander Runciman, born in Edinburgh in 1736, like Ramsay, showed an early predilection for art. At the age of fourteen he was placed under the care of John and Robert Norris, painters, in Edinburgh. His bent was towards landscape-painting. After six years' study he set up a studio of his own, but did not receive much encouragement. In 1766 he went to Rome, and when there became the intimate associate of Fuseli. After a residence in Rome of five years, he returned to Edinburgh, and was elected to fill the post of Master to the Academy. His works are not very well known, they aim at a high ideal, but are not happy in execution.

David Allan was born at Alloa, in 1744. When a boy he was for a time prevented attending school from an accident to his foot, and by way of amusement he took to drawing with chalk. Upon his return to school, he was detected in drawing a caricature of the schoolmaster, which caused the indignant preceptor to complain to his father. The caricature was considered so good that Allan's father conceived the idea of fostering the lad's bent, and sent him to a drawing academy established in Glasgow.

At the age of twenty Allan went to Rome, and prosecuted his studies with success. His picture, of "The Origin of Painting, or the Corinthian Maid drawing the Shadow of her Lover," procured him the gold medal of the Academy of St. Luke. Upon his return to Edinburgh, he was appointed to succeed Runciman in the mastership of the Academy, which post he held for ten years, but his success as a teacher was not great.

His designs illustrating Ramsay's poem of "The Gentle Shepherd" were much admired, and are still prized by collectors, but it was in depicting humorous scenes that he excelled. His "Scotch Wedding" is well known from the engraving, which procured a ready sale, and is perhaps the best work he has produced. He died at the age of fifty-two.

Henry Raeburn was born at Edinburgh on the 4th of March, 1756. Having become an orphan at an early age, he was admitted to the benefits of Heriot's Hospital, where he received a liberal education. Upon leaving that institution, he was apprenticed to a goldsmith, but during his leisure hours he took to painting, and ultimately resolved to devote himself to that art, and paid his master a sum of money to be freed from his indenture.

Raeburn was entirely self-taught; for, although he received a loan from Martin of some works to study, he got no instruction from that artist. This loan was the cause of a quarrel between these artists, which was never cemented; and in the rivalry which afterwards ensued between them as portrait-painters, Raeburn succeeded in driving his antagonist from the field. There is a romance connected with his marriage such as the novelist is fond of introducing into his pages. One day when the artist was engaged in sketching from Nature, a young lady appeared upon the scene, whose figure he introduced as an accessory to the landscape, and from this incident an intimacy sprang up which led to the marriage of the parties. Accompanied by his wife, Raeburn went to Rome, where he remained for a period of two years.

His industry was great, for not only did he devote eight hours a day to work, but in the evening he spent much of his leisure in the study of architecture and mechanics. His success was commensurate with his industry, and upon the occasion of the visit of George IV. to Scotland he was appointed limner to the king, and received the honour of knighthood.

In his portraits he concentrates his effect upon the head, keeping costume and accessories subordinate, and the character of the sitter is depicted, rather than a mere likeness.

Raeburn died on the 8th of July, 1823, in his sixty-seventh year.

The name of Wilkie is a household word,—engravings from his works are scattered broad-

cast over the land, and are found alike in hall and cottage. Since his time, a constant flow of artists has set in from Scotland towards London, where they have a wider field for their energies, and where their ability is duly appreciated.

PARIS NOTES.

THERE is no edifice more popular with the average tourist than the tomb of Abelard and Héloïse at Père la Chaise. The reason of this general taste would be difficult to determine, but the fact is continually pointed out by Parisian journalists. The legendary lovers' tomb is as frequently visited as the Colonne Vendôme. For the last five or six years, however, a visit to the mausoleum has been productive of considerable disappointment. The structure was literally crumbling away; and when, during the last year of the Empire some tardy work of reparation was commenced, it was alleged that a considerable portion of the primitive monument was hopelessly dilapidated. The works were interrupted by the siege, and have never been resumed. The result is, that sentimental pilgrims can scarcely determine where the mausoleum really stands. The little spirals at the four angles have entirely disappeared; and the four crowns surmounting the canopy, as well as that which crowned it, were destroyed by the recent storms. The complete restoration of the tomb has at last been resolved upon. The crumbling portions will be replaced, the bas-reliefs and *rosaces* chiselled anew, the inscription repaired and burnished, and the entire monument scraped and whitened. The cost of the reparation is estimated at 6,000 francs.

The solemn inspection of the New Opera by gaslight, at which the Ministers and privileged leaders of fashion are to assist, will not take place until next month. Very little of the gas apparatus has been installed. The great *foyer* is at present lighted up every night, but it is by means of portable machinery, in order to give M. Baudry an opportunity of studying his decorative paintings by gaslight. This artist and M. Garnier are occupied in harmonising gilding with the great ceiling-pieces, which, by gaslight will probably require to be framed in dull gold. The definitive illumination of the great *foyer* will consist of twelve sconces arranged in two lines, thus leaving the ceiling perfectly exposed. The sconces are of gilt bronze, ornamented with enlaced bronze and crystal garlands. One sconce has already been placed in the green-room *de la danse*. It comprises 101 jets, arranged in branches of six each. The auditorium will be lighted with similar apparatus.

One of the few prosperous workmen's clubs in Paris is the Circle of Masons and Bricklayers, founded a few years ago by M. Chabrol, the architect of the Palais Royal. The reason may probably be found in the fact that nearly all Paris workers in stone are natives of the Creuse, which, like Auvergne, furnishes a class of sober, obstinate, laborious workmen, utterly unlike those of Paris and the South. The club stands in the centre of the masons' colony, near the Pantheon. It has instituted classes in industrial arts, which meet every night, and practical lectures on architecture, stone-cutting, descriptive geometry, &c. On Sundays general, literary and scientific subjects are treated. Several of the members have risen since the foundation of the club to be master-masons and building contractors.

The re-edification of the Palace of the Legion of Honour is not yet completed; the great Rotunda, in the style of Louis Seize; the Salon des Muses, the ceiling of which will be painted by M. Hermann; and the Salon d'Aurore, which is to be decorated by M. Ravoir, will be completed in five or six months. But the offices are ready, and the functionaries of the order are about to leave the temporary hotel provided for them after the Commune. The most important decorative work is that of the Cupola, confided to MM. Raynaud and Siroy; it consists of groups of heroic figures—Jeanne d'Arc, Jeanne Hachette, Duguesclin, Bayard, &c. The new palace will also possess a curious museum, containing the insignias of all the military and civil orders instituted during the last two centuries; and there will be found the Libro-d'oro of the Legion of Honour, printed on vellum and richly bound. Sir Richard Wallace has presented the Order with a garniture de Cheminée, given by Napoleon to Marshal Davoust, and vases, candelabra, &c., from the Malmaison, where they ornamented the First Consul's study.

The Prefect of the Seine has appointed, in accordance with a report submitted by M. Iphand, a committee to inquire into the modifications to be introduced in the system of lighting and heating public monuments. Engineers submitting plans are desired to treat specially of school buildings, which are, for the most part, constructed on unsound sanitary principles. Inventors should address their memoranda to the Préfecture de la Seine, Direction des Travaux. Statues and commemorative monuments are all rising in prodigious numbers. In addition to the statue of Guizot, about to be erected at Amiens, there is at this moment, at the Ecole des Beaux Arts, an exhibition of projects for the statue of Lamartine, which will occupy the market-place at Macon. There are sixteen figures, one in bronze, and the rest in plaster. At the Chaise another monument will shortly be inaugurated. It is to the memory of Adolphe Brionnet, the well-known building contractor, who erected the greater part of the new Louvre, and who died a year ago. The monument faces out of the poet Casimir Delavigne, and affects the form of a Greek mosque, with all the ordinary heaviness of that style. Its elevation is about seven metres. The interior contains an altar, and the only attempt at decoration consists in a few holly crowns and sculptured presses at the angles. Lastly, a monument is about to be erected at Bagneux, near Paris, to commemorate one of the most brilliant *faits d'armes* of the siege. It is to stand on the spot where the Commandant de Dampierre was killed by the head of his column. The plan is rectangular, and occupies a surface of some thousand metres. The monument will take the form of a truncated cone, measuring three metres at the base, and scarcely one at the top. It will stand on a basement of Lorraine stone, and be surmounted by a life-size bust of the Commandant de Mobles, Picot de Dampierre. Two bas-reliefs in bronze will reproduce the most memorable episodes of the combat of the 13th of October, 1870. Unlike most similar monuments erected since the war, this will be achieved by public subscription alone, without the aid of the State or Municipality.

THE LATE SIR JOHN BENSON, ARCHITECT AND ENGINEER.

We record with regret the death of Sir John Benson, which took place a few days ago at his house in Alexander-square, Brompton, where, like Lady Benson, he had been residing some time for the benefit of medical advice. Sir John Benson, was born at Collooney, in Sligo, in 1812. Before leaving for Cork he designed a number of works in his own locality. He was elected county surveyor for the East Riding of York during the famine, and laboured assiduously in that position. He will be chiefly remembered as the architect of the building for the Great Dublin Exhibition of 1853, for which his designs were chosen in competition. It was on this occasion that we first knew him, and we have a strong recollection of the energy and power of labour he then showed. At the opening of the Exhibition he was knighted by the Earl of St. Germain, then Lord-Lieutenant of Ireland. He became engineer to the Harbour Board of the city of Cork, and improved the navigation of the river, by which the revenues were doubled. The waterworks there were designed by him, also some bridges and Roman Catholic Chapels; amongst the latter, St. Patrick's, the principal chapel in the city. He was also engineer of several railways. His last works, before leaving Cork, in November, 1872, were designs for raising the roof of St. Patrick's Church, and for the rebuilding of St. Luke's Church, both of which have been since carried out. Sir John was a member of the Institution of Civil Engineers.

THE REGENT'S CANAL EXPLOSION.

The inquest upon the three men who were killed in the explosion on board the *Tilbury* on the 2nd instant has been concluded. One of the witnesses was Dr. Alfred Swaine Taylor, who has been for forty years Professor of Chemistry at Guy's Hospital. He stated that he did not consider wooden casks to be proper vessels for the conveyance of benzoline. It was a most dangerous substance to uncover near a naked light; it was not readily put out with water, and the best thing to extinguish it was some

non-combustible material. A mixture of benzoline vapour and air was most dangerous, and on a barge would travel a foot in a second, and directly it met a flame it would explode. Dr. Taylor believed the cause of this explosion was a mixture of benzoline vapour and atmospheric air, which accumulated under the tarpaulin, met a light, and thus ignited the gunpowder. Major Majendie, the Government Inspector, also expressed his opinion that the explosion was due to an accumulation underneath the tarpaulin, which evaporated or escaped from the casks of benzoline, and reaching either the cabin fire or a lamp, communicated with the gunpowder. The jury by their verdict endorsed this view, adding that, in the storage and transport of the cargo, the Grand Junction Canal Company omitted proper precautions, and were guilty of gross negligence. They also found that the existing statutory laws were inadequate to secure the public safety. In the course of the inquiry Mr. Hughes, manager of the Grand Junction Canal Company, stated that the conveyance of gunpowder had, in deference to the state of public feeling, been discontinued upon that system.

THE HASTINGS TOWN HALL COMPETITION.

A BUNGE of the purest kind has been made over the competition for plans for the new town-hall at Hastings. Mr. Card having cubed the contents of each design, sent in a report, showing that not a single plan could be carried out for the 10,000*l.* voted by the council. The report having been privately circulated amongst members, the council sat specially, on Wednesday afternoon, to "consider" the same. The matter was all out and dry. The mayor proposed that Mr. Card's report should be taken as read. This was done, and the members of the press were prevented gaining information of its contents. Then the committee who have managed the precious muddle recommended that the plans should not be publicly exhibited; but as the cost of erecting the proposed hall would far exceed the sum voted by the council, all the plans should be returned to competitors, and further procedure in the matter be referred back to the committee. This was assented to, but not till Mr. Hill (architect) had given a quiet reminder of the view he had stated, that 15,000*l.* would be a very low sum for the cost of such a building. He also said plainly that the town authorities had put themselves in a ludicrous position, in sending out invitations to compete for a large building, to cost 10,000*l.*, which everybody could see must cost very far in excess of that amount. It is stated that Mr. Card, county surveyor, puts the cost of the building at 20,000*l.*

SCHOOLS OF SCIENCE AND OF ART.

Liverpool Operative Science Classes.—The prizes and certificates gained by the students who have attended the past session of the Liverpool Operative Science Classes were distributed in the Queen's-road Board School. Mr. S. G. Rathbone, chairman of the School Board, presided. The chairman, before distributing the prizes, delivered an address. He said the funds by which the classes were supported were derived entirely either from the fees of the scholars, or from grants made for results by the Science and Art Department, which was a branch of the Education Department of the country, so that they were conducted without putting the rate-payers of the town to any expense whatever. He wished, on behalf, not only of the School Board, but of the managers of all the elementary schools, to say how very grateful they were to the managers of the classes for the very liberal manner in which they had dealt with the elementary schools of the town. All the School Board had done to promote the welfare of the classes was to lend the school-rooms, and, in consideration of that service, the managers of the classes had received, at a nominal fee, any teacher or pupil-teacher connected with any elementary school. What was a great deal more, the managers of the classes had taken as many as they possibly could into the laboratory, and had supplied them, at very considerable expense, with materials for laboratory practice. A laboratory for instruction in chemical analysis had been opened, and there were sixty-five students' teachers and pupil-teachers belonging

to the different elementary schools, attending it. They were taught by Mr. Tate. There were 107 pupils attending the classes or lectures in chemistry. Last year the number attending was only thirty, so that the increase was conclusive evidence of the success of the classes.

Newcastle College of Physical Science.—The fourth session of the University of Durham College of Physical Science, held in Newcastle, was commenced on Monday week in the Wood Memorial Hall, Newcastle, under the presidency of the Dean of Durham (Dr. Lake), as the warden of the college. In opening the proceedings he said that the college maintained its position, and was indeed advancing in success. The council reported to the governors the continued success of the college, the number of students who attended the day classes last session being as follows:—First year, fifty-seven; second year, twenty-one; and from the Medical College, twenty-three; making a total of 101; being an increase of ten over the preceding year, and twenty-five over the first year. So far as the entries for the coming session are known at present, the numbers promise to compare favourably with past sessions. The amount of subscriptions and donations promised up to the close of the financial year was about 20,700*l.*, and secured a reliable income of 2,500*l.*, irrespective of fees. An important addition to the usefulness of the college has been effected by the appointment of Dr. Alleyne Nicholson to the chair of biology, and the formation of a class under M. G. A. Lebour, for the teaching of practical work of mineral surveying. The University of Durham has provided by act of convocation that students in physical science who have completed their course shall be admissible by grace of the university to the academical rank of associate in physical science, and that such associates after being engaged for three years in some practical work of mining, mechanical, or civil engineering, and having passed a further examination with reference principally to the work in which they have been engaged, shall be admissible by the grace of the university to the title of mining, mechanical, or civil engineer, of the University of Durham. Professor Aldis delivered the inaugural address.

The Etheldreda School of Art, Ely.—Last year the celebration of the bissexcentenary of the foundation of Ely Cathedral was a success. This year will be notable as the commencement of the "Etheldreda School of Art," Canon Selwyn having offered prizes for water-colour and pencil drawings by inhabitants of Ely and the hamlets, or those who have been resident in Ely during the year. Competitors, of whom we hear a goodly number have been named, are required to send in their handiworks, which are to consist of landscape views of the cathedral and market-day scenes, which will, with other works of art loaned for the purpose, be publicly exhibited after the prizes for the competitive drawings are awarded.

THE ARCHAEOLOGICAL INSTITUTE AND THE MAYORALTY OF EXETER.

At Exeter, the Royal Archaeological Institute of Great Britain have presented to the city a gold chain of office, to be worn by the mayor for the time being. Last year the Institute visited Exeter, and were so satisfied with the reception they experienced that they determined to leave some substantial mark of their approval; and learning that the mayor's chain, originally possessed by the city, was sacrificed in troubled times to supply the needs of the Sovereign, they determined that their approval should be shown in the presentation of a chain to take its place. The mayor last year was Mr. C. J. Follett, and last November he was re-elected, so that he is the first to wear the collar or chain which his hospitality and courtesy won for the city. The gold collar, with a badge attached, is a work of thirteenth-century style. It is very symbolical, the main links being formed by castles, the insignia of the city. The badge consists of the city arms in enamel.

The Earl of Devon made the presentation, and the mayor suitably acknowledged the gift of the Institute, and remarked that this presentation carried them back to deeds of endurance, self-denial, patriotism, and duty; it carried them forward into days of advancing progress, during which he hoped it would be handed down from generation to generation, in a continuous, unbroken history worthy of the past. It was a link which would bind together

a great, successful, and deep-searching society, with a great, industrious, and distinguished city.

Sir Stafford Northcote addressed the meeting, and afterwards the mayor and corporation entertained at dinner the representatives of the Institute, — the Earl of Devon, Sir John McClean, the ex-Mayor of Oxford, the hon. secretary of the Institute and chairman of the committee, Archdeacon Freeman, and many distinguished gentlemen, including Lord Coleridge, Sir L. Palk, M.P., Sir J. Kennaugh, M.P., Mr. A. Mills, M.P., Mr. J. G. Johnson, M.P., and Canon Cook.

FOREIGN COMPETITION IN IRON WORK.

A large drapery firm in Sheffield are at present enlarging their shop in one of the leading streets in the borough. The whole of the pillars, girders, arches, and other iron work, — which, by the way, is largely supplanting brick, stone, and wood work, — is being supplied by a firm in Belgium, their contract-prices being 19½ per cent. lower than the tender of English contractors and builders.

Sheffield is the centre of iron construction, and if Belgian manufacturers can compete with the staple industrial districts of iron, pay freightage and other expenses, what chance have other districts?

Staffordshire is also invaded by the Belgians, who have just sent in a heavy consignment of products of the mills and forges of Belgium. There are four ditch-plates of the 35 ft. 5 in. in length by 18 in. in width, and ¾ in. in thickness, and each plate weighs 15 cwt. This iron is to be used with baulks of timber in carrying the roof of a new fitting-shop for an engineering and ironfoundry works at Highfield, South Staffordshire.

Messrs. Perry & Sons applied to twenty large firms in England for the above iron, but only one quoted a price. The English firm offered to deliver the iron at 19½. 4s. per ton, whilst the Belgian firm made and delivered it at 18½. 2s. 9d. per ton. This fact is creating no little surprise and concern amongst masters and men in the north of England.

A NEW CHURCH AT BATTERSEA-RISE.

A NEW Church (St. Mark's), has been erected at Battersea-rise. The church, which is built of brick, is in the Geometrical style of architecture, with a small tower and spire at the west end. It consists of nave, with lofty clearstory windows, north and south aisles, south porch, and western porch, a vestibule, north and south transept, an apsidal chancel, organ-chamber, and vestry. A special feature in the edifice is the apsidal chancel, round which there is an ambulatory, separated from the sacristy by an arcade of brick pillars. Steps from the ambulatory lead to a crypt beneath. The nave is divided from the aisles by pillars of Pennant stone, with Bath stone bases and caps, from which spring brick arches. The chancel, which is unusually spacious, and adapted for a numerous choir, has an arcade of nine arches, with brick pillars and stone caps and bases, and a dwarf screen wall separates it from the ambulatory. From the chancel the altar is approached by a flight of nine steps, varying in width, and is surmounted by a gilt cross on a carved oak background, with the figure of an angel at each side. The windows in the chancel apse are filled in with stained glass, and contain figures of the Virgin Mary, Mary Magdalene, St. John, Simon of Cyrene, Joseph of Arimathea, and Nicodemus. This portion of the work was executed by Messrs. Lavers, Baraud, & Westlake. The architect of the church is Mr. William White; and Mr. Gregory, of the Clapham Junction Works, the builder. The cost of the structure, which will seat 600 persons, is 6,500l.

A Commemorative Clock Tower. — There was erected in 1872, in connexion with schools, at Stratton, near Micheldever, the Hampshire seat of Lord Northbrook, Viceroy of India, a clock-tower in memory of his lordship's son, who was lost in the ill-fated ironclad *Captain*, in which he was serving as a midshipman. The tower was erected by subscriptions of the neighbours and friends of the Viceroy. A photograph of the tower and an illuminated scroll setting forth its object and design have just been forwarded to Lord Northbrook. The memorial was designed by Mr. Colson, of Winchester.

STRONG-ROOMS.

ONE of the largest strong-rooms ever made has just been completed at Messrs. Chubb & Son's London Works, for the Argentine Government, and is now being got ready for shipment to South America. It is constructed of two shells, with an air space between, the outer shell being made of boiler plates, fastened by screw bolts, and having protected joints, the inner shell being the cases of fine resisting material. Entrance to the room, which contains about 1,100 cubic feet, is obtained by two massive doors of combined iron and steel, each door weighing nearly a ton, and secured by twelve bolts and three gunpowder-proof locks. The work is so beautifully finished that the most delicate hand can lock or unlock these great doors with perfect ease.

The interior is divided into three bays, each of which is fitted with four tiers of iron shelves, on which will be deposited the Government books.

The whole of the details are carefully carried out, and an idea of the amount of work involved may be gathered from the fact of there being no less than three thousand screws and rivets used in its construction.

ON ETCHING.

LIVERPOOL ART CLUB.

THE collection, illustrative of the history and practice of etching, lent by Mr. James Anderson Rose, to the Liverpool Art Club, and now being exhibited, as we have already mentioned, includes 537 plates. Mr. Rose has prefixed to the catalogue an Introduction on Etching, parts of which will interest many of our readers: —

Etching is the art of graving, with a needle, on a varnished copper plate, so that wherever the copper has been laid bare by the etching-needle, aquafortis poured on the plate bites in, but does not affect that part of the plate which remains covered with the varnish. If then the varnish be removed, and the copper plate be covered with ink, and wiped over with the hand of the printer, so as to fill up with the ink all the bitten-in lines of the design on the copper, an impression on paper taken by pressure in a rolling press is called an etching.

"Dry point" is a technical term for a process ancillary to etching, and consists in drawing direct on the copper plate with the etching needle, the plate not being varnished, so that so far as dry point is concerned, acid is not used for biting in, and the impression on paper is taken direct from the copper. Fewer impressions can be taken of a dry-point plate, or of an etched plate which has been aided by dry point, because the incisions of the needle, used as dry point, are not so strong or deep as the incisions of the needle bitten in by acid.

"Burr" is also a technical term, used to describe the effect produced on the printed etching, owing to the edge of each stroke of the needle on the copper plate being slightly serrated or ragged; this delicate rough edge of copper holds an extra portion of ink after the copper has been rubbed over by the printer's hand, and leaves on the paper, when the copper plate is pressed by the rolling machine, a rich soft velvety appearance, which for that reason is greatly esteemed by connoisseurs, and because also it shows the etchings having this burr, to be impressions before the plate is worn.

Unlimited freedom is the characteristic of etching. The needle, gliding along the surface of the copper, meets with little resistance, and easily takes any direction the hand may give. Etching may be practised by an artist with almost the same facility as if he were drawing with a pencil or pen on paper, with this distinction, that in drawing on paper the artist sees at once what he has done, whilst in etching experience only teaches what effect each stroke will produce when an impression is taken from the copper-plate.

There have been controversies for generations amongst various countries, notably Italy, Germany, and Holland, as to which is entitled to the honour of the invention of printing, and of engraving. But as to etching, there is little or no evidence or record where the process was first invented or used. Albert Durer etched a few plates, but he had evidently not fully mastered its technical difficulties, and his etched plates are not to be compared to his line engravings. Some form of the process of etching had doubtless been used before his time, both in Germany and Italy.

The earliest book on etching in the English language is dated 1599. It is entitled "A Booke of Secrets," and "also to grave with strong water on steel and iron." It is stated to be translated out of Dutch. Two things are there fore shown by the title, — first, that the process of etching was previously known in Holland, and, second, that steel and iron were employed before copper was used for the purpose.

According to Mr. Hamerton, in his very interesting treatise on etching, and etching successful etching requires a multitude of organic, artistic, and mental qualifications. It must be premised that a perfect knowledge and executive gift of drawing are absolutely essential, and next, that industry, although it may give certain amount of manual skill, cannot make an etcher. Mr. Hamerton then sets forth in numerous chapters what are the necessary qualities for a master in etching, which may be summarised as follows: —

Comprehensiveness. — To grasp the whole subject at once, in all its relations, and to work only with reference to the whole.

Abstractness. — When an etcher knows that his art cannot really imitate, he resorts to abstraction and boldly interprets.

Selection. — An artist does not try to detain one truth from its fellows, but to give the sum of all the truths, so that a master in etching will fully convey the ideas of structure, of light and shade, and of local colour with the same set of touches.

Sensitiveness. — An etcher should be sensitive in the best sense. True sensitiveness is not disease, but the highest life of the purest health. (Under this head Mr. Hamerton remarks: — "The great capitals there is over-stimulus from the excess of exhibitions. In the country, from the want of stimulus, there is mortal dullness, one of the well-known marks of provincialism.")

Emphasis. — In all human communication, where there is energy enough to move men, there is emphasis, — in oratory, in literature, in acting, in painting, in common daily talk, in music, even in the pantomime of gesture. There is a kind of emphasis necessary to all etching, even the most laboured, the delicate accentuation that lives in every stroke.

Passion. — The one capacity which makes all his other powers available is the capacity for passionate emotion. To feel vividly, to be possessed for a few hours by some over-mastering thought before the fire has time to die out of it, this is the first condition of success in etching.

Frankness. — Etching is eminently a straightforward art. It does not resort to apparently difficult ways of doing easy things in order to get credit for difficulties overcome. On the contrary, it is remarkable for preferring apparently simple ways of doing difficult things.

Speed. — It is right to insist on a certain value in mere rapidity. A rapid stroke, when not so rapid as to miss the necessary modulations, is generally better than a slow one, and a concise expression preferable to a diffuse expression.

Motives. — The motive of a picture is not so much material as spiritual.

In these principles there is a great deal of truth, carrying out Mr. Hamerton's theory that an etching should always be conceived purely as a sketch, and what is called a "finished" etching ought to be nothing more than a sketch carried further. It may be doubted, however, whether the art of etching ought to be circumscribed by any such theory, or whether these principles are especially applicable to the works of first-rate artists, like Rembrandt and Vandyck, Méryon, or Whistler. Genius is bound by no rules. It is essentially original, and modifies, alters, adds to, opposes, all previous opinions or works on any given subject, and in fact makes laws or principles for itself. Mediocrity does not take the lead of public opinion; it makes it a business to watch all its caprices, and to follow it in every casual turning. Genius, on the contrary, is not popular; it opposes what has gone before, and so far as it is original, it has to hide its time, and to create the taste to understand and appreciate originality. Most of the great etchers, according to Mr. Rose, have died miserably, as will be seen from the following portions of his paper.

Rembrandt Van Ryn is the sole and supreme monarch of etching, who developed in perfection its admirable qualities. He probably prepared all his own materials, and kept a printing-press in his studio, so that he himself printed off the impressions of his copper-plates. He worked in secret, and never practised the details of his art

in the presence of any one. The marvellous effects he produced have puzzled modern experts to discover the mode of his operations, so as to account for the wonderful results he arrived at. He added work to his plates, altered, bit and re-bit with acid, used dry point certainly, and perhaps the burin, and, in fact, seemed never satisfied, so that most of his prints are found in many different states. Of his own portrait, drawing at an open window, there are ten different states. It did not always or necessarily follow that the later states of his plates were the best. Sometimes, in making an alteration or addition, a better previous effect was lost or changed for the worse.

The censorious and ignorant have invented a slow and vulgar motive for Rembrandt's anxiety to perfect his work. It has been said that he knew the insanity of collectors, who then, as now, had a mania to possess different states of his etchings, not for their intrinsic merits but for their rarity, and that avarice induced him to produce these different states to gratify those whims and his own capidity. The world cannot comprehend the insatiable thirst of an immortal genius for perfection. This Rembrandt, whose magical works illuminate every national gallery in Europe, saving still plentiful stores for the adornment of the palaces of princes and the mansions of nobles,—whose etchings, altered, improved, perfected by ceaseless and profound thought and unintermitting labour,—the equivalent of whose works would now be estimated in gold by millions sterling,—this Rembrandt was an insolvent debtor! His treasures of Titians, Raffaels, and other masterpieces, with a hundred volumes which he had collected of the finest engravings in the world, his chairs, tables, bed, walking-sticks, shirts, pocket-handkerchiefs, linen then at the washer-woman's, and his Bible, were sold by public auction under a judicial execution,* and realised less than one-fourth of their estimated value. Rembrandt thenceforth descended to greater poverty, and such ultimate obscurity that the time and place of his death were for nearly two centuries unknown, and he was long supposed to have died at Stockholm, a fugitive from his native land. It has only very recently been ascertained that he was consigned to his last resting-place in Amsterdam.†

Vandyck was another famous etcher, as well as painter. He etched the portraits of a considerable number of his friends and contemporaries with whom he lived on terms of intimacy. These etchings are distinguished for delicacy and precision of drawing, for vigour also, and power of expression, with the same nice discrimination of character and grace of action which are so pre-eminently displayed in his pictures. In the first states, as etched by Vandyck, they are excessively rare. Twenty-two of them, with additional states finished by other engravers, and five other etchings by Vandyck, were sold at the sale of Julian Marshall's prints, in 1864, for 400l.; but they were certainly as now, worth very considerably more.

Vandyck's career ended in adversity, and when he was but forty-two years of age. He tried to retrieve his fortunes by the study of alchemy. Charles I., who had given him a pension, offered 800l. (more than 1,000l. of our money) to the physician who should save him, but his ailments were mortal: he died, and was buried in Old St. Paul's, so his ashes were lost or dispersed by the Fire of London. Considering the multitude, size, and splendour of his works in England, and in the Low Countries, as well as in Italy, where he lived five years, that he had hosts of friends, and lived always magnificently, it is marvellous how he found time in so short a life to produce so many and such beautiful works, and equally lamentable to think of his dreary end.

Hollar was another admirable etcher, who lived a long life of incessant labour. His works are numbered by thousands. Parthey's catalogue of them forms a considerable octavo volume. Dying in old age in hopeless poverty, he earnestly entreated the bailiffs, then carrying off his furniture, to leave him but his bed to lie on.

The greatest etcher of modern times is

Moryon,—a rare and subtle genius. So original and full of shadowy tragedy; so certain in his work; so true to facts; so powerful in execution, yet fraught with mournful mystery. Think of him tenderly, mournfully, this timid and neglected spirit, despairing, destroying his work, and perishing miserably in a madhouse. . . .

The advance in the knowledge, practice, and love of the fine arts is sometimes said to be one sign of the decadence of a nation. Prolonged peace, and the consequent accumulation of wealth, it is alleged, produce luxury and debauchery, selfishness and want of courtesy in manners, and either a disregard of or superstition engendered by cowardice in religion. With these conditions (if they be true) the fine arts will notwithstanding advance in popular esteem; yet we know that in the English people,—not meaning thereby that aggregate of ignorance, poverty, and crime which damagagues and scoundrels call the people; but the best of all classes, high and low, rich and poor,—there is a living, breathing, and inspiring sense of religion and morality, right and wrong, which is the only abiding atmosphere of true art. Therefore we may fervently hope and well believe that the fine arts, rightly understood and directed, will relieve the mind harassed with care, clear the brain wearied with toil, lend grace to life, and tend to exalt the understanding, purify the heart, aid morality, give to true religion homage, and by inspiring a wise admiration of the beautiful, prove a delight in prosperity, and a refuge and consolation in adversity.

"The eye did seem to labour with a tear,
Which suddenly took birth, but, overleaping'd
With its own swelling, dropp'd upon her bosom,
Which, by reflection of her light, appear'd
As nature meant her sorrow for an ornament.
After, her looks grew cheerful, and I saw
A smile shoot graceful upward from her eyes,
As if they had gain'd a victory o'er grief;
And with it may beams reveal'd themselves,
Upon whose golden threads the angels walk
To and again from heaven."

ST. PANCRAS.

KENTISH-TOWN.—(CAMDEN-TOWN.—SOMERS-TOWN.)

HITHERTO no connected account has been given of the results of the rapid progress of this district in the past seventy years, during which period three towns have come into existence. Somers-town dates its commencement from the time of the first French Revolution; Camden-town was commenced a few years after; and Agar-town was projected thirty years ago, but is now swept away.

The vast increase of the population in the metropolis has been made more evident in this district from the fact of its rural condition but fifty years since. Kentish-town, too, in the ten years previous to the last census, from various causes, had been increased by 23,881 inhabitants, making the total population 68,198 on the day the census was taken; the entire population of St. Pancras being 221,694.

The history of St. Pancras forms the subject of an interesting book,* from which we glean a few particulars as to the earlier histories of the three great districts of Kentish-town, Camden-town, and Somers-town.

The name of Kentish-town is derived from the fact, as most generally believed, of its foundation by Walter and Thomas de Cantilupe. In a notice of the "hamlet" in the "History of Middlesex," by Moll, published in 1724, he states: "You may from Hampstead, see in the vale between it and London, a village, vulgarly called Kentish-town, which we mention chiefly by reason of the corruption of the name, the true one being Cantilupe-town, of which that great family were anciently the owners. One or both of them built a chapel here. They were men of great account in the reigns of King John, Henry III., and Edward I. Walter de Cantilupe was Bishop of Worcester from 1236 to 1286; Saint Thomas de Cantilupe was Bishop of Hereford from 1275 to 1282. Thomas was canonised for a saint in the thirty-fourth year of Edward's reign (1306). The inheritance at length devolving upon the sisters, the very name became extinct. Kentish-town is now a prebend of St. Paul's."

Though oral tradition is an uncertain and not always reliable source of the truth respecting topographical data, yet its germs may be met

with. An intelligent lady inhabitant (a septuagenarian) of Kentish-town says: "You must remember that Kentish-town was originally a forest—a part of the Great Forest of Middlesex. The name of this town is generally believed to have been derived from Caen or Ken Wood, from Bishop Ken, who, you will remember, was a remarkably conscientious man in a licentious age. Even Charles II. appreciated his worth, made him his chaplain, and afterwards Bishop of Bath and Wells. He opposed the Popish intentions of James II., and he was one of the seven bishops sent to the Tower for resisting that monarch's unconstitutional dispensing power. He died in 1711, I think, and he was at one time the owner of the park, called then Bishop's Park, through which a road was out at Highgate. My father, and grandfather before him, were residents in this town. I have heard them speak of a woman who used to come through the wood to Kentish-town to their house to perform some domestic duties. There was then a wooden bridge over the Fleet Ditch by Millfield-lane. I remember my grandfather pointing out to me where it was, and where the mill stood, which no doubt gave the name to the lane. The ditch in that part was in the forest or wood, and was called Ken's Ditch,—hence the village or town Ken Ditch,—and eventually corrupted into Kentish-town."

Mr. William Howitt writes, in his "Northern Heights of London," that "about fifty years ago the people of Highgate made their visits to town in a stage-coach, which performed the journey in between two and three hours; fare, half a crown; such was the arduous undertaking that the passengers regularly stopped to take tea on their return at the Assembly House, Kentish-town. A very little beyond this Assembly House, now a tavern, is the Old Farm House. You will readily find it by that name, but do not look for poultry and geese in its yard, cattle in its fields, or milk and butter in its dairy. The only cattle are the human kind, densely crowded all round it in their close-packed houses; the only geese those who haunt its spirit tap, for it is a gin-shop public-house. But the other day all in front of this strange Old Farm House, as far as Camden-town, were green fields. They are now houses and shops."

In Palmer's "History of St. Pancras" it is stated that "Queen Elizabeth had a palace in Kentish-town. It was her hunting palace, where she repaired to enjoy her sports of hawking and other amusements; it afterwards became a country residence of the noted Nell Gwynne, and occupied the site of what is known as the Old Farm Tavern."

Kentish-town is honoured from having been the residence of Lord Nelson.

Many distinguished men have resided in Kentish-town. Old inhabitants remember frequently seeing at one time Lord Erskine walk down Mansfield-place to a humble dwelling in Spring-row.

In Craven-place lived for a short time the satirical writer, and yet kind-hearted man, Douglas Jerrold. In Mortimer-terrace, then having a pleasant prospect of Hampstead, over the Gospel Oak meadows, lived at one time the charming essayist and poet Leigh Hunt. Howitt says, "at one time Leigh Hunt had lodgings in Kentish-town, and then probably it was that they (Keats and other congenial friends) used to take their strolls up Millfield-lane and encountered Coleridge."

In the year 1791, Horace Walpole, in a letter to Mrs. Berry, informed her that Lord Camden had just let some land in Kentish-town for building 1,400 houses. Hence, a few years afterwards the pleasant fields were mapped out for streets. Several builders set to work, and one of the principal resident ones afterwards was Mr. Thomas Lever.

The name of Camden-town was said lately by an old-established weekly newspaper to have been derived from that of William Camden, the author of "Britannia"; which is obviously an error. By common consent the name of the ground landlord was given to the new town, though some years elapsed before it was so called or described on maps published by authority.

The connexion of the first Marquis Camden with the prebendal estate of Cantilupe or Kentish-town was in consequence of his father marrying Elizabeth, one of the daughters of Richard Jeffreys, grandson of Sir John Jeffreys, whose family became proprietors in 1670. It is held subject to a reserved rent of 20l. 1s. 5d. per annum to the prebendary of St. Paul's.

* Inventory of Rembrandt's effects made on the 25th and 26th of July, 1629.

† "I have lately discovered that Rembrandt died in 600, at Amsterdam, on the Rosenkrantz. His mortal remains were interred on the 8th of October of the same year in the West Church (Westkerk) of that town."—Discourse on the Life and Genius of Rembrandt, delivered at Amsterdam, by Dr. Schellema.

* St. Pancras, Past and Present: being Historical, Traditional, and General Notes of the Parish, including Biographical Notices of Inhabitants associated with its Topographical and General History. By Frederick Miller. London: Heywood & Son, 4, Catherine-street, Strand, 1874.

In an Ordnance Map of St. Pancras, of about the year 1804, it is shown that Camden-town was only then planned for additional streets. Except in High-street, there were post-and-rail fences to the roads connecting Camden and Kentish towns, and church-paths, as they were then called, were kept up by a rate. These paths led up to the old church.

The precise date of the application of the name to Camden-town is not very clear. It has been stated to have been so called in 1791, but on a map of London and its suburbs, published by Carington Bowles, in 1793, the district was not then so described. The main street (High-street), was then called Southampton-place. The road which connects the eastern end of it with Old Pancras-road, and which is now Crowndale-road, then was known by the few and favoured inhabitants as Pig-lane. The fields then known as Rhodes's Fields existed, in which some few inhabitants still living have reminiscences of gambols and kite-flying. In the adjoining Somers-town Fields, in times of political excitement, meetings were held of Jacobins—represented in later times by Radicals.

Somers-town forms part of the St. Pancras manor, the remaining portions consisting of the Brewers', the Skinners', and the Bedford estates, and of Agar-town.

In 1381, the reversion of the manor was granted by the Crown to the prior and convent of the house of Carthusian monks, built in honour of the Holy Salvation; but on the dissolution of monasteries, in 1539, it reverted to the Crown.

John, the first Earl Somers, was created in 1695, when he was Lord High Chancellor, and became possessed of this estate, probably by the gift of Queen Anne.

In the *Gentleman's Magazine* for November, 1813, a letter appeared, dated October 13 of that year, in which the writer, Mr. J. T. Malcolm, gives a description of the rise of Somers Town, and of the changes in that district during the previous thirty years. Mr. Malcolm says, in this letter:—"A road has been made lately, called the New-road, which has intersected extensive fields from Tottenham-court-road to Battle Bridge; about midway, and on the south side of the same stood the famous 'Bowling-green House,' which had been noted for at least a century as a country retreat for Londoners on a Sunday afternoon; and lower down on the opposite side, was the 'Brill,' a comfortable country tavern, and perhaps more ancient than its rival. A few houses near the 'Mother Red Cap,' at Camden Town, and the Old Church of St. Pancras, were the only buildings that interrupted the view of the country from Queen-square and the Foundling Hospital. With the exception of the two buildings already mentioned, and a group of tall trees in a lane leading from Gray's-inn-lane to the 'Bowling-green House,' there was nothing to interrupt the view. Commencing at Southampton-row, near Holborn, is an excellent private road belonging to the Duke of Bedford, and the fields along the road are intersected with paths in different directions. The pleasantness of the situation, and the temptation offered by the New-road, induced some people to build on the land, and the Somers Places, East and West, arose; a few low buildings near the Duke's-road first made their appearance, accompanied by others of the same description, and, after a while, Somers-town was planned. Mr. Jacob Leroux became the principal landowner under Lord Somers. The former built for himself a handsome house, and various streets were named from the title of the noble Lord (Somers), a chapel was opened, and a polygon begun in a square (the Polygon and Clarendon-square). Everything seemed to prosper favourably, when some unforeseen cause arose which checked the fervour of building, and many carcasses of houses were sold for less than the value of building materials.

In the meantime, gradual advances were made on the north side of the New-road, from Tottenham-court-road; and, finally, the buildings on the south side reached the line of Gower-street. Somewhat lower, and near to Battle Bridge, there was a long grove of stunted trees which never seemed to thrive; and on the site of the Bedford Nursery a pavilion was erected, in which her Royal Highness the Duchess of York gave away the colours to a volunteer regiment. The interval between Southampton-place and Somers-town was soon one vast brickfield.

The influx of French emigrants, caused by the goings on in France, has contributed to the prosperity of Somers-town, by their occupying most of the previously empty houses; and the

increase of the native population began to be perceptible by the demand for ground offered in leases by the Duke of Bedford and the Foundling Hospital, whose trustees own a great deal of land in the neighbourhood. The consequence is the erection of such streets as Guildford-street, Bernard-street, and the houses comprising Brunswick and Russell Squares, and Tavistock-place and chapel, the east side of Woburn-place, &c."

Mr. Malcolm's interesting description of his own times, needs some additions and explanations, and these are given by Mr. Miller.

When the first houses of Somers-town were built in 1786, the difficulty of access to them in winter time was a great drawback, and hence many of them remained unoccupied for some time. But when a large number of French Royalists found refuge in England, no more appropriate spot could be selected for them than that of St. Pancras with its ancient associations. Of course they brought with them their national characteristics and form of religion, and their priests organised the new community.

No part of London presents a more peculiar population than does that of Somers-town. The large number of Frenchmen who made it their home when anarchy existed in their own country, bringing with them their national characteristics and form of religion; many representatives also of the sister isle, who seem to have a natural affinity in temperament, as well as in faith, with their more polished co-religionists, besides a due admixture of the natives of nearly every nation, render the present population (some are the third and fourth generation of those who were the first settlers in Somers-town) the most difficult to deal with, especially by a clergyman of the Established Church. When the Church of St. Luke, near King's-cross, was removed, for the erection of the Midland Railway-station, the inhabitants of Somers-town were entirely deprived of its accommodation, as that church was re-erected in Kentish-town. The liberality of Mr. George Moore, however, supplied the want by the erection, at his sole cost, of a church and commodious schools in Charlton-street, with an entrance in Osulton-street. This church is called Christ Church, and was erected in 1869.

In no district in the metropolis, perhaps, can there be found more squalor, or more depressing scenes than in this.

In consequence of the high rents demanded in Somers-town, after Mr. Leroux's death, when his house property passed into other hands, "many who could obtain the means, became builders—carpenters, retired publicans, leather workers, haymakers, &c.: each contrived to build his house, and every street was lengthened in its turn." The result is to be seen in the varied size and style of some of the houses.

Before taking leave of Somers-town, more particular attention may be called to the extraordinary transformation effected at the eastern end by that ruthless reformer, the Railway. Opposite the King's-cross Great Northern Station, from Weston-place on the east to Skinner-street and Brill-row on the west, and thence from one side of Skinner-street in the Euston-road, including a row of large houses, in front of some of which was an enclosed green paddock, with trees, and where St. Luke's Church was originally built, and so returning to King's-cross,—all have disappeared; and on the site has been erected the Midland Railway Station.

The site known for more than twenty years as Agar-town was formerly meadow-land, and when a lease of this prebendal manor came into the possession of Mr. Agar, about sixty years ago, it was of comparatively small value. The Regent's canal was then in course of construction. The company proposed to cut their canal direct through the estate; but Mr. Agar, a Queen's counsel at the Chancery Bar, disputed their rights, and successfully contested the point in a court of law. He obtained, it is believed, large pecuniary compensation, and a diversion of the intended course of the canal, which accounts for the circuitous route it takes round the estate.

Until the year 1840, Counsellor Agar's grounds retained their park-like appearance. In one part there were several fine mulberry-trees. The approach to the residence (which building remained till lately) was by a neat lodge and gate from the King's-road. Then, a portion of the land on the Maiden-lane side was let off to market gardeners. The King's-road had a rural aspect, the hedgerows being skirted by poplar and other trees.

In 1841, Mr. Agar sublet the greater part of his estate on leases for twenty-one years. Ten-

ments were run up in consequence by any one disposed to take the ground. Many were mere hovels, erected by journeyman bricklayers and carpenters on Sundays and in other spare time, and were inhabited before the ground flooring was laid. Hence many of the first proprietors rued the day they ever contemplated becoming the owners of their dwellings in "Agar" or "Ague Town," as it was now called; for, as a natural consequence of the want of proper drainage and sewerage, the inmates contracted fevers, which carried off in some instances the industrious father or mother, and sometimes several of the children of a family.

The condition of a new town springing up under such circumstances could not long be concealed from the outside public. In 1851 it attracted the attention of Mr. Charles Dickens. It had been in existence about ten years. A graphic description appeared in "Household Words." We did our own little best to expose its evils. Public attention was thus drawn to the condition of this district; and to those who thus heard of it for the first time, it became a nine days' wonder.

There must have been something defective in the law which could permit such a condition of things as existed in Agar-town for twenty years. The Ecclesiastical Commissioners would not renew the lease to the Agar family, the tempting offer by the Midland Railway Company was accepted, and hence the disappearance of the town.

Perhaps in no other district included in the metropolitan area have there been greater changes than in the North-west. The volume under notice is an attempt to preserve a record of such changes, and to include accounts of buildings, institutions, and individuals associated therewith.

The author, Mr. Miller, has produced an instructive and entertaining book, which merits all the more favourable recommendation to public notice from being the fruits of the leisure hours of a working printer.

THE CLEMENT MEMORIAL, SHREWSBURY.

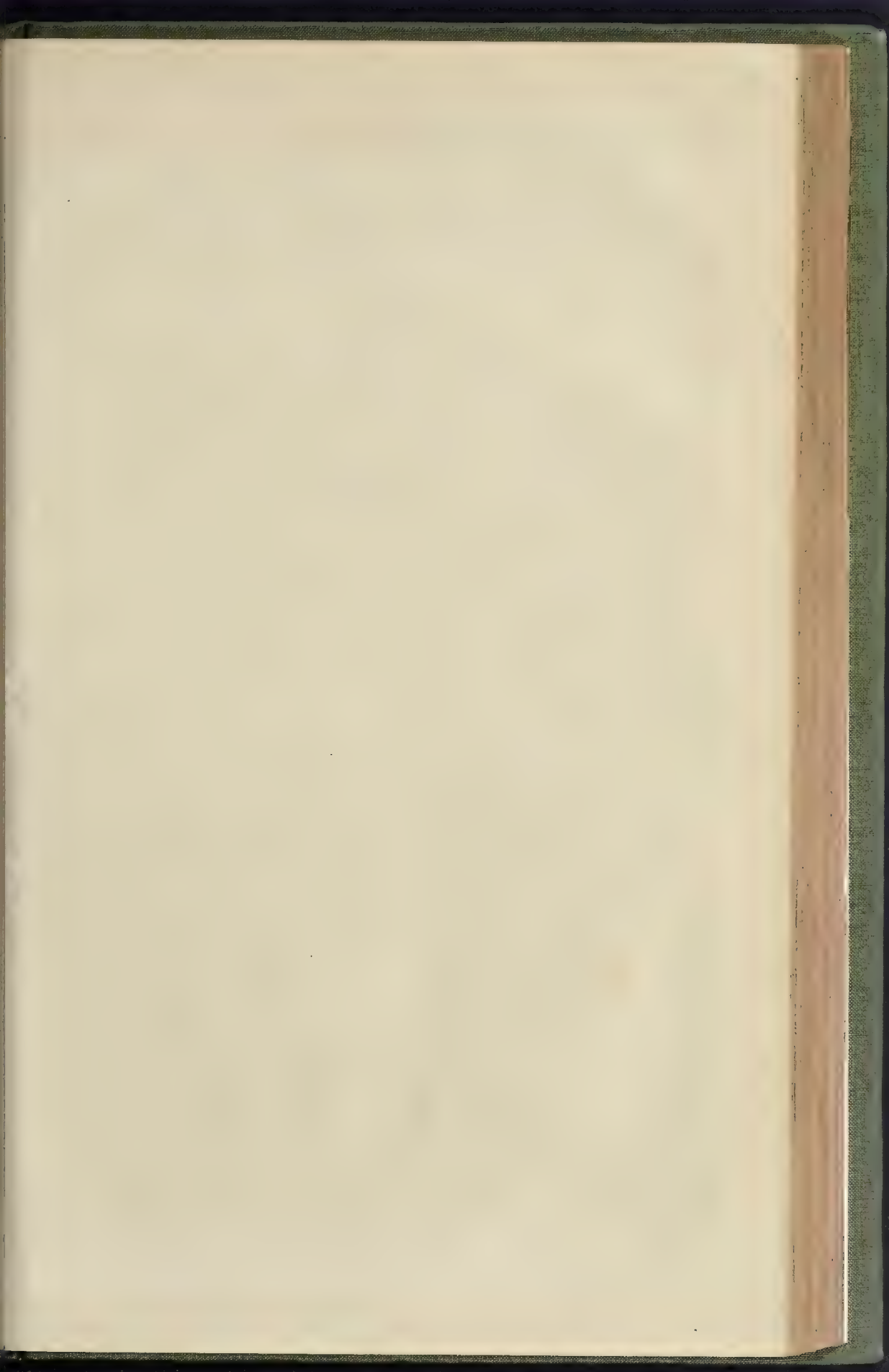
MR. WILLIAM JAMES CLEMENT, an eminent surgeon and good man, residing in Shrewsbury, made himself so well loved and respected by his fellow-townsmen that they have erected a memorial of him in front of the railway station, and the accompanying engraving gives a representation of it. The design, selected in competition, is by Mr. John Gibbs, who was the architect of the public memorials erected of his Royal Highness the Prince Consort at Abingdon, Sir G. C. Lewis, bart., Sir F. Sykes, bart., and others in various parts of the country, several of which have been illustrated in our pages,—works which give to his name some distinction. The memorial was executed by Mr. Dodson, of Shrewsbury. The general outline from the steps to the top is graceful. At the base on each side is a tier of three steps, which lead to the four semicircular drinking-fountains, each having a canopy. Above these the pedestal is continued up, and affords panels, in one of which is a bronze medallion portrait of the late Mr. Clement, by Mr. J. Durham, A.R.A., while in another is the following inscription:—

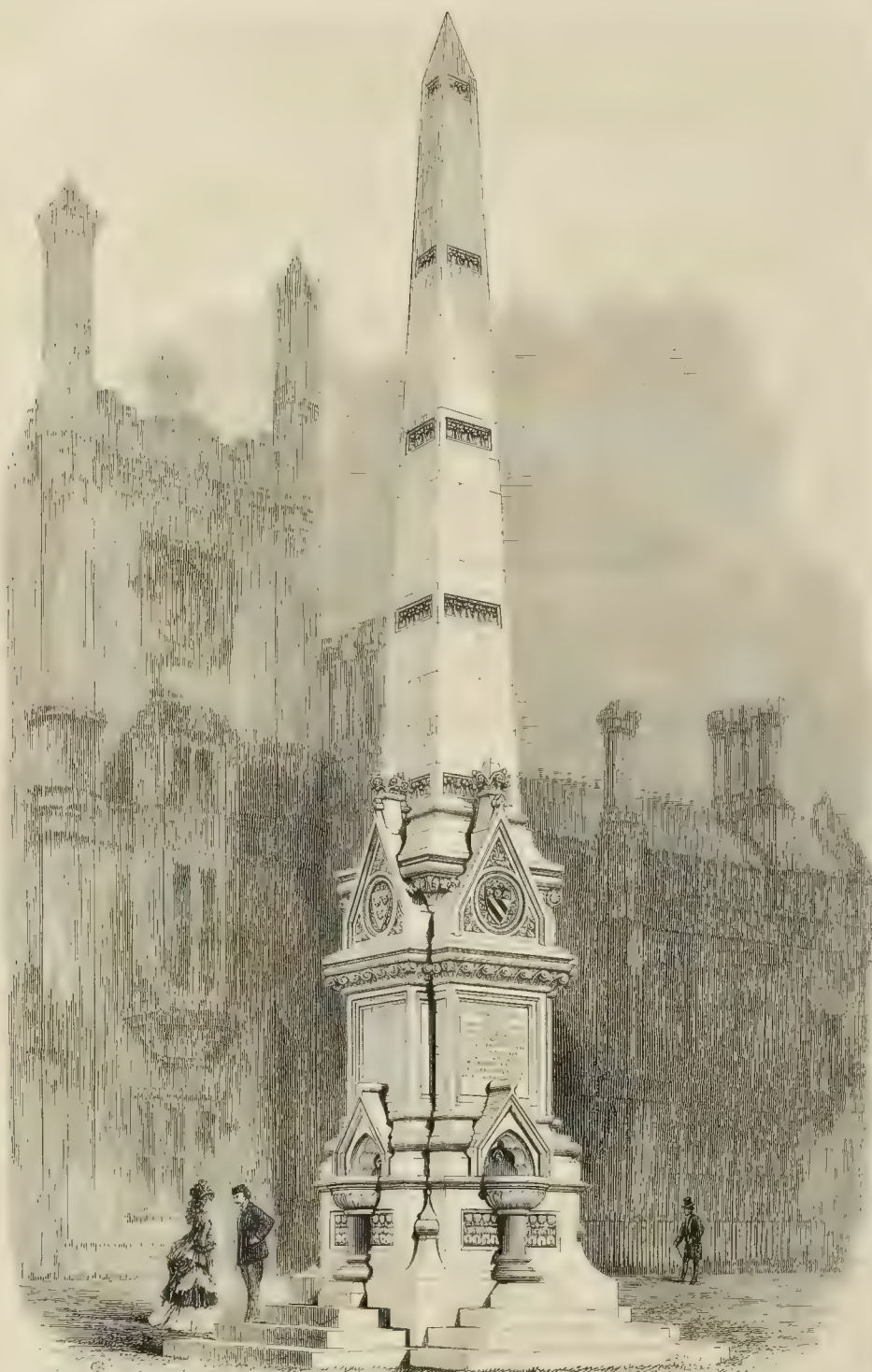
"To the Memory of
WILLIAM JAMES CLEMENT,
Surgeon,
Born MDCCCLII. Died MDCCCLXX.
Mayor A.D. MDCCCLXII-III.
M.P. for the Borough MDCCCLV-LXX.
Erected by his Friends and
Fellow-Townsmen
In grateful recognition
Of his enlightened public spirit,
Consummate professional skill,
And active private benevolence."

Over this is a cornice, having moulded and carved details, upon which rest four gables, containing emblazoned shields bearing the arms of the borough, the arms of the Royal Free Grammar School, and those of the late Mr. Clement. We now come to the upper base, parts of which fill up the angles between the gables, and from which rises a solid obelisk-like form having ornamental bands at five stages on each side.

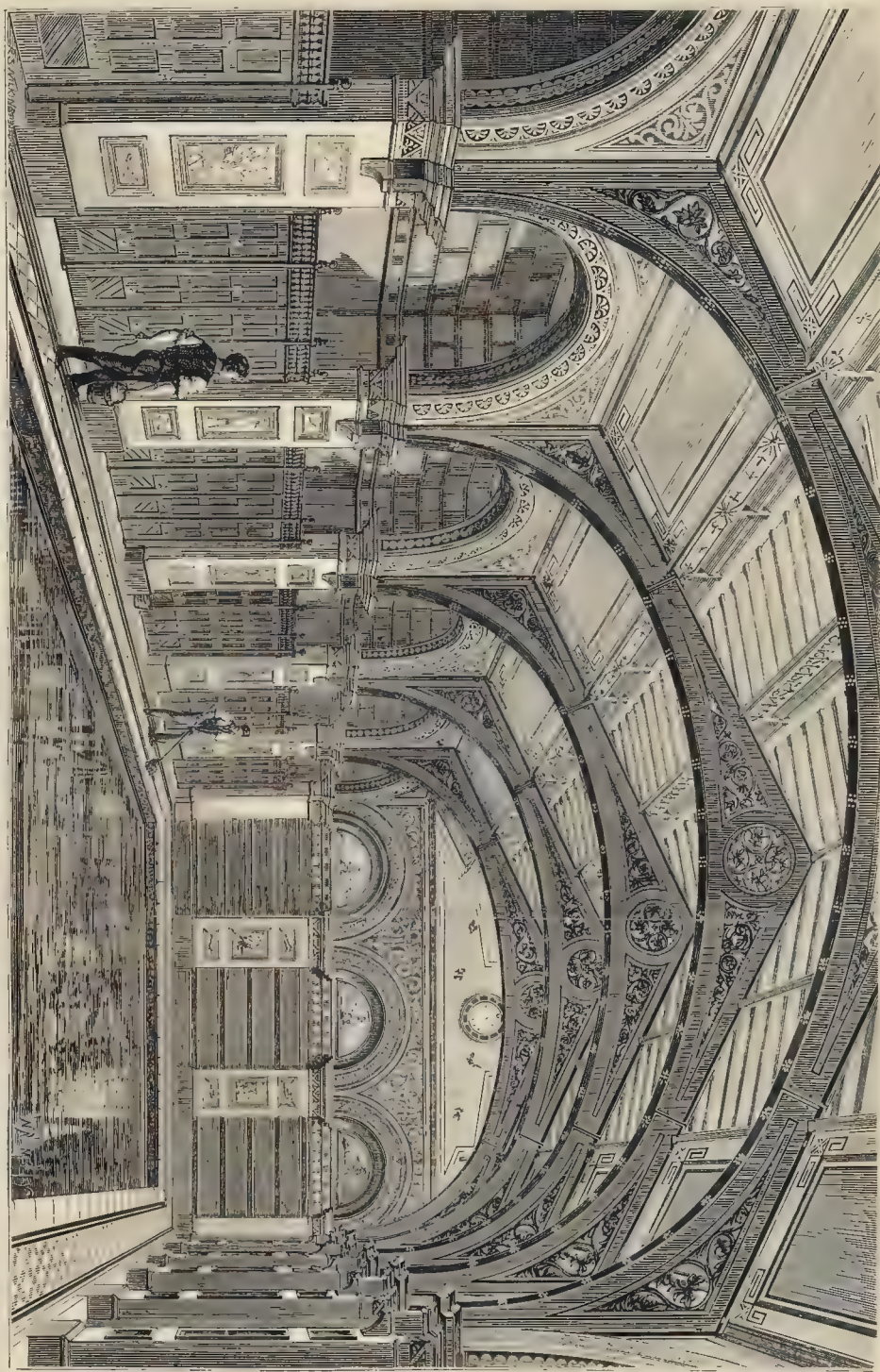
Beneath the memorial is a vaulted chamber of brickwork, which can be entered through the manhole at any time, that the supply and waste-pipes may be attended to, and by which they may be completely drained of water on the approach of frost, an arrangement which is very necessary in all such structures.

The cost of the memorial was about 600l.





THE CLEMENT MEMORIAL, SHREWSBURY.—MR. JOHN GIBBS, ARCHITECT.



ST. MARYLEBONE NEW SWIMMING BATH: SEYMOUR PLACE.—MR. H. SAXON SNELL, ARCHITECT.

ST. MARYLBONE NEW SWIMMING BATH.

This building is an addition to the already existing bathing establishment of the Commissioners of the St. Marylbone Vestry, and is situated in Seymour-place. The length of the bath-room is 85 ft., and the width 41 ft., the height being 28 ft. from the platform round the bath to the apex of the roof. The dressing-boxes, averaging 4 ft. 3 in. long, and 3 ft. 6 in. wide, are contained along the sides of the room in recessed arched openings. All the fittings of these boxes are of ebony, and the metal work is electro-plated. The arceding is continued along the end walls, but the recesses here are filled in with ornamental tile work. The piers of the arches have each three panels, filled in with blue hand-painted tiles, with variously designed representations of birds, fishes, and water-fowl. The roof is supported by cast-iron semi-elliptical ribs, ornamented with gilded scroll-work panels.

The size of the bath itself is 26 ft. by 73 ft., and the depth of water 4 ft. 6 in., shelving down to 6 ft. The spring diving-board is 4 ft. above the water, but there is another diving-board 5 ft. higher than this one.

The bottom and sides of the bath are covered with glazed tiling, in variously-designed patterns, and the hand-painted tile border above the water-line, 21 in. wide, represents the appearance of an aquarium, with fishes and rockwork.

The whole of the interior of the building is decorated with Pompeian ornament. The tile work has been executed by Messrs. Simpson & Sons, and the other decorations are by Messrs. Green & King. The builders are Messrs. Perry Brothers, whose contract for the execution of the whole of the works, including fittings, amounted to £2,500. Mr. Butler was the clerk of works. Mr. Raymond Smith is executing the marble fountain, which will be placed at the east end of the bath. The architect is Mr. H. Saxon Snell.

EXTENSION OF GLASGOW HARBOUR.

No better illustration can be afforded of the progress of Glasgow and the energy of its citizens than an account of the improvement of its harbour. As late as 1755 the west channel was only 44 in. deep at high water, and it was so obstructed by shoals, windings, and fords, that only shallow boats could be navigated upon it. Since then, the bed has been embanked with stone, the banks elevated and levelled, obstructions removed, and, by means of cuttings, dredgings, and straightenings, it has been made as uniform as a canal, and as serviceable for commerce as a bay.

The harbour itself has been made as valuable as a huge dock, partly by the deepening of the river's bed, partly by great excavations along the banks, and partly by the construction of massive quays. From 1862 to 1866 no less than 160 yards of quays were made. Besides this, there were made, from 1866 to 1870, 1,068 yards, and during the four years from then to the present year (1874), 1,096 yards have been added to the quay walls. It has been calculated that 200 yards of quays are required to be constructed yearly to meet the growing requirements of the trade of the port; but in the past five years that has been exceeded by 296 yards. The quay walls are now 6,557 lineal yards in extent, or nearly four miles in length.

The first graving-dock for Glasgow was now nearly completed. It is 560 ft. long, 72 ft. broad, and 20 ft. deep on the sill at neap-tides. It exceeds considerably in size those of Belfast, Greenock, and Leith; and indeed there is only one dock in the kingdom of greater depth at neaps, and that is one at Southampton, where the depth on the sill is 21 ft.

It is now proposed to construct an additional graving-dock, with dimensions somewhat similar to that already completed. A new quay-wall is being constructed, 220 yards in length, with a site for a 60-ton crane, on the north side, below Finnieston-street. This is being done by the Clyde Trust itself, without employing a contractor. Several of the concrete rings have been made already, and the committee charged with the work express no doubt of being able to sink the cylinders and construct the quay-walls more quickly and economically than if a contractor had been engaged. The Stobcross Dock is progressing satisfactorily to meet the increasing traffic. The total amount of quays yet to be made there is 3,400 lineal yards.

The great increase of population and of public works below the Glasgow Bridge, and on both sides of the river, calling for additional ferry accommodation, plans have been prepared for increasing it, for carriage and lorry traffic as well as for passengers.

INTERMITTENT DOWNWARD FILTRATION.

The following statement was prepared by Mr. J. Bailey Denton, C.E., for the Association for the Promotion of Social Science in Congress at Glasgow. Owing, however, to a personal accident disabling the writer from attendance, the paper was taken as read without discussion, and was not made public. Nevertheless, as the International Exhibition, where the process of intermittent downward filtration is now shown in operation, is drawing to a close, it is deemed desirable to place the details contained in this statement before sanitary authorities and their officers as illustrating the cleansing powers of natural soil, and the small extent of land that will suffice for the purification of sewage up to the standards recommended by the Rivers Pollution Commissioners, if the area be not less than one acre to 1,000 persons. It will, of course, be understood that the assertions are the author's, not ours.

It having been suggested to the author of this communication by the authorities of the International Exhibition at South Kensington, that he should illustrate the process known as "Intermittent Downward Filtration," as suggested by Dr. Edward Frankland, and first carried into practice by the author at Merthyr Tydvil by an example to be daily in operation in the western annexe of the Exhibition, it may be opportune to state briefly, for the consideration of the Association, the results obtained from it during the time that it has been in operation.

London sewage is delivered daily to the several exhibits of sewage treatment by the authorities of the International Exhibition, independently of the exhibitors. The quantity delivered to the author for treatment by intermittent downward filtration has been 25 gallons daily (except Sundays). This sewage has been distributed each day over the surface of three cubic yards of natural soil of a free description. Having filtered through the soil it is discharged as a clear effluent by a small outflow increased and diminished in volume as the sewage is applied. Owing to the necessarily limited character of the exhibit it was anticipated that the purification of the sewage by the soil would become less efficient the longer it was used. It will be seen, however, from the following analyses that the contrary effect has been the result.

The sewage was first applied to the soil on the 23rd of June, 1874, and the application has been daily continued since that date, Sundays excepted. On the 30th of June, seven days after the first application, a sample of the effluent water was selected and sent to Dr. Benjamin Paul, F.C.S., for analysis, who forwarded to the author the following results, viz.:-

Free ammonia	·009 in 100,000 parts.
Organic nitrogen ...	·049 "

On the 10th of August, forty-eight days after the first application of the sewage to the soil, a second sample was collected and analysed by the same eminent chemist, when he reported the following results:-

Free ammonia	·006 in 100,000 parts.
Organic nitrogen ...	·038 "

On the 14th of September, eighty-three days after the commencement, a third sample of the effluent was taken, and of it Dr. Paul said that it was "even better than that of the 10th of August." This is shown by the following figures:-

Free ammonia	·002 in 100,000 parts.
Organic nitrogen ...	·022 "

In order that these figures may be compared with the standards of purity recommended by the Rivers Pollution Commissioners, it may be stated that, disregarding free ammonia as of comparatively little importance, they considered that any liquid containing more than $\frac{3}{4}$ part of organic nitrogen in 100,000 parts should be deemed inadmissible into rivers.

In the supplies of drinking-water to the metropolis by the eight companies, the mean amount of organic nitrogen appears to be $\frac{2}{3}$ in 100,000 parts.

The improvement in the condition of the effluent water which these figures of Dr. Paul show is doubtless due, in a great measure, to the means taken to deliver and distribute the sewage on to the soil with regularity, each cubic yard of soil receiving precisely the eight gallons of sewage it is designed to absorb, cleanse, and discharge. This is effected by the use of the "self-acting sewage regulator," the object of which contrivance is to apportion and deliver the precise quantity of sewage which land, prepared for irrigation or for intermittent filtration, is designed to utilise and cleanse, and this is done independently of all supervision, and of the outflow of the sewers contributing the sewage, which may at one time be extremely copious, and at another little more than a dribble.

The irregularity of discharge attending the sewage of small towns, villages, mansions, and all kinds of large establishments is found to be the great difficulty in dealing with those communities. Besides overcoming this evil, and thereby reducing the comparatively heavy cost of applying small quantities of sewage to land, the regulator secures with certainty that *intermittency* of application which is so essential to purification. Moreover, the action of the regulator is automatic, and requires no attendant at night or on a Sunday. The sewage, as it is discharged from the town, village, or mansion, flows into a tank of a capacity to hold the quantity of sewage it is desired to deliver to a certain area of land at one time. This tank is provided with a syphon or other self-acting means of discharge, and directly the liquid rises to a given level, the outlet comes into action, and the liquid is at once discharged. When the tank is emptied, the discharge ceases and the sewage commences to fill the tank again, or another tank, as found desirable, slowly or quickly according to the rate of influx.

The author having carried out with success the intermittent downward filtration works at Merthyr Tydvil, under order of the Court of Chancery, as a means of abating the nuisance arising from the pollution of the Taff, which, after answering their *temporary* purpose for three years, may be discontinued at any time now that the wide breadth of land which the Local Board had previously purchased for surface irrigation has been laid out and completed as a sewage farm, is anxious to bring before the Congress this treatment as an effectual way of cleansing sewage *permanently* by recourse to a small area of land where land is very costly. The Rivers Pollution Commissioners show by six analyses, taken in the years 1871 and 1872, the following results from the intermittent downward filtration adopted by the author at Merthyr Tydvil.

Samples taken June and October, 1871, and July and October, 1872.

Organic carbon	·156
Organic nitrogen	·032
Ammonia	·063
Nitrogen as nitrates and nitrites	·269
Total combined nitrogen	·352
Previous sewage or animal contamination	2·887
Chlorine	2·84

Upon these figures the Commissioners say,—"Judged by popular standards, these samples would be pronounced to be fairly good potable waters. They were colourless, transparent when collected, and even when viewed with reference to their chemical composition were considerably superior to the average of Thames water which is habitually used for all household purposes in London; indeed, there is a close resemblance in chemical composition between the effluent water issuing from the intermittent sewage-filters at Merthyr Tydvil and that portion of the London water-supply which is drawn from the Thames." Analyses by Dr. Paul and other chemists confirm these results.

Intermittent downward filtration will be found equally valuable, whether adopted by itself on a limited area of land, for the primary object of *purification*, or in combination with surface irrigation on an extended area, as a means of securing the best return from the utilisation of sewage. The value of the process in the former case cannot be over-estimated, as it enables sanitary authorities to purify their sewage up to the standards recommended by the Rivers Pollution Commissioners, by the use of just as much land as they can get, if the quantity be not less than 1 acre to 1,000 persons, and of gaining some return in the shape of crops at the

same time. When adopted in combination with irrigation, intermittent downward filtration becomes the "safety-valve" of sewage farming, inasmuch as where a certain quantity of land is specially prepared for intermittent filtration the farmer need not take sewage on to the irrigated land when he does not want it, nor when the cost of application will exceed the benefit to be derived from it.

Where a small area of land only can be commanded by gravitation, and a greater breadth can be obtained for irrigation by pumping, the intermittent filtration process may be resorted to on the small plot of lower land with special advantage. In such instances the sewage may be lifted on to the higher land only when there are persons to pay a full rent for both land and sewage, in which case the quantity of sewage to be lifted will be precisely that which the farmer above desires to take, and only when he wants it. It would probably be lifted during the day, and on week-days, and during the night and on Sunday it would be run into the filtration areas. At times of extreme dilution, too, when the liquid might not be worth the cost of lifting, the filtration areas would receive it, and thus the cost of pumping would be reduced to a minimum.

An illustration of the cost of adopting intermittent downward filtration in a case where the land was very costly, and the works of drainage and surface preparation, including carriers, &c., for distribution, expensive too, may serve to show how small will be the rate charged on a district for such mode of disposal, when calculated upon the population and rateable value of the district contributing the sewage, which is the only proper way of considering the subject. In comparing the cost of intermittent downward filtration with that of any other process, it must not be regarded as an acreage outlay, but as one in which the total expenditure, with its profit or loss, must be fairly considered in relation to the ratepayers' interests.

In the case of a district containing a population of 15,000, with a rateable value amounting to 45,000*l.*, and requiring fifteen acres of land to purify the sewage discharged from the district, the cost may reach the following items:—

Land	£3,000
Under drainage, preparation of surface, carriers for distribution, chambers, &c.	2,000
	£5,000

The charge on the district necessary to repay this sum with interest in fifty years would amount to 22*½* *per annum*.

The fifteen acres of land, being divided into three equal areas of five acres each, one of which would be sufficient for the daily purification of the sewage, while the other two would come into action in rotation, would be devoted to gardening purposes. The ten acres not in daily use would be let to market gardeners by auction at the highest prices they would give for the land, with as much sewage as they would require, and no more. The lowest rent obtainable by this means would be 10*l.* an acre, while the five acres devoted to the purification of the sewage would, if let at a rent or retained in the hands of the sanitary authorities, secure a return beyond the cost of attendance of at least 5*l.* an acre. In this way, 125*l.* *per annum* would be realised, leaving a loss of 100*l.* *per annum* upon the work. This sum of 100*l.*, apportioned on the rateable value of the property within the district, amounts to less than one halfpenny in the pound.

From this it will be seen that with a very limited area of land, and with comparatively costly works, the disposal of sewage by intermittent downward filtration may be attended with a loss unappreciable to the ratepayers; while if it be associated with irrigation under favourable circumstances, that loss may be turned into a profit, made larger as the area of irrigation is increased.

It is to point out the great advantage of associating intermittent downward filtration with wide surface irrigation, as a means of securing profit from the latter, as well as to show the small area of land that will suffice for cleansing sewage up to the standard of the Rivers Pollution Commissioners, where land is difficult to get, that the present paper has been written.

Sewers' Benevolent and Provident Institution.—Mr. Wm. Henry Smith, M.P., will preside at the anniversary festival of this Institution, to be held on the 26th of January next.

PNEUMATIC DRAINAGE.

CAPTAIN LIERNUR, the inventor of the system of pneumatic drainage, waited recently on the Liverpool Health Committee to explain his system in detail. This he did in a speech of more than an hour's duration. He produced plans and drawings to elucidate his statement; and his explanation without the aid of these would be almost unintelligible. The following brief summary, however, taken from the local *Journal*, will give some idea of the system, to which, moreover, we have before now referred:

"In a building, in any convenient part of the town, is placed a steam-engine, which works an air-pump, so as to maintain about 1 vacuum in certain air-tight reservoirs sunk below the floor. There is no reason why this building should not be placed in the most populous part of the town, if thought desirable, as the process from beginning to end is not productive of any nuisance. From these reservoirs central pipes radiate in all directions, following the principal streets, and on or near these pipes at intervals street-tanks are placed below the pavement. From the street tanks, and separate entirely from the central pipes, street-pipes are laid along the streets, communicating by short branches with the closets of each house. All the junctions of pipes with tanks are furnished with cocks or valves, which can be opened or closed at pleasure, like water mains, and are got at by cock-ladders and turned by keys in the ordinary way. Each street-tank is also provided with a small pipe, upon which the street-tank is placed, and which is intended for his guidance. The vacuum created in the central building reservoirs can thus be communicated to any given street-tank so as to furnish the motive power by which, when the cock on any street-pipe is opened, all the closets in connexion therewith are simultaneously emptied into the tank. When the contents reach the street-tank, they are in like manner forced through the central pipes to the reservoirs under the central building, and thence transferred by means of vacuum power to hermetically closed tanks above the floor of the building. From these tanks the street-pipes distributed to the various dry-retorts for its reduction to pondrette, or is decanted in a fluid form into barrels, for immediate transport to the country. Both processes occur by means of a hermetically closed apparatus, so that any escape of noxious gases is utterly impossible. The gases formed are discharged into and burned up by the furnace. During the construction of this system, and before connections are made with the central building, a locomotive engine and tender empties the different street reservoirs and the closets connected therewith by means of a hose from the tender to the reservoir. The system can thus be put into operation on in any number of parts of a town or in separate buildings before being connected with each other at the central engine building. Closets of the simplest possible character are all that are required, and no water whatever is needed: water-closets can be used if desired. The funnel is made double, the space between the two communicating by a pipe with the outside air, and by the operation of a well-known law, carrying off all exhalations that may arise. These can only exist while the excreta is warm, as the fecal matter is removed before the setting-in of fermentation, after which only the generation of dangerous gases takes place. The excrement falls, without touching the inner face of the inner funnel, into a sort of hydraulic trap, capable of holding the fecal products of but one person, and compelling thus whatever it held before the fall into a larger trap of four times greater capacity. This latter discharges into the branch pipe which is connected with the street-pipe, and empties into the street-tank."

The Chairman and other members of the health committee frequently questioned Captain Liernur on points which cropped up as he went along. In reply to the Chairman, Captain Liernur said that an engine of seventy-eight indicative horse-power would be sufficient for a town of 250 acres, which, with an average density of population, would contain 50,000 people. Questioned as to some details as to cost, Captain Liernur said he could not give the details of expense so well as he could give the total expense. To introduce the system into a town of 250 acres, with an average density of population, would cost 100,000*l.*

The Town-clerk said the introduction of the system into Liverpool would cost a million sterling.

In the afternoon Captain Liernur had a conference with the Land and House Owners' Association. There was a large attendance of the members of that association, and there were also present several other gentlemen outside the association, who had been invited to take part in the meeting.

Capt. Liernur explained his system of sewage, dwelling more particularly upon the closet which he proposed for the houses of the working classes. In reply to Mr. O. Williams, he said nobody would be disturbed by the removal of the sewage from the houses. All they would see would be a man in the street turning what might be a hydrant, and by this simple movement the closets in whole streets would be cleaned out. He said his closets were erected side to side with the water-closets at the Vienna Exhibition, and during the time they were in use there not a drop of water was used. When the cholera broke out in Vienna the sanitary authorities found it necessary to use carbon constantly in the water-closets, but in his closets nothing whatever was used or found necessary. After the exhibition

the other closets were shut up, and his were used for a period of three months, or as long as they were required. His system could be adapted to one part of a town or the whole.

It seems desirable to mention here that the rudiments, at least, of this system were in operation, from fifteen to twenty years ago, in parts of London, by the district authorities, for the emptying of cesspools.

FURNITURE MANUFACTURE IN TURKEY.

A SERIES of articles on the industrial resources of Turkey is being published in the *Levant Herald*. The first is on a visit to the Beshiktash Furniture Works. These works are situated in the valley at the foot of the two hills upon which the village of Beshiktash is built, and consist of a number of two-storied wooden workshops, a large square three-storied brick building, now, unfortunately, burnt out, and the engine-house and offices, the whole covering a space of nearly 5,000 square yards. Adjacent to the factory is a large wood-yard, in which the raw material for furniture-making is stacked and allowed to season. The motive-power employed is a steam-engine of English construction of about 30-horse power, which communicates motion to over fifty machines of various sizes, from the noisy earth-shaking monsters which square up rough barks of timber, to the tiny circular-saws for cutting the mother-of-pearl tesserae for inlaid work, which resemble philosophical instruments more than machines, such is the delicacy and precision with which they work. Between these two extremes are planing-machines for iron and wood, large vertical saws for transforming the squared barks of timber into planks, ribbon-saws for cutting wood into various shapes, circular saws, moulding, rabbeting, tenoning, mortising, and drilling machines. There are also lathes for turning wood and iron, and a veneer-cutter. A large proportion of these machines have been made upon the premises, an engineer's and blacksmith's shop forming an important branch of the establishment. When Messrs. Tubini first took the factory, the cost of coal for the engine was a notable item in the year's expenditure, but for the last eight months the use of coal has been entirely done away with, the fuel used being a mixture of the chips and sawdust from the machines; the engine may, consequently, be considered as self-supporting. This valuable innovation is due to M. Collier, the manager of the works.

Having been fully convinced that the native woods of Turkey would successfully compete with those of the rest of the world in point of beauty and excellence, Messrs. Tubini determined to use as much home produce as possible. The principal native woods employed are maple, chestnut, the wood of the gum-mastic tree (*Leonticea*), oak, pine, hornbeam, beech, box, walnut-burrs, the wild rose, and several others of minor importance. The Turkish maple is a very fine wood; native oak, too, is excellent.

The workmen of the factory include carpenters, joiners, cabinet-makers, French polishers, mosaic workers, carriage builders, wood carvers, modellers, and gilders. The establishment is capable of producing every possible description of woodwork, from the rough wooden gratings used on board steamers and on landing-stages and terraces to the most artistically designed drawing-room furniture. A large proportion of the furniture of the palaces of Tcheragan and Dolmabahatché, the Yildiz Kiosk, and the mansions of Abraham Pasha and Agop Bey Keut-choglu have been produced at the Beshiktash factory, side by side with some thousands of square pics of wooden gratings for the new armoury at Matchka and the oak-flooring for the new Karakeui bridge. Parquetry for floors is another important branch of manufacture at Beshiktash, and many of the specimens would successfully rival the productions of Arrow-smith and other famous European makers. At the time of our visit a very beautifully designed dining-room suite in Turkish and American maple, the mouldings being in violet wood, was being completed for Ibrahim Pasha. As a specimen of artistic design, cabinet-making and carving, this suite is worthy of a place side by side with the productions of Fourniois or Gillow, the flower-carving in the Grinling Gibbons style being especially noteworthy for having been carried out by native workmen under the able direction and from the designs of M. Fortmanger, the art-director of the establishment.

METROPOLITAN DRAWING-CLASSES.

The annual distribution of prizes to the successful pupils of metropolitan schools in connection with the Science and Art Department, South Kensington, under the direction of Mr. Busbridge, has taken place. The most distinguished prizetakers were—W. O. Ray, Maryebone; J. M. Woolgar and E. Spencer, Paddington; W. Lane and J. W. Grover, Somers-town; and G. Shipway, Lambeth. The prizes consisted of books and instruments, given partly by the Department and partly by Mr. Busbridge. The Lord Mayor, who presided, said the Science and Art Department at South Kensington had, he believed, done a great deal of good. Education in every branch of mental culture was now an article of absolute necessity, and a knowledge of drawing was especially valuable to the mechanical classes. Having pointed out the value of drawing to the ship-builder, the house-builder, and the mechanical engineer, his lordship proceeded to remind the meeting of the higher uses of art-training in cultivating taste and elevating imagination. The Science and Art Department not only gave them mechanical teaching, but also trained their imagination and improved their tastes. Besides the ordinary prizes, Mr. Spencer received the Queen's bronze medal. In Westminster, Mr. J. Elder received the first prize in building construction. In Lambeth, Mr. H. O. Bailey obtained the first prize in practical machine-drawing, and Mr. J. Barnes in building construction. In Kensington, Messrs. H. Austin and J. Garrett, jun., had distinguished themselves in building construction. The prizes having been distributed, Mr. Grover (a student) announced the presentation of an illuminated address and a timepiece from the metropolitan students to Mr. Busbridge.

We do not quite understand how it is that the name master has the classes at Woolwich, Mechanics' Institute; Maryebone, Sala-street; Westminster, St. James the Less, Chapter-street; Battersea, Methodist Chapel Schools; Lambeth, Boys' School, Hercules-buildings; Somers-town, School Board school, Brewer-street; Hoxton, Wesleyan Schools, Minster-street; Deptford, St. Paul's Schools, Edward-street; Kennington, St. Barnabas's School, Devonshire-road; and Kilburn, St. Augustine's schools; but doubtless it is all right.

THE STOCKWELL GREEN BUILDING SCHEME.

The agitation caused by the proposal to build in Stockwell-green, which has been so prominently before the public during the past three or four weeks, led to a meeting at the house of Mr. J. F. Honey of Stockwell-road, on Thursday last week, when it appeared that Mr. Honey himself was the purchaser of the Green, and intended to build upon it, unless arrangements could be made with the Metropolitan Board of Works or some other public authority for the Green to be kept open.

Mr. W. Honey, solicitor, on behalf of his brother, explained the circumstances under which the latter had purchased the Green, stating in the outset, that when his brother told him, some time ago, that there was a probability of its being built over, he was indignant; but on examining into the matter, he found that unless something were done this result must follow. The speaker then detailed the arrangement under which Mr. J. F. Honey had obtained the interest in the Green, the lessee, in the Green, there being provision in the arrangement, that could the property be purchased as an agricultural price, under 500l., it should be kept open; but if the purchaser had to buy it at the rate of building, he was to be at liberty to use it as he chose. Having obtained Mr. Bull's interest, his brother gave notice to the landlord of his intention to buy, in accordance with the terms of the lease, which gave the lessee the power of purchasing. The landlord, however, would not listen to its being purchased at the agricultural value, and the result was that it had been sold for a sum a little under 4,000l. The speaker, in continuation, said he had searched the records, and could find nothing to show that there had ever been any manor of Stockwell, nor any tenants, nor a court ever been held, and the only explanation he could give was that the land was a strip at the side of the road, similar to what is sometimes seen at the present time in country lanes. On communicating with the solicitor to

the Board of Works, with a view of keeping the lane open, it was discovered that the Board had power to take over only those lands where manorial rights had merely to be purchased. His brother was desirous of keeping the land open. The question was, how could it be done?

A prolonged discussion on the entire question followed, in the course of which Mr. Cobdell said that the land was too small to be of any use as an open space. This was denied by other speakers, who said that the neighbourhood of Stockwell was increasing fast, and that for the sake of the children, and as a recreation-ground, the Green ought to be preserved.

Ultimately a resolution was passed to the effect that the meeting having been informed that Stockwell-green can be built upon, and that building operations will be commenced within the next few weeks, a public meeting should be called to ascertain whether steps cannot be taken to buy up the freeholders' rights, to secure it as an open space for the benefit of the inhabitants.

It was also resolved that the borough member and the Lord Mayor should be asked to attend the meeting, and the necessity of immediate action was urged, on the ground that agreements between the builders and Mr. J. F. Honey were completed, provisionally that the Board of Works did not buy the property.

In accordance with the above, a public meeting was held on Thursday evening at the Educational Institute, Stockwell-green. Mr. Wm. McArthur, one of the members for the borough of Lambeth, presided. The feeling of the meeting appeared to be unanimous against the Green being built upon, and, with the view of stimulating the residents in Stockwell against the project, handbills had been profusely distributed, stating that "unless strenuous and immediate measures are taken, that which is no doubt the old village-green of Stockwell will in a few weeks be a colony of small houses and shops. It is understood that the plans are merely awaiting the sanction of the vestry before building operations commence." Two resolutions were adopted by the meeting, the first being to the effect that it was most desirable that the Green should be kept open, and that the meeting pledged itself to adopt all lawful means to effect that object. The second resolution was, that a memorial be presented to the Metropolitan Board of Works, requesting them to use their influence to prevent the Green from being built upon, and also to take steps for bringing it under their own control.

THE NEW SANITARY ACT.

A CIRCULAR has been issued by the Local Government Board explanatory of the Sanitary Law Amendment Act of 1874, many of the provisions of which are concerned in the explanation and amendment of the Public Health Act of 1872. After noticing several that are of a strictly official character, Mr. Lambert, the secretary, says:—"The 26th section is of much importance. Hitherto there has been no uniformity in the time at which the local boards annually commence their term of office, and this section provides that henceforth the last day for receiving nominations for every local board, except in the district of Oxford, shall be the 26th day of March in every year, unless that day falls on a Sunday, Good Friday, or Easter Monday. There is a special provision that all elections which, but for this Act, would have commenced before the 26th of March next, shall be postponed until such day, and the members in office where no election shall be pending at the passing of this Act (in which case the election must have commenced before that time), will be entitled to continue in office until that date." To the public some of the most important of the new regulations are those headed as "Certain Miscellaneous Provisions." Section 50 provides that, "upon representation to any sanitary authority, that the water in any well, tank, or cistern, public or private, or supplied from any public pump, and used, or likely to be used, for domestic purposes, is so polluted as to be injurious to health, such authority may apply to the petty sessions for an order to remedy it. After summons the justices may make an order directing the well, tank, or cistern to be closed, or the water to be used for certain purposes only, or providing otherwise as shall appear to them to be requisite to prevent the use of the water for drinking purposes. The justices may also cause the water to be analysed at the cost of the authority. By section 54, the 26th and 27th Vic., c. 117, section 2, which

relates to the inspection of articles of food, is extended to milk, and the proceedings against offenders are facilitated by providing that the justice who is empowered to convict the offender need not be the justice who ordered the article to be destroyed. Section 55 further extends the powers of that Act by enabling entry, inspection, and seizure to be made upon premises where there is reason to believe that unsound food is kept or concealed, the previous statute only applying where the food is openly exposed or deposited, or kept in preparation for sale. Section 56 provides for the punishment of persons who, on the letting of houses, knowingly make false representations with respect to infectious diseases therein, by rendering such persons liable to imprisonment, or a penalty not exceeding 20l."

SANITARY MATTERS.

The Fever Epidemic at Carlisle.—There is a marked increase to note in the number of fever cases in the hospitals in this city since Monday, says last week's *Journal*. The total number in the two hospitals is fifty-five, or sixteen more than reported in last issue. There have been admitted to the House of Recovery during the year 174 patients, and to Fushill hospital 137, making a total of 311.

The Sanitary State and Water Supply of Hexham.—At the last regular meeting of the Hexham Local Board, Dr. Daniel Jackson, medical officer of health, presented a lengthy report upon the sanitary state of the town. Many of the yards, such as Victoria-yard, were in a very foul and loathsome condition. There had been deaths from typhoid or enteric fever, and he had been unable to trace that disease to any other source than the interruption of the daily supply of water. He had previously stated his opinion respecting the danger of an intermittent supply of water in a town like Hexham, where a system of drainage had been adopted which required frequent flushing and proper ventilation. He agreed with those who held that no real saving was effected by turning off the water during a considerable portion of each day. That had been well shown at Norwich and Liverpool, where, with an intermittent supply, the consumption was twenty-five gallons a head, while it fell to fifteen gallons a head with a constant supply. The health of the people was seriously endangered until a constant and abundant supply of water was procured, until the yards were thoroughly cleaned and kept permanently clean under a rigid and frequent inspection, and until all slaughter-houses were removed from crowded yards by the inhabitants. The death-rate—31 in the 1,000—was excessive. He recommended the establishment of a cottage hospital. In the discussion which followed, it was resolved to remove all the restrictions upon the water supply, and give a constant supply to the town, and also to institute a careful and minute inspection of the town once in every month.

The Sanitary Condition of Castle Church, Stafford.—An inquiry has been held at the Guild-hall by Lieut.-Col. Ponsonby Cox, Government Inspector, with reference to the proposal for uniting that part of the parish of Castle Church which is outside the municipal borough with the borough for sanitary purposes. There was a good attendance of the members of the Council and Board of Guardians. The proceedings took the form of a general discussion upon the sanitary requirements of the borough and Castle Church; the proposals put forward for a joint governing body of members of the Council and Guardians with respect to Castle Town, under the Public Health Act, 1872; the question of the Guardians giving up the sole government of that part of the parish to the Council; the desirability of increasing the present area of the municipal borough so as to make it include Castle Town; the various systems of sewage brought from time to time before the authorities; and the probable cost of a general system of deep sewerage for the whole borough; matters which from time to time have been brought forward in the Town Council, and Commissioners', and Board of Guardians' meetings. The Government Inspector explained that he was chairman of the meeting, and that the Council had been good enough to permit him to hold the inquiry in that room. He had been sent down by the Local Government Board, and if the Council had not given him the use of that room he should have been obliged to hold his

inquiry at a hotel. Mr. Austin did not appear to be satisfied with this explanation, and several times expressed his regret that there was no chairman. He could not see that the Inspector had any position whatever there. At the close, however, he thanked him on behalf of the town for the advice and information he had given. The Government Inspector, in remarking that he should have to report to the Local Government Board whether there was any necessity for them to take steps in the matter at once, expressed his opinion that from what he had heard and seen the Rural Sanitary Authority had only done their duty in bringing the subject before the Board.

Chepstow.—The members of the Rural Sanitary Authority have met to discuss what steps should be taken with the view to arrest the ravages of scarlet fever now prevailing in the district. The local sanitary inspector stated that since the last meeting scarlet fever had broken out at Broadwell and Morrison. Dr. Bond, the medical officer, in answer to the chairman, said that the only suggestion he could make as to a means of arresting the spread of contagion was, that two cottage hospitals, i.e., cottages to which sufferers from fever could be removed, and where they could be attended by the medical officers of the union, and nurses appointed by the committee, should be erected in different parts of the union. With regard to the cost, he instanced the system adopted at Cirencester, where what was known as one of the old post-houses was fitted up as a cottage hospital, and was occupied by a man and his wife, the latter of whom attended as a nurse upon patients who were brought in, at a remuneration of 10s. per week, and after the patients had recovered, the premises were thoroughly disinfected, and the house was occupied by the old people as before, the cost of this arrangement being comparatively very trifling. He considered it was the duty of sanitary authorities to do all that lay in their power, and at any cost, to check the spread of contagion. Disinfection was simply a palliative measure. The only remedy, in his opinion, was isolation. It was ultimately agreed that the local sanitary inspector should make inquiries as to the sites for the erection of cottages suitable for hospitals at different points of the district, and report to the next meeting. It was also agreed that the clerk be instructed to write to the Chepstow Local Board—the Urban Sanitary Authority—asking them to appoint a deputation to meet this committee to consider the subject of erecting a joint cottage hospital for Chepstow and the adjoining portion of the rural sanitary district.

SUSSEX ARCHEOLOGICAL SOCIETY.

THE Autumn Excursion of the Sussex Archaeological Society was made to Polegate, the special object being to visit "Wilmington to inspect the recently restored "Long Man." About fifty members arrived at Polegate. Several of the party walked the distance.

Arrived at Wilmington, which is situated just at the foot of the Downs, the party first visited the Church, which, however, beyond its age, furnished but a small amount of interest.

The Rev. Mr. Ellman, rector of Berwick, drew attention to the large amount of chalk used in the construction of the edifice, endorsing the opinion of an eminent architect that chalk could be profitably used in such buildings. To be safely utilised it required burning to such an extent as to get the pit-damp from it, when, being thus properly seasoned, it would last for centuries.

Leaving the church, the party started for the Priory, and, on turning the bend in the road, found themselves in full view of the "Long Man," which, thanks to its restoration, "stood out" with excellent effect. The "Long Man," or Wilmington Giant, is an outline cut in the turf on the side of the Downs, representing the nude figure of a gigantic man. Its arms are partly extended, and it supports with each hand a staff, each of which is as long as the figure. Its execution is artistic, although its immensity—it is 210 ft. in height—gives it, on a close inspection, a rude appearance. From the Priory, however, it bears the appearance of a well-proportioned figure, standing upright. The "Long Man" has been restored by subscription, under the direction of the Sussex Archaeological Society, who, before proceeding with the work, took the advice of Mr. Phené, F.S.A.

Mr. Phené, at the request of the company,

gave his reasons for attributing to the "Giant" a great antiquity, and for esteeming it an object of intense interest.

In reply to a question as to the meaning of the staves held by the figure, Mr. Phené said that he had had a diagram placed in his hands which represented them as a rake and a scythe, and transformed the figure into that of a hay-maker, tie and all complete. If they were right in assuming that the figure was Oriental in its origin, they could hardly accept that. The staves might or might not be intended for the instruments named; but it was probable that their meaning was lost. Probably they had an astronomical or solar purpose; for it might be taken as a fact that similar figures to this were used by the ancients as measurements of time as commonly as watches and clocks were now used. Some of these remains went further, and assisted in determining the seasons.

We have received a strong condemnation of the manner in which this cutting in the turf has been restored and doctored, but we are not at this moment in a position to offer an opinion on the subject.

ARTIZANS' HOUSES IN DUNDEE.

THE Dundee Working Men's Building Company, we are informed, are about to erect two blocks of concrete houses for artizans. There will be two rows of houses, with gardens between, and each facing 50-ft. streets. The rows will each be 470 ft. in length, while the distance from the face of the one block to that of the other will be 146 ft., representing the ground covered by the blocks and gardens. There will be twenty-two blocks in all, each containing six houses, two on each floor. The blocks will be three stories high, without attics. There will be twelve blocks of three-roomed houses, and ten blocks of two-roomed houses. Each house has within itself a W.C. and scullery. This is one of the best features of the scheme, but the closets are badly placed for ventilation.

HAVERSTOCK-HILL SCHOOLS.

THESE schools have been opened. They stand on a plot of ground between the Prince of Wales's-road and Haverstock-hill, having communication from each, and consist of two separate and detached buildings, one devoted to the use of infants, and the other to that of boys and girls.

The infant schools are built in the form of a reversed T, and consist of two large rooms, 40 ft. by 26 ft., which can be thrown into one by means of sliding doors, with two class-rooms attached, 20 ft. by 15 ft. 6 in., at the end, adjoining the other end, but entirely separated from the school-rooms, are the babies' rooms, 20 ft. by 15 ft., also available as one by means of sliding doors.

The schools and babies' rooms are fitted with galleries to seat the children, according to the usual method adopted by the School Board.

The schools for boys and girls will be conducted on the German system, and consist of ten large class-rooms, surrounding a central hall 74 ft. by 41 ft., each class-room averaging 25 ft. by 22 ft., capable of holding from forty to sixty children. Some of these class-rooms are divided by sliding doors, and others by fixed glass partitions, and the whole have their space devoted to the use of the pupils' desks, arranged in steps, so that the teacher has a distinct view of each scholar in his class. This is peculiar to this school.

The central hall is covered with an iron and glass roof, partially ceiled with matched boarding. The acoustical results arising from this arrangement are said to be good. Means for warming and ventilation are provided by Chapman's patent stoves.

The floors consist of wood cubes laid on concrete. Attached to the schools are teachers' rooms, with lavatories and cloak-rooms for the children.

The master's house stands in a pleasant garden, the caretaker's lodge being a separate building.

The sanitary conveniences are placed at some distance from the buildings, access to them being obtained by covered ways.

The school and class rooms will accommodate about 1,000 children. Every means have been taken to provide for their health and comfort while in the buildings.

Ample playgrounds are attached for boys,

girls, and infants, the former entering from Truro-street, and the latter from either Craddock-street, or by a picturesque private approach from Haverstock-hill.

The schools are built from the designs of Mr. E. R. Robson, the architect to the School Board for London, and are carried out in the style known as that of Queen Anne. The works have been executed by Messrs. Wall, Brothers, of Kentish-town; the iron and glass roof being supplied and fixed by Messrs. Riley, Brothers, of Kingland-road. Mr. E. Sibson has acted for the Board as clerk of works.

The amount of the contract for the building was a little over 9,000*l.*

THE ASSESSMENT OF TRAMWAYS.

At the Edinburgh Court of Sessions, Lord Ormisdale sitting as Lord Ordinary, had before him the appeal made by the Glasgow Tramway Company and the Vale of Clyde Tramway Company against the valuation of Mr. Dods, Government valuer. The Vale of Clyde tramways were valued by Mr. Dods at 200*l.* per mile. Upon the portion of their system in Glasgow they were willing to pay this sum, but upon the section of their line from Greenock to Gourock, which as they maintained is conducted at a loss, they demurred to paying on so large a sum. From the statement of the Dean of Faculty, who was for the appellants, it appeared that a conference had been held between the parties the result of which was that the valuation had been reduced to 115*l.* odd per mile, and the total valuation of 1,230*l.* brought down to 615*l.* The appeal was accordingly sustained, and an entry ordered to be made in the valuation-roll in accordance with the agreement. With regard to the Glasgow tramways, the valuation last year was fixed at 200*l.* per mile, but this year that sum was raised by Mr. Dods to 500*l.* The company appealed against this valuation, on the ground that it was excessive. After some discussion, a compromise was effected. The total valuation made up by Mr. Dods was 8,718*l.* including 2,000*l.* for stables, or about 500*l.* per mile for thirteen miles. The company's valuation was 4,786*l.*, or about 300*l.* per mile. The parties agreed to add these sums together, and take the half, or 5,700*l.*, as the valuation for the current year. With respect to the 2,000*l.* included in Mr. Dods's valuation for stables, inasmuch as the stables had been entered in the valuation-roll by the assessor for the burgh of Glasgow, the Lord Ordinary directed, in order to avoid the danger of double assessment, that these should not be included in the valuation-roll made up by Mr. Dods.

RAISED CHANCELS IN DEVONSHIRE.

SIR,—I should be glad to learn if there is a Devonshire church of which the floor of the chancel at the point of separation (where the screen stands or would stand) between it and the nave is raised more than one step above the floor of the nave. If any of your readers would point out an instance, with the date or style of the church, I should be greatly obliged.

A. B.

COOKING IN LODGINGS.

SIR,—Having had occasion lately to change my domicile, I searched several of the western and south-western suburbs of the metropolis for a suite of apartments for myself and family, but found myself baffled at every turn by the difficulty, almost the impossibility, of obtaining a set of apartments with even one grate suitable for cooking purposes. The fact is that in most, if not all, of the suburban districts, the activity of speculative builders has outbuilt the demand for genteel houses, and the result is that large numbers of such houses,—in some cases whole neighbourhoods of them,—are now occupied by the upper working and lowest middle class. The consequence is that the house, having been built with a view to the whole of the cooking being done in the kitchen, there is no convenience for it anywhere else; and the present occupants are therefore driven to make all sorts of expedients as the result. Having been thus brought face to face with the matter, it has struck me that if some inventive genius could design a pair of portable hobs, suitable for easy attachment to register or other low stoves, so as to render them suitable for cooking purposes, he would confer

fit on both landlord and tenants, and amply myself in addition. I feel so assured that thing could be done, that if I possessed the little mechanical skill I should have no hesitation in attempting it myself; as such is the case, I must leave the suggestion in your hands, hoping that it may not be without fruit.

IGNORAMUS.

WASHABLE CEILINGS.

—“F.R.” wishes for a suggestion for washable ceilings suitable for places of business where a gas is consumed, and where the use of wash is a nuisance. I should suggest the use of Keen’s or Parian cement, which can be trowelled to taste, and trowelled up to a face to the finest marble, and will always retain same, so that when dirty all that is required is little water and brush once or twice a year.

A PLASTERER.

“C.C.” offers to supply washable paperings and washable colouring; but he must his own course to make these known.

Thin sheet glass could be cut into small squares, or other suitable shapes, and coloured pattern, or tint, very cheaply, and fixed with soluble cement to the plaster, and could be used as easily as a window. Thicker glass could be applied in the same way to walls in flats, &c. It would be non-absorbent, inflammable, easily cleaned and repaired if injured by accident; and, unlike paper or wood, when repaired would be as good as at first. It is, unlike tiles, can be cut or bent to any shape.

W. H. JAMES.

DAMP WALLS.

—To prevent damp coming through walls following receipt will be found effectual:—1. gal. bright or tar varnish add 6 lb. of white lead and thoroughly incorporate. Walls painted with the above will prove damp-proof, and will be laid of light stone colour, so that kind of decorations either in oil paint or wall paper may be done on it. It may also prevent the decay of plaster. I may add that the offensive smell arising from the bright lead will pass off in a few days.

W. RIDDELL.

MAKE THE MOST OF IT.

—I know water works only where there are drains, and that it plays, and runs, and leaps, and splashes, and dashes, and sports, and roars for you, without a murmur, about the sorts of queer things, everywhere except where lovers meet, and then it goes “meandering it.”

At this moment, sir, the *Builder* is responsible to have water on the brain. In last week’s issue I read about Leicester-square, and Algar-square. It is very gracious of water (thought), always to be trying to find it. I like it for it. Then why not let it, as Leicester-square is a sort of white elephant, should not the overflow in any new arrangement disport itself in Trafalgar-square; and, if it be not exhausted by the effort (and the people be so minded), let it go on and play fantastic trick it may be asked to do before Horse Guards in St. James’s Park, and then away to the Aquarium somebody says we have at Westminster some of these days?

A. R. A.

“DAMP STRONG-ROOMS.”

—Your correspondent “C.” who wishes to have a remedy for damp in his strong-room, would do well to pause before adopting the plan suggested by Mr. Robert McDermott, of “drying a quantity, say half a bushel, of quicklime on the floor of the room, or he may put it in a box without the lid.” If he tries either of these modes *strictly verbatim* quoted he will speedily find his papers and parchments and books spoiled by the action of the lime, as a little trial of those accustomed to the material will testify.

A remedy that has in three instances where it has been crowned with perfect success is only to cause a jet of gas, a lamp, or a couple of wax candles, to be kept burning for some time in the room, and renewed at intervals if found necessary, and the admission of air

to the floor of the strong-room from a warmed chamber above. This may be done by carrying a 2-in. zinc tube from 2 in. above the floor of the strong-room, up through an inside apartment and carried to within 6 in. of the ceiling of any room above which is constantly used. This was done in a City office, the strong-room being in the basement, and until so treated quite useless from damp, and the pipe discharged in a clerk’s office on the second floor. The cure has been permanent. Large pieces of sponge may be suspended from the ceiling and frequently removed and squeezed dry.

W.

“MOLD AND ITS NEIGHBOURHOOD.”

Sir,—In your issue of the 26th September, there is a long letter from Mr. W. Pettit Griffith, F.R.S., professing to be an account of “a visit to Mold and its neighbourhood,” but really giving a description of Mold Church. With that description I have no wish to find fault; with regard to everything else he touches upon, the writer betrays marvellous ignorance. He says, “The neighbourhood abounds with lead ore, and the mining and smelting works give employment to a large number of labourers.” The fact is that the lead veins are to the north and west of Mold, while the town itself is on the coal formation, and for one man employed in the mines, there are twenty in the collieries. I do not know where Mr. Griffith found his smelt-works, but, as a matter of fact, there are none within eight miles of Mold. Mr. Griffith also informs the readers of the *Builder* that, “There are chapels belonging to the Roman Catholics, Calvinists, Welsh Independents, Baptists, Nonconformists, &c.” It seems that Mr. Griffith is ignorant of the fact that in this country the four first-named denominations are Nonconformists, and he ends his paragraph with the pious exclamation, “If they would only practise what they preach, real good might emanate from them.” If those words mean anything, they imply that those who preach in these chapels do not practise what they preach. Those who live in the neighbourhood are the best judges as to that, but even I can answer for it that whatever their practice, they have the facility of being more correct in their statements than Mr. Griffith has as yet learnt to be.

Mold.

J. MORGAN.

Having submitted the above to Mr. Griffith, to prevent a running correspondence, that gentleman writes as follows:—

“To occupy the pages of the *Builder* with a religious controversy would be very distasteful to your and your readers’ feelings; I will therefore briefly reply to Mr. Morgan’s intemperate letter.”

Mr. Morgan betrays a want of knowledge by calling Roman Catholics, Calvinists, Welsh Independents, and Baptists, Nonconformists: the Nonconformists form a sect of themselves.

A flying tourist cannot always personally see everything he has to describe in connexion with the town and neighbourhood he visits; his statements ought always to be supported by reliable authorities; my authority for the assertion that “the neighbourhood abounds with lead ore, and the mining and smelting works give employment to a large number of labourers,” is Black’s “Picturesque Guide to North Wales.”

In reference to the numerous dissenting bodies, I can only reiterate my “pious exclamation,” that “if they would only practise what they preach, real good might emanate from them.”

BUILDING BYE-LAWS.

The following case was heard at the last sittings of the Middlesex police-court.

The defendants were Mr. John Potts, builder, and Matthew Hind, house-owner, and the charge was,—“That on the 22nd day of March last, at the borough of Middlesex, you, the said John Potts and Matthew Hind, being persons intending to erect certain new buildings, to wit, live shops and dwelling-houses, gave the requisite notice thereof, and delivered to the surveyor of the said Urban Sanitary Authority, detailed plans and sections of such buildings, showing, amongst other things, the form and dimensions of the several parts of such buildings, which said plans were approved by the said Urban Sanitary Authority, that afterwards, upon inspection of such buildings by the said surveyor, it was found that certain things had been done contrary to the said plans and sections, and certain things had been omitted to be done shown therein; whereupon the said surveyor gave you the requisite notice to amend the same, and do that which had been omitted, which notice you, within six months last past, neglected to obey and comply with, and have ever since neglected so to do, contrary to the bye-laws in that behalf made and ordained by the said Urban Sanitary Authority, and contrary to the form of the statute in such case made and provided.”

Mr. Dale was counsel for the Corporation, and Mr. Blackwell appeared for the defendants.

Mr. Dale, in stating the case, said on the plans the story-posts were shown to be 9 in. by 9 in. in thickness, and the beams 15 in. by 12 in. Those plans being approved, it became the duty of the surveyor to inform the defendants to that effect. He did so, and found that the story-posts used, instead of being 9 in. by 9 in., were 8 in. by 7 in., and that the beams, instead of being 15 in. by 12 in., were 14 in. by 10 in. It would be sufficient to show that there was a deviation from the plans, and it would be for the magistrates to consider whether the story-posts and beams used were of the same dimensions as shown in the plans. If builders were not compelled to erect buildings in accordance with the plans, it was useless their submitting plans at all.

Mr. Edward Davison, Latham, Borough Surveyor, corroborated Mr. Dale’s statement, and added that since he reported the matter, and proceedings were ordered to be taken, the builder had sent plans showing the story-posts and beams of the thickness mentioned, but the Urban Sanitary Authority had refused to pass those plans.

Mr. Peter Borrie, engineer, Mr. John Hurdy, builder, and Mr. William Pinder, assistant surveyor, severally

spoke to examining the building and plans, and confirmed the borough surveyor’s statement.

Mr. Blackwell, for the defence, urged that the bye-laws of the Corporation under which the proceedings were laid could only be under the 54th clause of the Local Government Act, which provided that bye-laws must be made for certain matters, and if those bye-laws did not come under these heads they were of no use whatever. The sub-sections were with regard to the level, width, and construction of new streets, provisions for sewage, &c.; with respect to the structure of the walls of new buildings and securing stability and prevention of fire; with respect to the sufficiency of space about new buildings for securing a free circulation of air; and with respect to the damage of buildings or parts of buildings, and to the closing of buildings or parts of buildings which may be built for human habitation. That was all very good, but none of these sub-sections at all referred to the thickness of story-posts or beams. It might be said that it came under the stability of buildings and the prevention of fire. It had never been shown that the walls were not as stable as ever, and as there was less wood the houses were less liable to fire. The magistrates had no power to convict under these bye-laws.

Mr. Dale, in answer to objections, said the defence of the learned counsel was no answer to the charge. It was impossible to have walls in houses without story-posts or beams, inasmuch as all buildings must have entrances either by doors or windows, and beams must be used to support the superstructure. Although story-posts and beams were not mentioned in the bye-laws, they were included, as they were essential to the stability of the building.

The Chairman said the Bench were of opinion that a breach of the bye-laws had been committed, and it was a very bad case, because notice had been given by the surveyor. The defendants would be fined five pounds and costs, and they would leave it to the Corporation to take other proceedings.

Notice of appeal to the Superior Courts was given and permitted.

Books Received.

Elementary History of Art: an Introduction to Ancient and Modern Architecture, Sculpture, Painting, and Music. By N. D’ANVINS, with a Preface, by T. ROGER SMITH, F.R.I.B.A. London: Asher & Co. 1874.

This is the modest and not unsuccessful result of an attempt at the production of a book that may be placed in the hands of those whose acquaintance with art has yet to be made, and who wish to make it from the beginning. It is called an “Elementary History of Art,” and is intended as an introduction to the intelligent study of architecture, sculpture, painting, and music, in so far as a knowledge of those arts may be considered an essential element of a polite education. The book has been constructed on the framework of a Guide to the History of Art which is in use in the schools of Germany; but it has the merit of referring to any example, or copy, of the several works which it mentions as characteristic, which is to be found in the British Museum, the South Kensington Museum, the excellent and comprehensive collection of casts at the Crystal Palace, or other spots accessible to the English student. The history of English art and the names of English artists are also given, with considerable degrees of exactitude and of detail.

It is evident that, in any work of this kind, the great difficulty first to be met is that of scale. The degree of detail to which it is possible to descend, within a limited number of pages, is a matter requiring consummate judgment. In fact, so much is this the case, that we doubt whether it is possible satisfactorily to combine the history and the elements of art in the same work. In the volume to which we refer, it is the history that is in the care of the writer. And even here, the care that has been taken not to omit names of artists, has collected so many, that it is impossible to do more in many instances, than merely to mention them.

There is another point which bears, not alone on this volume, but on almost all the illustrated art works of a popular nature published in this country. We refer to the absence of original illustrations. The same remark applies to works of science, as well as of art. The English publisher, as a rule (and a most unfortunate and mischievous rule it is) deals in second-hand illustrations. He contents himself with casts of French or German cuts, familiar to the foreign scholar, and thus at once lowers the most interesting work that he brings out to the rank of a copy or a *réchauffé*. We are aware that to provide, as in this “Elementary History of Art,” 120 woodcuts, is to make a serious demand on the purse. But we think that this objection should be met rather by reducing the number than by lowering the quality of the illustrations. A far smaller number of cuts, selected by the writer, and embodied in the work, not by casual reference, but by distinct explanation, as bearing on some special point in the history of art, well drawn and well engraved, would be far more artistic, and in

every way more desirable, than the reissue of well-known engravings. Again, there should be a unity of treatment with respect to illustration. The want of such a quality destroys the beauty of a book. When we find a somewhat staring portrait of Carl Maria von Weber to occupy the same space on one page that is allotted to a section of the entire height of St. Peter's at Rome, on another, while the Moses of Michelangelo, on a third page, out-tops both, we are struck with a sense of incongruity. A small number of really good wood-cuts, in the place of this mercenary army, would be far more in accordance with the artistic feeling of the letter-press.

The addition of music to the fine arts of design is a feature of the book as to which much may be said in praise, and something in dispraise. If we look at a book as intended to give, for the first time, general ideas as to art, to a person altogether ignorant of the subject, there is a convenience in the addition of music. On the other hand, it is not so easy to see where to draw the line, if the old order be abandoned. Music, no doubt, under one aspect, is an exact science. As a graceful source of sensuous delight, it may be called a fine art. But, in that sense, it joins hands with poetry, with the drama, and even with the great round of popular amusements. We recommend our readers, however, to form their own opinions as to the advisability of the arrangement of the book in question, rather than its pages than from our own. They will thank us for the introduction.

Miscellanea.

The Art Loan Exhibition at Lynn.—This exhibition has attained large dimensions, and promises to be a successful affair. The inaugural proceedings took place on Monday in last week, when the Mayor, explained that the Exhibition had for its object the increase of funds for the restoration of St. Margaret's Church. The purpose of the committee is to restore the building to its pristine condition, and also to embellish it with all the architectural improvements of the present age. Captain Gurney said, one thing which had led to success had been that the Prince and Princess of Wales, and the Duke of Edinburgh had lent their names as patrons. The Prince had sent a picture, by Landseer; and also a mosaic picture. Thanks were due to Lord Townshend, who had sent the Belisarius picture, valued at 10,000*l.* at his own risk. He had also sent other pictures by well-known artists. Sir William Pfoikes had almost stripped his hall for the Exhibition. In addition to the various groups of art works, the exhibition is rich in china and porcelain curiosities and antiquities of several kinds. A few pictures by local artists and amateurs are exhibited for sale, wholly or partly for the benefit of the restoration fund. In the "selling class" the committee have made a hit by the sale of a picture by the late David Cox, which was lent them by Mr. Richard Bagge, with the promise that all they could make over and above 500*l.* should go to the fund. It was sold for 600*l.* to a dealer, thus realising a very acceptable contribution. The picture is one of an open, heathy country, is of no remarkable character, and of moderate size; and it is said that Mr. Bagge obtained it by exchange with the late Dr. Cotton for a freehold house not worth above 100*l.* But the painter was then living, which makes all the difference. The attendance at the exhibition has been very good.

The Colosseum.—Again it is asserted that the Colosseum in Regent's Park will be demolished, and on the site a number of palatial mansions will be erected. The site upon which the building stands, together with the grounds, is nearly an acre in extent, and has a frontage to the park of about 250 ft. in length. The story is, that the Cyclopedia at the rear of the Colosseum, and having its frontage to Albany street, formerly used for panoramic purposes, but which has also been closed for some years, is likewise about to be taken down. Until within the last few weeks it was expected that this building would be purchased by the Royal Academy of Music, and altered internally so as to adapt it to the performances of that body; but this intention having been abandoned, it has been determined to take the building down, and erect on the site a number of high-class residences in flats.

Railway Passenger Traffic Statistics.—The number of passengers conveyed on railways in England and Wales, the aggregate length being 11,043 miles, in the year 1870 was 288,632,921, including 27,004,386 first class, 66,736,823 second class, 191,891,712 third class, and 118,110 season-ticket holders. The aggregate number of miles travelled by the trains was 72,362,063. In the year 1873 the aggregate number of passengers conveyed on 11,369 miles in England and Wales was 401,465,086, including 32,474,219 first class, 62,866,761 second class, 306,124,106 third class, and 257,470 season-ticket holders, showing an increase of 326 miles of railway, and in the number of passengers 112,832,165, of which 5,469,833 were first class, 111,232,349 third class, and 139,360 season-ticket holders; but there was a decrease of 3,870,062 in the number of second-class passengers, owing, probably, to the change initiated by the Midland Railway Company in 1872, of conveying third-class passengers by all trains, and which was immediately adopted by all the other railway companies. The number of second-class passengers conveyed in the year 1870 was, as stated, 66,736,823; but in the year 1871 the number increased to 73,011,105, being an increase of 6,274,282. In the same year there was an increase in the number of first-class passengers of 3,088,152, and in the number of third-class passengers of 30,557,591. The number of miles run by the passenger trains in 1873 was 78,724,510, showing an increase over 1870 of 6,362,447 train miles.

The Late Mr. William Allan.—The death of Mr. William Allan, secretary of the Amalgamated Society of Engineers, has been announced. By this event trade-unionism has lost one of its ablest and most active supporters. Mr. Allan's connexion with the engineers extended over a period of thirty years. He was the founder of the amalgamated system in trade-unionism. At the last meeting of the Amalgamated Engineers it was resolved that the organisation should take into hand all arrangements of the funeral; and it was stated further that the leading working men's societies of the metropolis wished to be well represented on that occasion. The meeting passed a vote of condolence with the family of their late fellow-worker. A testimonial consisting of a gold watch, chain, and locket, and a purse of sovereigns, was lately presented to Mr. Allan. The total amount raised, says *Capital and Labour*, was "only 91*l.* 1*l.* 3*d.*;" and even of this amount the different unions appear to have contributed comparatively little, while the trade organisation with which Mr. Allan is identified is mainly conspicuous by its absence. . . . Being unwell at the time of the presentation, and not improbably annoyed at the result, he seems to have deputed the task of acknowledgment to one of his friends."

Stone Implements at Alderley-edge Copper Mines, Cheshire.—Some miners, at work on the Edge, came upon a large collection of stone implements, consisting of celts or adzes, hammer-heads or axes, mauls, &c. Some were lying upon the sand and gravel, from 1 ft. to 2 ft. below the surface, along with foreign boulders and pebbles belonging to the Drift period, but not thus necessarily indicating that period as the period of manufacture probably; others had been left in some old diggings of the copper ore, from 3 yards to 4 yards in depth. Nearly the whole have been rudely made, and were more or less smashed, and they appeared to have been thrown aside as useless, and were probably the waste of a rude manufactory of such implements. The specimens consist of different materials, viz., chert, syenites, basalts, felstones, porphyries, greenstones, silurian grits, limestone, &c., which are erratic and abound in the drift about Macclesfield. Along with the above are those of the local drift, as hard ganister sandstones, from the lower coal-measures, and quartzites, from the second division of the Yoredale rocks.

Opening of a New English Church in Brussels.—On the 15th of October, were celebrated the opening services of the first English Church built in Belgium by the unaided efforts of the British and American residents. The new church is situated in the Rue Stassart, in the centre of the English quarter. It is in the Gothic style of the latter half of the thirteenth century, and is capable of seating some six hundred persons, with painted windows, by O'Connor & Taylor, of London.

Proposed New Church at Polegate.—The movement is on foot for building a church, the site offered by Mr. Owen J. A. Fuller-Moyle near the station. The amount already promised is 871*l.* Mr. F. C. S. Roper will give to Polegate Church Committee on Easter Monday next 500*l.*, on condition that 250*l.*, in addition to the sum already promised, be paid into bank by that day, and that the patronage of proposed church be vested in the Bishop of diocese. Subscriptions to be received by London and Provincial Bank, Eastbourne towards the 250*l.* required. Mr. R. K. Blessie of Eastbourne, attended the committee, made a final examination of the plans he prepared for the church, and it was decided to submit them to the Diocesan Society, with view to obtaining a building grant, and, in meantime, Mr. Blessie was instructed to put out the specifications, and advertise for tenders for putting in the foundations and erecting nave next spring. It has been long and urged, for the population is on the increase and has already outgrown considerably the capacity of the little schoolroom.

Brickmaking Machinery.—The pugmill formed, according to the invention of Mr. Stevenson of Glasgow, with two diametrically opposed lateral outlets, at or near its bottom, and beneath each outlet there is a slide fitted to reciprocate horizontally in guides forced in the frame. Each slide is formed with two mould cavities to receive the clay, and when one end is at an outlet being filled, the other is beyond it at the side or the other having the brick pushed downwards out of it by a piston or delivering plate. These delivering plates, of which there are four, are worked by heavy crossheads, which, raised by cam surfaces, which may be formed fixed on the upper side of the bevil wheel on pug-mill shaft. When it is considered desirable to compress the clay in the moulds, pistons plungers are for that purpose fitted to work down through the pug-mill outlets. The plungers are acted on by levers on a transverse horizontal shaft, which has a third lever fixed its middle, having a connecting-rod jointed to that is acted on by a cam, crank, or eccentric on the second-motion or first-motion shaft.

Great Western Docks, Plymouth.—So extensive and important property at Plymouth having been acquired by the Great Western Docks and Exeter, and South Devon Railway Companies, a very handsome testimonial, in the shape of a massive epergone, has been presented at the Duke of Cornwall Hotel, Plymouth, by Mr. Alexander Hubbard, late chairman of the Dock Company, in recognition of the indefatigable way in which he, as representative of the directors, had managed the affairs of the company, conducting them from a very low condition to one of prosperity. The presentation was made by Mr. Ellis, director of the Bristol and Exeter Railway, and speeches highly eulogistic of Mr. Hubbard's exertions were made by Mr. Rooker, Mayor of Plymouth; Mr. Woolcombe, chairman of the South Devon Railway; Sir Massey Lopes, Lord of the Admiralty; and other gentlemen.

Corrosion of Tin and Tin-lined Water Pipes.—From an advance sheet of the *British Journal of Chemistry* we glean the following:—We give briefly some of the results of our practical experience, extending over more than twenty-five years, regarding the action of water on lead and tin pipes. We have during the time put into and taken out from well springs, and aqueducts thousands of feet of tin and tin-lined pipes, and in no instance within our recollection, where we have seen the interior surface of any of those pipes after a year's use, have we failed to discover more or less corrosion. Spring and well water seem to act upon tin much quicker than pond or river water. Hundreds of feet of block-tin pipe which we have put into wells have been called upon to replace within new after ten or twelve years' use, the old pipe being so corroded as to be useless.

Proposed New Public Hall, Thirsk.—The scheme for this building seems to have met with a fair share of public favour. A great many of the shares required for the erection of the building have been already taken up. The capital proposed is 2,500*l.*, divided into 2,500 shares of 1*l.* each; 1*l.* per share payable on application, and the balance of 19*s.* as required. The building has to seat 500, together with ante-rooms, suitable for concerts, balls, lectures, clubs, discussions, societies, committees, public meetings, and for every other purpose for which large gatherings of people may be required.

Enlargement of Locke Park, Barnsley.—Twelve or fourteen years ago the widow of the Mr. Joseph Locke, the well-known engineer, donated about 18 acres to the town for a public park, and, in 1866, a statue of Locke was placed in the park by the Institution of Engineers. The park is now a beautiful one, and greatly resorted to by the inhabitants. Miss McCroery, sister of late Mrs. Locke, has intimated her intention of erecting a memorial in the park to the memory of her sister, and, in the meantime, has presented incorporation with three parcels of land as an addition to the park. This addition will make the park about 40 acres in extent. The donor intends to erect a tower of observation at the highest part of the park, from which splendour of the surrounding district can be had.

Man-slaughter by a Road Surveyor.—Thomas Taylor, coroner, held an inquest on Tuesday, touching the death of Mrs. Lupton, who died on Monday from injuries received on 24th inst. The lady was returning from a visit to her brother, Consellor Tankard, when her carriage was upset, and she was thrown violently on the pavement. The accident happened just outside the borough boundary of Bradford, and within the district of the Pudsey Local Board. A drain had been dug in the road the soil left in a heap on the highway without a light or any other protection. John Taylor, the road surveyor to the Local Board, was found guilty of manslaughter for neglecting to order a light to be placed at the spot. He was committed for trial at the next Leeds assizes.

Remunerative Prison Labour.—At the next sessions at Lewes, Lord Chichester presiding, the visiting justices reported on the first six months' working of the new system of material labour in Lewes prison. The gross value of the manufactured goods was 2,600*l.* during the period named. The cost of materials of every expense connected with the work amounted to 2,100*l.*, leaving a balance of 500*l.* on the right side as the net return for the labour of the prisoners employed. The report states that some little difficulties had arisen in getting manufactured goods readily into the market, but that time and perseverance would put this right. The visiting justices were perfectly satisfied with the results. The report was read.

York.—At a cost of about 300*l.* the city has been polled on the question of the proposed Aldgate Ferry Bridge, adopted by the corporation, and this has resulted in a majority of 1,000 double votes in favour of the project. Application will at once be made to Parliament for power to carry out the construction, a design for already been furnished by Mr. Paze, the engineer, for a bridge which is to cost 30,000*l.* The structure will open in the centre for the passage of vessels. A new cigar factory for Messrs. John Bellerby & Son, of the St. George's docks, has been erected under the supervision of Mr. W. G. Penty, architect. The formal opening of the new building (the chief room of which is 80 ft. by 30 ft., and 18 ft. high) has taken place.

Canelling Niagara.—There is a project of cutting a railway tunnel under the fall. If the preliminary survey of Mr. William Wallace, engineer, is to be trusted, no insuperable difficulties either of a material or financial description need be feared. The length of the tunnel proper from shore to shore is given at 1,000 yards, while the cuttings on both sides will extend to nearly thrice that distance. Wallace prudently declines to give any estimate of the cost of this undertaking, but many people residing on the spot, and acquainted with geological formation of the district, believe a tunnel can be made at a cost not exceeding 500,000*l.* It remains to be seen whether the profits resulting from the work will form an equivalent for the desecration of a spot hitherto famed for grandeur and sublimity.

Novel Railway Experiment.—The promoters of the Mid-Northern Railway, which is intended to connect the Great Eastern and Northern systems at Swinton, near Rotherham, and at Doncaster, have determined to adopt a novel, and what they believe will prove an effective, arrangement. All shareholders holding 100*l.* of ordinary stock and upwards will receive the privilege of travelling on any portion of the proposed line in first-class carriages at third-class fares.

Cremation in New York.—Sir Henry Thompson's plan of cremating the dead has been taken up with great earnestness in New York. The German Cremation Society in that city, numbering about 450 members, have decided on erecting a suitable hall, with walls of iron 60 ft. by 44 ft., containing a rotunda supported by eight pillars. In the centre there will be erected an altar for religious ceremony, and upon a large stand in front of this will be placed the coffin. The ceremonies ended, the coffin would be gradually lowered by means of screws into a furnace, where it would be submitted to a hot-air blast of 1,000° Fahrenheit. It is calculated that complete cremation would take place in an hour and a half, after which the coffin would be again returned to the altar.

Proposed Breakwater at Swanage.—At an influential meeting composed of gentlemen interested in the stone quarries at Swanage, the advisability of making a breakwater at that place was considered and discussed, and a committee and sub-committee appointed to take the preliminary steps to further this project. The Swanage stone is much used for street paving and other purposes, and as the carriage of it can only be made by vessels from the port the scheme for a breakwater will be, if carried out, of great consequence in enlarging a trade even now very considerable. The meeting was attended by Captains Pilkington and Goodridge, R.N., who expressed themselves in favour of the movement. Mr. Bart, of the firm of Mowlem, Bart, & Freeman, was also present.

Street Lamps.—The vestry for the parish of St. James and St. John, Clerkenwell, has determined to adopt a plan with respect to the street lamps which has worked usefully at Metropolitan and suburban railway stations. The vestry has just passed a resolution to the effect that there shall be placed the street-names on the lamps at each end, at least, of the roads and streets of the parish, in embossed ruby letters on glass ground at the back. It is fully expected that so usefully will this labelling of lamps act as a direction for people in search of streets in neighbourhoods with which they are unacquainted, that the example set by the vestry referred to will be followed generally by the local authorities of the metropolis.

Unveiling of a Statue of Alex. Wilson at Paisley.—A monument in memory of Alexander Wilson, poet and ornithologist, has been unveiled at Paisley, his native town. The site is at the north-west corner of the Abbey grounds, and opposite the place on which the Clark Town-hall is soon to be erected. The monument consists of a bronze statue of the poet, 7 ft. 6 in. in height, standing on a pedestal of grey granite 10 ft. in height. Wilson is represented leaning against the stump of a tree; behind him is his gun; and at his feet are his hat and portfolio, with a favourite blue parrot that accompanied him in many of his wanderings through the forests of America. In his left hand is a bird, the plumage of which he is represented as admiring.

New Lines to the Alexandra Palace.—Three additional lines of railway communication are now being made to the Alexandra Palace. The Great Eastern Railway Company are constructing a direct line from their station at Bishopsgate; a new company is forming, at a cost of 16,000*l.* a line from the Enfield Branch Junction of the Great Eastern line, a distance of four miles, direct into the Palace grounds; whilst a third company is engaged on a branch line, one mile and a half in length, from the Tottenham and Hampstead Junction Railway to the Edgware Branch of the Great Northern Railway, and then from Highgate station to the Palace. The estimated cost of this enterprise is 320,000*l.*

Southport and the Pneumatic System of Drainage.—Captain Liernur's system of pneumatic drainage is about to be tried in Southport. At a meeting of the sewerage committee of the town council on Saturday last, Captain Liernur was present, and explained the system, and he was officially asked to report upon the whole question of the drainage of Southport, in connexion with the already existing sewers. Since then, Mr. Adam Scott has expressed his willingness, at his own expense, to put the pneumatic system into operation on a trial scale in the town, on the basis of the facts and figures disclosed by Captain Liernur's report. We shall, therefore, shortly have an opportunity of seeing the system in operation.

Proposed Universal Exhibition in Algiers.

From a document which has been forwarded to the Liverpool Chamber of Commerce it appears that it has been decided by the authorities of Algiers to hold a grand Exhibition there, to commence in November, 1875, and continue until about the spring of the following year. The building will consist of one large central hall, with lateral galleries attached, each covering a wide area of ground, and affording, it is expected, ample accommodation for the articles for exhibition which will be sent by various countries. The organising committee have issued a plan and a general specification of the proposed building, and they invite contractors to come forward.

The Richmond Water Supply.—An application has been made to the Local Government Board, by the Richmond select vestry, for permission to borrow 20,000*l.* for the purpose of obtaining a better water supply by sinking an artesian well in the chalk. A petition of the inhabitants to the same effect has been placed in the vestry-hall for signature. Mr. Hawley, C.E., and Mr. Prestwich, have been consulted on the subject, and it is stated they are of opinion that the scheme is perfectly feasible. The proposed reservoirs will be underground in Richmond Park, and the Crown authorities have, under certain conditions, already given their consent to this portion of the project.

The Inventor of Dissolving Views.—Mr. Henry Langdon Child, who was known to a previous generation as the father of this invention, has died at Mostyn-road, Brixton, in his 93rd year. He belonged to a family of painters, his eldest brother having been president of the Society of British Artists. His first magic lantern was made when he was only in his fifteenth year. In 1807 he first produced his famous dissolving views, which he perfected about the year 1818, and exhibited them at the Adelphi, then under the management of Mr. Yates. The Polytechnic was opened with his great phantasmagoria, to which he afterwards added the chromatope.

Fatal Accident at Northumberland House.—An inquest has been held at St. Martin's Vestry-hall, on the body of Mr. George Graves, a dentist, of Southwark. It appeared from the evidence that deceased had purchased the gold decorations of the ball-room at Northumberland House, and he was superintending the removal of the gold, when he walked along a wall about 14 in. wide, and missing his footing fell heavily to the ground, from a height of 10 ft. At the hospital it was found he was suffering from an injury to the spine and paralysis of the lower extremities, and he died on the 9th inst. Verdict, accidental death.

Fatal Accident at Reuter's City Offices. The premises in question are being remodelled and altered by Messrs. Nixon, builders, and workmen were engaged in loosing internal brick-work in the basement, close to where the safe-room formerly stood, when the iron door of the room gave way, and fell upon those who were at work below. One poor fellow named Collins was dreadfully hurt, and another labourer had his legs much injured. The two injured men were extricated and removed to St. Bartholomew's Hospital. Collins, however, expired from the injuries he had received. The other sufferer is progressing. The foreman had a narrow escape.

Doncaster Race-course.—The Race Committee of the Doncaster Corporation are proceeding with the new course they some time since resolved to lay out on the race common, so as to escape the hill on the far side, which is private property, and at present held under a lease from Mr. J. W. Childers, which presently expires. At a meeting of the committee held on Thursday in last week, plans were received from Mr. Godfrey, surveyor, and, after they had been considered, it was resolved to advertise for tenders for the construction of the new course, which is estimated to cost between 2,000*l.* and 3,000*l.*

The late Sir W. Fairbairn.—At a meeting of the leading citizens of Manchester, convened by the mayor, and held recently, it was agreed that a public subscription should be opened for the purpose of establishing a suitable permanent memorial in Manchester of the late Sir William Fairbairn. The form of the memorial selected was a statue and a scholarship, or other suitable endowment, in connexion with the engineering and mechanics' classes at Owen's College.

A Temperance Hall for Norley.—The want of a suitable meeting-place either for temperance or any other purposes at Norley has long been felt, and steps have for some time been in progress to supply this want by the erection of a temperance hall in the village. The site chosen is opposite the smithy, on what is known as the Smithy Close. The dimensions of the hall will be 45 ft. 6 in. by 25 ft., and it will be capable of accommodating 300 and on emergencies 400 persons. The style will be of the Gothic type, of pressed brick, and Mr. James Kirkham, of Runcorn, has contracted for the building.

New Almshouses at Salisbury.—The foundation-stone has been laid of the block of new endowed almshouses for aged couples (Hussey's Charity), which are about to be erected at the top of Castle-street, on the site of the old buildings of the original endowment, which have recently been pulled down. The mayor (Mr. H. Brown) and the members of the corporation attended the ceremony in their robes, together with the trustees of the charity.

City Liberal Club.—The old buildings on the freehold site of the proposed City Liberal Club in Walbrook are being actively dismantled. The architects who are preparing competitive designs for the new club-house are required not to send them in later than the 24th of November. It has been already decided that the building is to be in the Italian style, with a facade of Portland stone, which may be relieved with other stones and with metal.

Etruscan Monuments.—The Italian journals state that Monsignor Liverani, a Roman prelate, has discovered a method of interpreting the inscriptions on the ancient Etruscan monuments. He has devoted much time to the study of the subject at Chiusi, where Etruscan monuments exist in great abundance. He is about to publish, at Siena, an account of his discovery.

Abolition of Second-class Carriages.—In their half-yearly report, issued lately, the directors of the Anglesea Central Railway Company direct attention to the fact that the second-class on their railway has been abolished since the beginning of the present year, and that the restriction of passenger traffic to first and third class has produced an appreciable increase in the receipts.

Gift to Sheffield.—Mr. Alderman Jessop, steel manufacturer, Sheffield, has presented Brookly House, in a suburb of the town, to the committee of the Hospital for Women. He has instructed them to erect upon the vacant ground such buildings as they may require, and he will defray the cost, amounting in all to about 12,000*l*.

Gift of a Library and Museum to Hereford.—A free library and museum, the gift of Mr. J. Rankin, of Bryngwyn, has been opened at Hereford. The day was observed as a general holiday, and in the evening there was a grand display of fireworks. The Cathedral bells throughout the day rang joyous peals.

Forest Hill.—A lecture-hall was opened in this suburb on Tuesday last. It has been erected entirely by private donations. Mr. F. J. Horniman gave the site, and the architect, Mr. Vicars, his services. The builders were Messrs. Watson, Brothers. The ceremony was brought to a conclusion by a presentation of plate to the architect.

The Art Union Plate.—Her Majesty has been graciously pleased to accept from the Council of the Art Union of London an impression of the plate of the current year, engraved by Mr. Stocks, R.A., from MacIise's great wall-painting of "Wellington and Blucher meeting after Waterloo," which adorns the Royal Gallery, Westminster Palace.

Metropolitan Municipal Association.—The Home Secretary has appointed to receive a deputation from this Association on Wednesday, 28th inst., in support of the proposal to improve the Government of London, by extending the Corporation of London over the entire Metropolis.

An Athenian Donor.—A resident in Athens has announced his intention of settling 6,000*l*. per annum on Greece, for the benefit of the country, and offers a premium of 60*l*. for an essay showing how best to spend it with that object in view.

Bloomsbury "Express Country Milk Company."—In a private competition for new premises for this company, the design by Mr. W. Paice, architect, was accepted. The works are to be commenced at once under his superintendence.

Royal Patriotic Schools, Wandsworth.—Dr. Carpenter and Mr. Lewis Angell, C.E., have been instructed by the Royal Commissioner to investigate and report upon the sanitary arrangements of these institutions.

TENDERS

For building a warehouse in Jewin-crescent, City. Messrs. Herbert Ford & R. L. Hosketh, jun., architects.

Quantities supplied:—	
Gammon & Sons	27,336 0 0
Downs & Co.	7,198 0 0
Browne & Robinson ..	6,731 0 0
Turner & Sons	6,602 0 0
Larke	6,654 0 0
Perry & Co.	6,620 0 0
Merritt & Ashby	6,540 0 0
Kilby	6,443 0 0
Conder	6,397 0 0
Simpson & Son	6,375 0 0
Adamson & Sons	6,230 0 0
Brass	6,223 0 0
Scrivener & White	6,105 0 0
Nightingale	6,093 0 0
Crabb (accepted)	5,496 0 0

For the manufacture, erection, and completion of two pumping engines, boilers, sewage and pure water pumps, and other works connected therewith. Also for the erection of engine and boiler houses, cottages, and other buildings, for the Wimbledon Sewage Works. Mr. W. H. Rowell, engineer.

Contract No. 6, for Engines, &c.	
West & Co.	27,400 0 0
Derham	6,190 0 0
Smith & Co.	5,829 0 0
Stothert & Pitt	5,382 0 0
Patt & Lancaster	5,270 0 0
Ravensthorpe Engineering Co.	4,985 10 0
Clayton	4,490 0 0
Powis	4,452 0 0
J. & T. Dale	4,400 0 0
Mason	4,103 0 0

Contract No. 7, for Engines, &c.

Kellingbrack	7,880 0 0
Neave & Son	7,490 0 0
Crocket	6,286 0 0

For building and repairs at Clifton-street, Finsbury, for Mr. G. Tomkins. Mr. T. T. Green, architect.

Quantities by Mr. Rouse:—	
Staines & Son	2,384 0 0
Yanbush	352 0 0
Heaps	348 0 0

For building house, No. 122, Sloane-street, and stables and studio in rear of Nos. 121 and 122, for Mr. C. Bacon. Quantities by Mr. Rouse:—

Gasher & Parley	23,597 0 0
Sawyer	2,910 0 0
Stevens	2,900 0 0
Brackell	2,319 0 0
Reading	2,455 0 0
Ware	2,209 0 0
Groom	2,150 0 0
Jefferys	1,989 0 0
Winslip	1,955 0 0
Loose	1,800 0 0
Turrell & Son	1,800 0 0
Thomas	1,150 0 0
Reade (withdrawn)	1,130 0 0

For completion of Nos. 5 to 8, Cumberland-villas, Acton-green, for Mr. H. Cooper. Mr. E. Monson, jun., architect. Quantities supplied:—

Rankin	21,700 0 0
Simpson & Baker	1,681 0 0
Lydmann	1,650 0 0
Black	1,524 0 0
Fidler	1,475 0 0
Temple & Forster (accepted)	1,475 0 0

For alterations at No. 23, Finsbury-place, for the Universal Fire Insurance Company. Mr. J. H. Rowley, architect.

Cook & Green	2,076 0 0
Boyes	497 0 0
Downs	499 0 0

For Congregational church, school, and minister's house, Nantmawr, Salop. Mr. J. Sulman, architect:—

W. & G. Thomas (accepted)	21,950 0 0
Griffiths (withdrawn)	855 0 0

For alterations at 123, Church-street, Croydon. F. T. Mallett, architect:—

Legg	2,483 0 0
Hyde	454 0 0
Wimp	425 0 0
Jarrett (accepted)	410 0 0

For rebuilding house, Sutton Valance, Kent. Mr. Sulman, architect:—

Clements & Walls	2,913 0 0
Anson	387 0 0
Cox, Brothers	551 0 0
Arard (accepted)	755 0 0

For Congregational church, Little Hadham, Herts. J. Sulman, architect:—

Glascock	2,605 0 0
Corwell	645 0 0
Thurgood (accepted)	587 0 0

For house, exclusive of concrete basement and fittings, Addiscombe. Mr. J. Sulman, architect:—

Davis (accepted)	21,000 0 0
------------------------	------------

For fittings to public house, Chapel-almost, Liverpool. Messrs. T. E. Murray & G. H. Thomas, architects:—

Cheetham (accepted)	2,463 15 0
Wilkinson	438 0 0

For excavations and concrete for new church, Clifton Park, Twickenham. Messrs. Lockwood & Mawson, architects:—

Thompson	2,299 7 0
Newman	266 14 0
Boyes	260 0 0
Longmire & Burge	255 0 0
Keutmore	218 0 0
Cropper, Brothers	215 7 0
Howis & Bowl	204 10 0
Gregory	152 8 0
Grantham	185 15 0
Messon	149 10 0

Alterations to No. 12, Lavender-terrace, Knightsbridge, for Messrs. Harry Nichols & Co. Mr. A. Williams, architect. Quantities by Messrs. G. Landdowne & Pollard:—

Allowance for Cement	
Grimwood & Sons	21,447 0 0
Thorn	1,360 0 0
Simpson & Co.	1,580 0 0
Accepted	90 0 0

For new Primitive Methodist Chapel, Lavender-terrace, Knightsbridge. Quantities by Mr. A. J. Rouse:—

Payne & Stanger	23,054 10 0
Martin	1,949 0 0
Stephenson	1,868 0 0
Her	1,814 0 0
Dickens	1,780 0 0
Reavell	1,785 0 0
Sawyer	1,764 0 0
Johnson	1,731 0 0
Pym	1,643 15 0
Brickell	1,601 0 0
Warr	1,555 0 0
Loose (accepted)	1,530 0 0
Jefferies	1,500 0 0
Seal	1,460 0 0
Smith	1,360 0 0

For the erection of new schools at Bromley, for the London School Board. Mr. E. R. Hobson, architect. Quantities by Messrs. Gardiner, Son, & Theobald:—

Wall, Brothers	24,893 0 0
Wood	9,920 0 0
Williams & Son	6,867 0 0
Atterton & Latta	6,800 0 0
Kilby	6,668 0 0
Pritchard	6,535 0 0
Sheffield	6,458 0 0
Nightingale	6,287 0 0

TO CORRESPONDENTS.

I, T. E. R. A. V. J. B. D. J. H. R. O. R. C. G. T. E. M. H. W. W. C. G. Broad Churchmen.—A. M. T. R. J. H. Son & H. R. W. W. J. M. J. A. G. O. B. E. N. T. C. C. H. A. Student.—W. P. A. J. R. G. M. C. F. C. H. D. H. Mr. M. C. W. shall be happy to hear from him.—W. N. A. (the solid iron columns, of course). Architect (may name contractors) sending the list of tenders himself.—S. D. (from the School Board Office)—An Old Artist (next week).—A. M. (next week).—T. R. B. (next week).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

Note. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

TRELOAR & SONS,

Manufacturers of

COCOA-NUT MATS AND MATTING,

69, LUDGATE HILL, E.C.

CORK CARPET, FLOOR CLOTH, LINOLEUM, KAMPTULICON,

And all the new Floor Coverings.

The Builder.

VOL. XXXII.—No. 1656.

On Systematic Education in Art.

In order to be a competent and successful teacher in any branch of human knowledge, it is necessary to possess, not only an accurate acquaintance with detail, exhaustive so far as the degree to which the study is to be pursued may require, but, further, a general grasp of the aim, history, and main branches and divisions of the doctrine to be taught. This knowledge, which must thus be at once general and special, must be accompanied by constant recollection of the absence, from the mind of the learner, of even the fundamental notions of the study to be pursued, except in so far as they have been rightly exhibited to him by the teacher. This is, indeed, nothing more than the

wise and ancient rule to begin at the beginning. It is remarkable, however, how rare a gift this appreciation of the need of the scholar is. The great vice of all speculative opinion is assumption—the taking something for granted. It matters little whether that something be great or small; the mere fact of the assumption vitiates all the subsequent work. Truth thus obtained is only reached by guesswork, and can never be held as an element of the rational conviction of the mind.

Of this beginning at the beginning Euclid is the most illustrious example among the great teachers of antiquity. It has been the fashion, amongst those who seek to arrive at learning by some new and expeditious route, to speak lightly of this prince of teachers; or even to attempt to explain, to simplify, or to improve, demonstrations which are nothing but crystallised truth. To do this is to fail altogether in understanding one of the main elements of education. With the magic instrument of analytical research at our command, we are not likely to have recourse to geometry as a method of discovery. But as a method and form of discipline, intended not so much to communicate definite knowledge, as to nerve and brace the mind to distinguish between proof and guess, between opinion and falsehood, nothing, in the opinion of men well capable of judging, approaches the elements of Euclid.

Amongst men of our own time, though now, alas! no longer with us, Faraday may be named as the most brilliant example of this efficient method of teaching. That gifted man, when youth and age, fashion and science, crowded round his lecture-table, knew so well how to lay down the bases of each fresh demonstration, which he illustrated by brilliant experiment, that he communicated, as if unawares, to his hearers, the elementary points involved in any given nature. And this he did with such skill, that the grey head was not affronted; that no one was ever heard to say, "We knew all this before"; while for his youngest hearer there was no

painful strain occasioned by the frequent introduction of technical words, or by an assumption of their knowledge of certain processes, as to which they were actually in the dark.

How distinctly opposed to this sound educational method is the usual plan, of beginning by assuming a certain amount of positive knowledge, it is unnecessary now to mention. Whether we have the statement of entirely unproved grounds made under the usual form "we all know," or whether we have a mere slovenly reference to *data*, in themselves correct, the result is much the same. The learner has no distinct definition given him of the basis on which what he has to learn rests, or on the precise sense of the technical words which he hears frequently employed, and thus never obtains more than a hazy conception of what ought to be made clear as noonday.

But if this be true with respect to what is called popular teaching, so far as regards the seven arts recognised by scholastic philosophy, how much more ornally is the student misused in regard to what we now term the fine arts? The former (our readers may not feel affronted at being reminded) formed the *trivium* and *quadrivium* of the universities of Catholic Europe. Of these, the former group, consisting of grammar, logic, and rhetoric, constituted the elementary instruction of the schools; the remaining four arts, under the title of the *Mathesis*, were arithmetic, geometry, music, and astrology, the latter study including all that was known of formal or phenomenal astronomy, as well as what was considered to be the higher and rarer art of divination by the positions of the planets. Although the subservience in which the twin arts were believed to stand to theology was such (as Bishop Hampden remarks), that no one science was studied perfectly, or on its own principles, there yet remains so much of the Greek philosophic teaching on record, that it is possible for the student to commence his acquaintance with any part of the *trivium* or *quadrivium* on certain bases, and to learn, as it were, first, the letters, then the syllables, and then the words, of each of these "human arts."

With architecture, sculpture, and painting, however, the case is altogether different. The student will search in vain for thorough grammars, or rather primers, of these noble studies. The cause is one not easy to detect. It cannot be said, for instance, that sculpture was less advanced in the time of Pericles than either logic or rhetoric. How is it that on the later arts we have authoritative treatises, especially those of Aristotle, which, though existing only in the form of notes, have been the statute-book of the human mind for more than 2,000 years, while antiquity is silent on the former?

We can only explain this apparent anomaly by the suggestion that, when sculpture was a living art, entering into the public and private life of a people who denoted by the same word the good and the beautiful, it was regarded as a craft or mystery rather than as a science. It is not the case that greater exactitude was attainable in the studies of the *trivium* and *quadrivium* than in those of the sculptor's *atelier*. The very reverse was the case. A living author has recently pointed out* that the noblest Greek statues were wrought by such exact symmetric rule, that a want of commensurability between certain vertical and horizontal measurements, or between such elements as the length of the foot and the girth of the waist, is a certain proof of late and inferior work. But, although, classic literature is not altogether silent on this subject, we shall look in vain for a treatise on "Glyptics," to compare with the "Politics," or the "Rhetoric," of Aristotle; and we can only explain this silence by supposing that Phidias and his followers held a view of the secret

nature of their wonderful alchemy similar to that which we know in later times was held by Titian.

It thus results that, in that revival of the study of art in this country, we find ourselves without any adequate primer, text-book, or recognised course of instruction introductory to a general knowledge of painting, sculpture, and architecture, beginning at the beginning. The principal effort that has been made,—we speak of public, not of private effort,—in this matter, has been in the foundation and enrichment of museums, as well as in the establishment of such national and international exhibitions as may be said to have provided us with temporary museums. These efforts deserve the warmest support of all lovers of art. Their success, on the whole, has been great. The treasures of art now accumulated in this country are of priceless value. First must be ranked the noble collection of marbles, bronzes, and ceramic relics to be found at the British Museum. Although these gems of ancient art are of less educational value than they might be made, by the preparation of a complete *catalogue raisonné*, published in parts, at a moderate expense, their intrinsic worth is of the highest degree. The little hand-books which are issued by the authorities of the Museum, though brief and elementary, are learned and sound, and may be of great service to the conscientious student. Above all, these costly treasures have been placed within the reach,—so far as much of their instructive value is concerned,—of every museum, every school, every institution, even of every lover of art in the kingdom, by the issue of distinct series of photographs, which may be purchased, either in series or in separate sheets, at very moderate prices, of Mr. Maussell, of No. 2, Percy-street.

Again, our National Gallery is annually becoming richer in its contents. It contains many paintings of the first class. It is illustrated by an admirable catalogue, which forms almost a text-book of the history of Italian painting; and photographic copies, of the first excellence, are to be obtained by application to Signor Morelli, at the National Gallery.

We may, indeed, almost speak of the Royal Picture Gallery of Dresden, one of the finest collections in Europe, as brought within the reach of the English student, by means of the admirable silver photographs by which the Berlin Photographic Company have reproduced all their masterpieces of art. The rooms of this company in Rathbone-place may be called a picture-gallery in miniature.

Without now referring to minor institutions, such as the National Portrait gallery, in which the materials for an illustrated history of England, adorned by the most instructive of all drawings, the lineaments of the great men and women who made that history, are being gradually collected; with only a word of reference to those annual exhibitions of sculpture, paintings, water-colour drawings, and specimens of foreign as well as of British draughtsmanship, in which commercial ability is perhaps more consulted than educational information; we have, in the South Kensington Museum, a display of Middle Age and modern industrial and fine art not unworthy of ranking with its elder sister in Bloomsbury. South Kensington, moreover, has the signal advantage of associating with its objects of metallurgic, ceramic, textile, and other arts, an Art library, properly so called. It is one which, more truly perhaps than any similar institution in any part of the world, may be called a *live* library. Not only can we find there those books of reference and of illustration which are to be expected in such a collection; but there is present such an atmosphere of literary knowledge, so readily is the aid afforded by the librarian and his assistants to the inquirer, that the books are rendered twofold more accessible, and thus more valuable,

* *Edinburgh Review*, No. 285, art. 6.

to the student than is the case elsewhere. In saying this, however, we must guard ourselves from being thought to fling a stone at the far larger library in Bloomsbury. With certain precautions, which some persons think vexatious, as to the production of the ticket, we certainly meet here with as ready aid from the librarian as could be expected in so large a library. The comparatively small range of the Art library, however, places it much more readily within the power of its officers to give aid to the student, than is the case in a larger institution.

In the cataloguing of the South Kensington Museum the excellent example of affixing a label, which is a copy of the entry in the catalogue, to each object has been set. These labels, however, serve for identification, rather than for description; and we look in vain for those broad and general elements of instruction, with reference to the general character of the objects, that might be advantageously given in a catalogue. The handbooks to the Museum, however, supply this information to a certain extent.

Such being the general elements provided for the education of the student in this country, it is evident that, good as they are, we require something more. Classified and described objects of art are requisite for education in art. Of that there is no doubt. But they are only some, out of many, requisites. A museum, even if well illustrated by catalogues, may be compared to a botanic garden. At Kew, at Ghent, at Mar-seilles, at many other places that may be named, are to be found gardens containing numerous species of plants, arranged with accuracy, either on the Linnean system of botany or on that of Jussieu. For the botanical student nothing can possess higher interest. But for the visitor who knows nothing of botany, there is simply a garden, with, it may be, the names of the plants indicated by legible labels. Such a garden does not teach botany, except to the student who is taught to visit it. So it is with the Art museum. To a certain extent the mere presentation to the eye of beautiful objects, either of nature or of art, has an educational value. We should be the last to disparage the value of education through the eye. It is all the more effective because it is, to a great extent, unconscious; and it may be the case that the familiarisation of the eye with beautiful forms may, in many cases, teach it to reject forms that are not beautiful. But even this requires some aid, some guidance. The principles, elements, and laws of beauty require to be indicated to the learner. They are only instinctively appreciated by those who, however unconsciously, have a trained or a naturally correct taste. But beauty is not the only quality, for the possession of which objects are valued in museums. Character is of more importance than beauty, and to understand the import and value of character presupposes considerable acquaintance with art.

It follows that we are greatly in need of such primers or grammars of art as shall teach the visitors to our galleries and museums to look at the contents with intelligent eyes. The literary works, which may be named as leading the mind to form a general and comprehensive idea of art as a whole, that have most value to the English reader, are such works as the Lectures of the Presidents of the Royal Academy, amongst which those of Sir Joshua Reynolds are the most remarkable. In the lives of artists, again, is often to be found much general knowledge as to the history or principles of the special art practised by the subject of the biography. We may be pardoned for citing some papers that have appeared in our columns, specially discussing such subjects as grandeur in the antique, scale, character in art, motive, shadow, colour, symmetry, form, proportion and symmetry, ornamentation, and grace, as attempts to call attention to so many chapters of the elementary history of art; using the term rather to denote what is called the natural history of the subject than the chronological order of its development. Nevertheless, we are greatly in need of other books.

Fine Art in Oxford.—The Slade Professor of Fine Art, Mr. John Ruskin, gives two courses of lectures during the current Term—the first on "Mountain Form," the second on "Florentine Art." The first course consists of four, the second of eight lectures, and they are given consecutively, at noon, in the drawing-schools, on Tuesdays and Fridays, the first lecture on October 27.

FOREIGN ART PERIODICALS.

A DIVE into a promiscuous collection of the serials devoted to art, or to "the arts," in different countries, would probably leave those who were new to such investigation a little bewildered at the variety of the information and instruction offered to them; and, perhaps, a good deal impressed with the extent of the business in writing, editing, and printing carried on at present on behalf of art and art students. Those which are published in this country are of course more or less well known, according to their merits and success, to our readers. But scarcely any of the number of art serials published on the Continent circulate in this country; even the best of them are scarcely to be found in any ordinary lending library; and such notes on their respective character and value as we occasionally give must be interesting to those who are out of the way of seeing them.

To the *Gazette des Beaux Arts*, we devoted some space not long since,* considering it as a publication of sufficiently high and cosmopolitan character to deserve general attention. The September number continues the article on Baudry and his works for the Opera-house decorations, commenced the previous month, and illustrated in this number by a photo-lithograph from a very charming cartoon representing "pastoral music." A grand single figure, by Decamp (engraved), and an etching from a Vandyck portrait, by A. Gilbert, present the usual excellence of this journal in the department of illustration. Among articles on out-of-the-way and curious subjects (for which the *Gazette* is a frequent repository) is one on the arrangement and design of the classic toga as worn by Talma; also some notes on architectural engravings attributed to Bramante, of which one or two specimens are given. The *Lettres Anglaises* of M. Dubouloz descend from flippancy to impertinence, and speak of able artists, of whom the writer does not approve, in a tone to which the creditable title of "criticism" can by no stretch of complaisance be applied. French readers will be very much at sea if they take their notions of English painters from M. Dubouloz.

Art pour Tous is a specimen, in a small way, of what we have sometimes thought might be carried out on a larger scale—a journal with a polyglot letter-press; in this case French, English, and German. This perhaps could scarcely be done, however, except where the letter-press fills but a small space, and is secondary in interest to the illustrations. Besides providing for an international circulation, such an arrangement has the indirect effect of promoting acquaintance with each other's languages on the part of readers.

Art pour Tous, however, is but a very "popular" class of serial, of little real value. *L'Artiste*, edited by M. Arsène Houssaye, is a high-class publication well written and well illustrated. Under the heading of "Village Art" is given, in a racy, amusing manner, the "History of a little Church." The village of Chusclan had two wants, a church and a bridge, and had only funds for one. There was only a ferry, dangerous when the river was swollen with rain. There was an old vault of a church, entered down some broken steps, and containing a statue with one arm, and everything else in keeping. The bishop, on a visit, insisted on the church being rebuilt, or he would withdraw the *curé*. The mayor pleaded without avail for the bridge. But in the night there was a storm, and the bishop had a bad passage across the river next morning, and said, "You had better build the bridge; God will provide for the church!" The next bishop begged the money for the new church himself, till people at court would say "*Pardieu monsieur, garé à son église!*" But the funds were raised for the building. Decoration, however, was wanting. The next *curé* preferred the pleasure of the ear to that of the eye, and with much difficulty raised money for a peal of bells. But his successor, the Abbé de Moulimont, with no artistic education, had (what education can hardly impart) "*le sentiment inné du beau.*" And he was determined to have his church beautiful. Thereupon he was pestered with communications from painters round the neighbourhood, who offered to cover his walls at reasonable prices; but the good *curé* said, "Avaunt! you are not true artists who offer to paint at so much a yard; you are not worthy to decorate the church of Chusclan." Eventually the *curé* found in a convent near Arles a young man painting beautiful figures on the walls, as if he loved his work,

and he said, "You are the man for me." And so M. Sublet was engaged to paint the little choir at Chusclan, and the nave is waiting till money can be found to do it worthily. The moral drawn is that the *curés* have it in their power to give a new impulse to Christian art in France, if they will go about it in the right spirit, and that no place is too small, even "a little choir of a little church in a little village," to be worth good art. The *curés* would certainly be better employed in such matters than in "exploiting" pilgrimages, or influencing votes.

The *Journal Général des Beaux Arts*, without illustrations, seems to take up some original subjects, as in a series of articles on the "Fine Arts and the Blind," of which the last number is occupied with the representations of the blind of the Old Testament by various artists. "The Pictures of Edwin Douglas" form the subject of a very laudatory article, and "Artificial Flowers" are being systematically dealt with, perhaps rather unnecessarily. The *Dictionnaire du Mobilier* of that great and indefatigable worker, M. Viollet-le-Duc, has arrived at the words *Hache*, *Harnois*, and *Heurme*. In regard to the first subject, remarkable illustrations are given of the excellence and fitness of Medieval workmanship in such very practical matters as battle-axes. Translations of Viollet-le-Duc's "Lectures on Architecture," by Mr. Bucknall, are also to be had in a serial form. Of M. Daly's *Revue Générale de l'Architecture*, we have, during long years, often spoken. The latest number contains an important article on a subject as practically interesting here as in France, that of "party-walls" (*la mitoyenneté*). The questions, treated under separate headings, involve the consideration of the legal constitution of a party-wall, of the obligation to construct it, and of the several owners to keep it in repair. In regard to this point is raised whether a proprietor can get rid of his obligation to keep the wall in repair by giving up his rights over it. The conclusion is in the negative; or it would be more correct to say, perhaps, that neither can give up his right in it. The argument is, that Government in most cases compels the erection of the party-wall; and that if both proprietors chose to renounce their right simultaneously, it is evident they could not so get rid of their joint responsibility. The third series of *L'Architecture privée*, also by M. Daly, gives examples of nineteenth-century decoration. Nothing could be more finely got up than the coloured illustrations, which almost beguile us into admiring things which, as a matter of taste, one would be inclined to look coldly upon. The drawing-room decorations, which form the greater part, are not remarkable for anything beyond a kind of conventional elegance. The decoration of the entrance-passage, 17, Rue Gay Lussac, has more of refinement in detail and in tones of colour—a combination of green marble, with predominant tints of grey and buff in the painted decoration. The lavatory at the restaurant, Passage des Princes, by M. Hallier, architect, and M. Rey, decorator, looks admirable, but something must be credited to the execution of the painter, in which marble, mahogany, and other materials are imitated with an exactitude approaching reality. On the whole the execution is finer in this book than the design is generally worth.

The *Nouvelles Annales de la Construction* (with the title in English in the corner, "Annals of the Construction"), has been carried on for a good many years now by M. Opperman, civil engineer, and contains not so much novelty as its name implies. It is, however, a useful if dry publication, and is supplied with carefully executed diagrams of the constructions described or suggested. In a review of the recent competition for the Church of the Sacré Cœur, complaint is made, from an engineering point of view, that nearly all the competitors had greatly neglected the question of the foundations, the construction of which was a point to which attention was requested in the prospectus. Articles on the construction of granaries and of theatres are going through its columns; but the latter, at least, seem to offer nothing new.

The *Encyclopédie d'Architecture* is a very good fortnightly publication, known to some of our readers. Its illustrations are admirably got up, and both in these and in the style of writing and of general arrangement, it is evidently formed to some extent on the model of the *Revue Générale*. Mr. Parker's *Archæology of Rome* is reviewed in the last number, which also contains a new and somewhat singular project, by M. Martin de Mans,

* See *Builder* for May 16th of this year.

for the construction, on a new principle, of the piers of iron railway viaducts. This, the author says, is founded upon the analogy of the form of the leg in man and the larger animals, which rests upon the smaller end, and increases upwards. On this principle, M. Mans shows us, for the central support of a large viaduct across a valley, a framed cast-iron pier built in stages, each of which overalls the one underneath it, the whole springing from a single cast-iron column, with a slightly spreading base, on a stone pedestal. The plan of the pier above is that of two equilateral triangles placed base to base, and which, in the top stage, span together the width of the roadway. M. Mans thinks that, when such a pier is placed on its broad end as a base, it must pivot on one side and on the other successively, as a load passes over the bridge; hence a source of destruction from unequal tension continually repeated. How this is to be avoided by reversing the pier and placing the broad end under the load is not so apparent. M. Mans generously announces that he has no intention of taking out a *brevet* for his invention, which he presents for the use of the engineering world. We do not think his principle is likely to be adopted. Engineers and constructors generally have a strong inherited prejudice in favour of a broad base, and are not likely to take to putting their bridges on stilts.

Of German art publications, one of the best which has come under our notice is the *Zeitschrift der Bildende Kunst* (literally "Journal of Plastic Art"), published at Berlin, and edited by Herr Carl Lützow. Germany, however, cannot depend on her own resources for the most artistic style of illustration, and the name of "Flameng," as it is at the foot of the splendid etching from Rembrandt, in a recent number; and the lithograph in the same number is after Jorot. The last number (September) which has reached us contains a good etching, by Jünger, of Gebhardt's "Last Supper," in which that scene is treated with considerable originality, and with a more purely natural type in the faces and expressions of "the twelve" than we are accustomed to associate with the subject. Judas, opening the door, is in the act of quitting the room, looking back as he does so on the object of his treachery. There is much animation in the group immediately round the principal figure. The leading article is devoted to the life and works of Hess, the sculptor, who emigrated in his youth to America, and is illustrated by an engraving of his statue of Goethe by a young man, with his noble classic face, which either has been or is to be placed in a public position in New York. In publications devoted to high art, Germany does not seem to be rich; nor are they, such as there are, interesting in type. The *Denkmale Italienscher Malerei*, "Monuments of Italian Painting," from the decay of antique art to the seventeenth century, gives very careful and fine outline representations of the works of the painters it deals with, to a tolerably large scale, sometimes with special heads further enlarged; these are valuable for reference and information as to the type of drawing, but very uninteresting otherwise. This, however, is rather an illustrated publication, coming out in parts, than a periodical in the usual sense. Of the decorative arts, there are a good many illustrative publications, mostly poor enough as regards to spirit and design. *Kunst und Kunst-Gewerbe* gives illustrations of ornamental furniture, in some common-place style. The *Album für Baudecoration und Zimmerchmuck* gives fine photographs of decorations for the exterior and interior of buildings, from different sources, in the form of medallions, plaster ornament, &c., with a certain finish of style about them, but not very much novelty. There is a new publication of this class, hailing from Leipzig, *Decorations-Motive*, under the conduct of Herr Jummel (architect), Herr Ortwein, director of the Graz School of Art-work; and Herr Westphal, decorative painter in Leipzig; and other collaborators. This sounds very great, but the book so far (there are only one or two numbers out) contains mere reproductions of (man detail of an ordinary type, such as every one knows already, rather too well. *Kunsthandwerk*, published at Stuttgart, illustrates old things, as well as specimens of new designs for objects of use. The illustrations are very well engraved; one of a small antique vase, hollowed out of a piece of onyx, is beautifully chromo-lithographed, and is a most interesting object in every way, when there is the *Vorlagen für Ornamentalelei-*

introduction or guide to ornament, edited by Dr. Von Zahn, of Leipzig, which is in its second volume, in which different styles of ornament are set out in outline, and a portion coloured: the object seems to be similar to that of the "Grammar of Ornament," but it is far inferior in every way. It is difficult to know, either, what is the use of setting these different types of ornament before the German architectural mind, which seems to see no possibility in decoration but that kind of acanthus and boy and wreath medley, to which the architects of this school impart even an additional coldness and tameness in their use of it. You may open several German books on decoration one after another, by different hands; but you seem to find the same thing in all of them. The "behind-handedness" of the German (to coin a word after his own fashion) in these matters is painful to witness; and it is the more singular, because, as we all know, in mere *de fresco* methods of decoration the Germans have a peculiar aptitude. But when it comes to regular designing, all seems to revert to one type—the Munich classicism.

In a similar spirit are the German publications illustrative of domestic architecture, such as *Der Civil-bau* (Berlin), now in its second volume, and which displays mansions in the very extremity of cold and uninteresting aspect. *Bauten und Entwürfe* ("Buildings and Designs"), a new publication, edited by the Dresden Architectural Society, and representing "characteristic architectural works" of that city, is somewhat better. The large mansion by Herr Semper (an honorary member of our Institute) occupying a triangular plot of ground, at the corner of two streets, shows very able planning, and there is a certain power about the elevation which redeems its frigidity. A house by Herr Eberhard illustrated here shows some rather pretty treatment in the garden front. But in the main all fancy and originality seem to be crushed out of the German architect by the influence of the scholastic instruction in classical proprieties to which he is subjected. The height or depth of this classic nothingness is shown in the *Architektonisches Skizzen-buch*, a publication which has been carried on for some time back; to what end, German architects may understand, possibly. The name reminds us of a series similar in title, the *Croquis d'Architecture* of a club of the younger architects (we believe) of Paris; but the sketches in this case are, if we are not mistaken, lithographed for private circulation only. The last portfolio of them contains comparative plans of the principal European theatres to a uniform scale, in which the immense scale of the approaches and accessories to the auditorium at the Paris Opera-house dwarfs everything else; Covent-garden seems a small thing beside it, though the stages and actual auditorium are pretty near the same size. There is an admirable sketch of part of the Podesta Palace at Florence by M. Liberge, and a sufficiently imposing and not ineffective design for a grand pulpit by M. Bousac.

Among French publications coming out as a series, and illustrative of branches of art workmanship, is the *Galerie-meuble*, or store-house of furniture design, which undertakes to give fifty-four coloured plates a year. This is edited by M. Guilmand; the illustrations (chromo-lithograph) are brilliant in colour and finish, and contain good things here and there; but, as in some other of these publications, the drawing is in advance of the design. The *Histoire de la Céramique*, conducted by M. A. Demmin, gives photographs chiefly of old ware, with historical and explanatory comments: two busts of Louis XV. and his Queen, Luneville manufacture, given in the last number, are notable as spirited and expressive specimens of portraiture in this process. A more important and elaborate publication is the *Histoire Générale de l'Écaille ancienne, Française et Étrangère, considérée dans son Histoire, sa Nature, ses Formes, et sa Décoration: par Rispaquet, Peintre*, &c. This publication, now in its eighteenth number, is one of those works which in regard to completeness and splendour of illustration, are hardly brought out anywhere but in France. The coloured representations of vases and other specimens of ornamental pottery are executed with that elaborate finish and brilliancy which almost deceive the eye, and render the plate as complete an illustration as the object itself would be.

Italy seems to turn a good deal towards her ancient days still, and shows little life in the way of publications devoted to the elucidation or illustration of the art of to-day. The *Giornale degli Scavi di Pompei*, published by or for the

Archæological College, has reached its third volume, and no doubt may have matter for continuance for some little time to come; and there is, besides, the very fine large series of coloured illustrations of restored decorations, &c., of the reconstructed city, under the title *Casse ed Monumenti di Pompei*. The other Peninsular illustrates architectural art in the large illustrated periodical, *Museo Español de Antigüedades*, published under the direction "del Doctor Don Juan de Dios de la Rada y Dolgado," before whose name and style at least most Northern editors must bow their diminished heads! But the illustrations to the *Museo* are really very good. The September number contains a fine drawing of a remarkable tomb from Burgos Cathedral, in that extraordinary and picturesque medley of details of a Renaissance tendency, with a more than Gothic profusion and wildness in the general design, only found in Spain. The choir stalls from the monastery of Santa Tomas at Avila, carved wood, are very fine, and bear a far greater resemblance to Northern Gothic ("Late Decorated") than Spanish work in general. There is also a large engraving of Torrigiani's Virgin and Child, in the Museum at Seville. Of contemporary art-work in Spain, we shall probably be right in presuming that there is rather a dearth at present.

Few of the publications alluded to above have strong enough general interest to have a chance of regular circulation in this country. Some of the best, however, French especially, we think might and should have, and we invite the attention of librarians and of readers generally to them.*

WINTER EXHIBITION.—DUDLEY GALLERY.

THE eighth exhibition of cabinet pictures in oil, opened this week at the Dudley Gallery, can scarcely be said to contain any remarkable works, but includes a considerable proportion that are above the average. The most eminent names which appear in the catalogue are not very well represented. Mr. Alma Tadema's one contribution is below his mark. Mr. Poynter's "Psyche's Awakening" (in illustration of a quotation from Morris) is chiefly devoted to a sunrise effect among mountains, and the figure, in fluttering blue robes with a muscular development of arm, might stand for anything rather than Psyche. Mr. Watts, too, has fallen into the snare of allegory in his "Dawn and Day" (285), where the plump figure representing "Dawn," overpowered and driven down by "Day" rising behind, suggests associations other than ideal or imaginative, though there is fine drawing and colouring in the work. Mr. Spencer Stanhope's "Banks of the Styx" (168), with two somewhat lanky figures waiting for a small boat making its way from the "back-scene," suggests nothing higher than a scene from a "classic" opera. Failure, as to the highest ends of painting, is never more certain than when subjects so purely ideal are undertaken without the attempt or the power (whichever way the deficiency lie) to lift them above the prosaic.

Of subjects more within the ordinary limits, we notice Mr. Hodgson's "Postmaster-General's Office, Tangiers" (76), where the elaborate business of that institution is carried on by figures more highly finished in detail than we have seen from this painter before, and with a sufficiency of point and humour. In a more dry vein is Mr. Storey's "Enough is as Good as a Feast," a modern De Hooze in feeling and style, though with warmer colour and fuller execution than his Dutch prototype. One or two able painters are seen a little out of their usual provinces; Mr. Hemy has quitted green water and old piers for the pebble beach, in his "Salmon Fishers mending Nets" (85), a capital highly finished study of shore detail and figures in keeping; Mr. E. Dillon takes us to an Eastern interior at Cairo, with much minute ornamental detail, and rather a deficiency of light (as distinguished from colour); and Mr. Val Prinsep shows that he can paint landscape, in his sunny broadly-treated view in the Isle of Wight (269), where the local character of the scenery is recognisable at once. Mr. Arthur Hughes's "Our Daughter" (139), combines a girl of the full-lipped yet spiritual type affected by a certain school of painters, with a couple of

* We may mention that all, or nearly all, the most important foreign publications on art and architecture are to be seen in the Art Library of the Kensington Museum, the value and usefulness of which has been before commented on in the pages of the *Builder*.

"Squire Western" figures belonging to a type at least a century older; the juxtaposition in the same work is absurd, though there is much good work in the picture. Mr. F. D. Hardy, whose impressive picture under the title of "Hunger" will be remembered by some readers, combines in his small work entitled "Rest," careful study of light effect with a simple and unaffected pathos too rare in contemporary painting. Mr. A. B. Donaldson, also giving a little from his usual path, gives us a "Street Scene in Ludlow" (230), which, for combination of realism and finish with tone and effect it would be difficult to beat. These two last-named works are certainly among the most meritorious in the room. It is pleasant to see in the contributions of Mr. F. G. Cotman the prestige of an artistic name well kept up, especially in "Boats in a Mist" (29). Mr. Ernest Waterlow's "Knapp Mill, South Devon," deserves a word, as also the works of Mr. Wyllie, who, however, hardly equals here what we have seen from his hand elsewhere; and Mr. Joseph Knight's "Summer's Eve" and "Showery Day" (23 and 54, with others) combine genuine sentiment with broad and free handling. Mr. Townley Green is really striking out a path in his combination of carefully-studied figures with landscape; the attitudes of the three boys in the "Bird's Nest" (77) are admirably characteristic and expressive. Mr. Bridgman's "Mosque in Cairo" is an important study of interior effect; but scarcely so good as, in another way, his "Ustari in the Pyrenees," with the diligenza just getting packed; a little bright work recalling the small productions of Pissini, which are now so familiar to us at the "French and Flemish" gallery. Against Mr. Macbeth's pictures we protest; they are, one and all, mannered in colour and coarse in execution, and appeal to the popular mind only. Mr. Macallum's "Into a Quiet Haven" (253), an old yellow boat coming lazily across the water with two or three figures, shows a realisation of the class of feeling and effect which Mr. Macbeth seems to aim at, but seldom to work out conscientiously. As a contrast to this may be named "Sailing by Proxy," by Mr. Pollard (7), where a boat with one occupant manages to "forge ahead" through fresh rippling water with an oar-blade stuck upright to catch the wind. In composition and treatment of the water this singularly recalls Thaulow's picture of the "Norwegian Pilot-boat" in the International Exhibition (Room 17). The most prominent sea-piece here is Mr. H. Moore's fine study of "A Gale in the Mediterranean"; the movement and turbulent swing of the water are admirable. Among landscapes may be mentioned also "The Moated Grange" of Mr. Symons (68), very original in motive and tone; Mr. Morris's "Waning Light" (156), in which he repeats the idea of his "Good Bye" in last Academy, even to the reflection from the water in the cart-tracks; "River Scene, Holland," by Mr. C. Thornely (179); a drawing with a quotation for title by Mrs. H. Goodwin (276); "Evening: Study for a Picture," by Mr. C. J. Lewis; and a small work under the same title by Mme. M. Cazin. Mr. A. Severn's "Wreck on Boulogne Sands," a large work, is effective in tone, but wants atmosphere.

One or two small highly-finished animal studies, by Mr. W. Cauldery, should be noticed,—"A Tail of Horror," and "An Interesting Case"; in the latter, two cats, watching a cage of birds, are excellent in finish and expression, and in the careful study of the forelegs mechanically bent for a spring; not to speak of the pathetically innocent expression of the kitten looking on in the rear. Among heads, ideal or portrait, are "A Young Signor," by Mr. Forbes-Robertson, a clearly-painted and interesting head, in a picturesque head-dress; "Zarifa," by Miss Starr, interesting and original in type, but rather deficient in purity of colour; a fresh-looking, pleasant portrait of a young lady (225) by clever Mrs. Jopling; and a small study of head and bust, under the title "Haidée" (132), by Mr. Arthur Hill; rather hard, but highly finished and undoubtedly pretty. There is much pleasant work to look at in the collection.

Charges against the Surveyor of Pontefract.—Charges of fraud and embezzlement have been investigated by the Pontefract Town Council against their borough surveyor, Mr. James Wood, and the whole of the charges having been thoroughly gone into, the issue of a warrant to apprehend Mr. Wood has been unanimously agreed upon by the Council.

A NOTE FROM FLORENCE.

The following portions of a letter from a correspondent in Italy will interest some of our readers—

As far as Florence is concerned, there is really but little stirring. Politics and taxation are the only subjects of the day. The *Times*, last month, gave a very clear account of Italian finance, and no country, I fancy, could be in a state much nearer to bankruptcy. The ministry is so wretched. There seems no administrative power among the ministers. You may have read of the demonstration and threatened disturbances here, all ending in smoke. The harvest has been splendid, but the bakers kept up their enormous prices for bread, to sell off their stored-up grain at the same price as last year. Some clever fellows made loaves of the new grain and sold them from barrows in the streets before the shops of the hard-hearted bakers. Conceive the mortification of the latter, and the spirited retorts of the former on clearing their barrows to ready buyers in a few minutes! There was a grand three days' talk of internationalists and petroleum, and Florence was filled with soldiers; and then the lovely weather and the abatement of a few centimes in meat and bread, and the Florentines, a naturally peaceful people, took up their mandolines and their evening walks, and the air resounded with song, as usual in summer time. The Government make laws—invent new taxes—but there is no regular system for gathering the taxes or for making the laws respected. They instituted that every laboring man should pay a tax of 13 per cent. on his daily earnings, but the men refused. The Government then applied to the masters to deduct this tax before paying the men their wages. The Marquis Ginori, who has the largest manufactory in these parts,—he has revived the old Capo di Monte porcelain ware, and has large shops of all kinds of porcelain here and in Rome,—positively refused to deduct the tax, and others followed his example, all threatening rather to close their shops and discharge their men, and the subject was dropped. Now they are putting in force a law made in '66. I have seen printed copies of this law, and can vouch for the date, taxing all servants; that is, the tax must be paid by the masters or mistresses. The tax is so worded that all must pay except the king, royal family, and representatives of foreign countries. This is hard on foreigners. They are then contemplating a sort of property-tax—"viciosa mobile"; so that foreigners having their own furniture will have to pay. Now, to give you an idea of the manner of collecting the taxes, this tax for servants is to be got in immediately, and to be demanded for the years 1871-72-73, and to be done alphabetically. They have not been to me—I should come third on the list,—but they have been since to my old friend Mrs. W—. "Why," said I, "do they begin at W"? Because, I found out (it is a fact) they begin where they know there is least to do; where there will only be foreigners, who are sure to pay, while they know they have precious little chance of getting anything out of Italians, who will lie, and be up to every contrivance to get off paying. Just put all this together, and see by the first what a complete damper is put to all industry in Italy. In Piedmont it is different, there is naturally more activity; but here in Tuscany the utter ignorance of business ways, the lack of any spirited, enterprising movement, is most discouraging. Then the dreadful splitting of parties. I was visiting at Siena a family who are very *codine*—meaning of the extreme Conservative party—highly religious, &c. They were always talking against the Government. "Why do you not go into the Camera," said I, "and represent the high morale party, and help to do good to your country?" "Oh, we could not act with the country men." "Act on the Opposition, then—present men." "No, we could not go to Rome." And so the country is left in the hands of needy advocates. There is no patriotism among the young men of good family and good fortune in Italy. They pass their time and spend their money in senseless pleasures, leaving their brains uncultivated and their country to get on how it can. The king leads a somewhat sensual life; his son Umberto ditto. One wonders when the turning-point for better times will come. We had a dreadful fire here last night. Providentially it was near the Arno, and the soldiery got it subdued half an hour only before a tremendous hurricane came up, otherwise a great part of that side of the Arno would have been burnt down. They directly said it

was caused by petroleum. Among all this black state of affairs, it is cheering to find something going on, and I think art is taking a new step forward in the south among the young.

DAMAGE BY THE LATE STORM.

ONE of the most destructive hurricanes we have had for many years passed over the country on Wednesday in last week. We cannot, from want of space, give any adequate idea of the damage done in numerous places, and only select a very few as a specimen of the many reports sent in to us.

In Leeds, one of the most serious effects of the storm was suffered by the new Baptist chapel in York-road, a large portion of which was blown down, and damage done to the extent of about 800l., by the alarming and destructive gale which raged in December last. It is estimated that the damage by this second accident to the unfortunate chapel will amount to something like 400l. or 500l.

At Uggelbarnby, near Whitby, the new church sustained much damage, especially on the roof. At Egton Bridge, the Roman Catholic church of St. Hedda had much damage done to its roof.

At Southport, the spire of the new Presbyterian church was partially injured. At Crosses, near Southport, the roof of St. John's Church, which had only just been completed, looked perfectly safe on Tuesday night, but during the night the wind blew with such terrific force that the edifice itself was considered in danger. There being no windows or doors at present in the church, the open spaces gave the gale free access to the interior of the church, and early on Wednesday morning the belfry and part of the roof came down with a great crash, filling the interior of the church with debris.

At Bacup, the Wesleyan chapel, a comparatively new building, was partially unroofed.

At Old Shildon, Bishop Auckland, where some large church schools are being erected in a field near the Vicarage, the buildings were almost ready for slating, the roof having been put on with the exception of the bell-turret, where the woodwork had not been secured. The wind getting in carried off the woodwork, and blew down a great portion of the turret and part of the gable.

At Consett the national schools in course of erection were partially blown down.

At Durham a circus was blown down. At Stockport, a chimney 140 ft. in height, and nearly finished, snapped in the middle, and was completely razed to the basement, scarcely one brick being left upon another.

To enumerate the towns where new and old houses and chimneys were not injured would perhaps be easier than to state where no damage was done by the gale wherever it raged.

A house was partially unroofed at Wanda-worth; at Clapham two persons were injured by the falling of a conservatory; and at Baywater a wall in course of construction was blown down, injuring one man. Many other minor accidents are reported.

The neighbourhood of Smithfield Market was a scene of great excitement, in consequence of a report that a house had fallen in Charterhouse square. It was ascertained that at the Carthusian-street entrance to the square, the gable-end of the wall of one of the houses, which, under the Metropolitan Improvement Act, had been partially dismantled, had during the high gale fallen with a loud crash, burying one man in the ruins.

At Sheffield, several houses were blown down. At Newcastle, many buildings in course of erection have been injured. The damage caused to the tents and marquees on the Town Moor was considerable. A house was partially destroyed at Gateshead, and three houses at Coatham had both gable-ends blown in.

In Scotland, also, much damage was done. The most serious casualty resulting from the gale in the neighbourhood of Edinburgh occurred at Dalry. The greater part of a gable of a three-story dwelling-house, in course of erection in Caledonian-place, was blown out, and hurled upon the top of the temporary iron church erected at the corner of that street and Dalry-road. The church was of a structure of sheet iron, with wood lining, and capable of accommodating upwards of 300 persons. Inside the fittings were of the usual kind. The church was a total wreck. About half the structure was at once stove in,—smashed, in fact, as if it had been a band-box; and the wind getting inside,

completed the work of destruction by blowing out what remained standing, and reducing the building to a mere heap of ruins. The building was purchased about three years ago for 400*l*. All over the city considerable damage was done to hoardings and scaffolding connected with the erection of new buildings. Great destruction was everywhere wrought among roofing-slates and chimney-pots, and the stripping of lead and zinc from roofs was also of common occurrence. At Morningside, a turret of the new Free Church was blown down, a portion of the ruins passing through the roof.

In the south side of Glasgow the damage has been pretty severe; but Crosshill district seems to have suffered to the greatest extent. The new Free Church in Albert-road has been greatly damaged. The scaffolding around the spire, which was nearly finished, was blown down, several of the stones of the spire were dislodged, and the roof much damaged by the falling stones and timber. Albert-road was completely blocked up by the wreck. Part of the gable of a new building on Pollockshaw-road, west of the church, was blown down. Considerable damage as done to the Greenhead Church, in Canning-street, several feet of the spire having been blown down, which in its descent partially destroyed the north-east turret. In the north-west of the city, besides the damage done to roofs, chimneys, &c., one of the fine old trees in Woodlands-road was broken off by the root. Perhaps the most serious damage to property in the City occurred in the St. Rollox district, where a stak, some 70 ft. high, fell through the roof of an adjoining building. The damage done in the northern district of the city is considerable. A block of buildings in course of construction in New City, which has been so much damaged by the gale at it is feared the whole will require to be taken down. There was a good deal of damage done to dwelling-houses.

In the Hamilton district immense damage has been done to property. The new Free Church Burnbank-road, which was almost ready for use, was, when the storm was at its height, under a complete wreck. The vestry and two bles were blown down, and what remains of the front portion of the building is rent from top to bottom. The loss, which will fall upon the contractor, Mr. Downie, is estimated at 400*l*. In churches—Established and Congregational—Anchorage-road have also been damaged, a number of new houses—particularly a series eight nearly finished at Edlewood Colliery—have been partially destroyed by the violence of a gale.

Two chimney-stalks fell at Dunfermline.

At Dundee the gables of two large dwellings were blown down. Many smaller erections are ruined, and the river traffic was greatly interrupted.

WORKS AND IMPROVEMENTS IN OXFORD.

The local papers give their usual accounts of works in the University. We take some particulars from the *Herald*:—

All Souls' College.—The restoration of the magnificent reredos in the chapel of this college being continued, and will not be completed for some time. The reredos occupies the whole of the eastern end of the chapel, and about three-fourths of the statues and other figures are in situ. The other part of the restoration of the building has been completed. The reredos consists, when completed, of thirty-five statues and nearly 100 statues surrounding a picture of the crucifixion, each of the statues standing in an elaborate canopied niche. The tympanum of the reredos contains a group representing the Day of Judgment. The statues comprise all the leading characters in old and New Testament history.

Balliol College.—This college is being considerably enlarged at a cost of about 22,000*l*. Eight sets of rooms built at a cost of 4,000*l*, are now completed, and will be occupied this term. Further enlargement is being made by which ten sets of rooms will be added, besides a new dining-hall 90 ft. by 36 ft. in the clear, a lecture-room, common room, buttery, kitchens, and other offices. The eight sets of rooms, which have just been completed, are situated at the north-east end of what is known as Salvin Buildings. The building is about 50 ft. long and 40 ft. wide, and the style of the architecture in accordance with that of the new portion

of the college. It is 50 ft. in height from the ground to the ridge. There are four stories and two sets of rooms in each, besides a scout's room. The ashlar is of Bath stone, and the designs and ornamental work are of Tisbury stone, the whole being lined with bricks. There is only one staircase, and the steps are of the hard Tisbury stone. The windows are moulded headed, and on the south and east sides there is a splendid oriel window breaking out on the first floor. The roof is covered with slate, and there are three chimneys built also of Tisbury stone. The architect is Mr. A. Waterhouse; the builder, Mr. Horsman, of Wolverhampton; and the clerk of the works Mr. Simmons.

Christ Church.—Mr. Skidmore has been contributing to the beauty of the Cathedral by a lectern of ancient pale brass parcel silvered, after the manner of parcel gilt objects of art in the middle ages. It consists of a base covered with delicate flagstone, on which lions support shields with the arms of the College and University emblazoned over them, and under the canopies on the main stem are figures representing worthies of the canonry. Great improvements are being effected in the Tower Quadrangle. The terrace round the quadrangle is being lowered to the extent of 1 ft. or 2 ft., and the east and south sides are approaching completion; the other sides will forthwith be proceeded with. In removing the granite which formed the breast walls of the terraces, the foundations of cloisters and buttresses were discovered, consequently a deviation from the original plan of the alterations was resolved on. It is supposed that it was the intention of Cardinal Wolsey to erect cloisters around the quadrangle, and that these foundations were laid for the purpose. Therefore, instead of merely lowering the terraces the foundations are being reinstated, and handsome massive buttresses erected with moulded base courses, so that the cloisters can be completed at any future time. The terraces, instead of being of gravel, are laid with random rubbed York stone.

Keeble College.—Great progress has been made with the erection of the new chapel, and a considerable block of new buildings to the south of the College gateway, for the accommodation of forty undergraduates and three tutors, with a porter's house, has also been proceeding. This block is intended to form a part of the east side of a second quadrangle, of which the lately erected college servants' block, with its clock tower, contained hereafter with other building southwards, will form the west side. The permanent residence for the Warden will, we believe, be placed in this quadrangle. This new block of rooms differs from the one hundred rooms first erected in having an attic story. It is proposed to separate the two quadrangles hereafter, by a permanent dining-hall and library, in place of the present temporary chapel and dining-hall. The chapel, which like the other college buildings is of local red brick and stone, has now reached the full height of its side walls, and is remarkable for its general proportions and admixture of colours. The outside walls are much decorated with sculptures and with marble and other inlays in panels; niches at the top of the buttresses are prepared to receive figures, two of which are already in their places. A large representation of the *Agnes Dei*, surrounded by foliage, is carved in the tympanum of the south doorway which faces into the quadrangle. The west doorway opens out of a small cloister. The timbers of the roof now being put up will be covered with lead, and are being relieved with a range of stone pinnacles. Beneath this roof there will be a vaulted ceiling springing from shafts of Devon-

shire dark marble, with carved capitals and stone ribs. The surface of the interior is at present very unfinished. Large panels are prepared round the four walls beneath the window cills to receive mosaics representing a series of events from the Old and New Testament. Beneath this line of pictures the walls will be lined with various materials. Marbles and alabaster in various forms will be largely used in them. The works at the college are in the hands of Mr. W. Butterfield, architect.

Merton College.—The principal improvement at this College is the restoration of the tower of St. John's Church. The exterior of the tower showing great symptoms of decay from old age, it having been erected about six centuries since, the west side is being restored by the stone being cut out at an average depth of 7 in., and replaced by new Milton stone. It is intended to restore the other sides in a similar manner, and when completed the appearance of the tower will be greatly improved. The builders are Messrs. Fisher & Hobdell.

New College.—An important addition has been made to this college, and a further extension is about to be proceeded with forthwith. The new wing, having a frontage to Holywell-street, which was commenced in August, 1872, is near completion, and the remainder will be ready by Christmas next. The architect is Sir Gilbert Scott. The amount of the contract in progress and in the hands of Messrs. Jackson & Shaw, the contractors, of Earl-street, Westminster, is about 23,000*l*, and forms one portion of a large design. The building has two frontages, one in Holywell-street, and the other facing a noble quadrangle communicating with the present college buildings by a handsome gate through the old city wall. The character of the work is of the Medieval type with which the many previous works of this architect have rendered us familiar. The building gives forty additional sets of rooms to the college, two being for Fellows, and thirty-eight for Undergraduates, besides two lecture-rooms, each about 36 ft. by 22 ft. The area is 180 ft. by 45 ft., and the height from footing to ridge 75 ft. There are four sets of stone staircases in the building, which consists of basement and ground, first, second, and third floors, with an additional story in the central tower. The fronts are entirely of stone, obtained from the Milton and Taynton quarries, about twenty miles from Oxford. The Holywell-street front will be divided from the public way by an ornamental railing. The whole of the works have been superintended by Mr. H. Roome, clerk of the works, Mr. Bannison being the general foreman.

RECONSTRUCTION OF THE LAW COURTS AT LINCOLN'S-INN.

DURING the last few weeks extensive alterations have been in progress at the Courts at Lincoln's-inn, occupied by the Lord Chancellor and the Lords Justices respectively. The two courts have, in fact, been thrown into one, and converted into the Supreme Appellate Court, in anticipation of the Judicature Act coming into operation. In the new court, as remodelled and enlarged, an area of about 25 ft., at the north end, has been constructed for the special accommodation of the Lord Chancellor and the Judges sitting as the full court. This portion is raised considerably above the general floor level of the court, the seats for the Lord Chancellor and Judges forming a semicircle, and being eleven in number. The table for the officers of the court, below the judges, occupies a spacious area in front of the judges' seats. The seats for counsel, of which there are eight rows, raised one above another, are placed immediately beyond. The rest of the space at the south end of the court, occupying about one-third of the entire area, is set apart for the public. The entrance for counsel is through the door leading to what was formerly the Lord Chancellor's Court, whilst the public will be admitted by the entrance to what was the Lords Justices' Court. The judges' entrance is at the south end, leading into their private rooms, from which the bench is reached by a passage which has been partitioned off along the entire length of the court, on the east side. The white marble statue of Lord Erskine has been removed from its former position in the Lord Chancellor's Court, and placed at the extreme south end of the reconstructed interior, behind the space for the accommodation of the public. It has been what is technically known as a "pickle," for

the purpose of cleaning, and the pure white face of the marble has been restored. The walls and ceiling of the court have also been cleaned and coloured, and the old oak wainscoting repolished. The whole of the judges' and counsels' seats and other new fittings are of oak, and new hot-water pipes have been laid down for heating the court. The new court as remodelled will be ready for occupation at the opening of November term on Monday next. Mr. Smith, of Commercial-road, Whitechapel, has executed the work.

Vice-Chancellor Malins's Court has also undergone an internal improvement by the introduction of a new sunlight, and cleaning, whilst the whole of the buildings externally have been repainted and decorated.

The neighbouring Bankruptcy Court, in Portugal-street, is also being structurally enlarged, and internally rearranged, with the view of providing accommodation for the entire bankruptcy staff, including judge, registrars, and clerks, which is about to be transferred from Basing-hall-street, when the whole of the bankruptcy proceedings will be conducted in Portugal-street. The Portugal-street frontage has been brought forward 10 ft., which will provide accommodation for an increased number of officers, whilst the apartments in the rest of the building have also been to a great extent reconstructed.

The whole of the works at Lincoln's-inn, and also at the Bankruptcy Court, have been carried out by the Government Commissioners of Works, and under the direct superintendence of their surveyors.

PROPOSED NEW PARK AT BRINGTON.

A MOVEMENT is in progress for securing the laying out of a new park or recreation-ground on a plot of land adjoining the Metropolitan Extension line of the London, Chatham, and Dover Railway, situated between the Loughborough Junction and Camberwell New-road Stations. The ground in question, which is about 13 acres in extent, is known as Myatt's Fields, and was, until within the last two or three years, occupied as market-gardens. For some time past it has been laid out in streets, for building purposes, and houses of a superior class have been erected upon certain portions; but there is still an area of the extent above named altogether unbuilt upon, and a number of the inhabitants of the district interested in securing the preservation of open spaces are desirous of preventing it from being built upon, and appropriated as a park and recreation-ground, for the residents in Brixton and Camberwell. With this view a memorial is now in course of signature, for presentation to the Metropolitan Board of Works, asking them to take into their favourable consideration the desirability of purchasing the ground and converting it into a public park. The memorial is to be presented by a deputation, who propose to have an interview with the Board, accompanied by Mr. McArthur, one of the members for Lambeth. The site of the proposed park is easily accessible from Brixton, on the west side, and from the neighbourhood of Camberwell on the east, and is surrounded by a very large and rapidly-increasing population.

AIREDALE COLLEGE.

THE foundation-stone of the new Airedale College, which is about to be erected near Manningham Park, Bradford, has been laid by Mr. Titus Salt. For many years past the constituents of Airedale College have felt the necessity of something being done in the way of the erection of a building in place of the present one at Undercliffe, which has long been very unsuited to the requirements of the institution. For some time negotiations for an amalgamation with the Rotherham College delayed the carrying out of the idea of a new building, but when these negotiations at length came to an end, and it became a settled thing that the two institutions were to remain separate, the committee of Airedale College immediately took steps for the erection of a new building for the accommodation of the institution. A site was, after due consideration, purchased adjacent to Manningham Park, and it was decided to erect a college on the basis of the non-residence of students. This decision involved a reconsideration of the whole educational scheme of the institution.

The scheme having been decided upon, plans for the new building were prepared, and finally those of Messrs. Lockwood & Mawson were

selected. The plot of ground on which the college is to be erected is situated on the north side of Manningham Park between Manningham-lane and Heaton. About six acres of land were purchased, but about one-half of this the committee propose to sell off for villa sites, leaving about three acres for the college and grounds. The principal means of access to the college will be by Emm-lane, which runs up the side of the park-wall, and which is to be considerably widened and improved. The approach to the building itself will be by a broad entrance-drive from Emm-lane, which will pass between and also afford access to the villas.

The principal front of the college will thus be to the south, or to the park, and will present a total length of about 200 ft. The building is to be erected in the geometrical ornamented style. The shape of the building will be nearly that of a double T, the cross at the west end being the principal's residence, that at the east being the assembly-room, while the body of the building will be occupied by the library, large and small lecture-rooms, &c. In the centre of the front will be the chief entrance, opening into a spacious hall. The staircase to the first floor will be in the rear; and also at the back, the whole length of the body of the building, will run east and west the corridors, from which will open the various rooms. Next the entrance on the east side will be a large "common-room" for the use of the students, 30 ft. by 20 ft., and next to it lecture-room No. 3, 20 ft. by 16 ft. On the west of the entrance, on the ground-floor, is, first, the porter's lodge, with a fireplace muniment-room behind it. Next come lecture-rooms No. 1 and No. 2, each about the same size as No. 3. On the first floor over the entrance-hall will be a large council-room about 25 ft. by 17 ft. On the east side of this will be a large lecture-room, of the same size as the common room below, and another smaller one; while on the west will be the library, 45 ft. by 25 ft., and extending from front to rear of the building and lighted by windows on both sides. Occupying the extreme east of the building will be the assembly-room, 60 ft. by 30 ft., and with an extreme height of nearly 80 ft. This room will be fitted with vestries so as to be used as a chapel as well as a meeting-room, and will have a separate entrance. At the other end of the building will be the principal's residence. It will, of course, have separate entrances, but there will also be access direct to the college premises. The total cost of the six acres of land first bought was about 9,000*l.*, but it is estimated that when the four villa sites have been disposed of the net cost of the college for land will be about 2,000*l.* The contractors for the several works are:—Messrs. Murgatroyd, Idle, masons; Messrs. Beauland, Bradford, joiners; Mr. Rushworth, Shipley, plumber; Mr. Dixon, Bradford, plasterer; Mr. Hird, Shipley, ironfounder; Mr. Smithies, Bradford, slater; and Mr. Harland, Bradford, painter.

THE ADOPTION OF ROADS BY LOCAL AUTHORITIES.

THE point as to whether a vestry or other local authority can legally, under any circumstances, adopt a road, or any portion of a road, alongside which property has not been previously erected, was decided by Mr. Chance, the magistrate, at Lambeth police-court, in a case which came before him. Some time ago the Camberwell Vestry took charge of Martin's-road, leading out of High-street, Peckham. On one side of the road there is a row of houses, immediately in front of which runs an ancient footpath, and the remaining portion of the frontage reaches to some market-gardens on the opposite side. This portion was made into a road by the Vestry under the powers vested in them by Act of Parliament, the expenses being charged to the owners of houses already existing. The owner of eleven of these houses is Mr. John Weller, of the Rectory Nursery, East Dulwich, who was summoned to show cause why he should not pay the costs of making up that portion of the road opposite to his own property. In answer, Mr. Weller stated to the magistrate that he had purposely allowed himself to be summoned, not for the purpose of evading payment, but in order to raise a question of interest to the public. It was understood, under the Metropolitan Management Acts, that all new roads adopted by the Boards must be at least 40 ft. wide, but in this case the Vestry had adopted a road only 24 ft. wide. The adoption of this course by the Vestry was an advantage to him, but he desired to pro-

vent any road being formed of less than 40 ft. in width, and it was with that object that he had allowed himself to be summoned in order that it might be settled whether the Vestry was legally justified in adopting a 24-ft. road.

Mr. Chance, the magistrate, said that, in his opinion, under the Metropolitan Management Act of 1855, and also under sections 95 and 99 of the Amendment Act of 1862, a vestry might adopt any portion of a road either in length or width, and that consequently they were in a right position in this case, as the 24 ft. of roadway formed a portion of a 40 ft. road not yet completed.

Upon this decision being given, Mr. Weller asked the magistrate whether the Vestry or the Metropolitan Board would have power to compel the owner of the garden-ground opposite to give up sufficient land to complete the 40 ft. in width of road, in the event of commencing to build, without claiming payment at its market valuation from the Vestry.

In reply, Mr. Chance stated that in the event of buildings being erected, the parish building surveyor would doubtless take care that the building line was set back to the required distance. He did not express any opinion as to whether the owner of the land could claim payment for it from the parish.

THE GALLERY OF THE SOCIETY OF PAINTERS IN WATER-COLOURS.

THE building in Pall-mall East occupied as the Gallery of the Society of Painters in Water Colours is at present undergoing considerable structural and internal alterations. The frontage in Pall-mall up to the first-floor windows, containing the ground and a mezzanine floor, has been removed, and a new elevation of this portion of the frontage is in course of erection; the height of which to the bottom of the first floor windows (which, with the upper portion of the elevation, remains undisturbed) will be about 25 ft. It is built of Portland stone, and carries up to the first floor by four piers with panels which are intended to be faced with marble. The internal structural arrangements of the ground floor are likewise being altered by a new staircase leading up into the gallery above, which is in course of erection on the east side in lieu of the former staircase on the west side which has been removed. Mr. Cockerell is the architect, according to whose plans the new building is being erected, and Messrs. Jackson & Shaw are the contractors.

ST. MARGARET'S SCHOOL, MOSS SIDE, MANCHESTER.

THE foundation-stone of these schools was laid on the 24th inst. The ground-plan comprises infants' school, 39 ft. by 25 ft., with class-rooms, 15 ft. 3 in. by 14 ft. 6 in., and girls' school, 44 ft. by 32 ft., with class-rooms, 21 ft. by 18 ft. Each school has separate entrances adjoining to which are lavatories, hat and cloak-rooms. Access is gained to the first floor by a spacious stone staircase, and contains boys' school, 60 ft. by 32 ft., with two class-rooms; each 25 ft. by 19 ft., with lavatory, &c. Store-rooms, also kitchen fitted with boiler and other fittings convenient for tea parties. Accommodation is provided for 732 children. The whole of the exterior is faced with white-headed brick relieved with moulded and blue bricks to the arches of windows, string-courses, &c. The roof is open, with framed principals, and will be covered with Welsh slates, of two tints, with enriched ridge tiling. The windows are lofty one compartment in each being arranged to open. The outlay, including the fittings, will be about 3,600*l.* The rooms have open fireplaces, provided with Messrs. Shillito & Shorland's patent grates. The site will be enclosed with brick walls and wrought-iron railing opposite the building.

Mr. John Wilson is the contractor for the building, and Mr. John Lowe, Manchester, the architect.

The New Town Hall, Paisley.—On Monday the committee of the Paisley Town Council and the trustees of the late Mr. George A. Clark agreed to offer three premiums, of the respective amounts of 100*l.*, 50*l.*, and 25*l.*, for designs for the new Town Hall. The competition to be open and plans to be lodged by the 1st of February next. Mr. Clark bequeathed 20,000*l.* for the purpose of erecting a new Town Hall.

CONCERNING GLASS PAINTING.

SIR,—Mr. Gladstone, in his essay on "Ritualism," observes:—"The law that governed the design for an amphora or a lump, governed also the order of a spectacle, a procession, or a ceremonial. It was not the sacrifice of the inward meaning to the outward show: that method of proceeding was a glorious discovery reserved for the later, and especially for our own time. Neither was it the sacrifice even of the outward to the inward. The Greek did not find it requisite; nature had not imposed upon him such a necessity. It was the determination of their meeting-point,—the expression of the harmony between the two." "When we begin to imitate the conception that, after all, there is no reason why attempts should not be made to associate beauty with usefulness, the manner of our attempts is too frequently open to the severest criticism. The so-called beauty is administered in portentous doses of ornamentation sometimes running to actual deformity. Quantity is the measure, not quality nor proportion." Who shall be the rival of "some English architects plastering their work with an infinity of pretentious detail in order to screen from attention inharmonious dimension and poverty of lines?"

Mr. Gladstone has struck the key-note; but it is equally applicable to literature, science, and the other arts as to architecture. In literature in all its branches, either in poetry or prose, the subject, truth, and meaning are often lost in a multiplicity of pompous words and useless details. In science there is no end of extravagant jarring and brief existing theories. It is true this profusion of words in literature, uncertainty in science, and excess of ornamentation in art furnish employment to the masses; a problem so difficult to solve by philosophers or politicians; but is it not possible so to guide these means that there may be as much employment found for all classes without this waste of labour? There can be no doubt that the people or nation that can furnish the greatest advantage to the problem will reap the greatest advantage in the struggle for existence. To no subject in art do these criticisms apply with greater force than to glass-painting; and as, when used with judgment, it adds such brilliant, rich, and solemn effects to our edifices, a few remarks from an ardent admirer, who deeply regrets the evident decay of strength in this department of art, and hopes they may help to restore that meeting-point, harmony, or balance of power, may not be deemed intrusive.

Sir Joshua Reynolds has said that a picture ought at a glance to be able to challenge attention, and invite an examination of its beauties. This wise counsel is often neglected in glass-painting, and many admirers of stained-glass windows, content with their transparent prismatic picturesque effects, do not care if they are combined of old fragments put together without order, or confined to geometric floral and kaleidoscopic patterns, or composed of hideous distorted figures and designs, of which it is almost fruitless to attempt to discover the subject and meaning. This is the more to be regretted as our best glass-painters in some of their works lack the beauties of those by Medieval and Continental artists, while other works by them are as bizarre, ill-drawn, and incomprehensible as the paintings of any period. In a gallery the colours of a picture are affected by the proximity of others, as well as their position to the light, and glass-paintings equally affect and are affected by their environments and position, a point often disregarded; but the beauty of the colours, and intelligibility of the subjects of the glass pictures are chiefly obscured by the other enrichments of the window itself. A picture is admired for its telling its story distinctly, its breadth of effect, beauty, purity, and correctness of form, and the absence of meretricious details, accessories, and colours that fatigue the eye or distract attention from the principal points of interest. These qualities are equally valuable in glass-painting, and are appreciated by its judicious admirers far above its more sensationalists. Judging from some of the contemporary works in architecture and painting, it is probable that if it had been possible many of the medieval glass-painters would have filled the windows, however large, with entire sheets of glass, to cope with wall paintings, without the dark lines and shadows of metal framework obscuring their figures and subjects in wrong places, and painted the dark lines where they wanted them to help the design and give brilliancy to the colour. Metal framework being as

necessary then as now, and the size of glass requisite for burning in the colours rendered those large sheets impossible. If the artist of former days had any means of producing his effects not available at the present time, it is allowable to the modern artist in his endeavour to rival them to use means they may not have possessed; and if he can procure glass of a proper lustrous quality for burning in his colours in larger forms, why should he confine himself to the limited forms then in use? It is extremely difficult to prevent the dark lines of the metal framework supporting the glass crossing the paintings in material points. Yet considering how much the beauty of many magnificent windows are deteriorated, and their subjects confused by the iron and lead framing cutting across the figures and chief points of interest, too much skill and attention cannot be shown in making the divisions of the glass blend and harmonise with the design by which much confusion of the subject will be avoided and the beauty of the colours enhanced. The larger the forms enclosed by the lead framing can be made without sacrificing the purity, brilliancy, and richness of the transparent colours, will the comprehension of the subject be enhanced.

Though painted glass is often used to give lustre, splendour, and solemnity to an edifice, the chief use of windows is to admit light, and grave objections are reasonably made to dark, opaque-coloured glass for excluding it. In other paintings, the effect being obtained by reflection, the brightest tints are the most opaque, whereas in glass-painting the brightest tints are the most translucent, and the artist can carry that translucency into richer colours, greater depths, and subdued shades than can generally be done in other painting, and the talents of the glass-painter are shown by the use of those means and avoidance as much as possible of opaque painting. Mr. E. Parris observed that it was better to paint in bright cheerful colours, as our fogs, smoke, and gas soon toned them down. Experience proves his remarks to be too true. This may not be so important in glass as other decorations, but it is also worth the consideration of the glass-painter.

An art critic suggested that windows being to admit light, it was absurd to paint the figures on them with lights and shades as lighted from the front or inside the building, and that they should appear as lighted from the outside, so that the figures should be transparent in spirit as well as material. This specious theory is so impracticable that it does not appear ever to have been attempted, though some artists seem to have been misled by it into leaving the flesh tints white, or in an unnatural ghostly hue, forgetting that, if true, consistency requires that all the draperies, architectural canopies, pedestals, and other accessories should be painted in the same spiritual hues.

This theory failing, attempts have been made to preserve the appearance of flatness in glass by the means that Mr. A. W. N. Pugin tried, to prevent the reality of wall and other surfaces being lost in decoration; and Mr. Owen Jones, in many instances, successfully accomplished. This system, revived from the Early Greek art and the Medieval arts of Europe and Asia, appropriate to many materials as well as surfaces, is capable of great beauty, must be acknowledged, but, it must also be admitted, at a great sacrifice of natural beauty; and the crucial question is—which is of the greatest importance, the preservation of the reality of the appearance of the surface, with its endless repetition of regular conventional forms, or the sacrifice of the surface to the manifold beauties and varieties of natural objects? Conventionalism and Realism have divided mankind from the beginning in religion, literature, and all the arts, and will continue a fertile field of dispute to the end, and have generally been obliged to be reconciled in practice. Flowers, leaves, and other forms of vegetable life may be crushed, flattened, reduced to symmetrical forms, typified and combined with ornamental curves, spiral lines, or geometric figures, repeated at regular intervals; but animal life, from the highest to the lowest, rejects those arbitrary laws, and cannot be crushed into beautiful flattened forms.

The early Greek vases cannot be quoted as examples to the contrary, for if the figures are in one colour and the rest of the surface is another, the outlines of, and on the figures represented raised forms, and when more colours were introduced flat tints were soon departed from; and if the figures are represented as raised in

the slightest degree the theory of the preformation of the surface appearance must be given up, and it must depend on the speciality of the enrichment required. If the representations are to be confined to simple outlines, flat tints, a few planes, or the numerous planes, perspective depths, and variety of brilliant rich effects of light, shade, and colour to be found in the works of the greatest painters of all schools, are made use of. The simple methods of confining the figures with little relief to one or a few planes have generally been found monotonous, and abandoned for the more powerful means of representing religious, poetical, and historical subjects.

Glass-painting is a very imperious beauty, and will bear no rival next its throne. Its prismatic rays and transparent brilliancy change the hues and subdue the splendour of the wall-paintings; therefore, in proportion to their importance, and they are affected by the relative situation to its influence,—must its overpowering pretensions be subdued, and a liberal use of figurative and ornamental grisaille be substituted. To sculpture its bright colour imparts additional beauty, and glass-painting requires support, and its effects are enhanced by rich wall decorations and environments. But the variety of aspects, situations, change of seasons, of hours, and day or artificial light, so change and multiply its effects that it is impossible to frame laws to meet all cases. Naught will serve but a good eye for colour, and a knowledge of the relative harmony or contrast of colour, which is as important to the glass-painter, his critics, and patrons, as it is to other painters, to architects, decorators, and all employed in coloured embellishments, with their critics and patrons. But it is by their intrinsic qualities, uninfluenced by the surrounding decorations, that the beauties of glass-paintings are chiefly massed, whence arises the distinctness of subject, absence of breadth of effect, and proper subordination of colour to the chief points of interest, causing the waste of power complained of, and to which these remarks are principally addressed. Where the admission of light is of less importance than brilliancy, splendour, or solemnity, the figures should not be too small to be seen at a reasonable distance, nor the subject obscured by overcrowded figures, confused backgrounds, unimportant details, and minutiae. By the attention to these important points the compositions of Sir Joshua Reynolds and other artists for glass windows and the copies of high-class pictures are admired, in disregard of opacity and other properties incongenial to glass-painting; the best compositions being frequently where the divided spaces are filled with separate relative or sequential designs. In general the figures or subjects do not occupy the whole of the glass, and the remaining area is filled with representations of solid canopies, pedestals, and other enrichments not in character or harmony with the architecture of the window or subjects. This extra area would be better filled by geometric floriated and emblematic embellishments of a less solid description. The subjects and principal figures often occupy a still more limited space, being confined to variously-shaped metallic framed portions of the glass, the rest being filled with an infinite variety of strongly-coloured embellishments. In these the figures are usually so small, the subjects broken up and confused by extraneous colour and elaborate detail, that they only serve to dazzle the eye and bewilder the spectator. In these as in the other windows the subjects of the compartments should be co-dependent or sequential, and the colours of the accessory emblems, borders, and other ornamental designs, being kept subordinate, supporting but not clashing with the main subjects and figures. The heraldic conventional forms and colours are the most difficult emblems to deal with; but they must, by size or subdued colours, be kept subordinate if high art is required. The flesh tints of humanity should be natural, and those of angels, saints, spirits, fairies, and genii, copied from them as exemplified in the works of the greatest colourists of all schools, including those of the most successful spiritualistic painter of the fourteenth century. White should be most rigorously excluded from the flesh tints, and the representations of the lower animals should be natural, though they may be kept in a minor key. A most important point is, that if white, excluded from the flesh, is admitted in the draperies or other parts of the subjects in ground glass, it should not be used in the surrounding enrichments and borders; but if excluded from the subjects and their figures, it may be admitted in the other em-

bellshments. Pure white transparent glass, only admissible in very small portions to give vivacity and brilliancy, is subject to the same conditions. Where the true use of the window is demanded, in proportion to the light required must the colours be limited in intensity or space, and ground glass or grisaille introduced, pure white transparent glass being inadmissible in quantity. If the design needs more of the glass being occupied by colours, they should be in delicate and quiet hues. The figures in the subjects should be confined to few planes and to open daylight effects, they requiring less strongly-defined massive shadows than sunlight, all the other conditions relating to breadth of effect, subordination of the secondary embellishments and details on the glass, with the absence of distracting incongruous colours, should be attended to. In the belief and hope that attention to these points, by making the subjects and intentions of the glass-painter more apparent and satisfactory to the beholder, uniting the beautiful and useful, and saving the waste of misdirected labour, will tend to aid employment, instead of checking it, these remarks have been written.

G. B. MOORE.

THE ABBEY OF DUNFERMLINE AND CATHEDRAL OF DUNBLANE.

"**LORD HENRY LENNOX**, First Commissioner of Works, has inspected the ruined Palace and Abbey of Dunfermline with a view of ascertaining the extent of repairs requisite. The like attention will also be paid to the palaces of Linlithgow and Falkland, and the cathedral of Dunblane."

This announcement must be cheering alike to the antiquary and the architect, for these gray, weather-beaten ruins are mementoes of the time when civilisation dawned upon semi-barbaric Scotland, and they are dear to the hearts of patriotic Scotsmen, for they are associated with the memories of well-beloved kings and queens, but especially of Robert the Bruce. The origin and name of the town arose in the following manner. On a rock, forming a peninsula in the glen of Pittencrieff, through which a rivulet even at this day hurries to sea, Malcolm Canmore built a fort, which was named Dunfermline (the castle by the crooked stream). A village speedily sprang up in the vicinity of the castle, and the establishment of a religious house in the immediate neighbourhood gave an impulse to the progress of the village. But soon after there came another event which raised the hamlet into the dignity of a town,—an event of pre-eminent importance to the Scottish nation, namely, the marriage of Malcolm with Margaret the sister of Edgar Atheling, who, having been dethroned and his kingdom seized by William the Conqueror, fled by sea along with his family, and was driven by a storm on the Fife coast near Dunfermline. Margaret became the wife of Malcolm, and proved an inestimable blessing not only to her spouse but to the whole nation. By her influence and the example of her exiled countrymen the arts then known in England were introduced among the barbarous Scots, and along the coasts of the estuary of the Forth, where a number of trades were settled, the Saxon language began to supersede the Gaelic. The religious house founded by Malcolm was of a mean order, but under the care of Margaret it was enlarged and rendered important, and the king ordained that for all time coming it should be the burial-place of Scottish monarchs. David I., who at heart was more a priest than a king, converted the house into an abbey, where ere long became the most eminent in Scotland. In the reign of Alexander III. the abbey was still further enlarged by more elegant structures. King Malcolm III. (Canmore) having been slain at the siege of Alnwick Castle in 1093, his body was deposited at Tynemouth, but was afterwards exhumed by his son, Alexander I., and brought, says Fordun, "with royal pomp to the Church of the Holy Trinity at Dunfermline." Queen Margaret died four days after her husband had been slain, and her body was brought from Edinburgh to Dunfermline. Winton, in his "Chronicle," relates:—

"Before the Rood Altar with honour
She was laid in holy sepulture;
There her lord was laid also,
And with them her sons two,
Edward the First and Ethelred."

Passing over the royal burials in the Abbey of Dunfermline, we come to that of "The Bruce." According to Fordun, the king was buried in the

middle of the choir. Barbour thus describes the funeral ceremony:—

"They have had him to Dunfermline,
And him solemnly yriden [buried] syne [since],
In a fair tomb into the quire.
... When the service
Was done as they could best devise,
And syne upon the other day,
Sorry and sad they went their way,
And he debowelled was clearly,
And also embawled full richly."

In 1818, when the site of the new parish church was being laid out, the tomb of Bruce was discovered and opened. The body was reduced to a skeleton, the lead in which it had been wrapped was still entire, and a few fragments of fine linen, embroidered with gold, which had formed the shroud, were also discovered. The remains were re-interred with much state and solemn ceremony, by the Barons of Exchequer, in a tomb beneath the pulpit of the new church. The most severe blow suffered by the Abbey, next to that it experienced at the Reformation, was the visit, or rather visitation, of Edward I., who committed it to the flames because it was a meeting-place for the Scottish nobles to plot against the English usurper. Although after this destruction the Abbey was rebuilt, and still held an eminent position, it never again reached its ancient splendour. The Reformation came, and in 1560 the demolition of the sacred buildings at Dunfermline began, and since that period, mournfully remarks one of the historians of the town, "the wasting lapse of time, the neglect of past ages, and the dilapidations caused by numerous improvements, have left only a few mouldering ruins, the melancholy fragments of which convey but a faint picture of the former magnificence of the different structures."

The frateri, among the general havoc, has been somewhat fortunate, as it still possesses an entire western window, and beneath it, of twenty-six cells many still remain. By crossing the abbot's close from the frateri, the ruins of the palace are reached. In the ceiling, so to speak, of the embrasure of one of the upper windows, and perfectly visible from below, there is a singular piece of sculpture which is suspected to have been removed from some older building. It is inscribed with the date 1100. Certain, however, it is, that a palace with high claims to elegant architecture was erected by the fourth King James in 1500, and that he frequently resided in it. All that now remains is a single side-wall. The palace, with its lands, were presented by James VI. to the Queen on the morning after their nuptials, at Upolo, in Norway. In the palace, on the 19th of November, 1600, her majesty was delivered of her second son, the unfortunate Charles I. The bed in which he was born remained for several years, after the dismantling of the palace, in the chief inn of the town, until it was transferred to Broomhall, the seat of the Earl of Elgin, and from thence to Pittencrieff House. A strange legend still lingers in Dunfermline concerning the infancy of Charles, who was a peevish child. It is thus related by the late Robert Chambers:—"The infant was one night puling in his cradle in a room opening from the bedroom of the king and queen, when the nurse employed to tend him suddenly alarmed the Royal pair by a loud scream, followed up by the exclamation, 'Oh, my bairn!' On the king asking the cause of her alarm, she replied that there was something like an old man came into the room, and threw his cloak over the cradle of the prince, and then drew it back to him as if he had taken cradle, bairn, and everything away with him, and she deemed the thing 'no canny.' 'Fiend!' exclaimed King James, who saw in this a proof of his pet doctrine of demonology, 'I wish he had ta'en the girning brat clean awa: gin ever he be king, there will be nae gude in his reign; the de'il has cast his cloak over him already.'"

The last royal personage that occupied the palace of Dunfermline was Charles II., who spent some time in it during his Scottish campaign of 1650-1.

In coming time a king may sit in "Dunfermling town drinking his bluid-red wine," but not in the old palace; and he may worship, but not in the old abbey; yet, considering their associations and their architectural beauties, it is but fitting that they should be carefully tended and preserved.

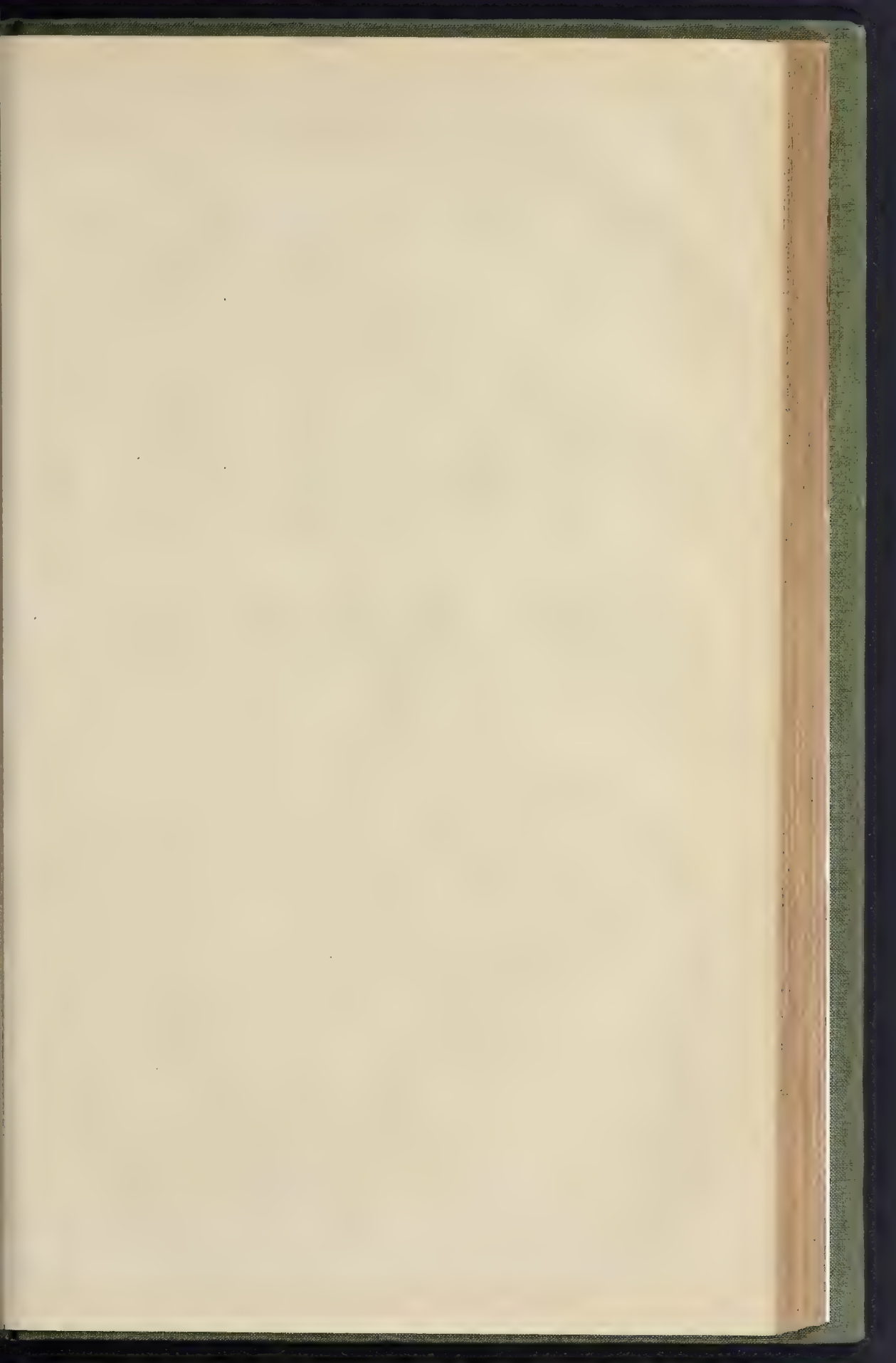
Lord Henry Lennox has also taken the cathedral of Dunblane under his care. It has several times undergone repair, most recently under the direction of Sir Gilbert Scott, when some interesting features were brought to light. The

little town (why not city?) of Dunblane has long ago retired into private life, and is only visited by the more enthusiastic tourists, and architects, and artists, in search of beauty and antiquity. Dunblane Cathedral was founded by David I., in 1140, and consisted of a nave and choir. The main entrance is from the west, and consists of an ornamental archway, above which is a magnificent window, having three tall lance-headed compartments, formed by outer and inner mullions. Of this window and this cathedral, Ruskin spoke in these terms to a Scottish audience:—"Do you recollect the west window of your own Dunblane Abbey? It is acknowledged to be beautiful by the most careless observer. And why beautiful? Simply because in its great contours it has the form of a forest leaf, and because in its decoration it has used nothing but forest leaves. He was no common man who designed that cathedral of Dunblane. I know nothing so perfect in its simplicity, and so beautiful, so far as it reaches, in all the Gothic with which I am acquainted. And just in proportion to his power of mind, that man was content to work under Nature's teaching, and, instead of putting a merely formal dog-tooth, as everybody else did at the time, he went down to the woody bank of the sweet river beneath the rocks on which he was building, and he took up a few of the fallen leaves that lay by it, and he set them in his arch, side by side for ever." The choir has, since the Reformation, been used as the parish church. In the vestibule and vestry, the latter of which has been formed out of the chapter-house, are still kept the prebendaries' and choristers' stalls, formed of carved block oak. About a hundred yards south of the library-house (Bibliotheca Leightoniana) of Archbishop Leighton, who was once a bishop of this see, and who left his books, which are still preserved, to the clergy of the diocese. It is to be hoped that this ancient little library will not be neglected by the Commissioner of Works. Dunblane possesses the ruins of an archiepiscopal palace, "too far gone" for restoration or repair, but forming with its grey lichened stones a lovely feature in the landscape. The palaces at Falkland and Linlithgow are also to undergo renovation; but to write of the many memories connected with them would be to write the greater portion of the history of Scotland.

MODE OF MAKING FIRE-ENGINE HOSE WATER-TIGHT.

THE *Boyerisches Industrie und Gewerbeblatt* contains a proceeding, which has been patented in Bavaria, for rendering hose of fire-engines completely water-tight, so as to withstand the greatest pressure. The hose are, after they have been cleaned and dried, impregnated with a mixture of 100 parts of glycerine of 24° B., and 3 parts of carbolic acid, which may be done either by drawing the hose through the liquid, or, better still, by brushing it well in. Thus treated, the hose are said to preserve a certain degree of dampness, without, however, being liable to rotting in the least degree, and so suffering deterioration in quality and durability. The brass fittings of the hose are attacked only imperceptibly by the acid contained in the composition; but even this may be easily prevented by giving them before impregnation a coating of weak shellac varnish, or by greasing them well with tallow. The hose, which are said not to leak in the slightest degree, must be cleaned every time they have been used, dried, and impregnated anew with the liquid. The previous drying of the hose is, however, not necessarily essential, more especially in winter, when drying is slightly difficult; it suffices to let the water run well out of the hose. As frost does not affect the mixture, hose prepared in the above manner, do not freeze easily at low temperatures.

Singular Death of a Mason.—An inquest has been held by Mr. T. Graham, at the Sun Inn, Swalwell, on the body of Henry Anderson, a foreman mason to Mr. G. H. Ramsay. He resided at Swalwell. It appeared from the evidence that the deceased was in the act of holding some cement, when part of it fell on his trousers, which quickly penetrated to the flesh and burned the leg in such a manner that he died nine days after the occurrence. The jury returned a verdict to the effect that the deceased had come to his death through heart disease, accelerated by the injury ascribed.





LADY BEACONSFIELD'S MONUMENT, HUGHENDEN CHURCH.—MR. ARTHUR VERNON, ARCHITECT.

MONUMENT TO LADY BEACONSFIELD

THE Parish Church of Hugghenden stands on the hill-side, within the Park, and about 300 yards below the Manor House of the Right Hon. B. Disraeli, M.P. The church is now undergoing restoration, involving a large amount of reconstruction and re-arrangement. The south aisle of the chancel is known as the Montfort Chapel, from some recumbent stone effigies of ancient date, ascribed to the family of Simon de Montfort, who is supposed to have lived at a house in the parish called Wreck Hall, in the windows of which were formerly the same coats of arms as those occurring on the tombs in the church.

The monument which forms the subject of our illustration is semi-mural, being erected outside the walls, and beneath the window of this Montfort Chapel. The position is immediately over the family vault of Mr. Disraeli, and the lines of coping which mark this spot are intended, upon the completion of the church restoration, to carry ornamental iron railings. The monument is of brown Portland stone. The slabs for the inscriptions are of polished red granite, and the small shafts are of serpentine marbles. We understand that Mr. Disraeli, for whom the monument was erected, has expressed himself as pleased with the execution and general effect of the work. The following is the inscription, in letters of gold, upon the centre tablet:—

In Memory of
MARY ANNE DISRAELI,
VISCOUNTESS BEACONSFIELD
In her own right,
For thirty-three years the wife of the
RIGHT HONORABLE BENJAMIN DISRAELI,
Lord of this Manor,
Ob. December 13, 1872.

On the right-hand tablet is written:—

In Memory of
JAMES DISRAELI, ESQ.,
One of her Majesty's Commissioners of Inland Revenue,
And Third Son of
ISAAC DISRAELI, ESQ.,
Of Bradenham, in this County,
Author of the "Curiosities of Literature,"
Ob. Dec. 23, 1868.

On the left-hand panel is the inscription:—

In Memory of
SARAH BRYDGES WILLIAMS,
Relict of James Brydges Williams, esq., of Carnanton,
In the County of Cornwall, and Colonel of the
Royal Cornish Militia,
She died at Torquay, 11th Nov., 1817, and was buried,
At her desire, in this Vault.

The work was executed by Mr. S. Sansom, of Kennington-road, London, from the designs of Mr. Arthur Vernon, architect, High Wycombe.

ST. BARTHOLOMEW'S, BRIGHTON.

ST. BARTHOLOMEW'S CHURCH, erected in Amersham, Brighton, at the cost of the Rev. Arthur Wagner, and recently opened for divine service by the Bishop of Chichester, has been the subject of much comment and discussion in its neighbourhood. Its extreme height, about 135 ft. to the ridge, and peculiarity of design, make it a very conspicuous object from many parts of the town. The plan of the work done is a simple parallelogram of nine bays, 19 ft. each. If finished, it would have about two bays more; but when this will be done is at present uncertain. Mr. Edmund E. Scott, of Brighton, is the architect; and Messrs. Stanning are the contractors engaged.

The total length of the church outside is

180 ft., and inside 170 ft., the breadth being 46 ft., and the recesses between the piers, which are placed at distances of 10 ft. apart, 6 ft. making it something like 58 ft. from wall to wall. The walls rise about 90 ft. from the ground to the parapet, and the roof rises to a further height of over 40 ft. above the walls. The north end wall has been so built that when it may be deemed advisable the building may be lengthened as already mentioned.

The church is erected of "picked stocks," relieved with bands of Portland stone, and having a moulded and weathered kiln-brick plinth. The grand entrance in Amersham-street is one of the best features of the church. Above the doorway is a canopied niche of Portland stone, which will receive the statue of the patron saint. The kiln-bricks in various patterns form diaper-work above this, and the large circular window which is 20 ft. in diameter, further relieves the view from being a mere mass of brickwork. The window is carried out with a good deal of work and is filled with cathedral stained glass. Openings for ventilation are made in the brickwork and in a larger opening the great bell of the church is to be seen from the outside. The north end is not so highly ornamented, its principal features being two plain windows with pointed heads, and three balconies for purpose of obtaining convenient access to the outside for repairs, when so required. The windows in the sides are eighteen in number, nine small ones and nine larger ones, the whole of them being glazed with the same description of tinted glass as in the others.

The roof is covered with black, reddish, and green tiles laid diagonally, and finished with cresting of red earthenware. The north end is surmounted by a light plain iron cross, and the



ST BARTHOLOMEW'S CHURCH, BRIGHTON.—MR. EDMUND E. SCOTT, ARCHITECT.

outh end by a heavier gilt cross, 15 ft. in height.

Internally, a prominent feature at the north end is a cross, hewn out of chalk, 20 ft. in height, which has on it the figure of our Saviour, painted from a drawing by Mr. S. Bell. The communion-table is placed on an elevated platform, reached by a number of steps paved with encaustic tiles, and although the chancel fittings are mainly temporary, some expenditure has been made in the decoration of the "table," and in erecting behind it a wall, to screen entrance to a vestry, which is at this end of the church. There is a choir organ by Holditch; the gallery for the grand organ is not yet built. The choir-stalls will be in the usual place.

The pulpit is a plain square-looking structure in the left-hand side, looking from the great doorway. One thousand chairs, with a ledge on each or books, have been supplied by Mr. H. Nye, of Brighton-place. Reckoning 6 superficial feet for each worshipper, there will be accommodation for something like 1,500 persons, but of course in a crush this accommodation can be very much increased. The seats will be arranged so as to leave one passage down the centre, and probably one on each side.

DUBLIN DRAINAGE SCHEMES.

The middle grows; report follows report; committees meet, resolve, and dissolve; counsel let fees, and give opinion; engineers draw and scheme; but nothing practical comes of all this worry. The Liffey still stinks; and Dublin, the capital city, remains the most fever-stricken, unhealthy spot in the kingdom,—a by-word of local government and Home Rule.

We have now the "Report of the three independent Engineers appointed to consider the 'Fifty-seven Plans for the Purification of the Liffey.'" They condemn all the plans submitted, and, like wise men, propose their own, which may be briefly described as two high-level sewers, one on each side of the river. Starting from a discharging point about two miles down the river from Carlisle Bridge,—and this point will be 5 ft. 6 in. above low water of spring tide, Ordnance datum,—these two intercepting sewers will contour the city from east to west. They will discharge by gravitation during four hours ebb; so there will be eight hours' storage required. This gives the outline of the new (?) scheme; we will not mind details. Comparing it with the "Dublin Main Drainage," which it is supposed to supersede and improve upon, we remark that it leaves out altogether the low-level system,—consequently the pumping required, and the most expensive part of that project. So it re-drains all the high ground, but the low districts, which have now no drainage, are left untouched. We venture to say that their plan will not affect one-half of the population living in the city. The poor, low-lying, densely-crowded, fever-stricken districts along the quays on each side, and from Sackville-street to the north wall, and from Brunswick-street to the river, cannot be drained without pumping, and their plan is useless for the worst.

The Report names the streets through which the proposed sewer will run, thereby inferring that they drain the district above. This cannot be. They must be too high in the said streets to intercept the old sewers, and their house connections. Take it thus: the proposed sewer starts at 5 ft. 6 in. above Ordnance datum, the gradient will be, say 3 ft. per mile,—four miles to the city = 17 ft. 6 in. in all in Henry-street or the quays,—but the level of the street is from 21 ft. to 24 ft.; the areas and sewers are from 12 ft. to 14 ft. below this, that is to say 10 ft. to 12 ft. above Ordnance; but the intercepting sewer is 17 ft. 6 in.! So the drainage must go, as of course, to the river.

Again, by the Main Drainage Act of 1870-71, the Corporation agree to take the sewage of Pembroke, Rathmines, Kilmainham, &c., and they contribute a rate in aid. This new scheme cannot fulfil this arrangement, so the Act, the loan, the rate, powers granted, time lost, great expense, and, worst of all, a huge pile of dead and dying,—all have gone, wasted, by sheer neglect and incapacity.

We will not speak of the Ballysnuten scheme; it is simple nonsense, and spoils what might be a practical report. Imagine—"washing" a river bed, 50 miles long, with 52,000 gals. of water, per minute for four hours, and arriving like an express train just in time, for low water in Dublin!

Why of all plans, the one most important, most

spoken of, which has already expended 20,000*l.* of Dublin taxes, should never have been alluded to, reported upon, or submitted to the engineers, appears most strange.

For what purpose was it withheld? Were its merits feared? Did they dread its success, and trembled least the engineers should report that it alone, of all the plans, succeeded in solving the question, and should be carried out? There are men who do not want a complete scheme, or any scheme. No, let Home Rule live, but let the poor man die in his undrained hovel, of sewage fever.

Neville's "Main Drainage" is the only solution that promises success, but it is far too costly for Dublin, 750,000*l.*, or 2*l.* per head of a poor population, living in 25,000 houses. But it could be much reduced without affecting in any way its utility; for during its passage through Parliament there were a number of absurd clauses inserted, and afterwards, to conciliate obstinate opponents, many things were promised which cost much to fulfil. They proved fatal, which was perhaps foreseen and wanted. The outfall pipes were confined further, and into deeper water, than was requisite. They were also moved seaward from the North Bull wall at great expense. The discharge of sewage was restricted to four hours' ebb tide, thereby entailing an enormous increase of storage, which had also to be covered. This roof alone would cost 40,000*l.*, to judge the cost of other things. The seawall along Clontarf-road had to be built and maintained, the roadway widened to 50 ft. At the crossing of the Liffey, the massive foundations of the future "O'Connell" Bridge were to be built, and the pipe track in the river to be cut out of solid rock, 6 ft. below spring tides, and last, the quays were to be widened, at a cost of 30,000*l.*! Mr. Neville had nothing to do with all this reckless expenditure.

Away with all this work. Let drainage be drainage. Give up the North Bull idea. Adopt the outfall of the engineers on the north side, at the end of the concrete wall. Have the pumping-station a plain low shed (no palace this time), beside the reservoir, which need not be covered. Why should it have a roof more than the present river, which is nothing more than a sewage tank? Leave out Arbour Hill high-level sewer: it is not worth the money. Let your pumps be only capable of lifting the summer flow of the sewage; let the rain and the floods go to the river: they will do no harm in the winter, so the pumping will be very small, and the rate from the townships will cover it; and yet all the low-lying districts will be well drained.

This modification (it is Mr. Neville's old plan, before Sir J. Bazalgette came on the North Bull) of the famous "main drainage," could be done for 350,000*l.*, by the powers granted by the special Act, before the Dublin Main Drainage Act was passed. The whole will be inside the city boundary, and will not require any private property to be purchased,—another saving. Let London ideas pass,—cut down all useless expense,—*Drainage* alone to be the watchword, and let Dublin and her Liffey cease to be a by-word of scorn. A. B. & C.

WOOD CARVING IN ITALY.

THERE is no art in Italy making more serious progress than that of hand wood-carving. More properly speaking, no art is being revived with such care and thought as that of the intagliatura, of which such beautiful specimens are seen throughout Italy in her churches and old palaces, but in greatest perfection in the choir of Siena Cathedral and in her Palazzo della Comunità.

The art in that deeply interesting old town has never entirely died out. Clever carvers have always been found there; but in the beginning of this century the work was more decidedly revived by Antonio Barbetti, a native of Siena, who with his two sons repaired to Florence, where a chance of greater encouragement might be expected. The latter are now following in the track of their father's initiatory work, and sending out works from their establishment of high artistic excellence, combined with admirable workmanship. We have just seen their last work now expedited to its owner, Mr. Philip Wright, of Church Stoke, Montgomery. The object, of Cinque-cento style, consists of a lectern and genuflessorio, or kneeling-stool, and sedilia, on a low platform, intended for a room set apart for family prayer and reading. The platform is raised about 8 in. from the ground. The lectern is carved on the sides and front with

highly-finished alto-relievo, in front by a group of angels in the style of those of Fra Angelico; the lateral compartments with subjects representing respectively the healing of Nathan, and the blessing of little children by our Lord. The upright panel, supporting the lectern, has on either side carved columns; the panel itself is adorned by an alto-relievo,—Christ teaching in the Temple. The drapery of the figures is remarkably good and graceful. The lectern can be brought near to the seat when employed for lengthened reading, or adapted to the person's height when kneeling before it.

The sedilia, or chair, is in form conformable to modern comfort, the back being hollowed for giving ease. In the inside of the back of the sedilia are carved, within an oval moulding, the anagram "I.H.S.," surrounded by angels' heads. On each side, in niches, are the full-length figures of St. Peter and St. Paul, with their characteristic symbols. The top of the back is semicircular, adorned with carefully wrought intaglios, surrounded by two angels supporting the Bible. The arms of the chair rest on angels and open carving. The seat rests on two brackets, terminating in two lion's claws.

The rear of the sedilia, slightly convex, is covered with carved ornamentation, and the whole redounds much to the talent of the artist, Rinaldo Barbetti.

OPENING OF THE CATHOLIC APOSTOLIC CHURCH, HACKNEY.

THE new church, for the Apostolic Catholic or Irvingite community, in Mare-street, Hackney, has been consecrated and opened for service. The work since the commencement has been carried on with great expedition. In September last year operations were commenced, and in February this year the ceremony of laying the foundation-stone was performed. The architecture is in a mixed Gothic style, betraying English and French features freely treated. The church consists of nave, transepts, chancel, and south aisle to chancel, the latter having apsidal terminations. The walls are finished with stock bricks, red and white courses being used in patterns and lines for the arched work of the windows and doors within. Bath stone has been used for the dressings of the chief entrance-door, window tracings, corbels to arches, and chancel-arch inside. Beart's moulded bricks are externally used for the pinnacles and string-courses. The roof is a hammer-beam one, with two principals, and three intermediate stop-chamfered purlins, and 14-in. sheeting. The transept vaulting is one of the principal features of the church, and is well executed. The transept principals are 50 ft. in span, with a rise of about 25 ft. Three lancet windows light the chancel, and the wall underneath is panelled in pitch-pine, with tracery at the head. The altar is of Caen stone, with columns, the panel-work on the head being carved in trefoil-pattern. The altar-top is a slab of red Mansfield, 8 ft. long by 3 ft. 2 in. wide, and 4 in. thick. The pulpit is of oak (raised on a Bath stone base), ornamented with turned columns and well-carved tracery. The seats are open, and are of yellow deal, stained and varnished, and provision is made under the seats for hats or other articles during service. The organ is the old one belonging to Bishopsgate Church, now disused; but it has been altered and repaired by Mr. Jones, of Brompton. The floor of the church is concrete; but the central and side aisle passages are laid with black and red tiles, in pattern. The sanctuary has encaustic tiles. The seats in the chancel, which are more ornamented, are for the choir and members of the ministry. There is a massive brass lectern, ornamented with the figure of an eagle, the gift of a member, and the church is lighted by twelve brass standards of nine lights each. On the whole within, the sittings, the fittings, and the furniture of the church show conscientious work. The roof outside is marked at the intersection by a *fidèle*, which is covered with oak shingle, the sheeting of the roof proper having a coating of asphaltic roofing-felt under its external covering of Staffordshire tiles. Adjoining or appended to the church are a minister's residence, a church-house for the keeper or deacon in charge, a vestry, and other rooms and offices, and good sanitary accommodation.

Additional ornamentation within and without will be added as funds permit, and a steeple is intended. The building has been erected from the designs of Mr. John Drake, architect, Rochester; but modifications were necessitated during the work. The builder was Mr. C. R.

Turner, Aldgate; his son, Mr. C. Turner, jun., acting as clerk of works. Mr. Samuel Smith, Malvern-road, was the decorator. The structure was designed to accommodate between 400 and 500 worshippers, and the cost, exclusive of the organ, has been upwards of 5,000l. An improvement could be carried out in front of the church in the widening of the roadway, and the community of this church are willing to contribute their share by transferring to the metropolitan or district authorities a strip of ground 152 ft. long by 6 ft. deep, at the cost of 400l. This sum would enable them to put up an ornamental railing outside the church. The throwing of this strip of land into the roadway would greatly improve that part of Mare-street where the church is situated, and which is extremely narrow at present.

PUBLIC LIGHTING BY METER.

A RECENT report from the vestry clerk of Chelsea shows that the price paid by this parish for gas has increased largely within the last year or two. In 1872 it was about 4,000l. per annum; it is now at the rate of nearly 4,700l. In 1872 the prices per lamp were 4l. 10s. and 4l., of the two companies respectively; now they are 5l. 2s. 6d. and 6l. 2s. 6d. respectively.

The plan recently adopted by the parishes of Paddington and St. Pancras consists of paying for the gas consumed by measurement, one meter being affixed to every twelfth lamp, and the average of the meter registration governing the whole consumption; of the parishes themselves lighting, extinguishing, and repairing the lamps; and of lighting them after sunset and extinguishing them before sunrise.

Applying the figures used by Paddington to this parish, Mr. Lahee shows that the saving would be about 1,400l. per annum.

The cost of the meters and things connected therewith, for seventy-five lamps, one in twelve of these in the parish, would be about 500l.

THE LIABILITY OF A GOVERNMENT OR A LOCAL AUTHORITY FOR NEGLECT TO ENFORCE ITS LAWS.

THE proposal to make the Government or local authorities liable for the damage done by the recent gunpowder explosion, on the ground that no legislative measures were adopted for the safe transport of the gunpowder, or no means taken to ensure existing laws being enforced, receives a curious illustration in a somewhat analogous case which has recently occurred in America.

In June, 1873, the timber-yard of Messrs. E. Roberts & Co., Cincinnati, was destroyed by fire, which resulted from the burning of some 40,000 gallons of oils, petroleum, &c., which were stored in violation of a city ordinance upon premises adjoining those of Messrs. Roberts & Co. This ordinance provided that no greater quantity than three barrels, or 100 gallons, of such oils should be stored in any one place within that portion of the corporate limits of the city (that is, where the fire occurred) unless the place of storage was under the surface of the earth, or was inclosed by a levee or earth embankment, and was certified to as being secure from overflowing the adjoining premises, and unless the owner thereof or person storing had obtained a licence to store such oils in accordance with the provisions of the ordinance.

When the fire broke out the quantity of oil stored was in excess of the quantity allowed by the ordinance, and action was taken by the owners of the timber-yard to recover from the city the amount of the damage caused, which was estimated at 30,000 dol., on the ground that the loss was occasioned by the neglect of the city authorities to enforce the ordinance referred to. It was also alleged that the attention of the authorities had often been called to the facts, and demand made upon them to enforce the ordinance. For these reasons it was claimed that the city was liable to the plaintiffs. The petition was demurred to on the ground that no cause of action was stated therein, and the court sustained the demurrer, holding that the oils not having been in the possession or control of the city, it could not be held liable for its acts of omission or commission with respect thereto; it not being the policy of governments to indemnify individuals for losses sustained either from the want of proper laws or from the inadequate enforcement of laws made to secure the property of individuals where such loss is occasioned by the unlawful personal acts of third persons, or

the unlawful use by third persons of their property, and the mere omission of the municipality to pass and enforce such laws.

Whether this view would be taken by an English court in case of proceedings being taken by those who suffered from the late gunpowder explosion, we have no means of judging. But that Parliament is morally responsible for not framing some provision to prevent such catastrophes is the general opinion of the country.

PROPOSED NEW WORKS AND BUILDINGS AT CARDIFF.

Extension of the Borough Boundaries.—The Corporation of Cardiff are about to take steps for extending the boundaries of the borough, and also for constructing several public works and buildings, and with the view of carrying out these objects they have resolved to give the necessary notices for applying to Parliament during the next session for powers of a very important and comprehensive character. The Bill to be applied for provides for including within the Parliamentary and municipal borough of Cardiff the towns or districts of Canton and Routh, the last named locality alone containing a population of 12,000. It is also urged that the city of Llandaff, immediately adjoining, ought also to be absorbed in the borough, inasmuch as merchants and others having their places of business in Cardiff, are constantly erecting residences in the neighbourhood of Llandaff, and thereby avoid the local rates imposed in Cardiff; but when the Bill was undergoing discussion it was suggested by the legal advisers of the corporation that as Llandaff was an ancient city and a bishop's see, it was highly improbable that Parliament would consent to its being merged in a comparatively modern commercial town. There appeared, however, to be a desire that Llandaff should be included in the Bill, it being stated that it could be withdrawn should Parliament be adverse, and the probability therefore is that the corporation will ask for powers to include it within the limits of the extended borough as well as Canton and Routh. The Bill also contains a clause providing for the erection of two new bridges for the purpose of uniting Canton and Routh with Cardiff, and also bridges under or over the South Wales Railway, as a communication between Canton and Grange-town, and between Routh and the East Moors. It likewise provides for powers to purchase land for the erection of a new cattle-market and slaughterhouses; also to purchase twenty-nine acres of land for the enlargement of the cemetery; likewise powers to obtain land belonging to the Marquis of Bute and Lord Tredegar, for the construction of a public recreation-ground; together with powers to purchase the gas and water works.

The Marquis of Bute and the Public Buildings in Cardiff.—The Free Library Buildings.—Appropos of the proposed extension of the borough boundaries, and the new works above-named, their appear to be some rather unpleasant misunderstandings between the Marquis of Bute and the local authorities as to the erection of buildings of a public character in Cardiff, and these differences have led, amongst other things, to the abandonment of a project for a free library and museum, which it was proposed to erect at an outlay of 20,000l. It seems that some time ago a committee was formed in Cardiff for the erection of a free library and museum, and that negotiations were opened with the Marquis of Bute for the purchase of a site. The site which the committee desired to obtain for the building was objected to by the Marquis, who, through his agent, wrote to the committee to the effect that "the library and museum buildings which they proposed to erect were too commanding, and that a building of less ambitious proportions would be more adequate to the social and intellectual requirements of the town." He offered them a site in a back street, at 250l. a year, on a lease of ninety-nine years; and it appears that as they had a difficulty in obtaining any other site, in consequence of nearly all the land in Cardiff belonging to the Marquis, the committee were disposed to accept this offer. It subsequently, however, transpired that the Marquis demanded absolute control of the library building after its erection, and he also requested that one of six London architects named should be the architect for the new building. The committee objected to the Marquis, as the ground landlord, having supreme control over a building upon which they proposed to expend 20,000l.,

and they also objected to the stipulations as to the six architects. They wrote to the Marquis asking him whether they were to understand that he reserved to himself absolute control of the building after its erection, and also whether it was his lordship's intention to insist upon either of the six gentlemen proposed to them as architect for the building. They added, that they were aware it was necessary to submit plans for approval, and they were prepared to do so in the usual manner. In answer the committee received the following letter from his lordship's agent:—"The Marquis of Bute requests that one of the six architects already named may be selected, believing, as he does, that among their names will be found those of the most distinguished in their profession at the present time, and that a building by any one of these would be an ornament to the town of Cardiff. Lord Bute declines the painful position of having any gentleman's plans, after being prepared and approved by the committee, submitted to him for acceptance or rejection." His lordship also adhered to his desire to have control of the building after its erection. On receipt of his lordship's answer, the committee met and passed the following resolution:—"The meeting is of opinion that the resolutions laid before the committee by the Marquis of Bute, through his trustees, with respect to the site, are such as to preclude the possibility of the undertaking being carried out, and resolves that it be definitely abandoned." There is also a further difficulty as to a site which the governors and committee of the Cardiff Infirmary require for the erection of a new infirmary. Lord Bute recently became possessed of a piece of land now occupied by barracks, in exchange for the site upon which new barracks are now being erected, and the committee made an application for this ground. An answer has been received to the effect that Lord Bute was prepared to grant a lease of four acres, for ninety-nine years, at a ground-rent of 250l. per annum; but the governors of the infirmary are of opinion that a public institution of this kind ought not to be erected on leasehold land, and they wish to get Lord Bute's consent to exchange it for land which might be purchased elsewhere. The failure of the free library and museum project, more especially, seems to have caused an intense feeling of irritation in Cardiff, and amongst some portions of the inhabitants the opinion appears to be strongly entertained that the Marquis of Bute has stood in the way of public buildings and places of instruction and recreation being erected in the town. He is charged with not having given the slightest help, either by purse or by counsel, towards improving and beautifying the streets or public buildings of Cardiff, which, it is said, is utterly and shamefully destitute of all appliances for art, culture, and learning. He is alleged to have refused sites for the erection of several churches, chapels, and schools, as well as land for a public park, notwithstanding that he is the owner of almost the entire town of Cardiff, and receives an almost fabulous yearly income. Whether such charges are or are not justifiable we are not in a position to state.

SMOKE AND WATER.

SIR,—While I frankly admit that no persons have a right to inflict nuisances on their neighbours, either by fouling rivers with sewage matter or vomiting forth dense masses of smoke, yet it is frequently next to impossible to get rid of the former or to prevent the latter.

I am now placed in such a predicament; for after expending 15,000l. on the erection of a manufactory, and building a chimney 250 ft. in height to carry off the smoke, with all the best modern appliances attached to the boilers for consuming as much of it as possible, actions at law and injunctions in Chancery are hurled at me from all quarters, and the cry is, "Shut the works up," before I have fully commenced operations. This advice, you may suppose, I am not prepared to follow, except in the last extremity.

I have heard that, by fixing in the chimney, immediately above the inlet for the flues, iron or copper pipes, with numerous small holes in them, and laying on to these a constant supply of water, a fine spray is formed, which effectually beats down all the smuts and blacks, and these are carried off along with the water by an underground drain. Unfortunately for myself, I have never seen this tried, nor can any one to whom I

have applied inform me where it is to be seen in operation.

As the subject is one of great public importance, and as it affects directly or indirectly thousands of others as well as myself, I crave your permission to ventilate it in your columns, trusting that some of your numerous readers will be able not only to help me in my difficulties, but also in so doing be giving the benefit of their experience to many others like myself who would be willing to expend any amount of money in preventing a nuisance if they did but know how.

* The scheme alluded to is described and illustrated in a book by the late Mr. C. J. Richardson.

THE METROPOLITAN BOARD OF WORKS.

At the last usual weekly meeting of the Board, Mr. F. Fowler moved,—"That before the Board finally decide on the gradients of the new road to be made from Charing-cross to the Victoria Embankment, the engineer do report on the feasibility of constructing a bridge over the Thames in continuation of such new road." Mr. Fowler stated that the inhabitants of the large district of South London between Waterloo and Westminster bridges felt great inconvenience from the want of carriage accommodation across the river, and said it was only a question of time as to the erection of another bridge at Charing-cross. He wished to show the engineer who might have the charge of the construction of such bridge, that the Board of Works, in constructing new streets, had had such a contingency before them in approving of the designs for such streets. In seconding the motion, Mr. Richardson said the Board had promised to do what they could towards freeing the metropolitan bridges from toll, and it might be that they would have to pay more for the buying up of the Waterloo-bridge tolls than it would cost them to construct a new bridge. If another bridge were to be constructed, it would certainly have the effect of reducing the value of Waterloo-bridge, and thereby a saving would be effected. After some discussion, however, the motion was lost. A small grant was made for the planting of Leicester-square with bulbs, plane-trees, poplars, and elms. A recommendation from the Parks and Commons Committee, to the effect that the amended tender of Mr. Meston (amounting to 5,357*l.*, instead of 6,280*l.*), to carry out the alterations in Southwark-park, be accepted, was adopted, the planting being carried out by the Board's own men, at a cost of 218*l.* It is to be regretted that the Board rejected the motion as to the bridge. A very wide bridge was wanted here, to connect the land on each side of the river.

EXPLOSION, REGENT'S PARK.

SIR,—Much interest has been shown by the public for the sufferers through this awful explosion, numerous meetings have been held, and subscriptions set on foot to redress losses occasioned by the dread visitation; but as yet only about 4,000*l.* have been subscribed to compensate damages extending nearly half a mile on all sides, and the utter havoc of house property in the immediate vicinity of Macclesfield Bridge; the whole ranges of houses from Portland-terrace to the York and Albany Gate, and many in the principal roads and streets, have been shattered, windows blown in, the roofs and partitions broken, and in consequence the occupants have left them. In the immediate vicinity, "volte-face" to the explosion, Stockley Lodge, Townsend House, North Lodge, and several smaller houses, have been wrecked to ruin. On an average, these large mansions will take 1,000*l.* each to reinstate them, and there are at least twenty more that will need 100*l.* each, besides the wide range of street houses, the doors and windows whereof have been smashed.

A committee has been formed, and held meetings, in order to take law proceedings against the Canal Company; but this appears to be a matter of doubtful issue, and whatever may be the decision therefrom, the decision can be procrastinated to a distant future. Meanwhile the terraces facing our beautiful park are all disfigured and deformed, and the owners of the property, in many instances, unable to repair their tenanted buildings. The explosion has desolated, it is true, but a limited space, but it is a national calamity, and might have occurred anywhere. No insurance company will admit liability, nor can any Governmental aid from

public funds be made applicable to the occasion. To what source, then, can the sufferers appeal for recompense or aid? Surely there is but one, and that is an appeal to the public for a voluntary contribution. Such a source, if properly addressed, could not fail to meet every exigency of the dread desolation which has befallen one of the most beautiful spots in the metropolis.

Q.

STREET CLEANSING APPARATUS.

SIR,—Knowing how willing you are to assist, through the medium of your widely-circulated paper, those unfortunates who, by the prospects of handsome gains, are frequently gulled into spending a large amount of time, and often money also, in preparing drawings, &c., for public competitions, I venture to seek your aid in the following matter, the details of which have already appeared in the *Builder*; but in case some of your readers may not have read them before, I will, by your kind permission, reiterate them.

In February last an advertisement was published in your columns purporting to be issued from the Asphalt Central Committee, No. 14, Palmerston-buildings, E.C., desiring to receive designs for an apparatus for flushing and cleansing the asphalt pavements, which design was to be in accordance with certain conditions furnished by the committee.

I was one amongst the many who was duped into sending in a drawing of a design of mine for the purpose. After waiting for a month or two I called at the committee's offices, and was informed that a decision was expected to be arrived at in the course of a week, and from time to time during the past nine months I have either called or written, and have received a somewhat similar reply, and so matters went on, till last week, when I received a letter from the committee, stating that they had referred the decision of the competition to a leading metropolitan surveyor and engineer, whose opinion is, "That the conditions named in the circular are not fulfilled in any of the designs." Now, with all due deference to the leading metropolitan engineer (whose name they do not quote), I am willing for any one to examine my designs, and feel quite safe in asserting that it fulfils the said conditions so far as they apply to a design of that character.

My object in troubling you is to know whether anything can be done to enforce the committee to award the premium offered, viz., fifty guineas; because, if legal steps can be taken in the matter, I for one would gladly unite with the other competitors to compel them to do so.

A COMPETITOR.

* * We have received five other letters on the same subject.

COLOUR IN THE STREETS.

SIR,—I perceive that the above subject has already occupied a paragraph in your columns. The painting the Post-office pillar-boxes of a bright red colour admits of justification [red is the royal livery colour], not merely on the utilitarian principle of drawing the attention of those who desire to post letters, but on the æsthetic ground of giving greater liveliness of appearance to our not too ornamental streets. Such is your verdict; and it agrees with an opinion I had heard previously expressed. Though not of that opinion myself, I had qualified my dissent, by remarking that if a variety of smaller objects of the same colour were made to surround the central one, it might reduce the whole to harmony, and bring it into keeping. Suppose, for instance, a multiplicity of baronets' blood-red hands were inserted into the walls, or attached to lamp-posts, with forefinger outstretched to direct the way to the nearest pillar-box.

Let us think a little of what ordinary common sense dictates about colour in the streets in other cases. The silversmith has his shop-front decorated in black and gold. At an opposite end of the scale of "loudness" in colour is probably to be found an oilman and colourman,—one who prominently puts forth his ability to serve painters and plasterers with colours and brushes on the most liberal terms. He illustrates his trade with vermilion on his shutters, vermilion on the fascia-board, and vermilion on the great honey-pots that serve as acroteria to his whole frontispiece. But then (though, perhaps, without ever going to learn at any School of Art) his decorative painter usually has the wit to balance all

this red with a corresponding quantity of the complementary colour, a bright green,—perhaps, for instance, a central green honey-pot between two red ones. This pitch of art the Post-office authorities do not seem to have arrived at, though chance may often supply the deficiency; for instance, when the red pillar-box is contrasted with the foliage of a suburban garden, or with the green dress of a lady passing by. But in either case, the oil-shop or the pillar-box, the bigness of the masses of colour makes them difficult to reduce to harmony, the safest way being to look at them from at least a furlong's distance.

G. M.

LIGHT UP THE "PILLAR-POSTS."

In favour of the new colour of the pillar-posts a postman remarked to me this morning, "They can now be seen a mile off." But at night, when they are most required, the boxes at the shops being closed, the pillar-posts are not so easily discovered. Why not surmount them with an ornamental red lamp? This would give a variegated and pleasant effect to the street-lamps, and indicate the whereabouts of the postal pillars in all directions. The name of the street might also be given on the lamps.

J. B.

DAMP IN STRONG ROOMS.

SIR,—I read the first communication on damp in strong-rooms, have read each subsequent letter on the subject, agree very much with your correspondent "W," and think that possibly the following may be useful.—Each strong-room should be fitted, not only with a burglar and fire-proof door, but with an inner gate; during the daytime the door should be set open, and a flexible tube, with a small movable gas standard affixed, should be carried through the gate into the room, and gas should be kept burning during the day.

The advantages of this arrangement are, the warming of the air, the ventilation of the strong-room (the absence of which latter is the cause of trouble to your correspondent), and the certainty that there can be no accumulation of gas in the strong-room, because the flexible tube with the standard attached, must be removed before the outer door can be closed.

T. E. KNIGHTLEY.

HASTINGS TOWN-HALL COMPETITION.

SIR,—The result of the competition has suggested to me the following reflections:—Supposing that a corporation requires a new building of any magnitude, and wishes to get the benefit of a public competition, at the same time intending to give the work either to some local man or a county surveyor, what easier mode can be devised than to advertise for architects to send in designs, and then return them with some such resolutions as the following?—

"1st. That the Council, having ascertained that the aid of a competent surveyor, that the cost of erecting the proposed new Town Hall from any of the plans and designs which have been sent in would far exceed the amount sanctioned to be laid out for that purpose, such plans and designs be returned to the respective competitors.

"2nd. That the whole matter be referred back to the Town Hall Building Committee for them to report to the Council thereon.

"3rd. That the surveyor pack up the whole of the plans immediately, and return them to the several competitors."

Of course, I would not insinuate that such a body as the Hastings Town Council would be guilty of such conduct. Oh dear, no! I am not responsible for the elegance of the style of the third resolution; it is, however, very suggestive.

A COMPETITOR.

SIR,—As there appears to us no doubt that the Town Council have, in returning all the drawings submitted in competition without even awarding the premium, exceeded the powers reserved to them in the instructions to architects, we have asked those of the other competitors whose names have reached us to meet us at 23, Bedford-row, London, on Monday next (November 2nd), at three p.m. We should be very glad if all other competitors would join us at that time, or communicate with either of us by letter if unable to attend personally.

Your kindly inserting this will, Sir, be of great assistance in helping us to maintain the interests of the profession, which appears in this case to have been treated with such levity.

THOMAS VERRITY,
LACY W. RIDGE.

SIR,—I have been professionally consulted by one of the competing architects for the erection of this town-hall in reference to the course pursued by the Hastings Town Council in rejecting the whole of the designs.

My client considers that the Council has not acted in accordance with its own conditions, and that the com-

petitioners have been badly treated. He thinks they should meet together to consider whether any steps should be taken to show the Town Council that it cannot with impunity depart from the conditions prepared on its behalf, and which regulated the action of the competitors. I am instructed, through the medium of your journal, to request those competitors who feel themselves aggrieved by the conduct of the Town Council to furnish their names and addresses to me in confidence, with a view to a meeting being held to look at the whole matter, and to decide upon the steps to be taken.

Will you please insert this letter in your next issue?
32, Walsbrook. J. PATTEN GILL.

* * We have received a number of other letters complaining of the conduct of the town council in this case, conduct we do not hesitate to stigmatise as dishonest and shameful; though we may hope that, in acting as they have done, they overlooked the actual nature of their behaviour. We trust they will at once reconsider their decision.

TEMPLE BAR STOPS THE WAY.

Sir,—Notwithstanding that the removal of Temple Bar has passed from desirability to necessity, and appears and is uncontroverted, determined by its own disintegration and the increased width to be given to the thoroughfare, it is still allowed to linger,—an obstruction to traffic, a likely source of danger, an eyesore (in its present state), and irritant.

For months vehicular traffic has been doomed to assume a funeral pace passing its portal, and the time seems distant when it will be permitted to recover its wonted liveliness. Why should this state of things continue, being objectionable and removable? What is the set off or gain for the inconvenience suffered? Clearly nothing. Then why should not the Bar be at once removed? There is no need first to decide what shall succeed it, ample time can and should be given to this consideration; but none is wanted for its removal,—it is its condemnation. Numerous prints of it are extant. Accurate measurements, if not already, can be taken, and therefrom drawings prepared. If that will not suffice, its very stones can be numbered, as suggested by Mr. V. Buckle in your columns,—removed, and in exact similitude put together again; but let its new site be well cared for, lest it become little better than a nuisance in another place.

The Embankment, the spot chosen by Mr. Barwell, would seem particularly inappropriate. Erected there, the old Bar could not look otherwise than insignificant and out of place, its scale being so disproportionate.

THOS. R. RICHARDS.

THE WILMINGTON FIGURE.

Sir,—By the omission of two or three words, through curtailment of my observations made at Wilmington on the 10th instant, it would appear that I think a "rake and scythe" might have been the instruments the figure on the Downs was originally represented as holding.

My preceding statements, referred to somewhat in detail by the *West Sussex News* and by the *Brighton Herald* under arguments "already published" in their columns, show that I did not think so. The sentence should be, "The staves might or might not have been intended for the emblems he had already mentioned, i.e. the emblems found in the hands of certain Oriental deities described in a preceding sentence. The outline placed in my hands was a mere caricature, and, but that it raised a laugh, would have passed unnoticed in any report."

JOHN S. PHIBBS.

WHAT IS A HOUSE, QUOD VOTING?

At a court for the revision of the list of persons entitled to vote at the election of members for Parliament, John Mavis claimed a vote for a house. The claimant occupies two rooms on the ground floor of a house in Tranwell-gate. Access is obtained to the rooms through a door in the passage leading from the street. Lower down the passage is a staircase leading to some tenements upstairs. In the yard through the passage is a cage, the occupier of which uses the passage, and there is no outer door to the passage.

Counsel for the claimant submitted that as there was no outer door to the passage no objection could be offered. The Revising Barrister (Mr. Heath) said the gist section of the Act provided that a house meant any part of a house occupied as a separate dwelling and separately rated to the relief of the poor. How could counsel make out that the two rooms occupied by the claimant were a separate dwelling?

Counsel replied that the claimant was the only person whose door was in the passage, and there was no outer door at all. Therefore he was in no way controlled by the other tenants.

Revising Barrister.—But the claimant could not get into his rooms unless there was this passage, and he uses the passage in common with the other tenants.

Counsel.—Yes, but a man must have a road into his house. In this case, there can be no question about the closing of the outer door.

The Revising Barrister.—But there is the passage. I think there is sufficient ground for me to disallow the claim, and shall decide that John Mavis is not entitled to vote.

A number of other claims similar to the above were disallowed.

BREACH OF CONTRACT.

At the last Derby borough sessions, in the Court of Record, the case of *Berrisford v. Coulson* was decided. Mr. Buzzard appeared for the plaintiff.

The plaintiff is a builder and contractor at Kilburn. It was stated that in August, 1873, he entered into a contract with Mr. Harper, mining engineer and contractor, of Derby, to build sixteen houses for him at Talk-o-the-Hill. He let the work to several sub-contractors, and on the 10th of September the defendant agreed to do the slating required for the houses at 27s. 6d. per square yard, according to a specification. A contract was signed, but no time was specified for the work to be done, and a fortnight afterwards the defendant told him the slates were on their

way to the building. A week after, however, defendant said he could not afford to do the work at 27s. 6d. per square yard, but he would do it for 11s. 11d., which plaintiff declined to accept, and told him he should expect him to abide by the terms of the written agreement which they had each signed. He did not proceed with the work, however, and in consequence plaintiff informed Mr. Harper, who instructed him to find another person to do the work. He accordingly went to Nottingham, Burslem, Tunstall, and other places, but without success, and his expenses amounted to 10l. or 12l. (approximately), the work was done under his own superintendence and that of Mr. Harper. In consequence of the non-fulfilment of the contract, plaintiff lost a profit of about 18s. or 20l.

For the defence it was alleged that instead of there being a breach of contract on the part of the defendant, there had been a breach of faith by the plaintiff, who, when he found he could get the work done at a cheaper rate than the defendant had agreed to do it, abandoned the contract. Defendant said he had taken the job at a low rate, and that he could commence slating in a fortnight. It was not ready for him to commence for a long time, and in October the defendant told the plaintiff he could not accomplish the work for less than 29s. 6d. per square yard. The plaintiff replied that he could get a Nottingham man to do the work for a less amount than originally agreed upon, and the defendant then understood that the contract had terminated. A verdict was given for the plaintiff for 10l.

PAYMENT FOR ARCHITECTS' SERVICES.

In the Leeds County Court,—before Mr. Marshall, judge, an action to recover the sum of 80l. was brought by Mr. Thos. Elliott, architect, Keighley, against Mr. H. Mayhew, builder, Dew. Worley, for professional services rendered by plaintiff to defendant, extending over a lengthened period.

The case for the plaintiff was that in 1873 he received instructions from defendant to examine and report with regard to a building erected by a man named Stones, the foundations and earth work in connection with which defendant had expended 400l. and 600l. respectively. Plaintiff made the necessary examination of plans, &c. Subsequently, however, defendant settled the matter with Stones for 12l. For the services rendered by plaintiff in this matter he claimed 75s. Plaintiff was also engaged in carrying the gas and water pipes and in preparing plans and specifications for eight houses. He did so, and these plans were deposited with the corporation of Leeds, but subsequently withdrawn by defendant's request, as he had purchased a more elaborate description. For his services plaintiff claimed 317l. 10s. Other services were also rendered by him, the claim for which brought up the total to the amount sued for.

The defence was that defendant and plaintiff were connected in other business matters, and that the latter had taken upon himself to do the work in respect of which he now claimed without receiving any instructions whatever from defendant.

The Judge gave a verdict for the amount claimed with full costs and immediate execution, observing that a more shameful defence he never knew.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The first meeting of the session will take place on Monday next, the 2nd of November. The president, Sir G. Gilbert Scott, R.A., will deliver an opening address. The presentation of the Royal Medal for 1871 will take place; but in consequence of a domestic bereavement, Mr. Street will receive it by deputy.

LECTURES ON ARCHITECTURE AND CONSTRUCTION.

The Council of the Institute publish some memoranda on this subject.

University College.—The lectures "On Ancient Architecture as a Fine Art" will be delivered by Professor Lewis from October 6th to the end of January. "On Architecture from the Medieval to the Renaissance Periods," from February to the end of the Session. Lectures "On Construction," from October to the end of the session.

King's College.—Lectures are given in the "Arts of Construction" by Professor Kerr. There are also two classes for the study of architectural drawing and shading, descriptive geometry, and surveying and levelling.

DAMAGE BY SMOKE AND SOOT.

BYRNE & THE WEARDALE IRON COMPANY.

In this action, at Bishop Auckland County Court, the plaintiff sought to recover the sum of 10l., the amount of damage done to trees and plants in the plaintiff's garden by the smoke which issued from the blast furnace of the Weardale Iron Company. From the evidence adduced it appeared that the plaintiff's garden is about two acres in extent, and is attached to the house. The defendants' blast furnaces are a short distance off, and great damage had been done to the pear and apple trees, fruit-bushes, and vegetables by the smoke and soot. The defendants did not seek to escape by pleading a

prescriptive right to smoke, but urged that the soot and smoke had not done the damage to the garden.

The judge (Mr. E. J. Meynell) said the defendants were clearly liable for the damage caused by their furnaces, and he gave a verdict for the full amount claimed, with full costs. The decision has caused much anxiety to iron and chemical companies in the north of England, as the action was a "feeler" for other heavy sufferers from noxious gases and smoke. Oas suit is to be brought against another company for damage done to the exterior of a stone mansion, by defacing the white stone and paint with a coating of soot from blast furnaces.

RAILWAY IRON EXPORTS.

The returns of the exports of railway iron during the month of September this year have just been issued, and they show a considerable falling off as compared with the corresponding period of last year. The exports during last month were 61,799 tons against 92,140 tons in September, 1873, and 93,833 tons in September, 1872. The exports to the United States amounted to 6,923 tons, as compared with 10,642 tons in September, 1873, and 37,732 tons in September, 1872. To Russia the exports were only 11,196 tons, as compared with 29,054 tons in 1873. As regards the year's exports, the United States only took 85,454 tons in 1874, against 151,972 tons in the corresponding period of 1873, and 378,053 tons in 1872. The falling off, therefore, is remarkable. The value of the railway iron exported in 1874 was 722,140l., as compared with 1,192,825l. in September, 1873, and 1,093,655l. in September, 1872.

SCHOOL BOARD SCHOOLS.

Dudley.—The Kate's-hill School Board Schools have been opened in presence of the chairman (Mr. Geo. Thompson) and a few members of the Board, but there was no formal ceremony. The schools are erected on a curved site at the junction of Owen-street (leading from the Dixon's Green-road) and St. John's-street, having a frontage of 56 yards to the former and 50 yards to the latter street, and comprising an area of about half an acre. The buildings consist of boys', girls', and infants' schools, with the requisite class-rooms, lavatories, cloak-rooms, and a teacher's residence. The boys' school, fronting Owen-street, is the first approached from the Dixon's Green-road, and is designed, with its contiguous class-room, to accommodate 195 pupils. The girls' school, for ninety, and the infants' school, for 100, with adjoining class-room, for thirty-seven children, front St. John's-street; the teacher's residence being placed between the schools at the corner formed by the junction of Owen-street and St. John's-street. At the back of and below the schools are provided separate and spacious open and covered playgrounds, and master's garden. Access to the schools is given by spacious lobbies, the entrance to the boys' school having above it a tower (giving additional bedroom accommodation to the house), surmounted by a bell-turret. The schools are each well lighted, warmed, and ventilated, and the fittings have been designed on a complete scale, and from approved models, care having been taken to obtain the result of the experience of the leading School Boards in these matters. The principal building material used has been red brick, relieved by the use of stone, and blue and moulded bricks. The roofs are covered with tiles, and are of open construction, showing the principal timbers internally. The schools have been erected by Mr. William Nelson, builder, from the designs and under the superintendence of Messrs. Davies & Middleton, of Dudley and Birmingham, architects to the Dudley School Board.

Edinburgh.—At a meeting of the School Board of Edinburgh it was reported that the plans of new schools to be erected at Dean and Leith Walk had been passed by the Education Department. Estimates were accepted for the former building, the total cost being 4,709l. 15s. 5d.

Camden Town.—The new schools erected for the Metropolitan School Board, in Camden-street, Camden-town, have been opened. Mr. Currie, the chairman of the Works Committee, addressed the numerous meeting at the opening, and stated that at the present time sixty-four new schools had been opened similar to the one they had met to celebrate the opening of that

They had now school accommodation for 520 children; they had then about twenty more schools to build, and then they would have accommodation for about 73,000. Such the results of four years' work. When the work of the schools had been completed, there could be, he could safely say, school places for about 80,000 children. The schools they had had that evening were more costly than many others which had been erected. For instance, Greenwich they had purchased the sites of schools for about 50s. a head, whilst in Marylebone some cost over three times that amount. The school cost 7l. 11s. 6d. per head. That might seem a good deal, but in some of the large towns in England, the School Board schools cost nothing like three times that amount. That the eighth school opened in Marylebone, and there would be accommodation for 7,122. There were, he was happy to say, three schools in the course of building, to supply the wants of the neighbourhood. The schools would be capable of giving accommodation to about 1,800 children. A school was also about to be opened at Grey's-yard, and it would accommodate 500 more. The present school had been built to accommodate 337 boys, infants, and 327 girls, making a total of 664 children. The site, he might state, was more than half an acre in extent, and cost 17s. 11d. per head. The schools were somewhat more expensive than others, but there was very convenience for the children, and they were designed by Mr. Robson, the architect, for the London School-Board. He had designed twenty-six schools out of those which had been erected, and the remaining twenty-six about to be erected had been planned by the same gentleman. The builder was Mr. Robert Mann.

Windsor.—Schools to accommodate 830 children have been opened here. Mr. Barlow, chairman of the Board, presided, and with him were Lord Lytton, and others. The chairman said that when the Board was formed there was but accommodation for 2,500 out of 6,000 children. 6,000 had been spent upon the schools and the buildings.

CHURCH-BUILDING NEWS.

Whitley, near Leeds.—The foundation stone of a new church to the parish church of St. Oswald, Whitley, near Leeds, was laid on the 29th ult., by the rector, the Hon. and Rev. P. Y. Savile. The nave and aisle have already been restored, the dangerous state of the chancel wall has rendered it necessary to rebuild that portion. It also intended to erect new vestries and a chamber for the organ, which is by Gray & Widdison. A stained glass window for the east end is being executed by Mr. Charles Gibbs, of Marylebone-road. The contractor for the works is Mr. John Lister, of Aston, Rotherham, and the architect, Mr. Hugh R. Gough, of St. James's

Radford, Coventry.—The new church of St. Nicholas, Radford, has been consecrated by the Bishop of Worcester. The site of the church is in a good position on the west side of the country and Over Whitacre turnpike-road, about one mile from Coventry, and was given by the trustees of Sir Thomas White's Charity. The church is in the Early English style of architecture. It comprises chancel, with vestry on the north side, and nave, with entrance porch at the west end of south side. The west gable is surmounted by a bell-turret, containing a single bell. The whole of the external walling and dressings are of local red stone; the internal dressings of the nave are of the same material, the floor being of Attleborough stone. The roofs are covered with Broseley tiles. The ceiling of the chancel is panelled with wood, divided with moulded ribs; that of the nave is open, the timber being of red deal exposed, stained, and polished. The floor of the chancel is of Minton tiles. The dimensions are as follow:—Nave, 30 ft. by 30 ft.; height of wall-plate, 17 ft.; height to ridge, 40 ft.; chancel, 21 ft. by 20 ft.; height to wall-plate, 16 ft.; and 27 ft. in centre. There is accommodation for 300. The edifice was designed by Mr. George Taylor, of Coventry, architect. The work was commenced in 1866, and by Mr. J. Dutton, of that city, builder, erected the chancel and vestry, his contract amounting to 1,000l. The erection of the nave was delayed long to want of funds and other reasons till 1873, when it was commenced by Mr. Daley, of Leamington; but in consequence of being unable to carry out his contract, the

amount of which was 1,525l., the work was completed by the Building Committee. The total cost of the building, including architect's commission, &c., is about 2,600l. The church is intended as a chapel-of-ease to the church of the Holy Trinity, Coventry, within which parish it is situated, and the sittings will be free and unappropriated.

Liverpool.—The new chapel in connexion with the Seamen's Orphanage, Newsham Park, has been formally opened by the Archbishop of York and the Bishop of the diocese. The foundation-stone of the chapel was laid on the 1st of August, 1873, by Mr. Charles Maciver. Like the Orphanage itself, the chapel was designed by Mr. Alfred Waterhouse, and is in harmony both in structure and position with the Orphanage to which it is attached. Its cost has been 6,200l., of which about 2,000l. remain to be collected. The chapel, which has been built by Messrs. Haigh & Co., consists of a nave, transepts, and chancel. The nave is intended for the accommodation of the general public, and will seat a congregation of about 300. The transepts are set apart for the children of the institution, and will accommodate about 400 of the little ones. In the angle of one of the transepts and the chancel is the organ-chamber, in which there has been built an organ by Willis. The walls of the exterior are of grey brick, with an admixture of red Rancom stone in the plinth, window sills, and jambs of red terra cotta in the cornice. Internally, also, the walls above the dado are of grey brickwork, relieved by bands of dark grey terra cotta and red stone. The structural timbers of the roof, which are of stained wood, are visible, and the seats and other fittings are all of pitch pine. The transepts are separated from the nave by two pointed arches, each supported in the centre by a column of polished red granite. The transept windows and those at either end of the building are divided by mullions, and enriched with traceried heads. The windows of the church are, many of them at least, of stained glass, not a penny of the cost of which ornamentation, or indeed, anything which comes under that name, has been taken from the funds of the institution. The stained windows were presented by friends to the Orphanage. They are the work of Messrs. Clayton & Bell, of London. The east window is the gift of Mr. James Beazley, subject, "Christ blessing little Children." The central panel contains the figure of Christ, after Thorwaldsen. On each side are two panels with groups of mothers and children. In the rose-window above is the figure of the Son of God enthroned. Below the principal objects are five subsidiary panels, viz.:—1. The Annunciation; 2. The Meeting of Mary and Elizabeth; 3. The Babe in the Manger; 4. The Presentation in the Temple; 5. Christ with the Doctors. The east transept windows consist of a rose-window, the subject being—The crucified Jesus and the two Marys. In four compartments are represented—1. Hagar and Ishmael; 2. Samuel and Eli; 3. Presentation of Christ in the Temple; 4. St. Paul and his Son Timothy. A brass plate under this window states that the windows in this transept are the gift of Susan K. Higgin, in affectionate remembrance of her husband. In the west transept there is a rose-window, with a representation of Christ walking on the waters. Below are two compartments, the subjects illustrated being Christ stilling the tempest, and Christ asleep on a pillow in the ship. Besides the gift of the east window, Mr. Beazley has defrayed the cost of the decorations of the chancel and transept ceilings, the roof having a background of azure spangled with gold stars. Messrs. Shrigley & Hunt, of Lancaster, did this portion of the work.

Poulton.—The new church of Poulton has been consecrated. The edifice is built in a style somewhat later than the Early English, and is dedicated, as was the former edifice, to St. Michael and All Angels. It consists of a nave, 61 ft. by 22 ft., with a height of 33 ft. to the apex; a chancel, 29 ft. by 18 ft., divided from the nave by a lofty arch; a north aisle, 61 ft. by 7 ft. 6 in., divided from the nave by four arcade arches, one of which is the chancel arch from the old church; an organ-chamber, 13 ft. by 7 ft. 6 in., with an arch opening into the chancel and north aisle; a vestry, 10 ft. 6 in. by 7 ft. 6 in.; and a porch at the west end of the south side of the nave, 8 ft. 6 in. by 8 ft. 6 in., with outer arch and jambs from the old church. The four south windows in the chancel, those in the south of the nave, the west window in the north aisle, and that in the organ-chamber, are all from the old church; as also is the font, with a new Portland stone step and base added. The three bells from the

old church have been hung in the bell gable, and at the west end of the church, after being tuned by Messrs. Warner & Sons, of London. The building stone and roof tiles from the old church have been reused in the construction of the new church. The new walling stone is from Mr. Attwood's quarry, at Poulton, and the dressings are of Bath stone. The church is heated with a No. 3 Farnitt stove. The oak outer doors and altar-table are provided. The wooden floors are laid, but for want of funds the tile pavement in passages and vestry, the encaustic tiles in the chancel, the choir seats, the whole of the seats in nave and aisles, the pulpit, altar-rail, lectern, &c., are not yet provided. The roofs are of stained deal; the eastern portion of the chancel ceiling being plainly decorated in colours. The reredos is of Minton's plain red and black and encaustic tiles inlaid in stone ashlar and niches, with a stone cross in the centre in relief. Mr. W. Restall, of Bisley, the contractor, has carried out the work.

Llanelli.—The consecration of St. Michael's Church, in the town of Dafon, has taken place. The church is composed of nave, two aisles, choir, chancel, chancel aisle, and vestry on the north side, with tower. It is constructed of local stone, with freestone dressings, and will accommodate about 500 people.

Bath.—Christ Church, which has for some time past been closed to allow of reseating and cleaning, has been opened. For a long time before the alterations the long seats of the nave were found very inconvenient, and the flooring much decayed. It was determined by the trustees to refloor and reset the church, and at the same time to improve the construction of the seats and give a larger space between each. This necessitated a sacrifice of several rows of benches and consequent loss of forty-four sittings, but the improved accommodation now afforded to the congregation will justify this sacrifice. On removing the old floor, the joists and sleepers were found to be almost entirely destroyed by dry rot, and the earth was within a few inches of the joists and in an offensive state. This was dug out to a depth of 12 in. below the joists, new sleeper walls built, and proper ventilation provided. The principal gangways have been refloored with oak, and the remainder of the area with deal. The new seats are of pitch pine with oak top-rails and moulded pitch-pine bench-ends. The wall seats have also been renewed in pitch pine and the wall boarding lowered 10 in. Two wooden columns under the front of the west gallery have been removed, and wrought iron brackets substituted, thus gaining six sittings and improving the access to two of the benches. The works have been carried out by Mr. E. J. B. Mercer, the contractor for the flooring and seats, and by Mr. J. Erwood for the masonry and excavating. The church has been cleansed, the ceilings and aisles whitened, and the walls recoloured by Mr. Towells, and the gas fittings renovated by Mr. Gibbs. Messrs. Gill & Brown were the architects employed by the trustees. The cost of the works will amount to between 500l. and 600l.

DISSENTING CHURCH-BUILDING NEWS.

Aigburth Vale.—The laying of the memorial stones of a new Wesleyan Chapel, to be erected on a site at Aigburth Vale, has taken place. The building, which is intended to supplant a room hitherto used for public worship, is what may be termed a school-chapel, being only intended as a temporary structure, as it is contemplated erecting a more imposing edifice. It will be of brick, in the Gothic style of architecture, with stone dressings. The roof will be of timber, and the fittings beech pine. There will be accommodation for about 250 people, and the cost of the erection, estimated at 1,000l., exclusive of the land, will be borne equally by Mrs. Farnworth and Mr. John Hargrove. The architect is Mr. Ellis Coleon, and the builder and contractor is Mr. Richard Stannanought.

Bootle.—The foundation-stone of a new Congregational Church, which is to be erected at Bootle, on a piece of land situate at the corner of Balliol and Stanley roads, has been laid by Mr. J. A. Pictou, of Liverpool, in the presence of a large number of members of the congregation and others. The buildings (designed by Messrs. Francis & George Holme, of Liverpool, in limited competition) will form in their entirety a group, consisting of a transept church, with tower and spire, double vestries, and, beyond these, school-buildings, with lofty gable and

bell-turret. At the south-west angle will stand the caretaker's house, connected with the vestries by a cloister passage. The church will accommodate 700 persons, and by additional galleries in the transepts, for which preparation is made, would accommodate 800 persons. The internal roof, about 50 ft. high, is to be covered with pitch-pine boarding, pierced with quatrefoil ornaments for ventilation, and broken into panels by mouldings. The material thus employed will have a favourable influence on the acoustics of the church. The space usually devoted to the chancel is appropriated to the organ, and screened off by panellings. The platform and minister's desk are ornamented, and immediately in their front are the seats for the choir and the key-board of the organ. A gallery occupies the tower end. There are but two piers with their corresponding arches in the church, it being the object of the architects to obtain for the congregation an uninterrupted view of the minister. The style of the buildings is Gothic, of an early geometric character, rather continental in type; but there has been no attempt to copy rigidly any peculiar period of Gothic architecture. The whole of the interior woodwork is to be pitch-pine. The buildings now to be erected consist of the church and vestries only, omitting tower and spire, and have been contracted for at a cost of 5,130*l.*, by Mr. Samuel Webster, of Bootle. In laying the stone, Mr. Picton said he did not like the word "chapel." "Church" was the right and proper word. It meant that which was dedicated to the Lord, and that being so he thought it was a proper term to apply to their places of worship. He hoped the building would be erected without accident.

Nottingham.—The foundation-stone of a new Unitarian Church on High Pavement, Nottingham, on the ground recently occupied by the old structure which had been removed, has taken place in the presence of a large number. The new building will cost 10,000*l.*, exclusive of the land, and the style is of the thirteenth century. The exterior of the church is of stone, with Bath freestone dressing. The arches and columns are intended to be made of Mansfield stone and Forest of Dean stone, and there is every probability that all the roof will be tiled. The extreme length of the nave will be 83 ft. 8 in.; depth of chancel, 17 ft. 6 in.; width of the nave, 35 ft.; width between the aisle and walls, 63 ft. 4 in.; width of transept, 22 ft. The principal entrance will be from High Pavement, and there will be other porch entrances to the transept, vestry, and choir. The seats are to be all pitch-pine, the building heated by hot water, and the lights are to be by jets from the columns. Mr. Stewart Colman, of Bristol, is the architect; Messrs. Hodson & Facon are the builders; and Mr. Peter Carr, of Bristol, is clerk of the works.

Eston.—A Wesleyan chapel, which has been erected at a cost of 3,000*l.*, has been opened at Eston-in-Cleveland. The chapel, which accommodates 550 persons, is situated a short distance from the Board schools, which are being erected at an expense of 6,000*l.* The architect was Mr. Edward Taylor, of York; and the contractors were Messrs. Paley & Bulmer, Eston.

Oulton.—The foundation stone of a new chapel and school at Oulton has been laid in the presence of a number of ministers, gentlemen, and other friends. Eight ladies laid memorial stones, each giving 25*l.* towards the scheme, and being presented with a silver trowel and mallet. Upwards of 1,000*l.* had already been subscribed, and the amount had reached 1,532*l.* 10*s.* towards an estimated cost of 2,000*l.* The erection will consist of a chapel and school in the Gothic style, freely treated, and having between them a tower with a spire, rising to a height of 60 ft. The chapel is intended to seat 350 persons; the school to accommodate 100 scholars. Mr. John Shaw, of Leeds, is the architect; and the principal contractors are Mr. Wood Higgins, of Oulton, builder, and Mr. Lockwood, of Woodlesford, joiner.

Malpas.—A new Congregational Chapel at Threapwood has been opened for divine service. The whole cost is a little over 280*l.* The chapel, which is of Gothic structure, has been built by Mr. T. Huxley, of Malpas, and is capable of seating 150. The seats are open, and made of deal, painted and varnished. The minister's desk is on a dais within the apse. The building is lighted by two chandeliers, and ventilated through the floor and ceiling.

East Dereham.—A memorial of the poet Cowper, in the form of a Congregational Church, has been opened at East Dereham, Norfolk, on the site of

the house in which the poet spent his declining years. It is called "The Cowper Congregational Church." The vestry has been fitted up with the doors and panelling of the room in which Cowper lived, and a granite monument 9 ft. high will, in two or three weeks, be placed in front of the church. The inscription for the monument, written by the Dean of Westminster, is as follows:—"This monument is erected on the site of the house where the beloved poet of Olney, William Cowper, spent the last years of his life, under the care of faithful friends. He lies buried in the parish church, having given up his soul to God April 25th, 1800." Then follow seven lines from the hymn, "I was a stricken deer." The church cost about 3,500*l.*

Norwich.—The memorial-stone of a new building in Theatre-street, for the use of the congregation of Scotch Presbyterians in this city, of which the Rev. W. A. McAllan is the pastor, has been laid. Mr. E. Boardman is the architect of the building. The style of the addition may be described as Lombardic Gothic, the semicircular arch and flat-pitched roof harmonising with the existing building. The new portion of the church will have a frontage of 52 ft. next Theatre-street, and a depth of 33 ft., the whole area of the building being thus increased from 59 ft. by 38 ft. to 59 ft. by 71 ft. The galleries will be entirely removed from the old building, and to gain greater height the floor will be lowered 4 ft. 6 in. There will be a gallery all round the new portion of the building approached by two stone staircases. This gallery will be supported by cast-iron columns, which are carried up and support an arcading of moulded circular arches. The ceiling will be flat and panelled, except that of the central portion, which will be covered. The lobbies will be paved with encaustic tiles. The entire floor of the building will be new, as also the seating. The present rostrum will be converted into a gallery for singers. The whole of the interior of the present building will be replastered, and the woodwork renovated. New vestries, &c., will be provided in the rear. Externally the building will be faced with white brick, with Bath stone dressings. The entrance will be a triple doorway, with shafts of polished granite in the jambs. Over this doorway will be a large wheel-window, 14 ft. in diameter. At the south-west corner of the building will be a tower 80 ft. in height. The total accommodation will be 700 sittings. The contractor is Mr. Samuel Hall, Norwich.

Southport.—St. George's Presbyterian Church, Southport, the memorial-stone of which was laid on the 18th of November, 1873, by the Earl of Kintore, has been opened for public worship. The building, which will accommodate about 500, is from the design of Mr. Thomas Wylie, of Liverpool and Southport, and is erected on a plot of freehold land in Lord-street. The cost of the church is about 5,000*l.*, exclusive of the site.

SCHOOL BUILDING NEWS.

Fulbrook.—The new schools at Fulbrook have been formally opened. The reason why this school was built was owing, originally, to the building in which the Boys' School was formerly held at Burford, the adjoining parish, being pronounced unsafe by an agent of the Ecclesiastical Commissioners, to whom the property belonged. The owners of property in Fulbrook and ratepayers therefore determined to erect a school of their own, to be carried on upon the voluntary principle, in preference to joining the School Board, which has recently been formed in Burford. The site was given by Mr. Abraham Stratton, of Fulbrook, and the present buildings, which were designed by Mr. Cox, of London, and contracted for by Mr. Hollowell, of Burford, are intended to accommodate about sixty children. The school consists of a good-sized schoolroom, with an infants' room adjoining. The landed proprietors and farmers of the parish have come forward liberally to accomplish this good work. The school being built for the benefit of all the children in this parish, it is to be conducted on the principles of the Church of England.

Wokingham.—The foundation-stone of All Saints' Schools, Wokingham, has been laid. The new buildings are being erected by Mr. Maynard, builder, from the plans of Mr. Joseph Morris, architect, Reading. The schools will be capable of accommodating 400 boys, girls, and infants. The total cost, including a teacher's residence, is estimated at 2,500*l.* Of this, 1,300*l.* must be raised by voluntary contributions, and the rest will be obtained under a scheme of the

Charity Commissioners, by the sale of property belonging to a local endowment for educational purposes, known as "Martha Palmer's Charity." Contributions amounting to about 830*l.* have already been promised. The site of the new schools is on land situated between All Saints' Church and the new parsonage-house.

Far Cotton.—A few months ago it was felt necessary by the Primitive Methodists of Far Cotton that a schoolroom should be erected, as it was found inconvenient to hold the school in the chapel and vestry. The project was accordingly set on foot, and it was arranged that the building should be erected on spare ground at the back of the chapel. The work of building was completed a few days back. The new structure adjoins the chapel, and in addition to the school-room there is a class-room. The school-room itself is 24 ft. long, 16 ft. 6 in. wide, and 13 ft. high. It will accommodate about 120 children, and will cost about 80*l.*, towards which 50*l.* have already been given in donations. There are three windows on the south side, and it is wainscoted about 4 ft. high.

Leaves.—Towards the end of 1873, a committee instructed Mr. H. Card to prepare plans, and Mr. W. Savage, a former resident of the town and scholar at the schools, who now lives in London, offered to contribute 100*l.* for the purpose the committee had in view, if the work was completed during the present year. With this incentive they set to work, the result being that Mr. H. Longley, jun., of Worth, has just completed the improvement of the old Wesleyan chapel as a school, which has now been opened. The old plaster front has been replaced by a brick one, relieved with facings of stone, the design being somewhat similar to the chapel front. The roof has been carried considerably higher, the galleries inside have been taken down, and in their place is a large room in which meetings, &c., will be held. Below are four good-sized class-rooms, and underneath two cellars. The most has been made of the limited space at disposal, and the front is fenced in with a low red brick wall, surmounted by iron railings, to match those in front of the chapel.

Weston-super-Mare.—The new infant school situated in the Christ Church district of Weston-super-Mare, have been formally opened. The new buildings will afford accommodation for 205 children.

Hereford.—The new national schools for the parishes of Holmer and Huntingdon have been opened. The school is situated between Wide marsh Common and Holmer. It consists of a mixed schoolroom, 45 ft. 6 in. by 81 ft.; a class-room, 18 ft. by 12 ft.; infants' school-room, 18 ft. by 18 ft.; with cloak-room, porches, bell-turret, and the usual out-offices. It affords accommodation for 150 children. The rooms are lofty and well ventilated. The cost originally was to be 930*l.*, but to that it was found necessary to add 10*l.* before the work was finished. The total sum, however, includes everything, even to the gravelling of the playground. The building is of red brick, with Bath stone dressings sparingly used. A few blue bricks, with the waste pieces of Bath stone, have been used to form a chequered pattern in the gables and over the windows. The roofs are covered with light green slates, and the ridge-crest with fire-clay. The walls internally are of brickwork, coloured and the roof-timbers, where showing, have been painted. Mr. F. R. Kempson is the architect of the building.

VARIORUM.

A work, entitled "Studies in Design for House Decorators, Designers, and Manufacturers," by Dr. Dresser, will shortly be published in monthly parts by Messrs. Cassell, Petter, & Galpin. It will consist of a series of original designs, prepared during the last fifteen years, printed in water-colours and accompanied by descriptive letterpress.—There is much truth in what the *Leisure Hour* says as to unhealthy workshops:—"Plenty of light and plenty of fresh air are two indispensable elements in the workshop, but it is only in exceptional instances that these indispensable requisites are provided. We are all acquainted with the term 'sweater,' which originated among workmen themselves as descriptive of their condition in working hours. The custom in large cities is to cram as many workers into a place as it can be made to contain. For the sake of saving expense the accommodation is of a kind utterly unworthy of the name. Ventilation is hardly thought of, or is so negligently managed that the workers

not bear the cutting draughts, and prefer the glowing heat to the certainty of taking cold; often the gloom is so dense as to ruin the sight, which only becomes injured to it by fires. On this subject of the perils and discomforts of the workshop we may quote the testimony of a writer who speaks of his personal experience:—"The compact between master and man," says he, "by which the former purchases the labour of the latter, appears to be the only thing kept in view by either of the parties. But the employer is morally bound to regard the health of the workman, for the very reason that the workman cannot take care of himself. His obligation is in London shamefully neglected. Men are crowded together in dark, damp, unwholesome dens, where not a tithe of the air necessary for healthy existence can penetrate, and where, in an atmosphere of tropical heat, and saturated with reeking poisonous odours, they are frequently compelled to work sixteen hours out of the twenty-four, it is for some months together; or they are buried in cellars or sheds pervious to every blast of the winter winds, and are debared from the sight of the sun for the live-long day. Any place, in short, is as fit a loft or the most fetid hovel, is as good a place as the most healthy and comfortable good enough for the operations of the workman. . . . In a word, the employer considers for the labour of the workman, and takes no life into the bargain." This testimony was given some years ago, and it is but fair to say that some small reform in this direction has been taken place; but the mass of the evil still remains to be dealt with, and we fear is not likely to be done away with until workshops, schools and poorhouses, are brought under systematic inspection by official surveyors authorized to compel the needed reforms."—With the first part of "The History of Protestantism" by the Rev. J. A. Wylie, just now issued, the publishers, Messrs. Cassell & Co. have put on a large engraving after Mr. E. M. Ward's "Father's First Study of the Bible."—The *Builder's Magazine* says:—"Wire-gauze as a substitute for glass is fast gaining the attention of persons engaged in constructive works. It is much employed in the Regent's Park Chamber Works, for the lifting door-screens of passages, for which hitherto glass has been exclusively used. It is admirable in the summer for this purpose, as it subdues the glare of light, moderates the heat, and admits but little light, while it insures perfect ventilation. The wire in a carriage provided with these gauze doors sees plainly through it, and have all the advantages without the disadvantages of glass. It is worth considering whether the plant-houses for various purposes—such, perhaps, as the growth of camellias and heaths—might not be fitted with wire-gauze than with glass, and wooden shutters for cold weather."

Miscellaneous.

The Whitty Jet Trade.—Chiefly through the liberality of Sir George Elliot, bart., M.P., an exhibition was held at Whitty recently, with several valuable prizes offered for competition. The exhibition was a remarkable success from every point of view; and last week the prizes won by the successful competitors were distributed. In connexion with the event, Dr. Fraser was engaged to deliver a lecture on the true principles of art, with special application to the manufacture of jet ornaments. The Dresser first spoke of the general principles of art, and then proceeded to point out the various classes and styles of ornament at their disposal for study and pattern, and went on to say:—"With jet much might be done. What did not the Chinese and Japanese have done with such a material?—so easy to work, so useful when worked, and capable of a polished surface, both bright and dead. Look how the Chinese spend years in cutting a jade bowl. Jet material is tough beyond all conception, and is more difficult to work than a diamond. The Indians make boxes and trays of soapstone, which is a softer material than jet, and even more brittle. I like the dull grey of jet, but it will not compare with the dead, bright surface of which jet is capable."

Brighton Beach.—We are glad to hear that the Town Council have rescinded their resolution to grant a lease of a portion of the beach east of the Chain Pier to the proposed Sea-bath Company at a rent of 125*l.* per annum.

Devonport Dockyardmen — A Plain-spoken Admiral.—An incident, of which little notice has been taken, occurred, we are told, one day early last week. The Admiral-Superintendent of Devonport received a deputation representing the whole four thousand men employed in Devonport and Keyham dockyards, who presented a memorial to them they might leave off work at five instead of six o'clock. Admiral King Hall, who is a very plain-spoken officer, but exceedingly popular in the dockyard, spoke in the following manner:—"Look here, men, I will send forward this memorial to the Admiralty if you like, but I shall put my own personal remarks upon it, and I will tell you what they would be like. You know how last year I worked hard to get you a rise in wages, and I got it for you because I felt you were fairly entitled to it. But this asking for time only means more money, for you know the work must be done, and if your day ends at five o'clock for half the year you will have to be kept on overtime till you do it. You are just asking the British ratepayers to pay you 15,000*l.* more a year for the same amount of work as you now do. Well, that will all have a tendency to make dockyard work so costly that the country won't stand it. Capitalists in Parliament will be ready enough to agitate for more of the naval work being done by contract in private yards, and in the end dockyard men will suffer. Wages in the north and everywhere are going down, not up. Belgian iron is coming over here, and our manufactured exports are diminishing. We can't stand foreign competition forever, and these demands for less time and more money will drive out the work of the yards and capital out of the country. It is a very foolish move of yours and very ill-timed, but I will send on the memorial if you wish." The delegates were taken aback. After some parley they asked for time to consult those who had sent them, and next day they came and withdrew the memorial.

The Turners' Company.—On Monday last the Lord Mayor distributed the prizes recently offered by the Turners' Company for the best specimens of stone, brass and gun-metal, and lapidary work. Mr. Sadgrove, the Master of the Company, said that was the fifth occasion upon which the prizes had been distributed by the Lord Mayor for the time being, and this year, as upon a former occasion, the Baroness Burdett Coutts had contributed twenty-five guineas, and Mr. Mortimer Hunt, of the firm of Hunt & Roskell, five guineas, so as to provide additional prizes for deserving competitors. Sir George Gilbert Scott, R.A., as a judge of the stone work, urged the necessity of cultivating beauty of form as well as excellence of workmanship, and an intelligent selection of material, and said the men of the present day could not do better than emulate, as far as beauty went, the form exhibited in the Greek and Etruscan vases. Silver medals, with the freedom of the Company and the City of London, were awarded to Frederick Garratt, an apprentice, 19 years of age; Mr. Frederick George Bradbury, of Penzance; and Mr. Thomas Rossiter, of Bristol; and bronze medals, or certificates of merit, with or without money, were handed to nineteen other competitors.

Plate Glass and the Explosion.—A public meeting of persons interested in the question of the liability of the Plate Glass Insurance Companies to pay compensation in cases where loss has been sustained through the explosion has been held, Mr. Joyce in the chair. The chairman said that he, with the committee, had waited on three companies who were mostly concerned in the explosion, viz., the London General, the National Provincial, and the Plate Glass companies. The first had paid all claims made, although few. The second were prepared to meet all disputed claims half way, although not liable. The third had stated that they could not deviate from the terms of their policies. It was resolved:—"That an advertisement be inserted in three daily papers, stating which company had met all claims, that that had met them in part, and the one that had not done anything, and the meeting pledges itself in future to support the National Provincial and London General Companies."

North Cambs Cottage Hospital, Wisbech.—Extensive additions are now being made to this hospital (under the direction of Messrs. Adams & Son, architects), the cost of which will be defrayed by the munificent foundress, Miss Trafford Southwell.

Denbigh Reredos Dispute.—Two memorials from the Church people at Denbigh, containing nearly 1,000 signatures, having been received by the Bishop, praying him to open the new church, and let the legal question of the reredos be settled afterwards, his lordship expressed a wish to the Parochial Association to receive a Deputation, representing both English and Welsh congregations, upon the subject. Accordingly nine gentlemen, nominated by the association, waited upon the Bishop on Thursday evening in last week. The Bishop said he had taken the best advice as to the legality of the reredos, and was fully determined not to consecrate the church till the centre compartment (the representation of the Crucifixion) was removed. He was willing to waive the minor questions of the endowment, &c., for the benefit of the parish. When informed that a gentleman had offered to clear the church of the debt of 1,100*l.* if the reredos remained intact, he advised a rejection of that offer, and an appeal to the public; and to show his sympathy, he would commence the subscription list with 50*l.*, and would even consent to a cross being placed in the compartment from which the obnoxious figures must be removed.

Steam Boiler Setting.—Mr. Henry Hiller, the chief engineer to the National Boiler Insurance Company, Manchester, says:—"There is considerable danger, even with long boilers, where the heat acts on plates bare of water, after it leaves the internal tubes, or has passed but once the full length of the boiler. Secondly, although the risk is very much reduced where the heat does not so act, until it has passed through the tubes, and along the bottom flue, there is still liability to overheating. Thirdly, no instance is reported where the seams at the lower part of a two-flued boiler have rent or fractured or otherwise failed when it was set on the same plan as exploded boilers referred to (where the heat passed from the tubes under the bottom of the boilers): the theory which was advanced in reference thereto thus not being confirmed. In conclusion, I may add that I would strongly advise that this plan of setting be discontinued."

A New Public Hall for Cockermonth.—The foundation-stone of a new Public Hall has been laid at Cockermonth. The new building, which is in Station-street, will, when erected, be the property of a company, the formation of which is due to Mr. John Cook, of Cockermonth, one of the directors. The plans for the building have been designed by Mr. T. L. Banks, of London, architect. The building itself will be about 53 ft. square, and built of rubble stone with the front cemented. The whole of the ground floor will be cellared; the cellars being used for the kitchen, scullery, heating apparatus, &c. It is intended to have a lift. As the ground on which the hall is to be built is lower at the back than in front, the cellars will be well lighted. The front entrance to the building will be central, and on each side of it there is to be a shop with a room behind.

Street Lighting.—The new lamps in Waterloo-place are placed there at the expense of the patentee. They are called "Bartlett's Boulevard Lamps," and have been used since 1871 in New York and elsewhere. The glass-shade is oval, with the lower part open; the glass itself is thick, but the principal improvement is the use of two porcelain outside reflectors, the one on the lower part of the chimney, the other at the centre of the glass shade or bell, throwing down on the pavement more light than street lamps ordinarily used in London. The upper reflector radiates light to a distance, but always downwards; the lower one sends the rays down near the lamp all round, and prevents any shadow being cast. The names of the streets are stencilled in ground glass.

Unauthorised Removal of Public Seats at Hampstead.—George French, a carman in the employ of Mr. Willett, a builder, has been fined 1*l.* and 8*s.* costs, for damaging and removing six public seats, the property of the Hampstead Vestry, from Belzoe-avenue. These seats were placed in the avenue by the Vestry for the public comfort and good, and the defendant knew that they were much valued. He said he was acting in accordance with instructions of his master, Mr. Willett, because the seats were a nuisance to the houses he had built. They were sometimes occupied all the night through by bad characters. The magistrate said that Mr. Willett ought to have taken proper steps to bring the matter before the Vestry.

Monumental.—The ceremony of unveiling the statue of Cromwell, which is shortly to be erected in the neighbourhood of Parliament-square, will, it is said, be performed by Mr. Thomas Carlyle. The local authorities of Macon, France (as we noted last week) having determined on erecting a statue in honour of Lamartine, whom they claim as a townsman, the Art Jury, empanelled to compare and report upon the numerous projects sent in, have given their preference to the one designed by the eminent French sculptor, M. Falguère. In it Lamartine is represented standing upright, bareheaded, robed in a loose ample costume. M. Falguère intends to proceed at once with his task, and it is hoped that the monument may be inaugurated early in the coming spring.

The Organ in the Town Hall, Bolton.—The Bolton Town Hall opened by the Prince of Wales not long ago has now been completed by the erection of an organ in the room in the centre of the building for public meetings and concerts. The instrument has been built by Messrs. Gray & Davidson, from a specification by Mr. Best, of Liverpool, to whom the authorities entrusted the arrangement and selection of the stops. The instrument stands in an apse at the south end of the hall, and its dimensions are—height, 36 ft.; width, 32 ft. 9 in.; and depth, 25 ft. 7 in. The blowing apparatus is placed on the basement of the building, and consists of two of Duncan's double-cylinder hydraulic engines. The lowest tender was accepted for the organ. The total cost, including case and all accessories, has reached 4,000l.

Club House for Stoke-upon-Trent.—In July, 1873, the Conservatives of Stoke resolved upon the erection of a commodious club-house of their own. The total cost of the new club-house will be about 2,000l., raised by shares, more than half of which have already been taken. The building, which is being erected in Glebe-street, will consist of four stories, including basement, and will contain dining, billiard, reading, smoke, and news rooms, besides kitchens and attendants' departments. The top story will form a large room for meetings. Mr. C. Lynam, of Stoke, is the architect; Messrs. Gee & Co., of Stafford, being the contractors. The ceremony of laying the foundation-stone has been performed by Mr. C. M. Campbell, M.P., in the presence of a great concourse of spectators.

Proposed Public Park for Wolverhampton.—Mr. William Astle, of Wolverhampton, has issued a circular calling attention to the importance of providing a public park for Wolverhampton. Mr. Astle states that he has received numerous communications from gentlemen favourable to the movement, expressive of their readiness to give substantial encouragement towards securing so desirable an object. The Duke of Cleveland is willing to sell a portion of the race-course, say, fifty or sixty acres—for a public park, at the rate of about 400l. per acre. Fifty acres might, therefore, be secured for 20,000l. Mr. Astle suggests that measures be adopted for holding a public meeting for initiating a great movement among the middle and working classes in aid of the project.

Financial State of our Insurance Companies.—A letter to the *Times* from Mr. T. B. Sprague, contains a startling statement as to the condition of some of our life insurance companies. Mr. Sprague says that the returns made to the Board of Trade in pursuance of the Life Assurance Companies Act, 1870, have rendered it impossible for an insolvent life insurance company permanently to conceal its position; and the result has been that the accounts published by certain companies—some of which are doing a large business—have led the actuaries who have studied them irresolutely to the conclusion that the companies in question are insolvent beyond all hope of recovery.

Land in Manchester.—We are informed that the triangular plot of land bounded by Victoria-street, Deansgate, and St. Mary's-gate, in this City, and including the whole of the site, without the buildings, of the Victoria Fruit Market, has been disposed of by the Manchester Corporation by private contract. The site included 5,160 square yards, and was sold at 56l. per yard, realising a total of 288,960l.—the highest sum total ever paid for any site of land in Manchester intended to be used for private purposes.

Reredos at St. Paul's Church, Margate. On Thursday morning, 22nd inst., there was a special service held in the above church commemorative of the erection of the new reredos, presented by Mr. Churchwarden Taylor. The reredos extends the whole width of the chancel, and its height is 13 ft. It contains over the table the Lord's Supper in alto-relievo, which has a diapered background. Its canopy is arched, and gabled, with crockets, finials, and Latin cross. On either side of the table are two illuminated panels containing the Ten Commandments, Creed, and Lord's Prayer. Mr. Dayman, of Vauxhall Bridge-road, is the sculptor and designer.

The Proposed New Grammar School at Darlington.—A meeting of the governors of this school, under the new scheme, has been held, at which it was stated that since the last meeting, when Messrs. Pease had offered 5l. on condition that 2,500l. more were raised, 5,061l. 6s. had been promised, making altogether above 10,000l. It was agreed to appoint a finance committee. Some discussion took place as to whether any steps should be taken to erect the building, but this was deferred, a committee being appointed to consider the question, with the understanding that accommodation should be afforded for boarders, day-boarders, and day-scholars.

Margate Aquarium.—We understand that very satisfactory arrangements have been made with a London firm for the conveyance of the concrete blocks from Dover to Margate, and that by the employment of steam-tugs they will be delivered at the rate of 400 tons in each tide, without being dependent upon the wind. It is not unlikely that the construction of the aquarium may lead to two very important improvements, namely, the formation of a small harbour for the protection of the fishing and pleasure boats and of the entrance to the jetty, and the construction of a wide and easy ascent for carriages from Bankside to the Fort.

Wimbledon Sewerage.—The Local Board of Wimbledon have had under their consideration the remaining contracts for the completion of the sewerage works of the town. Thirteen tenders were sent in for the manufacture of pumping-engines and other machinery, and for the erection of engine-houses. It was resolved to accept the tender of Mr. W. F. Mason, of Ipswich, for engines and machinery, at the sum of 4,195l., and the contract of Mr. W. Crockett for the erection of engine-houses, at 5,265l. The amount of these contracts, added to the cost of the former ones which have been accepted and are now being carried out, will form a total expenditure of about 50,000l.

The Proposed New Church at Brampton. Subscriptions flow steadily in towards building a new church at Brampton. Already 4,000l. have been promised, which sum does not include 250l. offered conditionally. Four sites have been named. The building committee have determined to ask Mr. Webb, architect, to examine the different sites, and advise as to their suitability, and also to suggest the design of the proposed church and its probable cost. A strong feeling seems to prevail in favour of the new edifice being erected where the present church stands.

Gasworks on Fire at Dublin.—A fire broke out at the works of the Alliance Gas Company, Great Brunswick-street, Dublin. The company had on store a large quantity of coal, and it was in a shed (upwards of 300 ft. long) containing the coal that the fire broke out, and in a short time the shed was one mass of flames. The flames, assisted by a strong easterly wind, threatened to bid defiance to all efforts. The fire-brigade was supplemented by a strong force of Grenadier Guards, but in the afternoon the fire still continued. About 1,500 tons of coal were burning.

New Police Offices.—The Commissioners of Police have commenced the erection of a range of buildings on the piece of land in the centre of Scotland-yard. The building, which is 106 ft. in length, will be built of stone, the entrance being at the Parliament-street end of the yard. The ground-floor will be used for the Hackney Carriage department, and consists of surveyors' and other offices, and restored property store, whilst the detective department will occupy the rest of the building.

The Joiners' Strike in the Potteries. At a meeting of the General Builders' Association of the Potteries and Newcastle, it has been resolved "That the joiners having struck work without a just cause, even while working the own hours; and, further, that as the dispute point does not come into operation until the 9th of November, the employers cannot at present consider the question of a joint note to ampute."

Proposed Exhibition in Peel Park.—The Society for the Promotion of Scientific Industries as has already been announced, intends to hold its second exhibition of machinery for tool-making and other branches of mechanical ingenuity in the coming spring, and inquiries have been made as to the favourable opportunities a site for the building in one of the Manchester parks, but without anything like encouragement from the park authorities.

The Palace of Westminster.—Claridge Patent Asphalt Company are now engaged under an order from Her Majesty's Commissioners of Works, in concreting and asphaltizing all the courtyards of the palace. These are some acres in extent, and are likely to occupy the company's workmen until the next meeting of Parliament.

Public Time-signal.—The want of a thoroughly accurate public time-keeper has long been felt in the south-western district: so Mr. Child, a watchmaker, in the Brompton-road, has erected a public time-signal, which is moved precisely at every hour by direct electric current from the Royal Observatory, Greenwich.

The City of Exeter Improved.—The first block tenements erected by this company in the Mermaid-yard is completed and ready for occupation. The Mayor and Corporation have been invited to take part in the opening ceremony which is fixed for this Saturday, the 31st inst.

Dumfries.—New Bridge over the Nith. At a meeting on Tuesday of the bridge committee of Dumfries town council, Provost Smith presiding, a plan and sections by Mr. Willet C.E., Aberdeen, of a foot-bridge across the Nith at Dumfries was approved of. The estimated cost is 1,400l.

Rainford Local Board.—Mr. Wm. Jel Hall, architect, Raven Chambers, St. Helens, has been appointed architect and surveyor of buildings to the Rainford Local Board. There was a large number of candidates for the office.

Piccadilly.—The committee of the Navy and Military Club purpose making certain alterations in their Club-house, No. 94, Piccadilly. The works will be commenced next year, by Walter Emden, architect.

A New Canal in Russia.—The construction of the Cronstadt (St. Petersburg) Canal has been entrusted to an association of capitalists and engineers for 6,500,000 roubles.

New Billingsgate Market.—The first stone of the new market, of which we recently published the design, was laid on Tuesday afternoon last.

Bath Abbey Church.—Prior Bird's Chapel in the Abbey Church, is to be completed at the expense of the children of the late rector.

TENDERS

For warehouse, stables, and cottage, at Willende green Farm, near London, for All Souls' College, Oxford. Mr. Robert Hutchinson, architect:—

Perry	23,722 0 0
Harrison	3,271 0 0
Crook	3,200 0 0
Blott	3,160 0 0
Keys	3,014 0 0
Widows	3,006 0 0
Johnson	2,903 0 0
Thomas	2,905 0 0
Gould & Brand	2,878 0 0
Parsons	2,845 0 0
Hook & Oldrey	2,824 18 0
Simpson & Baker	2,811 0 0
Haynes	2,799 0 0
Small	2,774 0 0
Smith & Allen	2,665 0 0
Handover	2,580 0 0
Groome	2,161 0 0
Lies	1,785 0 0

For rebuilding Mortimer Arms, Tottenham-court-road, for Sir Henry Meux & Co. Mr. T. W. Stent, architect:—

Colls & Son	23,997 0 0
Turner & Son	2,850 0 0
Blasford & Jones	2,939 10 0
Edbs & Son	2,937 0 0

For the erection of mansion at Hastings, for Mr. W. W. Brice and stone provided by the owner. Mr. Mansel Pleydell, architect. Quantities supplied:—
 Morgan.....£3,865 0 0
 Womersley.....3,875 0 0
 Stensford.....3,058 0 0
 Bailey.....3,533 0 0
 Avar.....3,430 0 0
 Taylor.....3,350 0 0
 Eldridge.....3,325 0 0
 Paterson.....3,310 0 0
 Crutenden.....3,190 0 0
 Wood.....3,160 0 0
 Voller.....3,170 0 0
 Howell.....3,120 0 0
 King.....3,192 0 0
 Geary.....3,084 0 0
 Faris (accepted).....2,397 0 0
 Woodall.....2,967 0 0

For the erection of the first portion of college, headmaster's house, and for external works, Kelly College, stock Devon. Quantities supplied. Mr. Charles F. Som, architect:—
 Marshall & Son.....£23,967 0 0
 MacMillan.....22,537 0 0
 Matcham.....21,449 0 0
 Hubbard & Co.....20,675 0 0
 Trevelyan.....20,021 0 0
 Blackford & Son.....19,898 0 0
 Finch.....19,500 0 0
 Pethick (accepted).....19,470 0 0

For building three houses in Powerscourt-road, Lower Wotton, for Mr. James Barber. Messrs. Ashdown & Co., architects:—
 Boyes.....£1,644 0 0
 Groves.....1,045 0 0
 Davey.....1,055 0 0
 Sharp.....980 0 0
 Young & Son.....903 0 0
 High.....825 0 0

For house at Morley-road, Lewisham, for Mr. E. Hips. Mr. Wm. C. Banks, architect:—
 Grubb.....£1,844 0 0
 Dunsford.....1,650 0 0
 Staines & Son.....1,544 0 0
 French.....1,370 0 0

For roads and sewers on Fellows-road Estate. Messrs. H. & T. Crockett, surveyors:—
 Crockett.....£2,300 0 0
 Killingback.....1,995 0 0
 Culverhouse.....1,983 0 0
 Watts.....1,539 0 0
 George.....1,325 0 0

For chapels, lodges, and gates, for the Crystal Palace Brick Cemetery Company, Limited, at Elmers-end, Kentham. Mr. A. G. Hennell, architect. Quantities supplied by Mr. W. W. Gwyther:—
 Shadell.....£9,371 0 0
 Williams & Son.....8,904 0 0
 Niblett & Son.....8,289 0 0
 Bowyer & Son.....8,131 0 0
 Dove, Brothers.....8,085 0 0
 Lord.....7,917 4 0
 Unwin.....7,723 10 0
 Willson, Brothers.....7,279 0 0

For two shops and dwelling-houses, Oxford-street, near George-street, for Mr. Wm. Adkins. Mr. F. H. Higgs, architect:—
 Higgs, Higgs, & Hill.....£7,540 0 0
 Roberts.....7,470 0 0
 Roberts.....6,998 0 0
 Scrivenner & White.....6,888 0 0
 Lister.....6,697 0 0
 Macey (accepted).....6,469 0 0

For new schools, at Loudwater, Bucks. Mr. F. W. Higgs, architect:—
 Sexton.....£4,300 0 0
 Snell.....3,295 0 0
 Woodbridge.....3,280 0 0
 Hand.....3,148 0 0
 Cooper.....3,100 0 0
 Reavell.....3,073 0 0
 Webb.....2,629 0 0

For alterations and additions to Cookham Union Workhouse. Mr. C. Cooper, architect:—
 Parto.....£2,840 0 0
 Lewis.....834 1 8
 Woodbridge.....826 0 0
 Walker.....824 19 0
 Reavell.....798 10 0
 Sturgess.....698 18 0

For works in the erection of additional laundry building, at the Central London Sick Asylum, Highgate, near Giles & Gough, architects. Quantities by Mr. C. Hodge:—
 Reed.....£2,089 0 0
 Levell.....5,927 0 0
 Turrell.....5,497 0 0
 Rankin.....5,160 0 0
 Niblett & Son.....4,990 0 0
 Bangs & Co.....4,864 0 0
 Staines & Son.....4,886 0 0
 Crockett.....4,857 0 0
 Nightingale.....4,854 0 0

For additions to school at Dudley Port, for the Tipton School Board. Messrs. Charles Round & Henry Beddoe, architects. Quantities supplied:—
 Nicklin.....£23,483 0 0
 Holland & Sons.....3,128 0 0
 Jones.....3,064 0 0
 Wilson.....3,018 0 0
 Tranter.....2,926 0 0
 Stockton & Son (accepted).....2,728 0 0
 Haflner.....2,423 0 0

For alterations, repairs, and decorative work, at No. 14, Charlotte-street, Bedford-square, for Mr. E. Weiguer. Mr. Frederick R. Haynes, architect:—
 Goughden.....£780 0 0
 Bayes & Ramage.....630 0 0
 Toms (accepted).....460 0 0

For new Episcopal and Nonconformist Chapels, keeper's lodge, and boundary walls, for Fresham Cemetery. Messrs. Lunn & Sansome, architects. Quantities supplied:—
 Smith.....£1,919 0 0
 Hawkins.....1,880 0 0
 Espley (accepted).....1,450 0 0
 Gardour.....1,448 0 0
 Walford.....1,440 0 0
 Foster.....1,368 10 0

For two houses, Barking-road. Mr. John W. Morris, architect:—
 Ebor.....£1,638 0 0
 Abraham.....1,494 0 0
 Bayes & Ramage.....1,465 0 0
 Lunn.....1,440 0 0
 Watts.....1,375 0 0
 Tanner.....1,361 0 0
 Bangs.....1,358 0 0
 Atherton & Latta.....1,350 0 0
 Sheffield (accepted).....1,344 0 0

For villa residence at Barnes-common, Surrey, for Mr. James Leaver. Mr. E. F. Roberts, architect. Quantities supplied by Messrs. Strudwick & Mennie:—
 King & Son.....£1,643 0 0
 Avis & Co.....1,630 0 0
 Adamson & Sons.....1,497 0 0
 Schriener & White.....1,446 0 0
 Temple & Foster.....1,445 0 0
 Atchison & Walker.....1,425 0 0
 Downs.....1,357 0 0
 For Concrete and External Portland Cement Work. Economic Concrete Company.....£860 0 0
 Foster.....468 0 0

For erecting warehouse, Nos. 8 and 9, Friday-street, City, for Messrs. Mosley & Powell. Mr. John Collier, architect. Quantities supplied by Mr. W. H. Barber:—
 Credit for Old Materials.
 Scrivenner & White.....£8,089£100
 Lorus.....7,92530
 Elvington.....7,07575
 Newman & Mann.....7,58990
 Mortar.....7,43375
 Cook & Green.....7,415165
 Bayes & Ramage.....7,116109

For the erection of new schools and residence, to be called Malden College, at New Malden, Surrey, for Mr. John King. Messrs. New & Son, architects. Quantities supplied:—
 Macey.....£2,427 0 0
 Thompson & Smith.....2,247 0 0
 Best.....2,235 0 0
 Harris & Sons.....2,208 0 0
 Ellis & Sons.....2,200 0 0
 Mark.....2,188 0 0
 Snowball (accepted).....2,120 0 0

TO CORRESPONDENTS.

G. R. M. C. L. E. W. G. W. C. A. G. H. J. L. J. P. Another Competitor.—A Duke, A Peer Architect. A F. H. S. G. H. S. W. H. J. H. H. L. K. A Student. R. T. W. C. W. W. L. B. E. N. J. S. P. C. R. J. W. M. H. E. R. T. P. S. L. A. W. R. B. C. O. R. E. C. T. O. R. S. M. E. C. O. R. R. H. M. C. R. T. W. L. S. W. H. P. E. C. T. F. B. O. S. D. H. D. (thanks). N. S. W. I. the Acting would be more too long a proposition. The Architects' Association would have no purpose. Apply, O. G. (noted). O. C. (thanks). Not desired.—Continued statement sent would probably be satisfactory.—W. C. D. (next week)—C. C. (next week).

We are compelled to decline pointing out books and giving addresses. All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication. Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

Six lines (about fifty words) or under	Situations Wanted.	Situations Vacant.
Each additional line (about ten words) ..	2s. 6d.	4s. 6d.
	0s. 6d.	0s. 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to residents in any part of the United Kingdom, at the rate of 1s. per annum, payable in advance. Half-yearly stamps are accepted for amounts under 5s. Any larger sum should be remitted by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to DOUGLAS FOURDRINER.

Advertisements cannot be received for the current week's issue later than THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for TESTIMONIALS left at the Office in reply to Advertisements, and strongly recommends that COPIES ONLY should be sent.

NOTICE.—All communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 46, Catherine-street, Covent Garden. All other Communications should be addressed to the "Editor," and not to the "Publisher."

Bath Stone of best quality. RANDELL, SAUNDERS, & CO. (Limited), Quarriesmen and Stone Merchants. List of Prices at the Quarries and Depôts; also cost of transit to any part of the Kingdom, on application to Bath Stone Office, Corsham, Wilts. [ADVT.]

Asphalte. Seyssel, Patent Metallic Lava and White Asphaltes. M. S T O D A R T & C O. Office: No. 90, Cannon-street, E.C. [ADVT.]

Whitland Abbey Green Slates.—These Quarries are now fully opened out, and are producing Slates in all sizes, and in any quantity: sound, and of choice green tint.—For samples and further particulars, apply to the MANAGER, at the Quarries, Narberth-road, R.S.O. [ADVT.]

Patent Selenitic Cement, with double the usual sand, is much stronger than ordinary mortar. Plastering finished in much less time at less cost. Excellent substitute for Portland cement for Concrete at less than half its price.—6 Wharf, Belvedere-road, Lambeth, S.E. [ADVT.]

Bills of Quantities, Specifications, &c., Lithographed by ROBT. J. COOK & HAMMOND, 29, Charing-cross, S.W., with accuracy and punctuality. Plans and Drawings Copied, Traced, or Lithographed. [ADVT.]

MICHELMORE & REAP, Manufacturers of COLLINGE'S PATENT HINGES, COLLINGE'S PATENT HINGES, LEVER, SCREW, & BARREL BOLTS, and IMPROVED CAST FITTINGS of every description. 36A, BOROUGH ROAD, LONDON, S.E. Discount to Builders. Illustrated Sheet on application.

ON retiring from Business, I take the opportunity of tendering my best thanks for the kind support received, and of the many kind suggestions by Messrs. STEPHENS & BASTOW, who for years past have been associated with me in the management of my business. All Accounts due to and from me will be collected and paid by the new firm. JAMES DIBNET.

BRISTOL STEAM JOINERY WORKS, No. 9, CHELTENHAM BUILDINGS, BRISTOL, July 1st, 1874. Messrs. STEPHENS & BASTOW Beg to call attention, to the above Notice, and trust to be favoured with the continued support accorded to their Predecessor. All orders, with which they may be entrusted, will have their personal attention.

PERFECT DAYLIGHT. WHY BURN GAS? CHAPPUIS' REFLECTORS IMPROVE NATURAL DAYLIGHT AND SUPERSEDE GAS. P. E. CHAPPUIS, PATENTEE AND MANUFACTURER. No. 69, FLEET STREET, LONDON.

of BRICKLAYERS, who has just completed the superintendence of a mansion in the country, a RE-ENGAGEMENT as GENERAL FOREMAN. Would not object to a constancy. First-rate reference from present employer.—Address, W. H. care of Mrs. Cope, Upper Room, 41, Abchurch Lane, London, E.C. 4.

The Builder.

VOL. XXXII.—No. 1657.

Close of the International Exhibition.

ATURDAY last (the 31st) was the closing day of the International Exhibition, which under the penny-entrance system adopted during the last few days seems to have been a place of popular resort. The attendance, even at an early hour on Saturday, was large; and the picture galleries seemed to engross the chief share of attention; except the diving man, whose place of performance was surrounded by a closely-packed crowd anxious to see the last of him.

The exhibition of pictures is now, as our readers are mostly aware, to be discontinued, and, as far as we understand, the galleries are intended in future to be a permanent museum rather than a place for annual exhibitions. We have spoken more than once to the undesirability of attempting to keep up a yearly exhibition of paintings on so large a scale; pointing out from the fact, that, with all the other existing means of exhibition open here and on the Continent, such an attempt must result, after the first year or two, in merely bringing together the pictures which were not good enough to find acceptance elsewhere, with the exception of a few stray contributions, here and there, of higher class. The sequel has quite justified our opinion so far as the picture-galleries are concerned, where during this year (except among the loan collection of works of deceased British artists) there were few things to arrest the steps during a progress through the long galleries.

Whilst entirely concurring, therefore, in the judgment which has decided the committee to give up these annual picture exhibitions, we at the same time hope that these galleries, so well fitted in the main for the exhibition of pictures and statuary, need not be permanently given up for any other purpose. We wish to repeat what we have said before, that a periodical exhibition of paintings in these galleries, at somewhat longer intervals (say three years as a minimum), far from being a failure, would be likely to be complete success, and to form a most interesting and instructive opportunity of comparing and noting the progress in art of the different European schools. It was the attempt to make it annual which led to the failure; partly because artists, English and foreign, had not time to wait for such an exhibition every year, and partly because the evident necessity that the walls should be covered led to the admission of such inferior work, and to a general lowering of the status of the exhibition in the eyes of English artists, who were on the spot and could see the working of the thing. But if the art exhibition were made triennial or quinquennial, and were properly advertised and drawn attention to throughout the art-circles of Europe, we believe it might still be made a very fine institution of this kind, and an opportunity for a

periodical display of works of art of the highest class; and therefore, while we cannot regret the discontinuance of the annual picture exhibitions, which were doing harm rather than good to artistic taste, we do hope this suggestion of a periodical exhibition at longer intervals will be borne in mind, persuaded as we are that, under such an arrangement, it might be made a great artistic and financial success, and that the galleries offer too good an opportunity for this class of exhibition to be permanently closed to painters, and devoted to mere museum purposes.

In other respects than the pictures, the Exhibition just closed has had a good deal of interest. The collections of ancient and modern bookbinding and of lace excited not a little attention and admiration; the collection of lace especially, which gave a new impulse to taste in this department of artistic handicraft. The collections of Indian ornament and of Parisian *bijouterie* were as extensive and as strongly and suggestively contrasted in taste as before. The information as to contemporary French building and engineering works, furnished in so systematic a manner by the maps, drawings, photographs, and models sent over by the French Government, was of great interest, and not without its value in pointing out some ways of doing such things rather better than we at present practise in this our conservative island; and the splendid collection of architectural drawings made for the *Commission des Monuments historiques* excited equal admiration for the spirit of the administration which carried out such work, and for the architectural ability which it found at its command. All this, then, of which we have before spoken at some length, we have owed to this year's Exhibition; and we have also had the opportunity of inspecting, previously and now, a very interesting collection of specimens of modern furniture design, and the satisfaction of finding the latest collection, that of the present year, superior to the others in the best qualities of design. We hope therefore that we have not to sing the requiem of the International Exhibition as a centre for the illustration of contemporary art in this and other countries, but that the authorities will see their way to such a working of the new arrangements as will permit of the building being, once in three, four, or five years, periodically devoted to an exhibition of the art of all nations. We have no doubt that it is possible to make such an exhibition, on that system, a great influence in the promotion of art and in the art-education of the country, as well as a perfectly satisfactory undertaking in a pecuniary point of view.

ENGLISH CHURCH BUILDING IN THE NINETEENTH CENTURY.

We have endeavoured, on several occasions, to place before our readers such statistical data as to the building trade as show the intimate connexion that exists between its healthy activity and the general welfare and prosperity of the country. We have seen that the demand for new houses is a function, so to speak, of the annual increase of the population; and that this is not so much dependent on the number of births, whether taken at per marriage or per thousand, as upon that of the viable births, or the excess of births over deaths. Further, we have endeavoured to show how any unnatural interference with the healthy activity of the builder's yard, whether by overstimulating production, for political objects, or by reducing production, by ill-advised trade combinations, tends directly to raise the price of food, to discourage marriage, and thus to dry up the springs of natural activity in the business.

We have also spoken of the remarkable manner in which the picturesque face of the country has been transformed, and generally most advantageously transformed, by the upspringing of new churches and chapels, as well as of schools, hospitals, and other public buildings, at times, of high architectural merit, and, on signally commanding and imposing sites. We may mention

the picturesque gables and turrets of the new Charterhouse School, which, on the healthful and lofty eminence of Frith Hill, overlooking the snug little town of Godalming, rise to view over the wide Surrey valleys with something of the dignity of Oxford itself. The restorations, properly so called, of churches, have been more numerous than the actual additions to the number. Of these we mentioned, now some little time since, the case of the little church which contains the mortuary chapel of the Earls and Dukes of Bedford, at Chenies, in Buckinghamshire, where the care and taste of the Right Honourable Rector, worthily devoted to the site of the sepulchres of his ancient line, has converted what we can remember as an assemblage of hovels where pigsties and barns were hardly distinguishable from cottages, to a village fit for fairy fable.

It is thus a matter of satisfaction to be able to lay hands on certain statistics, of the cost expended on churches, schools, and parsonages, within the present century, which have been culled and collected for a different object, by a writer in the July number of the *Quarterly Review*. Into the reasoning of the paper in question we are not about in any way to enter. It is as concerns the erection, support, and cost of the fabrics, that we have to speak; and all that we have to add to the outcome of a series of figures that may well be called surprising, will be a word or two of our own as to the probable future of church building.

The churches of England at the beginning of the present century were, it appears, some 10,600 in number. Such, at least, is given as the number of parishes. Cathedrals of rare beauty, erected in a time when men made both a matter of conscience and a delight of building, were included in the number. But what sort of sheds or pigeon-houses many of the rural edifices then were, we are rapidly forgetting. To build a church was then a more rare and difficult achievement than it has since proved to be to connect our chief towns by railways. Merely to obtain powers for building a new church in Derby cost 1,000*l*. Of the benefices, many of which were so miserably small that the incumbent eked out a scanty existence by the plurality of his ministrations, nearly half were without parsonage-houses. As for schools, their want was supplied (in theory) by catechising the children in the church itself, a practice still to be found in the rubrics; but then, as now, rarely elsewhere. Since the year 1714, Queen Anne's bounty had been augmenting the smaller livings; but so low had been the starting point, that in the first decade of the present century, 5,656 benefices were below 50*l*., and a considerable number were as low as 30*l*., in annual value.

The axe was laid to the root of this decayed state of our ecclesiastical fabrics by the Act of 58 George III., the first Church Building Act; under the sanction of which the Incorporated Church Building Society, established in 1818, commenced its labours. Both the State and the Church,—both the Society and the Act of Parliament,—wisely took their stand on almost the single English institution which may be traced up almost, or altogether, to the time of King Alfred,—the parochial division of the country. It is, indeed, to Rome that we owe the institution of the parochial system; but we are apt, and not, we apprehend, without reason, to attribute the territorial division to our Saxon kings. The work of church multiplication was, perhaps, rendered both slow and costly by the adherence to this principle. Happily, it was also rendered sure. Ample experience, both at home and on the other side of the Atlantic, shows the importance of checking the eager desire for church-building "in the air." When proprietary chapels present, by their yearly auctions of seats, the aspect of a new partnership between the two opposing influences, one of which is known as Mammon, we have small cause to wonder if the very springs of morality are dried up.

With the permission now given by the State to the people to provide increased church accommodation, the great church-building era of the nineteenth century commenced. As we have said, the movement was at first slow. From 1811 to 1820, ninety-six new churches were consecrated,—not quite ten per annum. From 1821 to 1830, the number had more than tripled; rising to 308 for the decade, or thirty per annum. This rate again doubled in the next decennial term, amounting to 600. From 1841 to 1850, occurred 929 consecrations. In the next ten

years, the number fell off by about an eighth part, sinking to 820. But from 1861 to 1870, 1,110 new churches were opened, or no less than 110 per annum. Nor has there been any slackening in the work since that date.

We thus come to the statement that, up to 1872, the total number of new churches built in England within the century was 3,204. In addition to this permanent increase in the number of fabrics, 925 old churches were entirely rebuilt, making in all 4,129; without counting numerous repairs, enlargements, and partial renewals. Of these more than a quarter, or 1,150, have been built within the last decade; so that, if we omit any number for the years 1799-1810—putting that decade down as zero,—we shall find the rate to have more than decupled in six successive periods of ten years; rising from 9·6 per annum in 1820, to 115 per annum at the latest date. We observe, too, that the rate was 110 per annum in 1870, rising to 115 per annum (in each case for the average of a decade) in 1872. We strongly suspect that a careful examination of even our own volumes would show that the number given is under the mark. The amount expended in this manner is not easy to determine. Some light, however, is thrown upon the subject by the accounts of the Church Building Society. Nearly half of the new churches were built with aid from this source, and the total cost of all the work thus aided was nine millions sterling. This gives an approximate sum of eighteen millions sterling expended in building 3,204 new churches, or a little under 6,000*l.* (to speak exactly, 5,614*l.*) per church. Of the cost of the rebuilt churches we are without returns, as well as of that of partial renewals. But if we allow for the 925 totally rebuilt churches, the same cost apiece as for the new ones, omitting the partial repairs, as a set-off for the cost of site, there can be little doubt that we shall be much under the mark. That gives us a fifthier sum, in round numbers, of 5,200,000*l.*, making a total of 23,200,000*l.* And this large sum has been raised by the people of England, to extend the fabrics of their National Church, at a rate of progress augmenting from an outlay of 54,000*l.* a year in 1820, to 584,000*l.* a year in 1872.

With regard to parsonage-houses, the information is scanty—almost nil. We have seen that 4,800 incumbents were without parsonages in 1800. We have seen an addition to the numbers of parsonages required, by the present date, of 3,204. This gives a total of 8,000 houses that must have been built, or in some way provided, for incumbents during the period in question. We suppose that no builder could be found who would guarantee this quantity of work for 3,200,000*l.* Thus, 28,400,000*l.* is a total below the probability. We observe that the present number of parsonages is set down at 11,000, and the fact that an incumbent must have a house, whether called a parsonage or not, is indisputable. Still, let any one who doubts this make a corresponding deduction from our total.

As to schools, the Education Report of the Privy Council for 1873 only reaches back to 1839. It is true that the increasing activity of which we speak renders the period preceding this date of far less comparative importance than the last twenty-five years. But from 1839 to the commencement of 1873, Parliament granted 1,356,487*l.*, and private munificence subscribed 3,585,164*l.*—making a total of 4,941,651*l.*; in round numbers, five millions sterling, for building Church of England schools. As the amount spent in church-building, estimated by the number of churches built from 1810 to 1840 was about a third of the total expenditure in the century, we may estimate that not far short of 1,200,000*l.* have to be added to the expenditure on Church of England schools.

It is well to add here, from the same return, that the sums expended, on other than Church of England schools, during the same period, were as follows:—British and Foreign schools—grant, 106,120*l.*; subscribed, 220,033*l.*; total, 326,153*l.* Wesleyan schools—grant, 81,317*l.*; subscribed, 151,942*l.*; total, 233,259*l.* Roman Catholic schools—grant, 42,167*l.*; subscribed, 99,650*l.*; total, 141,817*l.* Total of non-Church of England schools, 701,229*l.* against 4,941,651*l.* Church of England schools.

The effect of the labours of the Ecclesiastical Commission, during the period under review, has to be now taken into account. The starting-point here is eighteen years later than the Act of 1818, to facilitate parochial extensions. The first proceedings under the Act of 1836 related to the better distribution of episcopal incomes. The annual income of the see of Canterbury, at

that date, was estimated at 19,000*l.*; Durham stood at an equal sum; but that of Llandaff was only 900*l.*; that of Rochester, 1,400*l.*; that of St. David's, formerly an archiepiscopal see, only 1,900*l.* Twelve sees were reduced in their incomes by the Commission, and the remaining fourteen were augmented out of the proceeds. Thus Canterbury was left at 15,000*l.* per annum; London and York, at 10,000*l.* each; Durham and Winchester, at 8,000*l.* each. On the other hand, the remainder, except in the little Island of Man, reduced from 2,500*l.* to 2,000*l.*, was raised to 4,200*l.* per annum, and the greater number of sees were rated at 5,000*l.* per annum.

In regarding the probable future of church-building in this country, it is to be regretted that we have not the same amount of detailed information with regard to the various non-conforming bodies, as that which has been collected, and is now in course of collection with regard to the national church. The opposition raised by the Dissenters to a census enumeration is the cause of this want of information. For building purposes, the nature of the rite matters but little; but statistical information is that which is sought. We do not see any fairer mode of forming an approximation to the relative amount of church or chapel accommodation, which, in a broad view of the case, the Methodists, Roman Catholics, and other Dissenting communions, may be expected to supply, than that which is indicated by the outlay on schools. These institutions are the seed-beds of the future sects, using the word in its most impartial sense. This proportion, as before quoted, is that of seven parts for the national church to one part composed of the aggregate of all the Nonconformists. If, therefore, we speak of churches as identical in number with parishes or parochial districts, about one-eighth may be added to our totals to represent other than national places of worship. This, which is a money ratio, is nearer the mark than a numeric ratio, looking at the average sizes of the buildings.

We find, then, that the number of parishes in England, which in 1831 was close upon 10,000, according to the Parliamentary inquiry of that year, has been increased, up to November 1st, 1873, by 2,591, under the powers given to the Ecclesiastical and Church-Building Commissions. The increase, of course, is almost entirely in the urban districts. The number of souls in a parish, in the rural districts, averages 750. In urban districts, owing to greater facility of access, and increased number of services, a church of a given size may serve the need of a larger number of inhabitants than is the case in country places. If we allow a population of 1,500 to an urban church, or double the actual average found in country parishes, we shall require, for the accommodation of our urban population, a total number of 10,000 churches. The actual number of incumbents, in 1871, is set down at 13,043. There are rather more than 10,000 rural parishes. The difference gives the approximate number of 3,000 parishes, as all that now exist, as furnished with a parish church and incumbent, for the accommodation of the 15,500,000 urban residents. It results that 7,000 more urban churches are required to bring up the proportionate accommodation to half that of the rural districts.

Seven thousand new churches, if built at an average cost not exceeding that of those which have been aided by the Church Building Society, will cost, in round numbers, forty millions sterling. We are now expending some 600,000*l.* per annum, if not much more, in church building. At that rate of outlay, if continued, it would take about sixty-five years to accomplish the task, that is to say, we should complete them by about A.D. 1940. But by that time the steady increase of our population, if maintained at its present rate, will have been such, that we should be rather worse off, notwithstanding the addition, than we are, at this moment, for church accommodation.

But if we consider that we shall go on and build, not at the particular annual rate at which we have now arrived, taking one out a series of years, but at the progressive rate of increase maintained throughout that series, we shall have supplied the deficiency indicated within the present century.

This idea may, at the first glance, seem unlikely and exaggerated. But the only guide to forecasts of an arithmetical nature is deduction from ascertained facts. It is not more incredible, at a time when, as is now the case, we are actually building two churches every week from foundation to top stone, that we shall build

7,000 more within the century, than it was in 1820, when we were building less than ten churches a year, that that number should increase to 115 churches a year by A.D. 1870. Of course, we pretend to no positive prediction. And, indeed, we recall attention to the fact that the church-building, from 1851 to 1860, was one-tenth less than that during the preceding decade. But this multiplying rate is the function of the increase of our population. We find it to rule in commerce. In the coal supply it has been enormously developed. One thing may, at least, be considered as certain; stagnation is not to be expected. We must look for either advance or decline. Nothing is more improbable than that for the next twenty or thirty years we shall spend, even approximately, the same annual sum in church-building that we are spending during the present year. It is possible that we shall spend less; that we have arrived at a turning-point in our efforts in this direction; that we are at length on a level with our actual wants; and that we shall build very few more churches within the remainder of the century. But it is equally possible that we shall continue to build, and that, as at present, each successful effort will be the fruitful parent of many more. As far as the statistics indicate, such will be the case. And, in that event, the nineteenth century will have witnessed, not only the restoration and repairs of all, or nearly all the old churches in which our fathers have worshipped God for periods ranging from one to eight centuries, but the addition of at least 10,000 new churches to the structural wealth of the kingdom.

We have only space to name one other consideration, to which we before alluded. That is, that we may calculate on one certain source of demand for new churches, so long as we are unvisited by pestilence, or any great calamity affecting our birth and death rates. We are increasing our population at the rate of 140,000 per annum. Numerically regarded, that is more than the addition of 140 rural parishes to the kingdom each year. Our actual rate of more than 115 churches per annum does not come up to the requirement thus caused! We cannot therefore hold that any falling off is likely to be felt in that portion of the activity of the architect and of the builder which is specially directed to the erection of the churches of England.

WINTER EXHIBITION AT THE FRENCH GALLERY.

In the twenty-second Winter Exhibition of "Cabinet Pictures" by British and foreign artists at Mr. Wallis's Gallery, one side of the room is entirely occupied by a work which, scarcely, therefore, comes under this category. This is the "Venice doing Homage to Caterina Cornaro," by Hans Makart, for which a special gallery was built at the Vienna Exhibition. The subject is taken from the history of Venice. Towards the end of the fifteenth century, Giacomo II., king of Cyprus, espoused a noble Venetian lady, Caterina Cornaro, who was declared by the Doge and Council to be the "Daughter of Venice," and was dowered and fitted accordingly. The painting represents the nobles and merchants of Venice bringing their congratulations to the queen elect. She is seated proudly on a throne. The venerable Doge, in scarlet attire, stands by, having placed the ducal bonnet on her head. Before her children are offering flowers. A long train of visitors approaches, giving the effect of a procession, without its stiffness and want of variety. There is an old grey-bearded man, whose portrait might have hung on the proudest walls of Venice. A tall peasant woman, with a vase of brilliant majolica on her head, stands like a bronze statue. Behind her is one of those pale golden-haired beauties who are reared only in Italian palaces, where the fierce heat of the summer sun leads women so to shun its light that they become fairer than their Northern sisters, who court sun and wind without fear. Quaint forms of halberds are borne by the guards, breaking up the end of the group into picturesque details. The splendour of the attire lends pomp of colour to the picture. Caterina herself is perhaps the least, instead of being the most, beautiful of the many beautiful women there. A charming touch of nature is to be detected in the delineation of what must be a family group. The mother of Caterina, herself still in the late prime of her beauty, is bending anxiously towards her daughter. A little sister, of some three or four

years old, is giving play to unbounded delight. Further back, an elder sister, whom some men might prefer to the bride, does not seem altogether delighted at her sister's "practice how to bride it." The Baucante lies by the dais, at the right of the picture.

It is scarcely fair to judge of such a picture as so confined an area; but the general impression left, after all, is that, granting the effective grouping and some fine heads, the value of this work by the successor of Piloty is not in proportion to its extent in square yards. It strikes us, on the whole, as a "painty" picture, notable chiefly for a carefully arranged composition, a matter in which the best of the North German artists have seldom been found deficient.

Turning to the general collection, we meet at the commencement the well-known name of W. Bouguereau, whose "Little Marander" (2) is helped down of the garden-wall by one of those graceful gentle-looking peasant-girls whom the artist is never tired of painting, but whom we seem, perhaps, to know well enough by this time. "The First Cigarette" (17) of J. B. Burgess, which occupies a place of honour, suggests both in figures and accessories the inspiration of Gérôme; in character and incivency of touch and treatment it is quite beyond the subjects from Spanish life by which the painter has been known hitherto; the work is most conscientious and admirable throughout. F. A. Kaulbach (son of the Kaulbachs) sends a very prettily-conceived work under the title of "The Young Mother" (8), who stands in the midst of a landscape with a background of light fleecy clouds and silver-stemmed birch trees, in keeping with the prevailing key given by her light dress and fair complexion: the success of the painting is, perhaps, rather in the total effect than in the figure. The same artist sends the "Language of Flowers," an affected representation of two sentimental young people in velvets and satins in the middle of a room with furniture and floor polished up *ad libitum*. To see what can be made, in painting, of the sentiment of artificial life, let the visitor contrast this with the work in the opposite corner, "The Sonata interrupted" (38), by Madrazo, whose remarkably original style we took note of when his first contributions were sent to this gallery two or three years since. The heroine here has suddenly received a bouquet and a note of peculiar interest; she has risen and stands with her back to the instrument, thoughtfully and half sadly: the scale of colour is most remarkable, and in itself proclaims the painter's Spanish origin, but there the harmony is completely successful, and the work is the same full, rich, and free touch in the treatment of the silk dress, the flowers, the accessories generally, which marked out the artist's works from the first as those of a thoroughly original painter. Such a work, so suggestive in association and rich in colour, is worth a score of the cottage and peasant scenes in which many artists seem to think all the interest and sentiment of life is concentrated.

Another artist who seems to be striking out a path for himself is F. A. Bridgman, whose little work in the Dudley Gallery we alluded to last week; his "Cairo Courtship" (62) is an admirable study of bright strong colour, unflinchingly dealt with. Vibert's "Unequal Contest" (at cards) should be noticed; the attitude and expression of the shrewd old monk, who has his finger and thumb on the card he means to play next, is almost worthy of Meissonier. B. J. Blommere's "Visit to Grandfather" (45) is very individual in tone and handling, and shows admirable expression and character in the heads; the figure of the mother is open to criticism; her arm is certainly too long. An admirable specimen of the drawing and modelling of arms is to be noticed in Lecoq's "Coffee-bearer" (74), which has other high merits, but unfortunately the hands are not doing their work, and the tray and coffee-pot, if held as represented, must overbalance at once, both the hands being towards the outer edge of the tray, while the principal weight is towards its inner edge: oversights such as this suffice to make one uncomfortable, even in looking at an otherwise able work. Madame Bischoff's "Good Night" (122) has all, perhaps more than all, the lady's usual excellence in tone, and broad and effective treatment of detail. Two clever little works, by J. Morgan, should be noticed, "Kept Waiting," and "The Flower Girl" (24 and 90); the former, a small interior, with a girl looking out at the window (with her back to the spectator), is as fortunate and suggestive a combination of low warm tones

as could be desired, and tells its story admirably. Thirion's "Flax Spinner" and "Young Violin Player" (100 and 40) are admirable three-quarter figure subjects, which yet seem to want interest: a young girl in a velvet dress, holding a violin, is the best, and in tone and manner has an affinity with Sant's child portraits. F. Holl's "Deserter" (109) fails to interest us, and is a singularly repelling subject. Moreau's "Idyll" (135), a kind of medley of classic or ideal feeling with rustic figures and faces, is rather interesting. Among the very small works which one always finds among modern French paintings, Chevreillard's study (6) of an old priest smirking over the handbill of the "Monarchical Candidate" (in which the words *Pays and Patrie* appear in flourishing capitals) is as admirable and full of humour as its companion, No. 7, is silly. The little painting by Castres of the wounded soldier at the door of "L'Ambulance Civile" (15), is another very clever little thing. B. Frere's "New Earrings" is pretty; scarcely up to his mark. Schlesinger's "Haidée" (9) is a very pleasing and truthful conception of the character (if it can be called one); quite radiant and thoughtless. Dicksee's "Hermione" we cannot care for; any more than we can understand the merits of a large "Boaz and Ruth," by another artist, or to what such a work owes its prominent place on the walls.

Braith's two cattle-pieces (11 and 25) are remarkable in their way, as paintings of cattle, not as pictures. Among landscapes are two by Munthe, winter scenes, of which No. 41, with a fine effect of evening light, shows much feeling. Two or three works by Leader show more tone and atmosphere than we have been used to in his (generally) very hard landscapes. Meyerheim, generally one of the best landscape contributors to the spring exhibitions in this gallery, has one good but not remarkable work, "Shade and Sunshine" (59). "A Dutch Galliot" (69), by Clara Montalba, is a fine study of transparent water. Collier's "Fine Weather on the Coast of Cornwall" (88), Baron de Lyonnecourt's "Twilight in the Marshes, Belgium" (80), Marié's "Dutch Canal" (112), are good little landscapes; J. Linnell, sen., has one in his well-known style, and a very small but really original bit of effect should be noted in "Morning after Rain" (92), by A. F. Grace. The "Peaches and Green-gages" (23), by Madame Muraton, are delightfully fresh and juicy in appearance, and, with the half-glass of Chablis flanking them, look so inviting that even the critic is disarmed at the sight.

"THE FIFTH OF NOVEMBER."

MESSRS. BROCK'S FIREWORKS FACTORY.

PIRIGIMAGES to divers shrines and places being so much in vogue, the idea suggests itself that a pilgrimage to a fireworks factory, on the eve of the Fifth of November, Guy Fawkes's day, and some account of it, may be in some degree interesting and opportune.

There are few fireworks factories in this country, if any, on as large a scale as those of Messrs. C. T. Brock & Co., of Nunhead-green; and few firms that have made pyrotechnic displays so numerous or so grand, as those of Messrs. Brock & Co. at the Crystal Palace, on the Bosphorus, and elsewhere; few, if any, that have ministered by their art to the gratification of so many millions of spectators.

Nunhead-green is a pleasant locality, that once upon a time was a little detached hamlet, composed of a few ancient buildings, some of which still remain, but have the spaces between them filled up with rows of houses of the modern time; and radiating from the green are streets and roads lined with houses that have been built, as Peter Pindar's razors were made, "to sell." In evidence of the antiquity of the hamlet, it may be mentioned that the successive occupiers of the hostelry that flanks the green have held their licence continuously for 200 years.

Our destination, however, is beyond the confines of the green, to the large pasture field of $\frac{7}{8}$ acres, in which Messrs. Brock's fireworks manufactory is situated. To designate the place a factory is to apply a misnomer, inasmuch as the work is carried on in a group of small huts, widely detached from each other, and all of the most unpretending appearance externally. Anticipating, however, inspection of the interiors, it may be mentioned that many of them are very profusely ornamented with cuttings from the illustrated papers and other engravings. These detached erections, huts, and

sheds, are twenty-five in number (Mr. C. T. Brock commenced in 1866 with four of them), of which three only, magazines, are of brick; the others have boarded ends and sides, and light roofs covered with tiles. They vary in size from 10 superficial yards of floor space to about 16 yards, with three exceptions of erections that are much larger.

Fêtes and fireworks being over for the season at the Crystal Palace, the uninitiated may be apt to suppose that Mr. Brock's occupation, if not his name, has gone for a time, and that his works are closed for a space. This is far from being the case. October and the early part of November are always a time of great pressure at the works, and in no part of the fête season is the spirit so decided as it is in anticipation of the November trade. The persons employed, about seventy in number, are generally, for the greater part, employed throughout the year, a large proportion of the articles used in displays, and other kinds of goods, admitting of their being made for stock. There are, besides, orders coming in constantly from all parts of the country for "displays of fireworks" on the occasions of births, weddings, and silver weddings, flower-shows, regattas, openings of public parks, gardens, town-halls, and various other kinds of public rejoicings and fêtes. We found a large display-order in progress for a distinguished and noble family, to celebrate an important event in the family history.

One peculiarity of these works, that can scarcely fail to strike the visitor, is the preternatural stillness that prevails. Almost every one of the huts is occupied by busy workers, but not a sound is heard until the several huts are entered, and even then the sounds are of the most subdued kind.

Reverting to the detached positions of the huts and sheds, it may be mentioned that the spaces between the erections are in accordance with the provisions of certain Acts of Parliament bearing on the subject. The charging-shed must be 20 yards apart from any other erection, and the magazines 30 yards. The Government powder-magazines are placed at 50 yards apart. Messrs. Brock keep the greater part of their stock at Barking Creek, where it is stored in barges, and whence it is brought to the works as required. All the ingredients used in firing compositions are received in a state of fine powder, so that no grinding or trituration is required in the works.

The proportionate ingredients for fireworks of various kinds we did not ask, neither did we inquire as to the manner in which certain beautiful effects are produced. If we had made the inquiries, we have little doubt that Mr. W. H. Jones, our polite and communicative guide over the works, would have satisfied our curiosity. We may here state, in brief, that the principal ingredients that enter into the firing and compositions employed, as may be supposed, in a great variety of combinations, are gunpowder and its constituents, - charcoal, sulphur, and saltpetre; and, chiefly for stars and coloured fire, oxychloride of copper, chlorate of potash, chlorate of baryta, nitrate of baryta, nitrate of strontia, carbonate of strontia, magnesium, orpiment, shellac, steel-flings, and a few other ingredients.

The first erection reached on entering the yard is the men's dressing-room, where those who are required to change their shoes for flat slippers, or to change other parts of their clothing, do so. Each man has his own place and numbered hook.

The three largest erections on the ground stand in a line at a short distance from the road. Their origin is rather remarkable. In the time of the Franco-Prussian war, the French officials required to be delivered with the utmost possible despatch 2,000,000 paper tubes of about 1 ft. long to hold cartridges. The order was given to Mr. Brock, the three wooden houses were run up in a few days, and the order executed in a remarkably short space of time. The accommodation provided for the execution of this exceptional order, is now more than is needed for warehouse-room, packing, and other uses in connexion with the fireworks business. One of these erections provides a small clerk's office, a pay-office, and a large warehouse for the storage of tube and wrapping paper, balloon paper (light, strong, and non-porous), and fancy and coloured paper of various kinds used in finishing the fireworks. Here also are thousands of Chinese lanterns, fire-balloons, and other stores. On an upper floor stock is kept of the various sizes of shells, from 16 in. to $\frac{1}{4}$ in. diameter, ready for filling; also of the little paper cylinders ready to be charged

with the ingredients that provide the stars that discharge coloured fire in so many brilliant and beautiful tints. We were informed that almost any tint could be produced, say in yellow, from the palest lemon to the deepest orange chrome, and in reds from the palest rose to the deepest crimson; but the public like the colours *pronounced*, a decided yellow, red, green, or blue, and comparatively little is done in the production of graduated shades. The second of the larger erections is a workshop in which the men are engaged chiefly in paper work, rolling the tubes for rockets, Roman candles, and other work, and in moulding the halves of shells, which, when pressed and dried, and dressed on the edges, are glued together. The whole of this paper work is of remarkable density and strength. In making the paper shells a groove is pressed into the side while the paper is in a moist state, for the passage of the igniting match to the charge of powder at the bottom of the mortar.

The third of these front erections contains a paper-cutting machine, in which, in the course of a season, brown paper, aggregating acres of surface, is cut up for the tubes of rockets, Roman candles, and other sorts. These tubes are hard rolled, and in most cases about $\frac{1}{2}$ in. thick. This room is also used for packing fireworks, and on the occasion of our visit had an immense pile of carefully-filled cases of various sizes made up and addressed, ready for despatch to agents and dealers in almost all parts of the United Kingdom. In conformity with the requirements of the railway companies, the boxes are duly labelled "Ordinarily Explosive Fireworks." Touching the "hazard" incurred in the carriage of fireworks, it may be mentioned that Messrs. Brock recently exhibited an illustration in the presence of the Government Inspector of Explosives and a number of railway managers. One box full of fireworks was placed upon the top of another, and the top one intentionally fired. The contents were entirely consumed, but the contents of the bottom box remained unscathed. As we saw them packed, and in process of being packed, we came to the conclusion that there is little possibility of their being fired, unless they are surrounded by flames, or have fire wilfully let in to the interior of the box.

In the neighbourhood of the three buildings to the front there are numerous interesting objects connected with grand displays. Amongst these are large wheels for the display of Roman candles and the intermittent discharge of rockets; pierced boxes for flights of rockets; frames for devices, and numerous devices; initial letters for celebrations, ready to be fired at almost a moment's notice, including, of course, the legend "God save the Queen" and "God bless the Prince of Wales." Here also are a portion of Mr. Brock's stock of mortars for firing shells, of which he has about 800 of various calibres. These he purchased from Government after they had served their purpose in the peace rejoicings at the close of the Crimean War. They have tubes of wrought iron, and have on the outside a close coil of stout steel wire. Some of them, that have been recently returned from Constantinople, where they were doing duty last summer, seem to have had rough usage there, that has released the wire coil.

The huts include several for mixing, several for filling, three magazines, and two or three drying-sheds. In the mixing-sheds the precisely proportioned ingredients are first mixed by hand, and are then passed through a succession of sieves, with meshes of copper wire, until the whole is thoroughly incorporated and perfectly free from lumps or inequalities. In the filling-rooms we found hard running the order of the day. Rockets have a tapering hollow core that necessitates the use of seven or eight forms of annular rammers. The powder is added in small quantities, by means of a small copper scoop. At every successive addition the rammer is introduced, and struck smartly by a heavy boxwood mallet. The rammers are also of boxwood. In another room we found a workman operating, in a wholesale manner, upon five gross of squibs locked up in a frame. He was supplying them with the exploding charge of powder.

There is little or no machinery used in the works. For pressing the "choke" upon the necks of squibs, rockets, Roman candles, &c., a somewhat rude-looking machine serves its purpose very efficiently. In the next hut the operations consisted of pressing into cylindrical form the mixtures that furnish the coloured stars, given off in such gorgeous showers from shells and rockets. The powder is in a damp state,

and admits of being hard pressed. These stars, of which millions are used in the course of the season, have hard cartridge paper cases, and have each wings of match cotton, that renders escape from ignition almost impossible.

The last sheds visited in the field were, one in which the colour stars are dried, and another in which the lighting matches are prepared. In the drying-shed the stars are spread upon trays with canvas bottoms, and the sides of the shed, which are hinged, are opened according to the condition and direction of the wind. The match-making is a process more interesting than cleanly. Cotton-wick, of about the thickness of a quill, is drawn through a paste made of gunpowder. It is rough-cleaned by hand, and then drawn through a frame laced with copper wires. When sufficiently dry it is dusted with meal-powder. It is then covered by tubes of cartridge-paper, that are made to fit into each other, and provide any length that may be required. The device of the Crystal Palace itself, and that of the Escurial, at Madrid, both of which have been fired at the Crystal Palace, had each an area of 230 ft. by 80 ft., and required about four miles of this cotton-match to light them. Every visitor to the Palace must be familiar with the lightning-like rapidity with which the zigzag lines of fire pass across the device in all directions, lighting it at every part almost in a second. The shells are also fired by the cotton match. The mortars, which have no touchhole, are placed in a position nearly perpendicular. A charge of gunpowder is laid in the bottom of the mortar, sometimes in a cone for the smaller shells. The match is carried down to the powder past the shell, in the groove provided for it; it comes over the top edge of the shell, and may be of any length, so as to admit of the mortar being fired from any distance. A match is passed also into the interior of the shell by the opening in its top. When it has reached the proper altitude it is so arranged that this match ignites the charge, bursts the shell, and produces the fiery shower of jewels and golden rain.

On a great display night it is usual to use 2,000 rockets, flights of 100 shells, 600 Roman candles, and 400 coloured lights. On such an occasion there is about $1\frac{1}{2}$ mile of rocket-stick used. These sticks are very slight, and seem to be of clean pine board, sawn one way, and cut with lance points in the other. During the last season, on several occasions more than 200 persons have been engaged in firing displays at the Crystal Palace, including 100 boys holding coloured lights as a salute. At each of these displays 13 ton of fireworks are burnt. The cascades of fire are sometimes as much as 90 ft. and 100 ft. above the level of the grand terrace.

The set pieces and devices are all, in the first instance, drawn on paper, with the colour effects intended to be produced. The design, in pieces of 12 in. square, is copied by the workmen in the wood-framing, they in their turn indicating by patches of paint on the wood the colours that are to be produced in fire. The tubes and cases containing the matter to be fired are impaled upon spikes projecting from the face of the woodwork, and the whole are united and interlaced by the firing-match before referred to. The practice of applying colour externally to indicate the colour to be given off in firing is practised almost invariably, the pointed cones of the rockets being coloured red, green, blue, &c., according to their character and contents. Mr. Brock was mainly instrumental in causing the fire-works competition at the Crystal Palace, in 1865, at which the well-known Colonel Boxer, then of Woolwich Arsenal, Dr. D. S. Price, Mr. E. Chadwick, C.E., and Mr. Edwin Clark, C.E., were the judges. Mr. Brock did not compete, but a result of his connexion with the directors was his appointment, in 1866, as pyrotechnist to the Company. The displays at the Crystal Palace have been witnessed by 2,500,000 persons, and Mr. Brock's powers as a fire-post are now pretty widely known.

St. Peter's Church, Eaton-square.—A new organ, of large dimensions, has been erected in St. Peter's Church, Eaton-square. The new organ, which is said to be the largest church-organ in the metropolis, has been built by Messrs. Lewis & Co., at their works, Shepherd's-lane, Brixton, and contains fifty-three stops, in addition to ten couplers and sixteen combination and other pedals. The estimated cost, when finished, is upwards of 2,500l.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The first ordinary general meeting of the new session was held last Monday evening at the rooms in Conduit-street, under the presidency of Sir Gilbert Scott, R.A.

A request was made that the letters from Mr. Ruskin with regard to the refusal of the Gold Medal of the Institute be then read.

Sir Gilbert Scott intimated that in the address he was about to read to them the matter should be fully touched upon.

Professor Donaldson said that there always had been a wish expressed that the correspondence between Mr. Ruskin and the Institute should be made public; but this, he thought, was not desirable.

The subject having dropped, Mr. Henry C. Harris, of the Indian Civil Engineering College, was duly elected an Associate.

Mr. Eastlake (secretary) then read a long list of donations of books to the library, stating at the same time that various sums of money had been received towards the library fund.

The President said that he had first of all a very unpleasant duty to perform. At a meeting of the Council held on the 13th of July last, it was resolved that, in conformity with bye-law 16, section 8, of the rules of the Institute, Mr. E. W. Pugin be declared no longer a member of the Royal Institute of British Architects.

Sir Gilbert Scott then read his presidential address, and at the close formally presented to Mr. Pearson, for Mr. Street, the gold medal of the Institute.

Professor Donaldson, in proposing a vote of thanks to the President for his address, said that after an involuntary absence from the Institute for some years he had the greatest pleasure in being present that evening to hear the able address of their President. They were all much pleased at seeing him looking so well after his recent indisposition. He looked up to Sir Gilbert as an example to follow, for altho' he had been made to pulling to pieces cathedrals and other buildings, and in no hands could their cathedrals be better placed than in those of their President. Sir Gilbert had alluded to the study of buildings being a great source of pleasure; they must all feel this, for who had not in his early days seen noble buildings which had inspired them, and had given them a greater stimulus to study, to devote their hours, striving to emulate those great men who had gone before. The five years he had passed abroad had been the period of the poetry of his existence. Their President, no doubt, felt this when he was abroad, and no doubt his absence gave him a stimulus to future exertions. In his address he had given a pleasing testimony to the memory of one whom they admired and loved, the late Mr. Owen Jones, than whom a better man never existed. He was possessed of great perseverance, indomitable energy, and devoted not only his time and his powers, but also a modest fortune to the perfecting of a great work, the Alhambra, which he brought to a successful issue. He (the speaker) was sure that they would all look forward to the promised memoir of the late Mr. Jones from the pen of Sir Digby Wyatt, who was at the present time unfortunately away through indisposition, but who he hoped would return looking as well as the President. Sir Digby Wyatt had an appreciative heart, a felicitous mode of giving utterance to words, and was also one who believed in following the views of the men who had gone before. He (the speaker) would not follow Sir Gilbert Scott into the question of the decoration of St. Paul's Cathedral. The word "gold" was made use of as an ornament in certain passages quoted by the President, which Professor Donaldson maintained did not occur with respect to the decoration. St. Paul's Cathedral should be a magnificent building, which should excel in ornament and decoration, and be carried out in the spirit of Sir Christopher Wren, the decoration being treated with calmness and purity. In conclusion, he begged to propose a hearty vote of thanks to the President for his address.

Mr. T. H. Wyatt having seconded the proposition, it was carried.

The President having replied, the Secretary announced that on the 16th inst. Mr. J. McVicar Anderson would read a paper on "Orwell Park Observatory." Mr. Airy, C.E., having promised to be in attendance to describe the scientific portion of the work.

Before the meeting separated, the President stated that the Council had not been at all sus-

cessful in the securing of members to read papers during the coming session; and he would urge upon those present the necessity of sending in their names early for this purpose.

THE INSTITUTE LIBRARY.

At the opening meeting of the Session already mentioned, the donations announced included some thirty-four volumes from Mr. P. C. Hardwicke, F.S.A., fellow. Another donation, from Mr. Horace Jones, V.P., of copies of medals struck by the Corporation of London, called for a special vote of thanks from the meeting. The medals commemorate noted events connected with the City of London, from 1831 to 1872, and they are now enumerated in the printed catalogue of medals, busts, stones, &c., recently compiled by the Librarian, Mr. S. W. Kershaw, M.A.

The Council has also approved the purchase of several important books from the sum given by members to the library fund, and they cannot but impress on the younger students the advantages the collection of books, prints, drawings, and photographs offers for architectural research.

As some misapprehension seems to exist as to the evening hours during which the library is open, it is again announced that the Librarian attends, on Monday, Thursday, and Friday evenings, from six to nine p.m.

RE-CONVERSION OF CROCKFORD'S.

THE NEW LIBERAL CLUB.

The building in St. James's-street, for many years past well known as Crockford's, has been purchased for the purposes of the new Liberal Club, formed under the auspices of the Duke of Devonshire and others, and is now undergoing extensive structural and other alterations, so as to adapt it to the requirements of the newly-organised club. It is only within the last twelve or eighteen months that the building was almost entirely reconstructed, and a new frontage to St. James's-street erected, in order to convert it into an auction depot for the sale of works of art and other valuable property, but the enterprise resulted in failure, and the building is now being entirely remodelled, and will henceforward be known as the Liberal Club House.

Externally the building will not undergo much change, the recently-erected new frontage to St. James's-street remaining, with the addition of a former story. The internal alterations in progress are, however, very extensive, and involve not only the rearrangement of the several apartments and decoration of the interior, but also the reconstruction of several portions of the structure. One of the heaviest portions of the structural alterations is in the basement, which is being converted into baths for the use of the members of the club. The sub-basement is also being completely rearranged, and converted into kitchens and extensive culinary apartments. This portion of the building will be connected with a house at the rear of the main structure in Bennett-street, from which there will be lifts from the basement to all the upper floors of the club. The large rooms on the ground floor, on the right and left side of the grand staircase, will be used as the morning and reading rooms of the club, and these are both being painted and decorated. Pale green will be the prevailing colour in the mural ornamentation of the apartments, with a dado in dark green carried round the walls, and round the ceilings there will be stencilled cornices and friezes. The grand staircase, the walls of which are decorated with verd antique scagliola fluted pilasters, and Sinima scagliola panels, is also undergoing restoration and additional ornamentation. The noble suite of apartments on the first floor are likewise being decorated. These apartments will form the large dining-room of the club, with two smaller dining-rooms, and also a drawing-room, and the walls and ceilings of all these several rooms are being painted and decorated with enrichments in gold. The staircases, from the ground to the upper part of the building, are likewise being painted and decorated, with a dado and stencilled border carried round the walls. When the building was converted into an establishment for the reception and sale of works of art, an extensive picture-gallery, extending to the entire width of the structure, was carried across the upper story, fronting St. James's-street. In the alterations now in progress, this apartment is under-

going a complete transformation. The central portion is being converted into a commodious billiard-room, for the exclusive use of the members of the club. The walls and ceiling of this apartment, which is 60 ft. in length by 34 ft. in width, will be decorated in *carton pierre*. The other two apartments will be billiard and smoking rooms for the use of strangers. All these several apartments will be lighted by a skylight in the centre of the ceiling, and above them an additional story or gallery is in course of erection, which will contain the bedrooms and apartments of the servants of the establishment. In addition to the different apartments above named for the general use of the members of the club, there will also be a number of private sitting-rooms, and likewise bedrooms.

The alterations are being carried out under the direction of Mr. Phipps, architect; Messrs. Newman & Mann being the general contractors. Mr. Bell, of Tension-street, Lambeth, is executing the decorations.

CONSTRUCTION OF POWDER STORES, NEAR LIVERPOOL.

A NEW Company has recently been formed, called the Mersey Ammunition and Powder Storage Company (Limited), who have just completed and opened magazines at Holpoot Gutter, on the shores of the Mersey, near Helsby, in the county of Chester.

The powder-magazine is a building 77 ft. long by 63 ft. wide, divided into three compartments. The ammunition-store is a separate building, about 100 yards distant from the magazine, and is 38 ft. by 22 ft.

They are both constructed upon similar principles, the foundations are upon solid blocks of concrete. The whole of the buildings stand upon brick pillars and arches, set in cement, the floor being 7 ft. 6 in. from the ground, so that at high tides the water flows under and around the buildings, to the height of 4 ft. or 5 ft., but they do not present any obstruction to the ebb and flow of the water. The buildings are very substantial and dry, the outer walls are built with a cavity in the centre, and the whole of the internal brickwork is covered with boarding from floor to roof, secured with copper nails. The roof is covered with boards, felt, and slates; the floors are constructed with very strong beams, the boards are fastened with oak pegs, and covered with linoleum. Ironwork has been avoided where practicable in the interior construction, and no brick or iron is visible. Both buildings are protected by lightning conductors. Corbelled platforms or balconies are carried along the full length of the buildings. A hut for the employes has been erected, and strongly-constructed stages jut out from the buildings to the edge of the creek, for the receiving and discharging of cargoes, which will be conveyed from the magazines by means of wooden trucks. The powder-magazine will hold 400 tons, and the ammunition-store 150 tons.

The Company have also built a house for the superintendent, about half a mile distant, which commands a complete view of the powder-stores. They are also erecting four cottages at the nearest village, for the accommodation of part of the men about to be employed.

The works have been carried out under the superintendence of Mr. James N. Crofts, architect, of Cook-street, Liverpool; Mr. Thomas Hughes, of Chester, was the contractor for the whole, excepting the four cottages, which are being built by Mr. Thomas Davies, of Osceot, near Chester.

THE FEMALE SCHOOL OF ART.

THE Female School of Art, in Queen's-square, Bloomsbury, under the guidance of Miss Louisa Gann and an energetic committee, continues to make steady progress. The students' paintings and drawings which received the various prizes allotted, have been on view for a couple of days, and formed a whole quite equal to any we have seen there before.

At the head of the list of successful students of the present year stands the name of Miss Alice Hanslip, who has no fewer than a dozen subjects on view, and who takes the Queen's Scholarship, value 30l., presented for competition among students of this school. Miss Hanslip, we observe from the report, received honours last year also, and achieved the distinction of contributing a life study in chalk, which was subsequently purchased by the

Queen. One of the principal pictures in the present exhibition is a Belgian woman, in peasant costume. The Queen's Gold Medal, for the best study of modelling in clay, has been awarded to Miss Susan Ruth Canton, for a copy of the "Dying Gladiator." Another exhibit in this department—a copy of the Venus of Milo—by Miss Angela Mary Marshall, is a work of much excellence and promise, though it has failed to secure a prize. National bronze medals have been gained by Miss Jessie Corcoran, for a Study of Flowers in Water Colours, and Miss Alice Hanslip for a Study from the Life.

The Queen's Prizes go to Miss Emily Austin for flowers painted in oil and ornamental analysis of flowers; Miss Susan Ruth Canton, study in modelling; Miss Ellen J. Hancock, study of flowers in oil; and Miss Alice A. Locke, study of flowers in oil.

Third Grade Prizes, in the advanced stages of painting from the life and from nature, have been awarded to the Misses Ellen Ashwell, Emily Austin, Jessie Corcoran, Alice B. Ellis, Ellen Hancock, Alice Hanslip, Anne E. Hopkinson, Agnes Jerson, Jane Lock, Charlotte Austin, Annie Russell, Julia Clarke, Hannah Cole, Gertrude Hamilton, and Susan R. Canton.

Of the sum of 10l. 10s., given by Mr. Francis Bennock, for prizes, the following awards have been made, viz.:—3l. 4s., for study of foreground in oil, to Emily Austin; and 2l. 2s., for original composition, illustrative of a poem, "Sir Ralph de Rayne and Lilian Grey," to Susan Canton; honourable mention to Ellen Ashwell. Mr. Bennock, as a further encouragement, has given a second extra prize of 1l. 1s. to the student, and also a personal commission to the two prize students, and to Agnes Jerson, to repeat their illustrations in a larger volume.

The Juvenile prizes, given by Mr. John Henderson, have been awarded to Miss Rosalie Watson and Miss Minnie Hogg.

The Gilchrist prizes elicited a spirited competition. The advanced prize of 3l. for the best outline from the round of the Laocoon, has been awarded to Ida Lovering; *proxime accessit* to Mrs. Bachmann. The Elementary prize of 2l. for the best sheet of outlines from selected portions of ornament from the flat, has been awarded to Emma Jones; *proxime accessit* to Helen Bourne and Caroline Codd. We are glad to hear that the Gilchrist Trustees have agreed to offer a scholarship of 50l. a year, tenable for two years, to female art students, to assist in enabling them to prosecute their studies at the Female School of Art. Things are evidently looking up in Queen-square.

NEW CEMETERY AT ELMER'S END, BECKENHAM.

THE laying out of the grounds of the Crystal Palace District Cemetery Company, between Anerley and Beckenham, is proceeding rapidly, and the tenders for the buildings have been published in our columns.

The chapels will be of Kentish rag, with Bath stone dressings, lined inside with gault and Pecher's embossed bricks, and with tiled roofs. The open-timbered roofs, the seats, doors, &c., are to be in pitch pine, the floors laid with Milton's tiling.

The consecrated chapel has a chance at the east end, with three two-light windows to be filled with stained glass, the subject of the centre one being the "Raising of Lazarus," the "Raising of Jairus's Daughter," and the "Widow of Nain's Son" being the subjects for those on each side. The main body of the chapel will be lighted by six two-light tracery windows, with a rose-window at the west end, all filled in with stained glass in geometrical patterns.

A tower and spire, 85 ft. high, with bell-chamber, is placed at the west end. A waiting-room, with accommodation for ladies, is also provided. Adjoining the entrance-door a covered shelter has been arranged for the undertakers' men. The style of the building is the Decorated. The other chapel has similar accommodation, but is of different design, and more freely treated. The east end is circular, with seven-light windows, and these, together with a large west window, will be filled in with stained glass.

The tower is square, and finished with a ridge roof. The lodge for the superintendent, which will be placed adjoining the main entrance in Elmers End-road, will be built in red bricks, covered with brown tiles, and with ornamental bay windows, and barge rafters at the gables.

The whole of the work is being carried out from the designs of Mr. A. G. Hennell, architect, of Bedford-row. The cemetery is the property of a limited company.

The situation, though retired, is convenient of access to a large surrounding neighbourhood, and the land stands high, with a gradual slope towards the south.

THE ARCHITECTURAL ASSOCIATION.

The report, just now issued, contains also the programme of the new session, and shows preparations for a large amount of useful work. Architectural students in London, at any rate, can no longer complain of want of facilities for a rigorous study of their profession, and we seriously advise all who have entered architects' offices to take immediate steps towards becoming members of the Architectural Association.

The following is the syllabus of papers to be read at the ordinary meetings:—

- Nov. 6. Address from the President, and Reports from the various Classes.
- Nov. 20. "Architecture and Landscape." Mr. H. H. Statham, jun.
- Dec. 4. "Periods of Transition in Architectural Style, and is the present Day one?" Mr. A. Payne.
- Dec. 18. "The Annual Excursion:—To France, August, 1874." Mr. E. Sharpe.
- Jan. 5, 1875. "Brick and Concrete Church,—St. Mark's, Battersea Rise." Mr. W. White.
- Jan. 22. "On the Influence of Tradition in the Development of Gold and Silversmith's Work." Mr. R. H. Soles Smith.
- Feb. 5. "Notes on the Architecture of the Brittany Coast." Mr. R. M. Fulford.
- Feb. 19. "Queen Anne and other Forms of Free Classic Architecture." Mr. John J. Stevenson.
- March 5. "Queen Anne and its Relation to the Gothic Revival." Mr. Lucy V. Ridge.
- March 19. "The Development of Stoneware and other Fictile Materials for Architectural Purposes." Mr. John Sparkes.
- April 2. Members' Notice.
- April 16. "What a Student's Course in Architecture should be." Professor T. Hayter Lewis.
- April 30. "Timber Houses in Norway and Sweden." Mr. F. E. Thicke.
- May 14. General Business Meeting. "Valuation of Property." Mr. Banister Fletcher.
- May 28. "Remarks on the Detail of Cast and Wrought Iron Girders, and their Application to Building Purposes." Mr. Richard Moreland, jun.
- June 11. [Nomination of Officers.]
- "Thoughts on the Arrangement and Materials of Town Churches." Mr. James Brooks.
- June 25. [Election of Officers.]
- "The Grammar of Architectural Ornament." Mr. H. H. Stannus.

The new session was opened last week with a *convocation*. The president, Mr. G. H. Birch, having delivered his address, the prizes won by the competitors in the different classes were distributed as follows:—In the class of design, 1st prize, Mr. P. J. Marvin; 2nd prize, Mr. L. A. Shuffrey; honourably mentioned, Mr. A. Ingleton; in the class of construction, Mr. Hemmings; in the study of colour decoration, Mr. Scott; in the Architectural Union Company's examination for measured drawings, Mr. E. J. May. Other prizes were taken by Mr. G. Langford, Mr. W. T. Brown, Mr. Pratt, Mr. W. S. Jackson, Mr. Tanner, &c. After the distribution, Professor Kerr, Mr. Spiers, and Mr. Edis briefly addressed the meeting.

WATFORD PUBLIC LIBRARY AND SCHOOLS OF SCIENCE AND ART.

The formal opening of the Public Library in Queen-street, Watford, by the Earl of Verulam, has taken place very successfully. The building had been well arranged for the occasion. Decorations of plants and flowers met the visitor at every turn, and the lecture-hall, where luncheon was laid out, had plaster casts placed in different positions, adding to the general effect. At the upper end was a trophy of flags. The elementary room, which will accommodate forty or fifty students, will be used generally for the evening classes and also as a lecture and class room. The antique room is furnished with a large number of casts supplied by the Department agents. There are capitals and bases of the orders of architecture. The painting-room is used almost exclusively for the morning pupils.

The meeting for the distribution of prizes to the successful competitors of the School of Science and Art took place in the Agricultural Hall, on the evening of the same day. The Earl of Clarendon presided. There was a large and attentive audience.

The building has been insured in the Liverpool and London and Globe Insurance Office for 2,000l.

Several valuable presents have been made to

the library, which already contains about 700 volumes.

During the year classes in connexion with the School of Science and Art have been conducted in Building Construction under Mr. W. H. Syme; in Magnetism and Electricity under Mr. Fairman; and in Drawing under Mr. R. W. Hinton, B.A.

The Art night-class has been raised to the rank of a School of Art, and takes its place among the recognised institutions of the county for high art education. Dr. Puckett, late head-master of the Leeds School of Art, has been appointed head-master.

THE LIVERPOOL DOCK BOARD AND THE NEW LANDING-STAGE.

At the last weekly meeting of the Mersey Docks and Harbour Board, the Works Committee reported that they had received, through the engineer, a letter from Messrs. Brassey & Co., as to the progress being made in the reconstruction of the landing-stage. The report had been considered satisfactory. The same committee recommended that iron should be substituted for wood beams in the construction of the Landing-stage, for the South Reserve, at an estimated additional cost of 4,000l. Mr. Hornby, in moving the confirmation of the committee's proceedings, according to the *Journal*, said that the South Reserve Stage was that which the Board were having constructed in accordance with their Parliamentary obligations, at the Low-water Basin. The original plan had been to construct the stage with wooden dock beams, but a question had arisen as to whether it should not be made the same on both sides of the water, and the committee thought it desirable not to make a distinction, but to have both stages constructed with iron dock beams. As to the extra cost, something would be gained in the greater durability and in the greater safety arising from the construction being of iron. With regard to the progress of the reconstruction of the landing-stage on the near side, which was alluded to by Mr. Spence at their last meeting, a report had been made by Messrs. Brassey to Mr. Lister, and forwarded by the engineer to the committee; in which they stated that they were using all possible despatch in carrying on the work. The committee thought the Board might safely leave the matter in the hands of Mr. Lister and Messrs. Brassey, and the committee's proceedings were confirmed.

ST. LUKE'S, MIDDLESTOWN, YORKSHIRE.

MIDDLESTOWN is situate on an eminence, and is reached from Horbury Bridge by a pleasant stretch of highway, five miles from Wakefield. Mr. W. Brooks, who we are informed, has largely contributed to the proposed erection, was presented with a silver trowel, and ebony mallet with silver rim, by the rector. The stone was then laid by Mr. Brooks, who said:—"In the faith of Jesus Christ we place this corner-stone, in the name of God the Father, God the Son, and God the Holy Ghost." In the cavity of the corner-stone were placed papers and the following MS.:—"St. Luke's Church, Middlestown. To the eternal glory of God, the great Architect of the Universe, in the faith of Jesus Christ. The foundation-stone of this Church was laid by Wm. Brooke, Esq., and J.P., of Northgate Mount, Honley, October 17th, 1874. The Right Rev. Robt. Bickersteth, bishop of Ripon; Rev. J. J. Brooke, rector of Thornhill, and rural dean, donor of the site; Rev. Henry Greene, curate in charge; Revs. T. E. Hargreaves, M.A., F. R. Grenside, M.A., and R. S. Jukes, assistant curates in the parish of Thornhill; Mr. F. R. N. Haswell, F.R.I.B.A., North Shields, architect; Mr. Robert Kilburn, Thornhill, contractor for foundation." The new church will form a conspicuous object, and when completed will be easily seen from the surrounding parishes. The structure will be in the Early English style of architecture, and will consist of nave, north and south aisles, chancel with apsidal end, organ chamber, choir and clergy vestries. A tower will be subsequently added to serve as a porch at the west end of the south aisle. The nave will be divided from the aisle by an arcade of four arches. The roof is intended to be arched in wood in a trefoil form, the chancel having braced spars. Accommodation will be

provided for upwards of 400. The contract for the foundation has at present only been let, but it is expected that the entire edifice will cost about 3,000l.

SCHOOL BOARD SCHOOLS.

South London.—The Statistical Committee of the Metropolitan School Board deem that another school is needed, between Wandsworth-road and Clapham-rise, to meet a deficiency of 478 school places, and additional population settled since their calculation. There are two inspected schools in sub-division CP, but only one infant school in CQ, and application is to be made to the Education Department for authority to build a school for 500 children in the latter sub-division. The Works Committee are then to secure a site and erect a school, with power of enlargement. Besides these several new schools are recommended in Lambeth, with authority from the Education Department for 500 children in sub-division B, where the calculated deficiency was 114; for 500 in AE; for 500 in BK, deficiency 278. In Southwark additional accommodation is to be applied for, and authority being given, the Works Committee are to procure sites and erect schools as follows:—In sub-division A, for 1,000 children; in B, for 500; in C, for 500; in G, for 720; in AE, for 1,000; in AC, for 1,000; in AE, for 750; and in AG, for 720.

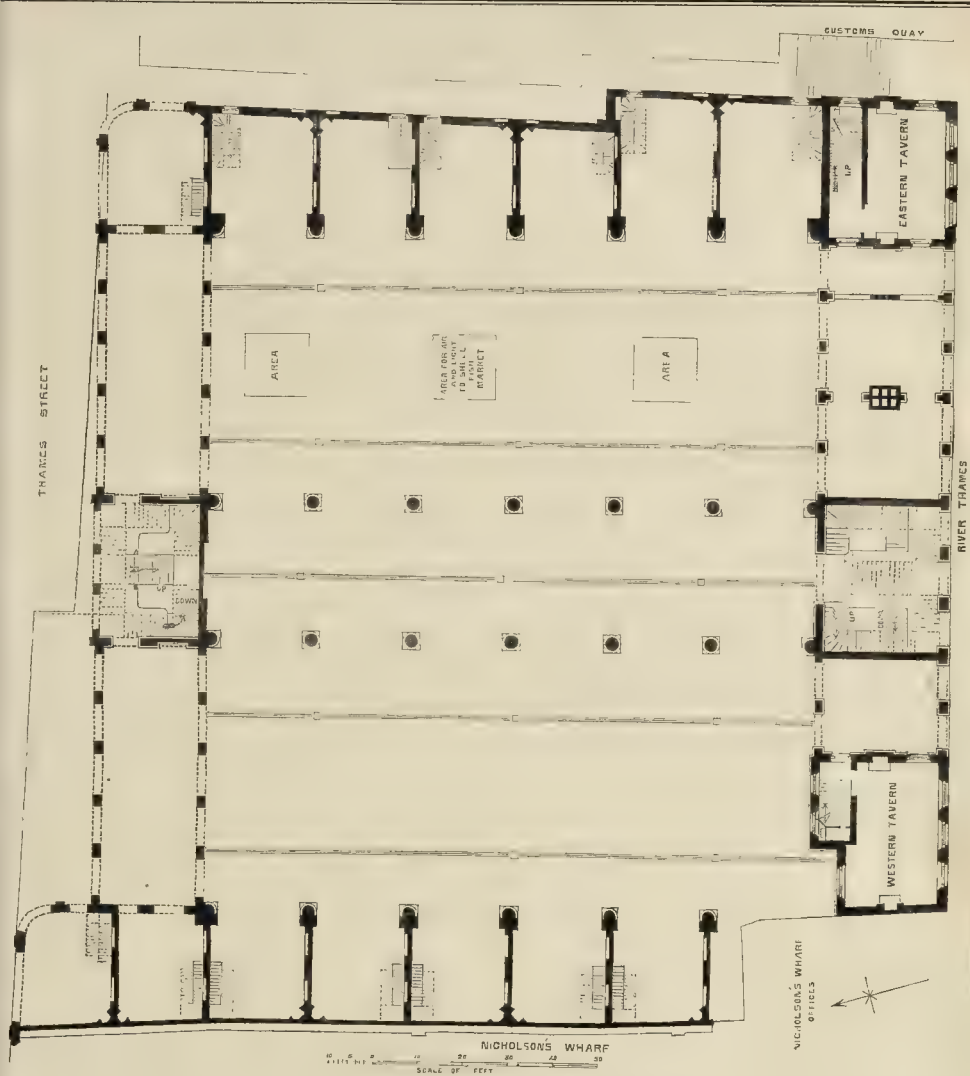
Notting-hill.—New School Board schools have been opened by Sir Charles Reed, at Saunders-road, Notting-hill, close to the Uxbridge-road Railway Station. The schools have been erected to accommodate 200 boys, the same number of girls, and 300 infants. The amount charged by the contractor, Mr. Wigmore, of Fulham, for the erection of the schools was 7,000l. The whole of the construction of the building has been carried out under the direction of Mr. W. De Gough, clerk of the works, and Mr. Facer, the foreman. The play-grounds, it may be stated, are more than usually spacious.

Brierley Hill, Kingswinford.—New School Board schools have been opened in Moor-street, Brierley Hill. The style of architecture is fourteenth-century Gothic, and the materials used in the construction are red bricks, relieved by Codsall stone dressings. The buildings comprise a boys' school, a girls' school, and an infants' school. Each school has a large class-room attached; and there are besides a Board-room, a clerk's office, a library, lavatories, cloak-room, &c. The residences of the teachers occupy one corner of the ground, and the architecture of these is in keeping with the style of the schools. The building has been erected in accordance with the plans of Mr. Thomas Smith, of the Mount, Stourbridge; and the tender accepted for the work was that of Mr. C. V. Horton.

Llangollen.—The schools lately erected at Llangollen, by the School Board of the town, have been opened by Mr. G. Osborne Morgan, M.P. for Denbighshire. The style of the building is simple Pointed Gothic, and the materials used are red Penryn bricks, with white bricks inter-leaved with red from the jambs and quoins. Each division has separate lavatories, and the arrangements for heating and ventilation are of approved construction. The roofs are of Festiniog blue and Carnarvonshire red slates, arranged in bands. The total cost of the site and buildings is 1,489l. The buildings are intended to accommodate 300 scholars. The architect is Mr. Richard Owen, Liverpool; and the builders are Messrs. Ellis & Jones, Towryn.

Goole.—On Monday the foundation stone of new schools, to be erected in Alexandra-street, was laid by the chairman of the Board, Mr. John H. Rockett. They have been designed by Mr. Watson, of Wakefield and Doncaster, and the contractor is Mr. Elliott, builder, of Goole, the ironwork being entrusted to Mr. Richard Cooper, also of Goole. The design consists of three large school-rooms, with class-rooms, &c., namely, boys' department, school-room 71 ft. by 20 ft., and two class-rooms each 20 ft. by 15 ft.

London Foresters' Asylum, Bexley Heath, Kent.—A contract was entered into with Mr. Vickery, builder, of Belvedere, Kent, on the 10th of October, for the erection of the second portion of the west wing, for the sum of 655l., and 30l. additional for the boundary wall. The brickwork of houses is commenced. Mr. W. F. Potter is the architect. We gave a view of the asylum some time ago.



PLAN OF NEW BILLINGSGATE MARKET.

NEW BILLINGSGATE MARKET.

We add to the particulars and view of the intended Billingsgate Market already given* a plan of the ground floor. The work is being done by Messrs. John Mowlem & Co., builders.

THE ACCESSORIES OF THE BILLIARD ROOM.

On previous occasions we glanced at the construction of billiard-rooms and billiard-tables, and we now give a few particulars respecting the subordinate though still indispensable accessories of the game—beginning with the “cue” and the “balls.” Simple and familiar as the subject may appear to some of our readers it yet affords considerable scope for disquisition, particularly if we began to enter on the comparative value of the different sorts of timber, and the numerous varieties of ivory of which these accessories are

composed. Such, however, is not our purpose; we can only profess to supply a few constructive hints, the best we can, in the briefest manner possible.

It seems to be admitted by all good players that the best form of a modern billiard-cue is a slender tapered rod of timber, from 4 ft. 6 in. to 5 ft. in length, varying in diameter from 1 in. to 1½ in. at the larger extremity, and from ½ in. to ¾ in. at the point. The long cues (called “butts” and “half-butts”), which are used with a “rest,” or artificial bridge attached to a similarly tapered rod, are usually from 6 ft. 6 in. to 8 ft. long, proportionably stouter in their make and heavier in their weight. It seems also to be generally admitted that the best sort of timber for a good serviceable cue is thoroughly seasoned ash. We have seen, of course, many varieties of timber imported into the fabrication, including lance-wood, hickory, box-wood, Brazil-wood, and others; but, as we have before pointed out, nothing is so useful and so enduring as ash, and, we may add, of course, Scotch

ash. American ash has been tried and found wanting, as being too light; and indeed we believe any other variety of the European *fraxinus* than the Scotch makes the cue too supple.

The best Scotch ash trees, again, are those which are grown upon rock, and which, from this cause, are long in arriving at maturity. Some of the best Scotch ash trees, we remember to have been told by a good forester, are grown on the Earl of Morton's estate at Dalmahoy (Ayrshire, however, is the most prolific county), when they are found to have reached their full perfection. For our purpose, or indeed for any of the numerous purposes to which this valuable timber is applied, the root cuts are to be invariably preferred; and with the view of preserving the form and direction of the fibre, it has been recommended that the planks should be split and not sawn; although a well-known maxim in woodcraft, we may suppose in practice that this salutary rule is often departed from, but certainly never without damage to the

* See pp. 898 and 899, ante.

article which it is intended to produce. The seasoning cannot be too much insisted on. All the planks should be stacked at least twelve months before being out to the smaller scantlings, and all good manufacturers accordingly possess large stocks of the timber. With regard to the finishing of the cue, we may explain that great ingenuity and experience are necessary to the proper execution of the bench work; for perfectly true lines in the shaping of a cue are absolutely indispensable, and it is no such easy process for even a skilled artisan to plane a circular taper perfectly true. Even after this a twist may be observed. Besides there must be a certain (sometimes indefinite, but always necessary) balancing of parts. Some cues are longer than others; some butts are heavier than others. Certain of our best players require a greater weight in hand than others, who prefer a lighter description of butt. For this reason many of our finest cues are elaborately loaded, and at the same time ornamented at the end by the addition of 12 in. or 18 in. of boxwood, rosewood, or ebony, which is often beautifully incised or inlaid with mother of pearl or silver.

We cannot lay down any precise rule as to weight and dimensions, but we have uniformly observed that the best players preferred the plainest cue, provided it were perfectly straight and properly balanced. The "butt" or handle should be well flattened on one side (to the extent at least, of one-third of the diameter at the base, diminishing to nothing at the distance of about 12 in.), in order that it may be used to strike with when necessary; but the other part of the cue should be quite round, and taper, as we have said, finely and gradually to the point. Here it must be confessed the interest of the cue must culminate, for unless the point of the timber rod be finished with an appropriate "tip" or buffer (for it plays the same part in a collision), the cue, however splendidly made, would turn out to be utterly useless.

The "tip" of the cue is in fact a question of great nicety and importance. Captain Crawley, who has given much attention to the subject, prefers that a piece of solid ivory should be inserted between the extremity of the timber and the layers of leather. The necessity of the buckskin is at once apparent, since it would in the first place inevitably destroy the balls sooner or later if the impact were made with hard wood; and secondly, it would deprive the player of that elasticity of touch on which all good strokes depend. The best "tips" are usually made of two layers of different kinds of leather, hard next the wood of the cue and springy at the top. What are denominated "French tips" are in considerable request for fine play; and these are made in nearly the same manner as those which we must recommend with the hard leather foundation.

During play, of course, the cue "tip" should always be properly "roughed" and well chalked in order to prevent it slipping off the smooth surface of the balls. The chalk should be fine, quite free from grit, and neither too hard nor too soft. So produced, a good billiard cue is almost indestructible; it also improves with use; indeed, a favourite cue may be re-tipped and kept in order for any length of time. Every well-appointed billiard-room should possess a cue-rack—a movable one is best, and that of a circular design the most elegant—containing at least a couple of dozen ordinary cues of different sizes. In addition to this there should be a rest, a half-but, and long rest, and a spider for pyramids. The marking-board is an indispensable adjunct; and a compound board is invariably the best, being better adapted for the marking of various games. We have, however, previously said enough about the furniture and paraphernalia of the billiard-room.*

We must now say a few words about the balls, which are, or ought to be, made of the finest sort of ivory, turned from the solid, perfectly spherical, and highly polished. With two exceptions, also, they are all curiously dyed. When we say the finest ivory, we must be understood to speak with some degree of emphasis; for there are different qualities, as some of our readers may know to their cost, and the distinction is sometimes not very easy to make out. In fact, the term we apply to that solid white translucent substance "ivory," is somewhat too indiscriminately applied to several varieties of osseous matter. In the first place, and most notably, we have the tusks and teeth of the elephant; also the teeth of the hippo-

tamus, or river-horse; and even the teeth of the walrus or sea-cow! There are likewise several different kinds of fossil ivory and vegetable ivory; and we have seen or heard of billiard-balls being turned out of the whole of these spurious varieties. This, of course, is just one form of adulteration, to use a mild phrase, chiefly practised by inferior manufacturers, and by them generally confined to the pool and pyramid balls, which are dyed in various colours. Unquestionably the finest and most valuable ivory, and that alone from which a good billiard-ball should be formed, is what is obtained from the tusks of the African elephant; and next to that, also the tusks of the Indian elephant—by preference in this case of the breeds which exist in the Archipelago. This ivory is easily distinguishable from all inferior sorts, and of ordinary bone, by its beautiful texture of rhomboidal network, and also from its character of transparency. The finest ivory is often more transparent than superfine paper of the same thickness; and, moreover, if we place a thin transverse section under the microscope, we immediately detect a symmetrical series of curvilinear lines diverging from the centres, and interlacing each other exactly like the engine-turning of a watch.

The finest ivory also possesses the highest specific gravity,—in other words, the finest ball is the heaviest one, bulk for bulk, and therefore the hardest, because of its greater density. The finest ivory has likewise something of a transparent yellowish tint (which is, no doubt, due to the oil it contains), but this changes gradually to a beautiful and permanent white. Inferior ivory, on the contrary, when first cut, is perfectly white, but becomes discoloured and dingy with age and exposure. The best billiard-balls, therefore, are made from the finest ivory, and turned from the solid. Of course, the points of the tusk, up to 2 in. or 3 in. diameter, are alike the most suitable for the purpose, and the most economical. They should always be so turned that the centre or core of the tusk is exactly in the centre of the ball, in order to avoid the slightest bias; for if they are not so made, and not perfectly spherical, they will not roll correctly, as our readers will easily understand. Indeed, the turning of a perfectly spherical billiard-ball is one of the nicest processes of the mechanical arts. The late Mr. Holtzapffel, was, we believe, the first to bring it to something like perfection, by simply reversing the ball in the chuck of the turning-lathe some four-and-twenty times before the process of polishing. Messrs. Borroughs & Watts have improved on this by introducing machinery, which turns out the balls, not only perfectly spherical, but corresponding in weight almost to a single grain. The regular billiard-balls are 2½ in. in diameter. For pool and pyramids the same or smaller balls are generally used; while for the French cannon game, balls from 2½ in. to 3 in. in diameter are frequently made.

The colouring-matter in use for staining the ivory red is, we believe, either carmine or vermilion, and for the pyramid-balls different pigments, according to shade. The balls are usually dipped into a slightly acid solution, then dried in fine sawdust. A good deal of mystery is preserved about the dyeing of balls, which we need not at this moment stay to unravel.

What we have said with regard to seasoning the ash for the cues applies with still greater force to the ivory for the balls. The best makers allow their stock of ivory, cut into rough squares and other pieces, to mature for years before turning out the balls. Indeed, after every cue has been taken, a billiard-ball is still liable to be affected by atmospheric changes; and has been known to split with exposure to a severe frost. Billiard-balls ought to be regularly washed with soap and tepid water, and as much care should be given to them as possible. Indeed, the utmost possible care is necessary in the treatment of billiard-balls, a circumstance which is too much neglected, we are afraid, during the game. Those who have watched the tremendous force with which the balls are sometimes struck into the pockets will have noticed the severe concussion between them and the corners of the table, often causing an indentation, and sometimes a chip. This is now to some extent obviated, and should always be guarded against, by channelling the sharp corners of the table-legs, and even by interposing a morsel of sheet India-rubber, at the point of contact.

The proper complement of balls is two sets of three each for billiards; a dozen of diversified colours for pool (put into a pool-basket); together with a full set of pyramid-balls in a triangular

box. We have only to add that the Russian and American games may be played with the pool-balls, while for the French cannon game, as we have mentioned, balls from 2½ in. to 3 in. diameter are used, but seldom needed in this country.

In concluding these brief and imperfect notes on a billiard-room, with its accessories and surroundings, we have only a few words to say. There are lessons we may derive from its study, in the actual philosophy of construction which concern all who are interested in the progress of the useful arts. The whole of the processes involve the utmost exactitude. The room itself must be well heated, lighted, and ventilated. The necessary conditions of the table are security in its foundations, rigidity in its structure, and elasticity in its cushions. It must be straight in its lines, and level on its surface. The indispensable qualities of a cue are that it should be straight and well balanced; and, finally, those of a ball, that it should be sound at the core, and perfectly spherical.

RYDE WATERWORKS ASSESSMENT.

THE MAYOR, ALDERMEN, AND BURGESSSES, APPELLANTS; THE GUARDIANS OF THE POOR FOR THE ISLE OF WIGHT, RESPONDENTS.

This case, which has created some local talk, was heard at the Hants Quarter Sessions, on Tuesday, October 20th. Some months since the council appealed to the assessment committee at Newport against the increased assessment of these works in the parish of Ryde, viz., 300l. to 1,100l., but the committee, after hearing the evidence of the surveyor, Mr. Livezey, of Ventnor, and Mr. Blake, solicitor, decided that there was no case for alteration. Thereupon the council resolved to appeal at Winchester, believing that justice would be done there.

Mr. T. Hawksley, C.E., past-president of the Institution of Civil Engineers, London, was then called, and stated that he had had very large experience in the construction and valuation of waterworks, extending over many years. He had inspected the Ryde Waterworks, in company with Mr. Stayton, the borough engineer. He had received the fullest particulars from him of all details in the original cost and working expenses, which he believed to be very reasonable, and reliable. The proper method of assessment was to assume what the works would be let at to a hypothetical tenant. The present rent was at 8d. in the pound; he therefore assumed that the tenant would collect that amount, which, with the out-districts, trade purposes, shipping, and building, realised (after deducting voids, &c.), 2,808l. The disbursements in salaries, management, working expenses, and rates and taxes deducted from it, left 1,065l. as the net rental; and after allowing for interest on tenants' capital, risk, trade profits, and renewals, it left 300l. as the net rateable amount for all the works in the three parishes, which are rated at 1,095l. under the new assessment. If, however, it was held that the full schedule prices of 9d. in the pound were to be charged, it would increase the value by 263l. The proper allocation to Ryde parish would be fifteen twenty-sevenths of the whole; because, taking the value of the works at 27,000l. there were 15,000l. value in Ryde parish. Such was, in his opinion, the only fair mode of apportionment.

Mr. George Henry Stayton, C.E., surveyor to the borough of Ryde, was called, and proved that the figures supplied to Mr. Hawksley by him were from actual fact, also that he agreed on all points with his evidence as to the rateable value of the undertaking. He was very familiar with all the details of cost.

Some rather weak evidence was offered on the other side.

The decision was given on the 22nd of October, viz., that the assessment of the works in Ryde parish was reduced 625l., i.e., to 250l. net respondents to pay costs. This gives a saving of 75l. per annum.

Ely Cathedral Restoration.—In accordance with the resolution passed at the Ely Diocesan Conference in July, a committee met at Cambridge last week, the bishop in the chair, when it was determined to take steps to raise subscriptions for the rebuilding of the north-west transept of Ely Cathedral, by an appeal to the diocese and the country generally. The estimated cost of this work is put by Sir Gilbert Scott at between 25,000l. and 28,000l.

* See pp. 561 and 720, ante.

PUBLIC WORKS ABROAD.

FROM a batch of Foreign Office reports, which have just made their appearance, we glean some information of interest to our readers. Referring to the public works, either completed or in course of completion in Venezuela, we learn that three new bridges have been lately built in Caracas, and are of solid, durable construction. A new Hall of Congress, and a University, described as, architecturally, of very handsome design, are also being built in that capital; while extensive works are in progress for the purpose of bringing an additional supply of water to the town from a distance of thirty miles. A new railway, to be about sixty miles in length, is also being constructed, under the direction of English engineers, for the purpose of connecting the copper-mines of Arica, in the State of Tarapacá, with the port of Tacaca, a branch-line to the town of San Felipe being in contemplation. Surveys for a railway, from Caracas to the neighbouring port of La Guayra, are also being made by English engineers, the road thither having been in the meantime repaired. Many new roads into the interior have been projected; some, indeed, have been actively commenced, and plans are under consideration for the canalisation of some of the principal rivers of the Republic. With respect to public works in La Guayra, it is mentioned with satisfaction that a great deal, comparatively speaking, has been effected in this direction of late. Public offices and buildings have been and are being renovated, whitewashed, painted, or repaired, on which account the expense this year has amounted to nearly 3,000 dollars, while last year the expenditure under this head was over 7,000 dollars. A railway, as noted above, to connect this port with Caracas, has been taken in hand, English engineers being specially brought out for the purpose of superintending the works. On this account the expense this year is stated at about 17,000 dollars. The roads of the country have also been carefully attended to, and repaired where needful, considerable sums having been expended in that way.

With regard to public works in Turkey, the information given is not of a very copious character, tending to the belief that there is not much enterprise in this respect manifested just now in that country. From Aleppo we note that frequent changes of Governors-General, and the loss of a very able Engineer-in-Chief, Mr. Haddan, who has been promoted at Constantinople, without having a successor appointed, have had the unfortunate effect of putting a stop in all public works which were being carried out in the neighbourhood. Railways, carriage-roads, draining of pestiferous marshes, opening of water-conduits, and other schemes of a similar character have all been abandoned in so far as active steps for their construction are concerned. Intentions of working them are still professed, but as to the reliance which can be placed on such vague purposes, different opinions are entertained. The necessity for the execution of many improvements is urged as being very pressing, but this fact seems to have little influence upon the minds of the authorities. As an instance of the apathy of the authorities in this way, it is mentioned that the carriage-road between Jaffa and Jerusalem has been allowed to fall into such disrepair that none but the roughest kind of vehicle can traverse it. At one time there was some talk about the construction of a line of railway, but this has now altogether died away, and the road continues in the same wretched condition, while the other roads of the district are equally bad. Credit, however, is assumed in that two lines of telegraph *ad Beyrout and Alexandria* respectively, connect Jerusalem with Europe, and an extension has been made to Bethlehem. Complaints are also made that the roads in the neighbourhood of Rhodes are in a most impassable condition, notwithstanding that regulations have been issued on the subject.

In the reports referring to America, we notice that incidental allusion is made to the rebuilding of the business part of Boston, and to the public works of the city and state. The large section of the commercial portion of the city has been almost entirely rebuilt in a more expensive manner than formerly, and handsomer, more commodious, and safer buildings have been erected. At the same time, seventeen streets have been widened, four considerably extended, and a new square laid out, at a cost to the Corporation of about 5,000,000 dollars, an outlay which, it is said, will be amply compensated by the in-

creased facilities which will be afforded. It is further mentioned that the progress of the Hoosac tunnel, which will remove the great natural barrier to a direct railway communication between Boston and the west, is satisfactory. As far back as the year 1825 it was contemplated to open a passage for a canal through the Hoosac mountain, but it was not till 1854 that the work of tunnelling was undertaken, under a concession to the Troy and Greenfield Railway Company. In consequence of the difficulty of raising capital, very little progress was made by this company, which finally abandoned the enterprise in 1861, when the State took charge of it, and in October, 1863, resumed the work. In 1870 a contract for the completion of the tunnel and the laying of a double railway-track was concluded with Messrs. Walter & Francis Shanley, well-known Canadian engineers. Under this contract the work was energetically carried on, with what result our readers are aware. The total length of the tunnel is 25,031 ft., or 49 ft. less than three-quarters of a mile, and its cost to the State, exclusive of approaches and other outside work connected with it, is estimated at about 10,000,000 dollars.

EFFORTS ON THE CONTINENT FOR IMPROVING THE DWELLINGS OF THE LABOURING CLASSES.

WRITING to members of the Society for Improving the Condition of the Labouring Classes, Mr. Henry Roberts, F.S.A., says,—The increasing importance with which this subject has been regarded in various European countries may be seen from the following resolution passed at the Congrès de Bienfaisance convened in Brussels in 1866 under Royal authority, when about twenty delegates resolved unanimously:—

"That it is of public utility that the working classes should be enlightened by all possible means with reference to the improvement and maintenance of their homes in good order; that the instruction of their families should comprise all that which relates to the cleanliness of their persons and dwellings, as well as to the benefits arising from good ventilation, the evils resulting from damp, and the neglect of sanitary measures. Lastly, that the study of the science of preserving health is one which should be rendered accessible to all."

Since the above-mentioned Congrès de Bienfaisance took place, large piles of workmen's houses have been built in Belgium. The subject was brought before the Italian public by the late Marchese Carlo Torrigiani, one of whose powerfully-written pamphlets I received from him whilst living at Nervi, near Genoa, in 1864. The Marchese was at that time at Turin, where, as a senator, he had the opportunity of urging his views on this important subject, in those quarters where they were most likely to prove effectual. His work contained ample information relative to the operations of our society, from the time of its foundation in 1844, giving also the number and description of the buildings it had erected. But it was not by such publications alone that he proved the depth of the conviction he had often expressed to me, that on the state of their dwellings depends in great measure the well-being of the labouring classes. In Florence, the city in which was his ancestral home, he promoted and carried successfully into operation a building society, which has erected a large number of excellent houses for workmen, mostly four stories high, dispersed through the city and its suburbs. Since his lamented decease in 1865, this true philanthropist has been succeeded in the interest he took in these works by another nobleman, the Marchese Guerinoni.

In the hope of assisting to diffuse amongst the Italian labouring classes, as well as among some in a higher position, more correct views on a subject, for the wider spread of which in England we are greatly indebted to our noble president, I published, a few years since an abridged Italian edition of one of our well-known works, "Home Reform; or, Advice to the Labouring Classes," originally read as a lecture at Harrow, afterwards published by the Society when its scientific accuracy had been kindly tested by two learned professors.

Last year an enlarged edition of this work attracted the notice of the Syndic at Rome, who, unknown to me, ordered 300 copies of the work for distribution in the public schools of that city. (The work is sold at the nominal price of 10c., about 1d.). Such a proof of impartiality was truly worthy of a Government,

which studies the welfare of those entrusted to its care.

Two acts of princely liberality have not long since been much noticed in Genoa.

The Duchess of Galliera and her son, besides presenting to the city of Genoa the well-known splendid Palazzo Rosso, have also appropriated the sum of two millions of francs, for the construction of houses to be let at the lowest possible rent to poor and honest artisans. The spot chosen for the site of these buildings is Bisagno, and the houses to be erected at a cost of about 100,000 francs are twenty in number. Suitable houses for the labouring classes have also been erected in Modena and Parma, as well as in other parts of Italy, which are traceable for their origin to the same source.

Nor have similar efforts been confined to Europe. The re-publication in the United States of America of some of the works referred to, has been followed by the construction of large piles of workmen's houses in New York, by Mr. Stewart, a rich merchant of that city; and in Boston by Mr. Lawrence, American Ambassador in London during the first Great Exhibition in 1851, with whom I have often conversed on this subject. Nor can I omit to mention Mr. Peabody's generous liberality in placing an enormous sum of money in the hands of trustees, one of whom is the present Earl of Derby, in the expectation that it would be employed in constructing workmen's houses in London, in which much of his gigantic fortune had been acquired.

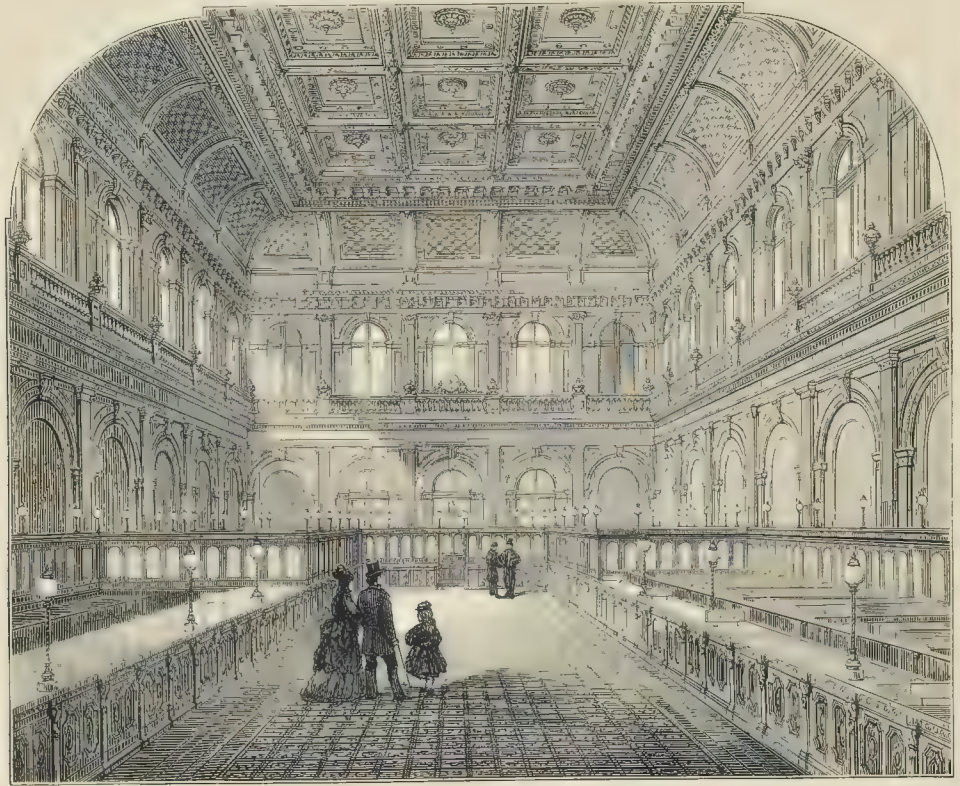
RAILWAYS IN NEW ZEALAND.

NONE of our Colonial Governments exhibit in a higher degree a spirit of enterprising liberality, with a view to the development of the resources of the colony than the Government of the Great Britain of the Southern Hemisphere, as New Zealand has sometimes been designated. Government and Government officers have their hands quite full with railway construction and railway surveys, road-making, water supply to the gold-fields, "prospecting" for coal, and other public works. Capable engineers for the supervision of public works are scarce, and their services at a high premium. To meet the demand for such enlightened service, a corps of Engineer cadets has been formed, and has been found to work well. The candidates for admission to the corps must be not less than eighteen years of age, and are required to pass a Civil Service Examination. They are paid 80l. per annum for the first year, and have a rising salary to the fourth year, when they are, if competent, promoted to the rank of Assistant Engineer.

The Colonial Engineer-in-Chief is showing great activity in pushing forward the railway works in progress. Messrs. Brogden, for instance, are offered a bonus of 500l. per month for every month between the time at which the Auckland and Onehunga is actually completed, and the date for completion fixed by their contract. Favourable reports are given as to the progress made with many other lines already let to contractors. The Waitara and New Plymouth line, also in Messrs. Brogden's hands, is reported to be "progressing satisfactorily." The first section of the Wellington and Masterton line completed by Messrs. Brogden, and maintained by them for three months, has been taken over by the colonial authorities. The above relate to the Northern Island. In the Middle Island active progress is being made with the Pictou and Blenheim, the Nelson and Foxhill, the Greymouth and Brunner, including a suspension-bridge over Grey River, the Canterbury main line, and others.

The lines authorised in the colony aggregate 1,010 miles 48 chains; and the appropriations by the Colonial Government for railways, including 10,000l. for surveys, amount to 5,575,400l. Of the aggregate authorised lines, 148 miles were open at the date of the Engineer-in-Chief's last report; on 104 miles the permanent way was being laid; and 422 miles were under contract, or 674 miles in all, open or in progress; the remainder had still to be let. The roads in progress are very numerous, and embrace extensive aggregate mileage. Some of the coal-fields await only the completion of the engineering works in progress to commence their full development. In a few years it is expected that the colony will be, from native sources, independent of imported supplies of coal.

There are 1,241 miles of telegraph poles, and 2,523 miles of wire in the colony. Upon these 125,738l. have been expended.



NEW PROVINCIAL BANK, BUENOS AYRES.—INTERIOR OF PUBLIC SALOON.—MR. HENRY HUNT, ARCHITECT.

NEW PROVINCIAL BANK, BUENOS AYRES.

OUR news from this city of late has been chiefly of revolution and disorder. By way of contrast, we give our readers a view of the principal apartment in the new bank buildings lately erected there in lieu of others found to be too small.

During the administration of Governor Alsina, in the year 1866, the first steps were taken in the matter; but it was not till April, 1869, that the works were begun. The present building stands on the site of the old one, and as it was essentially necessary not to interfere with the general business of the Bank, it was deemed prudent to do the work by halves, so that while one part was being used, the other was taken down and reconstructed. The architect of this building is Mr. Henry Hunt.

The principal entrance is from the Calle San Martin, and consists of three massive bronze doors, which open to a vestibule, on the right and left hand sides of which are the respective entrances to the "Bill Renewal" and "Exchange" departments.

Now follows a marble staircase, which on either side leads to the apartments occupied by the directors; between the flights are the three doors of the saloon which give entrance to the public, and lead to all the principal offices.

The saloon is 41 varas in length, by 22 varas in breadth; its height from the ground to the ceiling, placed at some distance below the rafters, is 20 varas. A vara is 34 in. English.

On each side, throughout the whole length of the building, are the different offices, all cased with iron and fireproof, and constructed so as to be made available for enclosing either books or money, as securely as in the best fireproof safe.

These different offices which occupy the grand saloon are arranged on the sides of the latter, and the upper part of them forms a gallery

leading to apartments at the end of the saloon. In the saloon at this end are three doors communicating with a yard, 13 varas long by 12 wide, containing an awning and other conveniences, a staircase leading to the upper part of the building, servants' rooms, a furnace for the burning of paper currency, and the apparatus for the artificial warming of the principal saloon by heated water during the winter months.

The first floor in this spacious yard is on one side destined for the issue of notes, with all the appurtenances thereto applying, and, on the other, for the service belonging to this all-important department. The second floor can be made use of, when necessary, as a private dwelling-house, but is provisionally destined as a general archive and deposit department.

There is a saloon for the daily meeting of the directors with an additional saloon of the same dimensions, a sort of ante-room, where visitors or others may be at their ease.

In order to guard the building, as far as human means are concerned, against fire, the weather part of the doors and windows is made of wrought iron, with a fence, which can be raised or depressed at pleasure, thus rendering the building absolutely impervious against any casual calamity of the nature referred to, which may occur in the immediate vicinity. All the interior doors are provided with iron plates, lined on the exterior with mahogany. The counters and divisions of all the principal offices are of mahogany. The iron safes of each office are fixed within solid brickwork. The establishment is provided with apparatus for the extinction of fire, as well as with electric bells, not only for daily but nightly service. For the latter there is an electric cable, which runs underground, and connects the establishment with the police department, so that at any hour of the day or night assistance can be obtained from the latter in case of need, without a moment's delay.

The architecture adopted in the exterior of the building is the Roman. The front, in the Calle San Martin, from the pavement to the first-floor, is Ionic, and from thence to the roof may be considered as Corinthian. Above the centre door, in the Calle San Martin, is a tower, with its clock, attaining a height which may be said to command the entire centre of the city.

SOUTHSEA CONGREGATIONAL CHURCH.

THIS Church occupies a commanding position in the Old Kent-road, Southsea, and consists of nave, with aisles and two transepts. The nave runs north and south, to a length of 72 ft., and is divided from the aisles and transepts by arcades of four arches, supported by columns of polished red Aberdeen granite. The walls are built of the black flints of the neighbourhood, in irregular courses, with quoins of white bricks, relieved with red brick bands and arches, stuccoed inside, but with the brick arches and bands showing fair with the surface.

The principal entrances are in the north front, and at the north-east angle.

Foundations have been laid for a tower, with spire, 103 ft. high, at the north-west extremity, but this has not yet been built, nor is the general carving completed.

The church is seated for 610 persons, with open benches of pitch pine, and is heated by Haden's hot-air apparatus. Over the platform is a window filled with stained glass, by Messrs. Horwood Brothers, of Frome. The other windows are glazed with tinted cathedral glass.

The total outlay up to the present time has been about 4,650l. Mr. A. Smith, of Portsea, was the contractor. The gas-fittings were supplied by Mr. E. Tuck, of Bath; and Mr. W. J. Stent, Warminster, was the architect.



SOUTHSEA CONGREGATIONAL CHURCH.—MR. W. J. STENT, ARCHITECT.

DESFEUX'S LEATHER BOARD FOR COVERING ROOFS.

The application of board made of leather parings for covering roofs is steadily on the increase, especially since it has been found practicable to impart to the material the required durability, imperviousness, and its *visu quod non*, a great resistance against the constantly changing influences of the atmosphere. Only by changing the mode of manufacture, these properties could have been secured. According to the German edition of *Engineering*, the board formerly used for covering in roofs was a spongy, easily compressible mass, which received a single coat of tar, and which had the great fault of softening, and consequently losing its consistency in a damp atmosphere. This has lately been superseded by a product manufactured by P. Desfeux and others, of fibrous matters, possessing a greater substance, such as leather, and which are in the process of manufacture impregnated with an oleaginous chemical composition, imparting to the material, when cut into sheets like paper and dried, the appearance of real leather. This system of covering in roofs offers considerable advantages, especially from an economical point of view. The new roofing board is said to be very light, and consequently, as no other material, suitable for slight constructions.

THE NEW SYNAGOGUE IN PARIS.

A WRITER in the *Jewish Chronicle* gives some particulars of its present appearance:—

Although you have given your readers some account of the new synagogue, or temple, as it is called in Paris, I still venture to send you the following as the result of the impressions made on my mind in a flying visit through the gay capital.

The synagogue is situated in the Rue de la Victoire, a very narrow thoroughfare, but celebrated as having been once the residence of the Rothschilds, and, at an earlier period, of Napoleon the Great when he was General Bonaparte. The building stands back some 10 ft. or 12 ft. from the line of houses, so that it has a much larger approach than the width of the street would otherwise allow. Immediately within the entrance is a very large vestibule, which leads into an inner one of the same dimensions, at the sides of which are the staircases leading to the ladies' gallery.

I was struck with the magnificence and beauty displayed on all sides. The seats on entering face the *Echal* or Ark, as far as the *Tebah* or reading-desk, which is almost in the centre of the building, leaving a middle passage or gangway which leads to the steps of the *Tebah*, so that there is only one ascent for the Hazan instead of two, as in most of the London and other synagogues. Beyond the reading-desk the seats are placed east and west, and further on is the choir—a circular inclosure made of oak. Under the galleries on each side are chairs instead of fixed seats; on the right and left of the choir are private seats for the members of the Consistoire of Paris, the most notable occupants being Barons Gustave and Alphonse de Rothschild.

There is a flight of steps on each side leading to a throne occupied by M. Isidor, Grand Rabbini of the Consistoire of France, who sits on the right, and by M. Zadoc Kahn, Grand Rabbini of Paris, who sits on the left. It is this part that more particularly strikes the visitor on entering. The throne is semicircular in form, and surrounded by velvet chairs for the *Dayanim*.

In the centre of the building a third flight of steps having pillars of polished marble leads to the *Echal* or Ark with its veil or curtain, which is a splendid piece of workmanship and is the gift of Baroness Gustave de Rothschild in memory of her father-in-law, Baron James de Rothschild, and I am informed that the working of the embroidery occupied a period of five years.

During prayers this curtain is drawn aside by an unseen hand, when the door of the Ark is exposed to view, and being gilt it has a very fine appearance. When opened the interior is highly imposing; it is very spacious and is intended in some measure to represent the Holy of Holies. The Ark or Sanctuary is in effect a chamber. The Scrolls of the Law are placed on a raised dais at the back. The Hazan enters alone, in humble imitation of the entrance of the Priest into the Holy of Holies, and hands the Scrolls to

those appointed to bear them to the reading-desk. A glass dome throws a soft light on the interior, and gives a solemn and sacred appearance to it. Above the Ark and round the semicircle of the Sanctuary are stained glass windows, of beautiful design. Among the devices I noticed the names of the twelve tribes, each surmounted by its standard or device; and to crown this imposing Sanctuary, the ceiling forms a large and spacious overhanging canopy, from which hangs the "Perpetual Light," a massive silver lamp weighing some sixty pounds, the gift of Baron Alphonse de Rothschild. Round the arch of the ceiling above the Ark are inscribed the words:—"Tu aimeras donc l'Eternel ton Dieu de tout ton cœur, de toute ton âme, et de toutes tes forces."

The galleries are spacious, the upper tier being for the poor on high days and holidays when there is no room below. Above the front gallery is an organ, and round the arch above are inscribed the words:—"Tu aimeras ton prochain comme toi-même." The building is able to seat 1,800 persons. The prices of seats range from 22 francs to 300 francs each.

DORKING CHURCH AND CHURCHYARD.

THROUGH the munificence of Mr. Cubitt, M.P., the vicar and churchwardens are enabled to undertake forthwith the work of enclosing and planting a large portion of the parish churchyard, viz., the south-eastern angle, which is bounded by the footpath leading from the church passage, High-street, to St. Martin's-place, and Mill-lane. Plans for the restoration and enclosure of the whole of the churchyard have been prepared by Mr. C. H. Driver, architect (under instructions from the churchwardens), but it is not intended at present to deal with any other part than that designated, even if funds were available for the purpose, seeing that the church remains in an unfinished state, and that the yard must, of necessity, be more or less in disorder until the completion of the tower and spire, south porch, and sacristy. Tenders for the dwarf wall and wrought-iron railings in accordance with the plans and specifications of the architect, were received and opened on Saturday morning last, and found to be as follows:—

Builder's Estimates.

Colls & Sons	£167	0	0
Hamblyn Brothers	127	0	0
Goddard & Sons	715	0	0
Lynn & Dudley	113	10	0

Ironfounders' Estimates.

Rossiter	£215	0	0
Sauberger	141	19	6

The tenders of Messrs. Lynn & Dudley and Mr. Sauberger being the two lowest, were consequently accepted.

The painted window just put up in the south transept of the restored parish church is one of a series of subjects arranged by Mr. Gambier Parry in a general scheme for the windows of the nave and transept, and has been given by Mrs. George Cubitt (Denbies), in memory of her parents, her father, the Rev. James Joyce, having been formerly vicar of the parish. The cartoons were drawn by Mr. H. Burrow, artist, of London. The painting and glazing of the lights have been carried out at the Whitefriars, London, under the direction of Mr. J. C. Powell. A brass underneath the window bears the following inscription:—"To the glory of God, and in affectionate memory of James Joyce, M.A., vicar of this parish, who was born Nov. 2nd, 1781, and died October 9th, 1860; and of Sarah, his wife, who was born Feb. 8, 1792, and died May 12th, 1856; this window is erected by their youngest daughter, Laura Cubitt, A.D. 1871."

SCHOOLS OF ART AND OF SCIENCE.

St. Alban's School of Science and Art.—A meeting in connexion with this school has been held, Mr. H. J. Toulmin in the chair. The secretary (Mr. H. Lanaway) read the report, in which the committee announced that the classes, with one exception, had been fairly attended during the past session. About seventy students had been under instruction in the various classes; forty-two of these presented themselves for examination, fourteen obtained certificates, and one a Queen's prize. Five subjects were taught, viz., mathematics, acoustics, theoretical mechanics, model drawing, freehand drawing. The number of certificates and prizes this year was not so numerous as on previous occasions. During the four years the classes had been in operation, 225 students had been on the regis-

ters, 147 had been examined, and about eighty had received certificates, besides numerous Queen's prizes. The school is not entirely self-supporting.

Hanley School of Art.—The annual meeting of the supporters of this school has been held in the large hall of the Mechanics' Institution. Mr. Robert Heath presided. The committee presented their annual report, and expressed their satisfaction with the results of the works of the year. The increased number of students having occupied all the rooms in the school, further provision had been made during the year. The committee, however, regretted that they had not another room to appropriate to the growing wants of the modelling section, since this most successful branch of the institution required greater facilities for its work. The usual examinations were conducted in April and May; the large number of 1,405 works executed during the year were sent up to the Department. The Examiners affirmed "the general merit of the works has advanced." The committee congratulated Mr. Bradbury not only upon the general success of the year, but also upon the manifestly high estimate in which the Department held him as a teacher. Mr. Bradbury read his annual report.

The Leeds School of Art and Science.—The annual distribution of prizes to successful students in the Art and Science Classes connected with the School of the Mechanics' Institution, has taken place in the Albert Hall, the Mayor (Mr. Marsden) presiding, and presenting the prizes. Mr. Edward Baines was also present, and there was a large attendance of the successful students, male and female, and their friends. The report for the year ending May, 1874, was read by Mr. A. Stevenson, the head master of the school. It stated that during the year there had entered the school a total of 380 students, of whom 125 attended the day-classes, and 285 the evening classes, 300 of them attending both day and evening. Upwards of sixty students had attended a shorter time than one quarter. On the 9th of April the collected works which had been executed in the school during the previous twelve months were forwarded to South Kensington for examination. Thirty-five students, sent work of an advanced character, and 180 sent works in the elementary stages; altogether 215 students sent 930 separate productions of one kind or another. The report of the official examiners upon the works transmitted for their inspection was highly satisfactory and encouraging. Seventeen students had had awarded to them twenty-two prizes, two taking two prizes each, and one the very unusual number of four prizes. In the National competition one work was awarded a bronze medal, the highest award made this year in that stage of art. In the schools connected with the institution 225 children receive instruction in drawing. The science classes report said,—The chemical classes continue to flourish under the tuition of Mr. George Ward, who reports very favourably of the pupils during the past session. The increased numbers of pupils, and their attention to the subjects of study, have been very encouraging, and lead to the hope that there is a growing appreciation of the value and importance of a knowledge of this most interesting branch of science. The number of students attending these classes has been as follows:—Inorganic chemistry, 46; organic chemistry, 9; metallurgy, 14; laboratory course of practical chemistry, 29. Many of the students passed the science examination in May last, and A. N. Pearson, one of the successful candidates, obtained a scholarship.

The Advantages of Art-Culture.—Mr. Julian Goldsmith, M.P., has distributed the prizes gained by the Tonbridge Art School. He said he considered that science and art covered almost the whole sphere of human life. Science appeared to him to be the theory upon which they carried out most of the practical works of life, and art was the result of that theory. The result of scientific investigations had brought all the greatest discoveries of the present day. It was owing to science that they had the electric telegraph; that they were able, not only to communicate with persons by post, but to flash like lightning their thoughts to the other side of the world. His definition of art was the cultivation of all that was beautiful. The taste for art in his opinion could not be too widely developed. It was the great desire of those who originally established those classes, and it ought to be the great desire of every employer

of labour, to induce the working classes to study carefully the principles upon which their work was founded. There was no doubt that many workmen had made great discoveries; but he would say that, owing to the fact that English workmen did not study the theory of their work as foreign workmen did, there was a considerable danger of their being left behind in the race, which was never won by the sluggard or the laggard. It was most desirable, therefore, that those of the working classes who had the opportunity should endeavour to cultivate a taste for science and art, and should show by their attendance at the classes that they were anxious to become something more than mere machines.

ART AND RITUALISM.

SIR,—In your recent article on "Art and Ritualism," you invite artistic thought, in order to throw "more light" on the subject. I beg, therefore, to communicate the following.

I would premise my observations by an attempt, briefly, to give a definition of what is understood by the term "art." I hold it to be, in abstract, an expression of the beautiful and true, by means of colour and form; in other terms, the language of beauty to express feeling and sentiment.

Ritualism is a revival of mediævalism, and mediævalism is a corruption of the beautiful and true in art as it is in religion, as I will endeavour to show. Take, for example, its architecture, analyse it, and what do we find its elements to consist of?

First, foliated and floral device, often in luxuriance, laid, as it were, upon a framework of geometric shape, connected and varied by means of lines, dots, teeth, stars, and such like things, with occasional representations of angels, men, and beasts,—mostly ugly, sometimes hideous. Such is the language; and, taken as a whole, it possesses a rude kind of beauty; but it is only a debasement from a higher standard of perfection, as I will presently show.

To illustrate the expression of sentiment. Enter one of our cathedrals, and what is the kind of feeling that comes over you? It is one of gloom, of depression,—a lowering of the healthy tone of the vital system; and yet we are told this is a reverential feeling, proper and befitting Christian worship. The fact is, this does not savour of heaven, but of Rome; it is sepulchral; its very odour is mouldiness and chill. And what can be said of the finery in connexion with ritual ceremonial, for it is quite unworthy the name of art? That it is fitted only to delight children. One thing, however, about it is very significant—its symbolism. But by that we are thrown back into the childhood of the world, into Assyrian and Egyptian darkness, before the beauty of art had ever been realised. But it becomes a mighty power in the hands of a priest-hood now as it did then, to mystify things they do not understand.

"The crying want" is not for more ritual and mystery; for the mystery, we are told by good authority, is revealed, and the light shines as brightly in Christ as does the sun in the firmament to those who will behold it. The want is for truth and beauty.

Let us now consider the best art produced under the influence of heathen philosophy, and see what was then attained.

The Greeks seemed to have discovered, from a close observation of nature and application of geometric principles, a law of beauty—as well known to the artists then as the law of gravitation is understood at this day, which enabled them to produce not only temples, but the commonest utensils for domestic use, which have excited the admiration of the world to this day. But it was in the temple where they displayed refinement of the highest order. There not only are fitness and propriety in design, but a sentiment of purity and chastity pervades the whole; and in ornament and structure there is harmony.

Colour with the Greeks was of little import, nor did they much need its use to represent their cold philosophy. Stoicism is stamped on all their work—that was their highest ideal. But Christian art demands more than that: the feelings cannot be ignored—they must be moved, but not to gloom and sadness, but to a peaceful joy and cheerfulness. To this end colours rightly applied would greatly conserve.

While art may be elevated by the inspiration of pure religion or of philosophy, it cannot in reality confer any spirituality whatever on re-

ligion itself; we know it did not, in its best days, for the religion of the Greeks was superstitious and degrading: much less, then, the religion of Christ, the true worship, to consist in the beauty of holiness,—an ideal that defies all material art to represent.

Let us hope the time may come when the architect and artist may appear possessed of all the knowledge of the past and the requirements of the present, and with all the technical skill to realise what the world has never yet seen, true Christian art.

AN OLD ARTIST.

THE SYSTEMATIC STUDY OF ART.

SIR,—The systematic study of art is a subject to which I have given a long and deep attention; I therefore read your important leader of last week with considerable interest. I have not only given the principles of art a life's study, but I flatter myself that I have established them on an immutable basis,—the basis on which, I firmly believe, the Greeks had set them. There were doubtless Grecian treatises upon these, as we know there were on the cognate subjects of literature and the drama. We cannot suppose the Greeks to have been such blockheads as to have gone on making statues according to certain *maxims* without being able to give intelligible reasons for having done so. *Savants* only tell us that the ancient sculptors did constantly observe certain proportions, but the Grecian treatises upon art doubtless informed the readers why,—without this reason the fact itself is next to profitless.

But of what avail would be treatises of so thoroughly a scientific character on the fine arts to a people whose minds have been demoralised by generations of *rhodomontades* upon art? Treatise after treatise has teemed from the press, during the last century, upon the same subjects of grace, beauty, grandeur, &c., each author following his own way, to his heart's content, but in which you shall find no common basis or measure. Hogarth and Reynolds alone of all the host appear to have been thoroughly impressed with the idea that the principles of art should be evolved by scientific method. The host of literary meanderings, however, under which the shelves of the Art Library now groan, are for the most part utterly useless as grammars or guides to the student. In fact, the public having, as I say, been demoralised by these hazy speculations, has come to the conclusion that the fine arts have no immutable basis. There is only a matter of opinion, of individual feeling. "I don't care for that; do you?" settles to each on-looker the status of a work of art finally, without appeal.

Let us see what we have which is sound by way of treatise upon subjects connected with art. We have excellent works on the history of art, anatomy, and perspective,—that is about all. Treatises upon proportion are founded upon example, not upon reason, scientific investigation; virtually, therefore, they are useless. Those on colour are framed upon the Newtonian hypothesis, which has long since been abandoned, and are in other respects treated from an altogether erroneous point of view. We must, therefore, I fear, wait till the School Board schools have done their work, and cultivate English reason, before it will be of the least use attempting systematic, scientific teaching in matters of taste.

W. CAVE THOMAS.

THE SANITARY STATE OF BIRMINGHAM.

SIR,—The *Builder* having for many years successfully fought in the van of the battle of sanitary reform, and by its exposure of the plague spots of our land, ameliorated the condition, and earned the gratitude of thousands, I beg to call your attention, and that of the public through you, to some facts about the sanitary condition of Birmingham.

This great and important town, the metropolis of the Midland counties, the centre of the industries connected with the iron trade, and the great witness for liberalism in religion and politics, might reasonably be expected to hold a foremost place in the sanitary scale; here one would look for effective drainage, a good and plentiful water supply, and, above all, good and wholesome dwellings for the working men in whose welfare Liberals profess such a warm interest. Unfortunately, all these expectations are entirely disappointed; for Birmingham is as conspicuous for its backwardness in these important matters

as it is for its advanced and pronounced sentiments on religion and politics. The following facts prove this:—The water supply is defective, part of the town being supplied from Wolverhampton, while a large proportion of the dwelling-houses are supplied by wells. Open ash-pits and privies are almost universal, water-closets being few and far between. The drainage is defective, and in many streets entirely absent for in the poorer parts of the town neither sewers are laid nor streets paved until long after the houses are built and tenanted.

"Jerry builders" may claim this town as their paradise, for they are allowed to do pretty nearly whatever is right in their own eyes, and therefore wrong in every other person's; thus we have street after street of 'badly-built, ill-drained, or undrained houses holding one another up, and often erected on foundations of rubbish and dirt through which wells for the water supply are bored. The natural consequences of this state of things is, that the badly or but lately drained or entirely undrained ground poisons the wells, which are certainly not purified by the adjoining privies, which, aided by muddy, unmade roads, plentifully supplied with pools of stagnant water and heaps of decayed rubbish, propagate noxious vapours, so that the unfortunate inhabitants both drink and breathe poison. Hence it is no wonder that though the town is naturally healthy, disease is asserting her dire dominion.

It is a disgrace to the authorities that since the spring small-pox and scarlet fever have raged fiercely and incessantly; but as the working man and his family have been the chief sufferers, little or nothing has been done.

I venture to appeal to the *Builder*, as a true and tried friend of the "working man," to raise its voice on behalf of the artisans of Birmingham, whose days are shortened by living in unhealthy houses which are a disgrace to our age.

W. C. D.

PUBLIC APPOINTMENTS AND PRIVATE PRACTICE.

SIR,—Professional men are aware that various public appointments exist in and about London, all of which cause much competition in the body of architects and surveyors when vacancies occur; while several are regarded as among the chief prizes of the profession, and are supposed to be held by the *élite* of the *élite*. Some of these appointments bind those who hold them with no restrictions upon their private practice, others are given professedly on the understanding that no private practice shall be carried on. In the case of some of these appointments, indeed, a large increase of salary has been made in consideration of all private practice being abandoned. Such are the facts as to these appointments, and yet, I do not doubt, many of your readers will have been astonished to meet occasionally these envied officials, whose time is supposed to be devoted wholly to the duties of their office, engaged in some private professional practice of their own; unless, as may have happened, the commonness of the occurrence should cut off the edge of the wonder. I have heard a whisper, indeed, that those who want the help of these gentlemen must ask them to give it as a matter of friendship, and when the work is over, instead of paying a fee, make a present. This, however, points to such well-planned deception in high places that I must suppose the whisper has been erroneous. My surprise at finding these things occur even once among those who, from their position, should exhibit the highest professional examples, may make me exaggerate the extent of these underhand proceedings; but that they should occur at all, I am sure, fully explain your receiving a line on the subject from

DIOPHANTUS.

New Masonic Hall at Morpeth.—The foundation-stone of a new Masonic hall was laid on the 30th ult., at Morpeth, by Ald. Cranston, mayor of the borough, in presence of a large number of brethren of the Lodge De Ogile, the members of the Town Council, and other inhabitants. Mr. W. Davidson, addressing the assembly, stated that the Masonic Hall Company designed to provide not only a lodge room and offices for the brethren of the Lodge De Ogile, but also large halls for public use, for concerts, balls, theatres, lectures, auctions, &c. He then presented a silver trowel to his worship, and asked him to lay the stone. The Mayor having laid the stone, briefly addressed the company.

SANITARY MATTERS.

The Bishop of Manchester on Sanitary Matters.
A meeting has been held in the Memorial Hall, Albert-square, Manchester, in connexion with the Manchester and Salford Sanitary Association, for the purpose of hearing a lecture from Dr. Morgan on "Causes of Death." The Bishop of Manchester presided, and there was a large attendance. The Chairman, in introducing the lecturer, said that he felt that there could be no subject of more general interest to a community like theirs than that of the sanitary condition under which they lived. The Manchester and Salford Sanitary Association, as probably most of them were aware, had been in existence in Manchester for nearly a quarter of a century, and in that time had done very excellent work in various directions. Dr. Morgan would tell them something about how they might best manage their sanitary matters, so as to be conducive to a long and healthy life, and that in Manchester, he presumed, speaking generally, was a somewhat difficult problem to solve. He believed, although the death-rate in Manchester as compared with many other cities was very high, speaking from his own experience, there were parts as healthy as in any town with which he was acquainted. He had enjoyed good health in Manchester; but then he lived in Higher Broughton, and he knew that Higher Broughton was a different place to Lower Broughton, Deansgate, Shudehill, and the alleys and courts in the neighbourhood of Ancoats. He had no doubt that Dr. Morgan would tell them that disease, to a great extent, was preventable. He did not know whether Dr. Morgan would tell them that smoke was deleterious to health; he was inclined to think that it was not, but certainly it was not a pleasant phenomenon to the eye, or made life agreeable. Then there was another prolific element of discomfite in the water which surrounded them, for he hardly thought the Medlock, the Irk, and the Irwell contributed much to the health of Manchester. There had been a good deal of talk about the purification of the streams, but whether anything would be done in their lifetime he could not say. He instanced the favourable results which had followed from the thorough draining of the city of Salisbury, which city, from being one of the most unhealthy in the kingdom, had become the healthiest, to show what municipal authorities might accomplish. Dr. Morgan then proceeded with his lecture as to the causes of death, dividing the subject into three heads—accidental or violent deaths, natural deaths and deaths from old age, and deaths from disease. In discussing the question of the death-rates of Manchester and London, the lecturer in accounting for the low deaths in the latter, said that the population of the metropolis was fed by the healthiest towns and counties in the kingdom. In Manchester 49 per cent. of the population above twenty years of age were natives of other places, and the people who came to Manchester in adult life were not as a rule born in such healthy towns and villages as those who went to London, and not the children of such healthy parents. The lecturer then discussed the questions of infant mortality, contagious diseases, and consumption, and expressed his belief that many cases of consumption arose from alcoholic excess. Bad air, the stenches from decomposing animal matters, and spirit-drinking added greatly to the death-rate of large towns. In speaking of excessive overcrowding the lecturer said Dr. Leigh, the officer of health for Manchester, had reported that in St. George's Ward, on an acre of ground, 1,115 persons were living, which, including the streets, only gave 44 yards of ground to each person. In Manchester there were from 80,000 to 100,000 persons, and in England about 2,000,000 of persons who were living in houses which were in such a state that it was impossible to enjoy health in them. Deaths were much more numerous in this country than they needed to be.

The Leeds Sewage Works.—On the 1st of the present month an article appeared in the columns of the *Yorkshire Post*, descriptive of the extensive works which have been erected at Knostrop, for dealing with the whole of the sewage of the borough, and an intimation was then conveyed that it was expected in a few days the works would be in full operation. From unforeseen causes, however, which often arise in connexion with new machinery and plant, this expectation has not yet been realised. An inspector from the Local Government Board (Mr. Fleming), the

members of the committee, and other gentlemen, went on that occasion; but owing to a defect in the centrifugal pumps which have been put down for lifting the sewage, the trial did not get beyond its initial stages, for the pumps did not work, and the sewage could not, therefore, be lifted. In the interval which has elapsed since that time the defect in the pumps has been remedied, and a day was appointed for a further testing of the machinery. Alderman Tatham (the chairman), the members of the committee, the borough engineer (Mr. Morant), and other gentlemen, were present. The test was applied merely to the pumping machinery, and was, to outward appearance, all that could be desired. The pumps were kept going for some time. The sewage alone, however, was lifted by the pumps, and not as it will be mixed with the precipitating and deodorising ingredients. Owing to a stoppage in one of the pipes, the precipitating and deodorising ingredients could not be sent down into the sewage. Each of the tanks had been filled with sewage, and they stood the test without showing any weak point.

The Fever Epidemic at Darwen.—The fever epidemic spreads at Over and Lower Darwen, and there were reported to be 1,500 people suffering from it—one to every sixteen of the population. Twenty deaths are recorded during one week from the epidemic, and forty-one during the month. The deaths from all causes during the month were 180 as against sixty-five on the previous month. A medical officer has been sent down by the Local Government Board to inquire into the causes of the outbreak.

The Sanitary Condition of Lewes.—In consequence of the prevalence of low fever in Lewes and its suburbs, the Local Government Board, at the invitation of the Local Sanitary Authorities, deputed Dr. R. Thorne Thorne, a gentleman attached to the Medical Department of the Board, to visit Lewes and make personal inspection and inquiry into all matters bearing upon the sanitary condition of the town. The doctor has been doing this, seeing the sanitary and other authorities, inspecting nuisances, and so on. He has also had consultations with the medical men of the town, and has made inquiries as to its water and drainage systems. Measures were likewise taken to thoroughly flush the sewers running through the principal streets of the town, but whether this was done at the inspector's suggestion, or at the unprompted instance of the sanitary authorities, we cannot say. It is not the intention of the Medical Inspector, says the *Sussex Express*, to hold a formal inquiry and take evidence, but he seems to be accessible to every one who has anything whatever to communicate to him upon the important matter he is now investigating.

"ARCHITECTURE AT OXFORD."

UNDER this heading Mr. Charles L. Dodgson, "senior student of Christ Church, Oxford," writes to the *Pall Mall Gazette* of the 3rd ult., to complain of the proceedings in progress in the Quadrange of that time-honoured college. He says:—"The central lawn is fringed by a series of long low walls which, projecting at right angles from the terrace, intersect the turf at short intervals. At a first glance one might suppose them to be buttresses of the terrace wall; it is only when one begins to realise their number, their unnecessary length, and the entire want of reasonableness in their presence, that passive acquiescence gives place to a feeling of vague astonishment." It appears that in lowering and narrowing the terrace of the great quadrange recently, the foundation walls were discovered for cloisters which have never been erected (a cross wall for each bay, apparently), and it is considered that "we should wrong the memory of Wolsey if we did not preserve this record of what he wished to do." Accordingly (*teste* Mr. Dodgson) about 300l. are to be spent in casing with fresh stone these hitherto subterranean and unsuspected walls, now by the altered level brought to the light of day.

Unless it is intended within a short period to build a cloister, this certainly appears to us to be restoration run mad. The correspondent of the *Pall Mall* has no doubt that what is really intended is "To urge upon us, the governing body, at no distant date, the erection of cloisters all round the Quadrange"; in any event, the present casing of the old foundation walls "is either the indulgence of a shadowy archaeological sentiment, or the first step in a piece of wanton extravagance." As to the first branch of the

alternative we quite concur; as to the question of extravagance, that depends a good deal on the funds of the college, which, according to the complainant, have been drawn upon for beautifying and restoration far more than they will bear already. This is a question for themselves; but the particular operation complained of certainly seems a work of archaeological supererogation. Who is the architect responsible for the proceeding?

HASTINGS TOWN HALL COMPETITION.

SIR,—With reference to the letters upon this subject which have appeared in your publication, may we suggest that if architects would decline to compete when the terms of the competition are impossible of fulfilment, it would be very much better, not only for the dignity but for the interests of the profession.

We had intended competing, but having sent to the Town Council a letter, of which a copy is enclosed, without receiving any reply or acknowledgment, we felt that it would be only exercising common sense to withdraw from the competition.

LEE BROS. & PAIR.

* * The letter in question went to show that to execute the works required would involve an expenditure of 30,000l.

At the meeting of competitors held on Monday last, the majority of those who submitted designs were represented. It was unanimously resolved that preliminary steps for ascertaining the liability of the Town Council should be taken, and a guarantee fund for securing the necessary expenses was entered into. As the matter appeared to the competitors to be not only of personal but of professional interest, it was resolved to ask the co-operation and assistance of the Council of the Royal Institute of British Architects.

Another meeting will shortly be held, and it is requested that any other competitors who are willing to co-operate will forward their names to Mr. Lacy W. Ridge, 23, Bedford-row.

We are informed by an inhabitant of Hastings that Mr. Andrews, the borough surveyor, is not responsible for the sum of 10,000l. being named for the new town-hall. Mr. Andrews told the committee that the sum stated was far too small, and asked to have it increased. With calculations before them at 4d. a foot, the majority would not take his advice.

COLUMNS AND GIRDERS, UNDER THE BUILDING ACT.

SIR,—Assuming that the Building Act, through the medium of district surveyors and the Board of Works, does provide a competent supervision, and also insists upon a sufficient strength, for the exterior walls of buildings; it is none the less a deplorable fact, that in most of the interior construction, more particularly the items of columns and girders, there are no official regulations which ensure a sufficiency of strength, nor any officer with power to condemn a weak and faulty construction. There are many examples of such construction in various parts of London,—notably two in the Poultry,—but an instance that came under my observation to-day leaves all competition far behind; it is a large pile of buildings in the Euston-road. It is five stories in height, and the three upper floors are supported in the centre by wooden columns, the said columns being nothing more than pieces of scaffold-poles jammed in between the floor girders. The building was, I hear, done on speculation, and during construction was either sold or let to a large cabinet-making firm, who have not yet occupied it. When they do so, it is to be hoped that the loads on the upper floors may be of the lightest possible character, or an accident may follow.

Assuming that the load per square foot on each floor is 1 cwt., including the weight of the construction, which is the least that should be taken for an ordinary dwelling-house, we can then arrive at the load carried by the lower tier of columns. The building is 32 ft. wide between walls, and the columns are 11 ft. apart; we therefore get 32 ft. by 11 ft.=352 ft. total area of each bay of floor. Usually, only one-half of this would be carried by the column, but in this case, the wooden beams being continuous over each column, we must take $\frac{1}{2}$ of this area, or 220 ft. This, at 1 cwt. per foot, gives 11 tons, or, for three floors, 33 tons on each of the lower

tier of columns. The columns are 10 ft. long and 6½ in. average diameter, the material being, as before stated, merely lengths of scaffold-poles, with the bark peeled off and oiled and varnished, and, as such poles usually are, full of cracks and shakes, due to the seasoning of the wood. Area of columns = 33 in., so load taken above gives 1 ton per square inch of sectional area. Now, it appears from experiments by Hodgkinson, that columns of red deal with a ratio of length to side of 29 to 1 were crushed and crippled with an average load of 26½ cwt. per square inch of sectional area. Should the load on the floors be 1½ cwt. per foot—a thing very likely to occur through stowage of timber, &c.—the load on columns would then be 49½ tons each, or 1½ ton per square inch. With this load the columns would probably fail, and perhaps lives might be sacrificed.

Thinking that your notice of this case might possibly avert such a catastrophe, I have thought it well to trouble you with this short statement of the facts. R.

FIRE PROOF.

SIR,—The following is an extract from the article "Putney" in a small book published in 1811, as a pocket companion for the tour of London and its environs. It might be well to know what good came of the invention so handsomely rewarded, and whether the memorial still exists.

R.

"An obelisk was erected in 1786, on Putney Common, on the side of which, toward the road, is an inscription, importing that it was erected 110 years after the fire of London, on the anniversary of that dreadful event, in memory of an invention, for securing buildings against fire; an inscription toward Putney records a resolution of the House of Commons, in 1774, granting £500, to David Hartley, esq., for this invention; on the side toward London, is a resolution of a Court of Common Council, granting the freedom of the City to Mr. Hartley, in consideration of the advantages likely to accrue to the public from this invention; and on the side toward Kingston, is their resolution, ordering this obelisk to be erected. Near it is a house three stories high, and two rooms on a floor, built by Mr. Hartley, with fire-plates between the ceilings and floors, in order to try his experiments, of which no less than six were made in this house in 1778: one in particular, when their Majesties and some of the Royal Family were in a room over the ground floor, while the room under them was furiously burning."

C. G.

ANTS.

SIR,—Some two years since I altered the basement of my house from a dwelling-kitchen to a tailor's workshop, taking up the boards to make an independent drain, after which covering the whole with lime and rubbish, making a sort of loose concrete, under that part which is covered with the shopboard, all under the advice of my builder. Since then the place has been overrun with ants all over the house of ten rooms, and there are now a serious inconvenience. Can any of your correspondents advise me in your next issue how I can exterminate them? I have a plan to several parties, but no one can help me: hence my troubling you, which may excuse. W. R. J.

* Suggestions will be found in our previous volumes.

Probably, however, some of our readers may be able to communicate the result of personal experience.

PAINTINGS IN ST. MARY'S CHURCH, EARL STONHAM.

Tars fabric is now undergoing a thorough restoration, and not before it was needed, as the walls of the north transept were in a wretched condition, and had to be taken down to their very foundations.

The roof also of the choir had to be renewed in consequence of the mouldering state of the timbers. The roof of the nave, which is in the florid style of architecture, and filled with carvings, is also in a bad state. The whitewash of the walls has been partially removed, and mural paintings of a somewhat extraordinary character were brought to light:—

"On the east wall of the north transept," says a correspondent of the *Suffolk Chronicle*, whose remarks we abbreviate, "I discovered the 'Nativity,' 19 ft. in extent. To the extreme north are the three 'Wise Men,' Magi or Sages (vulgarily called the three 'Kings of Cologne') mounted on white horses with peculiar trappings. Next in advance are the three shepherds, two with staves in their hands, and the third playing a sort of bagpipe. Below them are sheep feeding, of a peculiar breed. Next to them, and near the altar, are the three Sages. It is to be regretted that below the Virgin the wall is much gone, but portions of letters are faintly visible."

The wall which faced this on the west, now destroyed, was filled with human heads. In the south transept I discovered the Martyrdom of St. Catherine (a very popular saint in this neighbourhood). She is also carved upon the roof, leaning upon a lioness with a broken wheel at her feet. Opposite to this on the west wall are St. George and the Dragon.

Above the chancel arch I discovered a rich and perfect representation of the 'Last Judgment,' exquisitely outlined and evidently painted by a more masterly hand. In the centre is the Saviour seated upon a rainbow throne, with His right hand uplifted, exalting his words. Round His head is his usual nimbus. At the foot of the throne on either side are two angels, with expanded wings, blowing

trumpets; below them are the dead emerging from the graves. On the right-hand side are the blessed in groups, headed by saints and angels, and in the centre is the blessed Virgin. Above all are two angels bearing the emblems of the Passion. On the left are two strange figures, half human, with horns and long ears, one bearing a double-headed staff, and his feet like birds' talons. Below them is a monster with jaws expanded, into which three devils are thrusting the condemned; a fire is issuing from its mouth and nostrils. Four scrolls are visible, but the inscriptions are entirely obliterated.

The entire walls were once ornamented with scriptural subjects, but so much defaced by the Puritans that scarcely a subject can be traced with certainty. Several relics of antiquity have been found amongst the debris, and amongst them a beautiful Grecian cross terminating in a fleur-de-lis, the original flooring-tiles, &c.

H. WAZLING.

AS TO A DECISION OF THE INSTITUTE OF ARCHITECTS.

SIR,—The "Daily Press" having given publicity to the facts that my name has been removed from the list of members of the Institute of British Architects, I feel sure you will kindly insert this letter in your next publication.

Since the Pugin and Barry controversy, considerable differences of opinion have existed between myself and several of the prominent members of the Institute, so much so that my attendance at the meetings has been limited to one occasion only.

Indeed, so antagonistic has long been the prevailing feeling of the Council towards myself that on February 21, 1868, in a leading article which appeared in the *Building News*, entitled the "Pugin obituary," the Editor remarked that "Mr. Pugin's courage, or, rather, his confidence, in his cause must have been of no ordinary kind when he agreed to submit the matter to the Council of the Institute," and added, "His father's case would not have been tried by his peers." The truth of this last remark neither myself nor the public are at all likely to dispute, especially after perusing the supplementary and original address made by the President on Monday last.

My criticisms, contained in a pamphlet entitled "The Designs for the New Palace of Justice Critically Considered," did not tend to improve my relations with the present President of the Institute, of whose designs it was utterly impossible to speak with admiration.

This was the position of affairs until my dispute with Mr. John Rogers Herbert, R.A., who remarked to a gentleman whom I shall call as a witness in an ensuing action:—"If the fact that Pugin has been meddling with bricks and mortar were brought before the Institute, where he has many enemies, he might get accused, which would do me considerable service. If I brought the matter forward, it would look like malice; but you, or some of your friends, might do this for me."

Shortly after this the case of Pugin v. Molloy (which was decided in my favour) was heard at the Guildhall before Mr. Justice Brett, upon which the Council of the Institute, who had been previously prepared, immediately wrote for the particulars. The details of this matter are too lengthy to enter into in this letter, but they will be made public in the ensuing action of Pugin, Sir G. Gilbert Scott and Others.

On the 31st July, 1874, having been privately informed of the decision at which the Council had arrived, I wrote to Mr. Rogers Herbert, as follows:

"The Council appear to have formed a singular interpretation of our rules, which were framed for the purpose of preventing impositions by architects on their clients, and the by-laws of the Institute, which would prohibit the architect from receiving any benefit derived from his clients beyond his recognised commission."

When the Council are in a position to show that I have infringed the last clause, they will then be in a legal position to carry out the by-law 16, section 3. Should they attempt to do this, I will then bring in a bill of complaint, so I have instructed my solicitor to place my name in action to set aside their decision, and to claim damages."

I may here add that an action, arising from spiteful and impracticable conduct on the part of a client, cannot be brought within the rules of any corporate body. I therefore hold that the decision arrived at by the Council is unjust, and after I have proved the same, I will indict the President and members of the Council for libel.

As for the remainder of Sir G. Gilbert Scott's address I may, without any chance of being accused of fulsome or egotism, remark that it is difficult to state whether its effect upon the public mind will not be as damaging to the dignity of the Institute as Mr. William Burgess's proposed Rococo decoration of St. Paul's Cathedral would, if carried out, be ruinous to the internal effect of that grand edifice.

If instead of discussing how it is possible to expend a million of money in destroying the sublimity of that noble work, the Council would turn their attention as to how a direct approach from the Embankment could best be obtained, the public would at least gain something by their efforts, and one of our finest buildings would be rescued from its grave of bricks and mortar, in which, said to say, it is at present entombed.

E. WILKIN PUGIN.

THE ARCHITECTURAL MUSEUM.

SIR,—Is this Museum in Tufnell-street ever open in the evening? If not, should it not be so?

On Saturday night, about half-past seven, I went there, accompanied by several of my assistants, and I was awfully disappointed to find the place closed against us.

Thanks to Mr. Lembre, we possess photos of many of the most interesting of the useful casts collected there, but, after all, although they might be well utilised to his great advantage at the Museum.

Excuse a provincial for asking a question, and coupling it with a suggestion. HARRY REES.

St. Michael's, Cornhill.—This church, one of the finest in the City of London, is undergoing a thorough restoration.

FROM SCOTLAND.

Edinburgh.—There has just been presented to the Philosophical Institution, by Mr. James Gibson Craig, a marble bust of Mr. J. R. McCulloch, who was at one time editor of the *Scotsman*, and whose "Dictionary of Commerce and Commercial Navigation" is a text-book of these subjects. The bust was executed in 1861 by the late Mr. P. Slater. Placed on a column of Peterhead granite, it will in future occupy a place in the library of the Institution, side by side with Mr. Hutchison's bust of the late Mr. Adam Black, also the gift of Mr. Gibson Craig. In referring recently to building operations at the west end of the city, the *Weekly Scotsman* took occasion to mention a project which has been mooted by Lord Provost Fyfe, for the construction of a light iron bridge across the Water of Leith Water, immediately above Bell's Mills. The plan of such a bridge as would meet the requirements of the case has been prepared and placed in the council chamber. It is proposed that the bridge, starting from the northern end of Magdala-crescent, should cross the river at that high level to the top of the slope leading up from Bell's Mills on the road which here runs north-westward between the Orphan Hospital and John Watson's Institution towards the Queensferry turnpike. Carried at such a height, the bridge would require to have a length of more than 350 ft. Commencing from the south end, a stone abutment of nearly 50 ft. long is shown to be imbedded in the top of the slope. From the outer end of this a light iron structure on the lattice girder principle is carried across in six spans of about 45 ft. each to another abutment built into the northern bank. With a total width of 32 ft. 10 in., the bridge as designed presents a carriage-way of 24 ft. and a footway on the east side with a width of 8 ft. 10 in. A light railing of ornamental character serves the purpose of a parapet.

Glasgow.—The new Infirmary, situated on the lands of Downhill, and in close proximity to the University of Glasgow, has been formally opened by a conversation. It will supply a want long felt in Glasgow. Designed by Mr. John Burnet the main building, when complete, will extend from east to west to a length of 460 ft., while the portion running north and south will be 260 ft. long. The building, so far as completed, will contain from 180 to 200 beds; the larger wards of which eight are finished, are to be appointed equally to surgical and medical patients while there are several additional rooms which will be devoted to special cases. The ward, very in size, have windows on either side, and are constructed to afford accommodation for fourteen and eighteen beds each. They are 15 ft. in height, and their width is 26 ft., affording from 105 to 110 square feet of floor-space, and 1,575 cubic feet per bed. In each of the rooms there is a large fireplace, which, in addition to supplying the requisite amount of heat, serves the purpose of ventilation. The building generally may be described as consisting of nine blocks, which intersect and shoot at one another at the intersections. The original estimates were 70,000*l.*, exclusive of the sum paid for the site, which was calculated at first at 17,391*l.*, but, in consequence of additional ground being required, may be estimated at about 23,000*l.* Before the building is completed, however, the cost cannot be less than 100,000*l.*

Brechin.—The ceremony of turning on the new water-supply to the town of Brechin has been performed by Lord Dalhousie. There was a procession, composed of the Volunteers, the Freemasons, the employees of the public works, and the magistrates and councillors.

Art Exhibition at Wick.—The Calithness Art Exhibition has been formally opened by the Duke of Sutherland. The exhibition contains a large number of paintings in oil and water-colours from the collections of the Duke of Sutherland, the Earl of Caithness, Mr. Pender, M.P., Sir Tollemache-Sinclair, M.P., Mr. Trail of Rattar, and others. Of the 160 or so oil pictures, there are examples of the Italian, Flemish, and Dutch, and English schools. Rubens, Van Dyke, Rembrandt, Titian, Maclellan, Macculloch, Raeburn, Gainsborough, and others of less note are represented. The display of water-colour paintings includes pictures by Glover, Robert, and Stanfield, &c. There are a number of casts from Kensington Museum, containing valuable collections of majolica and stoneware, porcelains and earthenware, electrotypes and bronzes.

Other cases contain antiquities and curiosities from the Dunrobin Museum, among which are King Theodore of Abyssinia's drinking-cup and prayer-book, and a number of articles from the Gold Coast. A large collection of Chinese and Japanese curiosities are exhibited, and there are numerous contributions from Calthness men in America, Australia, New Zealand, India, China, and Africa. One room is wholly devoted to photographs.

Burning of a Scotch Mansion.—Errol Park House, the residence of Mr. Francis Molison, merchant, Dundee, situated in the Carso of Torrie, ten miles from Perth and twelve from Dundee, has been destroyed by fire. Since Mr. Molison came into possession of the estate last year he has spent from 10,000l. to 12,000l. in alterations and additions, which were almost completed. How the fire originated is not exactly known, but it is surmised that a gasfitter or plumber had dropped a light among the joists in the roof. It is estimated that the damage, which is covered by insurance, will be considerably under 20,000l.

The Completion of the New Harbour at Port-Ford.—A public demonstration has taken place in the village of Port-Ford, on the Banffshire coast, and on the property of the Duke of Richmond, to commemorate the completion of a new harbour which his grace has at his own expense, caused to be built for the inhabitants there. The new works have cost 5,000l.

Aberdeen.—The new school buildings of the Forthill School Association, Aberdeen, which have just been completed at a cost of 5,000l., have been opened by a *soiree*. 2,000l. of the sum required have been contributed by Mr. Jacob Campbell, a banker in New York.

Inverary.—A bust of the late Lord Colonsay, in replica of that by Mr. John Steell, belonging to the Faculty of Advocates, Edinburgh, has been unveiled in the Court-room, Inverary, by the Duke of Argyll. Lord Selborne was present.

St. Andrews.—The joiners who suffered in a recent fire in Mr. Bruce's premises, St. Andrews, were presented, in the committee-room of the town-hall, each with a sum of money representing about three-fourths of the value of the tools they had lost. The money was subscribed by a number of the townspeople and others. Mr. E. Ellice, J.P. for the burgh, contributed 5l. The provost advised the men to have in future all their implements insured.

CHURCH-BUILDING NEWS.

Driffield.—A public meeting of the parishioners of Driffield has been held in the Corn Exchange, to receive the report of the committee appointed at a previous meeting to obtain an estimate for restoring or re-seating the church. The chair was taken by the Rev. J. Cheesman, who read a letter from Mr. G. E. Street, architect, who informed that it would be the wish of the parishioners to restore as far as possible all the architectural features of the edifice. In his estimate he had reckoned for fir roofs and deal seats, and allowed for the restoration of all stonework, for a new south porch, new vestry, new roof throughout, and for warming and lighting, at a cost of 4,000l. An estimate had also been given by Messrs. Frank Smith & Son, of London, for supplying 600 oak sittings for 675l. for 600 pine sittings for 450l. The question for the meeting was whether the restoration should be confined to the re-seating, or a general restoration of the fabric as recommended by Mr. Street. The chairman said he had 200l. promised towards a general restoration. The being of the meeting appeared to be for a thorough restoration, and a committee was appointed to raise funds for that purpose.

Twickenham.—The first stone of a church, intended to accommodate 1,000 persons, has been laid by the Princess Mary Adelaide of Cambridge (Duchess of Teck), on freehold ground given by Messrs. Henry and Alfred J. Little. Before the neighbourhood had attained its present importance and extent, a small proprietary chapel, which is unconsecrated, and which at any time be applied to other purposes by its owners, was but just adequate to meet the wants of those members of the Church of England dwelling in the vicinity. It is now supplemented with a temporary iron church; and, until the projected building can be finished and consecrated, Montpellier Chapel and its subordinate place of worship will remain in the charge of the Rev. Francis John Clay Moran,

the intended incumbent of the church now about to be erected, at a cost, probably, of not less than 12,000l.

Norwich.—The restoration of Burlingham St. Peter's Church is now completed, and the edifice re-opened. The little edifice on the road from Norwich to Yarmouth, with its round tower and thatched roof, has been turned into a little model church. The visitor upon entering it had found a flat plaster ceiling, with high and uncomfortable deal pews, hideous gallery with a large unsightly staircase to it, and no vestry. Without in any way destroying the old features of the church, as far as they were good and worth keeping, the whole has been remodelled. The plaster ceiling has been removed, and new open-timbered roofs have been put up and covered with green slates. A chancel arch in stone (there was none before) has been introduced, the church has been benched in oak, with a new oak pulpit and prayer-desk, and the passages and chancel laid with Minton's encaustic tiles, some of the tiles in the latter place having the keys of St. Peter on them, emblematical of the saint to whom the church is dedicated. The altar-rails are of oak with carved foliage, &c., containing emblems of the Passion, &c. The upper part of the tower, which was in a very shaky state, has been entirely rebuilt, and a new and excellent clock put in it. A new vestry and south porch have also been built, and the church has been heated by Haden & Son, of Trowbridge. The windows have been glazed with cathedral glass, and the west gallery, which could not be entirely dispensed with, has been reconstructed. There are new doors, and a new font. The whole of the works have been executed by Mr. Cornish, of North Walsham, and Mr. Evans, of South Walsham, from the designs and under the superintendence of Mr. Phipson, architect; and the entire expense has been borne by Mrs. Burroughes, of Burlingham Hall.

Ditton.—St. Michael's Church, Ditton, which is situated within a few yards of Hough Green Railway Station, on the Cheshire Lines Committee Railway, has been consecrated by the Bishop of Chester. The church was opened for divine service and administration of the sacrament, under licence, on the 3rd of February, 1870. The reason why the consecration did not sooner take place is accounted for by the fact that, according to the ecclesiastical laws, a church intended for parochial purposes cannot be consecrated nor the district constituted a parish until the endowment fund has been raised. The committee who had the erection and endowment of the church in hand found it necessary to provide school accommodation, which has delayed the raising of the endowment fund. The schools, which are in close proximity to the church, are free of debt, and have been erected at a cost of about 900l. The church, we are glad to say, is also free of debt, and was built at a cost of 2,255l. It is in the Gothic style of architecture, cruciform, and consists of chancel, transepts, and nave, and is constructed to seat 354 persons. The seats in the church are open, and are constructed of stained pitch pine. The land on which the church is built, a parsonage (which is to be erected), and schools, was the gift of Mr. Thomas Shaw, of London. The architect was Mr. E. Grayson, of Liverpool; and Mr. William Middlehurst, of St. Helen's, was the builder. The stone for the erection of the church had to be carted from Rainhill, the timber from St. Helen's, and the bricks from Widnes.

DISSENTING CHURCH-BUILDING NEWS.

Bingley.—The formal opening of the new Wesleyan Chapel at Bingley took place under auspicious circumstances. It is now nearly three years since the foundation-stone was laid. The building of a new edifice having been decided upon, the providing of the necessary funds was energetically taken up. Mr. Alfred Sharp and Mr. Wm. Sharp contributing each 1,000l., the latter adding at the foundation-stone laying 250l., while a like sum was given by Mr. Alfred Sharp's children. At that time the total sum subscribed towards the building fund, including 1,900l. estimated to be realised by the sale of the old chapel was 7,000l., but as the old chapel has been sold to the Midland Railway Company for a sum of 3,250l., a considerable addition has been made to the fund. As a set-off against this, however, the estimated cost of 11,000l. had been exceeded by 1,000l. The sum, therefore, required to be made up is about 3,000l.

Anerley.—The foundation-stone of a new Con-

gregational chapel has been laid, at Anerley road, by Mr. Samuel Morley, M.P. The estimates were for building one that would contain 1,250 sittings. The cost of the main building is to be 9,805l., including galleries, and it is hoped to add a spire later. The cost per sitting will be about 8l. 18s. Of the total amount above 4,500l. have been given or promised. The ground for the site was acquired under Mr. Osborne Morgan's and Mr. Samuel Morley's Sites for Public Worship Act.

Gateshead.—A Wesleyan chapel has been opened at Bensham. The chapel stands well back from the high road; and, occupying a corner site, is a prominent object from all sides. The style of the building is Italian, inclining to the Classical. The main building is a parallelogram, 70 ft. long by 46 ft. wide, and having a height from floor to ceiling of 32 ft., inside measurements. The entrance-doors are in the south end, under the shelter of a projecting portico, which forms the principal feature of the building externally. This consists of two intermediate circular columns, with square pilasters at the angles, each standing on moulded pedestals, and having carved Corinthian caps. Over the columns is an elaborate cornice and pediment. The lower part of the staircases to the galleries is placed in the angle between the porch and end of the chapel. The galleries are carried round three sides of the interior, stopping against the north wall; between them is the orchestra, which projects 20 ft. beyond the line of the chapel, and has the opening thereto spanned by a moulded arch springing from a group of three pillars on each side. These have Corinthian caps, moulded entablature, &c. The level of the orchestra is about half-way between the ground and gallery floors. In front of the arch is the pulpit platform, with the communion space enclosed by a rail in front of it. The ground-floor seats are in three groups divided by two passages. The side galleries have pews three deep, with a fall-down seat against the wall. The south end gallery has nine pews in depth. Sitting accommodation, allowing 28 in. to each person, is thus provided for upwards of 800 adults, at a cost of about 6,000l. The woodwork of the pews, gallery front, pulpit platform, &c., is all of pitch pine, simply varnished, and the whole has a light, warm appearance. The beams of the roof rest upon curved braces, carried by carved stone corbels. A margin of stained glass is introduced round all the windows: this, with the orchestra windows, has been made by Mr. G. J. Bagley, of Newcastle. The artificial lighting of the galleries is by four gas pendants, on the ground floor by wall brackets, and the orchestra by two wall lights of fifteen jets each. The heating is to be accomplished by hot water in small wrought-iron pipes. The building has been completed by the contractor, Mr. Joseph Elliot, of North Shields, from the designs and under the direction of the architect, Mr. F. E. N. Haswell, of North Shields, Mr. Wilford being clerk of the works.

Driffield.—The large new Primitive Methodist chapel and school-rooms, in George-street, Driffield, though not entirely completed in the interior, is so far progressed as to allow of a public opening. The new chapel and school-rooms form the largest public edifice in the town, and have been built from designs by Mr. J. Wright, of Hull, architect. The chapel is capable of holding 1,000 persons. The whole will cost nearly 5,000l. The contractors have been Mr. M. Gage, bricklayer; Mr. T. T. Dickenson, joiner; Mr. J. Hickson, stonemason; Mr. H. Ward, stonemason; Messrs. Reed, Malton, gasfitters; Messrs. Young & Co., iron-workers; and Messrs. Holden & Truswell, Sheffield, for the warming apparatus.

Wotton.—Walton Park Congregational Church has been opened for divine service. In 1871 a small church was erected by the Congregationalists of the town to assist in meeting the spiritual necessities of the population of this rapidly-increasing suburb of Liverpool. The edifice contained accommodation for 200, and was designed by Mr. H. H. Vale, in the Early English style. The congregation and school have increased until it has become necessary to considerably enlarge the accommodation provided, and this has been effected by the addition of a new wing of equal size to the original building, and standing at right angles to it, the whole now consisting of a nave 70 ft. long, 25 ft. high, and 10 ft. wide, and seats arranged for 350 persons. An organ-gallery has been provided at the extreme end of the nave, with a lecture-room below, which can be formed into two class-rooms by means of a revolving screen presented to the church by Mr. Stones, shuttle

manufacturer, Ulverstone. The church is constructed of picked grey brick with patent pressed red and blue band courses, &c., and yellow Stourton stone dressings. The windows are glazed with cathedral tinted quarry lights, having coloured margins and cross-bands. The roofs are open-timbered, with crisped and cross-braced principals springing from carved stone corbels. From three of the principals are suspended wrought and gilt coronæ, by Messrs. Hodgkinson, Lester, & Poynton, of Coventry. The whole of the enlargement has been carried out from designs and under the superintendence of Mr. Thomas Cook, architect, by Messrs. W. and G. Johnson, builders, Seaforth.

Tarvin.—The members and friends of the Wesleyan Connexion in Tarvin, having for some time past found their present chapel inadequate to the accommodation of the increased congregation, set to work to collect and raise a fund for a new and more commodious place of worship. The subscription list amounted to 350*l.*, with many promises. Mr. Langford's contract for the chapel, including heating, lighting, and fencing, is 700*l.* The architect's, and other expenses, with the old debt, will bring the cost to nearly 900*l.*; not including the gifts of teamwork, sand, &c. According to the plan, the chapel will have 160 seats. On the preacher's right will be the school-room with 100 seats, and on his left the vestry, with 40 more seats. The rooms are opened to the chapel by folding doors, and with a very small outlay a permanent enlargement could be made.

Gloucester.—The ceremony of laying the memorial stone of the new Congregational (Tyndale) Chapel about to be erected in Lower Barton-street, at the corner of Stratton-road, has been performed in presence of a large number of delegates of the Gloucestershire and Herefordshire Congregational Union and the general public. The promoters of this movement, considering the religious accommodation of the district to be very slender, having received sufficient promises of support to justify them, decided upon erecting a chapel, which will ultimately seat 750 adults; but for the present it will be divided into two parts by a cross wall, the nave alone forming in the meantime the chapel, with accommodation for upwards of 500 persons, and the transepts and cross being provided with a temporary ceiling, and fitted up with a school or lecture-room. Ample space is reserved on the site for the erection of large school buildings, whenever the growth of the congregation shall necessitate the addition of the transepts and cross to the area of the church. The style of architecture is Early Gothic, the walling being of Painswick stone, lined with brick. The principal entrance is opposite Barton-street, and consists of a deeply-recessed doorway with moulded jambs and arch, in the gable over which are three traceried windows. The side elevations have battresses dividing double-light traceried windows, with gables over the heads of each. The transept gables are occupied with large Gothic windows. A ventilating flèche or louvre, rising from the centre of the main roof, is a prominent feature of the design. The roof internally is open-framed and of one span. The floor is seated with chairs, the end gallery, over the front entrance, with open benches. The total cost of the buildings now in course of erection will be, exclusive of the land, 2,800*l.* The architect is Mr. James Tait, of Leicester; and the contractor, Mr. Meredith, of Gloucester.

VARIORUM.

Mr. F. R. CONDER, in the *Bible Educator*, says as to measures of time:—"The one Gospel date which may be regarded as chronologically fixed, is that of the Crucifixion. The term of the procuratorship of Pilate, who held that office for the last ten years of the reign of Tiberius, first approximately fixes the time. The fifteenth year of Tiberius, according to St. Luke, preceded the Passion. The Passover, in the year in question, fell on the fifth day of the week. These requisites are found to concur in the year 753 of the City of Rome, or 30 of the A.D. reckoning. The names of Longinus and Quartinus, the Consuls for that year, are referred to in early Christian literature. And a reference exists to the computation of the vague Egyptian year, which gives a coincident result. Again, the habitual celebration by the Christian Church of the day of Pentecost on the Sunday, on which day of the week it falls when the Passover is on the Thursday, is a mute confirmation of the

accuracy of the reckoning. Good Friday may be regarded as the best fixed day of the week in ancient history. The Nativity, according to St. Matthew, occurred during the reign of Herod the Great, who died on the 20th of Cisleu, in the year of Rome 749. How long before the close of this reign the event occurred is not stated by any Evangelist. There is a reference by St. Luke to the fact of Christ being about thirty years old; but it is not distinctly said whether this was His age at His baptism, at His commencement of public teaching, or at His death. The same doubt attaches to the event as to which the date of the fifteenth year of Tiberius Caesar is given by the same Evangelist. If this were, as the first glance at the passage suggests, the commencement of the preaching of John, the whole course of the events comprised in the Gospel must have been crowded into a very few months."

"We get a memorandum, as to woods for walking-sticks, from *Cassell's Household Guide*, for November:—"Hazel grown in low districts is usually dark-coloured in the bark, and not so highly esteemed as the light-coloured variety, which grows chiefly in Wales and the Highlands of Scotland. White-thorn, if peeled soon after cutting, has yellow lines marking the circulation of the sap, but these can be scraped off. Blackthorn with the bark off makes the finest "white" thorn, but they are most valued with the bark on, the knots closely set, the triple spikes, if possible, at every knot. Brier is the most easily got of all the varieties, and it is remarkably strong. Should it not taper enough, it may be reduced so as to give it the shape. Those that grow on a breezy hill-side often rub against their neighbours, thereby producing eccentricities which improve the sticks by "individualising" them. Rowan, or mountain ash, makes a good tramping-stick, though it has not much appearance, and, with common ash, it has the property of not firing delicate hands. Common ash shooting from an old stem, when thoroughly smoothed and varnished, shows fine silky threads streaking its white surface. Broom and barberry have the prettiest barks, both as regards streaking and colour, and both can be stripped should it be injured. Oak, unless a shoot from an old trunk, is not worth the trouble of making into walking-sticks. Gorse or whin gives by far the prettiest markings of any barked stick, and is remarkably strong."—"Tom Hood's Comic Annual" for 1875 (80, Fleet-street), is full of fun and cleverness, set forth by pen and pencil.

Miscellaneous.

An Unfortunate Attachment.—A very painful scene occurred in a church in Bucks township, Ohio, a few Sundays ago. It seems from the account given of the affair by the *Dover Reporter* that the church has lately been undergoing repairs. Among other improvements a new coat of paint was placed on the pews, followed by a coat of varnish; the result was most pleasing to the eye, but unfortunately the varnish had been applied so late in the week that it had not had time to become hard before Sunday, when the congregation flocked to their seats. No apparent inconvenience was suffered until the clergyman was about to deliver the benediction, when the congregation were horrified to find that they were unable to stand up—they were, in fact, glued, or rather varnished, to their seats. Their spasmodic efforts to rise were most distressing to witness—in vain did the clergyman exhort them from the pulpit to resignation. They were seized with a kind of panic, all the more frightful because they were for the moment powerless; at last, by what seemed to be a simultaneous and herculean jerk, they managed to tear themselves from their sittings, but at what a sacrifice! The pews were literally covered with fragments of Sunday apparel. Shreds of silk, lawns, calico, broadcloth, and cassimeres were left as souvenirs of the tenacity of varnish used in beautifying that church, and the hapless congregation, rushing from the doors, hurried homewards with an expression on their faces as though their hearts were even more severely rent than their garments.—*Fall Mall Gazette*. [Repetition of this fanny story may be useful as a warning.]

Bolton Town-hall.—The capital account of the Bolton Town-hall is now closed. The entire cost of the hall and its appointments comes to about 175,000*l.*

Woburn Sands.—The opening of a Lecture Hall by the Duchess of Bedford has taken place at the rapidly improving and picturesque village of Woburn Sands. The Vicar (the Rev. H. M. Erskine), purchased, at his own cost, site and presented it to the trustees, J. Roberts, of Trentham, drew up some plans. The builder was chosen in the person of Mr. Saml. Foster, of Kempston; and Mr. Price, of Woburn, was appointed clerk of the works. The brick was laid in May in the presence of numerous company. Since then the building has been progressing, and on the opening everything appeared to be finished. It is constructed of plain brick, and is in the Early English domestic style. Its dimensions are 50 ft. long by 22 ft. wide; the extreme height is 30 ft. The roof is of the open description, with circular ribs resting upon stone corbels. Facilities are afforded for lighting, the place both natural and artificial. The ventilation is on the modern system, and the heating is intended to be effected by hot air, the chamber being erected but the apparatus has not yet been obtained. A cloak-room is built at the south end. In addition there are several out-offices. The walls are stuccoed from the windows upwards, and below the windows they are panelled with varnished pitch pine. A raised platform occupies the south end to be used for lectures and concerts. At the north end there are bookcases for the reception of the parish library. Sixth accommodation is provided by some hundred Windsor chairs. The entrance to the building has a porch constructed principally of ornamental wood.

A Startling Invention.—We learn from the *Pictorial World* that "an Englishman has discovered a method of fixing the image of a subject on a sensitized plate not more than 4 in. in diameter, an impression from which can be afterwards enlarged to the necessary size. The plate is fixed into an ordinary locket or key-chain hanging from a watch chain, and can be suddenly exposed, by a touch of the finger, entering a room, and an image taken of a picture or a person without any one besides the operator being aware of it. The ingenious method by which the exact place, person, or picture brought into focus by first casting a soft ray of artificial light from this wonderful locket is the important part of the invention, which we are not at liberty to mention further in detail at present. Whether or not such things can be done to any purpose, it is high time that artists and photographers who produce original pictures should look to the immediate protection of every work of art or new design by entering them at Stationers' Hall." This reminds us of an idea first broached in the *Builder*, of a photographic apparatus, fitted with clock-work, and whereby a daily series of microscopic negatives of a scene, who presented themselves, and all groups and scenes, in a bank, for example, could be taken and stored up for future reference, enlargement, and use. Holidays, processions, and public scenes, and public openings, too, could be taken. We are not come to all this yet, but may some day.

Sculpture for Government Offices.—A number of statues of statesmen have been placed in the niches of the Colonial and Home Office new buildings during the present week. They consist of representations of the late Lord Grenville, Liverpool, and Melbourne, Sir Robert Peel, Sir James Graham, and Sir George Cornewall Lewis, also Earl Russell and Sir George Grey. The statues of Lord Melbourne, Sir George Cornewall Lewis, Lord Liverpool, and Sir Robert Peel face Parliament-street, the first-named being at the upper part of the building. Lord Grenville and Sir James Graham are represented in the upper story of the Charles Street frontage, and Sir G. Grey and Earl Russell in the lower portion. The statues, which are executed in Portland stone, are 7 ft. 6 in. in height, in addition to the pedestals. They have been executed by Mr. J. B. Phillips, sculptor. The like number of statues for the Colonial Office are being executed at the studio of Mr. Armistead, Eccleston-square, and will be in their places in about a fortnight. They contain amongst others, representations of the late Earl of Derby, Earl Grey, Lord Glenelg, Sir William Molesworth, and others.

A Cabmen's Shelter is about to be opened near the Town Hall, Leeds. There are shelters at Birmingham, Manchester, Liverpool, Derby, and Edinburgh, but none in London or in Dublin.

Mr. Ruskin and his Pupils.—Mr. Ruskin has issued the following notice at Oxford:—"The Slade Professor has tried for five years to please everybody in Oxford, by lecturing at any time that might be conveniently subordinate to other dates of study in the university. He finds he has pleased nobody, and must for the future at least make his hour known and consistent. He cannot alter it this term, because people sometimes come from a distance, and have settled their plans by the hour announced in the *Gazette*, but for many reasons he thinks it right to change the place, and will hereafter lecture in the theatre of the museum. On Friday, the 30th, he will not begin till half-past twelve to allow settling time. Afterwards, all his lectures will be at twelve, in this and future terms. He feels that if he cannot be granted so much as twelve hours of serious audience in working time during the whole Oxford year he need not in future prepare public lectures at which his pupils need much regret their non-attendance." Mr. Ruskin, it appears, has recently changed the hour at which his lectures are delivered from two o'clock to noon, and as twelve o'clock clashes with various college lectures, some complaints have arisen.

Society of Engineers.—At a meeting of the Society of Engineers, held on Monday evening last, Mr. J. H. Adams, vice-president, in the chair, a paper was read on *Tramway Rolling Stock and Steam in connexion therewith*, by Mr. C. C. Crump. The author reviewed all the leading historical events, extending over 100 years, connected with the use of steam on common roads and on tramways. The idea of steam-propelled carriages appears to have originated with Dr. Robinson, of Glasgow; but Mr. Cugnot was the first to put the idea into practice, which he did in 1770, by constructing a steam-moved carriage for the conveyance of artillery. Mr. Hancock appears to have done more than any other inventor to demonstrate the practicability of steam locomotion upon our highways, for in 1836 he put all his steam-carriages on the Paddington-road, and ran them daily for about six months. The late Mr. Grantham brought out the most recent example of a steam-moved tramcar in England, and which has been the subject of very recent experiment with the view—when legislative enactment shall permit—of its introduction upon our Metropolitan Tramways.

The New Patent "Polychrome" Printing Process. for printing any number of colours at a single impression. Colour-printing, as at present practised, necessitates the use of a separate engraved plate, block, or stone for each colour required; whilst, to prevent the inks from blurring or smearing, time to dry must be allowed between each successive working. Under the "Polychrome" process, any number of colours or varied shades can be printed at a single impression, without the use of the ordinary printing inks, or the engraving of any plates, blocks, or stones,—the prints, moreover, becoming perfectly dry in a few minutes. The process may be briefly described as follows:—Colours, prepared in solid slabs, are cut out and inlaid according to the design to be produced, being held together in a sliding frame. The surface of the combined block is then ground perfectly smooth, and the "Polychrome" prints worked off with great rapidity, drying immediately. If a very clearly defined outline or high degree of finish is required, the ordinary methods of lithography or block printing can be applied in combination with the new process.

Deputation on the Gas Question.—A deputation, consisting of Sir James Hogg, the chairman, and about a dozen members of the Metropolitan Board of Works, waited upon the Gas and Water Committee of the Corporation of London, at Guildhall, on Wednesday last week, with the view of securing united action between the two great governing bodies of the metropolis in respect of the intended application to Parliament for the purposes of obtaining an alteration and improvement in the supply of gas to the metropolis. The conference, which occupied some hours, was of the most cordial character. It is understood that every precaution has been taken to secure the success of the Parliamentary campaign, and that the two bodies will act in perfect unison, and take all the necessary steps to gain an improved supply of gas for the metropolis, and it is believed that they will succeed in saving the gas-consumers at least a million of money per annum by reducing the price of that all-important article of daily consumption.

Sheffield Architectural and Archaeological Society.—On Thursday in last week a meeting of this society was held at the School of Art, when the Rev. J. Stacey, the president, took the chair. In the spring of the present year a sub-committee was appointed to inquire into the extent and condition of the ancient records in the possession of his Grace the Duke of Norfolk, the Town Trustees, the Church Barges, and the Callers' Company. From various circumstances nothing has yet been done towards reporting upon the records of the Duke of Norfolk, but on Thursday night, reports were presented upon the records of the Town Trust and Church Barges, which were accepted by the society, and a resolution was passed asking the sub-committee to pursue its inquiries. Mr. B. Bagshaw drew attention to the interesting discovery of the bones of extinct animals, near Castleton, recently made.

Projected New Canal.—At the last meeting of the Hull Chamber of Commerce, a letter was read from Mr. W. Austin, C.E., to the President, introducing a sketch of the proposed junction of the Humber and Mersey rivers, by cutting extensions of heads of each river (until both met), when a deep and broad tidal stream or canal would be formed, whereby an immense traffic, coming from the great northern Continental countries, would, in the projectors' opinion, pass through Hull, Liverpool, Dundalk, and Donegal to the Atlantic, and onward to America, &c., saving all present risks and losses round the coasts, with great difference of distance and time. The whole line of tidal canals, it is added—126 miles Hull to Liverpool, and 90 miles Dundalk to Donegal—could be formed and completed within two or three years after commencement.

Wistanstow, Salop.—The chancel of Wistanstow Church, which has been restored at the cost of the rector elect, has been opened. From being one of the meanest, it has now become one of the handsomest in the county. Among other improvements, the ancient oak roof has been opened up and restored, while the ceiling between the rafters has been coloured blue. The pavement is formed of coloured encaustic tiles, manufactured by Thorn, of Bursley, and laid according to a design by the architect, Mr. S. Pountney Smith. The builder for the whole of the works was Mr. T. Pugh, Hungerford, Much Wenlock. A sweet-toned organ, by Hill & Son, was bought by subscription. The present restoration goes no further than the chancel, but it is hoped the rest of the church may not long remain uncared for.

Constantinople.—According to the *Levant Herald*, the celebrated Russian painter, Aivassofski, on whom the *Car* has lately conferred the rank of general, has arrived on a visit to Constantinople, and has been received by the Sultan, who is already acquainted with his works, several of them being in the imperial palaces in this city. The new Stamboul theatre, which has been built in a portion of the Seraskier square, near the mosque of Sultan Bayazid, was opened on the 1st of Ramazan by the performance of "Arifin Hilesi" ("The Rogueries of Arif"), a comic opera composed by M. Dehohadjian, the director of the troupe. The new piece was well received by a crowded audience. The theatre, which was built in less than a month, will contain about 800 persons, and is commodious and tastefully decorated.

The New Gaol, Portsea.—The foundation-stone of the new Borough Gaol was laid on the 29th ult. by the Mayor (Mr. G. E. Kent), in the presence of the members of the Town Council, the Board of Guardians, and other corporate officials. On the occasion his worship was presented with a silver trowel suitably inscribed, supplied by Messrs. Emanuel & Sons, Ordnance-row, Portsea, and at the conclusion of the ceremony the company dined with the Mayor in the school-room of the Workhouse. The new building is being erected on a piece of land adjoining the Portsea Cemetery, and directly opposite the Union-house. The Messrs. Evans, of Southsea, are the builders, and Mr. G. Rake, Portsmouth, is the architect.

Oxford Barracks.—A site for the new barracks has been chosen at about two miles from Oxford. It extends over about twenty acres. It is at the north-east corner of the cross roads leading to Horspath, Headington, and Cowley. The buildings, which will cost 50,000l., are making rapid progress.

Gainsborough.—Memorial Window.—A new stained glass window, in the parish church, was viewed for the first time last Sunday. It is situated in the east wall of the north aisle, in what is known as the "Thonock choir." The subject is "Christ the Consoler," and illustrates the passage, "Come unto me, all ye that labour and are heavy laden, and I will give you rest." The figures are effectively grouped, and the whole work is executed in a satisfactory manner by Messrs. Ward & Hughes, London. The window is the gift of Lady Bacon, in memory of her late husband, and bears the following inscription:—"In memory of Sir Henry Hickman Bacon, premier baronet, born April 5th, 1820, died Nov. 14th, 1872."

Descent at a Tea Meeting.—A few days since a tea meeting in connexion with the Baptist cause was held in the neighbourhood of Sheerness, and was the scene of a rather amusing incident. A numerous company had assembled, and tea was about to commence when suddenly, and to the consternation of all, the floor of the room in which the party had gathered gave way, and the company found themselves, tea-table, provisions, and all, deposited upon a lower level. Fortunately, there were two girders about 1 ft. below the floor, capable of sustaining the weight, or the "tea-meeting" would have been held in the cellar.

East Grinstead Town-hall.—There seems a probability of East Grinstead having a building that will be worthy of it before very long. The East Grinstead Club Company have purchased the County Court, and we understand it is their intention to pull the present building down in the spring and build another on the site that will fulfil the requirements of a Town-hall, a drill-shed for the volunteers, and numerous other purposes. The example set by Mr. Toth, of planting trees in front of his residence, has been imitated with good effect by a number of the residents on the south side of the town.

The Borough Jewish Schools.—The new and commodious extension buildings in connexion with these schools have been consecrated. The schools were originally founded in Heygate-street, Walworth, by the late Baroness Meyer de Rothschild in 1867; but it having been found necessary to enlarge them, a site was obtained from the Ecclesiastical Commissioners, and a fund was opened a year ago to defray the costs of construction. The schools will now accommodate 200 children, of both sexes, and the present buildings have been constructed at a cost of 1,600l., by Mr. Cohen, from designs by Mr. Lewis Solomon.

Grants for Educational Work in Workmen's Clubs.—The Council of the Working Men's Club and Institute Union are anxious to encourage a taste for systematic reading and study in Workmen's Clubs, especially as regard those subjects for which no adequate stimulus is afforded by existing societies. They have determined, therefore, to make, in the spring of each year, grants of books or money to those clubs which shall have done most to provide for their members instruction in certain stated subjects. A subscription is being raised to enable the Council to carry out these views.

Improved Dwellings for the Industrial Classes.—The first block of improved dwellings for the industrial poor, erected by a local company, was opened with considerable ceremony at Exeter on Saturday. The buildings, comprising twenty-four tenements, are situated in different parts of the city. The project was started by the mayor, Mr. William Follett, and he has been joined in the scheme by a number of other philanthropic gentlemen.

The Rating of Government Property at Chatham and Rochester.—It is expected at Chatham that the amount which will be contributed by the Treasury towards the local rates of Chatham and Rochester to those parishes in which there is public property belonging to the Crown, as soon as the amended valuation of the whole of the property in possession of the Admiralty and the War Department has been completed, will be about 10,000l. per annum.

Generous and Speedy Response to an Appeal.—The appeal, in Monday's *Glasgow Daily Mail*, by Mr. Quarrier, for 3,000l. to build a house to lodge working boys, and as a night refuge for homeless children, has been promptly responded to by two Glasgow ladies, who have in the most generous and unostentatious way subscribed the necessary sum.

The Institution of Civil Engineers.

The first ordinary meeting of the fifty-eighth session of this society will be held on Tuesday, the 10th inst., when questions of rainfall, of flow from the ground, and of evaporation, in India and in other places, will form the subjects of discussion, founded on a paper then to be read descriptive of the Nagpur waterworks, by Mr. Alex. R. Binnie, M.Inst.C.E.

Old St. Pancras Churchyard.—The Vestry of St. Pancras have resolved to go to Parliament for a Bill to enable the Church Trustees of that parish to contribute 1,000*l.* towards preserving the old churchyard as an open space and ornamental garden. The vestry themselves also resolved to contribute 1,000*l.* out of the rates for the same object.

Sharpness New Docks.—We understand that the new canal entrance will be opened some time in the course of the month of November, but the precise date is not yet fixed.

TENDERS

For Oxford Main Drainage, contract No. 4. Mr. W. H. White, engineer.

Nowell & Robson	£36,500 0 0
Crockett	35,600 0 0
Chappell	34,400 0 0
Bugbird	34,000 0 0
Neave & Sons	33,800 0 0
Accok	30,367 0 0
Clark	29,700 0 0
Dickinson	27,970 0 0
Cole	27,730 0 0

For new wing and alterations at Yewden, Henley-on-Thames, for Mr. G. C. Schwabe, Messrs. Sedgwick & Son, architects. Quantities by Mr. L. C. Hallett. —

Macey	£4,225 0 0
Patman & Fotheringham	3,780 0 0
Hill, Higgs, & Hill	3,640 0 0
Adamson & Sons	3,523 0 0
Conder (accepted)	3,486 0 0

For residence at Highgate, Mr. G. Lethbridge, architect. Quantities supplied by Mr. C. H. Goode:—

Kerry	£2,350 0 0
Ware	2,300 0 0
Giles-Bennett	2,773 0 0
Grover	2,737 0 0
Southcott & Co.	2,457 10 0
Kirk	2,457 0 0

For cooking apparatus, baths, hot-water, and warming works, at Cleveland-street Sick Asylum, Messrs. John Giles & Gough, architects. Quantities supplied by Mr. C. H. Goode:—

Benham & Sons	£1,608 0 0
Fraser Bros.	1,602 0 0
J. & F. May	1,450 0 0

For erection of Primitive Methodist Chapel, Thorn-street, Reading. Mr. Charles Smith, architect:—

Outfield	£1,293 0 0
Grover	1,263 0 0
Simonds	1,444 0 0
Blandford	1,360 0 0
Sheppard	1,370 0 0
Strong	1,365 0 0
Searle	1,358 0 0
Flewold	1,347 0 0
Bishop	1,340 0 0
Reavell	1,191 0 0
Dover, Son, & Co.	1,189 0 0
Lock	1,038 0 0

For alterations to Nos. 685 and 687, Old Kent-road, for Messrs. Eastwood & Co. Mr. A. Freeman, architect:—

Minaud	£163 0 0
Thomas (accepted)	140 0 0

For erection of farm buildings on the Free School Estate, Wottonham, for the Governors of the Rochester Free School Estate. Mr. J. H. Andrews, surveyor to the Governors. Quantities supplied by Messrs. Curdery & Sandall:—

Bishop	£1,602 10 8
Cole	1,645 0 0
Stiff	1,508 0 0
Naylor	1,493 0 0
Gates	1,363 0 0
Barr	1,385 0 0
Sollitt	1,358 0 0
Sollitt (accepted)	1,358 0 0
Dover & Son (withdrawn)	1,803 2 0

For alterations and additions at 60, Dyke-road, Brighton, for Mr. Jones:—

Howick	£145 15 0
Lockyer	128 0 0
Patching & Webber	120 0 0
Holloway & Co.	112 0 0
Kemp (accepted)	90 0 0

For additions to Belvidere Mansion, King's-road, Brighton, Mr. G. Lynn, architect:—

Cheesman & Co.	£2,245 0 0
Patching & Webber	1,864 0 0
Lynn & Sons	1,950 0 0
W. & T. Garrett (accepted)	1,785 0 0

For additions to 13 and 14, King's-road, Brighton, for Mons. A. Boucher. Mr. C. O. Blaber, architect:—

Patching & Webber	£419 0 0
Spreadborough & Co. (accepted)	390 0 0

For farmhouse, home-stead, and double cottage, at Wimbrough, near Oakham, for St. John's College, Oxford. Mr. Robert Hutchinson, architect:—

Lord	£1,616 14 0
Edey	1,455 0 0
Cade	1,430 7 0
Allen	1,410 5 0
Smith	1,390 0 0

For Little Stukeley School. Mr. Robert Hutchinson, architect:—

Smith	£377 10 0
Male	359 12 6
Allen	344 10 6
Cade	843 0 0

For temporary offices at Farringdon road, for Mr. Thaddeus Hyatt:—

Cook & Green	£195 0 0
Toms	153 0 0
Angood	168 14 2
Waldram & Co.	145 0 0
Porter	124 0 0
Burge & Hammege (accepted)	97 0 0

For gas services of the fittings for the New Branch Bank Buildings, the City Bank, Ludgate-hill. Messrs. J. Tarring & Son, architects:—

Rothwell	£279 0 0
Heath	231 10 0
Benham & Son	195 0 0

For heating with hot water the Marylebone Presbyterian Church, Upper George-street. Messrs. Tarring & Son, architects:—

Boulting	£400 0 0
Smith	298 0 0

For the erection of house, shop, store-rooms, coach-house, and stable, and other out-offices, at the junction of Belmont-row with Lawley-street, Birmingham, for Mr. William May. Mr. J. Meggett, architect:—

Horsley Brothers (accepted)	£320 0 0
-----------------------------------	----------

For alterations to premises, Icknild Port-road, Birmingham. Mr. J. Meggett, architect:—

Toft (accepted)	£160 0 0
-----------------------	----------

For the first portion of the Roman Catholic Church of the Martyrs, Great Prescott-street, Tower-hill. Mr. Pugin, architect. Quantities supplied by Mr. R. O. Harris:—

Downs	£10,276 0 0
Scriveners & White	9,995 0 0
Dove, Brothers	9,975 0 0
Perry	9,860 0 0
Merritt & Ashby	9,896 0 0
Lascelles	9,855 0 0
Lawrance	9,639 0 0

For first portion of Mission-room for St. Stephen's Church, Poplar. Mr. J. W. Morris, architect:—

Riddall	£330 0 0
Abraham	336 0 0
Lies (accepted)	301 5 0

For sundry works to complete residence at No. 2, Castle-terrace, Castlemore, for Mr. G. W. Jones. Mr. William C. Leonard, architect:—

Hunt	£735 0 0
Wilson	460 0 0
Eyles (accepted)	445 0 0
Berry (withdrawn)	324 0 0

For rebuilding No. 39, Bedfordbury, London. Mr. Charles F. Chesterman, architect:—

Yerbury	£200 0 0
---------------	----------

For the erection of house and conservatory at Singlewell, for Mr. J. Wood. Mr. J. Drake, architect:—

Blake	£1,225 0 0
Calland	2,178 0 0
Sollitt	2,140 0 0

* Accepted for both after slight alterations.

For alterations and additions to Beckett House, Clapham-common, for Mr. S. W. Caviston. Messrs. E. H. Babson & Brock, architects:—

Shrimpton & Cole	£1,670 0 0
Carter & Son	1,635 0 0
Manley & Rogers	1,670 0 0
MacLellan	1,568 0 0
Loat & Son (accepted)	1,539 15 0

For detached family residence at Highgate. Mr. George Stooke, architect:—

Corsham	Extra if	Extra if
Doan	Doan	Doan
Fronts, &c.	Fronts, &c.	Fronts, &c.
Consins & Son	£4,825	£280
Hall	5,900	235

For the erection of the Enfield Cottage Hospital. Mr. Thomas J. Hill, architect:—

Childs	£1,500 0 0
Patman	1,149 0 0
Linsell	1,155 0 0
Fairhead (accepted)	1,080 0 0

For brick sewers at St. Giles's, Holborn:—

Nowell & Robson	£2,100 0 0
Bloomfield	1,997 0 0
Wilton	1,490 0 0
Taylor	1,462 0 0
Neaves & Son	1,353 0 0
Pusey	1,333 0 0
Crockett	1,229 0 0
Rabb	1,307 0 0
Killenback	1,149 0 0

For pipe drainage for the Walthamstow Local Board:—

Taylor	£1,450 7 5
Wilton	1,430 0 0
Rendell	1,290 0 0
Marshall	1,275 6 0
Thompson	1,260 0 0
Goodair	1,163 0 0
Carter	1,145 0 0
Bugbird	1,138 0 0
Pitney	1,110 0 0
Jackson	1,099 0 0
Bloomfield	1,073 0 0
Richardson	1,058 0 0
Folter	1,030 0 0

For brick sewers for the Chelsea Vestry:—

Chappel	£2,900 0 0
Thompson	2,226 0 0
Bloomfield	2,110 0 0
Neaves	2,080 0 0
Feltham	1,981 0 0
Pitney	1,986 0 0
Potter	1,983 0 0

TO CORRESPONDENTS.

J. M. H. R. — E. T. R. — T. & Son. — B. R. — A. G. — J. S. D. — Thompson College. — Iron Ore. — L. W. R. — W. A. G. — R. H. — C. P. O. — W. C. L. — J. W. M. — P. T. & Co. — J. H. A. Lover of Progress. — J. G. — J. C. — M. B. — T. — G. — S. — W. B. (apply to the Secretary). — Of Subscribers (each name requires special study for the care) — Editor. — It would probably not be able to recover at last. — Consistent of Baker houses in town. — Architects in India on trial.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

	Situations Wanted.	Situations Vacant.
Six lines (about fifty words) or under ..	6d.	6d.
Each additional line (about ten words) ..	6d.	6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to residents in any part of the United Kingdom at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

It is supplied to the Editor at the rate of 12*s.* per annum. It is supplied to the Editor at the rate of 12*s.* per annum.

The Builder.

VOL. XXXII.—No. 1658.

Sir Gilbert Scott's Presidential Address at the Institute of Architects.

HOUGH it is nearly two years since you did me the honour of electing me as your President, this is the first occasion on which I have had the pleasure of appearing personally before you at the opening of a session, and of delivering to you in person the customary opening address.

I was deprived of that pleasure last year through having felt it my duty, at the advice of my friends, to indulge in half a year's rest from professional work,—the first absence from business of that duration which I had enjoyed since I commenced practice. My inaugural address was read in my absence by our friend Mr. Eastlake. The writing of it had greatly interested and stirred me up while at a distance, and if it failed to produce a similar effect on the minds of those who heard or read it, I can only say that I may regret, but cannot help, it.

My long absence, on that occasion, was divided equally between the enjoyment of the works of nature and of art,—between God's architecture in the mountains and man's architecture in the cities of France and Italy. This recollection suggests to me that, on our reunion after our autumnal recess, we may, many of us, have to congratulate each other on our return from a well-earned vacation, during which our bodily system has been invigorated and retrained after the labours of the year, and our artistic system refreshed and supplied with new material,—the one by the aid of the country, the mountain, or the ocean; and the other by drinking deeply and afresh at that exhaustless fountain of art, whether ancient or otherwise, which happily yet remains to us in nearly every country of Europe, and in many beyond its confines.

It is a trite observation, but one which the too often repeated neglect of its precepts may excuse, that we, architects, especially need both these forms of relaxation and re-invigoration. Our customary labours are peculiarly exacting upon body and mind; both of which have, therefore, a special necessity for change,—and that, careful and frequent as may have been our studies from the great examples of our art, their impressions and our memory of them grow dull, and our very sketches lose their early value, unless we introduce, ever and anon, new matter by the study of ever fresh examples, and by the repeated study of those with which we were once familiar.

To the young and ardent student, the study of the ancient examples of his glorious art is the subject of romantic anticipations, of delightful realities, and of hallowed and cherished memories; while, as we grow older, it is not only essential to take every opportunity of re-lighting the lamp of our youthful enthusiasm by revisiting the objects which delighted us in earlier life, and of ever adding to its flame by seeking out

fresh objects for our studies; but it is consoling to feel conscious that, while other sentiments may possibly become less vigorous, this all-absorbing source of delight never fails to kindle in our hearts the same enthusiasm as ever; and that even old age does not lessen the almost childlike earnestness with which we revisit and again sketch from the object of our youthful admiration.

Let us, then, encourage these feelings, and never for a moment imagine that advancing years have any right to damp them! These considerations lead on to what is always the most melancholy part of our annual addresses,—the memory of those who, though keeping up, perhaps to the last, these lively feelings for their art, have been, during the past year, taken from amongst us.

The losses we have to deplore are as follow:—M. Baltard, architect, of Paris, honorary and corresponding member, of whom I will ask our foreign secretary, or Mr. Phénix Spiers, to speak; Mr. Elkington Gilh, architect, of Bath, Fellow, a most respectable and excellent member of our Institute; Mr. William Perkins, architect, of Worcester, an old pupil of Thomas Rickman, of honoured memory.

Mr. Perkins was the official architect to Worcester Cathedral, and carried out the recent restoration there. I was associated with him in respect of internal fittings and decorations, and can bear witness to his knowledge of our ancient architecture, to his practical skill, and to his honourable and thoroughly trustworthy character, both professionally and personally.

Lastly, I have again to advert to the loss, not only to our Institute, but to our art and to the world,—sustained by the decease,—all too antecedent,—of our highly-gifted and most valued friend and Fellow, Mr. Owen Jones.

Enough has, perhaps, already been said at different meetings to show what were our feelings towards Mr. Owen Jones, and how deeply we have felt, and must ever continue to feel, his loss. I do not myself feel able worthily to add to this; inasmuch as nothing short of a memoir by one whose privilege it has been to enjoy his intimate personal acquaintance can so add to what has been already said, as to do any justice to the gravity of the subject. Sir Digby Wyatt is obviously the man to do this. He was away at the time of his friend's decease; but I trust he will, ere long, favour the Institute with such a personal sketch of the life and of his own reminiscences of his and our common friend, as may adequately represent, on the face of our Transactions, both the eminent qualities of our distinguished member, and our appreciation at once of his merits and of our loss. . . .

I may here mention that the bequest of 1,000*l.* by our lamented Fellow and past-president, Sir William Tite, has been thoroughly considered, as to the precise mode of carrying out the instructions of the testator, by a special committee; two members of which were especially selected from among those personally acquainted with his wishes. This committee was efficiently aided by our honorary solicitor, and it is trusted that the result will prove satisfactory.

A bequest has recently been made by the will of the late Mr. Thomas Grisell, of Norbury Park, of 250*l.*, to be expended yearly on founding a new medal. I have a melancholy pleasure in recording my sentiments of friendship and respect for the memory of Mr. Grisell. It was many, many years back that I placed myself for a short time under him, for the purpose of studying the more practical departments of my profession, and I can never remember him but with feelings of respectful regard.

Ely Chapel.

Early in the present year the attention of the Council was called, by a letter from Mr. Christian, to the proposed sale by auction of

Ely Chapel, in Holborn; that gentleman urging that some steps should be taken towards preserving that interesting example of Mediæval architecture.

I may here mention,—for the information of the few, either among the hearers or readers of my address, who may need it,—that the chapel of St. Etheldreda, in Holborn, is the solitary remnant of the once splendid London Palace of the Bishops of Ely. It appears to have been erected by Bishop de Luda (or Louth), who held the see from 1290 to 1298, and is consequently about coeval with the exquisite monument to that bishop in Ely Cathedral,—a work clearly by the same hand with the tombs of Edmund, Earl of Lancaster, and Aveline, his wife, at Westminster, and of Archbishop Peckham at Canterbury; four works of art which may challenge Christendom for any to surpass them; and this chapel bears so much resemblance to them in some of its details as to suggest a like authorship. It may be said to be a worthy contemporary of the sanctuary and earlier eastern chapels at St. Alban's; of the abbey churches at Newstead, Tintern, and of Sweet Heart; and of many other of the noblest productions of the most refined and completed variety of Mediæval architecture. It has been immortalised by Shakespeare in Richard III. and by Pugin in his "Contrasts"; and thus stands high, both as an historical monument and as a work of art.

These claims, however, were unavailing to save it from the inexorable hammer,—not used, we may hope, to "break down the carved work thereof," but still, at all risks, to knock it down to the highest bidder.

The Council lost not a moment in taking up the cause of the threatened monument. A deputation called both on the law officers who had ordered the sale, and on the auctioneers who were commissioned to carry it out. Our accomplished Secretary pleaded its cause in the *Times*. I wrote myself to the two men whom I deemed from their antecedents most likely to open their hearts and their purses in such an extremity,—but received no efficient offers of aid; when, as a response to Mr. Eastlake's appeal, Baron Albert Grant came forward with offers of immediate aid, if we would subsequently use our exertions to induce the public to take it up.

We thought that the precious monument was rescued,—but, unluckily, we had been requested to advise a maximum to be offered,—and, to our dismay, an unknown bid went beyond our commission. We could readily have amended this; but we had failed to arrange our plans with due forethought and perfection, and it was lost! Happily, in due time, it transpired that the purchase had been made for Roman Catholic uses, so that we may hope that the precious relic may be preserved and its mutilations restored.

I trust, however, that our future efforts of this kind will be more perfectly arranged; though I acknowledge to a large share in the imperfection of those I have recorded.

The Metropolitan Buildings Bill.

Among public events of the past Session with which the Institute has been brought into official connexion, may be mentioned the attempt made by the Metropolitan Board of Works to supersede the present Building Act by a new Bill, which was introduced in the House of Commons by Sir James Hogg, M.P.

It will be remembered that our Council in their annual report for 1874, drew attention to the fact that the draft of this Bill was only submitted for their opinion at the eleventh hour, when there was but little or no time left for its examination. A committee was, however, appointed to consider the subject, and they prepared a report, which was subsequently adopted by the Council and forwarded to the Board of Works. In that report objection was made to

the general principle of the new Bill, which appeared to confer upon the Metropolitan Board of Works too full and too arbitrary powers, and to reduce the position and individual authority of the district surveyor. It was also remarked that this Institute, to which for nearly twenty years the duty of examining candidates for that office had been entrusted, was practically ignored in the Bill; and this naturally led to the inference that the examination itself, which had been carefully and gratuitously conducted for so long a period, might lapse altogether, at least under its present system. Several other objections, chiefly of a technical nature, were raised to the Bill in our report, which, having been duly circulated among our members, was brought forward for discussion at a special general meeting, held here on the 11th of May last. Meanwhile, a petition against the Bill had been drafted by Mr. Beresford Hope, our late president; who, I may here say parenthetically, is always ready to render us services of this kind, and give this Institute the full benefit of his position and influence in Parliament. It was also intended that a deputation from the Institute should wait on the First Commissioner of Works for the purpose of explaining the objects of the petition. Unfortunately Lord Henry Lennox's engagements prevented him from receiving the deputation before the new Bill came on for discussion in Parliament, but he subsequently made an appointment with Mr. Estlake, who had an interview with him on the subject. The Bill was eventually referred to a Select Committee of the House of Commons; and, when the matter was discussed at our special general meeting, a series of resolutions were passed, the purport of which you will probably all recollect. Copies of these resolutions were forwarded to the several members of the Parliamentary Committee, and counsel was retained to represent this Institute and support our petition against the Bill while the Committee sat. In taking this step, the Institute really acted in conjunction with the District Surveyors' Association, who themselves had drawn up a careful report on the subject, but who not having lodged a petition against the Bill would have no *locus standi* except as members of the Institute.

The Bill received opposition, as might have been expected, from more than one quarter; and, after hearing arguments and evidence on both sides of the question, the Parliamentary Committee suggested certain amendments, which, if they had been adopted by the Metropolitan Board, would have met some, at least, of the objections raised to the Bill, and might have helped its progress in the House; but the promoters of the Bill, though prepared to concede certain points, — as, for instance, the re-insertion of a clause authorising this Institute to examine candidates for the office of district surveyor, — were not prepared to withdraw or remodel those clauses which represented what may be called the principle of their scheme; and, finding this to be the case, the Parliamentary Committee decided that it was inexpedient to proceed with the Bill, and made an official report to that effect.

The Finances and Efficiency of the Institute.

I will now notice a matter concerning deeply the vital interests of our Institute, on which considerable divergence of opinion has existed, but which I entertain very sanguine hopes may lead to arrangements tending greatly to our future prosperity and practical usefulness.

Though the finances of the Institute evince a satisfactory progression, the increase in our expenditure has advanced at a more rapid rate, and was found last year to have so nearly overtaken our income as to excite some alarm. . . .

It has been, I think, clearly shown by our secretary and others, that the alarm felt by the finance committee was rather prospective than bearing directly upon present exigencies, and that the unfavourable figures were the result of some exceptional calls upon our funds, which need not be repeated; but, on the other hand, it is the farthest from being desirable or satisfactory that a great society like our own, — the standing representative of the professors of a great and universal art, — should ever be in danger, — under circumstances however exceptional, — of scraping the bottom of its purse, or finding itself unable to meet expenses which the exigencies of the profession it represents may point out, from time to time, as being beneficial. Such a position, I urge, is beneath our just dignity, and would at

times render nugatory our efforts for the great objects for which our Institute was founded.

Not to mention, however, these extraneous calls upon our finances, — have we not every year demands upon us which our great position seems to render imperative, but which the limits of our resources compel us to under-rate?

Is our *Library*, for example, on a scale commensurate with the dignity and the just demands of our profession? Have we the means to procure measured drawings of the ancient monuments, even of our own land, which every winter is reducing to impalpable dust, or the hand of spoliation sweeping away? Have we funds to enable us to procure fac-simile drawings of ancient decorations, which the very air we breathe is every moment destroying? Our Rooms ought to be the Public Record Office of all which relates to the ancient and perishable relics of our own and of the collateral arts.

Again, — Have we sufficient means of sending students about to study their art, in our own or in foreign countries? Happily we are able to do a little; but are we content with that little?

And yet again, — Have we means at our disposal to aid and promote schools of study under our own eye? or, on the contrary, are not the few poor pittances doled out most unwillingly for such objects reckoned as among those exceptional expenses which we promise ourselves and bargain with others never again to repeat? And were we not tempted this year to view the failure of the Soane Competition almost as a windfall?

I rejoice to think that a portion of the new committee [appointed to report on this question] consists of *Associates* — of men young enough to remember the defects and needs of their own pupillage, and to sympathise with those who are still but students. I rejoice, too, to think that some of these belong to that younger society, which is doing much towards avoiding and meeting these defects and these needs.

It has been suggested that this house, and the galleries it contains, should be made the means of exhibiting, from year to year, specimens and objects of contemporary art, tending to excite ambition and emulation; and were such exhibitions conducted with a fearless and rigorous censorship, it would be most useful. The fear is, that it would descend to the rank of an advertising office. Far more, however, do we want a constant exhibition of the works of those artists and workmen of good old times, which would excite no jealousy, and respecting whose claims upon our study there would be little difference of opinion. I trust that this new committee will not report till they are able to show us how to attain these objects, and all others we need: if without raising fees and subscriptions, well; but anyhow to attain them. I will only add on this subject, that the number of our members, though large, is small as compared with the extent of the profession; and that the increase of our members brings with it also the increase both of our usefulness and of our resources.

The Completion of St. Paul's.

One circumstance which has somewhat disturbed the public mind in relation to our art and to one of its noblest monuments, it may be hardly safe to allude to while so much excitement exists. Yet it is so exceptionally important that to pass it by in silence might be attributed to cowardice or carelessness. I allude to the project for decorating the interior of St. Paul's.

On this project the Council of the Institute, as long ago as 1870, passed a resolution cordially approving of the same, and offering the co-operation and sympathy of the Institute, though even in the absence of any such voluntary expression of feeling, it needs no assurance that a society like ours would feel the deepest interest in the success of such a work.

The outline of the intended treatment of this noble interior, which was laid before the public at that time (1870), as the groundwork on which the committee sought subscriptions, was as follows.

After alluding to the great care which would be required in the selection of artists and designs, and the necessity of a considerable amount of experiment before any final decision could be arrived at in so many difficult questions of art, they proceeded to say: —

"The leading principle affirmed by all who have been consulted is this — To make Sir Christopher Wren's intentions for the completion and decoration of the Cathedral the main text, as it were, and to study to carry out as implicitly as possible whatever he may have expressed in drawing, model, or writing; and, where these materials for

guidance fail, that harmony is to be sought for to the fullest practicable extent with what he has proposed or done."

"Sir Christopher Wren's views are consistent with the most magnificent ideal. We know that mosaic pictures, rich marbles, and sumptuous gilding entered largely into the calculation of what he thought was due to his design."

Proceeding to mention Sir Christopher Wren's intended marble ciborium or altar-piece, and his magnificent choir-screen, which, with its architecture, metal work, and sculpture, would be a very gem of art, they continue: —

"The better to illustrate the idea of the magnificence which has been imagined, let the entrance be supported at the west end, about to become the easiest access to the Cathedral. On passing through bronze doors richly charged with devices, the first most striking effect would be produced by the brilliant roof covered with mosaic patterns, and rich with gold. The cupola immediately overhead, 40 ft. in diameter, and the pannels of the exquisite side chapels, would be pictorially treated in the same material. The walls relieved with marble slabs and marble mull; the pavement also and the windows, enriched with colour, must be so treated as to preserve a due regard for breadth of effect and the necessity in St. Paul's for a large amount of unobstructed sunlight. All panels to be filled with coloured marbles or sculpture, and no niche to be without a statue. The side and transepts must, however, be in some respects subordinate to the choir."

"In the great dome, which has been happily called the very 'essence of the building, the *graviolle* pictures of Sir James Barry cannot ultimately, to give place to Sir C. Wren's cherished wish for mosaic pictures. And, in addition to these, the drum and the eight spandrels (the latter already commenced in mosaic) will afford grand scope for the highest efforts of art and magnificence."

"The roof of the choir should be a splendid and impressive work in mosaic, elaborate without massiveness, dignified in general effect, surpassing the richness of the rest of the church. The windows in the apse will here also be more fully coloured; and the marbles, whether of a classical, arabesque, or human, and what art can be made of, or in panels and inlaid patterns on the walls and pavement, would all be arranged so as to impart a fuller idea of sumptuousness. This must be especially the case with the ciborium and the choir-screen already referred to."

They then quote from Sir Christopher himself the following remarks: —

"Painting and sculpture," said the judicious Sieur de Cambray (Holland House), "are the politest and noblest of ancient arts, true, ingenious, and claiming the resemblance of life, the emulation of all beauties, the fairest of records of all appearances, whether celestial or sublimity, whether angelical, divine, or human. And what art can be more hopeful or more pleasing to a philosophic traveller, an architect, and every ingenious mechanician — All must be true without it."

I have quoted these passages because, in the state of excited confusion into which the whole subject has recently fallen, it may be well to have a fair conspectus before us of the actual programme thus early laid before the public, as the foundation for the appeal to their co-operation.

Such, then, was the proclaimed intention; nor is it possible to conceive a promise of more gorgeous sumptuousness than it offers; so that we must not now complain of excess of splendour, though the treatment and design are fully open to our criticism.

About this stage of the proceedings, the executive committee appear to have requested Mr. Burgess, — not as an architect, but rather as a man learned in Christian iconography, — to lay a scheme before them for the arrangement of subjects for the mosaic work, sculpture, &c., which he did in a very detailed form, displaying great mastery of the subject, though I would suggest one falling off from the spirit, though not the letter, of the programme in the omission of figure-subjects from the small domes in the bays of the nave and choir. At that time Mr. Penrose was the sole architect to the committee, as well as being officially surveyor of the fabric; and it was, I suppose, nearly two years later that for some reason, right or wrong, the committee determined to nominate an architect to the work distinct from the surveyor of the fabric. I had been myself a member of the executive committee, though I had not usually acted; but I attended at that time expressly to oppose this change, which I thought unfair towards Mr. Penrose; but, on its being carried, I advocated and voted for the nomination of Mr. Burgess, thinking that his knowledge of iconography and of ecclesiastical art would, when united with Mr. Penrose's learning in the Classic and Renaissance styles, ensure a good result.

Mr. Burgess's instructions were (roughly speaking) to follow Sir Christopher Wren's intentions, wherever they could be ascertained or inferred; but, where they failed, the directions were, not so much (as expressed in the programme) that "harmony was to be sought for to the fullest practicable extent with what he had proposed or done" (though this was suggested), as that reference should be made to the works of the best Italian artists of the sixteenth century. The reason, I presume, why the con-

tinuator of a work of the eighteenth century was referred back to artists of the sixteenth, was the impression that the revived classic of the earlier period had become more or less corrupted in the time of Wren, and that the lamp should be rekindled from its earlier flame. I know not whether this was ever made clear to Mr. Burges, nor do I know much,—excepting from the printed statements,—of the mutual arrangements and relations which have subsequently existed between that gentleman and those with whom he had to act; but it would appear from those statements that, where the most implicit freedom of communication and the greatest possible mutual confidence were essential,—the very reverse of these has on both sides existed. No wonder, then, at the utter chaos and confusion which has arisen!

I do not go into these particulars with a view to take either side on a question on which the public mind has been lashed almost into frenzy. Where one party is disposed to approve and the other utterly to condemn the whole of what is laid before them, was to the ill-starred wight who ventures to suggest intermediate or moderate views. The exceptional character, however, of the subject is such as to outweigh all such risks, and my object in going into the matter is to urge the importance and the justice of an absolutely dispassionate investigation of all the questions at issue, each calmly and on its own merits. I do not think that this can possibly be done by those who have allowed themselves to become infuriated, and have committed themselves to desperate extremes, but I feel convinced that, if entered upon in a calm manner and a spirit of justice and good feeling, by persons at once qualified and uncompromised, the difficulties would one by one vanish, and that the highly talented architect and his eminent colleagues of his own and the sister arts would produce a result which might defy hostile criticism, and be acknowledged to be a system of treatment worthy of the great architect of whose work they are continuators. Mr. Burges is accused of speaking contumeliously of Sir Christopher Wren, and of not having paid due regard to his intentions; but who does not sometimes in an unguarded moment give vent to thoughtless expressions afterwards regretted, and who is the judge of Sir Christopher's intentions? Indeed, if Mr. Burges were disposed to carry the same accusations into the camp of his critics, he could readily obtain practical commentaries on both of these questions from the writings of our talented and valued friend, Mr. Fergusson, who may be shown to have repeatedly said about as hard things of Wren in good earnest as Mr. Burges, unhappily, seems to have said (let us hope) in jest; nay, that he has not long since proposed in a printed letter to the Dean, almost entirely to reconstruct Wren's choir, converting it bodily into a new and vast dome, of which he gives a design. This, however, he defends against all charges of irreverence for the great architect's intentions, such as he feels it right to press against Mr. Burges, by pointing it out to be composed of Wrenian elements, and by expressing his earnest conviction that, had Sir Christopher foreseen the change, it would have gladdened his death-bed, and it is almost suggested that, were it possible, he would even now signify his approval of the proposal.

Mr. Fergusson has more recently condemned *in toto* the use of mosaic so early and so publicly announced by the programme, and repudiated the Italian architects to whose works Mr. Burges had been so emphatically referred; so that, so far as he could look to that gentleman as a guide, poor Mr. Burges must find himself reduced to a state of supreme puzzlement, which seems to demand some new and unplugged agency to clear it away. Anyhow, unless some such step be taken, this noble project of completing St. Paul's, which has for years excited such lively interest, seems doomed to inevitable shipwreck; for, depend upon it, the Dean and Chapter will never incur the responsibility of making it over to amateurs. My personal wish would be to see the two architects working hand in hand, each supplying that in which his special strength lies, and both together guiding into unity the efforts of a band of the noblest artists whom our age can produce.

But, whatever may be the course pursued, I would urge that the work be one of completion and of decoration, and in no degree, however small, a work of architectural alteration. The public have long since accepted the one, but they justly reject the other; for, to use with a slight modification the words of an excellent

modern writer (though they cut in one special instance, I am sorry to say, against myself):—

"A patchwork improvements in the modern style,
Bestow'd upon some venerable pile,
Do but lead us on,—structures to revise
That Wren has built, another Wren must rise."

The Royal Gold Medal.

I now come to a circumstance which has caused some feeling of vexation, though it has happily culminated in what would, but for a melancholy circumstance, have been the most agreeable item in the agenda of this evening. I refer to the award of the Royal Gold Medal for the year 1874.

Had the Council from the first determined to recommend as the recipient of the medal for this year an English architect, there would scarcely have been room for a doubt as to the architect whom they would have selected; but they, after careful consideration, thought that on this occasion the consideration should be limited to Englishmen distinguished for their literary productions in connexion with architecture,—and it was most natural that, under these conditions, the choice should fall on Mr. Ruskin.

That gentleman being abroad, we failed to obtain a reply from him to the intimation of our choice; and time pressing, the recommendation of the Council, after being ratified by the general meeting of the Institute, was communicated to her Majesty, and received her gracious approval.

To our great disappointment, we afterwards received from Mr. Ruskin a letter in which he declined to accept the proposed honour; a refusal which subsequent correspondence failed in inducing him to retract.

As the season was then far advanced, I suggested through General Sir Thomas Biddulph that the award might perhaps remain in abeyance for this year; but on receiving her Majesty's command to submit to her another name, the Council rescinded their former resolution, that an author rather than an architect should be recommended, and unanimously chose Mr. Street; a choice since confirmed by a general meeting of the Institute and graciously approved by the Queen.

In judging of the conduct of Mr. Ruskin in declining the proposed honour, a wide range of circumstance and sentiment demands our consideration. In my own personal communication to him on the subject, besides the apparent disregard which his refusal seemed to involve for the honour graciously offered by the Sovereign, I argued that he and our Institute were labourers in the same cause whether we define that cause as the advancement and perfecting of architecture or the conservation of its ancient monuments and productions; that, in so far as we may have failed, we were sharers in that failure, and *vice versa*; and that for him to refuse the sympathy of us—a corporation for these ends, as expressed towards himself—a corporation sole labouring in the same direction, was, to say the least, vexatious and inconsistent.

His ostensible reasons were the general havoc he found, whether in the form of "restoration" or of direct spoliation, to be made or making in all countries with ancient monuments; and I argued that we had for years had a standing committee for their defence, and were really doing actively and practically what he advocated for their preservation; so that to visit these misdoings on us would be the reverse of being just.

It may be reasonable, however, to modify our judgment by taking another view of the case. In doing this we may remember that Mr. Ruskin's position has ever been the raising of his protesting voice against the artistic or non-artistic vices of the age. Had we at once co-operated with him and been successful in stemming the course of these vices, it would on his view be consistent for us now to be giving and receiving compliments and congratulations; but, as he says, we took no notice twenty years back, when he lifted up his voice like a trumpet, and that now we desire to show sympathy we cannot point to a very practical result as a ground for our congratulations, but, on the contrary, are compelled to admit that the ancient monuments of every country in Europe, and our own no less than others, show at all points the marks of the desolating hand of pseudo-restoration or of open rapine.

The instances which Mr. Ruskin selects as representative of this deplorable class of facts are as follow:—

1st. The neglected and sordid condition of the tomb of Cardinal Brancaccio at Naples, which

he views as the most important example in Europe of the architectural sculpture of the fifteenth century.

2nd. The conversion of the church of San Miniato, at Florence, the most beautiful example of the twelfth-century architecture in that city, into a common cemetery.

3rd. The destructive restorations carried on in the exquisite chapel Santa Maria della Spina, at Pisa.

4th. The recklessness with which the ruins of Furness Abbey have been dealt with by the railway engineers.

These four facts he considers only too illustrative of the general agency of the public, and of the builders employed by them, on the existing architecture of Europe; consisting in the injurious neglect of the most precious works, in the destruction under the name of restoration of the most celebrated works for the sake of emolument, and in the sacrifice of any and all to temporary convenience.

For the existence of this state of things he considers that we—the members actual and honorary of the Institute of British Architects—are assuredly answerable, at least in England; and under these circumstances, he says, he cannot but feel that it is no time for us to play at adjudging medals to each other, and must for his own part very solemnly decline concurrence in such complimentary formalities, whether as regards others or himself. For we have none of us, it seems to him, any right remaining either to bestow or to receive honours, and least of all those which proceed from the grace and involve the dignity of the British Throne. He concludes with an assurance of his personal respect for the members of the Institute, and of profound regret at finding himself compelled to decline their intended kindness and courtesy.

Now, all this may be viewed from two different points. We may, on the one hand, very fairly protest against the injustice of being made in any degree responsible for acts in which we have had no hand, over which we had no control, and against which we should protest as loudly as Mr. Ruskin; but, on the other hand, we being the incorporated representatives of architectural practice, may, in a certain sense, be held to represent *its vices* as well as *its virtues*, and in the eyes of a self-constituted censor, and one who from his first appearance before the public has devoted himself wholly to protest and warning, we can hardly wonder that, if he holds us thus responsible, he should not think it a time for us to be playing at compliments with our censor.

Read for a moment his expressions of righteous indignation directed nearly a quarter of a century back, and imagine what must be his feelings wherever he directs his steps. If he travels in France, he finds restoration so rampant that nothing which shows much of the hand of time is considered worthy of continued existence, but must be reworked or renewed, cleverly, artistically, and learnedly perhaps, but nevertheless new work taking the place of the old work, or the old work retailed till scarce a vestige of the surface on which the old men wrought so lovingly is allowed to remain. If he goes into Italy, much the same meets his eye. In his own Venice the Fondaco dei Turchi, the most venerable secular Byzantine work, is rebuilt. At Rome he would observe a square mile almost excavated and carted away, which contained—discovered only to be in great measure destroyed—the ancient wall of Servius Tullius, 12 ft. thick of solid masonry, and against it a second Pompeii of antique Roman houses, hardly explored, but merely disinterred and carted away as rubbish. At Assisi he would find the works of Cimabue and Giotto in the hands of the restorer, though as I trust with better promise. In Belgium he would find ancient buildings chipped over and made to look like new; or, as is the case with the wonderful church of the Dominicans, at Ghent, deliberately destroyed. And, is the case much better in our own country? Has not the hand of false and destructive restoration swept like a plague over the length and breadth of our land, and are not those churches which have been treated with veneration and care a mere gleaming among those which have been dealt with in careless ignorance of any value to be attached to them? To Mr. Ruskin's eye the best of our restorations are mere vandalism, for he protests against them root and branch; and to him all the difficulties and disappointments met with in carrying them out would be only so many reasons for reproaching us for having undertaken them at all. Anyhow, he would find in England far more than one half

of our ancient churches to have been so dealt with by ignorant and mercenary hands that one is ready to curse the day when the then youthful Cambridge Camden Society, all too sanguine and ardent, adopted for their motto the ominous words so sadly realized, "*Donec Templum refeceris.*" But restoration has not laboured alone in the work of Vandalism; deliberate destruction has been rife amongst us. Has not one great cathedral body deliberately pulled down its ancient hospitable hall of the fourteenth century, and another its stupendous tithe barn of the thirteenth? Near another cathedral, where the episcopal palace is formed out of a vast Norman hall, the sole remaining instance of a hall of that age supported by original timber pillars and arcades, I have only just now seen some of these timber arches lying as old material in a builder's yard, having been turned out I fear under the eye of a Fellow of this Institute for the purpose, to use Mr. Ruskin's own words, of "temporary convenience."

Knowing, then, who it is that we have sought to honour, great as was at first our dismay at his rejection of our advances, we need not, on consideration, wonder that he does not permit his ascetic voice to be softened by our proffered compliment, but rather exclaims with a fellow-ascetic of olden time: "Is it a time to receive money and to receive garments, and olive yards and vineyards?"—"It is no time for us to play at adjudging medals to each other."

Fully, however, as we may allow that we have in these days more cause for humiliation than for mutual gratulation, we cannot go so far as to admit that this deprives us of the right and privilege of giving honour where we know that honour is due. Great as are Mr. Ruskin's merits, they are in the main those of *words* rather than of *deeds*; we would fain have paid a tribute of acknowledgment to the utterer of these burning words, whether we may in all points agree with them or not; but our approaches having been repelled, we, in reconsidering our position, determined to transfer the honour to one who has shown himself great in actual and substantial works of the highest merit; and we feel that in doing so we honour also another powerful and instructive writer on architecture; and, while resending our resolution that "the consideration of the person to be recommended for the Gold Medal of 1874 be limited to Englishmen distinguished for their literary productions in connexion with architecture," and determining to recommend an English architect, we scarcely depart from the spirit of the resolution we rescind, for we are only adding to the qualifications it prescribed the more substantial merits of a practical architect. Mr. Ruskin says we have not any right remaining either to bestow or receive honours; but he, perhaps, reserves to himself the pontifical power of dispensation; and as he has somewhere pronounced of Mr. Street's greatest work in prospect, that it will be a source of perpetual delight to future generations, we may fairly presume that he has thereby exempted Mr. Street from the disability referred to. Anyhow, we will not only venture on acting instrumentally in the bestowing of this honour, but may go the length of congratulating ourselves on having been led by force of circumstances to a better choice than we had at first made.

I may say for myself that I had gone to the Council meeting with the intention of proposing Mr. Street, when the course of discussion led us to choose a man whom we might have guessed, had we sufficiently thought of it, would be likely to bring some theory to militate against our intentions, and who has really not done so much to merit this honour as Mr. Street; for, after all, an anatomiser of what is bad claims lesser honours than he who practically carries out what is good. Mr. Street, I feel, needs no laudation from me; but I cannot forbear to say a little in that direction. It was my privilege to know Mr. Street in very early life, when he had just completed the years of his pupillage. He was already a most devoted and advanced student of Medieval architecture; so much so, that I have within the present year mistaken for old Medieval work, details which I now believe were produced by him during his pupillage. From that time (the date I refrain from giving as it may betray my own antiquity) I knew Mr. Street in the most practical manner possible, till he commenced practice, and had every means of watching the rapid development of his artistic power, his intense devotion to his art, and his almost superhuman capability of hard work, and that in its most artistic form; added to his enormous study of ancient examples of the style

to which he specially devoted himself. Since then his labours need no record; they have been ever before the public. He sprang suddenly into fame, and has been ever advancing more and more rapidly in the estimation of all who can appreciate genius and skill, till he has attained a point of eminence beyond which an architect need scarcely aspire.

I will not attempt to enumerate even a small selection of Mr. Street's works. They are soon broadcast over this and other countries, and it is our own fault if we are not personally acquainted with their excellencies. I will rather dwell on the moral side of Mr. Street's artistic character; his steady pertinacity in following on the great movement to which he from the first attached himself. I will not say that he has been wholly unmoved by the passing fluctuations of taste which ever and anon float over us; that would be to convert steadfastness into dull immobility; but he has adhered with absolute loyalty to the great revival, and that in its best form—the revival of the earlier, the most vigorous, and more perfect types of Medieval art. For it is my opinion that no revival can be defended which is not based on the *best*, the *most pure*, and the *most vigorous* types of the style to be revived. Not only, then, has Mr. Street closed his eyes to the siren's song which would lure him away from his great purpose by the quaint mysteries of the period when Gothic had been lost and Classic not regained, or by the blandishments of Queen Anne of blessed memory, but he has resisted in a great degree even that eclecticism which would treat all the true varieties of Medieval art as having an equal or even a joint claim to revival. I envy and *revere* this unbending steadfastness, and earnestly wish that it may prevail.

I alluded in my last year's address 'to Mr. Street's great and mighty work, the Law Courts, and expressed a hope that the threatened cutting down in costs would be reconsidered and relinquished. I know not how this matter may stand, but I repeat my earnest hope that in a work of so much magnificence and of so national a character, no petty economies will be allowed place, but that it may be carried out in all its integrity and nobleness. I have not that knowledge of the design which would warrant my offering any remarks upon it. I have alluded to Mr. Ruskin's expression of feeling, and will avoid thrusting my head into (what shall I say?) the *very hive of bees*, though, as the industrious swarm seems just now to have settled under a neighbouring copula, there, perhaps, at once to distil their sweet condiments, and to whet their spicula for another contest, I am probably shrinking from a danger which has ceased to exist. I will content myself with wishing all success to Mr. Street's great work.

But, as I have said before, Mr. Street's claims do not rest wholly on his structural works: he is an author of no mean eminence, and his book on "The Brick and Marble Architecture of Italy," and his "Gothic Architecture of Spain," will always stand forth as practical evidences of this fact, not to mention the more fugitive productions of his pen. These works are not only of the utmost value from the talent of their author, but more especially so as proceeding from one who has probably extended his studies and his wonderful powers of sketching to the Medieval buildings to a greater number of countries and places than any other living man.

Since I wrote the above, an affliction of the heaviest form has fallen upon him whom we were rejoicing to honour. He has suddenly been bereft of the companion of his life, the sharer of his wonderful success, and the efficient and sympathising coadjutor in many of his labours, collateral, to say the least, to those which have rendered his career so brilliant. We have already, in our corporate capacity, expressed to him our deep condolences, and every member of this Institute will render him, silently or expressed, his own special tribute of heartfelt sympathy. We are necessarily, through this most sad event, deprived of the pleasure which would have arisen from a personal presentation of the Medal; and Mr. Street has deputed his valued friend and ours, Mr. Pearson, to receive it in his name.

Par nobile fratrum! Mr. Street is appropriately represented by a brother architect, whose works are well worthy to stand side by side with his own; and I hope to see the day when Mr. Pearson may receive this token of honour otherwise than as a deputy.

I beg you, my dear Mr. Pearson, to receive this Medal,—the gift of the Queen,—in the name

of our common friend, Mr. Street, and to assure him of our admiration of his genius, and the share we one and all feel in his sorrow.

ORNAMENTAL GARDENING.

WITH that consistent effort at completeness in treating a subject which is so characteristic of the French illustrative publications, the author of the great work on the "Parcs and Promenades de Paris," recently completed, and pronounced his labours by an introduction giving, with almost the fulness of a separate treatise, a sketch of the progress and varieties of ornamental and landscape gardening at different periods, accompanied by numerous illustrations. The almost unwieldy size of the book will, we fear, prevent it from finding a place except in public collections and private libraries of some extent and pretension, and a look through the heads of M. Alphand's introductory treatise in commencing some account of the book, will not be without use.

"Gardens," says our author, "being the completion of the habitation of man, have undergone, in the same country, changes analogous to those which transform the house. Simple in their origin, and entirely devoted to the cultivation of useful vegetables, just as we find them now around our cottages, they have been enlarged and modified in proportion as the human mind has become more refined, in proportion as the manners of man have become perfected, and his more delicate perceptions acquired. The employment of the garden as a useful resource has been more and more restricted, or altogether abandoned. A work of art, of the most original type, and of great charm, has been little developed, forming a graceful setting for works of sculpture and of architecture."

In attempting to restore or describe the probable aspect of the gardens of antiquity, from the slender indications available of this nature, we fall back, thinks M. Alphand, on the unity of feeling in ancient art as compared with modern:—

"En les étudiant, on peut, à l'aide des fragments ou par analogie, reconstituer les choses disparues, leur rendre, avec quel degré de certitude, la forme dont elles avaient été revêtues par les artistes de l'antiquité. Cet enchevêtrement, cette unité dans les créations artistiques, sont surtout visibles chez les nations antiques; l'isolement des artistes n'entretenant la pureté des types, le progrès se faisait lentement, c'était un panouissement régulier, puissant, paisible, comme tout effort longuement et sursis; cela ne ressemblait nullement à l'engouement léger de la mode, qui n'est que des œuvres médiocres et des imitations maladroites."

This latter remark is very well put as a discrimination between the spirit of ancient and modern taste,—the gradual and uniform development of the one in comparison with the rapid and contradictory changes of the other; but as an excuse for giving conclusions as to ancient gardening, with little or no facts to go upon, it will hardly stand. There are indications of the arrangement of gardens, certainly, in the incised records of Egyptian monuments (a specimen of which is engraved), leading to some conclusion as to the highly symmetrical arrangement of their gardens, with avenues and artificial basins or canals; a severe style of treatment seem to point, the indications of the architecture of the Greeks, M. Alphand takes shelter, in default of absolute information, under that convenient "*devait être*" which comes so handy to the French critic, and for which one can only lament there is no adequate representative in English; "must have been" is a little too strong, and does not evade or glide over the confession of actual ignorance in so light and delicate a manner as the French formula supplies. In his conviction that the gardens of the Greeks "*devaient être*" of a symmetrical character in accordance with the architecture, M. Alphand is, however, at variance with some other critics, who refuse to see in Greek architecture that love of symmetrical arrangement which others find in it, and rather regard it as seeking the picturesque in irregularity of disposition and arrangement, though strictly symmetrical in detail. And the question whether Greek architecture does not really harmonise best with a somewhat picturesque and irregular laying out of the site, is at least an open one, if indeed it be not regarded as nearly decided (by the sites of the existing remains of Greek temples), against M. Alphand; who, in fact, speaks in another paragraph of "the grace with which their architecture allied itself to natural landscape." Another point in regard to the relation of Greek architecture to landscape, alluded to by the writer, is the use of

* Les Promenades de Paris: Bois de Boulogne, Bois de Vincennes, Parcs, Squares, Boulevards. Par A. Alphand, Inspecteur-général des Ponts et Chaussées, Directeur des Travaux de Paris, &c. J. Bachevalier, Editeur. Librairie de la Société Botanique de France.

the module as the basis of proportion, which, he observes, "gave to their architecture an elasticity which permitted them easily to place the mass of the building *en rapport* with the natural lines of the ground, without altering its general disposition." There is, however, something to be said on both sides in regard to this; for one effect of this unaltering proportion was to obscure the scale of a building, and therefore to make a larger or smaller work than the average give a false scale to the landscape. If the Greeks had really the feeling for landscape with which M. Alphonse crochets them, it would be surprising that this should have escaped them; but we do not think there is evidence of anything whatever analogous to the modern feeling for landscape having existed in ancient Greece.

We have more indication of the ancient gardening taste of the Chinese and Japanese (at whom the author next glances), owing both to numerous conventional but sufficiently indicative representations on their works of art, and to the obviously unchanged character of their civilisation for a long period. From what we may fancy of the Greek garden, to what we know of the Japanese and Chinese one, is a long step. The whole disposition of these latter bears out as strongly as anything could the position taken by the author at starting, as to the relation between styles of gardening and national character or history. He rightly characterises the Japanese garden, with its little irregular clumps of trees, its wriggling walks and shapeless ponds, as "an idea arrested in development." . . . The workman, patient, and devoted to his task, has become clever at it; but the artist has only insufficient perceptions, and in consequence a very limited conception: "a remark which might be equally applied to the whole circle of Japanese art, at present so disproportionately prized. It is the art of the workman, not of the artist. In the Chinese garden, again, how characteristic of the people, with their vanity and self-glorification (now diminishing, probably, under the influence of a wider European intercourse), is the aspect of their "little heaps of earth affecting the air of mountain-chains—an error of proportion very common, but which does not in the least shock the Chinese artist, and which he frequently and advisedly commits."

Of the gardens of the Romans, M. Alphonse observes that they were regular, though not strictly symmetrical; the pomp of imperial luxury demanding that the palace should be surrounded "by avenues adorned with 'statues, by columns, obelisks, trophies, arches of triumph, &c.' Whether this desire for a pompous conventionalism of appearance is connected with the sway of unlimited power, or whether modern instances of its development have only arisen from a desire to imitate and revive the style of the Roman empire in all its details, it might be difficult to say. It does seem a fact, however, that despotism has seldom content with the beauty of landscape as it exists, but desiderates conventional and expensive improvements, as tangible evidences, perhaps, of unlimited wealth.

The gardens of the Middle Ages, M. Alphonse dismisses cursorily enough, as scarcely coming under the head of artistic work; only noticing the prevalence at this period of that taste for studiously intricate arrangements of alleys which subsequently became a known feature in gardening under the title of a "maze," as in the well-known though very paltry little specimen at Hampton Court. The plan of the garden of the Château de Gaillon is adduced as a specimen. It is, however, to the Renaissance that we are to look for the initiation of modern gardening.

"The Italians initiated and re-established the grand style of the Roman gardens, in the midst of magnificent sites. They raised, in the midst of magnificent sites, these charming summer palaces, surrounded by spacious gardens, of which we to-day admire the composition, at once learned and elegant. These gardens have been, to the modern epoch, the revelation of the landscape. They were not confined to providing merely plantations for shelter, spaces for rare flowers and for promenades. They realised a majestic decoration around the habitation, and opened up extensive prospects beyond the immediate site. Their contrivers made holiday with nature; they understood and loved her; they studied her effects, both graceful and grand; they arrived, in fine, at the true sentiment of the art."

On this head our author quotes Messrs. Percier and La Fontaine (*Musées de France*) to the effect that the gardens of this period in Italy,—

"Present the variety and the picturesque effect of modern gardens, with nothing of their monotony and artificial simplicity. They are planted regularly around the habitation, and it is always by an artistically-managed

progression that, in receding from the mansion, they ally themselves with the rural aspect of the surrounding country. There is never, as we see among ourselves, a garden in which there is the pretence of making a site, a landscape, but on the contrary it is a site made into a garden. It is the art which has adorned nature, not that which pretends to create it."

This is a most important distinction; and there is no doubt that the best principle of gardening is that here (by implication) recommended, in which the garden is an artificial addition to the natural advantages of a site. We cannot, however, see reason altogether to condemn the practice of what may be called "constructed landscape" in a garden. This is an art which has its value, particularly in regard to the formation of public parks in the neighbourhood of large towns, and where often natural variety and interest of contour, or of grouping in the land, does not exist within convenient reach. The aspect of such work when in preparation, and until some years have removed its raw look and clothed it in a natural garment, is certainly rather painful to the mind. But eventually it may realise a beauty which could not have been obtained, perhaps, otherwise. We may compare on this head two parks not differing much in size, and subject to similar natural disadvantages of a flat site; Battersea Park, namely, and the park at Birkenhead, well known as one of Paxton's happiest efforts. The whole of the effect around the admirably-contrived artificial lakes in the latter, is an elaborately built-up landscape on a small scale, with its risings and depressions, and open glades. But at the present time, after an existence of from twenty to thirty years (if we remember rightly), it looks like nature, and has all the charm of a picturesque nook with its sloping banks crowned with varied foliage, whereas the park at Battersea, made (as our French critic would consider) on more honest principles, is perfectly prosaic and uninteresting to walk in, by comparison: it is simply a fenced-in tract, inclosing water, trees, and flowers, and will never be more. M. Alphonse (to return) gives as specimens of the typical Italian Renaissance treatment, plans of the grounds of Villa d'Este, Villa Albani, and Villa Aldobrandini; possessing much the same characteristic features, contrasts of plantation or shrubbery with parterres laid out in symmetrically-arranged squares, and walks intersecting each other at right angles. In the Villa d'Este fortunate advantage was taken of the inclination of the land on one side of the grounds, so that the same kind of arrangement of the flower plats and mazes is seen on one side on the level, and on the other side arranged on a slope. In the Aldobrandini grounds the walks through the planted portion meet each other at varying, and (mostly) acute angles, like the pattern on a Moorish ceiling. It is doubtful how far this is an addition to the interest of the grounds or not; in general, perhaps it is pleasantest to find a little artifice in the walks, and not know precisely, always, whether your feet are tending, though, on the other hand, a symmetrical and rectangular arrangement certainly has more pomp and dignity. We would not, however, see gardens, even where these qualities are arrived at, divided into squares like a gridiron, as in the plan given of the Tuileries gardens in the sixteenth century. The necessity for artificial decorations to complete these symmetrical gardens is admitted. In all these Renaissance Italian gardens,—

"The lawns, the flower-gardens, the avenues, are accompanied by statues, arches, and columns. This decoration, borrowed from architecture and sculpture, is very suitable to the Italian gardens. It would be much less so in the North, where the foggy climate does not lend itself to these strong effects of light, so *essentiels* in the South. On the other hand, these regular perspectives require to be relieved by such accessories; their depth is increased by this succession of objects in bronze and marble, which break the monotony of a line of verdure too uniform, and which is not softened or shrouded by mists. . . . Thus the artists of this land of sunshine have availed profit by all these resources, and thereby been able to realise compositions which would otherwise have remained cold and dull. These pompous creations are admirably in harmony with the brilliant epoch which produced them."

The garden architects of the French Renaissance did not realise the robustness of effect of their Italian compeers, and they failed to do so from a want of breadth and largeness in their treatment of the ground, and from a slavish bondage to veritable symmetry,—the precise reflection of one half of the design in the other half. From this over-estimate of symmetry proceed, too, those monstrosities of architectural decoration in verdure,—trees and hedges tortured into piers and pediments and balustrades,—which are to be found preserved in plates of the period. Nature herself fought against this interference

with her liberties, and the constant attention required to keep her free growths duly clipped and sheared into the form and dimensions thus imposed on them, may have conducted a great deal to their abandonment. Of the ornamental parterres which were such a feature in the French gardens one may think with more favour; the system was carried too far; but a very brilliant and by no means unsuitable effect is obtained by this treatment of masses of bright and contrasted flowers in symmetrical *lignes d'axes*, wherever and whenever plenty of bright sunshine can be counted upon. Under any other aspect they look melancholy enough, and it may be questioned whether the adoption of this system in English gardens at present to so great an extent, is altogether to be commended. There are comparatively few days with us, even in the summer months, when this kind of effect can be seen to advantage. That another kind of treatment has been recognised for a long time as suitable to England, one is reminded by the heading in the book we are speaking of, "*Jardins irréguliers ou agrées, dits jardins Anglais*." M. Alphonse mentions a theory that these gardens (rare in Italy) were inspired by the poems of Milton and Pope; a curious combination to name, for certainly Pope's tastes were artificial and French enough. Milton also in his early days seems to have partaken of the taste for symmetrical gardens (gathered perhaps from his visit to Italy), if we may conclude so from his description of "retired Leisure,"—

"That in trim gardens takes his pleasure."

It was only later that there grew on his mind that conception of the natural garden:—

"Which not nice art
In beds and curious knots, but Nature boon
Pour'd forth profuse o'er hill and dale and plain,—
the Eden,—

"Wild without rule or art, enormous bliss,"—

in regard to which the latter adjective is so curiously used in its original literal Latin sense. But our author has no faith in this poetical origin of the *jardins agrées*.

"The truth is that these gardens have been created in the north, because it is the climate which really suits them. England has never been attached like France and Italy, to the Classic style, to the architecture of symmetry; she rebels, at the present day, the systematic formulae to which our artists are subjected. Must we attribute this to her insular situation, which isolates her from other nations; or rather to that facility for travelling (*pour les voyages*, he perhaps means *voyages* in the English sense) which permits her artists to visit peoples having very different arts? We think the credit must be given mainly to the climate."

In that misty atmosphere, where the landscape is *doucement estompé* (whatever that vague phrase may mean), the distances detach themselves in confused masses, which take bluish tones as they recede. The sun sometimes projects shadows which detach strongly the main objects on brilliant backgrounds; sometimes throws out the foreground in strong light, against a background bathed in grey mist. One can imagine nothing more poetic than these landscapes of faint tones, and which the movement of the mists seems to animate; a beauty ceaselessly modified by unexpected effects, and which cannot reveal its effect in the landscape of the south, bathed in an unchanging light. Thus the regular disposition, of which the effect is imposing in Italy, loses much of their value under the cloudy sky of the North. In England, but more especially in Scotland, the landscapes are admirable, less owing to the richness of the vegetation than by the contrast which is produced by the play of light. Its inhabitants were bound to endeavour to take part with these natural phenomena. They have, therefore, composed gardens where Nature keeps the *premier rôle*. . . . A pasture, where are placed here and there clumps of large trees, beyond which recedes the horizon, streaked with lines of light and blue shadows; a river, or a piece of water, reflecting the sky and the willows which grow on its banks (he need not have confined us to willows); "these are the primary elements of the English garden, or rather of the *jardins agrées* of the North. This ensemble of extreme simplicity would be little remarkable under a bright sky, which would bring out (*accroître*) uniformly each detail; but it assumes a most enticing aspect under the changing sky of England, Holland, or the North of France. No doubt a great many *jardins agrées* have lately been planted in England; but these have been imitations, and not creations conformable to the genius of the country. Art does as well as nature, and all the more so when we deal with a branch of art which has for its end the embellishment of Nature herself."

We have thought it worth while to translate the foregoing as a very well judged comment on the characteristics of English landscape, not always so well appreciated in regard to its real beauties by critics of another country. Having touched upon the leading typical styles of gardening, illustrated in M. Alphonse's treatise, we may consider in a further article some of his suggestions as to the practical carrying out of these different phases of the art of landscape gardening; and give a fuller notion of the book itself and its illustrations.

THE NEW BUILDINGS AT THE NATIONAL GALLERY.

The first portion of the additions to the National Gallery are now almost completed. The newly-erected block is situated at the north-east side of the present building, and is 167 ft. in length and 142 ft. in depth, covering a ground area of about 13,720 superficial feet. The building consists of a basement and ground-floor, in addition to the several spacious apartments above, forming the new galleries. The basement and ground-floor both contain a large number of rooms, those in the basement being chiefly for stores. It also contains a spacious boiler-house. The rooms on the ground-floor are intended mainly to be set apart for male and female students, and one portion will be used as offices. The principal part of the structure is the upper portion of the building, which contains the several new galleries for the exhibition of works of art. These are approached through the existing galleries by a new entrance connecting them, and which leads into a large and handsome octagonal hall, 43 ft. in diameter, covered in with a domical roof, of iron and glass, which internally will be again filled in with embossed glass. At the angles of this hall there are openings leading into four vestibules, each about 36 ft. by 30 ft. The several openings or approaches to the vestibules are ornamented on each side by double columns, consisting of rich Genoa green marble. The columns are surmounted by moulded arches, supporting a deep cornice and coved ceiling in panels. In immediate contiguity to the vestibules are the several new galleries, three in number, and situated on the east, the north-east, and the north sides respectively. They are all lofty, and occupy a large area, the east gallery being 96 ft. by 40 ft.; the north-east gallery, which is octagonal in form, 40 ft. in diameter; whilst the large gallery at the north end is 120 ft. in length by 40 ft. in width. The height of the several galleries is 32 ft. from the floor-line to the face of the ceiling, which in the centre is inclosed with embossed glass, uniform with that part of the building already described. The large gallery has a groined and coved ceiling, the ceilings of the east and north-east galleries being coved and panelled. The height of the hanging space to the architrave of the cornice is about 19 ft. A plinth of black Belgian marble, is carried entirely round the several galleries and vestibules, as well as round the doorways. The whole of the plaster work and mural decoration is executed in Parian cement. In the construction of the roofs of the building iron has been chiefly used, although the flooring is to be of wood; and, as a protection against fire, iron sliding doors divide each gallery. The four vestibules and octagonal central hall are being finished with a view to the exhibition of works of art as well as the galleries. It is expected that the new galleries will be ready for the reception of paintings and other works of art early in 1875, and in the meantime it may be stated that they already favourably contrast with the appearance of some of the existing galleries.

Mr. E. M. Barry, R.A., who was appointed architect of the new National Gallery in 1868, has designed the buildings, which have been erected by Mr. G. W. Booth, of Gosport and London, under the superintendence of Mr. Roome, as clerk of works; Messrs. Head, Williams, & Co., of Cannon-street, having executed the iron and engineering work. The cost of the buildings is upwards of 80,000l.

The block approaching completion is only a section of the intended new National Gallery, according to Mr. Barry's plans, the rebuilding of the present frontage in Trafalgar-square, together with a new elevation to St. Martin's-lane, being contemplated, as well as the extension of the building westward at the rear of the Trafalgar-square elevation, including the construction of a new grand staircase. It is, however, uncertain when the new structure named will be proceeded with; as although the last Conservative Government stated in 1863 that it was then intended to proceed immediately with the new building, no steps have since been taken with this object, excepting those which we have above described.

Designs for the Improved Dwellings Company.—The directors, in reply to their offered premiums of 250l. and 150l., have received twenty sets of drawings, about 100 in all, and intend inviting professional assistance in awarding the prizes.

ST. SAVIOUR'S CHURCH, MARKHOUSE-ROAD, WALTHAMSTOW, ESSEX.

The consecration of this church took place on Tuesday, the 3rd inst., by the Lord Bishop of Rochester.

The plan of the church consists of nave and aisles, chancel, with north and south aisles (that on the north side being appropriated as vestries for clergy and choristers), and apsidal sanctuary at the east end. The entrances are through the tower, which is situate at the north-west angle of the church, by a porch at the south-west angle, and by two smaller doorways on the north and south sides at the east end of the nave. The principal of these entrances is through the tower, and is elaborately groined in stone. The nave is in five bays, and over the arches is a lofty and well-developed clerestory, with a range of two-light windows, with solid panels between them, in which are represented alternately the Lamb and the Pelican, and smaller medallions containing the various symbols of our blessed Lord and His Passion. The western portion of the chancel is arranged as a presbytery, and is raised three steps above the floor of the nave, the platform on which the altar stands being elevated five additional steps. The easternmost compartment of the apse has a three-light window, with early geometrical tracery in the head, fitted with stained glass, by Mr. Daniel Bell, representing our Lord in majesty, with the heavenly hierarchy and the peoples of the earth in the act of adoration before him. The organ, not yet completed, will be placed on the north side of the chancel.

The tower is surmounted by a lofty spire, and contains a musical peal of eight bells, by Messrs. Warner, of Jewin-crescent, Cripplegate.

The architecture of the church is that of the latter part of the thirteenth century, and the material of which it is built is, externally, Tisbury stone and Kentish rag walling. The arches, window-dressings, quoins, &c., internally, are of Corsham Down stone, and the walling of basework; all the doors, seats, and woodwork generally are of oak; and the pavements are laid with Godwin's tiles. The church, with endowment and vicarage, is provided at the sole cost of Messrs. Knowles & Foster, Moorgate-street.

The architect of the church is Mr. Francis T. Dollman, and the contractors are Messrs. Henshaw. The clerk of the works is Mr. Samuel Burbridge.

DANGER OF BUILDING OVER MINES.

On Michaelmas-day last, a large dwelling-house was swallowed up at Gilberton, Pennsylvania, U.S.A., under circumstances proving the great danger of building over mining ground. The house in question stood over a coal-field and the outcrop of a vein, and when the coal was taken away there was nothing left for its support but a few feet of earth. A heavy rain loosened the soil, and on the day in question the inmates of the house happened to observe their little garden-patch sinking below.

They had but just time to snatch up their clothes and a few valuable articles, and run for their lives, before the house began to rock, then fell over and disappeared, roof foremost, in the abyss, followed by an avalanche of rock and earth which quickly buried it. Had it occurred in the night the loss of life would have been great.

In our own country, some parts of the town of Sheffield, it is stated on good authority, stand over an abyss, and the like fate to the above may some day befall those houses.

COCKERMOUTH CASTLE.

This castle occupies the point of a steep and, in part, rocky knoll which intervenes between the confluence of the Derwent and the Cocker, two rivers of Cumberland, the one, on the north, flowing immediately at the foot of the rock, the other, on the south and west, separated from it by an irregular strip of land from 50 to 70 yards broad, of uneven surface, and covered by a part of the town which shares its name with the castle. It is not until 120 yards below the castle that the actual meeting of the waters takes place. Two of the sides of the position are thus fortified by nature; the other, the roof of the promontory, has no such protection. It seems to have been covered by an artificial ditch, connecting the cliff of the Derwent with the sloping bank of the Cocker. This, however, has been

filled up, and all that remains of it is a tradition confirmed by slight depression in the soil.

The castle, following the outline of the rock, is triangular in plan. Its north and south sides face towards the Derwent and the Cocker, and are in length 110 yards and 120 yards. They crest the slope at about 36 ft. above the level of the water, and are connected by a base line of 76 yards, in which is the entrance, facing towards the east. The castle commands much of the town, and is placed outside of it to the north and east. The parish church stands within the town upon a height opposite to and south-west of the castle, the Cocker in its narrow valley flowing between them.

The curtain within which the castle is contained, is about 30 ft. high, and is capped at its western or acute angle by a half-round tower and at the two angles of the base are two rectangular towers, that to the north-east being the gatehouse. Between them is a small buttressed turret, solid and 8 ft. square. There are also two rather large buttresses, additions upon the south curtain near the east end, and three small flat ones upon the older front of the wall, at the west end. On the exterior of the north wall are seven buttresses of various dimensions and dates.

The triangular interior of the castle is subdivided by a cross line of buildings, about 66 yards from the base, into two wards, the lower or eastern, four-sided, being the larger, and the upper or inner being a small triangle. Where the cross wall unites at its south end with the curtain is, upon the latter, a small square tower called the "Bell Tower," and at the north end a much larger tower, containing the kitchen. Between these, on the cross wall, is the inner gatehouse. The level of the upper ward is about 6 ft. above that of the lower. This gatehouse is not central, being 34 yards from the north, and 19 yards from the south curtain. It is rectangular or nearly so, and in plan a capital T, the outer portal being in the centre of the cross head, the inner one in the foot, and a large chamber in the stem between them. The head is 36 ft. broad, with a projection of 18 ft., and the gatehouse is 60 ft. deep. The sill of the outer entrance being 6 ft. above the outer ward, must have been approached by some kind of bridge or incline plane, of which all traces are now gone. The outer arch is lofty and segmental, of 9 ft. opening. It supports a screen parapet, embattled, behind which is an opening or machicolle 9 ft. broad and 4 ft. deep. Behind this is an equilateral arch opening into a passage 10 ft. deep, vaulted and ribbed from the four angles, the ribs meeting at the centre with two ridge ribs, the central point of the eight being without boss or circle. Beyond the passage is a second arch of 8 ft. opening, and beyond it a sort of vaulted passage or vestibule, 18 ft. deep, opening into the interior of the gatehouse at the first-floor level. Beyond the arch and left of this inner vestibule are two doors of 2 ft. opening, one segmental and one shoulder-headed. These open each into a small acutely-vaulted prison, about 8 ft. by 16 ft. lighted by a small loop. From each there opens in the outer wall, a small door into a mura- garderober. In the centre of each prison is a small square trap which is the only opening into a lower prison or dungeon of the size of an vaulted as the upper one, but without any opening. Two holes in the upper vaults seem intended to carry a horizontal bar from which prisoner or his food might be lowered through the trap. These prisons are placed on each side of and parallel to the gateway, in the thick cross head of the T.

The basement of the gatehouse-chamber, 21 ft. broad by 29 ft. deep, and about 10 ft. high, is quite plain, and without loops. It is entered by the west wall, from the upper ward, by a flight of twelve steps, beneath a lancet doorway. The covering of this room was the timber floor of the gatehouse. This first-floor, also 21 ft. by 29 ft., has in its side-walls two doorways, of 3 ft. opening, and acutely pointed, which led into the lateral chambers. In its west wall, but near the north end, is the inner gateway, piercing the wall 9 ft. thick, and opening into the upper ward. This passage is vaulted. It has no portcullis and the passage for a door. In the north side of the passage narrow, shoulder-headed door leads into a small vaulted lodge, looped towards the upper ward.

Entering this ward, on the left, is the door descending to the basement, and further on the right and left, are two doors, each lancet, and at the top of flights of twelve steps, which descended into the basements of the lateral chambers. The gatehouse had an upper floor, now mostly gone.



COCKERMOUTH CASTLE.

- | | |
|----------------|----------------------|
| A. Lower ward. | F. Kitchen. |
| B. Upper ward. | G. Hall. |
| C. East tower. | H. Inner gate-house. |
| D. Flag tower. | I. Bell-turret. |
| E. Gate-house. | |

There were two lateral chambers on each side of the gatehouse, parted by an east-and-west cross-wall, now destroyed. The large spaces thus formed are not quite rectangular. That on the north averages about 26 ft. east and west by about 35 ft. north and south; and that on the south is a mean square of about 35 ft. Of the four chambers by which these spaces were occupied, the basements of the two next the gatehouse were covered with a pointed vault. Except these, the floors above were timber. The walls of the southern rooms are mostly destroyed, those of the northern are tolerably perfect, and show the windows and fireplaces of a first and second floor, with small mural chambers in the north-east angle. The southern chamber abutted on the curtain, in which is seen a rude round-headed arch, now a postern, but which has a Norman aspect, and looks as though intended originally for the recess of a loop. The small square bell-turret, of about 18 ft. by 10 ft., at the south-west angle of this chamber, stands on a slightly projects from the exterior of the curtain. The basement looks of the age of these buildings, the superstructure, of that of the cross-buildings and inner gatehouse.

At the other or north end of the cross buildings the kitchen tower, a very remarkable structure. Its plan is nearly rectangular. It is composed of a basement and a first floor. The basement is reached from the upper ward by fifteen descending steps, down a vaulted passage in the wall, at the head of which is a round-headed door of decorated date. The chamber is about 30 ft. square, having a central octagonal pier without a dome or cap, whence spring eight ribs meeting at other ribs which spring from corbels in the

angles and from responds in the centre of each face. Each of the four bays thus formed is again spanned by ribs springing diagonally from the responds. There are no ridge-ribs, and the vaulting spaces are filled up with rubble. The arches are pointed, and the vault about 20 ft. high. In the two eastern spaces are square-headed loops, opening on the lower ward and now concealed by a modern building. In the north wall is a small water-drain. This was probably a cellar, introduced and vaulted to place the stone floor of the kitchen on the level of the hall. It is called a chapel, but bears no indication of having been intended or ever used as such.

Above the cellar is the kitchen, the floor of which is level with that of the hall, and about 10 ft. above that of the upper ward. In plan it is rather rhomboidal than rectangular. The two eastern angles are right angles, that to the north-west acute, and that to the south-west obtuse. The north and east sides measure 35 ft. and 37 ft., and the opposite sides 29 ft. and 38 ft. respectively. In the south wall are two fireplaces, 11 ft. broad by 2 ft. deep, with remains of stone hoods, and with square vertical funnels running up a common shaft at the inner end of each fireplace. The funnels also receive those from the fireplaces in the rooms to the south; the whole forming one stack. Over these fireplaces, high up in the south wall, is a large long loop, square-headed, and about 2 ft. wide. In the east wall are two other loops of the same width, and about 24 ft. long, crossed by a transom, square-headed, but placed within shoulder-headed recesses. These openings are clearly intended to carry off the vapour. North of

these loops is a small door, whence a narrow mural stair ascends 10 ft. to a second door that opened upon a gallery along the north wall.

In the centre of the north wall is a bold pier, 7 ft. wide by 4 ft. deep, from which spring laterally two pointed arches, thus forming two recesses. The soffits are ribbed, one with two and one with three ribs, plainly chamfered. In each recess is a loop, square-headed, and opening on the curtain, and above, 10 ft. from the floor, is a string which supported the floor of a timber gallery, which ran along this north side, and was carried out in front of the pier, and thus overlooked the culinary operations. It was entered at the east end from the door already mentioned. In its west end was another door, opening into a mural chamber, not now accessible, but which may have communicated with the hall. Above the gallery level the pier is pierced by two narrow passages, with round-headed doors, which lead to a small common chamber in the curtain, probably a garderobe. Below, the lateral faces of the pier are hollowed, as for cupboards.

The west wall of the kitchen is now chiefly occupied by a large lofty arch, of 15 ft. span, and about 30 ft. high, evidently a modern insertion together with the wall above, and opening into what was the hall. On the south side of it are traces of a part of the old buttery-hatch. To the north is the only door of the kitchen, 4 ft. broad, and shoulder-headed, and which opened from the lower end of the hall. It is curious that so large a kitchen should have had no other outlet. Grose gives a drawing taken in 1774, which shows this west wall of the kitchen before

Thomas and Margaret had Anthony, de Mar
aged twenty-four 39 Ed. III., and Mar
Anthony had Jean, who died young, 43 Ed. II.
seized of the castle and honour, when Ma
became the heiress. She married Gilbe
de Umfranville, Earl of Angus, who died
4 Rich. II. They had but one son, Sir Robe
who pre-deceased his father, childless. Th
earl died 4 Rich. II., seized of the castle a
honour, and Maund, then, 8 Rich. II., marri

Henry de Percy, Earl of Northumberland. The inheritance, failing the heirs of her body, was settled upon the heirs male of her husband, who were to bear the arms of Percy and Lucy quarterly. This remainder took effect, and Cockermouth passed to the descendant of Percy by his first wife, Margaret, daughter of Ralph Lord Neville, whose arms appear over the gateway of Cockermouth, as do those of the Earl of Angus.

Earl Henry was slain at Bramham Moor, 1408. Hotspur, his valiant son, fell at Shrewsbury. Henry, the next earl, and lord of Cockermouth, fell at St. Alban's, 1455, as did his son Henry, at Towton, in 1461. Henry, the next earl, met a violent death in the Tower in 1489, being the fifth lord of Cockermouth of that brave, brilliant, and unfortunate race. Henry, the next earl, died a natural death in 1527, as did his son Henry, childless, in 1537. The next inheritors were his nephews, sons of his brother Sir Thomas; the earl Thomas, who was beheaded, leaving an only daughter, 1572, and Earl Henry, who died 1585. Henry, the next earl, died 1632, and was followed by Earl Algernon, who died 1668, whose son, Earl Jocelyn, was the last male of the ancient race, his son Henry having died young. Elizabeth, Baroness Percy, the daughter and sole heir, married Charles Seymour, Duke of Somerset. Algernon, their son, created Earl of Egremont and Baron Cockermouth, died 1750, and was father of Elizabeth, the Seymour-Percy heiress; but Duke Algernon had also a sister, Katherine, upon whose son, Sir Charles Wyndham, the earldom and barony, and the castle of Cockermouth, were settled, and so descended to George, the last earl, who died without a successor in 1845, bequeathing Cockermouth to his natural son. Cockermouth Castle, therefore, having descended through the houses of De Meschines, De Fortibus, Milton, Lucy, and Percy, can boast a connexion with some of the most celebrated of the northern barons. It has, however, another, and certainly not less brilliant, association. In the adjacent town was born William Wordsworth, and the green court, flower-crowned walls, and gloomy dungeons of the castle are commemorated in one of the sweetest of his sonnets—

FROM THE SPIRIT OF COCKERMOUTH CASTLE.

"Thou'rt old upon me, and dost fondly think,
Pent I that, stricken as both are by years,
We, differing once so much, are now companions,
Prepared when each has stood his time, to sink
Into the dust. Bewhile a sterner link
United us; when thou, in boyish play,
Entering my dungeon, didst become a prey
To soul-appalling darkness. Not a blink
Of light was there; and thus did I, thy tutor,
Mute thy young thoughts acquainted with the grave,
While thou wert claving the wing'd butter-fly.
Through my green courts; or climbing, a bold autor,
Up to the flowers whose golden purple
Still round my shatter'd brow in beauty wave."

G. T. C.

ARCHÆOLOGY IN INDIA.—THE TEMPLE OF BHARAHUT.

As many of our readers are aware, General Cunningham, and a band of equally enthusiastic archaeologists, have been engaged for a considerable time past in active researches among the Buddhist temples of Bengal and Northern India, and their efforts have hitherto been rewarded by a very considerable amount of success. The past few months have been especially fruitful in good results, and one of the most recent discoveries has roused General Cunningham to enthusiasm. This is the disinterment of the enclosure or railing of the Bharahut tope. Bharahut, which is termed Bharaud on our maps, and is 120 miles south-west of Allahabad, is believed to be identical with the *Bardasias* of Ptolemy, and has long been known to be the site of a very ancient capital. Writers of sixty years ago tell us that the jungle then covered the remains of the ancient city, but that its precise situation was clearly defined by the ruins of a gigantic brick tope, 68 ft. in diameter, and surrounded by a stone railing 9 ft. high. Since that time the natives have carried off the stupa, finding it very much more convenient to build with the consecrated bricks left by their forefathers than to manufacture more friable constructive materials for themselves. Happily, the stone railing proved too much for the enterprise of the villagers who established themselves in the vicinity of this easy quarry, and rather more than half of it remains undamaged, although it had been thrown down by the rubbish piled against it by the latest burrowers, who had unearthed the very foundations of the tope itself. When General Cunningham first

visited the spot, only three of the railing pillars, near the eastern gate, were visible; but a little research and a shallow excavation soon disclosed the pillars of the south gate. The precise area of the inclosure thus determined, the explorers set to work and excavated the whole of it. Their hopes of finding any valuable remains of the old temple were disappointed; but, after all, the railing was the best prize, and fortunately the relics of it were in excellent preservation. The colonnade of the Bharahut stupa is pronounced to be of the same age and style as the great Sanchi Tope, near Bhilsa. The railing round the latter, however, is perfectly plain, whereas the Bharahut railing is elaborately sculptured, every pillar and every rail and the whole of the coping being ornamented on both faces, and inscribed on almost every stone. The inscriptions have been deciphered, and while from the characters employed the erection is supposed to be the age of Asoka, or B.C. 250, much curious information is afforded as to the donors of the respective pillars, and of the varied scenes which are represented by the sculptures. Indeed, the sculptor in many instances has not relied upon the effect of the pictorial device in telling its own tale, and has labelled it most carefully for the benefit of the groundlings. Whatever the motive of this peculiar ticketing, degenerate Aryan archaeologists find it very useful, and are thereby enabled to identify nearly all the scenes and figures represented in the bas-reliefs. In strong contradiction to the topes at Sanchi and Mathura, there are no naked or immodest figures in these sculptures; and the effigies of the women are all well clad. Their heads are generally covered with richly-figured cloths, and most of the figures are decorated with gold and jewelled ornaments, on which one of the favourite Buddhist emblems is frequently repeated. Both men and women wear earrings and one peculiar and massive pattern predominates throughout the sculptures. The ankus, or elephant goad, is also a favorite ornament, being placed at intervals in the long necklaces of the ladies. There is no lack of diversity in the representation of the various characters, and we are introduced to all sorts of society from the palace to the barrack-room. We have common soldiers attired in long tunics girt at the waist, wearing boots ornamented by tassels in front, and armed with broad scimitar-looking swords. The standard-bearer prances along on a steed with strange trappings, bearing aloft a human-headed bird on the top of the pole, and so we ascend the social ladder till we come to "the Queen of India, decked out in all her finery, with flowered shawl or muslin sheet over her head, with massive earrings and elaborate necklaces, and a petticoat reaching to the mid-leg—a petticoat secured round the waist by a zone of seven strings, as well as by a broad and highly ornamented belt." So varied are the figures that, as General Cunningham says—"From these sculptures we can learn what was the dress of all classes of the people of India during the reign of Asoka, or about three-quarters of a century after the death of Alexander the Great." The representations of the denizens of the lower animal world are also greatly diversified, and we find elephants, horses, deer, cows, monkeys, tapers, crocodiles, and Jonah-like fishes, which are swallowing whole boat-loads of men. The artists of those far-away times seem to have had a keen sense of the ridiculous, and fully recognising the trickiness of the monkey tribe, have not hesitated to turn it to advantage in their representations. In one scene an elephant is depicted as a captive, and the men who have seized him, having fastened a billet of wood to his trunk, to prevent him from working mischief, have handed him over to the custody of a monkey tribe, some of whom tug him along by cords, while the rest institute a kind of triumphal procession, to the accompaniment of shells and cymbals, played by an orchestra of apes. On another slab the monkeys have made a giant prisoner, and restrain his restive attempts at liberty by the controlling force of a huge pair of pincers, which are firmly fixed on his nose, and kept in grip by a drag elephant. As might be expected, the legendary lore of Buddhism is not omitted, and there are more than a dozen representations of the *Jatakas*, or traditions respecting the previous births of Gautama. One stone refers to the "goose birth"; but the only portion of the slab now remaining below the inscription is the expanded tail of a peacock, a bird that apparently took part in the story as well as the goose. Another relates to the *Kurvas*, a sort of demigod, two of

whom, a male and female, are represented with human heads, and a dress of leaves, as standing before some human personage, who is in a sitting posture. A third refers to the "mean or average amount of food" which was attained by daily increasing the quantity with the enlarging moon, and decreasing it when the moon was waning. One peculiar slab represents an elephant, with a bee stinging its eye and a bird pecking at its head. The elephant is treading on a nest of young sparrows, and a frog sits croaking close by. To the right, another bird is sitting on a tree and piping after a second elephant, who is hastily retreating in terror, with his tail between his legs. This queer picture is entitled, "The Latwa Bird-birth." A common Cashmere legend explains it. The story goes, that a roving elephant mischievously threw down a nest of young birds. The parents, in their distress, summoned the bees to aid them in redressing their wrongs, and the hunking aggressor was so severely stung that he fled to the river, and was drowned, in a vain attempt to escape from his tiny tormentors. The moral is obvious, and co-operators might appropriately introduce the Buddhist slab into their coats of arms. The entrance-gateways were, of course, especially rich in ornamentation. The corner pillars bear statues, each 44 ft. high, of Yakshas and Yakshinis, to whom the guardianship of the portals was entrusted. Altogether this railing is a most marvellous piece of ancient workmanship, and its discovery supplies a missing link in the history of Hindostan, comprising, as we are told it does, "new words, new facts, and many a correction of what was already known" relative to the country in the past.

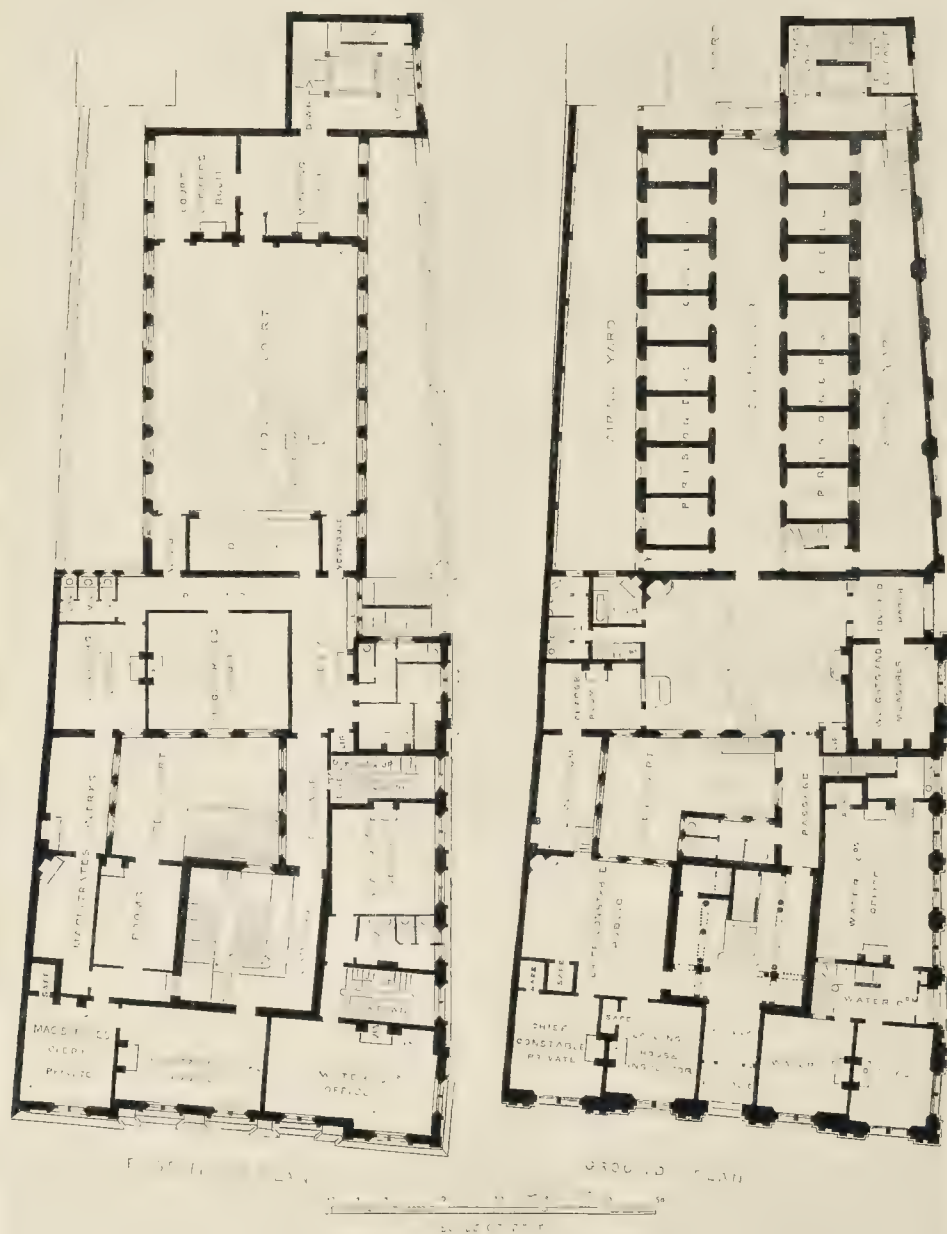
NEWCASTLE POLICE COURTS.

We illustrate in our present number the Police Courts which are being built in Newcastle from the designs of Mr. John Lamb, architect, at the cost of about 17,000*l*. A description of the building has already appeared in our pages, but it may be convenient to repeat a portion of it.

The new courts are situated on the east side of Pilgrim-street, opposite Shakspeare-street, the rear being contiguous to the borough gaol in Carliol-square. In shape the site is an irregular parallelogram, 210 ft. in length, and 80 ft. in width at the front of Pilgrim-street end, and 65 ft. in width at the other end.

The general style of the building is French-Italian, but the treatment of details is very free. The front elevation is adorned with colossal figures of Truth, Peace, Justice, and Mercy, and a set of heads of historical characters placed above the doorway, and above the arched and mullioned windows. The head above the main entrance is intended to represent Queen Victoria. There are also heads of Queen Elizabeth and of Oliver Cromwell. The height of the front elevation from the pavement to the pediment is 64 ft., and the vase-shaped final which surmounts it carries it 2 ft. higher. In a line with the centre of the building, and at a distance of 20 ft. or 30 ft. from the front, an octagonal tower rises above the lower roof. To the cornice of this tower the height is 81 ft., to the top of the pyramidal roof is 22 ft. higher, and a diadem-shaped summit of ironwork terminating in a vane makes the height from the ground to the topmost point of the building 126 ft. The side elevation is not so ornate in style as the front. There are two projections with pavilion roofs—one at the corner, the other some distance down the new street. Lower still is a large tower, under which is the public entrance to the new Police Court.

Between this tower and the middle pavilion is what may be termed the waist of the structure, which is not carried up to the same height as the other parts of the building, and which contains the cells for the prisoners and the court-room. The front entrance is flanked by polished granite slabs, and leads immediately to the grand staircase. The well of the staircase is the octagonal tower. On the ground-floor of the front portion of the buildings are the offices of the chief constables, clerks, inspectors of police, &c. Further on are a few steps down, which lead into what is to be the charge-room, and beyond it is the reserve police-room, a spacious apartment. Beyond this again are the cells, in two tiers, the increased height between the first-floor and the ground caused by the descent of the steps, affording room for the Mezzanine or intermediate floor. There are twenty-nine cells, each measuring 11 ft. by 8 ft. 9 in. Every cell is fitted up in ap-



NEW POLICE COURTS, NEWCASTLE.

proved fashion, and warmed in winter by hot-air pipes. Outside of the cells, and at each side of the building, is an open courtyard, in which the prisoners may take their exercise.

Underneath the cells is the furnace for heating the cells and the court-room above, and there are also arrangements for the ventilation of the building by means of flues running up and along the walls of the court to a ventilating shaft, where an open furnace carries off the foul air. On the first-floor at the front are the rooms of the magistrates' clerk and his assistants, retiring-rooms for the magistrates, consulting-rooms for solicitors and their clients, waiting-rooms for witnesses, &c. The court-room is on this floor, and measures 50 ft. by 37 ft., and 25 ft. in height, with a ribbed and paneled coffered ceiling, lighted from the roof by a large skylight, and from the sides by circular windows with swing sashes. The bench does not take up any space of the room, as the magistrates will be seated a few feet above the level of the floor, underneath an elliptical arch thrown back from the west end of the room. On the upper floors of the higher blocks are dwelling-rooms for officials, and kitchens and dormitories for the police. Every

floor has its own water-closets, urinals, lavatories, bath-rooms, &c. Hydrants are also placed at every point of vantage for the suppression of fire, should it break out. Provision has been made in the south-west corner of the building for the offices of the Whittle Dean Water Company. It is also intended to establish an underground connexion between the police cells and the gaol.

Mr. Walter Scott is the principal contractor, and different departments of the work have been sublet by him to Messrs. Lowry, joiners; Mr. Gibson, painter; and Mr. Ralph Dodds plasterer.



NEW POLICE COURTS, NEWCASTLE.—MR. JOHN LAMB, ARCHITECT.

A LAY SERMON ON CHURCHYARDS AND EPITAPHS.

In an hour of morbid melancholy the poet sings of earth becoming "dark with the shadows of the tombs." It is an unnatural and repulsive idea to associate skulls and crossbones and the like horrible paraphernalia with Death; to paint him as a gaunt skeleton armed with a scythe, wandering to and fro in the world, ruthlessly mowing down youth and age. It is better philosophy and better religion to figure Death as one of God's brightest angels continually travelling between earth and heaven, bearing messages of love, with voice soft as the autumn wind, that whispers to the dying blossom, and hand as gentle as the snow-flake, that weaves their shroud above the perished flower.

"Weep not for the dead, neither bemoan him," was the counsel of the prophet of old, but how difficult the task to act upon it. Bereavement mourns over the grave as if the one she loved was lying in the darkness beneath; she will not pause to reflect, to know and comfort herself with the knowledge that all that endeared the lost one,—lost only for awhile,—the nobleness of soul, the beauty of mind, go not down into the grave, but rise from the bed of death upon the wings of immortality. It is the dust alone which returns to the dust.

"The luxury of woe" has lost much of its spiritual significance, and is become grossly materialised. Nowadays it has a price in the market. We measure our grief by the length of our cramps. We have establishments whose "melancholy pleasure" is to supply mourning at various rates and in various shades, so as to accommodate the wildest heartbreak and the most microscopic grief. Only at the grave do we discover what a good or amiable or noble-hearted individual the departed was. We get up subscriptions for a monumental tomb to the genius or talent that for nigh a lifetime begged a morsel of bread from us, and got a stone,—after death,—and we inscribe on it an epitaph to tell posterity how highly the departed was honoured during life, how deeply regretted after death. "False as an epitaph," is an old saying. "Here lies," is a common and equivocal commencement. There is a painting in Hampton Court, representing the Day of Judgment; the graves are open, and some of the reanimated corpses are rushing about, carrying their tombstones with them; unfortunately the artist has been beneath a tombstone for a century or two, and the idea he wished to convey is buried with him. Could it be that he supposed the dead would on the Great Day of Account use their then epitaphs as testimonials?

An epitaph is too frequently an ornamental grief; if it were not so, nothing could teach a more solemn lesson; nothing could better win the heart of man to think kinder of his fellow-men; for all that was lovable in a friend becomes still more lovely, all that was hateful in one we deemed an enemy is robbed of ugliness when friend and enemy are laid in the grave. Death draws a curtain between us and the departed through which we see them beatified, as we see a calmer loveliness in the landscape when veiled in the golden haze of the morning.

It is a feeling of natural piety that causes us to record upon the gravestone the name and virtues of the deceased; and those that say,

"We have no need of names or epitaphs,"
We talk about the dead by our friends,

are actuated by a feeling flowing from the same source. Each churchyard is a volume of Earth's great treatise on Death; its printed pages are the records on the tombstones; there are in it also blank pages—nameless graves—eloquent in their silence. Nature bends her blue eye on each hillock in the churchyard, nothing unlovely or repulsive meets her gaze; she only sees that which was once the tenement of a soul,

"Turning to daisies gently in the grave."

It was a beautiful thought of olden Saxon piety to name the burial-ground God's Acre,—a sacred land at whose borders man should put off pride and vanity; a field never to be upturned by the plough, into which the husbandman should never cast the grain to be quickened for the sickle of the reaper; where that seed alone may be sown which is to corrupt amid corruption, and to rise incorruptible when God gathers in the harvest of time.

An epitaph being the utterance of sorrow, should be brief. The character of the individual whom it commemorates should be given, but not

in detail,—a scrupulous minuteness is apt to convey the impression that the truth has not been strictly adhered to, and a multiplicity of words is generally the index of assumed sorrow. An old epigram says,

"With most of epitaphs I'm grieved,
So very much is said;
One half will never be believed,
The other never read."

If the departed was a kind husband, let that be said, without noting the various domestic duties which he so lovingly discharged; of a charitable man, let the simple fact be told without turning the tombstone into a subscription list (no uncommon practice), by detailing the various sums he gave during life, or bequeathed at death, for benevolent purposes, and astonishing future generations with the information that he was president of a soup-kitchen, or honorary secretary to a coal-distribution society; if a soldier, where is the necessity to enumerate the number of legs lost and stumps won in the cause of glory? if an author, let no "complete list of the author's works" be furnished; and let not a physician's epitaph become a "quack advertisement," recording wonderful cures he had performed during his life; in short, an epitaph should be brief, and written in language that will appeal to the hearts of all who read it. It should be free from the arrogance that appropriates heaven and eternal happiness, and, on the gravestone, boasts of the possession in words such as these:—"I am with the blessed." It should refer to the hope that stretches beyond the grave, to the uncertainty of life, and the certainty of death, and the tone of it all should teach that.

"The glories of our birth and state
Are shadows, not substantial things."

The more condensed an epitaph is, the better. Pope wrote for Dryden's tomb:—

"This Sheffield raised. The sacred dust below
Was Dryden once. The rest who does not know?"

It was not adopted. How much grander the one word that occupies its place:—

"Dryden."

What an intensity of affection in the simple inscription:—

"Here lies Willie,
Aged 8 months."

The simple notice, "Here lies Willie," would have given scope for wide conjecture, but "aged 8 months" pictures at once the infant sitting on the shore of life suddenly snatched away from the murmur of the sunny wavelets. Our best epitaphs are incorporated with our literature. What need is there of quoting Milton's on Shakspere, Ben Jonson's on the Countess Dowager of Pembroke, or Garrick's on Hogarth?

Into the subject of epitaphs written by poets for themselves there is little space to enter. That of Thomas Hood is almost perfect,—*"He sang the Song of the Shirt."* Thomas Campbell wished that "Author of Gertrude of Wyoming" might be recorded on his memorial stone, but his wish was not carried out. Matthew Prior wrote for himself such an epitaph as might have been expected:—

"Nobles and Heralds, by your leaves
Here lies what once was Matthew Prior,
The son of Adam and of Eve,
Can Stuart or Nassau claim higher?"

In vivid contrast to this is the self-written epitaph of Robert Burns:—

"The poor inhabitant below
Was quick to learn and wise to know.
And kindly felt the friendly glow,
And softer flame;
But thoughtless folks laid him low,
And stand his name."

The age of conventional epitaphs is gone, such as "Sickness was my portion, physis was my food," &c., and "Afflictions sore," &c.; the age of conventional tombstones, on which were displayed crossbones and grinning skulls and cherubs, that strongly resembled owls and parrots in their general contour, has departed and in the place of the latter we have a conventionality quite as ridiculous, quite as absurd. Who has ever entered a cemetery without being annoyed with the number of *quasi* broken pillars, torches extinguished, or about to be so, and the ewers and towels and double-handed jugs, that are suggestive of nothing but bedrooms and barbers' shops?

There is a large class of well-meaning people who seem to think a gravestone without an epitaph a mere wilful waste of so much good stone, and that *with* one, or rather *by* stone, the

claims of the departed to the consideration of the public are mightily strengthened; that a plain tombstone is considerably more respectable than a simple raised turf; but that a tombstone with an epitaph to boot is positively and indisputably genteel. Our burial-places are capable of great improvement. Who without a shudder can look upon a city churchyard, "a dismal place raised a few feet above the level of the street, and parted from it by a low parapet wall and an iron railing—a rank unwholesome rotten spot, where grass and weeds seem in their frowzy growth to tell that they had sprung from paupers' bodies, and struck their roots in the graves of men sodden in steaming courts and drunken hungry dens." How different the feeling with which we enter a churchyard in the country, how reverently we gaze around the holy pile where beneath whose roof in life they congregated to worship,

"Each in his narrow cell for ever laid,
The rude forefathers of the hamlet sleep."

And yet knowledge and our reason tell us that to bury the dead in proximity to the living is to help to shorten the, in any case, brief space of time which divides one from the other.

WATER-TIGHT COMPARTMENTS IN IRON SHIPS.

THE details of the last terrible catastrophe in the Channel,—the collision between the two iron ships, the *Candahar* and the *Kingsbridge*,—enforce still more plainly the necessity for increased precaution against collisions, and against their results.

As far as precautions against the collisions themselves go, the question is not so immediately within our province as the means that may be adopted to limit, if not prevent, their disastrous results. As long as a good iron ship is sound she will float; but knock but the smallest hole in her below her water-line, and she will inevitably go to the bottom. With wooden ships this is not necessarily the case; the natural buoyancy of wood will keep even a water-logged vessel at the top of the water for a time; she will not fill and sink so suddenly as a vessel the specific gravity of whose material is much greater. In the case in question, the *Candahar* and the *Kingsbridge* were both iron ships, of nearly equal size, and both were very much injured; but one went down in three minutes, while the other managed to get into a safe port. Why was this? The *Candahar* smashed in her bows, but the entrance of the water into the hull of the ship was prevented by the water-tight bulkhead with which all iron ships are built. The *Kingsbridge*, on the other hand, was attacked in a part where no water-tight compartment existed, and there was nothing to prevent the immediate filling of the whole of the ship.

The moral is obvious. Let iron ships be protected all round by water-tight compartments. Let them be built in two skins, or shells, the space between which should be divided into cells having no communication with each other. It may be answered by shipbuilders, that steamers are not designed for battering-rams, or to resist battering-rams, any more than they are built to go ashore; but this is no answer to the fact that vessels do come into collision with each other, and do go ashore, often with the most disastrous results, because no precautions are taken to meet such a contingency. Why are steamers built with a single water-tight compartment in the fore part of the ship? Is there any object in this precaution? If so, why not extend the precaution to other parts, and build the ship in several water-tight compartments; and so ensure her safety in case of being run into, as much as in case of her running into something else?

When the *Great Eastern* made her first voyage to Australia, she struck on a reef, and made a large hole in her outer skin. Had this outer skin been all that stood between her hold and the water, the fate of the *Great Eastern* would have been sealed from that moment; but inside the outer skin was an inner shell, which was uninjured, and the space between the two being divided into water-tight compartments, only one of these spaces was filled with water, and the damage was soon repaired.

The story of the *Amélie* gives a new point to the moral we would instil. Though abandoned with 7 ft. of water in her hold, and with a serious leak somewhere, the vessel outlived a terrible storm, and her safety is probably attributable to

the fact that she was built in several water-tight compartments. Many equally fine ships have gone to the bottom without a moment's warning, through collision or through striking a rock, but their fate has been hastened by the absence of this precaution.

As long as there is a chance of collisions and of vessels striking sunken rocks every possible means ought to be adopted to reduce to a minimum the dangers of such accidents. The fact that most iron steamers are fitted with a water-tight compartment in the stern, while the rest of the hull is left unprotected, looks like a grim satire upon the mission of such ships: if they run anything else down, they are probably safe through the existence of this compartment; but was beside the unfortunate sailing-vessel that comes across her path.

We cannot help again enforcing the desirability of all iron vessels being divided into separate sections, so that, should one be laid open, the buoyancy of the others will, at least for a time, keep them afloat. A double-skin, similarly divided, would be the greatest protection that has hitherto been devised; and it is to be wished that shipowners and shipbuilders will always take this precaution. The extra primary expense would be more than compensated by the additional security, and the diminished risk of loss in case either of collision or of striking; and even if the vessel itself were so damaged as to be beyond saving, she would keep afloat long enough to allow her crew and passengers to take to the boats, instead of being suddenly engulfed in a watery grave, as is now too frequently the case.

CO-OPERATION IN EMIGRATION.

Sir,—There are continually a number of builders, from architects to hawkboys, emigrating, and they are amongst the most intelligent and enterprising of the craft, and, as a matter of course, readers of the *Builder*. They do not leave because there is no demand for their labour in England, but because they are those who are not contented to go out of the world as they came into it, and have a praiseworthy objection to remain for ever mere hewers of wood and drawers of water. Excelsior! and not stagnation, is their motto; and so long as they remain British subjects and Englishmen, their ambition should be encouraged. British capital always follows British labour, and the interest it earns comes back to swell the capital which grows so rapidly in England, and there is no doubt that if this had been invested in England only it would not have grown as it has.

Amongst these emigrants many are disappointed and disheartened, because the other side of the Atlantic is not the Paradise for carpenters and bricklayers they thought it, and some of these take to drink and carelessness, whilst others resolve to save money to return to England with; but they do not return, nevertheless. Before they can save this money, they have to work much harder than ever they did before, as their master works furiously by their side, instead of a sympathetic foreman, as in England. Not a few of such emigrants will have as many masters in a month as they had in twelve in England; but they have to "slog into it," all of them, till they do not mind it. It is not so much the richness of the soil as the hardness of the labour spent upon it that makes America flourish. You can buy doors and rods of brickwork cheaper there than in England; and a farm labourer will do the work to three acres there whilst he is doing it to one here. There is no aristocracy to support, but there is worse: a great number of scheming, "cute" middle-men to support, and it is these who flourish out of the high wages paid for labour.

A working man may ensure success and an independence in a few years by system. He may wax rich instead of the middle man, but he must not sell his labour to a man who sells it to another, nor yet buy what he wants of a shopkeeper who buys it of another shopkeeper, who again buys it of the manufacturer, who keeps a traveller, because if he does he is helping to keep six or eight middle-men. No; he must sell to the real consumer, and buy of the real producer; and he must, as far as possible, become his own producer and consumer, and therefore be prepared to do whatever his hand finds to do.

To put this into practical form, the emigrant must, before leaving England, raise 25*l.*, and then combine with say forty-nine other emigrants who have done the same. Amongst these there will be carpenters, blacksmiths, wheelwrights,

masons, bricklayers, plasterers, quarrymen, gardeners, farmers, &c., and their united capital will amount to 1,250*l.* They must then secure almost free passages, and an almost free grant of 2,000 acres of land, with plenty of trees upon it. They must not go into expensive lodgings, but adopt a colony where they can live in tents till they have erected their own houses. Then they must purchase enough food, &c., of a producer to last till they can produce their own. This can be done in less than twelve months, and leave a good balance, and it can be proved that this capital is ample for the purpose. For illustration, I will take the colony of Queensland, where it is 1*l.*, and not 5 dollars to-day, and 4*l.* dollars to-morrow. The wages of such as I have named would average there 1*s.* per hour, and the hours are 8 per diem, 48 per week, or 2,400 per annum; thus the earnings of these fifty emigrants would be 6,000*l.* per annum. That is to say, the estate would be worth 6,000*l.* after their twelve months' labour upon it, less the cost of their provisions, 500*l.* at producers' prices. In the same inferential manner it can be proved that in ten years it and its produce would be worth 55,000*l.*, clear of the cost of living those ten years. Thus, by the laws of political economy, each member of the party would be worth, if their labour was equally valuable, 1,100*l.* in ten years. We find combinations against masters and capitalists, and it may be reasonably asked whether such a combination as this would not effect the purpose of these combinations,—which is to elevate the workman collectively rather than individually,—quicker and much more permanently, as no one would oppose it, whilst the Government, I am empowered to say, would encourage it as much as possible.

Let me explain the scheme by putting it in the form of a prospectus:—

THE CO-OPERATIVE FARMING AND SETTLING COMPANY (LIMITED).

Registered under the Companies Acts, 1862 and 1867. Capital, 1,250*l.*, in fifty shares of 25*l.* each: payable, 5*l.* on application, 10*l.* on allotment, and the remainder as may be required.

DIRECTORS.—To be elected from amongst the shareholders.
BANKERS.—The National Bank of the Colony.
SECRETARY pro tem.—Mr. Deemal Equaton.
TEMPORARY OFFICES.—Somewhere in London.

PROSPECTUS.

This company is formed to supply an urgent want long felt by individual emigrants, to establish them upon colonial lands as farmers, builders, &c. Emigrants desirous to receive the benefits of the Company must take one share, and in return a passage will be guaranteed for 3*l.* en route, employment at the current wages of the colony, provision at 50 per cent. under retail prices, a fifth share of the whole of the profits, and other advantages which must attach to the undertaking.

The company will engage a gentleman of colonial farming experience as manager, to be obtained by advertising in the colonial papers, whose chief duties will be to train the shareholders in colonial farming, and direct their labour upon the estate. It will be called upon to find securities, and be held responsible for the results as each shareholder, whilst at work for the company, will be treated as any other workman would be, and remunerated for such labour as the manager may direct him to perform, as he may find him worth according to his colonial experience.

The company will open a store on the farm, where each shareholder may obtain what he may require upon credit whilst at work on the farm.

All wages or per centages of wages will be paid after the sale of any produce, unless the shareholder wishes them to remain to augment the working capital of the farm; and as the cost of living will not amount to more than 10*l.* per annum, the wages due at the end of the year will average 100*l.* It can be abundantly proved by statistics, experience, and handbooks, that the productions of the soil of the colony yield a large profit after the high wages are paid, and that fully 20 per cent. may be expected on the capital invested, which would swell the amount to the credit of each such working shareholder to 112*l.*

A garden, &c., for the private use of each shareholder will be apportioned from the estate.

The shareholders will be chiefly occupied in cleaning, draining, irrigating, fencing in, cultivating, building upon, and otherwise improving the estate, but contractors can be entered into to perform similar operations upon the estates of neighbouring settlers. They may be married or single, but at first the accommodation will be such as to suit the single man, such as tents, shacks, shacks, shacks, or "slab huts," or "Humpies," or "Canadian Castles," or "Slanties."

Emigrants may do well to ponder over this prospectus, for it is not every one of them that improves his position by making his motto, "Every one for himself, and God for us all," and co-operation is essential to the progress of the age.

A LOVER OF PROGRESS.

West of England Sanatorium.—The tender of Mr. John Hando, builder, of Weston-super-Mare, for the erection of the third section of the above institution, has been accepted, and the work will be commenced forthwith.

THE NEW FRUIT MARKET AT WORCESTER.

THE new wholesale fruit-market, built by the directions of the Local Board of Health, has been opened to the public. It forms an improvement which all who know the nature of the locality will think great. Built between the bottom of Dolday and Newport-street, it presents a rather attractive appearance in the midst of the dingy-looking houses on either side. The site is near to that of the old market, on the North Quay. At the east side of a capacious yard is placed the warehouse for storing fruit, a building 34 ft. long by 21 ft. wide, while on the north is a row of offices, nine in number, for the use of the fruit merchants. There are two entrances, one from Dolday and the other from the North Quay, with a small doorway for foot passengers at the side facing the bridge. The whole is built with red brick, the windows having stone sills, and the arches of the doors and key-stones are constructed of Bath stone, with blue chamfered bricks between. The windows have iron frames. The piers of the gates are built with bricks, the caps and plinth being stone. A causeway of Rowley nuts with curbing of Yorkshire stone fronts the offices, and round the outside of the market will also be a causeway of the same material. The toll-collector's office is placed at the south side of the yard, and a few feet to the east is an entrance to the Hope and Anchor inn. The outside walls are all panelled. The yard itself is macadamised, and an upper stratum of gravel laid on.

The contractor was Mr. Kendrick, of Lowesmoor. Mr. Rowe was architect.

THE DARLINGTON FEVER HOSPITAL.

This building now approaches completion, and will probably be opened before the close of the year. It is built on the pavilion principle. Mr. G. G. Hoskins, of Darlington, is the architect. The site occupied was purchased at a cost of 600*l.*, and is a little over 2 acres in extent. The length of the corridor is 246 ft. by 8 ft. wide, and besides its convenience as a main artery to the buildings, presents a fine promenade for the male patients, who will occupy the upper wards. Each main pavilion is 42 ft. high to the ridge, and by itself looks an imposing but compact erection. The whole of the hospital as at present arranged, will hold comfortably forty-four patients, allowing to each, at any rate those in the main wards, about 144 superficial feet of area, and 2,000 cubic feet of air. This number, in case of emergency, could, of course, be much increased, even in the present buildings; and as the town increases in size, the buildings can, without at all interfering with the general design, be doubled in size and capacity. The whole cost, including that of the site, the building, and the boundary enclosures, is estimated in round numbers at 9,000*l.* There is a washhouse for infected linen, and a separate one, that used for the household, a drying-closet made of large slide doors, which can be drawn out or pushed into a hot-air compartment at will. The fumigating-chamber is supplied with Messrs. Nelson's fumigating apparatus. Provision is also made for the reception of infected clothing and bedding. The sinks are supplied by Doulton, London, and being non-porous, are warranted against throwing out infection.

The local papers say, the practice of building separate pavilions arose from the recommendation of Miss Florence Nightingale, enforced by the late Sir James Y. Simpson. We assume nothing more than we are entitled to when we say that the advantages of the pavilion system, as used in earlier times abroad, were first brought prominently before the public in our pages, whence advocacy of the system was carried on by the admirable Miss Nightingale. The time is coming when even a wider distribution of patients will be insisted on.

The New Opera House, Paris.—*Gaitynani* says that the acoustic properties of the new Opera House were tried a few days back with the full orchestra. The piece performed was Auber's overture of *La Muette de Portici*. Various echoes were observed, but the decoration not being terminated, several doors being wanting, and the public absent, the experiment was not considered complete. This first trial, however, showed that the space assigned to the orchestra was too limited, and that one row of seats behind will have to be suppressed.

PROPOSED EXHIBITION OF ART MANUFACTURE IN EDINBURGH.

EXHIBITIONS of industrial art have now lost their novelty, and are looked upon very much as matters of course. Their success has been varied and their effect upon art workmanship precarious, although it may be generally conceded that upon the whole they have had a beneficial influence. This is more particularly observable in the matter of household furnishing and decoration, a branch of art which necessarily follows the fluctuations in the more important art of architecture. These fluctuations have, however, taken the direction of more fashion and caprice rather than that of true development and originality. This is sufficiently evinced by the present rage for the Queen Anne style; the carpets and wall papers now brought forward are after the Dolly Varden style of costume; flowers and fruit form the chief items of detail, and these are scattered about without much design, producing a somewhat *bizarre* effect. This cannot be upheld as a desirable result, for although a certain unity of effect is produced, inventiveness and true progress are checked, and mere imitation is the rule.

These fluctuations or fashions have generally originated in the metropolis, and thence have spread to the provinces; but their influence has weakened in proportion to the distance from the great centre, and it will be found that north of the Tweed there is less of that sort of thing than farther south.

It is proposed to hold an exhibition of art manufactures in Edinburgh next year; the proposal has been favourably entertained, and if carried out, the truth of our remarks will be put to the test. The scheme as proposed can be carried out at small cost, as it is intended to use the new infirmary for the purposes of the exhibition, an experiment carried out in Leeds some years ago.

The portion of the building now approaching completion consists of four spacious pavilions of three floors each. The situation is a fine one, overlooking a public park, and within easy distance from the most frequented parts of the city. Apart altogether from the Exhibition, Edinburgh is a city well worthy of a visit; it is annually thronged by numbers of travellers, and this year it will, doubtless, be more so than ever. The demand for hotel accommodation is greatly on the increase, and at present considerable efforts are being made to meet that demand.

Perhaps the most characteristic and attractive art-workmanship to be found in Edinburgh is the article of jewelry. Certainly the jewellers' shops are those most affected by visitors. In this line, Mr. J. D. Marshall (brother of Mr. Calder Marshall, sculptor) is *facile princeps*. He is no mean proficient as an amateur painter in oil, and in the present exhibition at Manchester will be found a large interior with numerous figures, which is the work of his hand. In his own special branch of art, he does not confine himself to the stereotyped forms; but has introduced an entirely new class of work, suggested by the ruin crosses and other sculptured remains, and the details of Byzantine architecture, &c., which are wrought up with great delicacy and artistic finish. Edinburgh is not a manufacturing town, but it has acquired some reputation in the production of household furniture, and there are several firms who produce and send to all parts of the empire work of this description. The substantial are generally preferred to the more fragile forms, and while there is much to admire there is a good deal that is censurable.

Our readers may have remarked that Mr. George Dobie, of Edinburgh, has offered prizes for designs in wall decoration, and such an example will doubtless be followed by the promoters of the exhibition.

The Messrs. Ballantine, whose name is known to our readers, have of late made new efforts, and produced works of artistic merit. A new window, just placed in the choir of St. Giles's Cathedral, is a noteworthy example of subdued harmony, combined with richness of effect. English visitors will look at the ancient church of St. Giles with surprise, for nowhere will they find a similar structure in a worse state. The restoration of the choir has certainly done something towards amending this state of matters, but the dirty condition and miserable art displayed in the north transept, and the manner in which the south transept and nave are filled up are far from commendable. Visitors to Edinburgh need

not look for much in the way of church architecture, the new cathedral of St. Mary will not be completed for some years, and the other new churches are commonplace. The ruined fragment of Holyrood Chapel is indeed worthy of careful study, and a drive to Roslyn will place them in contact with one of the most remarkable specimens of Mediæval art, and in the midst of one of the most beautiful scenes in the Lowlands of Scotland.

It is the natural beauty of Edinburgh rather than the beauty of its edifices which forms its chief attraction. At every turn new combinations meet the eye which are not found elsewhere, and the artist in search of the picturesque will find it there as surely as in the Continental cities he delights to haunt.

It may be that the forthcoming exhibition may lead to a more energetic and earnest pursuit of true art in the fair "Queen of the North"; and nowhere in the empire could better headquarters be found for the establishment of a University of Art. The city might be made the Florence of Britain,—a source from which artists in every branch might spread to the remotest corners of the land.

SS. PETER AND PAUL'S CHURCH, SWANSCOMBE, KENT.

THE quiet village of Swancombe, three miles from Gravesend, made a sort of holiday occasion of the re-opening of the parish church after having been closed for about eighteen months, during which time considerable works have been done.

The nave tower and aisle of the church have been restored by Professor Erasmus Wilson, F.R.S., at a cost of about 2,000*l*. The chancel at a cost of about 700*l*, about 500*l*. of which were given by the Messrs. White. The porch was rebuilt by the Freemasons of Greenhithe, at a cost of about 200*l*. Four stained-glass windows have been given; a handsome tomb has been erected over the family vault of Professor Erasmus Wilson at the east end of the south aisle; and a window of stained glass put up by the committee in memory of Professor Wilson's kindness and liberality.

The church, including the font, screen, lectern altar, altar-rail, &c., is ancient, and is well worthy of a visit, as it contains many objects of antiquity.

Mr. Erasmus Wilson is wisely acting as his own executor, and is doing many good deeds in his lifetime.

EXTENSIVE SANITARY BUILDINGS FOR THE METROPOLIS.

THE Metropolitan Districts Asylum Board, with the concurrence of the Local Government Board, intend to rebuild the Hampstead Hospital, in order that it may be available for the reception of patients in the event of an epidemic breaking out in the metropolis.

It is further proposed to build a new wing to the Caterham, and another to the Leavesden Asylum, and the managers consider it may be necessary to erect another establishment for the reception of pauper imbeciles and idiots in the metropolitan district; and it has been suggested, to meet the present emergency, whilst the new buildings are being erected, the Metropolitan Asylums Board should lease the workhouse in Whitechapel, which was erected for able-bodied paupers, but not used, as those cases now go to Poplar.

The expense in carrying out the new buildings will fall very heavily on the metropolitan rate-payers, and it is said to find that the necessity exists for them.

THE LIVERPOOL MASTER BUILDERS' ASSOCIATION.

THE annual dinner of the members of this Association was held on Wednesday last week at the Royal Hotel, Dale street, Mr. W. Callaghan presiding, and the vice-presidents were Messrs. D. Radcliffe and J. C. Bentham. The dinner was partaken of by about 100 persons. After the cloth had been removed, the chairman gave the usual loyal and patriotic toasts, all of which were duly honoured; after which Mr. Radcliffe (vice-chairman) proposed the toast of "The Mayor and Corporation of Liverpool," to which Mr. R. B. Minton and Mr. Forrest responded. In replying in the first place to

the toast, Mr. Minton said he looked upon the fact that this year there had been no municipal contest, as a proof of the town's satisfaction with the representatives of the various wards. He regretted that there were not gentlemen in the Council to represent the building trade; and, as he could, if necessary, select two dozen gentlemen worthy of the distinction, he thought it was the duty of the building trade to look after their own interests. Mr. George Atkin then gave "The Town and Trade of Liverpool," to which Mr. Forrest responded.

Mr. T. D. Barry next gave the toast, "Success and Prosperity to the Master Builders' Association," and, in doing so, bore testimony to the immense value which the architects put upon the efforts of the Liverpool master builders. Among the toasts given was that of "The Operatives of Liverpool," to which, in response, Mr. James Samuelson said he hoped they would at once accede to the request of the masons and plasterers for an advance. They would have to do so, and it was of no use wasting time and money in look-outs and strikes. If they were not disposed to yield at discretion, they had better follow the example of the coal proprietors, and come to an understanding to victimise the public by a judicious arrangement as to when strikes should take place. If they were not disposed to follow his advice so far, he would advise them to go in square for arbitration, and not offer 50 per cent. of the demand at first and then fight the operatives over the rest. That was not business.

SUBSIDENCE OF THE ROADWAY AND SEWER IN KENSINGTON-SQUARE.

THE roadway and sewer in Kensington-square appear to be in a very unsatisfactory state. At the meeting of the Kensington vestry last week it was stated that the roadway on the north side of the square had fallen in bodily, in consequence of the sewer underneath having given way, and the surveyor reported to the Board that he had caused the ground to be excavated for the purpose of making an examination. On the opening being effected, he found that the sewer was in the very worst state of dilapidation. In many places the side walls had given way, and the roof had fallen in, while in other places the bottom had gone. He discovered, from the examination, that the sewer wanted entirely reconstructing to the extent of 240 ft. The vestry decided at once to advertise for tenders for the repairing of the sewer.

THE PROPOSED PUBLIC BATHS AND WASHHOUSES IN CLERKENWELL.

At the meeting of the Clerkenwell Vestry last week, the question of erecting public baths and washhouses in the parish came under discussion. The special committee to whom the subject had been referred brought up an elaborate report, in which they stated that they had visited the public baths and washhouses in nine parishes in the metropolis, and were much pleased with their general construction and organisation, and they were of opinion that none of the metropolitan parishes should be without them. They recommended that in the event of the Vestry agreeing to the adoption of the Act, prizes should be offered, of such amounts as three commissioners to be appointed might deem fit, for the best plans and designs for the buildings, which would have the effect of securing all the latest improvements being ascertained and submitted for adoption; and they also strongly recommended that commodious and well fitted-up swimming-baths be made a leading feature, and that such swimming-baths be provided for women, the committee having found that good swimming-baths were an essential element of success. Mr. Brighty, in moving the adoption of the report, said the success of the movement would depend on the business qualifications of the three commissioners the Vestry appointed. He added that no parish was more in need of baths and washhouses than Clerkenwell, as most of the poor were engaged in indoor trades. Some members of the Vestry advocated the postponement of the erection of baths in the parish until a return had been produced showing the amount of money borrowed by the Vestry during the past five years, but the majority of the speakers were in favour of the project being carried out, and one member (Mr. E. J. Thompson) said that if they borrowed 25,000*l*. or 30,000*l*. for the

erection of the building, the money could be got from the Public Loan Commissioners at less than 4 per cent., and if they put 1d. in the pound on the rates, it would bring in 1,000l. a year. If they had to pay money out for a few years it would be returned in time, as pauperism would necessarily decrease. After an observation to the effect that the report was one of the ablest ever laid before the Vestry, the discussion was adjourned.

DINNER OF THE BUILDERS' BENEVOLENT INSTITUTION.

The annual dinner in connexion with this Institution was held on Thursday, the 5th inst., at Willis's Rooms, St. James's, Mr. George Dines, president, in the chair, supported by a very large number of the members and friends of the Society, including Messrs. George Plucknett, Thomas Robinson, W. R. Rogers, George Spencer Smith, Alfred Mansfield, J. M. Macey, George Godwin, F.S.A., R. Walker, J. Russell Freeman, Stanley G. Bird, Peto, Horn, Mowlem, Freeman, Burt, Alfred Goslett, J. Mackrell, T. F. Rider, Gardiner, Theobald, James Barnett, G. Trollope, Charles Fish, H. A. Hunt, jun., George Jennings, Bayes, Stirling, F. May, Hunt, Steward, C. Aldin, Thomas Stirling, M. Hall, J. S. Lee, James Simpson, W. Nicholson, S. E. Mann, Manley & Rogers, Scrivener & White, F. W. Keeble, J. Waldram, W. Watson, J. T. Bolding, W. J. Mitchell, E. Toms, J. Schofield, and others. About 240 sat down. The usual loyal and patriotic toasts having been duly given, and received with the customary honours.

The Chairman, in proposing the toast of the evening, said,—My duty now calls upon me to propose as a toast the Builders' Benevolent Institution. As many of you are aware, this Institution was established in the year 1847 for the purpose of helping members of the building trade who had met with misfortune, probably after many years of labour and anxiety. With old age creeping upon them and unfitting them for labour, they found themselves, as it were, stranded upon the world, and without, I may say, the means of living. The Institution also gives relief to the widows of members of the building trade, and I can assure you that some of the most lamentable cases of distress coming before the committee of this Institution are those of widows. Many an aged woman, after living in a state of comparative comfort all her life, suddenly finds herself, by the death of her husband, with all her resources cut off, and dependent on friends and relatives very often no better off than herself. Now, gentlemen, our object in meeting here to-night is to assist cases of this description, and I must ask you to remember that before any person can become a candidate for election on the funds of this Institution, he must satisfy the committee of investigation, who go into these matters, that his means of subsistence do not extend beyond a few shillings per week. As I have said, the Institution was commenced in 1817. Since that time 125 pensioners have been admitted upon its funds, and at the present moment we have forty-two on the books, the male pensioners receiving 24l. per year, and the females 20l. per annum. The amount distributed in pensions in this way since the commencement has been 18,113l. 6s. 6d. I may state that these pensions are paid from the annual subscriptions, from the interest of funded property, and also from the profits which have been received at different times, from the annual balls, which last item has amounted to a much greater sum than I should have supposed, viz., 2,331l. 7s. 6d. Now, I will say one word upon this subject, and that is, that our annual ball is fixed for the 21st January next, and our friend, Mr. Harris, will be glad to receive the names of any gentlemen who are willing to act as stewards in connexion with that occasion. The amount of our funded stock at the present time is 17,529l. 14s. 2d., of which 3,541l. 0s. 6d., principal and interest, are locked up as a building fund. Now, gentlemen, I have given you a short description of what the Society has done, and what it is able to do, and I think most of you will agree with me that it is not so much as ought to be done by so large and important a trade as that of the building trade of London. Our first-class builders and our middle-class builders have supported the Institution very liberally, and we are also supported by many kind friends, who live, as it were, just outside of our trade—who are connected with us, but do not belong to us, and I am sure we tender them our best thanks. But we have

never yet been able to cast our nets so as to bring in the smaller fry, whose numbers, could we get hold of them, would compensate for the smallness of their individual contributions. I believe there are 1,500 members of the London building trade in the "Directory" who do not subscribe to this Institution. Now here I think is an opportunity which every gentleman present might take advantage of in the next year, and try to get a contribution of half a guinea from each of the members of the London building firms who do not subscribe to our Institution at present. This would give us increased funds, and enable us to elect every one of the present candidates who are waiting for election, many of whom will have to be put back from time to time before they are successful. I have said, gentlemen, that our trade is a large trade, but it is also an uncertain trade, exposed, especially in these days of competition and speculation, to great vicissitudes, and it therefore becomes our duty while we are in prosperous circumstances to provide as far as we can for those upon whom misfortune may fall. I would like to put it upon higher ground, and say that it is our privilege to do so, and to help forward to the utmost of our abilities so good a work as that which it is the object of our Institution to effect. I feel that I am but a sorry beggar, but I ask you not to let any shortcomings on my part—any want of ability in pleading the cause of this Institution—prevent you from subscribing liberally to it. In conclusion, I would express the wish that all now present will, not only now, but in the future, do all they can to uphold and maintain this Institution in its present high position, and, further, seek to extend, by energy and perseverance, the useful and beneficent work which the founders of the Institution intended it to accomplish. I ask you to drink most heartily to "Prosperity to the Builders' Benevolent Institution."

Mr. Plucknett (Cubitt & Co.) next proposed, in genial terms, the health of the President, who, he said, was ever ready to serve the Institution to the utmost of his ability.

Mr. Dines having responded, Mr. Russell Freeman proposed "The Patrons, Vice-Presidents, and Trustees," coupled with the name of Mr. George Jennings, who acknowledged the compliment with some hearty expressions.

Mr. J. G. Macey, in proposing "The Treasurer" (Mr. George Plucknett), paid a warm tribute to the great and continuous efforts which that gentleman had made on behalf of the Institution. There was no man in the building trade who had given so much time and energy to the affairs of the Institution, and although there were many honourable names associated with the building trade, no name could be mentioned which would be received with greater respect than that of Mr. George Plucknett.

Mr. Plucknett, in responding, appealed for an increase in the amount of annual subscriptions, for an increase of only 100l. per annum would enable the directors to receive four or five more pensioners on the funds of the Institution.

Mr. Rogers proposed "The Architects and Surveyors," coupled with the name of Mr. Godwin, to whose labours flattering reference was made by the speaker.

Mr. Godwin, in responding, said that the Builders' Benevolent Institution was not on the scale of importance and magnitude which the vastness of the interests involved required. He would supplement what had been said on this head by mentioning to them the fact, deducible from the last census, that during the past ten years 240,000,000l. sterling were spent in erecting dwelling-houses in this country, and it was equally certain that if the population went on increasing in the same ratio as in the past, there would have to be spent for the same purpose, during the next ten years, the sum of 250,000,000l., or no less than 25,000,000l. a year. This was exclusive of the enormous sums spent in the erection of churches, railway stations, public buildings, bridges, &c., which would bring the total up to a sum which would seem fabulous. Surely, then, the Builders' Benevolent Institution ought to have an annual income of 10,000l. or 15,000l., instead of 2,000l. or 3,000l., if it were to worthily occupy its position as the principal charity of the building trade. In conclusion, Mr. Godwin expressed his gratification at seeing his old friend Mr. Dines occupying the President's chair, and paid a high tribute to that gentleman's sterling worth.

The other toasts were—"The Directors and Stewards" (proposed by Mr. Thomas Robinson, and responded to by Mr. Simpson), "The Ladies" (proposed by the Chairman, and

responded to by Mr. Steward), and the "Secretary" (Mr. A. G. Harris).

Subscriptions to the amount of 521l. 15s. 6d. were announced during the evening.

ST. JOHN THE DIVINE, KENNINGTON.

The consecration of this church is to take place on this Saturday, the 14th inst.

The church consists of a chancel, south chapel, priests' vestry, choir vestry, organ-chamber, nave, north and south aisles, cloisters, baptistery, porch, and, when complete, a west tower with a spire. The chancel is 46 ft. long by 24 ft. wide, and the arch which surmounts it measures 51 ft. from the chancel floor to the top, while it has a span of 21 ft. The south chapel is 30 ft. by 16 ft., and is fitted with a piscina; while the cloisters, above which the organ-chamber is situated, are 19 ft. by 16 ft. The choir vestry is 35 ft. by 13 ft. 3 in.; and the priests' vestry is 17 ft. by 14 ft. 6 in. There are eleven steps from the altar to the chancel floor. The length of the nave is 110 ft. by 35 ft.; while the north and south aisles are about 100 ft. long and 13 ft. wide. The height of the church from the chancel floor to the ridge of the nave roof is about 64 ft.; to the inside of the walls, 52 ft.; and to the eaves, 37 ft. The aisle walls are 25 ft. high. In front of the organ-chamber is a carved niche for the figure of the patron saint, St. John the Divine. The arcade is divided into bays, with very richly-moulded pillars or columns, with carved capitals most rich and telling between them; while the arcade piers are thrown out 5 ft. on each side, and connected with the chancel arch by means of an skew arch. The roofs of the south chapel and the cloisters are groined in red brick, with moulded ribs of stone transverse and diagonal. The floor of the church is to be paved with tiles of various patterns, each pattern divided by bands of white Portland stone, and there are no pews in the church, only chairs. Behind the altar are to be three stained-glass windows, subject the Adoration of the Lamb, which were presented by a friend of the undertaker, and are being prepared by Messrs. Clayton & Bell, of Regent-street. There will also be a reredos, and a large number of oak stalls. The nave roof is a Gothic-shaped arch with moulded ribs, and is made of yellow deal, unstained and prepared for painting, which will be done when funds are forthcoming. The general style of the building is Gothic, and the church will be very similar to the church of St. Mary Magdalene, Paddington, which was also designed by Mr. Street. The material used for the church is a red brick, specially manufactured for the purpose, with Bath stone dressings. Outside there will be ten carved pinnacles, each 10 ft. high, which are to be raised above the north and south aisle parapets. The tower and spire will not be completed for the present. The tower is to be over 200 ft. in height. The number of the church will accommodate is as follows:—Nave, 617; north aisle, 175; south aisle, 164; chancel, 26; total, 982; which, with a choir of 22 persons, will make a grand total of 1,004.

STREET-CLEANSING APPARATUS COMPETITION.

In consequence of letters in our columns complaining of the treatment received by competitors in this case, some of the gentlemen connected with the offer wish it understood that the proceedings in this matter have been quite straightforward. The several companies, first of all, subscribed 300l. to meet their engagements. They invited a prominent member of the Society of Arts and some other gentlemen to join them, who attended every meeting, and they gave a careful attention to every design submitted. With consent of the competitors, the designs were all exhibited to the Commissioners of Sewers at Guildhall, and afterwards at the Society of Arts. The investigations of the committee tended to show that none of the proposals were likely to effect what was wanted, but they offered one or two of the competitors any opportunity they wished of showing, in some practical way, what their inventions would do. Finally, they referred to a gentleman who had full knowledge of the subject, who is, personally, totally unknown to every member of the committee, and who has made his award, which, we believe, can be seen by any competitor.

It is urged that fifty guineas were no object at all to the committee. If they could have

obtained what they wanted, it would have been invaluable to them, and have made the fortune of the inventor.

ROYAL ARCHITECTURAL MUSEUM.

THE Skinner's Company have presented twenty guineas to the Council of the Royal Architectural Museum, Tufton-street, Westminster, in aid of their Drawing and Modelling Classes for Art-Workmen. How many art-workmen attend?

Sir, In reply to letter, signed "Harry Hems," permit me to say that the Architectural Museum is open every Saturday until six p.m.; and on the evenings of Monday, Wednesday, and Friday, from seven till nine, when the drawing and modelling classes for art-workmen meet, and the Museum is partially lighted.

ASSISTANT SECRETARY.

DESTRUCTION OF SMOKE BY WATER JETS.

SIR,—Your correspondent "Architect," who asks for information on this subject, will find the method patented by Jeffries, in 1824, described in the "Mechanic's Magazine," vol. 34, p. 198. Also, no doubt, he can obtain a copy of the patent at the Patent Office for a mere trifle, as all the patents have been printed up to a very recent date. There is also a patent by T. Hadley for the same purpose, by a shower of water, but I am not certain of the exact date. I believe it to be about forty years ago. In this plan the patentee has either four or six jets. The smoke passes up each alternate flue, and a jet of water descends through the others. By this means the patentee says he purifies the smoke, and deposits all the carbon in the form of lamp black. I confess to a want of faith in both these plans. C. H.

DAMPNESS IN STRONG-ROOMS.

SIR,—As yet we have seen no satisfactory reply to the question of "G." in the *Builder* of the 26th of September. We certainly fail to understand how your correspondent, "W." (October 24), causes a current of warm air to descend into the room.

Every properly-built strong-room has a gate, besides its iron door. The door is kept open during business hours, while the locked gate prevents intrusion and gives free circulation to the air. Upon or above the ground-floor this gate will usually suffice, but if the room be in the basement, and so built as to keep out external damp, it may be kept quite dry by burning one or more gas-jets under metal bells connected to ordinary iron gas-barrel (say 1½ in. or 2 in.), carried into and through the roof and walls far enough to leave no risk of fire descending it, and terminating upright in the open air, or by preference in an old chimney-flue. Burning gas in the room without such ventilation would only aggravate the evil.

CHUBB & SON.

SIR,—Allow me to suggest yet one more remedy, which, if it does not absolutely cure, will certainly greatly mitigate the evil,—it is common salt. Place some of this in pans on the floor, or where convenient, and change when saturated. It has been tried with success by Mr. Penrose (whose idea it is) in his office at St. Paul's. G. M. D.

COLLEGIATE PROPERTY IN LONDON AND ITS CONDITION.

MAGDALENE COLLEGE, who are the freeholders of several streets in Southwark, are charged by the authorities of the parish of St. Olave with gross neglect of the sanitary state of the small tenements rented of the College by the poor, through a leaseholder, and with being the cause of spreading epidemics in the metropolis. In College-street, for example, there are about thirty small houses, and these contain from 400 to 800 souls, and more during the night. The medical officer found in one four-roomed house, four families, a man and his wife and four children in one room; nine persons in the small front room on the ground-floor; two women and five children in a still smaller room at the back; and two families upstairs. The place was in a very dirty condition, and wanted turning out altogether. Several of the houses have fever under treatment, and at two dwellings deaths from scarlet fever have just occurred.

Institution of Surveyors.—The first ordinary general meeting of the session will be held on Monday, November 16th, when the president, Mr. Thomas Huskinson, will open the session with an address.

BRIDGE-MASTER IN THE NORTH RIDING.

SOME few years ago the *Builder* took exception to the terms advertised by the North Riding Quarter Sessions offering 300l. salary for a competent bridge-master, which title, by the way, is an ancient one, and now embraces within its duties all that is known to belong to the office of county architect and surveyor. The professional ability required to design lunatic asylums, gaols, courts, police stations, bridges, &c., and to advise the justices on other professional subjects, was not likely to be found for 300l., the *Builder* predicted, especially when at that time the surveyor had to pay all his travelling expenses and be debarré from private practice.

If I remember rightly, there were forty-six candidates for the office, the successful one being Mr. J. G. Brown, of Sunderland, who had carried out the Assize Courts, Durham, under Mr. Crozier, C.E. This gentleman was expected to be everywhere in the county where works were being carried out, and in the moor highlands above Richmond a contractor had charged more time and men than he had employed, which resulted in an attack upon the character of the surveyor, resulting in his resignation and dismissal.

The magistrates, touched by the statements made by their late official, improved their offer to 400l., and 60l. a year for a clerk, and such travelling expenses as the Court would allow, which offer attracted several applicants, notably two distinguished officers of Royal Engineers on half-pay. The appointment fell upon Captain Creyke, who for two years has endeavoured to do the work of this large district; but, alas! again we find a contractor has brought trouble to the official, and on asking for more salary for his assistant, he is asked to resign. Surely it is as little as the Great Unpaid can do,—to appoint a professional arbiter to inquire and report to them how such a state of things may be remedied, as within the space of five or six years we have two gentlemen sadly injured for life, through some defect in the working of this office. Without a liberal allowance for clerks of works attached to the office, I fail to see a solution to the problem, unless private practice is allowed, enabling the architect chosen to employ profitably a staff of assistants which he could rely on for occasional inspections, although it seems paradoxical to employ the money derived from private sources to a public office; yet such has been successfully done for many years in the neighbouring county of Durham. A district like the North Riding of Yorkshire, some sixty by thirty miles, with nearly 200 bridges and bridge roads, numerous police-stations, the Clifton Lunatic Asylum, the House of Correction at North Allerton, militia depôts, and other public property constantly being augmented, must entail a large amount of travelling and attention, and how a surveyor can manage to be here, there, and everywhere, although understood by the Justices to be easy enough, is a puzzle to the past bridge-masters and perplexing to the public. The same Justices give 500l. or 1,000l. to a Clerk of the Peace, who also has a deputy; and in the interests of an honourable profession and an important office, I recommend them to be equally liberal with their next surveyor if they wish to keep a good man and have the work thoroughly attended to. LOTHOUSE.

ACCIDENTS.

At the New Town Hall, St. Helen's.—At the Town Hall in the course of erection at St. Helen's, by Mr. Rome, of Liverpool, two young men, employed as bricksetters, were on the scaffold in one of the upper stories, when the support suddenly gave way, and they were thrown on to the flooring beams. One man had a leg injured, and one sustained severe cuts about the head.

In Sorby-street, Sheffield.—Some houses are being erected in Sorby-street, Sheffield, by Mr. T. Smith, builder, and amongst others he had working for him Samuel Keetin, and a youth named William Howson. They were working on the scaffolding, when one of the ropes gave way, and the scaffold fell. They both fell a distance of about 30 ft., and were removed to the infirmary. Howson sustained a compound fracture of both bones of the leg, and Keetin was very much shaken by his fall.

Fall of a House in Birmingham.—A serious accident, says the local *Daily Post*, has occurred in the neighbourhood of Dale End,

where, a house (No. 30) in John-street suddenly fell. Some adjoining buildings having been taken down, Roddey's house was left without support, and its sudden collapse seems to have been attributable to that fact and the recent storms of rain and wind. Some bricklayers and labourers at work near the spot perceived that the house had "given notice," and promptly raised an alarm. The people, with one exception, rushed out into the street and narrowly escaped with their lives, for almost immediately afterwards the gable end fell, and brought the sides with it. A woman failed to get out in time, and was buried in the ruins. As soon as possible she was rescued, and taken to the General Hospital. She was, fortunately, not so badly injured as was expected.

Fatal Crane Accident at Tudhoe.—From an inquest on the body of Robert Rowling, it appears that he, along with another man named Richard Carr, met with their deaths in consequence of a crane accident at Tudhoe Ironworks, on the 24th ult. George Savage, foreman labourer at the works, stated that the crane was for the purpose of lifting heavy pieces of iron, for the removal of one of which he gave orders on the day named. The crane moved and went over to the girder, which gave way, and the affair fell to the ground, a distance of about 14 ft. or 15 ft. All the men, six in number, were more or less hurt. He had seen this crane lift six or seven tons, and he had never heard that the column was out of position. Thomas Shaw, engineer at the works, stated that the crane and winch were looked at about once a week. He considered the girders a fixture. Had examined the foundations of the column from which the girder lost its hold, and found that the foundation stone had fallen away on one side, rather better than an eighth of an inch to the foot, which caused the column to get out of its perpendicular. The girder would consequently have less hold on the column top. Witness should think that that was the first cause of the accident. He did not know how long this stone had been out, but thought it must have been getting out slowly for years. The platforms were put down on so substantial a basis that they were not expected to require supervision. The jury returned a verdict of accidental death, but at the same time they recommended that the owners of the works direct a periodical inspection of the girders and permanent way.

CHURCH-BUILDING NEWS.

Retford.—The parish church of St. John, Clarlborough, has latterly been undergoing complete restoration, and has been formally reopened. The ancient pile, having a commanding position at the entrance of the village, was erected about the middle or towards the close of the seventeenth century. Since that period, time had been busily engaged damaging the millions of the windows, and had so deformed the original regularity of the building that it appeared ready to fall down. Various attempts were made to repair this antiquated sanctuary. Bits of plaster were dabbled here and there for stopgaps, and bricks were used for stone, so that these so-called improvements gave neither solidity nor elegance. Architects and builders have been employed, everything deemed essential has been taken in hand, and now there is only a sum of 300l. required to improve the churchyard, and build new entrance-gates.

Potton.—The parish church of Potton has been reopened for divine service. The old pews have given way to new sittings of varnished beech, the whole of the floor being boarded, with the exception of the nave and aisle passages, which are laid with Milton's encaustic tiles. The belfry space is now thrown into the church, and another advantage gained by the removal of the old gallery is that the proportions of the Gothic arch of the belfry are fully disclosed. The organ, which also is a relic of the past, has been transferred to the south side of the chancel. The large window in the northern aisle, at the eastern end, has been restored and lowered, the old window having been for years half blocked up. Clearstory windows have also been put in, with cathedral glass. The roof of the nave, which is of oak, has been varnished. The church is heated by means of two stoves, one near the pulpit, and the other just inside the entrance at the south aisle. Over the communion-table there is a large stained-glass window, having in the centre a medallion representing the Redeemer in the act of breaking bread with

two disciples. A memorial-window has been placed in the south aisle next the vestry. It has three compartments, the centrepiece being the Crucifixion; while on the left is a representation of the birth of our Saviour, and the star guiding the Magi to the stable at Bethlehem; that on the right being symbolical of the Resurrection, the subject being the apparition of the risen Lord to Mary in the garden. These are surmounted with the monograms Alpha and Omega, the central panel exhibiting the letters I.H.S. in relief. Messrs. James Powell & Son, of London, were the artists. The entire of the improvements noticed were carried out from the designs of Messrs. Raynes & Shum, architects, the London. Mr. W. Osborne, of St. Neot's, was the contractor. The advisability of restoring externally, not only the north porch, but the north side of the church, as soon as possible, has been suggested. The old cement should be removed, the entire of the side refaced, and the windows, which are now in a bad state, should be placed in a proper condition.

Ducklington.—The small church of Hardwick, a village ecclesiastically united to the parish of Ducklington has been reopened, after enlargement and repair. The church, which is situated in Cokethorpe Park, and dedicated to St. Mary the Virgin, originally of the beginning of the thirteenth century (of which date there is a font), had undergone every possible mutilation and alteration until it had been reduced to a plain white-washed flat-ceiled nave and chancel, the latter ending in a plastered wall without any east window. The roof having become very insecure, it was resolved to attempt not merely necessary repair, but some improvement as well as enlargement, and the result is that an aisle has been added on the north side, having a lean-to roof; the flat ceiling has given place to an open roof; the east and north walls of the chancel have been rebuilt, and a window of three lights, filled with stained glass has been inserted; the chancel has been raised by three steps, and the sacristy paved with tiles; and a small west gallery has been removed. Want of funds has prevented the re-seating of the church, but the old pews have been reduced in height and have lost their doors, some old carved oak (granted to the church by Magdalen College in 1840) has been worked up afresh to make a reading-desk and chancel-stalls, and chairs have been placed in the aisle. It was found on removing the plaster from the north wall that an arch had formerly led into an aisle, of which the foundations were discovered on opening the ground for the new aisle; and a fifteenth-century door has been re-opened on the south side of the chancel, as well as a small priest's door close to the east end on the north. In the portions of wall which have been rebuilt many carved fragments of windows, columns, and doors were met with; of these two stones, with Tudor roses, have been used for the supports of the beams at the entrance of the chancel; another has been adapted for a credence-shelf, and the old piscina, found in the materials of the east wall, has been restored to its original place and use. The east window, painted by Messrs. Usher & Kelly, is the gift of Mrs. Cottrell Dormer, of Rousham Park, and represents the Crucifixion, the descent from the Cross, and the leading home of the Virgin Mary by St. John. The architect employed was Mr. Bruton, of Oxford; and the builder, Mr. Barnes, of Witney.

Brighton.—In the enlargement of St. Margaret's Chapel, Cannon-place, the style adopted is Renaissance, freely treated; and the decorations are in conformity with that style. There is a new chancel, formed at the west end, with circular columns of red Penryn stone shafts on clean Corsham Down stone pedestals, with carved stone capitals, moulded caps, bases, and carved and moulded panels, supporting semi-circular arches moulded and run in plaster, &c. The north wall is divided into bays by pilasters in plaster, surmounted by cast capitals. The ceiling over the chancel is wagon-headed, and its surface broken up into octagonal panels, with raised and moulded ribs, all in plaster. The south side of the chancel has circular columns and square pedestals, all of Corsham Down stone; carved capitals, and ace-shaped moulded panels to pedestals. These columns support the south side of the chancel roof, and do a like duty—with the addition of carved stone trusses on their sides—for the gallery on that side overlooking the chancel. The gallery is intended to receive a new organ at its east end, with two fronts: one facing along the south gallery, through a newly-cut opening, and the other facing

into the chancel. The west end of the gallery is to be devoted to the use of the choir. The general plastering is done with the patent stucco, and finished in trowelled stucco. There is a reredos, panelled and artistically worked out in unison with the old English custom of having the Ten Commandments placed in the centre panels, and the Lord's Prayer and the Creed in the outer panels. The columns of this reredos are diminishing and fluted; the whole being in plaster. For improved means of egress and ingress two additional doorways and staircases have been provided; one at the N.W. corner of the north gallery, and the other at the S.W. corner of the south gallery, occupying the spaces severally used as the "infants' school" and the old vestry, both now swept away, and thus affording access into St. Margaret's place and Regency square, giving increased light and air to the north side, and providing five or more means of exit and entrance. The new staircases are of red pine, with oak rail and newel. The windows in the dome are entirely new, of iron, and glazed with coloured glass. In the space formerly occupied by the old organ in the east gallery additional free sittings have been fitted up, and the Fishermen's Gallery has been extended across over it and is now in one, fronted with a new ornamental iron panelled fence with mahogany rail. The whole of the old square-headed windows of the nave, both above and below the galleries all round, have been enlarged and remodelled and additional ones provided. All the ceiling timbers under the gallery have been heightened. The gallery sittings have been cut down and re-arranged. The sittings in the nave are entirely new and of oak. An improved ventilator is fixed in the top of the dome, and the whole system of ventilation has been generally attended to, as also the lighting throughout; the old sunlight being replaced by gas jets, just under the windows of the dome. In the decorative painted work, Mr. Allen, of Fulham, has been employed, as in the dome decorations, together with the gallery fronts, walls, columns, capitals, and panels. The heating arrangements have been remodelled by the London Heating Apparatus Company. The cost of the enlargement of St. Margaret's will be from 4,000l. to 4,500l. The contractors of the work are Messrs. Cheesman & Freeman, builders, Brighton; Mr. Denman being their works representative, and Mr. Wood their clerk of the works, Mr. John O. Scott, of London (son of Sir Gilbert Scott), is the architect.

Miscellaneous.

The Beaufort Chapel, Badminton.—Her Majesty the Queen having decided to erect a monument to the memory of her father, the late Duke of Kent, at the south-west angle of St. George's Chapel, Windsor, it was found that much of the light required to show it to advantage was excluded by a large monument to the first of the Dukes of Beaufort, which blocked up two of the windows of the chapel belonging to that family, near the entrance to which the new monument will be placed. The Duke of Beaufort therefore agreed that this monument should be taken down and removed to Badminton, and thus complete the series of memorials of his ancestors in that church. Mr. Thomas H. Wyatt, architect, was consulted, and the removal of the monument and restoration of the chapel were entrusted to him. The masonry of the chapel was much injured, large portions having been cut away to make room for the monument, and it was evident that the entire walls and roof needed re-decoration. This has now been done, and the effect is good. The badges, &c., of the Beaufort family have been introduced in the ornamentation, investigation of the fragments of ancient work having shown them to exist in the original decoration. The series of windows begun many years ago by Mr. Willmet, having the arms of the Marquises of Worcester and first Dukes of Beaufort, has been completed, carrying on the arms of the latter to the present time. The work has been designed and carried out by Messrs. Lavers, Barrand, & Westlake.

Radstock.—A residence is about to be erected at Radstock for the station-master on the Great Western line. The directors of the company have adopted the plans and specifications of Messrs. Robbins & Sons, builders, of Coleford, and the contract for the works has been taken by them for about 400l.

Memorial of the late Mr. Godfrey Sykes.

An inquiry was made through the columns of the *Sheffield Independent* the other day, as to what had become of the memorial it was proposed to erect to the memory of the late Mr. Godfrey Sykes? The memorial itself has been completed, and has been in Sheffield for many months, but its erection has been deferred through the difficulty of obtaining a suitable site. Several positions in the town having been thought of only to be rejected, it has now been decided, with the permission of the Corporation, to place the monument in Weston Park. The choice of three sites there has been offered to the committee, and when the gentlemen appointed to select the most suitable of these have come to a decision, nothing will remain but to erect the memorial and to pay for its erection. The memorial consists of a column standing on a square base and surrounded by a vase in copper gilt. The material employed is terra-cotta. The column is a copy of those used in the new buildings at South Kensington, designed by Godfrey Sykes himself. Of the three bands of figures upon it, the topmost represents infancy, the second middle age, and the lowest old age. On one side of the square base is a medallion of Godfrey Sykes in copper gilt; on another, a panel filled in with the tools of the artist's craft—palottes, brushes, and modelling tools; while the third and fourth bear, on copper gilt, inscriptions giving the leading features of Mr. Sykes's life. It is proposed that the whole shall be surrounded with an iron railing, from the foundry of Messrs. Longden & Son. The memorial has been designed by, and its erection carried out under, the direction of Mr. James Gamble, of the South Kensington Museum.

St. Michael's Church, Chester-square.

The ceremony of relaying the foundation-stone of this church, which is being enlarged, has taken place, in the presence of a considerable number of spectators. The foundation-stone was originally laid thirty years ago by the then Earl Grosvenor, and it was built to accommodate a congregation of 1,200 persons; but the church has for some time been so much crowded that it was determined to enlarge it by lengthening the chancel about 20 ft., by which accommodation will be afforded to about 400 persons more. The wall at the east end has been taken down and a temporary screen erected, so that the services might be carried on, and they have been carried on to the present time without interruption. In the progress to the works it was requisite to take up the foundation-stone, and it has been raised in the position it would have been in had the church been originally built of the size it will be when enlarged. Under the stone was found a brass plate with an inscription in Latin and in English, stating that the church was dedicated to the memory of St. Michael the Archangel, and that the foundation-stone was laid by the Earl Grosvenor on the 20th of May, 1844. This plate, with another bearing a similar inscription, but substituting the Duke of Westminster for Earl Grosvenor, and the name of the present vicar for that of the former one, was placed under the stone, together with a bottle containing coins of the realm. The Duke of Westminster laid the stone. He said a few months ago Mr. Fleming took measures to raise subscriptions, which now amounted to about 4,000l. The expense would be about 6,000l.; so that about 2,000l. were required to make up the amount.

Ship Canal from the Atlantic to the Pacific.—A correspondent hears that the much-talked-of and much-needed ship-canal from the Pacific to the Atlantic Ocean through Nicaragua is about to be realised. In the first instance, Napoleon III. wrote and published an excellent pamphlet on the subject when imprisoned at Ham. The King of Holland, too, it appears, tried to make something of the scheme. Some months ago the subject was brought prominently before General Grant, who knew the country. A distinguished American engineer was appointed by the United States Government to command an inland surveying party. The work was completed in 1873, and the working maps, plans, computations, and estimates are now sufficiently advanced to be submitted to Congress.

The Proposed Sheerness Esplanade.—The Sheerness Local Board of Health having applied to the Local Government Board for authority to borrow 2,500l., in order to construct an esplanade, the latter Board have sent an inspector to hold an inquiry.

Opening of Crewkerne Cemetery.—The parish of Crewkerne adopted the Burial Acts two years ago, and appointed a Burial Board, under whose direction the cemetery buildings have been erected and the ground laid out. The ground is four acres in extent, of which about two and a half acres are apportioned to the church and the remainder to the Nonconformists. The buildings consist of two chapels, with central tower and a lodge, in which, besides the cemetery-keeper's apartments, there are a board-room, clerk's office, and strong-room. The whole is built of local stone, with Ham-hill dressings. The architect was Mr. Nattrass, of London, and the builder was Mr. Draper, of Crewkerne. The entire cost to the parish will be about 3,500*l.*, which has been raised on a loan to be repaid in fifty years. The paths were formed and the ground planted by Mr. Scott, nurseryman and landscape-gardener, of Merriott and Yeovil. The site is elevated, and from it there is an extensive view. The cemetery has been consecrated by the Bishop of Bath and Wells.

New Works at Hartlepool.—The extensive works of the North of England Wagon Company have just been opened at West Hartlepool. They are the property of a limited company, of which the chief merchants in West Hartlepool form the directorate, and Mr. S. Hannah (late of the North-road Engine Works, Darlington) is the manager. Messrs. Johnson & Fletcher, of West Hartlepool, have been contractors for the works, and the bulk of the powerful machinery is from Messrs. Robinson, of Rochdale. The works occupy a site of several acres, part of which was formerly the Cricket Field. The new saw-mill of Mr. T. Brown, Stockton-street, West Hartlepool, has been set in operation. It is a spacious building, erected at a cost of several thousand pounds, and is furnished with sawing and planing machinery, &c. A commencement has been made this week with the new engine stable in Mainsforth-terrace, for the North-eastern Railway Company, the contractor being Mr. Moore, of Hartlepool, and the cost close upon 10,000*l.*

Bristol School Board.—Mr. W. P. Baker presented the report of the committee appointed to consider the designs for a new Board School in Long Ashton. The committee had before them ten designs, which ranged from 2,400*l.* to 5,000*l.* The committee did not think that the board would be justified in selecting a design to cost 5,000*l.*, if those at a lower figure were satisfactory, and, finding this to be the case, they put aside all those above 3,000*l.* There were two plans which they brought before the Board, the one marked "Experientia Docet," estimated to cost 2,302*l.*, and that marked "Nulla Dies," the estimate of which was 2,680*l.* He moved that the former design be accepted. The Rev. Mr. C. Price seconded the motion. Mr. H. F. Davies proposed, and Mr. A. Hall seconded, the adoption of the other design. The question was put on the amendment, which was carried by vote to four. The chairman announced that the successful candidate was Mr. Stewart Coleman.

Re-opening of Lord Penrhyn's Slate Quarries.—Mr. Williams, Mr. Wyatt, and Major Matthews, arbitrators in the dispute at Lord Penrhyn's quarries, have published their award. While blaming the men for having ceased work suddenly and without reference to the arrangement at the close of the previous strike, that all complaints against the management should first be investigated by a supreme manager, they find that, with one or two exceptions, the whole of the charges against the management of not adhering to the arrangements with Mr. Lloyd have been disproved. The men at once resolved to resume work on the agreement made between the men and Mr. Penrhyn Lloyd, and on lettings by agents other than the present managers. Lord Penrhyn has appointed Mr. Wyatt supreme manager; and it is rumoured that Mr. Francis has resigned, and that his resignation has been accepted.

Exeter Improved Industrial Dwellings Company.—Of the block of buildings lately opened, the first stone was laid by the mayress, assisted by the right worshipful the mayor, on the 6th of November last, and the contract was undertaken by Mr. James Stile for 3,543*l.* On the site in the Black Boy-road, the directors have accepted the tender of Mr. James Stile (from among four others), for the sum of 2,710*l.*, for the erection of a complete block of sixteen dwellings of four rooms each, and these buildings are about half-finished.

Manchester Statistical Society.—In the course of the Session the following papers, among others, will, it is expected, be communicated to the society:—Professor W. Stanley Jevons, M.A., "On the Progress of the Mathematical Theory of Political Economy, with an Explanation of the Principles of the Theory;" Mr. Robert Montgomery, "On the Bank of England and its Reserves;" Rev. R. H. Gibson, B.A., "Some Comparisons between Ancient and Modern Statistics;" Dr. W. H. Ramsey, F.R.S., "On the Boundaries of Parishes, Unions, and Counties;" Mr. A. Hildebrandt; Mr. W. E. A. Axon, "Some Defects in the Statistics of Libraries and Books;" Mr. W. L. Sargent; Professor A. S. Wilkins, M.A., "Notes on the First Report of the Universities Commission;" Mr. R. Bailey-Walker, "On the Facts of the Census (vol. 3);" Mr. H. H. Howorth, "On the Tendency of the Rural Population in highly-civilised Communities to Drift into Towns, and some of its Results."

London Bridges.—At the meeting of the Metropolitan Board of Works last week a report was brought up from the General Purposes Committee, recommending that notice be issued of the intention of the Board to apply to Parliament for power to free from toll all or any of the bridges over the Thames within the limits of the capital. Mr. Richardson, the chairman of the committee, said the total amount of toll levied on all the bridges was, he had calculated, about 65,000*l.*, and twenty-five years' purchase of the bridges would amount to 1,625,000*l.* It was, he thought, worth while to obtain from the Government a continuance of the coal and wine dues beyond the year 1888, the date at which they expire. After a long discussion the proposal for the adoption of the report was carried on a division by 27 to 9. The purchase of the gas companies is also to form the subject of Parliamentary action.

New British Institution Gallery.—The present collection in Bond-street exhibited under this title is quite as good as, if not better than, any that have preceded it. It consists of works by both foreign and English painters. Under the former head are interesting specimens of the art of Messrs. De Haas, Lamorinière, Jan & Franz Verhas, Bossuet, and Giannetti; and from the English some charming little pictures by Messrs. Linnell, Dobson, F. Goodall, J. B. Burgess, and others. Mr. Claude Calthorp sends two very striking works. They represent on a large scale small portions of the interior of St. Peter's at Rome, with a very few figures in each case; and even those who may think them not likely readily to find purchasers, will be forced to admire the painter's boldness and originality.

Opening of a New Railway in India.—Bombay advices are to October 12. The *Gazette* of that date says: "The chief event of the week is the opening of the Hyderabad State Railway, which brings the great Mahomedan city of the Deccan into direct communication with Madras, Calcutta, and Bombay. The line is a little over 100 miles long, and at present is carried only as far as Secunderabad, one of the greatest depôts of British troops in India; but there can be little difficulty in perceiving its great commercial and political importance. Hyderabad is a walled city, said to contain 400,000 inhabitants, and one of the chief labours the railway has before it is to civilise the crowds of rude semi-barbarians who are gathered behind its walls."

Health of Chepstow.—This district is suffering from a serious visitation of the epidemic known as scarlet-fever. We are glad to find the local *Advertiser* urging that the time has now arrived when it behoves those to whom the administration of affairs, as sanitary authorities, is confided, to bestir themselves, and that promptly and earnestly, in devising and carrying out projects, if not for "stamping out" the disease, which it is argued is impossible,—at any rate for the alleviation of suffering, and the taking of all due precautions for preventing the spread of the malady, especially amongst the poorer classes, who properly come under their jurisdiction.

Dismissal of Apprentices.—One of the apprentice carpenters with Messrs. Caird & Co., Greenock, sued that firm in the Greenock J.P. Court, on Saturday last, for wrongful dismissal, and claimed 50*l.* as damages. The case was dismissed, the opinion being given from the bench that the pursuer had broken his contract in joining with the other apprentices in systematically annoying the piecemen employed by Messrs. Caird & Co., whose presence in the yard the boys objected to.

The Overcrowding in Cottages at Burton-upon-Trent.—In compliance with a request from the Chairman of the Burton Town Commissioners, Mr. Joseph Nanneley, a meeting of employers of labour has been held in St. George's Hall Assembly Room, there to confer upon the most desirable plan of providing better house accommodation for the working classes, when it was unanimously resolved, "That the employers of labour present at this meeting pledge themselves to use their best endeavours to remedy the deficiency of cottage accommodation in Burton, and to invite the co-operation of the firms recently settled in the town."

Mr. Rupert Kettle and the Holiday Question at Ironworks.—Mr. Rupert Kettle has made his award as arbitrator to the North of England iron trade upon the holiday question, which has lately promised so seriously to interfere not with that industry alone, but with all the leading manufacturing operations throughout the country, by reason of the action taken by certain of the ironworkers last Whitsuntide, and the decision thereon by the County Court judge of the North of England district, by which employers were made responsible for workmen's wages during local holidays. The award is that no further claim can be made by the workmen.

Proposed Free Public Library and Museum for Islington.—A deputation attended the meeting of the Islington Vestry on Friday evening to present a requisition in writing, asking the Vestry to fix a time and place for a public meeting of the ratepayers of the parish to determine whether the Public Libraries Act, 1855, shall be adopted for this parish (sec. 8, 18 and 19 Viet., cap. 70). Professor Leoni Levi was spokesman, and stated that at Westminster they were only charging a farthing in the pound, and in other places he was aware that the rate was a halfpenny. The 24th inst., at 6 p.m., was appointed for the meeting.

Sale of Building Land facing West Ham Park.—Messrs. Philip D. Tuckett & Co. lately sold at the Mart, some freehold meadow land and garden-ground, lying upon the verge of the new public park. The whole of the lots excited keen competition, with the following results:—Lot 2, a plot of land containing 3r. 32p., with a frontage to Margery Park-road, sold for 720*l.*; lot 3, a plot of land containing 1a. 3r. 7p., with frontages of 665 ft. to Margery Park-road, sold for 1,530*l.*; and lot 4, a large area of meadow and garden land containing 21a. 1r. 12p., having a frontage to the portway, sold for 6,500*l.* to the British Land Company.

The Cowan Compensating Heat Company.—Some time ago we mentioned the experiments by Mr. Cowan with the view of utilising the heat given off by lime in slaking, for the warming of horticultural and other buildings. The arrangement has been patented, and our advertising columns show that a company has been formed to work the patent commercially. It is claimed that the arrangement in most cases saves the entire cost of fuel; that the heat is maintained more steadily than by any other system; that no night attendance is required; and that there is no smoke or unpleasant smell produced.

Disappearance of a Book valued at £12,000.—The Book of Kells, written by Saint Columbkille in the year 475, the most perfect specimen of Irish art, with illuminations, and valued at 12,000*l.*, has disappeared from Trinity College library. It is alleged to have been sent to the British Museum for the purpose of being bound. The volume is regarded as the palladium of Ireland. A receipt for it, signed by a Mr. Bond, purporting to be from the British Museum, has been placed in the hands of the Provost of Trinity College, Dublin. The greatest excitement prevails in the College respecting the mysterious disappearance of the volume.

Tipton Parish Church.—The parish church of Tipton has been reopened, after being closed for nearly twelve months for repairs and restoration. The exterior of the church has been renovated and cemented, the building re-roofed, and the old "pepper-box" tower remodelled. New windows of a modern pattern have been substituted throughout, and the interior has been cleaned, decorated, and re-lighted; the chancel has also been enlarged.

Sedgwick Memorial.—About 10,000*l.* have at present been subscribed towards the proposed Geological Museum at Cambridge in memory of the late Professor Sedgwick, which will it is estimated, cost 31,700*l.*

Honour to Shakespeare.—The Freemasons lately unveiled a window set up in the church at Stratford, in honour of Shakespeare. On the invitation of the Vicar of Stratford, the Rev. Dr. Collis, Grand Provincial Chaplain of Warwickshire, after the brethren had been formally met in the Town Hall, a procession "in clothing" was made to the church, when the window was unveiled, and a tablet placed beneath it shown. Dr. Collis read a paper showing the need of restoration of the church, if it is to be preserved.

The Great Northern Arrangement.—The Great Northern proposes to run special first-class carriages, having superior accommodation, the trains then consisting of "special," "first," and "second" class carriages. A change in the goods rates has been considered at Euston, and if carried out may seriously affect the Midland Company. The two great competing companies are said to be taking counsel how, without injury to themselves, they may most effectually retaliate upon the Midland.

Salford.—At a special meeting of the Salford Town Council, held on Saturday last, a report of the Museum and Parks Committee was adopted, in which it was recommended that a gallery of fine arts and sculpture be added to the present museum building, and that a sum not exceeding 6,000*l.*, from the Langworthy bequest, be expended in carrying out that object. A resolution was also passed in favour of a recommendation of the Health Committee, that Wilton House, Cross-lane, be rented as a hospital for infectious diseases.

Monument to the Welsh Fusiliers.—A monument has been erected in the parish church at Wrexham in memory of the officers and privates of the 23rd Royal Welsh Fusiliers who fell during the Ashantee war. The monument is erected by the officers and men of the regiment, and takes the form of a mural tablet, while on a light marble slab rests a wreath of flowers carved in stone, in the centre being a black heart bearing a suitable inscription in gilt letters.

Brighton.—The proposal made by Mr. W. Macfarlane, of this town, some time since, to utilise the Madeira-road, under the Cliff, leading from the Aquarium to Kemp-town, by constructing a winter garden, art gallery, and attractive covered promenade, is now being put into a tangible form, and very shortly the scheme will be formally submitted to the Town Council. The plans, which are somewhat elaborate, are being prepared by Mr. A. D. Dawney, C.E.

Falling in of a Tunnel.—The Maple tunnel, near Buxton, on the Manchester, Sheffield, and Lincolnshire, and Midland Railways, has fallen in for about 15 yards. The trains are being worked from either end of the block. It is supposed several men are buried in the ruins. The tunnel has been undergoing alterations for some weeks past, and traffic has been worked on a single duplicate line of rails.

Cheap Nails.—The "pony-wise" nails made of some cheaper metal than copper, which necessitated an expenditure of 600*l.* in the case of the *Raleigh's* resheathing, have created so great an interest in the Controller's Department at the Admiralty that a careful analysis of a sample has been ordered. An ordinary experimental trial before adoption would have been more satisfactory.—*Naval and Military Gazette.*

Breeze.—Considerable saving in the production of "breeze coke" by the Pittsburgh ironmasters availing themselves of the laws of specific gravity is announced by the *Southside (Pittsburgh) Ledger*. The ashes from the furnace asphalts are thrown into water, and a certain portion float; the heavy cinders sink to the bottom. The floating portion is selected, and found to be the best possible fuel for a forge fire.

Establishment of a Cottage Hospital at Frome.—A large and influential meeting has taken place at Frome, for the purpose of establishing a cottage hospital. The Marquis of Bath presided. The Earl of Cork proposed, and Mr. G. W. Sheppard seconded, an appropriate resolution, which was put and carried, and one appointing trustees and managers and approving of a code of rules was adopted.

Asphalte in Lambeth.—The Lambeth Vestry, at their last meeting, after a long discussion on the merits of the asphaltes of the three principal companies in London, decided to adopt the recommendation of the General Purposes Committee to accept the tender of the Société Française des Asphaltes for the work required in the parish.

TENDERS

For addition to farmhouse at Hestwell Park, for the Earl of Winchelsea and Nottingham, Mr. William King, architect:—
Wood £288 0 0
Peters 587 0 0
Featherstone & Lucas 543 0 0
Prestable & Morley 536 0 0

For the erection of a new farmhouse and offices at Raley, near Hanbury, Oxfordshire, for Earl Jersey, Mr. William Eversden, architect:—
J. & T. Davis (accepted) £2,320 0 0

For building new premises in Upper Sackville-street, Dublin, for the directors of the Royal Bank, Mr. Charles Geoghagan, architect:—
Hammond & Doolin £7,798 0 0
Moyers 7,687 0 0
Lighe 6,820 19 5
Beckle 6,752 0 0
Gahan 6,677 13 8
Pemberton 6,532 0 0
Connolly 5,486 17 0
Kelly 5,287 0 0
Collen, Bros. 5,962 0 3

For the erection of four shops at Wood-green, for Mr. T. Clarke, Messrs. E. Habershon & Brook, architects:—
Carter & Son £1,170 0 0
Manley & Rogers 2,867 0 0
Loat & Co. 2,811 10 0
Sharpening & Cole 2,797 0 0
Scrivener & White 2,750 0 0
Browne & Robinson 2,640 0 0
Prout 2,630 0 0

For alterations and additions to second house, Clapham Common, for Mr. S. W. Cawston, Messrs. E. Habershon & Brook, architects:—
Scrivener & White £1,110 0 0
Manley & Rogers 1,086 0 0
Sharpening & Cole 1,036 0 0
McLachlan 996 0 0
Loat & Co. 985 10 0
Carter & Son 943 0 0

For the completion of the Inns of Court Hotel, Messrs. Bateman & Corser, architects. Quantities supplied by Messrs. Bateman, Hunt & Hunt.

Lincoln's Inn-fields Holborn Block.
Kirk & Co. £13,760 0 0 ... £2,200 0 0
Waldram & Co. 12,900 0 0 ... 2,197 0 0
Browne & Robinson 12,718 0 0 ... 1,920 0 0
Manley & Rogers 12,850 0 0 ... 1,987 0 0
Perry & Co. 12,700 0 0 ... 2,080 0 0
Simpson 12,600 0 0 ... 2,070 0 0
Hill, Higgin & Hill 12,220 0 0 ... 1,940 0 0
Loncmire & Burge 12,100 0 0 ... 1,960 0 0
Boyce 11,500 0 0 ... 2,048 0 0

For public hall, Hackney, for the Hackney Public Hall Company, Limited, Mr. Henry St. John Ingram, architect. Quantities supplied by Mr. W. T. Hollands:—
Waldram & Co. (accepted) £5,325 0 0

For shop, Mare-street, Hackney, for Mr. T. Wilkinson, Messrs. Lee & Smith, architects. Quantities supplied by Messrs. Linsell & Giffard:—
Fish £3,393 0 0
Hayworth 3,187 0 0
Seargent 2,980 0 0
Waldram & Co. 2,897 0 0
Newman & Mann 2,876 0 0
Forest 2,767 0 0
High 2,776 0 0

For stables, lofts &c., Stoke Newington, for Mr. Martin L. L. Mr. W. Reddy, architect. Quantities supplied:—
Ashby £1,201 0 0
Browne & Robinson 1,179 0 0
Lewis & Co. 1,071 0 0
Waldram & Co. (accepted) 1,065 0 0
Cook 984 0 0

For asphalt paving, for the Lambeth Vestry, Mr. H. Mcintosh, surveyor:—
Val de Travers £237 10 0
Limmer 226 12 6
Société Française des Asphaltes (accepted) 225 0 0

For alterations to the Three Tuns, Portman-mews, Mr. H. J. Newton, architect. Quantities by Mr. H. W. Budd:—
Godden £145 0 0
Taylor 44 0 0
Shurmer 423 0 0
Hockley (accepted) 376 0 0

For alterations at the Oakley Arms, Lambeth, Mr. H. J. Newton, architect:—
Hockley £127 0 0
Taylor 108 0 0
Shurmer (accepted) 93 0 0

For repairs, alterations, and additions to 51, Portland place, W. Mr. Frank E. Thick, architect:—
Plant (accepted) £450 0 0

For hotel on the Kite's Nest Estate, Hastings, for Counsellor Phillips, Mr. Henry Carpenter, architect:—
Hinkley £2,296 8 8
Womersley 2,100 0 0
Champion 2,070 0 0
Elbridge 1,997 12 0
Park 1,979 8 0
King 1,927 0 0
Vidier 1,850 0 0
Howell (accepted) 1,780 0 0

For the erection of a house and shop at Poplar, Mr. T. J. Hill, architect:—
Anley £827 0 0
Saber & Son 827 0 0
Isles 798 0 0
Brown 627 0 0
Sheffield 627 0 0
Linn (accepted) 680 0 0

For decorations at the Mansion House, for the Corporation of the City of London:—
Macintosh £297 0 0
Pitman & Quinbertson 845 0 0
Gillow & Co. 735 0 0

TO CORRESPONDENTS.

ARCHITECTURAL ASSOCIATION. We are forced by pressure of matter to postpone full report of the meeting to the 21st inst. A. C. J. G. B. J. H. W. & Co.—M. F. N. K. O.—B. & Son—W. G. S.—F. C. H.—M. N. E. P. T. A. F.—R. W. W. H. J. N.—C. W. W.—G. H.—P. W. B.—W. P.—J. M. (thanks)—W. G. T. (thanks)—J. R. de P. (next week)—B. & Co. (next week).

We are compelled to decline pointing out books and giving addresses. All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication. Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

Six lines (about fifty words) or under ... 2s. 6d. 4s. 6d. 6s. 6d. Each additional line (about ten words) ... 6d. 1s. 1s. 2s.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to residents in any part of the United Kingdom at the rate of 1*s.* per annum, payable in advance. Half-yearly advance accepted for amounts under 5*s.* Any larger sum should be remitted by Money Order, payable at the Post Office, King-street, London, W.C. to the General Post Office.

Advertisements cannot be received for the current week's issue later than THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for TESTIMONIALS left at the Office in reply to Advertisements, and strongly recommends that CORRESPONDENTS only should be sent.

NOTICE.—All communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 46, Catherine-street, Covent Garden. All other Communications should be addressed to the "Editor," and not to the "Publisher."

Bath Stone of best quality. RANDELL, SAUNDERS, & CO. (Limited), Quarrymen and Stone Merchants. List of Prices at the Quarries and Depôts; also cost of transit to any part of the Kingdom, on application to Bath Stone Office, Corsham, Wilts. [Adv.]

PERFECT DAYLIGHT.
WHY BURN GAS?
CHAPPUIS' REFLECTORS
IMPROVE NATURAL DAYLIGHT AND SUPERSEDE GAS.
P. E. CHAPPUIS,
PATENTEE AND MANUFACTURER.
No. 69, FLEET STREET, LONDON.

The Builder.

VOL. XXXII.—No. 1659.

Ornamental Gardening.

HAVING in our last number commented at some length * on the historical portion of M. Alphand's elaborate essay on the above subject, we proceed to consider some of the suggestions in the latter part of the same essay, on the practical carrying out of the art of landscape gardening. In regard to "the choice of a style," the French critic generalises as to gardens very much as English landscape gardeners generalise in regard to architecture; he recognises only two styles, into which all varieties resolve themselves,—the style *régulier* and the style *agreste*. In choosing which style to adopt, we must be guided to some extent by the nature of the habitation to which the grounds are annexed. As a general rule, a symmetrical mansion should demand symmetrical gardens; but this will depend to some extent on the size of the house; for a small building, which does not impose its presence in a very marked degree upon the landscape, may go very well with a picturesque garden. This view, which we consider to be perfectly correct, may serve to explain also how it is that Greek temple architecture goes so well, as it unquestionably often does, with a more or less "picturesque" site. Were the Greek temple larger and more extended in scale, it would require the symmetrical style, as much as does the Roman palace. But the nature of the site itself should influence the design of the garden. If the site is totally flat, M. Alphand considers the "regular style" would be out of place, as the varied levels or platforms necessary for its effect could not be realised; but we can hardly accept this judgment unreservedly. It is possible to apply the regular system with success on a flat, or nearly flat surface; and, on the other hand, a site of very irregular levels may interfere considerably with the "symmetrical" gardener, and lend itself more naturally and with much less trouble to the irregular system. Where there is a gentle and uniform declivity of the ground in one direction, however, the use of terraces as a means of effect is at once suggested, and terraces, as a rule, go with "regular" gardening only. When considered in reference to the surrounding country, it is suggested that the regular garden derives additional effect from contrast with a landscape offering "strong" reliefs, varied profiles, and an extended horizon. In the midst of such a landscape, the garden appears emphatically as a kind of gem set in the midst of the natural scenery; and it is certain that an irregular garden cannot successfully be combined with a landscape of the same character, as there is no principle of contrast, and the garden becomes little more than a space marked out by walls or fences from the rest of the

country. Indeed, our own opinion is that the value of the irregular garden or park is almost entirely to be looked for in connexion with towns, and as supplying something of that rural scenery and effect which is not attainable in its natural form. Under other circumstances, the very idea of a garden as an artificially planned pleasure-ground suggests the idea of its being more symmetrical and more ordered than the landscape. The remark of M. Alphand, that the regular style demands much more extended surfaces than the irregular, coincides with this view. The irregular garden, in this light, may be viewed as the means of compressing rural effect into a small space, which has to be made the most of, and can only be so by disguising its small extent, and arranging the garden so that the whole shall never be seen at once, and the vista being decidedly but pleasingly checked in each direction, the fancy may be at liberty to imagine space and extent much beyond what is immediately visible. Indeed, in such a case pious frauds should be, and often have been, with excellent effect resorted to; glades and openings indicated which have the appearance of leading to more extensive areas, and so on. Where a pompous and dignified mansion, however, is placed in the midst of a varied and irregular landscape, the irregular garden may form a very pleasing link between the formality of the grounds immediately adjoining the building, and the picturesque aspect of the landscape; the garden appearing by this treatment gradually to resolve itself into "landscape" as it recedes from the symmetrical centre of the whole, the mansion.

In regard to laying out the *jardin régulier*, our author is opposed to the adaptation of any formal rules, such as the older French gardeners prided themselves on observing, and rather considers the perception of the artist, on the due consideration of the peculiarities of the site, is the only guide to be much relied on. "*Pour trouver les proportions d'une œuvre plastique, l'œil est seul juge.*" Some recommendations given, however, are, that any opening made in a plantation should be of such size in regard to the view which it affords, that the eye may take in objects enough to form a complete picture. "It is desirable also, in composing a landscape, to establish near the point of view groups of trees which will not only give a perspective scale, but by their shadows will serve to throw out the lights on the landscape. In every composition the dimension of an accessory part should not exceed that of a principal part."

All this, as M. Alphand observes, is simply following the rules of perspective. He does not give any suggestion for such curiosities of artificial perspective as those for which Shenstone, the poet, made himself and his small estate renowned at one time. Shenstone's great effort was an avenue, contrived so as to give an effect of distance within a comparatively short range of measured length. Large and heavy-foliaged trees were employed in the foreground; then the line of plantation was made to recede at each side, and where it re-appeared to the eye, trees of much smaller size and delicate tones of foliage were used, which kept on diminishing in size down to the extremity of the vista, where a dwarf summer-house, painted in "distant" tints, further aided the illusion. The lines of plantation also continually approached each other, so as to create an artificial linear perspective. The trick does not seem by any means worth the trouble; but it attracted sufficient attention in the poet's time to raise the jealousy of the Lytteltons, whose estate of Hagley adjoined Shenstone's boundaries, and who used to amuse themselves by the rather cruel expedient of taking their friends to look at his perspectives from the wrong end! To return, however,—this question of perspective will also determine

the dimensions and proportions of the objects of art which may be placed as decorative adjuncts either near the house, or in selected parts of the garden. These will sometimes be found to have a different effect, or assume a different scale, when placed in connexion with the surroundings of their position, from what was expected. They will appear either too large or too trivial, and in such a case either the work itself must be altered or replaced, or the treatment of the ground in its vicinity must be altered, whichever is most easily accomplished. The *jardin régulier* being in fact a vast and complicated decoration, work in marble or stone, whether in the shape of steps, balustrades, or statuary, should be introduced with due regard to the total effect, and as a means of giving brightness and high lights at the salient points. A very important consideration is to arrange the lines of plantation so that the eye can readily follow and discriminate them (for in a regular garden nothing should appear confused or accidental, all should be manifestly the effect of design); and with this object it is desirable to avoid too complicated arrangements, which may look very well on paper, where they can be easily rendered distinguishable, but which are lost in execution. Another distinctive trait of the regular garden, is that the trees are grouped and disposed according to their height. This often leads, naturally enough, to similar species being planted together; a method, however, which is open to the objection of giving a monotonous uniformity of tone, and it is on this account found most satisfactory generally to group trees of the same height, but of different species and tint. So our author; but nevertheless we think that near the house, especially in a *démeure* which is intended to be above all things stately in effect, a symmetrical arrangement of trees of the same kind, especially such as have a marked character and considerable uniformity of growth, is very satisfactory and suitable in every way. By selecting the most formal trees for such a situation, and planting them in a formal manner (not, of course, clipping them into uniformity of outline, which is villainous), the vegetation is brought into connexion with the architecture, with which it seems, if one may so speak, to sympathise. On the other hand, in the "park," as distinguished from the "garden" (which latter is properly the portion immediately adjoining the house, and laid out in conformity with it), the employment of geometrical and regular lines and angles, in the arrangement of the alleys and drives, may often be dispensed with in situations where the eye cannot take in the whole from any point. Even a winding path need not be "shocking to the eye"; it is sufficient that two curves of it should not be visible at the same time from any point in its progress,—a dictum which will be found insisted upon by most landscape gardeners, old and new. Indeed, the art may be said to be strong in traditions which are handed down from one expert to another, and most of which have probably had their origin in some defect observed by the "landscapist," or complained of by his client, and thenceforth systematically condemned.

The "regular garden" is a composition governed by one predominant idea, which more or less fixes the relation and proportion of all the parts to one another at once. The "irregular garden" is less interdependent in its parts, allows of much more variety of detail, and is more a thing elaborated by degrees than a whole invented at once. Our author divides it into three principal elements for consideration, viz., the relief (or contour), the plantations, and the walks. The natural relief of the ground (if it is well marked) gives the indication of the leading points of the design, the positions for water and plantations; and though it may be necessary to

* See p. 942, ante.

modify the ground somewhat, it is best to do this as little as possible,—to leave the natural lines of the site wherever they are not really unsuitable or difficult to deal with. In regard to this subject, the author takes occasion again to condemn the practice of making, on a flat site, an artificially inclosed and valleyed garden. As he had previously pointed out that the regular garden did very ill on a site of this kind, it would follow that those who live in a flat neighbourhood could have no ornamental garden at all, the art being "tabooed" for them at both ends. This is hardly fair, especially as it is just where natural beauty or interest in landscape is wanting that the ornamental garden becomes doubly valuable. We quite concur with M. Alphand as to the certain failure of any attempt to modify landscape on a large scale, but portions of a site may very well be artificially formed in relief in this manner, and partly enclosed or marked out from the rest, as a kind of special "pleasance." This was Paxton's method at Birkenhead (referred to in our last article); and this method avoids all appearance of an attempt at deception when the spectator is outside the portion thus treated, it being manifestly an artificial production, although when he enters it the aspect of nature may be found successfully imparted to it.*

The relief and section of the ground being ascertained or determined upon, comes upon that the consideration of the water and the plantations, which form as it were the basis and the crown of the activities respectively. The means of overflow for water must be duly considered; and we think more importance should be attached to the provision for a regular flow through the artificial lakes, however small. Sites on which parks are formed are not always those in which springs abound; oftener not, in fact; but if this resource is not available, a certain water-shed could be obtained, except in a very dry season, from the natural or artificial declivities of the site; and this should be conducted to one point and discharged into the lake, with a corresponding overflow provided at the other end. So little real good can be got out of stagnant water, that it is surprising this question of a through flow has not been treated more as a matter of course in writings on the subject. In regard to the plantations, it is desirable that each species of tree should be placed as nearly as possible in the sort of situation in which it would naturally or most frequently be found; and a certain relation between the height of the trees in the same plantations should be preserved. It does not do to place close to trees of a small growth those that will appear to crush or overpower them. As to the classification of trees, our French landscapist places it under four heads,—according to their height, form, colour, and the size of their leaves. The characteristic forms of nearly all trees he considers may be reduced under a few general heads, such as the "pyramidal" (the pine), the "paraol" shaped (the cedar), the "spherical" (willow, horse-chestnut), the "falling" (weeping-willow), the "irregular" (oak, elm). These latter, we may observe, though the grandest of trees in themselves, and in the middle of a landscape, are among the least advantageous in ornamental grounds. They are too proud and independent chiefs in the vegetable kingdom to bend to the levelling will of the landscape gardener; for, as M. Alphand truly observes, it is not an object to give even to an irregular garden the aspect of nature, especially not of the nature immediately surrounding it. However picturesquely irregular, it is still a work of art, and should appear in the midst of the surrounding landscape as at least one remove nearer to the conventional. A further value in the plantations of a garden of this nature is in acting as blinds to prevent the spectator from embracing too much at one coup d'œil, and thereby to increase, by a kind of multiplication of effects, his impression of the size of the place. This is a *sine quâ non* in the treatment of a site of restricted dimensions, in which case the spectator should never be allowed to see the whole at once; on the contrary, every effort should be made, by artfully turning and winding the walks, to increase the impression of extent, and even to make the same plantation do double duty, from different points of view, and lose its identity. This may be, and has been, most suc-

cessfully accomplished; but it is obvious that if the spectator is allowed, from any single point, to get a view of the whole, the enchantment, if one may call it so, is gone at once. On the other hand, we do not approve of breaking up a large site too much; for all the contrivance we have been alluding to is simply a means of compensating for the want of the greatest of all advantages, space and extent. In regard to this, landscapists generally are too fond of breaking up and dividing the water, especially in their parks, to give a river effect. This is the only thing that can well be done with it on a small site; but if the artist has the advantage of a large extent of ground, nothing is more effective than a broad extent of water, with distant plantations on the opposite bank; and this is too often ignored, and the beautiful aerial effects on an expanse of water are lost through the prevalent desire for "prettiness" on the part of the inventor, and a want of feeling for breadth of effect in nature which, to say truth, the practice of the art of landscape gardening rather tends to lead to.

We quite concur with M. Alphand in thinking that the accessories of fountains, statues, vases, and other decorative objects of a more artificial nature, which are considered a matter of necessity for the completion of the formal *jardin régulier*, need by no means be omitted from the irregular gardens; they are less necessary to it, perhaps, but they always heighten effect by giving points of light, as well as by contrast with the irregular lines and deep tones of the foliage. Macise, if we remember rightly, once introduced a sculptured fountain into a view of the garden of Eden; this was hardly in place certainly, but it showed the artist's feeling in the matter. The last operation in the laying out of the irregular garden is the tracing of the walks. This M. Alphand regards as a very subordinate affair. "*L'allée n'est qu'un itinéraire*." It is nothing in regard to the total effect certainly, but it is of importance in regard to the views which those traversing the walks will obtain of that effect. A sinuous line is not to be commended except where unavoidable, but curved lines have a superiority over the straight ones, inasmuch as they change the spectator's position as he walks, in two directions, instead of in one only, and, therefore, afford more frequent changes of the point of view for every part of the scene. M. Alphand likes to see, in extensive lawns, the walks slightly sunk, or so left here and there among shrubs, as not to come into the general view, and to convey the appearance that those traversing them are walking on the grass. The good taste of this appears questionable, especially as the result is to cut off part of the height of the figures; though, perhaps, the landscape gardener would approve of this as giving an increased scale to his scene!

Public gardens, near a town, are, the author is careful to point out, under different conditions from private ones; requiring larger and more numerous walks, and also such arrangements as not to interfere too much with the necessary surveillance on the part of park-keepers. The consideration of this part of the subject, however, we must defer to a further article, when we come to notice the account and illustrations of Parks and Promenades of Paris, which is the real object of the work before us, though the able and extended introductory essay seemed to afford an opportunity for going a little more generally into the subject in the first instance.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary meeting held last Monday evening, Mr. John Gibson, vice-president, in the chair, the following were elected Associates:—Mr. Colville Brown, of Long Melford, and Mr. William James Martin, of Reading.

Before proceeding with the business of the meeting,

The Chairman said that it was his regretful duty to inform those present of the death of Mr. G. Leung, who was a member of the Institute, and who was universally known and respected in the profession.

Mr. J. Macriar Anderson (Fellow) read a paper "On the Orwell Park Observatory," to which we will refer hereafter. At the conclusion of the paper, Mr. W. Airy, C.E., son of the Astronomer Royal, who was present for the purpose, kindly explained the scientific portion of the work.

Mr. Airy commenced by stating that the in-

struments used in connexion with the Observatory at Orwell Park were a powerful equatorial instrument and a small transit one, the former being an adjunct to the latter. The transit instrument need not by any means be a large one. With regard to the height of the instrument, it was of course necessary that the instrument should look over trees in adjacent buildings, and right down to the horizon, this being an important condition for the purpose of observing planets and comets when near the sun, which was a favourite subject among amateur astronomers. There was a great inconvenience arising when the Observatory was attached to a lofty mansion. For the better support of an instrument, it was necessary that there should be proper columns, not in contact with walls or floors of the building. In the case of the Orwell Park Observatory, the instrument was supported upon one central pier or pillar, circular on plan, and carried up from the foundation to the height of 60 ft., in one solid and unbroken mass of brickwork, it being 10 ft. in diameter at the bottom. The difficulty was in getting a sure foundation for the instrument, free from vibration. Of course, such a column as that at Orwell Park tended much to be free from vibration. The dome being provided with a shutter, was so contrived that it opened easily. The entrance to an observatory, also, was generally a difficult undertaking, and was often contrived to be a matter of much inconvenience. With respect to the construction of the dome, it should be made to revolve, and it should be so contrived that it could not possibly get too hot in the sun; the skeleton of it should be made of iron. In the construction of that at Orwell Park, the ribs were of wrought iron, 4 in. in thickness. The movement was effected by means of a grooved wheel and endless ropes, which, acting on a circular rack on the top of the wall, caused the dome to revolve with perfect ease. Great care should be taken of these wheel boxes, so as not to let water or any fluid into them. The dome was of such a nature that it was impossible to put any ornaments on the top to relieve its appearance. According to the English method, the polar axis was carried on two columns, one at the north side, and one at the south side of the observatory. The advantage of this method was that the door of the observatory was comparatively free, and it was easy to get at the instrument in these positions. In the German system of mounting the telescope was carried on a single central column, and on a vertical standard, the advantages of which were lightness and ease of motion, which the construction demanded, the disadvantage being that the polar axis was generally short. As to the question of warming the observatory, it was of course out of the question to warm it while any observations were going on, or even before such observations, but for all that it was very advisable to have means at hand of warming the observatory when not in use, in order to preserve the instruments, and for the purpose of keeping the books from mildew, and also to prevent any dampness that might arise. In the case of the one at Orwell Park, Mr. Anderson had made some excellent arrangements with regard to this, by communicating pipes from the bath-room to the observatory. With regard to lighting the observatory, wherever there was gas he would certainly advise it to be introduced; it could not be applied to all parts of the instrument, but it certainly could to some. Wherever it could be applied, he was of opinion that it would be a great convenience. There was the gas utilised at Orwell Park. The arrangements made, too, there respecting the shutter connected with the observatory was also a great success.

Mr. Talmage said that astronomers generally would be exceedingly happy for any saving of labour that architects might introduce in the construction of an observatory. The manner of moving the shutter at Orwell Park was not, he thought, the best means that could be devised; but in the different observatories with which he was connected, he confessed that he had not used the rope very much. The construction of the shutter, however, was complete in itself; but it would be as well in every possible way to guard against rain and snow. The arrangements of the main stand of the pedestal, too, was of considerable beauty and utility. The telescope, also, should be constructed so as to be shifted about very easily. In the present arrangement at Orwell Park the work was one on which, architecturally considered, he would not venture an opinion; but for its use and for its purpose it was a most admirable arrangement.

* In referring to Battersea and Birkenhead Parks in our last article, we had not noticed that M. Alphand also places them in conjunction, giving plans of them on two opposite pages. He does not, however, appear to recognise the essential distinction in their method of treatment.

Mr. Penrose was of opinion that the work at Orwell Park was interesting to the architect as well as to the engineer. With regard to the arrangements made for the mounting of the instrument, one could not but greatly admire them, as also could they admire the method of revolving the dome, upon a series of wheels, contained in boxes formed in masonry for the purpose. One could certainly have wished that the great column had had an independent foundation at Orwell Park Observatory; but Mr. Anderson had stated that this would not be productive of any difficulty in that respect, and the effect might prove to be quite satisfactory. He was very much interested in the contrivance by which Mr. Anderson had utilised the spaces round about the dome.

Mr. Hall stated that there were two very important observatories that were lofty buildings, viz., those at Oxford and Paris; and he would like to ask the question whether any effect from vibration had been noticed in them. At the Greenwich Observatory, at the time of the passing of the South-Eastern Railway Bill, there was great opposition to it shown on the ground that the vibration would affect the proper working of the observatory. There was great apprehension felt at the time, and he did not know if the point was of great importance to them; still, he would like to ask Mr. Airy for further particulars with regard to this subject.

Mr. Penrose said that he happened to live at Wimbledon, about half a mile from the South-Western Railway Station, and he often felt the vibration of the railway at that distance. When the railway was contemplated to be constructed near to the Greenwich Observatory, an experiment was made by Mr. Stone with a basin of mercury, and some sensible vibrations were felt owing to the tremors caused by the heavy luggage trains, this interfering in some respects with the observations that were being made.

Mr. Morris thought that if some meteorological records were kept with regard to vibrations in the interior of any building it would be as well. It would be interesting to know what would be the result, he maintained, of a large enclosed space of confined air upon buildings of the character in question. If Mr. Penrose would turn his attention to the vibratory action of the times and seasons upon such buildings, it might be, he was of opinion, productive of some very valuable results.

Mr. Airy said that in regard to the foundation of the transit instrument, it was not a perfect one; but he was quite satisfied with its present foundation, the transit instrument being not a matter of great importance in a thing of this kind. With reference to the question of vibration caused by trains, he would be very happy to lay before them the actual record of the observations which his father took in connexion with the Greenwich Observatory. Of course the effect of vibration was very different on different grounds. The Observatory at Greenwich was situated on a site of hard gravel, which, technically considered, was as hard as a rock. The vibrations at Greenwich from the adjacent railway were still felt; but they were now of an insignificant character. The railway company offered to do everything in their power to diminish the vibration, if allowed to approach nearer to the Observatory; they offered to run their trains on india-rubber wheels, and surround the station with peat bog; but he was glad to say that this was refused, and the great "railway king" had been driven out of the bounds of the Observatory.

DUTIES OF THE SANITARY INSPECTOR.

SOME of the higher and more onerous duties of the sanitary inspector have not received that degree of attention at the recent scientific and social congresses which the nature of the subject deserves. The subject of pure air in manufacturing towns, for example, is one that concerns the whole of our population, since who can be said to be beyond reach of the evil influences.

The Public Health Acts in some measure operate as a check to the growing evil, both by its stringent enactments and its valuable proviso as to the inspectors, but it cannot be said that this Bill is rigidly enforced. The Smoke Nuisances Act has also been found grossly defective whenever its irritant or prohibitory powers are put in exercise; and, in fact, the whole of our recent sanitary legislation is nothing but a petty system of "med-

dling and muddling." It may be alleged that chemical works should belong more properly to the department of the medical officers of health; but we demur to this conclusion. All good inspectors of nuisances should possess an acute sense of smell—particularly of bad smells—and that in our opinion is enough to qualify them for the supervision of the most intricate chemical manufacture in the kingdom. Of course, we hold it true that bad smells of any description are all more or less injurious to health; yet how many honest and well-meaning people are to be found every day who boldly assert that knackers' yards, tanneries, dung depôts, and similar centres of noxious smells, are not only not injurious, but, on the contrary, are positively beneficial! We can also remember, some years ago, on one of the numerous sanitary explorations we made eastward, that we came across a catgut manufactory. "Ah, sare," said the little Frenchman who owned the establishment, "dis is a healthy work,—dere is no cholera-morbus here!" "Very likely not," we replied, stuffing our nostrils, "the ground seems fully occupied." Such experiences will occur to the recollection of any one who has explored the slums of great cities. And let us here ask the question, who will persuade the ghastly proprietors of the miserable hovels and charnel-houses which go to constitute the aforesaid slums, that these hovels are unwholesome, and unfit for human habitation?

The very same degree of colour-blindness and diseased "olfactorys" seems to pervade the whole race of chemical manufacturers. They can demonstrate to their own entire satisfaction that their insufferably noxious vapours exercise a curative influence on the atmosphere rather than otherwise; and that their dingy pestiferous works are almost, if not altogether, as salubrious as the island of Madeira or the South of France. We need not go very far to find illustrations. Take a gas-work,—an exceedingly mild instance of the offence,—and if it be in a crowded and populous neighbourhood, just look at the effects it produces on the surrounding tenements in the course of twenty years. Properly manufactured coal gas may be made quite innocuous, or nearly so; but it is now grossly adulterated, like everything else, and accordingly we have to choose between the evils of inhaling carbonic acid or sulphuretted hydrogen, or other like perfumery at every stage of its manufacture. Alkali works, or more properly acid and alkali works, are tremendous sources of iniquity in regard to nuisances. What their action may possibly be, if unchecked in their operations, on human life, it is not easy to say with precision; but they have managed to destroy all the vegetation within easy distance. The copper works in Swansea have actually extirpated the verdure, and laid waste the whole surface of the beautiful valleys. Mineral acids and alkalis do not, however, originate the worst description of fumes. The products of the destructive distillation of coal-tar, a most flourishing species of chemical manufacture in our day, give out of their chimneys a most disgusting series of bad gases; and if we wish to get to the worst of all we must go to the works where organic substances, such as fat, oils, resin, paraffine, soap, and ovens, are transmuted from their crude materials into the genuine article of commerce.

The artificial manure works belong to this latter category, and we may say with great truth and propriety that the smells proceeding from the works in this case are, in every sense of the word, injurious. Foremost in the ranks of the offenders stands the process of dissolving bones by means of sulphuric acid. Our readers will easily understand this operation when we state that the bones are usually putrid; and in the chemical reaction which follows the action of the acid on the organised tissues, all the gases which flow from putrefaction are set free, and are of course promiscuously poured into the surrounding atmosphere. We will not attempt to describe the exceedingly nauseous smells which are so created; but this we fearlessly assert, that they can be nothing else than poisonous. In fact, they are poisonous more or less to that extent which they are diluted with pure air; and such a mixture of air just signifies, of course, a more or less contaminated atmosphere. We have smelt the monster as St. George did the fabulous dragon of yore, at least five miles off! We have known a freehold estate reduced 25 per cent. in value within a period of ten years, just on account of the unwholesome

contiguity of these manure works. And yet a bowl was immediately raised when it was attempted to put some stop to the abominations. "Oh, you are going to interfere with the interests of agriculture!" Of course the device was successful.

There are worse compounds, we may add, than dissolved bones made up in the form of artificial manures; but we need not dwell on them. Blubber and putrid oil, the carcasses of diseased animals, the refuse of slaughter-houses and triperies, the refuse of soap-works, paint-works, dye-works, and a multitude of other kinds of refuse, are all impressed nowadays into the service of agriculture. Whatsoever substance contains nitrogen will answer the purpose provided it be soluble in sulphuric acid; and sulphuric acid will solve almost anything.

One conclusion is plain enough. It is a well-ascertained fact that the whole of these chemical operations may be rendered perfectly innocuous. There are a good and a bad,—a right and a wrong principle underlying the whole processes at every stage. It is simply a question of expense. But then expensive manufacture signifies a reduction of profit. Hence the necessity of the Sanitary Inspector. A long and sad experience has taught the country that manufacturers themselves cannot be trusted to deal on the square with public health, wherever their interests are so directly involved. But the public health is the higher consideration in every respect. Accordingly these bad gases must be absorbed, the liquid poison must be decolorised, the solid contamination must be consumed. And here, we submit, lies one of the most essential and important functions of the Sanitary Inspector.

A PEEP AT SOUTH KENSINGTON.

THE South Kensington Museum has put on a fresh and bright appearance, and that gloomy aspect in some of the corridors of which we have often complained has partly disappeared. The long passage on the west of the courts, which was so disagreeably dark, is now better lighted, and contains some very noble specimens of tapestry. Further improvements are in progress. We cannot but think that the Museum has gathered fresh life and vigour from the termination of the permanent International Exhibition, which, like a growth of ivy on a fig-tree, was starving and strangling that which helped it to climb.

The newest acquisitions made by this Museum consist in some fine specimens of pierced metal work from Persia. The oldest of these are of great beauty and delicacy, the arabesque work of the pattern being charmingly relieved by the removal of the ground. In some specimens, on the other hand, while the skill of the workman is undiminished, his taste has been sadly impaired by a departure from that long tradition of Eastern art which forbade the representation of the human figure by the sculptor. The struggle between the old and the new, the beauty of the true arabesque, and the atrocious vulgarity of the human figures, which are of unmistakably European origin, is highly instructive. On other specimens, again, it is China that is shown as the invader of Persia—odious Chinese figures squatting around the graceful foliage.

There is a feature of this institution which contrasts very pointedly with an occasion of complaint which has reached us, not unfrequently, as to two other of our great public museums,—that is, constant accessibility. It was only the other day that we heard from a foreign visitor to London that he had paid six visits to Bloomsbury, and found the gates shut against him each time. Of course, it may be said that the officers of the British Museum give notice of the times of closing, and that it is the fault of any one who goes there on a blank day not to have made himself acquainted with the proper time. But the question remains whether it is wise and fair to the public to adopt so complicated a system. Those of us who have occasion to visit the Museum on the blank days cannot discover any just cause for the closing. Again, the long vacations of the National Gallery are extremely vexatious to persons who visit London, perhaps only once a year, but unfortunately during the time selected for closing.

All that is done, or is said to be done, in these two establishments during close-time is carried on at South Kensington without excluding the public. We are not urging that one, or even two, students' days in the week are

unreasonable at the National Gallery; but the arrangement of free and sixpenny days appears to answer the purpose far better and far less vexatiously, than closing.

SOCIETY OF FRENCH ARTISTS.

THE average of work in the ninth exhibition, in the Society's rooms in New Bond-street, is not quite equal to what we have seen there before. In regard to landscape, however, the collection is strong. Corot is, as usual, largely represented. His most important work, "Dante and Virgil," on their way through the preliminary shades of the descent to Hades, is, in tone and size, a kind of companion to the "St. Sebastian" of last year, but can scarcely be called equal to it. The artist seems to be more at his best in one or two of his smaller works, as the "Canal Scene" (48), which, by the way, curiously recalls Constable. Daubigny is hardly fortunate in "The Thames below Greenwich"; but redeems himself in his "Banks of the Oise" (59), a work showing a splendid freedom and force of handling without the slightest exaggeration. His larger work, "The Cooper" (97), is a fine assemblage of thick, heavy, summer foliage, crowded in impenetrable masses. Dupin is powerful but obscure in his "Land Storm" (55). A fine poetic thing is the "Old Stone House" of Millet (52): desolate in the midst of a common, with a wind and a wild autumn sky to complete the desolation. "The Last House in the Village," by Laurens (39), shows an extraordinary effect of evening light on a snow landscape,—perhaps a little exaggerated,—unquestionably striking. No landscapes here will be looked at with more pleasure than those of Mme. Cazin, who has been down among the villages and cornfields of Sussex, and from thence has brought us half a dozen pieces of genuine poetry, as charming in feeling as they are refined and delicate in the treatment of tone and colour. All are good: we should perhaps single out as the best, "Cross-in-Hand Mill" (18) and "A Lane in Sussex" (95), both charming in composition and the realisation of light in the sky, though in a perfectly different tone and manner. On second thoughts, we are not sure that "Cutting Hemp" (101) is not superior to these in power, though there is less in the subject. This lady's is a true and genuine talent, which seems to grow more ripe and complete each year. The late Georges Michel is represented by three landscapes, hardly equal in breadth and power to those which were placed here last year, except, perhaps, "Farm house on the Banks of the Seine" (62), which is in his best manner.

Reybec's "Beer-drinker" (27), in breastplate and dirty orange scarf, and jerkin with tarnished gilding, his expressive features half elevated and half bemuddled by his potatoes, is a masterpiece; but there is no other figure-subject to which such a phrase could apply. Chaplin's "New Necklace" (104), a life-size sitting figure of a young lady in partial dishabille, shows fine and pure painting in the head and bust, but the lower portion of the figure is so awkwardly indicated under the drapery, that the young woman seems to be all knees. Madrazo's "Cup of Coffee" (87), a half-length (also life-size) is clever and telling, but, we fear, must be set down as undeniably vulgar. The portrait of Mr. Woolner, by Legros (66), is a fine, unaffected piece of work. The same artist's sketch of a lady (68), certainly clever, is not quite successful, and not pleasant in tone. Among smaller works in which figures are the predominating interest, Iluguet's "Caravan" (91) and Bens-si's "Reconnaissance" (117) may be mentioned; and there is a very clever though unpleasant thing by Degas, "Scène de Ballet" (9), representing two dancers coming down the stage: the action of the toe and working muscles of the leg in the foremost figure are admirably given; the plain features and thin scraggy arms are sadly realistic. We must not quit the exhibition without an admiring look at the numerous flower-pieces of Fantin,—fresh, bright, and real in texture and colour to an extent rarely seen on canvas.

Machinery on Sale.—Messrs. Jas. Wadham, Sen., & Co., issue, under the title "The Standard," a monthly list of second-hand and new machinery on sale. The twenty-seventh number of it now before us includes a considerable range.

WAIFS AND STRAYS OF LONDON.

IT is remarkable what an amount of good may be done by one thoroughly earnest person working with determination in the right line. This is seen, to take only one case, in the result of the efforts made by Dr. Thos. Barnardo, at Stepney and Limehouse, for the rescue and aid of destitute children of both sexes. A young physician, he began his labours in this direction only eight years ago with but little external assistance, and now we find established in consequence, a Mission-hall, houses, and schools, in Hope-place, Stepney; a Home for Working and Destitute Lads, Stepney-causeway; Temporary Orphan Home, Stepney-causeway; a City Messenger Brigade, Stepney-causeway; Home for Neglected and Destitute Girls, Ilford, Essex, and Laundry and Workrooms, Carr-street, Limehouse; Woodchopping Brigade, Carr-street, Limehouse; New Branch Ragged Schools, Salmon's-lane, Limehouse; Bible, Tract, and Pure Literature Depot, North-street, Limehouse; New Mission-hall and Coffee Palace, "The Edinburgh Castle," St. Paul's-road, Limehouse; and a Big Tent (seating 3,000 people), for summer use only, Rhodeswell-road. The Boys' Home is said to have rescued already some 400 poor London lads. The temporary Orphan Home will accommodate from forty to fifty little boys; and as a Home for orphan and destitute girls there is a house with twenty-five acres of land already provided. There are fifty-four girls here, and it is proposed, as funds come in, to build a number of cottages on the land, each one of which will contain some twenty girls under the care of a good motherly woman, who will train them for domestic service. The earnings of the wood-chopping brigade amounted last year to 3,165*l.*, as against an expenditure of 2,761*l.*; and the City messenger brigade took no less a sum than 1,650*l.* during the same period. About 112 persons are now engaged in the various branches of the work, of whom thirty-six are paid, the remaining seventy-six being volunteers. The financial statement from April, 1873, to March 31, 1874, shows 20,000*l.* on each side of it. Surely this is all very remarkable and very encouraging. A number of persons interested in the work are arranging for a sale of useful and fancy articles on behalf of these destitute boys and girls, which will take place on Wednesday and Thursday, the 16th and 17th of December, in the large hall of Willis's Rooms, King-street, St. James's-square, and if any of our lady friends feel disposed to assist in what we really believe to be a good cause, all they have to do is to send their contributions to Dr. Barnardo, at the Home for Working and Destitute Lads, Stepney-causeway.

ROMAN EXPLORATION FUND.

THIS fund is much in want of help at the present moment; and Mr. Parker says such another opportunity can never occur again. By the law of Italy all the property of the monks and nuns, or religious corporations of any kind, must be sold, and the money invested in the public funds, before the 1st of January, 1875. The great works of the new city on the hills are so far completed, especially in making the drains under the new streets, and the foundations of the houses even where they are not completed, that not much more remains to be done in the way of excavations in that quarter. But new streets have also to be made in the old quarter; one of these, which is much wanted, is to go from the south end of the Corso to the new excavations in the Forum Romanum. It is to be a wide, open street, and the gradients made convenient for carriages. The line of this street passes directly over the subterranean chambers of the great prison of the time of the kings, used also in the time of the Republic and of the Early Empire. These chambers are now cellars under houses at the foot of the Capitoline Hill, at the south-east corner. They have been rented by Mr. Parker for some years, and he has made important excavations and discoveries in them: all these he will be obliged to fill up unless he can purchase the property.

The Municipality are quite willing to deviate from the direct line of the street in order to save these interesting remains, provided that the proprietor of the property will act in concert with them; but they have to borrow money at 8 per cent. for all the great works they have to do, and they cannot afford to do so for archaeological objects only. Mr. Parker has reason to

believe that these cellars might be bought for 500*l.*, and the remains of this great ancient prison would thus be saved for generations to come. One friend, the head-master of one of the public schools of England, who was in Rome for a day only last season, and to whom Mr. Parker explained the matter on the spot, has sent him 100*l.* towards it; but most of his friends are wearied out with his continual importunity, not seeing the importance of the work that has to be done in Rome now or never.

The smallest contributions will be thankfully received, even shillings, remembering the proverb, "That many a little makes a mickle." The antiquities of the city of Rome are an object of interest to every educated person; it is only the ignorant who are indifferent about them, and Mr. Parker is amazed at the apathy which is generally shown in England on the subject.

THE ROYAL ACADEMY.

THE next election of an Academician to fill the vacancy caused by the death of Mr. J. H. Foley will take place on the 9th of December.

On the 10th of December, the annual distribution of medals will be made,—the 10th being the anniversary of the Academy. This year it is only silver medals that are to be awarded to the various schools,—with the exception of a travelling studentship to an architect, with a gift of 100*l.*

EXCAVATIONS AT CISSBURY, SUSSEX.

SOME excavations have been made at Cissbury, one of the most interesting of the Sussex chain of camps, and Mr. E. Willett last week gave an interesting account of the proceedings at a meeting of the Brighton and Sussex Natural History Society.

After alluding to the various strata through which the excavation was made,—viz., just below the surface-soil, a layer of loam; below this, at the depth of 5 ft., solid chalk and red earth; at 10 ft., large blocks of pure chalk; at 13 ft. a repetition of the red earth; and then another layer of chalk,—Mr. Willett said that at a depth of 17 ft. they came upon the mouth of a cave, and afterwards seven more were displayed to view. The caverns varied from 3 ft. to 5 ft. in height, owing to the roof giving way more in some places than in others; the width of each was undetermined, as in some instances the separation from one another was merely effected by a barrier of stalagmite, and had it been considered safe to move this, the whole series would probably have been found to be very nearly one large cave with several openings. The length of the longest gallery explored was 19 ft. One singular feature presented by the entrance to the galleries was, that they were all squared,—a fact which one of his (Mr. Willett's) friends had remarked showed a sign of high civilisation on the part of the excavators. With regard to the uses for which the caves were designed, there were several theories: a very natural one was that they were dwelling-places, if not for the whole year, at least during the winter storms, or as caves of refuge in time of war. He did not say this might not have been a secondary purpose; but he thought it highly improbable that, for either of these purposes, they would have gone so deep, for, had they done so, some traces of continued habitation would, doubtless, have been left. Another suggestion was that they were storage-barns for grain; but, if so, why should the shafts be filled up again so carefully? And how was the entire absence of anything of the sort accounted for? He was himself convinced, with Canon Greenwood, that the main purpose in view by the original excavators of the shaft and galleries was to obtain a supply of flint. The first objection was, why they should go so deep for flint when they could get it on the surface? The answer to which was that flint was much softer and more easily worked when freshly procured than when it had been dehydrated and weathered by exposure, and that for the manufacture of gun flints, which is still carried on in the little town of Brandon, in Suffolk, they procured their raw material at a considerable depth. As to the manufactured implements found, taking the bones first, they found that they were pieces of the antlers of the red deer, variously manipulated. They were in poor preservation; but there was one fair example of the excavator's instruments. This was an antler, measuring 11 in., which, stripped of all its tines, except the brow tine, formed a

powerful pick, and, when reversed, a hammer; it was, in fact, the prototype of the implement (in wood and iron), at present in use for the same purpose at Brandon. Another tool was manufactured from the top end of an anvil. The handle in this specimen was much worn, but it was difficult to determine whether it had been intended for a pick or a drill. Then there were the tines, which, broken off for the more comfortable use of the pick, became useful implements.

The various objects found during the excavations will shortly be deposited in the Museum at Brighton.

CARBONIC ACID ENGINES.

Two or three notices on this subject have recently appeared in the *Builder*. I presume that the force in the primo-motors referred to is derived from carbonic acid when it has been compressed from fluid.

In normal state of a gas into the condition of a fluid. This was, at any rate, the principle upon which Sir Mark Isaac Brunel, the Thames Tunnel engineer, endeavoured to make matter an engine, at the instigation of Sir Humphry Davy, the great chemist. Davy was very sanguine about it, and remarked, among other things, that in working the engine a great accession of power would be gained even by the slight warmth which would attend by one's sitting on the vessel containing the compressed gas. But Dr. W. H. Wollaston, who was Davy's less popular contemporary chemist, and in some measure his rival, predicted that the gas without escaping, would gradually lose its elastic force. He arrived at this conclusion from some experiments he made in his usual singularly ingenious manner with simple means, and he was right, and Brunel's money, including costs of patents, was lost.

From my boyhood, I have always admired Wollaston's extreme neatness, and his address in arriving at great conclusions by operating on very small quantities of matter. Once, when lecturing at the Royal Institution in Albemarle-street, he stepped up to a lady, and held some pungent salts for a moment to her nose. This caused a tear to trickle from her eye, and as it rolled down her cheek, Wollaston caught it, and analysed it, and showed the salts it contained, there and then, to his audience.

His method of making extremely fine wire for astronomical purposes, by constructing a compound rod of platinum surrounded by silver, in about the same proportions that cedar-wood encloses black-lead in a pencil, and then dissolving-away the silver by some acid which had no effect on the remaining platinum, which was left still in the same proportion after the two metals had been drawn out together into an excessively attenuated compound wire, was an idea which may be termed sublime, if sublimity can be applied to such things.

When Davy was exciting the wonder of all scientific London by results obtained with his galvanic batteries, made of plates of metal alike of enormous size and number, Wollaston met a friend in the street, and told him to observe how he could do the same thing in a much less compass. So drawing him into a dark corner, he took out of his waistcoat-pocket a tiny bottle and a tumbler, and emptying the contents of the former into the latter, a platinum wire was by it instantly made white-hot. This very battery, preserved as a relic, enclosed in a red morocco case, was shown to me in 1867, by Mr. Ulex, an analytical chemist in Hamburg.

This habitual admiration of Wollaston has often led me to copy his spirit in a humble way, and with less important results, in my own profession. Thus, twenty years ago, when beginning an aquarium work in Clerkenwell, London, I had little sea-anemones in small glass jars of artificial sea-water, and when the creatures obstinately remained closed, and could not therefore be induced to take food, I placed one hand over the top of the jars, one at a time, and with the other gave the water a brisk agitation, on which the zoophytes soon opened and were fed, exactly the same as they open in the sea, and from the same causes, the excitement of increased oxygenation. I discovered this by accident, from the slight motion which the water acquired by being carried across a room. This was not exactly what is called "a tempest in a teapot," but it was a veritable storm in half-a-dozen ounces of facitious sea water, and was in some respects attended by a storm's results.

I should not like however to imitate

Wollaston in one thing,—his extreme reserve as to allowing any one to see his modes of scientific operation in private. Once, when an acquaintance found his way by stealth into Wollaston's laboratory, the latter, with a severe air, said, "Sir, do you perceive this furnace?" "Yes," was the answer. "Then," exclaimed the chemist, "make it a profound bow of farewell, for most assuredly you will never see it again."

In a late number of the *Builder* my appointment as naturalist to the Royal London Aquarium Society at Westminster, was announced. I wish to add that I shall still retain my post in the Crystal Palace Aquarium, the generosity of the Directors of both institutions enabling me to serve the two conjointly. W. A. LLOYD.

YORK MINSTER RESTORATION AND RE-OPENING.

THE south transept of York Minster which is being restored at a cost of nearly 20,000*l.* having been partly completed, re-opening services were held in the cathedral, on Tuesday and Friday last week. About 150 clergymen took part in the procession up the nave. The restoration has been carried out according to the plans of Mr. Street, and the transept has been closed for three years in order that the alterations might be effected. This transept is the most ancient part of the Minster, the exact year when it was commenced being 1215. Through age the transept had become quite dilapidated and unsafe. The clerestory walls were sadly out of perpendicular; and in addition to this, it was found that when erected they had not been substantially built. The inside portions of the walls had been filled in with stone clippings entirely without cement. A different method has been adopted in the rebuilding of these walls. They are of solid masonry, laid in with Portland cement, and tied by wrought-iron bars running through each of them from the south front to the lantern tower. The Purbeck marble shafts are mostly new. On the roofs the slating has been removed and sheet lead substituted. The groined work has been stripped of the whitewash which covered its beauty. The central roof of the transept has a herring-bone. The lath and plaster in the spaces between the groining have been taken out; and in their place oak boarding has been fixed; and the bosses, including several combinations of foliage, such as oak, thorn, maple, and vine leaves, have been gilded and the back-picked out in vermilion. There are also two lines of vermilion running parallel on each side of the groining, and along the ribs of the ridge throughout the whole of the ceiling. Although a great portion of the work of restoration has been effected, much yet remains to be done; and it is expected that fully two years will elapse before it is finally completed. Of the total cost about 5,000*l.* still remain to be obtained.

THE STOCKWELL GREEN BUILDING SCHEME.

It appears highly probable that the project for building upon Stockwell Green, which has already been noticed in the *Builder*, will be carried out, as nothing seems to have come of the public meeting held two or three weeks since, nor have the committee appointed at that meeting made any report as to their interview with the Metropolitan Board of Works on the subject. Meanwhile the preliminary steps for destroying the Green have been taken, workmen being last week engaged in removing the trees, with the view, it is stated, of the site being immediately prepared for the erection of houses. This proceeding seems to have been regarded with much concern by the residents in the neighbourhood, who have drawn up and signed a second memorial to the Board of Works, urging them to step in and, if possible, prevent the Green from being broken up. It appears now to be feared that in order to secure the Green it will be necessary to compensate those parties who have purchased plots from Mr. Honey for building upon, in addition to paying that gentleman the 4,000*l.* which he gave for the Green, although it was understood that the lots were let and the contracts entered into subject to their becoming inoperative by the Metropolitan Board taking possession of the Green. It is likely that a few days will finally decide the question whether the Green is to remain as an open space for recreation purposes, or be covered with houses.

PURCHASE OF SITES FOR MORE NEW BOARD SCHOOLS IN THE METROPOLIS.

In addition to the new Board Schools,—about 100 in number,—which have recently been erected and opened in different parts of the metropolis, the London School Board have given notice of their intention to purchase by compulsion 106 more sites for the erection of a further number of new schools, or for the enlargement of existing playgrounds, and the improvement and extension of existing school-houses. The number of actually new schools which the Board propose to erect, in addition to those already opened and in progress, is 70, whilst the sites to be purchased for extending playgrounds and enlarging existing schools, are 30 in number. The total area covered by the sites to be compulsorily purchased is 1,451,059 ft., or about 34 acres in extent. The number of sites scheduled in the county of Middlesex is 56, of which 5 are in the Chelsea division, viz., 2 in Chelsea, 2 in Kensington, and 1 in Hammer-smith. The sites in the Finsbury division are 13, of which 2 are in St. Giles-in-the-Fields, 3 in Clerkenwell, 3 in St. Luke's, 2 in St. Andrew's, Holborn, 3 in Islington, and 1 in Saffron-hill. In the Hackney division the sites are 13, of which 6 are in Hackney parish, 3 in St. Leonard's, Shoreditch, and 4 in Bethnal-green. The sites in the Marylebone division are 5 in number, 2 of them in St. Marylebone parish, and 3 in St. Pancras. In the Tower Hamlets division the sites scheduled are no less than 15 in number, 1 being in St. Botolph Without, 1 in Whitechapel, 1 in Ratcliffe, 3 in Limehouse, 4 in Poplar, 2 in Mile-end Old Town, and 2 in Bromley. The number in the Westminster division is 5, of which 2 are in Covent-garden, 2 in St. Clement Danes, and 1 in St. John the Evangelist. The sites to be purchased in the county of Surrey are 41 in number; of these 22 are in the Lambeth division, viz., 3 in Newington, 4 in Lambeth, 7 in Camberwell, 1 in Lambeth and Camberwell jointly, 1 in Kennington, 2 in Clapham, and 4 in Battersea. The number in the Southwark division is 19, of which 2 are in Christ Church, 3 in St. Saviour's, 3 in St. George the Martyr, 1 in St. John's, Horselydown, 7 in Bermondsey, and 3 in Rotherhithe. The number of sites scheduled in the county of Kent is 9, of which 2 are in Greenwich, 3 in Deptford, 2 in Plumstead, 1 in Lee, and 1 in Lewisham. The total number of dwelling-houses on these several sites (in addition to business premises and other buildings) proposed to be demolished for the intended new school-buildings is 548, of which 22 are in the Chelsea division, 66 in Finsbury, 91 in Hackney, 31 in St. Marylebone, 71 in the Tower Hamlets, 24 in Westminster, 103 in Lambeth, 113 in Southwark, and 27 in the Greenwich division.

SCHOOLS OF SCIENCE AND ART.

North London School of Art.—Col. Sir James Hogg, M.P., who presided on the occasion of the sixth annual distribution of Government prizes to successful students in connexion with the North London School of Art, said it was satisfactory to think that the Government, in that particular district of the metropolis, had established a school of art for elevating pursuits; and that the Government had by their present system of education interested themselves in their training of the arts and sciences. It was impossible to say too much upon the culture of science and art; they could not be too widely dwelt upon. To cultivate art was to cultivate all that was beautiful and graceful, and would tend greatly to elevate all those who studied it. The students were studying, he rejoiced to find, all that tended to elevate their character by mental and intellectual training, "which more advanced persons, he thought, than anything else, making themselves and their homes happier. He could not but help thinking how much more useful young men and young women would become if the importance of joining such a class as the North London School of Art were impressed upon them. When he looked round and admired the various pictures that adorned the walls, he could not but earnestly hope that there was some young artist among them who would shine in the artistic world. He was glad that many of the students had gained prizes for building construction. Many people imagined that there were no handsome buildings in London, but he thought otherwise; anyhow, if the rising generation thought there were not, they could make up the deficiency. He had been talking about

refined tastes making a man happy, and he thought they would agree with him that with those who were inclined to bring intellectual attainments to their work the results arrived at would be better; but there was a larger and wider character open, viz., the advancement of the country's manufactures and arts. Many of the students were engaged in artistic designs; and he was glad of this, for he was of opinion that working men should study the principles in which their work was founded. It had been stated that the English were far behind their neighbours in art education, but that statement he thought rather an exaggerated one, although, at the same time, in artistic designs foreigners had excelled us.

Keighley.—At the annual distribution of prizes to the students of the School of Science and Art in connexion with the Keighley Mechanics' Institute, which took place in the lecture-hall of the Institute, Mr. Edward Baines contrasted the building in which the Institute once carried on its work with that in which it was now located, and said the contrast was so striking as not to be exceeded even by the progress of the population or the prosperity of their manufactures from 1825 up to the present time. He had the pleasure, at Ripon, of giving to Keighley the highest rank among the Yorkshire institutes, but he found that he had underrated their position, and that, in addition to the 905 members, there were to be added 795. In the Trade School there were 180; in the Art School, 150; in the girls' elementary classes, 150; in the boys', 250; and in the evening science class 60,—making 744 to be added to the 905. So that they had 1,695 altogether; but from that they had to deduct those who were members both of the Institute and the schools. Making a liberal allowance for that, they had still left 1,500 young persons engaged in the study of art, literature, and science, infinitely to their own advantage and to that of the town of Keighley. Keighley, he had thus still to say, held the first place of any town of Yorkshire—not only in the variety of its agencies, but in the great number of its members; and he begged that, as they had the first rank now, they would strive to maintain the position they had, with so much labour and so great difficulty, earned.

THE NEW MORTUARY FOR BATTERSEA.

At their meeting last week, the Wandsworth Board of Works finally agreed upon the erection of a new mortuary in Battersea. The Committee to whom the matter had been referred, recommended that a plan which had been prepared for the erection of a mortuary in St. Mary's Churchyard, by the architect of the Rev. Erskine Clarke, the vicar, should be approved, subject to certain minor arrangements suggested by the surveyor. In moving the adoption of the recommendation, Mr. Tully said they could not obtain a better site, and with regard to the plans, he observed that there was not much difference between that submitted by their own architect and the one drawn out by the vicar's architect. The latter wished the building to be of such a character, architecturally, as to harmonise with the church, to which the mortuary would be adjacent. Mr. Todd thought that if their own architect's plan was the cheapest, there was no reason why they should go to any extra expense; but it was eventually decided that the mortuary should be erected according to the design furnished by the vicar's architect.

ST. SAVIOUR'S CHURCH, POPLAR.

THIS church, which has been some time in course of erection, was consecrated by the Bishop of London on SS. Simon and Jude's Day.

The church consists of nave, north and south aisles, chancel, chapel on south side, and vestries on the north side of chancel, with organ-chamber adjoining. The nave is 82 ft. 3 in. by 27 ft. 4 in., the aisles being similar in length by 14 ft. wide. The chancel is 32 ft. deep by 23 ft. 8 in.; chapel on the south side, 27 ft. by 19 ft. 3 in. There is a covered porch or narthex along the whole of the west front 10 ft. wide, into which the doors to the nave and aisles open. The height of the walls to aisles is 14 ft. from floor-level to plate; the nave is 32 ft. high to plate, and 54 ft. to ridge.

The materials used are stock bricks, with red brick bands for the exterior, with Bath stone for windows, doors, &c., and malm seconds for the interior facing, the arches forming the arcade of

the nave being of moulded bricks worked in pattern.

The nave-piers are of Bath stone, circular on plan, with moulded caps and bases, and are 10 ft. high from the floor level to the springing line of the arches.

The roofs are of Memel fir, covered with boarding, and are stained, but not varnished; the chancel-roof consists of moulded circular braces under rafters, resting on carved stone corbels about 4 ft. apart.

The nave is lighted by quatrefoil windows, ten on each side, with enclosing arches in red brick. The style of the church is the Early Middle Pointed, the aisle windows being each of three lights, with varied tracery, the east and west windows being of five lights each.

The nave is lighted at night by gas coronas suspended from the walls of the clerestory, and the aisles by wall-brackets. The chancel is lighted by two standards placed against the brass altar-rail, and by a series of jets on the top of the open wood-screens at back of the choir-stalls. These works were executed by Messrs. Hart. The pulpit, font, and dwarf-wall, separating the nave from the chancel, in stone and marble, were executed by Mr. Anstey, of Alpha-road; and the general carving, both inside and out, by Mr. Robinson.

The accommodation provided is for 750 adults. The church has been erected by Mr. William Bangs, of Bow, at a cost of about 7,000l., Mr. Bulton being the foreman of works under the contractor. The architects were Messrs. Francis, of Old Broad-street.

ELECTION OF DISTRICT SURVEYORS.

At the ordinary meeting of the Metropolitan Board of Works last week, an election took place to fill the office of district surveyor of South Islington, vacant by the retirement of Mr. Godwin, after long service. There were twenty-eight candidates. The following six were chosen to go to the poll: Messrs. R. Plumbo, Mathews, Gundry, Watson, Piper, and Walker; from which list Mr. Plumbo was ultimately selected. For the office of district surveyor of Stoke Newington, also vacant, there were nineteen candidates. The six named to go to the poll were Messrs. J. D. Mathews, Gundry, Watson, Piper, Archer, and Landsdown, and Mr. Mathews was ultimately elected.

Both the new district surveyors have worked earnestly to promote the interests of their profession, and we are glad to find that they are appreciated beyond their immediate circle.

SANITARY MATTERS.

Darwen.—The fever epidemic at Darwen has been the subject of an official inquiry by Mr. Henry Stevens, M.D., representative of the Local Government Board. That gentleman, having investigated the drainage and other sanitary arrangements of the town, attended a special meeting of the local Board, and addressed the members on the cause of the epidemic. A few hours, he said, had satisfied him of ample cause for that great and most aggravated calamity that had befallen them. He could not find words to convey an idea of the bad state of the town. The abominable filth that he had seen, the acres of uncovered excrement that they had dug in the town, had never been equalled in all his experience, and he had had a considerable amount of experience. He found yards with cesspools uncovered that were hidden from view and simply obnoxious. Between Henry-street, George-street, and William-street, there were alleys that were composed of cesspools insufficiently covered, with houses built on either side of them, and in the back-yards of the houses there was no convenience whatever for privies for the storage or holding of ashes. He recommended the adoption of the dry-earth or tub or pail system of removing excrement, and a constant removal of refuse. He condemned open cesspools, and said that the present scavenging system was "a farce, a delusion, and a snare." The houses were situated so closely together that it was next to impossible to prevent contagion. They needed a mortuary, and provision ought to be made for conveying infected patients to it in a kind of ambulance, so that they might be kept isolated. A vote of thanks was passed to Dr. Stevens at the close of the proceedings.

Outbreak of Fever near Bolton.—At the last meeting of the Bolton Rural Sanitary Authority,

a letter was read from Mr. E. C. Deakin, of Belmont bleachworks, stating that there were four cases of fever at the Wrights' Arms, Belmont, which had been imported from Darwen. The authority at once instructed Dr. Gregory to proceed to Belmont to use whatever disinfectants were necessary, and to order the affected persons to be removed to the workhouse if the circumstances warranted such a step.

Fever at Weaverham.—An outbreak of fever having occurred at Weaverham, Cheshire, the Inspector of Nuisances (Mr. H. J. Bennett) has made a house-to-house visitation of the place, and found enough to account for the rise and progress of disease of an epidemic nature. The Inspector has recommended a scheme for the suppression of the nuisances, and the Norwich Union rural sanitary authority propose to carry his suggestions out.

The Water Question at Bernal Castle.—At the last monthly meeting of the Teesdale Rural Sanitary Authority, Mr. Robinson, C.E., Darlington, produced, as requested, a report as to the water-supply of Cookfield and Woodland, and stated that the water from Woolley Hill and Hindon Beck was not suitable for domestic use. The only source of supply, therefore, was cold wells, and the Duke of Cleveland, as owner, and the London Lead Company, as lessees, had declined to allow the Board to appropriate the spring. The chairman then apprised the meeting that the Waskerley Water Company intended applying to Parliament next session for power to purchase 180 acres of land in the neighbourhood of the Grove, to be converted into reservoirs, and also for sanction to raise 600,000l. capital to carry out the works, and with this fact before them, Mr. Scarth advised the meeting to postpone any immediate action. This course was adopted.

The Sewage Question in Birmingham.—The Sewage Committee have prevailed upon the advisers of Sir Charles Adderley, in view of the prevalence of epidemic disease in Birmingham, to give an assurance that the right hon. gentleman will no longer oppose an application by the Council to Vice-Chancellor Bacon so to vary the existing orders for injunction as to enable that body to proceed with the sewage in districts in which the medical officer of health advises drainage operations to be undertaken.

Bad Sanitary Condition of Ryl.—A long and somewhat stormy discussion has taken place at the Ryl Commissioners' meeting on the proposed drainage of the town. Months ago Colonel Cox approved of a plan, but nothing has been done towards carrying it out. The members generally agreed that the drainage of the town was in a disgraceful state, and that unless something was done the town would lose its popularity. Mr. Preston said the drainage was in such a deplorable state that a Government inspector would come down to inspect the town if something was not done immediately. Eventually it was agreed that the necessary arrangements for the drainage of the town be made forthwith. The scheme is likely to cost 8,000l.

Bristol Urban Sanitary Authority.—At the last weekly meeting of the committee of this body, the medical officer (Mr. Davies) reported that the city was healthy, and the death-rate was 23 per 1,000, being a moderate rate for the season. The chairman said he wished to say a few words concerning the connexions with the drains being properly seen to. He had gone into the matter with the city surveyor and his officers, and he found that the building inspector's duties were to see that the plans of all new buildings were carried out in accordance with the by-laws and the Act. They superintended and examined all drains, pipes, their connexion, and the proper laying and putting together the joints of the drain-pipe, and also saw to the construction of the traps and privies, so that everything that could be done had been done by the officers of the city surveyor. He said that in order that there might be no mistake, Mr. Mathews said he intended to have moved a resolution with reference to the sewer-gas question; but as this was the last meeting of the present committee, he thought it had better stand over until the new committee was appointed, and in the meantime he would get it into shape.

COAL DUST.

Sir.—Will any of your readers tell me the best method of utilising coal-dust? I cannot burn it in my kitchen, and have always a great quantity on hand, it being too dusty to burn in the open stoves. W. P.

ISOLATION, AND THE ORGANISATION OF LABOUR.

Pondering on the problem involved in Great Exhibitions, we would go back for a moment to the days of Marco Polo, the Venetian—a poetic, not to say somewhat dreamy time, long before the modern system of doing things had for a moment been thought of or even imagined. A remarkable time, truly, in very many ways, and most instructive to glance at, from the fact of its enormous divergence from the present. The great principles at work in the minds of men in that day, and certainly in the minds of statesmen, and in the minds of those who thought of and regulated the affairs of men and nations, was undoubtedly that of "isolation." Walls of adamant surrounded each individual State; and it was only with difficulty, almost impossible to realise in these free-trade days,—that one nation, or even one city, communicated with another. It was war and invasion that brought the isolated communities together. Trade, and the instinct of the trader, doubtless did a good deal, for people will trade, as Mr. Cobden used to affirm, in spite of all hindrances and difficulties; but in the main, "isolation" ruled everywhere. Each nationality, and city, and trade sought to keep its gold, and its silver, and its trade secrets at home, and to itself, and the whole spirit of the times favoured this isolation, and so "protected" individual action. Such was the spirit and instinctive feeling of the Middle Ages, and of the times of our later forefathers, when they lived, and ruled, and did their work. That it had its disadvantages, and its no end of hindrances, there can be no sort of doubt; but that it had some advantages peculiar to itself is equally certain. What were they, then, if any?

It is this momentous question, hard to answer exhaustively, that leads at once to our proper subject matter; for one of the prime objects of these annual Exhibitions has been, not only to bring together the work done in our own land, and by our own fellow workmen, but to bring together, for comparison's sake, the work done by other men, working under widely different surroundings, and under other skies, and with other materials. In short, to see what Nature in her infinite variety of workings can do, as she has disposed her materials, and her diverse minded and handed workmen all round the world. And these successive Exhibitions, from 1851 to 1874, have no doubt done this more or less completely, but in a somewhat curious and certainly modern way, difficult, it may be, to make quite plain to those who have not already thought of the thing a little. Let us, to make the matter as clear as we well can, go back a few centuries. Suppose that in the days of old Marco there had been an exhibition of Venetian products generally, of materials, processes (we would emphasise this last word), and fine-art results, in the then Gothic London. Let it be borne in mind that the then Londoner was surrounded on all sides entirely by his own home-made wares, and his own home-made architecture and costume. But little, very little, could have come from the foreigner, and even when and where seen must have at a glance been recognised as foreign. Some imaginative power is required to picture nowadays this aspect of things British. But what would the Venetian have had to send and to show to the good folks of London so different from his own home-made wares? Why, simply everything. From the language he spoke, to the architecture he lived under, and to the "ritualistic" dress he wore, all things were different. Venice and the Venetian produced one set of things; London and the Englishman produced another. The Gothic of Venice, for example, though so "Gothic" as to be almost typical, was as different from the Gothic of London as two things can well be, and it was isolation that produced them both. It is a singular problem, and we must wonder how it is that no more attention has been given to it; how it was that the same "Gothic" idea of architecture should have travelled as it did into all the countries of Europe,—from Venice to London, and from Moscow to Madrid, and that it should have assumed so different and characteristic an aspect in each one of them; so individual as to be quite distinct, so much so indeed as to make of them almost distinct styles of architecture. Surely there must be, and was, an interest in such way of work; a way of work, be it observed, all but impossible nowadays, when materials, methods of work, and styles of art, travel at express speed. A Venetian Exhibition

in Gothic London would indeed have been a novelty. Let it not be supposed that this glance at the old ways of work has no application to art or art work in these days; or that the idea does not bear upon the modern Exhibition efforts; for nothing can well be more disappointing than the French work, to cite an instance in this Exhibition, if we look in it for the peculiarly and specially French manner. Nothing can surpass the ingenuity of the French artists and workmen, or their neatness and skill of hand. Nothing seems to come amiss to them; and we can but regret that so much skill should be expended in work in which there is in reality no special style, or feeling, or even intention, and certainly nothing that is thoroughly and entirely French. There was no single object in this year's French show to compare with the admirably-carved marble chimney-piece of last year, and of the author of which we, at the time, but in vain, endeavoured to learn the name—a true artist and workman. We cite the French work as typical. But if the show put forth in this year's Exhibition by the Frenchman must needs cause disappointment to those who went to see what he, as a Frenchman, can in these days do, how much, even, greater must be the disappointment in the Hindoo, or Indian, or Oriental court? From the Frenchman we do and ought to look for the veritable French mind and hand; and most surely from the native Oriental should we look, in such a show as this, for evidences of his mind and hand skill,—not borrowed or copied work, or work made for others,—but his own work, and made for himself. It seems well-nigh impossible to exaggerate the amount of loss here; for the Oriental man, as was so strenuously urged at the "Congress" of Oriental treasure-hunters, is not only an original man, but a liberal donor of original gifts. There is actually nothing, according to that learned congress, that the Eastern man cannot do, or has not done, as well as, or even better, than any other of nature's original types of humanity. And then, the enormous sphere of his activity, the vast primeval continent of Asia, in which he has worked and lived, full of mystery and wonders on all hands,—the primal ground on which mighty nature went first to work. What is it we want, then, to see from his strange country, and from his strange mind and hand? Why simply his own work! But in this Hindoo Court, in this now passed away Exhibition, this is precisely what we did not and could not see, for almost nothing of it was there to be found. Only by the merest accident a glimpse was got of it. Up in some obscure corner, may be, there was found, by dint of searching, some rough earthen vessel or pot, with, may be, some rude figures or devices drawn on it by native hands. This is genuine work as far as it goes. There was, too, a little metal-work, inlaid silver in iron, in very many ways good; but even here it is by effort that you get at the real work of the native artist, for the forms may, perchance, have travelled all the way from Birmingham or Sheffield. Then there were textile fabrics, from fine muslin to rugs, and shawls, and even silk handkerchiefs; but it needed a keen eye to find out and to separate the real work from the "market" patterns and the market colours,—on which, by the bye, a good deal might be written. These Great Exhibitions have been, as we know, full of trade and business adventure, and the "markets" consequently must be looked to. But the real and true artistic interest in such a display as this must be in the being able to see what that particular phase of human nature, the Oriental man, can produce by himself and for himself, that we may thus come to appreciate his native and original powers as an artist and a workman. And may not this thought guide to a truer display of Oriental work in some future Exhibition, whenever such may be determined upon?—an effort to find the native workman, so well able as he is to do his own work, and to think of it for himself. In this way these Exhibitions have their prime work yet to do. It is a thought that leads very far indeed, and points to the future; for it may happen that those Eastern men may come to be conscious of their native artistic strength in a way which they now do not dream of.

If it were, then, asked what it is in principle, looking at the artistic aspect of it, that these Great Exhibitions have done most to foster, and to place prominently before the world, we should reply, that it has been the showing how the power of "organisation" and division of artistic labour can be brought,—as in machine-

making it has been,—into action, and into profitable and even effective play in Art. All Adam Smith's dreams of what could be accomplished through the division of labour, have in these days been even more than realised. A man, says Adam Smith, working by himself, in a room full of good hand-tools, may be the whole of one day making a very common and very simple object. But, he says, put this same object into the hands of a number of men, each man doing his own special part of it, and it may be that ten or twenty of such objects may be the result of it. No one who looks about will doubt this. And this applies not merely to things of simple utility only, but to "ornaments,"—things wherein artistic work forms a necessary and component part of them. We do not here refer to the design only, but to the working out of that design. It is by and through the power of "organisation" that such work is now done, and by which so much of it is got through. Everywhere about us the results of it are seen, and these Exhibitions have been right full of them. In this, the last year of the Exhibition, this way of work was all but triumphant. It was almost an accomplished fact, and perhaps the very little there was of what, in old-fashioned days, was the way of work, was even more instructive than its total absence. A curious state of things, and at the very foundation of art action. It is little as those who now rule in these matters artistic, think of it,—the to be, or not to be, in art. In this Exhibition, to be viewed lately for a penny, there were here and there, by accident as much as anything, examples of hand-work, or perhaps we ought insist on it, say, of solely individual hand-work; a few things, as we have said, with at least this amount of merit in them: they evidenced the capacity and kind of power possessed by the executive workman,—his art handwriting. A little of it was seen, but very little, in the French court, a little in the Hindoo court, a little of it every here and there, patent only to those who can see it, and who look for it. It may be one of the problems of the future in art, and be put to the art-student as a test of his powers of sight, and insight, and artistic instinct, to go round such a show as this, and to note down after careful examination, and to point out the results of the individualised artistic powers, as seen in the working artist's productions. We know of nothing in the way of art "examinations" which could possibly surpass this as a test of discriminative and artistic mental powers. We would commend it to those who are charged with the teaching of art to the people.

THE NEW OFFICES OF THE SOUTH YORKSHIRE AND NORTH DERBYSHIRE MINERS' ASSOCIATION, BARNSELY.

THE Association occupies a prominent position amongst similar societies, having something like 23,000 permanent members, and over 50,000 in its funds. The new offices and residence for the two secretaries, which were formally opened on the 9th inst., have been erected from designs furnished by Messrs. Wade & Turner, architects, of Barnsley. The style adopted is a sort of Italian Gothic, and the building being situate at the junction of the Cockerham and Victoria roads, has a striking position. The residences are situate at each end of the erection. The offices are approached by an entrance from the Cockerham-road, 10 ft. in width, the floor of which is laid with ornamental tiles. The large office, which is to be devoted to the transaction of the general business of the Association, including that connected with the colliery which is about to be transferred to the society, measures 25 ft. by 21 ft. Mahogany desks run round the office, the floor of which is laid with ornamental tiles. On the right-hand side of the passage, almost opposite the entrance to the principal offices, is a committee-room, 14 ft. by 12 ft., in which the executive of the council will hold its meetings. To the right is the pay-office, in which the whole of the money transactions of the Association will be carried on, including the payment to the widows and orphans of deceased members. In the recess are to be found lavatories, with hot and cold water, as well as a book closet, 18 ft. by 6 ft. On ascending a broad staircase, the council chamber is reached. The room is a very beautiful and spacious one, measuring 50 ft. in length, and 25 ft. in breadth. It is lighted by two eight-light chandeliers. The sittings for the 102 delegates who, as a rule, meet every fortnight, and often when

required, consist of benches, the framework of which are of polished mahogany, with hair-stuffed spring seats and padded backs, covered with maroon leather cloth. Chairs of similar construction provided for the presidents and secretaries, are placed at the upper end of the room. Around the walls of the chamber are hung paintings of various kinds, including that of Sir Humphrey Davy, the inventor of the safety-lamp. In the tower is a room measuring 14 ft. by 12 ft. 6 in. The houses occupied by the secretaries have each an entrance-lobby, 7 ft. wide, with two front rooms, 15 ft. by 14 ft. and 15 ft. 6 in. by 14 ft. 6 in. respectively. There are four bedrooms to each house, two attics, as well as the necessary conveniences. The building, which is set a short distance from each road, stands on 454 yards; but the whole area contains 1,375 yards. The frontage to the Cockerham-road measures 104 ft., and that to the Victoria-road, 74 ft. The space in front of the buildings is planted with choice shrubs and plants. The original estimates put down the cost at about 4,000*l.*, but the total expenditure will be between 5,000*l.* and 6,000*l.* The contractors for the several works have been as under:—Mason, Mr. H. Wright; joiner, Mr. J. Broadhead; slater, Mr. G. Scharley; plasterer, Mr. M. Fenwick; plumber, Mr. R. Greenwood; painters, Messrs. Stephenson & Charlesworth; gasfitters, Messrs. Hutchinson Brothers; bell-hangers and ironmongers, Messrs. Wright; all of Barnsley. Mr. J. Whittaker has acted as clerk of the works. The building, it may be stated was erected in accordance with resolutions passed by the council, and is wholly of stone. It is invested in the following gentlemen as trustees on behalf of the Association, viz.:—Mr. Thomas Moore, Sheffield; Mr. John Holmes, Methley, near Leeds; Mr. D. Moulson, miner, Swinton, near Rotherham, president of the Association; Mr. S. Broadhead, miner, Kilnhurst, trustee of the Association; Mr. S. Hall, miner, Masbrough; Mr. E. Law, miners' weighman, Parkgate; and Mr. J. Whyatt, miner, Wombwell Main, near Barnsley.

THE CHATSWORTH STREET BOARD SCHOOLS, LIVERPOOL.

AMONG the schools now being erected by the Liverpool School Board, those in Chatsworth-street are noticeable for the possession of several appliances not hitherto, that we are aware of, introduced into such schools. As our illustrations show, the buildings face Chatsworth-street and Sophia-street, and occupy the north and east sides of the site on which they are built, the south and west sides being reserved for playgrounds. They will accommodate 1,000 children, divided into 400 infants, 350 juniors, and 250 seniors. There are two infant schools for 200 each on the ground-floor, containing schoolrooms for ninety-five, one class-room for forty-five advanced infants, and two infants' class-rooms for thirty each, fitted with galleries, and capable of being thrown together by movable screens. The senior boys' school for 120, with schoolroom for sixty, is also on the ground-floor, and also has two class-rooms for thirty each. The remaining portion of the ground-floor is occupied by the committee and master's room, and the caretaker's house. On the first floor in the Sophia-street wing are the junior schools for boys and girls, for 180 each, with schoolroom for 120, with two class-rooms for thirty, capable of being thrown together by lifting screens. Each junior schoolroom, 59 ft. by 21 ft. 6 in., is divided into two by lifting screens, as shown in dotted lines, the full width of the rooms. There is a boys' drawing-room over the caretaker's rooms. In the Chatsworth-street wing are the senior girls' school for 120, with schoolroom for sixty, and two class-rooms for thirty each. A mistress's room, supplying a want much felt, with lavatory and w.c., and a girls' drawing-room. Lavatories, and cap and bonnet rooms, distinct from each other, are provided for each school. There are three separate entrances to the playgrounds for infants, girls, and boys, and three main staircases. The main angle of the building is carried up as a gabled tower, and in this are the well and a cast-iron tank, holding 3,750 gallons, supplying the building by a 3-ft. cast-iron main supply pipe, fitted with hydrants and a hose in case of fire. The rooms are all lofty and light, the ground-floor being 14 ft. 6 in., and the first floor 18 ft. high. The upper part of the eaves is hung on swivels. There are also in the outside walls seventy ventilating valves, supplied by Messrs. Lawson & Haineworth, of Halifax.

Each school and class-room has, in addition, a separate extraction-flue carried from the centre of the room to remove foul air and the products of combustion, always open. The whole of the buildings are heated with hot water, on the system patented by Mr. B. Harlowe, of Macclesfield; and, in addition, each room possesses an open fireplace, ensuring the ventilation of the lower part of the room. Doors of communication between the several schools, with pass-keys for easy supervision, are provided. The movable "sound-proof" lifting screens, of which there are six, are the invention of the architect. They open the full width of the room, and half the height, and each is worked by a small winch, fitted up in the cased jamb. When up, a free and uninterrupted view is thus obtained, and the two rooms are practically made one. The wall dividing the boys' and girls' junior schools has an opening in it, 8 ft. square, fitted with sound-proof doors, for the purpose of fitting up a screen for magic-lantern entertainments, and allowing the whole of one school-room being utilised for the audience, while the apparatus is being worked in the next room. The chairman of the Board suggested this idea. Each main facade is faced with Lancashire grey shoddies, the dressings being of red Woolton stone. The whole of the joiners' work is pitch pine. The architect is Mr. T. Mellard Reade, C.E., of Liverpool. The sole contractors are Messrs. Burroughs & Son, of Liverpool. The contract for the whole of the work is for 5,403*l.*

THE CHURCH OF WETZLAR, GERMANY.

We have in our papers upon Mediæval Architecture in Germany made frequent allusions to the "Dom," or "Stiftskirche," at Wetzlar, and we some time back gave an illustration of a portion of the interior of this most interesting edifice. We now propose to call the attention of our readers to a most remarkable feature connected with the exterior of this church.

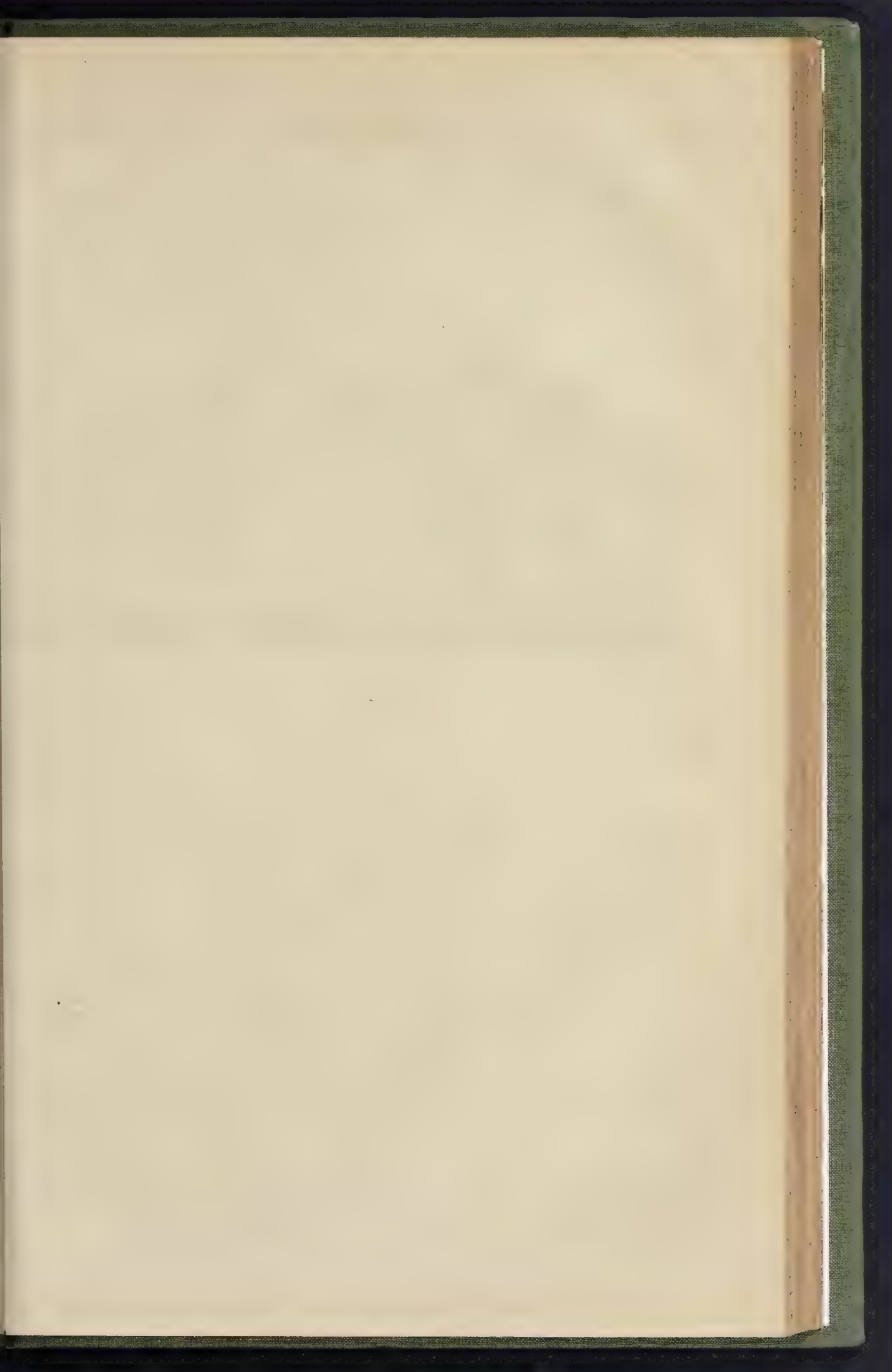
Those who have studied ancient churches, both in this country, and more especially on the Continent, must have noticed how frequent was the practice during the later periods of Gothic architecture, of patching on new fronts to early buildings, and the western fronts of churches were particularly favoured by this operation. In some cases the ancient western end was simply refaced and converted into the prevailing style of the day, in others the ancient western end was destroyed, and a new one erected, and in other cases the church was considerably lengthened, and of course the ancient west end was destroyed. Now, the great peculiarity of the church at Wetzlar is the fact that it retains both the ancient and the more modern west ends; for, owing to the works having been suspended, probably through the want of funds in the first place, and then having been subsequently altogether abandoned on account of religious differences in the sixteenth century, the more recent front was never entirely completed, and the ancient Romanesque front was never destroyed, with the exception of one tower.

The church of Wetzlar consists of a choir, or chancel, and aisles, of the earlier portion of the thirteenth century, deep transepts, and a large nave and aisles of similar height. The latter, though apparently works of the thirteenth and commencement of the fourteenth century, are really only alterations of the more ancient church, which dated from the twelfth century. This will be seen by examining the lower portions of the walls, where remains of Romanesque arcades will be discovered. When the nave and transepts were heightened and (nearly) rebuilt at the end of the thirteenth century, and the earlier part of the fourteenth, the ancient western front was left standing. It consisted of a deep porch with a double doorway, a round-headed window above, probably a gable, flanked by two rather singular towers, only one of which now remains. It is square in plan, and each face is gabled in a remarkable way. From amongst these gables rises a dwarf octagonal lantern, which was probably crowned with a dome or cone; but this termination, whatever it was, has been destroyed, and is now replaced by a slate roof. There is an absurd idea which is very popular in Wetzlar, that this front originally formed portion of a heathen temple; and although there cannot be the slightest doubt that it is a work of the Romanesque period (probably of the twelfth century), it is a rather singular fact that the tower should have been known by the title of the "Heiden Thurm" for some centuries back. This front is built of tufa. There is little orna-

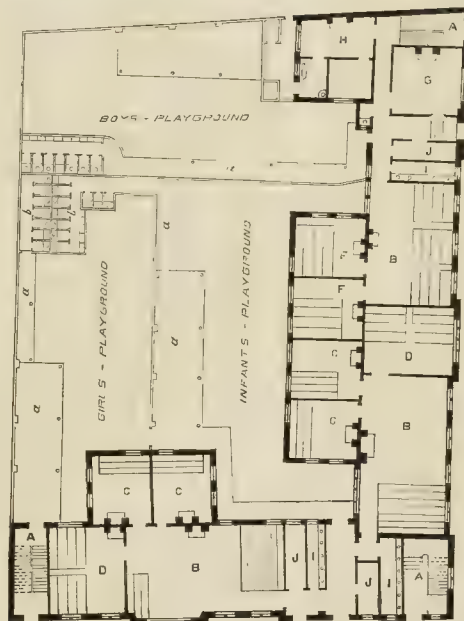
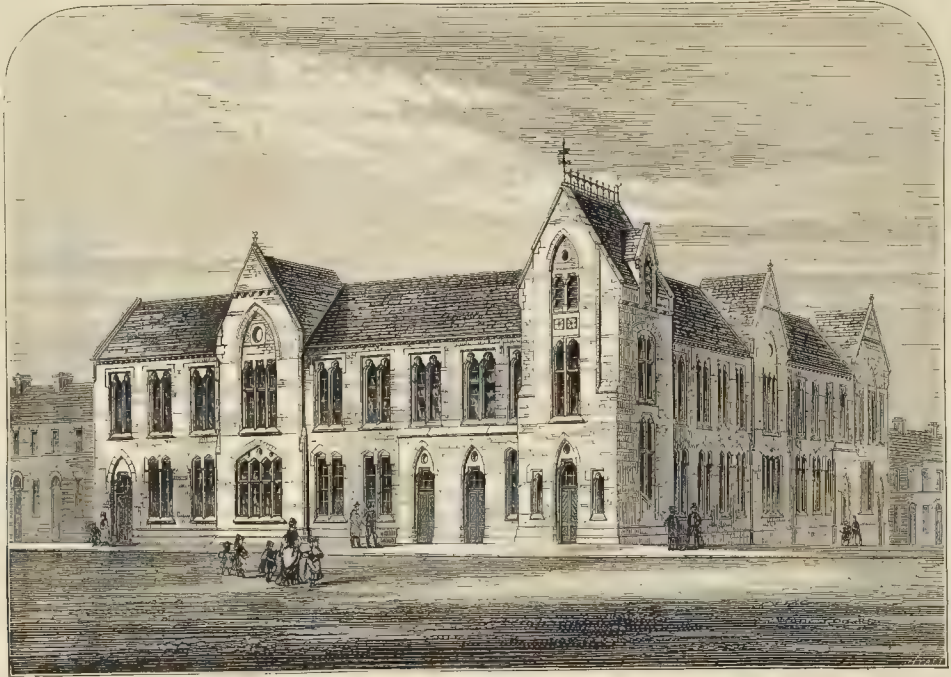
ment about it except the western doorway, which is subdivided by a column supporting two semicircular arches, the capital of which and the tympanum are ornamented by some rude carvings representing serpents. This doorway leads into a kind of porch or narthex, which occupies the space between the towers.

In the year 1336, the foundations of a new western front were laid, some 40 ft. to the west of the ancient one, and the southern tower of the latter was destroyed to allow of the south aisle being sufficiently prolonged to unite the new southern tower with the nave of the church. Within a period of some fifty or sixty years the lower stories of the great southern tower, with its noble south porch and doorway, the western portal and the basement of the northern tower were constructed. There seems then to have been a suspension of the works for nearly a century, after which the works seem to have been resumed, and the top story of the great southern tower was constructed, and probably the singular wooden lantern, covered with slate, which terminates it. This tower can only have been completed a very few years, if at all, before the Reformation, and it is rather singular that it should be capped by an unmistakable representation of the "triple crown." When we take into consideration the fact that at the Reformation the majority of the people of Wetzlar joined Luther, while the clergy of this church remained faithful in their attachment to the Pope, so much so that the church has ever since been divided, the choir remaining Roman Catholic and the nave being used as a Lutheran church, it seems not improbable that this lantern may be the external exponent of that dispute between the laity and clergy which caused the completion of this church to be abandoned.

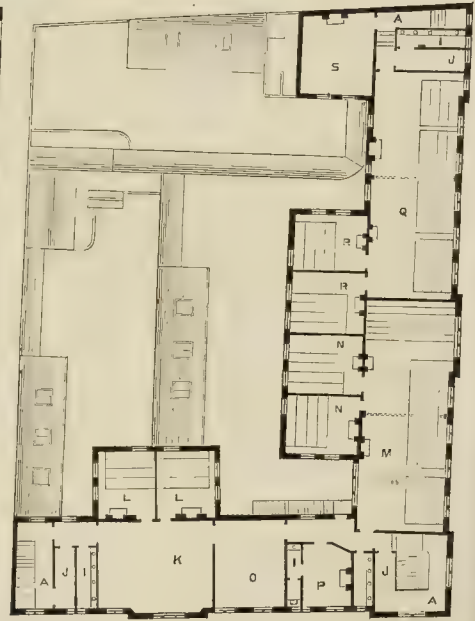
Another interesting thing connected with this west front, is the fact that it proves beyond all doubt that the Mediæval builders were in the habit of finishing their buildings as the work went on, and not building in block, and having the carving, &c., executed *in situ*, as is the usual custom on the Continent. For here, although the western wall is only carried up half its height, and the great canopy over the western portal has never been terminated, not only is all the foliage carved in the most delicate and beautiful manner, but even most of the niches have been filled with sculpture, much of which is of the greatest beauty, especially the statue of the Madonna and Child on the centre pier of the western doorway, which is justly celebrated all over Germany. In the tympanum of the doorway the "Coronation of Mary" and the "Adoration of the Magi" are represented; and over the doorway on the south side of the completed tower are fine statues of our Lord and the Evangelists. The figures round the arch of the western doorway represent prophets, and there are some most charming little statuettes of angels introduced between the canopies of the niches, and in the tympana of the arcades; in fact, with the exception of the west fronts of Ratisbon and Freiburg, no other church in Germany possesses a facade more richly decorated with sculpture than this unfinished one of the church of Wetzlar. Notwithstanding, however, the great richness of detail and positive beauty of the sculpture and foliage carving, it would be difficult to find a Mediæval work more carelessly constructed and badly built than this front. The basement of the northern tower, although only carried to the height of about 40 ft., is several inches out of the perpendicular, and is cracked and broken about in a most alarming manner. In the northern tower, the perpendicular joints of the masonry are, in many instances, almost unbroken for four and five courses. The stones are very large indeed, some of them being 7 ft. long and 2 ft. 6 in. deep; in nearly every instance these large stones are cracked through the middle; but the jointing of the tympanum of the western doorway is the most singular. It appears to be almost entirely vertical, and there is scarcely a horizontal joint to be seen. Probably this was done in order to get the figures in each carved upon a single stone, so as to have no joints cutting across them; but the result has been that the lintel which supports this tympanum is cracked in several places. Of course, to finish this front now is an impossibility, and it is perhaps a fortunate thing that it is so, if we may judge from what has been done in that way by the Wieskirche at Zoest, where an interesting fragment of an ancient design has been made the foundation of a pretensions and most uninteresting modern facade.



LIVERPOOL SCHOOL-BOARD SCHOOLS, CHATSWORTH STREET.—MR. T. MELLARD READE, ARCHITECT.



GROUND PLAN



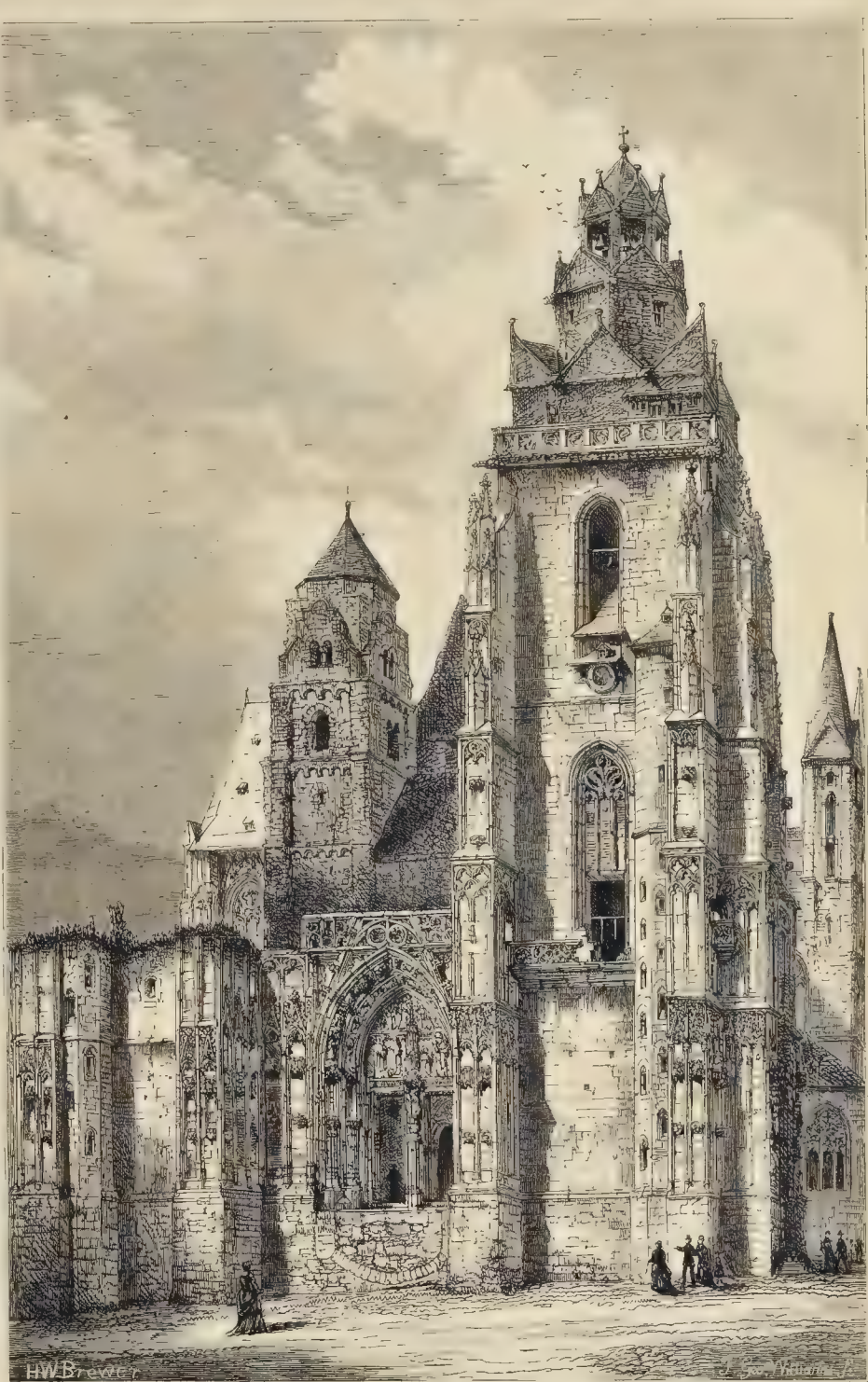
FIRST FLOOR PLAN

A A A. Staircases.
 B B. Infants' school-rooms.
 C C C. Infants' class-rooms.
 D D. Advanced infants' class-rooms.
 E. Senior boys' school.
 F F. Senior boys' class-rooms.

G. Master's and committee room.
 H. Care-taker's house.
 I I I. Lavatories.
 J J J. Caps.
 K K K. Covered play-grounds and ways.
 L L L. Latrines.

K. Senior girls' school.
 L L. Senior girls' class-rooms.
 M. Junior girls' school.
 N N. Junior girls' class-rooms.
 O. Girls' drawing-room.
 P. Mistress's room.

Q. Junior boys' school.
 R R. Junior boys' class-rooms.
 S. Boys' drawing-room.
 A A A A. Staircases.
 I I I I. Lavatories.
 J J J. Caps.



THE CHURCH OF WETZLAR, GERMANY.

ARCHITECTURAL ASSOCIATION.

THE PRESIDENT'S ADDRESS.

The first ordinary general meeting of the session, 1874-75, was held on Friday evening, the 6th inst., the newly-elected president, Mr. G. H. Birch, in the chair, when the following gentlemen were elected members:—Messrs. F. A. Barth, W. S. Merrick, J. S. Alder, J. Jermain, jun., F. Anderson, E. Webb, J. S. Watts, S. Wheelhouse, W. A. Waddington, S. Howe, jun., H. A. Hearse, J. Tweedale, E. Newton, W. H. A. Berry, H. H. Hunt, J. H. Baxter, H. W. Burrows, S. T. Thomas, J. E. Carter, S. Smith, M. J. Lansdell, E. Dormer, jun., C. B. Young, J. Webster, and H. H. Statham.

Mr. G. H. Birch, in the course of his address, and after referring in flattering terms to his elevation to the presidential chair, said that they had heard from the honorary secretaries of the Association, and also from those various classes which met within those walls, some few statistics of the past session; and those present had heard of their failures and shortcomings in one or two particulars, and he would take occasion to refer to these. First, with regard to their duty to themselves; and, secondly, he would refer to their position with regard to others. He found that it had been the custom of some past occupants of that chair to pass in review, and to criticise, some buildings erected in the metropolis during the year preceding their year of office. Some had offered them their friendly, and, he was going to say, fatherly advice and counsel, as to their demeanour and behaviour in the various professional difficulties that beset them. Some had dwelt at greater length on the advantages to be obtained *here*, and impressed upon them very forcibly the necessity of working harder and studying more deeply. He thought all these subjects exceedingly valuable, with the exception of the first, but he did not think it advisable on the present occasion to indulge in criticism, which was without any advantage whatsoever to them. As to the advantages of membership here, he admitted great good was to be obtained, and of the immense value of the classes here he did feel most emphatically in a position to speak. His objection to criticisms was this,—whatever opinions he might hold, he did not think that the chair of the Architectural Association was the place to enforce them. Undue weight and importance might, and very often, were given to words, mere words, uttered from that chair, to which other wise they were not entitled; as they were the private opinions of an individual, who might differ in opinion as much from his predecessor as his successor would probably differ from him. They had enough, and far too much, criticism, sharp, unheathy, and, above all, superficial, not only among themselves, but from the outside. It was in itself, and if used and directed properly, a good thing, and no professional man, however thin-skinned he might be, need be afraid of it; but how often was it misused and misdirected? There was no other profession of the fine arts so subjected to this false criticism as theirs. Every one felt competent to deliver an opinion. They were free to do so; but to indulge in a systematic manner of sweeping criticism, without allowing for hundreds of extenuating circumstances, by which they knew very well the architect was so completely bound hand and foot that he could not do even what he would, if they wanted less of this harsh criticism from the outside world, let them be lenient to one another, and let no man review another, either in a quarterly, fortnightly, or contemporary manner. They could be true, but, above all, they could be just.

"Learn, then, what moral critics ought to know:
For 'tis but half a judge's task to know;
'Tis not enough, taste, judgment, learning, join:
In all you speak let truth and candour shine."

Alluding to the arrears of subscriptions, the President went on to say that the treasurer's report showed a deficiency in this respect, which state of things, he maintained, should not be. They were essentially being crippled in the area and extent of their operations for the want of funds actually owing to them. It was unhappily a fact that the past session had been one of peculiar difficulty in that respect, and their treasurer had advanced money with a generosity which, while thanking him most sincerely, they ought never to have allowed. They had no right to expect any member to disburse from his pocket the funds to pay their liabilities from quarter to quarter; but this was what Mr. Mathews had to do on their

behalf. At the present time there were numerous subscriptions still owing, and the greatest difficulty was found in getting at those members who were, generally speaking, conspicuous by their absence from the meetings. The membership of such men was simply a clog to them, and they were far better without it. In all other respects, their position was most satisfactory; but he could not help thinking that the excellent address of their late president, Mr. Edward Tarver, had borne some fruit; but though the attendance had improved, there was still room for further improvement in all other classes in this respect. In looking through the productions of the senior class of design, he was perfectly struck by the marked improvement in quality. Years ago, the ideas were of the wildest, and the construction only suitable for castles in the air, for no earthly buildings could be so constructed. Now, wild ideas of this character were of the rarest occurrence. Design was studiously kept within reasonable limits, and there was scarcely a single drawing which did not show the most marked and careful attention to detail and construction. The Senior Class of Design was fortunate in possessing a president of no ordinary ability in Mr. Walter Lonsdale, and he thought there could be scarcely a single member of the class who attended last session who would not look back in future years with no small feeling of gratitude for his kindly hints in design, and for his valuable criticisms. To make this class, which had been called the sheet-anchor of the Association, more popular and even more instructive than it had been in former years, a special committee was called, composed of past presidents of the class; and it was then decided that certain alterations should be made, not in the actual mode of conducting the class, but in limiting the various designs to one common basis. He trusted that this arrangement would meet with their approval, and that they would show their appreciation of the labours of the committee by joining this class in larger numbers, and supporting Mr. Aston Webb during his occupation of the chair. The Elementary Class of Design was not only well attended, but the interest was well sustained, even to the end of the session. He thought, however, that there was room for more members; and he trusted that the approaching session would see a considerable augmentation of members. In this class they had the advantage and benefit of the opinion of men whose artistic ability had deservedly placed them in the foremost rank of the profession.

Referring to the abandonment of the class for the study of coloured decoration, it was found impossible to continue with so small an attendance. Coloured decoration was a subject that it was more than necessary to know a little about. To be an architect one must know a good deal about coloured decoration, and on the use and harmonies of colour. The works of one of the best living architects, marked as they were by boldness and vigour of detail, were spoilt hopelessly and irretrievably wherever coloured decoration had been applied. Indeed, so utterly base were the combination and tints used, that he could only account for it by the fact that the architect must be colour-blind. The failure of the class in question was due entirely to the apathy shown by the members. The class died a natural death, the officers only being present at its final obsequies, and gave it decent burial. But he hoped it would be disinterred during the present session, and that their strenuous efforts would be exerted in once more placing this among the most valuable of their classes. The "Sketch Book" from time to time made its welcome appearance, having now arrived at its ninth volume, 576 plates having been issued, all being studies and sketches and measured drawings of old work. These plates were in themselves an inexhaustible supply of the architecture of the past for their guidance for the future. As regarded the late autumnal excursion, it was impossible to overrate the value that this was in an educational sense to all those whose privilege it was to attend it. In December they were to have a paper by Mr. Sharpe, who personally conducted the excursion, regarding the autumnal tour, which was to be illustrated by sketches made by the members. That evening promised to be one of the most interesting of the series, and he was glad that they would have that opportunity of testifying their thanks to Mr. Sharpe.

With respect to the subject of voluntary architectural examinations, Mr. Birch went on to say, that forty-three out of about sixty candidates who had passed were members of the

Architectural Association. For his part, he believed strongly in architectural examinations, but not in voluntary ones. The Royal Institute of British Architects was a body they looked up to with great respect, as the representative of the profession, to form their laws and protect their interests. It possessed a charter of incorporation, was under Royal patronage, and had all the *déclat* with which the high professional ability of its members surrounded it. He was given to understand that the Royal Institute, feeling that students required something more than seeing their names enrolled in the scanty list of candidates who had passed and received a certificate, proposed that in future a candidate who had passed in both divisions should, on becoming a member, be entitled to the designation of graduate of the Royal Institute of British Architects; in other words, might add G.R.I.B.A. after his name, instead of F. or A. R.I.B.A. He had no doubt but that the general public would be equally impressed with letters of such mysterious meaning, but it was not his intention to raise a laugh about this. He believed firmly in an "examination," and every step taken by the Institute towards this desirable end deserved not only their sympathy, but their active co-operation. He knew that there were difficulties almost insuperable in the way with regard to this subject, but he was sure that eventually they would disappear, and then, and not till then, would an architectural examination be satisfactory, and would add to the confidence which they desired the public to have in their ability.

Reviewing their position as a recognised body, they had reason to congratulate themselves. Their finances, though capable of improvement in the particular already referred to, were in a satisfactory state. Their classes continued to be well attended, and

"Something attempted, something done,"

might be said of all; their numbers steadily increasing. He was aware that there were still a large number of architectural students who held aloof, partly from ignorance of what they were doing and of what they might obtain by joining their ranks, and partly from an exalted idea of their own self-sufficiency. To the former they were ready to extend the right hand of good fellowship, and would welcome them gladly amongst them. To the latter he would say that he was only too happy to find that there was a possibility of learning one's profession more thoroughly outside these walls than his experience gave any credit for.

As regarded the architectural doings of their neighbours across the Channel, there was a remarkable institution in France still existing, and that was the Commission of Ancient Monuments. This was a Government affair, and was under the control of a Minister, who seemed to combine in his own person the offices and duties which in England were relegated to the First Commissioner of the Board of Works and to the Privy Council on Education, and to one or two other Boards; he was called the Minister of the Interior. The organisation of this department seemed to have been the work of one whose recent loss France still mourned, M. Guizot. The idea was due to him that ancient buildings of all epochs still remaining should be inventoried, and a regular classified list made of them. Drawings of the most accurate description should be made of their existing state, and, where ruin was imminent, small sums of money, granted by Government, should defray the expenses of putting them in repair. This was only a brief outline of this Commission of Historical Monuments, for the plan as originally proposed by M. Guizot had since been considerably modified in some particulars and extended in others. There had been an attempt in England to get a similar Commission appointed, but he regretted to say it was unsuccessful, though warmly supported by some very influential Members of the House of Commons. However, he hoped to see the effort renewed, and, perhaps, this time with more success. It required a good many efforts to get the House of Commons to consider measures of this kind. Among the many exquisite drawings sent to England through the exertions of this Commission, it was difficult to say which were the most beautiful. Those who saw them at the Exhibition, he was sure would endorse this. The drawings of Mont St. Michel alone were worth any money to see, as were those of St. Nectaire, Ezy le Dome, the Chapel at Vincennes, the latter set being noticeable for the style in which they were drawn more resembling

what they were accustomed to do here. It struck him, after looking at all these representations of old work, and the wonderful field for study thus so readily at hand that French architects had, that when a new cathedral was wanted at Marseilles they should have chosen such a design and erected such a building as they appeared to have done. Drawings, models, and photographs were exhibited in large numbers, and in all there was not a single feature to redeem the innate ugliness of the design, at once heavy and fussy, with a façade recalling a railway station and a Turkish mosque. It was utterly without that dignity and stern expression of repose so imperative in a Christian cathedral. They were subject to fashions in architecture, and perhaps he ought to be more lenient, but why French architects should have adopted the Romanesque and left out the best features of Romanesque, like the play of "Hamlet" with Hamlet left out, puzzled him. He had already expressed the hope that such a Commission of Ancient Historical Monuments might take its place as one of the permanent institutions of this country. Of what immense value it would be here to have all their existing buildings possessing any historical and architectural interest, thus preserved from further injury, and protected from private greed or public improvement. The very name of the latter conjured up innumerable instances of wonderful advantages to be accrued, of magnificent thoroughfares which the pedestrian shunned, and where vehicles were not. An instance of this occurred to him then,—Northumberland House. He did not wish them to assume that this building was one that he considered as being worthy of a place on a list of ancient historical monuments to be preserved. In one sense of the word, it was an historical monument, and he much regretted its removal; but the public improvement to be hereafter effected, in which, of course, "the finest site in Europe" was dragged into discussion, gave it popularity in the eyes of a tax-paying community, was, after all, questionable. Looking at the plan proposed, and knowing intimately the surrounding neighbourhood, it did seem marvellous that such a scheme should have passed without any opposition. He had no doubt that if some ancient building, possessing great historic and artistic interest, say, the Priory of St. Mary Rouncival, which once stood on the very site, had been there, it would have been as ruthlessly levelled to the ground as the Town-house of the Percies. This mania for destruction on the plea of public improvement, so rife at the court end of the town, had communicated itself to the City. They had seen several churches demolished, and many others were marked for destruction. The removal of these old churches was now taken quite as a matter of course; no one minded. It must be fresh in their recollection how one of the leading architects of the day had been assailed in articles without number; the whole wrathful indignation of the press had been brought to bear on his defenceless head. Reviewed by Ishmaels of the profession, condemned in the columns of one paper, his dismissal demanded by another. They asked his crime. He was supposed to be in favour of tampering with the work of the greatest architect who ever lived. There was also another fallacy connected with this subject, namely, the want of unity of design in the public thoroughfares. If they believed all they heard, their finest streets were irreparably spoiled through this important principle not having been attended to. Was this want of unity a fault? He could not think so. They had streets where this idea had been carried out, and Regent-street, King William-street, City, and Moorgate-street, were the painful results. Uniformity of design had been tried under the most favourable auspices in the new streets and boulevards of Paris, and even there, with all the advantages of a clear atmosphere, and strong effects of light and shade, it still failed to commend itself to his taste. Let them turn to the London streets, where this principle had not been attended to, and where the glorious system of narrow frontages and doing that which was right in their own eyes, of shooting up beyond their next-door neighbour, or modestly nestling under his shadow, was carried out to the letter without the advantage of a clear atmosphere, &c. Was the result displeasing? Not in his eyes, and he did not think in the eyes of those present who appreciated the picturesque.

Passing on to speak of the question of competition, the President went on to say that competition was the "curse" of the profession. Let

them take an instance. A church was to be built, and a limited number of architects were asked to send designs. They would only compete on the conditions that a professional man of known ability and integrity was appointed judge. The committee agreed, the designs were sent in, and the award arrived at, after most careful sifting of the several designs. "In Memoriam" was put first, as having carefully kept within all the requirements of the particulars supplied as to cost, accommodation, &c. The committee reversed this decision, put it on one side, and chose for themselves, out of four designs, the worst and the most expensive,—the one that they had settled all along should have it. No fictitious case, again, but a fact. He did not come before them with a remedy for all this; they had the remedy themselves. Be wise and save their labour, their toil, and their pains, and avoid "competitions"; never mind how tempting the bait, join not the swarm of minnows. In conclusion, he said, architecture was making real and rapid progress; sounder principles were daily gaining ground; there was a greater demand for their services. They would now be called in where, only a few years ago, it would never have entered into any one's brain to employ them. An architect was a man whom formerly only the titled and great knew anything at all about. He might have been pedantic, but he was always an educated, refined, and travelled gentleman, who could give them an exact copy in Portland stone or cement of any temple of antiquity they had a fancy for. He was not in advance of his times, but was equal to them; and now, as they had altered so much, and construction, through the use of materials now employed, had altered with them, they had to learn more; their education was a matter of vital necessity. If they would keep pace with the times, they would embrace those opportunities here so liberally supplied. Remember that life is short, and art is long, and that the work of their hands and labour of their brains would live when they themselves were forgotten:—

"Out upon Time, it will leave no more
Of the things to come than the things before.
Out upon Time, who for ever will leave
But enough of the past for the future to grieve,
O'er that which hath been, and that which must be.
What we have seen our sons shall see,
Remnants of things that have passed away,
Fragments of stone, reared by creatures of clay."

Mr. Phéas Spiers, in proposing a vote of thanks to the president for his address, dwelt upon the importance of students preparing themselves for examination at the Institute, and expressed his opinion that, in the course of time, such an examination would be indispensable, and would be regarded as a mark of qualification by the public.

Mr. Lacy Ridge having seconded the motion, it was carried, and the proceedings terminated.

SUPPLY OF WATER IN PARIS.

The state of civilisation of a people, says M. Belgrand, the engineer who presides over the waterworks and sewers of Paris, is indicated by the quantity of water provided by the authorities for each inhabitant.

In Paris the total quantity is considerable, not less, in fact, than 355,000 cubic metres in twenty-four hours, supplied by the canal of the Ourcq. The water of the Seine raised by twelve pumps, that of the Marne elevated by the great waterworks of Saint Maur, from artesian wells, from the fountains of Arcueil, Rangis, Belleville, Des Prés Saint-Gervais, and the derivation of the Dhuy. The derivation of the Vanne, just completed, will shortly add 100,000 metres more to the total.

This mass of water is distributed in Paris by means of 59 ornamental fountains, 26 fountains in public markets, 813 fountains, plugs, &c. for public use, 4,500 cocks beneath the pavement for flushing the gutters, 240 hydrants for filling water-carts, 2,900 ditto for watering the roads with hose branch, 80 fire-plugs, 155 stations for supply of the water-carriers, 681 urinals, with about 250 public offices, 50 religious edifices, 250 schools and colleges, and 200 municipal establishments. The number of private houses supplied with water is only yet about 40,000.

The supply of water is stored in twelve large reservoirs, two of which, namely, those of Ménilmontant and Montsouris, have a capacity of 300,000 cubic metres; the Passy, Belleville,

Charonne, Buttes-Chaumont, Monceaux, Gentilly the Pantheon, Saint-Victor, Racine, Vaugirard, Montmartre, and Château-de-Montmartre, vary in size according to the area which they serve.

Little now remains to be done to give to all the inhabitants of Paris an abundant supply of water. The grand works which brought the water of the Dhuy to the capital have long been finished, but a few supplementary supplies have still to be diverted into the great conduit. The Vanne works are all but finished, but the upper chamber of the great reservoir of Montsouris is not yet available on account of the falling in of the unfinished vaultings which form the roof, but the restoration is nearly completed.

When this work is finished, and the waters of the Vanne are all brought into consumption, those of the canal of the Ourcq, which are chemically bad, and those of the Seine below Paris, will no longer be used for domestic purposes, but only for the streets, sewers, public fountains, and the lakes of the Bois de Boulogne.

A curious fact, not perhaps generally known in England, may be mentioned here. The artesian well at Passy, which occupied many years, and cost a large sum of money to construct, yields water at a high temperature, and loaded with sulphuretted hydrogen gas. This is the more extraordinary as there is no other source of the kind in Paris, and the water of another and much older artesian well, that of Grenelle, which was at first seriously reduced in amount when the new well was opened, is perfectly sweet. The cost and the results of artesian wells have caused them to be abandoned for the future as regards the public supply. It is said that hot baths are about to be established around the Passy well, and an attempt made to render the Passy waters as popular as Harrogate or Buxton.

The changes above mentioned will necessitate the enlargement of a few mains and the shifting of others, when every inhabitant of Paris will have at his command a supply of pure and wholesome water carefully filtered. The street fountains,—hydrants,—from which the poor obtain their supply of water, are to be increased in number, and in the more wealthy parts of the city water will doubtless be supplied to every floor and set of apartments, as it has been for some years in the best quarters.

When M. Belgrand's system shall thus have been brought into complete action, Paris will have a daily supply of between 400,000 and 500,000 cubic metres of water, and each inhabitant may consume or use 114 litres a day, while an equal quantity will be devoted to the washing of his house, courtyard, closets, &c.

Taken in connexion with the system of sewerage, this supply of Paris with water to the extent of about 50 gallons per head per diem is, perhaps, the greatest boon that has been bestowed on the people of the capital for centuries, and the reservoirs of Ménilmontant and Montsouris and the conduits which bring the Dhuy and the Vanne to the city will in future times rank amongst the most notable monuments of France.

England was long ahead of Paris in respect to the supply of water, but our neighbour has now surpassed us, and we may with advantage revise and complete our system.

COLOUR IN THE STREETS.

SIR,—Your correspondent, "G. M.," bewails with great justice the absence of colour in the streets of London, and suggests blood-red bands as auxiliaries to the red pillar-posts, as a relief to the sombre effect at present everywhere visible.

To go a step further, it appears to me that we might with advantage take a lesson from our Continental friends in this respect. Not only do they study the effect of chiaroscuro in the arrangement of their shop-ware and fittings, so as to set off their goods to the best advantage, but entire façades are painted with architraves, pediments, pilasters, cornices, ornamental panels, balustrades, and even festoons of flowers, so as to give the effect of a handsome front to a building which is devoid of a single projecting ornament. The substitution of painting for worked stone can of course only be justified on the score of economy, but it might be adopted as a relief to the monotony of the general aspect of our streets to a very much greater extent than it is at present. Glazed tiles would greatly help to this end were they laid in string-courses, or in the frieze of cornices, and the panels of pilasters.

CHAMELEON.

"INTERNATIONAL PLAYING CARDS."

SOME thirty years ago "Pelix Summerley" thought of producing a pack of cards in which the court cards, while retaining the quaintness of those now in use, which seem to have come down to us from the time of Henry VII. or Henry VIII., should mark the date of their make by the introduction of portraits of the reigning kings and queens. His desire has only just now, by the co-operation of Mr. Benbow Downes, and Messrs. De la Rue & Co. been carried out. There might be more fun and more force in them than we find, or they might have been made to approach as works of art, more nearly some of the ancient cards, especially the German. The object, however, has probably been, while introducing a little novelty to avoid producing anything to distract the players' attention. The early history of playing cards is full of interest, involving as it does in a remarkable manner, the origin of engraving and printing. One hint we may give to Messrs. De la Rue. The aces in the pack before us are surrounded with a pattern in blue, quite different from all the other cards. This should be altered, as at present the merest glance over the top of an adversary's hand would at once inform a sharp player of the presence of these very powerful members of the pack.

THE DRAINAGE OF THE ARTISANS', LABOURERS', AND GENERAL DWELLINGS COMPANY'S HOUSES.

APPLICATION FOR PARLIAMENTARY POWERS.

FOR some time past there has been a dispute going forward between the Artisans', Labourers', and General Dwellings Company and the Wandsworth District Board of Works as to the drainage of the company's houses on the Shaftesbury Park Estate, at Lavender-hill, Battersea, which appears to have determined the company to apply to Parliament for general powers as to drainage. They have given notice of their intention to seek for powers in the next Session, to authorise them to drain the houses erected by them upon any lands now in their possession, or hereafter to be to them acquired, in such a manner as to them may seem fit for securing the best and most effectual drainage of such houses and buildings. The Bill also contains a special clause sanctioning the system of drains adopted, and now in use on the Shaftesbury Park Estate, and authorising its continuance, and also providing for the connexion of the drains with the sewers of the Wandsworth District Board. A further clause provides for the settlement by arbitration of all differences between the company and the Wandsworth Board as to the drainage of the Shaftesbury Park Estate, in reference to which a suit in Chancery is now pending.

SEWER-GAS AND WATER-TRAPS.

MR. HENRY MATTHEWS, of Bristol, writing on the subject of sewer emanations in that city, says—"It may startle some of your readers when I state that I have, as they can, generated a sufficiency of gas in a wine-glass to pass freely through such a trap, and keep up the regurgitation for a considerable time. I wish to point out that the resisting medium in the trap is simply the perpendicular height of water from the bottom of the injected iron, generally 1 in. to 1½ in.; affording, as I think, no substantial hindrance to a moderate pressure of gas finding its way through this slight obstruction into houses, especially when tempted by a higher atmosphere than exists in the sewer."

It should be borne in mind that, whilst the temperature of our sewers is low, naturally, and under such circumstances, decomposition is not facilitated, yet there is constantly taking place new, unknown, chemical combinations—accidental in themselves—but, at the same time, these may and do give off deleterious gases.

The excrement of a typhoid patient passing into a sewer will certainly give off more or less of the germs of that disease, and these only require a sufficient volume of gas to carry them into the house which offers the least resistance in the shape of sewer-traps.

Ventilating pipes or shafts are of no value, for, in the first instance, to be of any value they must be of sufficient size to reduce the pressure of gas in the sewer to such an extent as to prevent the possibility of its entry by the weakest sewer-trap in the house; and, in the next place, sup-

posing you have reduced your sewer-gas to such a pressure by passing it off through ventilating shafts, you have diffused whatever germs of disease may be contained in it throughout the neighbourhood.

Remember, you have not destroyed the germs of disease, you have only diffused them."

SCHOOL BOARD SCHOOLS.

A NEW school was opened in Clerkenwell on Saturday last by Lord Napier and Estrick, K.T., situate in Eagle-court, near St. John's-lane, and not far from Farringdon-street Station. The building consists of two stories, the ground floor being devoted to the use of the infants, with a covered playground attached, and the first floor to the boys and girls, each department consisting of a large schoolroom and three class-rooms. These are approached by a double staircase in the centre of the building, with ample lavatory and cloak-room accommodation. The plan is somewhat like an elongated E, of a plain but substantial elevation, faced with picked stocks, and red brick dressings; and the schools will contain 301 infants, 210 boys, and 210 girls—721 in all. The architect is Mr. E. R. Robson, of the School Board; and the contractor is Mr. Wigmore, of Fulham, Mr. R. Ayres being clerk of works. The amount of the contract was a little under 4,500l.

BRONZE DOORS, BUENOS AYRES.

MESSRS. BUNNETT & Co. say,—In your impression of November 7th, you give an account of the "Provincial Bank at Buenos Ayres," just erected from the designs of Mr. Hunt, and refer to the principal entrance, which consists of three massive bronze doors.

As these doors, we believe, are the largest ever made in bronze metal, we think your readers may feel interested with a few facts.

The openings for these doors were each 17 ft. 4½ in. high, by 7 ft. 1 in. wide, semi-circular headed. The whole of the front of the doors is very richly ornamented, chased and burnished in every prominent part.

As each door was made, we erected it, and notwithstanding the great weight, it was easily opened or shut.

The weight of each is as follows:—Bronze metal, 55 cwt.; wood core, 12 cwt.; iron frame, 21 cwt. The total weight of one door and frame thus is nearly 4½ tons.

PROPOSED NEW WORKS AT THE FOREIGN CATTLE MARKET.

THE Corporation intend to make application in the next Session of Parliament for powers to make new approaches, and widen and construct new streets leading to the market. The proposed works include the widening of the whole of the south side of the road leading from the gate at the north-western corner, and also the construction of an entirely new street, commencing at the termination of the road as widened, and terminating in Victoria-road. The Bill also provides for establishing slaughter-houses at the market, and for the sale of hides and offal. The Bill further provides for the disposal of those portions of the lands and buildings at the market which were erected under the provisions of the Animals Contagious Diseases Act. The Bill also includes powers with reference to the Metropolitan Cattle Market at Islington, and the closing of the hide-market at Leadenhall Market, a main provision being the removal of the hide-market from Leadenhall to the Cattle Market at Islington.

CABMEN'S RESTS.

Wolverhampton.—A public meeting was held at the Town-hall, for the purpose of presenting to the public authorities of the borough two Cabmen's Rests. One of the structures was drawn up opposite the Town-hall, and was an object of attraction to a numerous and popular gathering. It is constructed of wood, roofed with galvanised iron, precisely upon the model of the shelters provided for the cab-stands at Birmingham. The upper portion of the rests being glazed with stout glass, the cabmen can take their rest and keep their eyes upon their cabs with equal facility, while gas and fire and all needful conveniences for cooking dinner or tea complete the comfort of the whole.

Walsall.—Mr. J. Brewer threw open the "cabmen's rest" erected by him on the stand near the Railway Station, and invited the men to take possession and use it. He referred to the legal difficulty in the way of the Council undertaking the charge of the rest, and said that under these circumstances he would meet any deficiency that might remain after the men had themselves contributed towards the expenses of its maintenance. The men very warmly thanked Mr. Brewer for his kindness, and presented him with an address containing a formal acknowledgment of their gratitude.

STATE OF KIMBLE CHURCH.

SIR,—Passing, the other day, through the hamlet of Kimble, Bucks, I could not help noticing the ruinous state of the church. Besides other signs of decay and neglect, I observed in the roof of the chancel, on both sides, a number of openings, some of these 1 ft. in length, and that the wall of this portion of the building, notwithstanding its massive character, is cracked from the coping to the ground.

Kimble Church, which stands at the foot of the Chiltern Hills, skirted by the Ikeneld-way, near White Leaf-croes, is a very old, narrow building, apparently of the thirteenth century. It retains traces showing that it was once cared for and more honoured by some who have found a tomb in the solitude of its churchyard.

Upon inquiry there I was told that the parishioners were now too poor to restore it. My informants, who seemed really in trouble on the subject, added that the church of Great Kimble was little less dilapidated.

A small amount would sufficiently repair the roof to save the walls and chancel from further damage. If you would kindly make known these facts, the means will no longer be wanting.

Kimble is associated with one of the most remote events in English history, of which there are still, or were in 1840, after the lapse and decay of nineteen centuries, several evidences in the neighbourhood. In old records it is called Knebel, from Knebellia, or Cymbeline, the British king, and it is mentioned in Domesday Book.

JAMES R. FORSTER.

CO-OPERATION IN EMIGRATION.

SIR,—The scheme and outline prospectus for a company as above, by "A Lover of Progress," in your last, is hitting the right nail on the head, and will serve to open up, I hope, a question which is of vital importance to others, besides the farmers and tradesmen he speaks of as suitable co-partners. This is the kind of thing that will provide a hopeful future for many a weary clerk in this great metropolis, pining at present under the grinding effects of competition, toiling through a prospectless life of routine work, which barely brings him enough to keep body and soul together, to say nothing of providing suitably for wife and family, if he is so unfortunate as to possess these treasures in this over-crowded country; ever building up the fortune of his employer, but never laying so much as the foundation-stone of his own; working ceaselessly, or with very few intervals for relaxation, at a business or profession for which he is possibly ill-fitted, and therefore loathes all the more, and longs for some duty that shall make use of his manly proportions, or develop the latent powers of muscle and sinew which he possesses, but which are quite lost to himself and society in his present sphere, and are hid, as it were "under a bushel."

The question has been frequently brought forward, "What can be done to assist the countless numbers of ill-paid clerks, in commercial and professional circles, especially when from any cause thrown out of employment?"

This Co-operative Emigration Company might, perhaps, be just the thing that is wanted, and would eventually become an extensive concern, batches of emigrants going off from time to time to different colonies, or to the United States, as their tastes might lead them after due consideration.

The New Zealand climate is one that I should recommend to Englishmen, as being free from the extremes of heat and cold met with elsewhere, and the Government of this colony offers inducements in the way of twenty acres of land free to every emigrant paying his passage out from England, and good Government land can be

bought from 1l. to 3l. per acre, according to situation.

Further information on this colony might be gained by a visit to the Agent-General for New Zealand, at 7, Westminster-chambers, Victoria-street, S.W.; and by the perusal of a two-penny pamphlet, to be had there or through Mr. G. Street, 30, Cornhill, E.C., called "Notes on New Zealand," by the Rev. P. Barclay. Other books could be named, but I cannot now enter into further details, but shall be glad at any time to assist "the ball in rolling," believing it to be the very thing required at the present time.

W. H. E.

CONDITION OF LONDON BAKEHOUSES.

Sir,—I lay before you for publication a statement concerning the sanitary condition of the places wherein is manufactured the bread on which we live; in which the ferment (a liquid from which the bread is made) stands for hours exposed to air—often very impure air—or, at most covered, only by a sack over the tub which contains it. One place I have recently left has a water-closet, a place where is thrown all the ashes and other refuse of the house (lodgers upstairs), and a five-hole sink, under which passed the whole drainage of the house. Acts of Parliament, we know, forbid all these, and a sanitary inspector is paid to see to these things, but where is he? The Bakehouse Regulation Act orders the whitewashing of bakehouses every six months, but I know of no place where it is done; many of them are in a filthy condition.

One I worked at near Charing-cross had a water-closet in it; and in one corner was a "plug" for keeping out the Thames during high tide; thus retaining the drainage of the house for an hour or two. On the removal of the plug all the drainage of the house passed a hole about a foot square, accompanied with the usual smell of sewage. What fate might we expect if anybody had a contagious disease in the house?

Another place had a water-closet in the bakehouse without a syphon-pipe; in other words, the pipe led straight down into the sewer, which was directly underneath, and the water apparatus out of repair, and not useable.

A fourth had a dustbin across the area (about 3 yards from the bakehouse) under the following circumstances. The bakehouse-door opened into the area, across one end of which is the water-tank, which used to overflow when the water came in; the trapped sink was not sufficient to carry this into the drain, and it used to flow into the cellar (down two steps), where the ashes, &c., were thrown. The cellar was large and not often emptied, and the dustbin had to cross the bakehouse with the refuse. Imagine the stench to which the dough and ferments (liquid) of which your bread is made are exposed.

I do not complain of the ill-ventilated state of most bakehouses, as I am sure, from experience, that bakers would not admit much cold air into the bakehouses for fear of checking fermentation, but this is no reason why the means of preserving their health should be denied them.

The same may be said of bedrooms, many of which are not compliant with the Bakehouse Regulation Act. Again I ask, where are the inspectors? T.

MARGATE DRAINAGE COMPETITION.

Sir,—It appears to me that as far as the competitors are concerned we are now in precisely the same position in which we ought to have started twelve months ago.

We now know what we ought to have been told then,—that irrigation is not desirable, but that the most advisable method of sewage disposal for Margate is to discharge it into the sea at "Botany Bay,"—a point then as well known as now as being an unobjectionable site for the outfall.

Mr. E. M. Barry (architect), in a letter to the Builder, of August 8th, notices the difficulty of obtaining the necessary information required by competitors as one of the great evils of competitions. Of what use is it for an engineer to waste his time in devising an irrigation scheme or on the detail of the internal arrangements of the town sewerage,—when irrigation is never intended to be adopted and his sewer arrangements will never be appreciated,—for the whole point turns upon the disposal question.

Instead of each competitor being afforded the utmost information he can desire, each is regarded with distrust and suspicion when he asks a question, as if he were trying to gain

secret information,—beyond what is fair to his brother competitors,—to get the better of them.

It may be said that every facility and information was given to competitors. It might be thought so by some; for instance, by those two fortunate competitors who had the "tip" to discharge into the sea at the Botany Bay.

The mayor very kindly drove me round the town, as probably he did others. The surveyor answered certain questions put to him, but never volunteered a single statement of any kind. I asked whether there was any place where the sewage could be discharged into the sea without becoming a nuisance. I was told none was known, but I must find out for myself. Now it must have been known that this "Botany Bay" was available, and I say all we competitors ought to have had this pointed out to us, with the option of devising a better scheme if we could. It may be said I am jealous of the two competitors whose designs have been deemed first and second best, and I do not attempt to deny it. I am jealous and annoyed that the mere idea (the discharge into the sea at Botany Bay) should bear the palm. I have not heard it said that the sewer arrangements shown by "Economy" and "C.E." are better than the others, but I have heard that the scheme of the one who was nominated for the first premium could not be carried out under nearly double the amount of his estimate. I think, therefore, that now we know what the Town Council really do wish for (the discharge into the sea); we ought all to be allowed to give our views on the matter, and start fair, with the same information vouchsafed to each. No need for plans to be under mock, but let each engineer compete in his own name.

CHARLES W. WHITAKER ("WESTMINSTER").

ROYAL ARCHITECTURAL MUSEUM.

Sir, I am obliged by "Assistant Secretary's" letter, in reply to my inquiry as to whether the Museum is open on Saturday evenings.

Surely six o'clock is an early hour for closing on that night?

As a journeyman carver in London—that was before the Architectural Museum at Tilton-street existed,—it was very seldom I missed "getting in" a long Saturday night in the Art Library, or the corridor close by, where the casts were hung, at South Kensington, and I remember that when the gong went at ten o'clock, I used to come away most reluctantly.

Has the expense of gas, &c., anything to do with the closing of the Museum at an earlier hour than South Kensington?

Saturday night is assuredly the most popular one at the latter place, and hence the inference that it should be the same at Tilton-street, did appear unwise.

My business being almost altogether, at present, a country one, it happens that neither my assistants nor myself have many chances for visiting the Museum. Perhaps we are more fortunate than some of our London brethren, however, as we get greater facilities for being in and about the dear old cathedrals themselves, and this privilege we prize not a little.

If, however, I may infer economy has anything to do with the early Saturday closing, I shall really be very glad to subscribe one or two guineas per annum, if a few other readers will do the same, and thus a modest sum might readily be realised to pay the extra gas-bill.

Then, the wealth of architectural detail the Museum contains will be accessible to all classes, and I think may not prove the least attractive feature in the metropolitan programme presents to her children for their Saturday evening digestion.

HARRY HEMS.

BUILDER CHARGING FOR PLANS OF HOUSES.

THE case of Cuppy v. Hudson, heard at the Shoreditch County Court, is one of some interest to builders. The plaintiff, a builder, claimed 9l. for drawing plans and elevations for two houses, that were built on freehold land belonging to the defendant, near to Denmark-terrace, Victoria Park.

The plaintiff's evidence in chief and cross-examination showed, that he had done building work for Mr. Hudson for some years, and had received payment for three houses. It was not usual in the building trade to charge for plans of houses, when the builder who drew the plans had to execute the work, and he had not charged for the plans of the three houses he had built for Mr. Hudson previously. In the present case, however, another builder was employed, and he considered himself justified in charging for the plans he had prepared according to order.

The first plan in the present case he drew was not exactly what the defendant required, but that had been modified, and new plans made, according to which the houses were built by another builder. The houses were in a row with other houses, but not upon the same plan.

Counsel for the defendant, in his address to the jury, stated he should prove that the plaintiff was merely asked to prepare a rough sketch, not an architect's drawing and elevation of the houses to be erected, and it was monstrous for a builder to assume the status of an architect by merely drawing a rough sketch for new buildings. He called the defendant, who flatly denied giving orders to the plaintiff to prepare plans, but had merely, as his former builder, asked Mr. Cuppy for a rough sketch, and when the plans were brought to him, he at once said they were of no use to him whatever. The plaintiff then asked witness to take the plans home, and show them to his wife, upon which witness replied, that his wife never troubled herself about plans or eleva-

tions, and that the plans were not at all what he wanted. The plaintiff thrust the plans under witness's arm, and said, "Take them home; I shall not charge you for them." That was while the houses were being built, and he considered the plaintiff had no claim upon him. The houses were built, but not on the plans of the plaintiff. It was only when the plaintiff saw the houses being built, and another builder employed, that he turned round and demanded 9l. for worthless plans.

Witnesses were called in support of defendant's case, and also to prove the usage of the trade.

The jury gave a verdict for the defendant, and the judge allowed full costs.

INFRINGEMENT OF "THE BRISTOL IMPROVEMENT ACT, 1847."

IN October, 1874, at the Quarter Sessions an appeal case was heard before the Recorder,—brought by Mr. John Harper, millwright, of Belminster Parade, Bristol, against the decision of the magistrates,—who had convicted him in a penalty of 40s., and costs, for omitting to fix stone jambs and an iron door to an opening in a party wall.

Mr. Murch, instructed by Mr. H. J. Brown, appeared for Mr. Harper; and Mr. Norris, instructed by Mr. J. G. Heaven (clerk to the Improvement Committee) appeared for the district surveyor (Mr. Josiah Thomas). The facts of the case, as stated in court, were these:—Harper drew a door-opening in a certain interior divisional wall, opening from a room on the ground-floor into a hallway way. The divisional wall divided the tenement into separate premises, there being separate doors and separate staircases; the said wall was also carried up through the roof and properly coped. The district surveyor requested that the said opening be provided with an iron door and door-frame, and stone-jambs, head, &c., the wall being a party wall.

On the opposite side it was contended that the wall was only a divisional wall, that the house was rated as one only, and numbered as one; and the builder was brought to prove that it was built for one, and therefore the wall in question could not be a party wall. On the first hearing of the case, the magistrates having viewed the site, Harper was convicted in the penalty of 40s., and costs. At the Sessions the Recorder confirmed the decision of the magistrates. The appellant to pay all costs.

STAINED GLASS.

Buddock Church.—A large window has been added to this church, which is a three-light ornamental window with figures introduced. In the centre light is depicted our Saviour, and in each of the side lights are represented two acts of mercy. This window was furnished by Messrs. Cox & Sons.

St. Giles's Cathedral, Edinburgh.—The restoration of the choir of St. Giles's, completed about twelve months ago, is being followed up by the substitution of painted glass for the present plain windows. A committee specially appointed arranged a plan by which the choir windows, nine in number, should be devoted to New Testament subjects, and the co-operation of the public was invited in the way of contributing a series of memorial windows. Already four have been taken up on this footing, and the first of these has just been completed by Messrs. James Ballantine & Son. This is the first window on the north side of the choir, appropriated on the committee's plan to the nativity and early life of our Lord. The execution of it was undertaken by Mr. Duncan Monteith, as a memorial of his late brother.

In carrying out the prescribed design, Mr. Ballantine, jun., by whom we believe the drawings were made, has had the benefit of the advice and superintendence of Mr. E. Herdman, R.S.A. Due effect has been given to what is understood to have been the desire of the Ecclesiastical Commissioners that such a tone of colour should be adopted as would admit of the greatest possible amount of light passing through the window. A considerable proportion of the design is accordingly worked out in white and silvery grey, while strong colours are sparingly introduced. The style adopted is that of the period to which the architecture of the church belongs. In the three upper lights is placed the subject of the Nativity, the Holy Family filling the centre light, while that on the spectator's left is occupied with the adoration of the Magi. In the tracery above, the star of Bethlehem appears in the central compartment, the choir of angels being represented in the quatrefoils on either side. The three lower lights of the window are each devoted to a separate subject. On the left is the Presentation in the Temple, in the centre the Flight into Egypt, and on the right the Disputation with the Doctors. At the foot appears, in unobtrusive characters, the dedicatory inscription. The second window in the series, being that devoted to the Baptism, Calling of the First Apostles, First Miracle at Cana, and Healing the Sick, has been undertaken by the family of the late Mr. James Richardson, as a memorial of him. The third, which is immediately over the Napier tomb, has been for the present reserved. The fourth is to be put in by Messrs.

D. & T. Stevenson, in memory of their father, the constructor of the Bell Rock Lighthouse; and the next in order being that at the north east corner looking down High-street, has been taken in hand by ex-Provost Law. The designs for all these have received the approval of the committee, and are now in course of execution.

St. Giles's, Reading.—A number of the friends of the Rev. C. H. Travers assembled in St. Giles's Hall, Reading, for the purpose of presenting to him, on his resignation of the vicarage of St. Giles, a memorial window, which had been erected in that church. The window has been executed by Messrs. Clayton & Bell, of Regent-street. The design is of the Decorated period of architecture, and in the fan-lights are figures of SS. John, Peter, Paul, and Timothy. In compartments beneath are representations of the Administration of Baptism, Holy Communion, Solemnisation of Matrimony, and the Burial of the Dead.

Petworth Church.—A stained-glass window has just been placed in the chancel of this church, to the memory of the late Mr. W. Morris. The subjects are, "Peter and John at the Beautiful Gate of the Temple," and "Peter raising Dorcas to Life." Above and below the subjects is thirteenth-century canopy work, the details of which are from old examples. In the tracery-piece above there is introduced a group of angels holding a scroll, on which is written, "Come unto me and I will give you rest." The work has been carried out by Messrs. Heaton, Butler, & Bayne, of London.

SCHOOL BUILDING NEWS.

Lurgan.—The Watts Intermediate School has been erected on a commanding site adjacent to this town. The buildings comprise schools, containing accommodation for sixty day-scholars and twenty boarders, together with residence for the head master. In addition to this, and in compliance with the terms of Mr. Watts's trust, there are also a residence and the necessary offices for a teacher of agriculture. The buildings have been erected with red brick, with Dumfriess sandstone dressing, and the style adopted is a treatment of Gothic used in some of the old grammar-schools in England. The schoolroom has a porch with groined ceiling, supported by moulded stone ribs, springing from carved bosses, and above this rises a tower, having a spire containing a belfry, and terminated by a wrought-iron finial. The windows are divided into triple lights by stone mullions, enclosed by a relieving arch. Over the pointed doorway of the school porch there is a stone canopy enclosing a shield, on which it is intended to engrave the title of the school and the arms of its munificent founder. The large dormitory above the schoolroom is lighted by dormer windows, with double cusped lights on both sides. The principal gable of the master's residence is terminated by a carved owl. The interior joiner work is of selected pine, varnished. Altogether, the sum expended on the edifice is about 3,000l. Messrs. Young & Mackenzie, Belfast, were the architects, and Messrs. Collier & Brothers, Portadown, were the contractors.

Gnosall.—The opening of new schools in the parochy of Knightley was made an occasion of great interest by the inhabitants generally. The little structure is from a design by Mr. Barratt, of Ecclehall, architect, and contains porch, classroom, and schoolroom; the latter is 28 ft. by 18 ft., and the classroom 15 ft. by 15 ft. The porch is inlaid with encaustic tiles, and the rooms are heated with open fireplaces. The building is of a Gothic character, built with white bricks and blue bands. Both exterior and interior are neatly finished, and the builder was Mr. Samuel Addison, of Gnosall. In the evening upwards of 200 sat down to tea, and Major Hargreaves briefly addressed the assembly, congratulating them on the completion of the work which had been achieved by their liberality. **Mr. Morley.**—The foundation-stone of a new school, in extension of the existing accommodation at St. Peter's Church School, has been laid at Mr. Morley, by the Earl of Dartmouth. The present church school in Morley, calculated to accommodate 220 children, is attended at present by 300, with an average attendance of 220. More accommodation is urgently required in the district, notice to provide which has been given by the Education Department, and the new building will meet the requirements of the Department, and will for the present prevent the necessity for the formation of a school board. The

new building will be a plain structure, in the late Gothic style. It will consist of school-room and two class-rooms, and will give accommodation for 230 children. The site of the building, which is situated in Victoria-road, has been presented by the Earl of Dartmouth. The cost of the erection is estimated at over 1,000l.

Wittersham.—New national schools have been opened here, and the occasion was made a general holiday in the village. The site of the schools is a healthy one, near the church, and was given by the Rev. E. H. Sladen, lord of the manor of Wittersham. The foundation-stone of the schools was laid on the 20th of May last, by Mrs. Hadden Parke. The style of architecture is mixed Gothic. Accommodation for 173 children is provided by a room 51 ft. 6 in. by 20 ft. 4 in. to be used as a mixed school; a room for infants 20 ft. 6 in. by 20 ft. 6 in.; and a class-room 20 ft. 6 in. by 18 ft. 6 in. A master's residence adjoining is in course of erection. The contract price was 1,247l. for the schools, with 105l. for cartage, which latter item was saved by the work (250l.) for the master's house. Mr. A. A. G. Colpoys, of St. Leonards, was the architect, and Mr. James Holt, of Stone, Oxney, the builder.

CHURCH-BUILDING NEWS.

Cambridge.—St. Luke's Church, at Chesterton, a suburb of Cambridge, has been consecrated by the Bishop of Ely. The building has been raised at a cost of 4,500l. The reredos is a gift of the Rev. C. E. Graves.

Radcliffe, Lancashire.—Building operations were commenced in connexion with the erection of the new church of St. Paul, at Black-lane, Radcliffe, on Thursday, the 5th inst., a certain amount of ceremony having been observed on the occasion of cutting the first sod. The church is to be a substantial stone structure in the Early Geometric style, and will accommodate 500 persons. Its arrangement consists of nave, with apsidal chancel, transepts, passage aisles, vestries, baptistery, tower and spire at the north-west angle, and south porch. Mr. G. Napier, of Manchester, has undertaken its erection and completion at a cost of about 5,000l., in accordance with a design prepared by Mr. John Lowe, of Manchester, and selected in open competition. Mr. Lawrence Hall has generously contributed 3,000l. towards the cost of its erection.

Ash Priors.—The parish church of Ash Priors has been opened for divine service, after a restoration in which the professional assistance of Mr. J. Houghton Spencer, of Taunton, architect, was engaged, and the whole of the works have been carried out from designs, and under the personal supervision of that gentleman. The chancel, which was previously very shallow, has been lengthened, and a vestry built on its south side. The old north doorway, which for many years has been blocked up, has been re-opened, and a porch added; this will for the future form the principal entrance. The gallery, which hitherto completely obstructed the tower arch and western window, has been taken down, and the ancient high pews have been removed. The roofs are new throughout being open-timbered and moulded; the walls have also in many places been rebuilt, and strengthened by buttresses on the outside. Many of the windows are new, and so is the western doorway of the tower; Hamdon-hill stone being used for the dressed stone-work, and local red sandstone for the other portions. The staircase to the rood-loft has been retained and covered with a stone roof. In removing the plaster from the pier to the north end of the chancel arch a squint was discovered. The seats are of pitch-pine with carved oak ends, accommodation being now provided for about 200 persons. The new reredos, which is formed of Corsham and Ham stone, white liais, and marble, consists of three canopied compartments with stone diaper on each side and below; in the central compartment there is a black marble cross; the Alpha and Omega are carved in stone in the side compartments. The pulpit is octagonal, and built of similar stone and marbles as the reredos; it is supported by a clustered column of Devonshire marble. The chancel is paved with Minton's tiles, and the single-light window on the north side of the chancel has been filled with glass painted by Messrs. Clayton & Bell, of London. The moulding of the seats has been copied from a fragment of one of the old bench-ends, and some of the carving was suggested by a panel supposed to belong to the original rood-screen. The mouldings upon the ribs of the roof, and the crosses at their inter-

sections, were copied from fragments of the old work. The tower has been repaired and painted, and the fourth bell, bearing date 1720, being cracked, has been recast; there are six bells the oldest having the date 1711 upon it. The tenor bell is 3 ft. 2½ in. in diameter, and is inscribed as follows:—

"Tuto the Church I ring and call,
And to the grave do summon all."

A chiming apparatus, invented by the Rev. H. T. Ellacombe, rector of Clyst St. George, Devonshire, has been fixed in the loft just under the bells, by means of which the six bells can be easily chimed by one man while it does not interfere with the ordinary way of ringing, when occasion requires. The contractor was Mr. John Spiller, of Taunton. The stone-carving was done by Mr. Frost, and the wood-carving by Mr. Spiller, jun.

Oswestry.—The parish church of Oswestry has been restored and reopened for divine service. Mr. G. E. Street, R.A., into whose hands the work of restoration was entrusted, determined to preserve, as far as possible, the whole of the exterior, restoring the decayed tracery of the windows, but keeping as nearly as possible to the character of the whole work, even where it might be charged with being slightly debased in style. He confined his proposals for considerable alterations to the interior, and directed his efforts mainly to making the church more convenient for the purposes of public worship. To do this it was necessary to take down nearly the whole of the columns and arches, and to rearrange their lines. By widening the nave and spacing the piers the church, as now rearranged, is a convenient building. Looking at the exterior as restored, and recalling its appearance previously, the new features are, on the north side, a partially renewed transept gable with a pointed window filled with tracery in place of the old circular-headed window. The aisle windows are simply renewed in the old style. The west front shows a new doorway into the nave surmounted by a new west window. Here, again, the form of the window at the end of the north aisle is preserved. It is simply enlarged and renewed in the old style. But the most noticeable improvement in this front is the altered proportion of the nave and aisles, caused by the widening and raising of the former, and the general alteration of the pitch of the roof. Coming to the south side we find two new gable windows filled with tracery. The east front is the one most strictly preserved, and, with the exception of repairs and finishing of gables surmounted by stone finials, it has only one new window replacing the street-door originally existing. This window is designed to correspond with the other windows on the front. On the south side of this front the new vestry has been built. The works have been executed by Mr. Yates, builder, Shifnal. Mr. Yates has had the misfortune to have his workshops burnt to the ground, and with them were burnt almost the whole of the oak seating for Oswestry Church. Mr. Chapelow has acted as Mr. Street's clerk of the works during the progress of the restoration. The pulpit is executed in Caen stone, with traceried panels of carved work, and is the gift of Mrs. Howell, of Tenby. The font, which is a children's gift, has been executed by Mr. Earp, of London. It has sculptures on its sides of the four Evangelists. The lectern, which is of oak, was carved by Messrs. Rattee & Kett, Cambridge, and was the gift of Mrs. Gwynne Evans. A small stained-glass window over the south porch is given by Mr. F. G. Buller Swete. There are two compartments, in one of which the Sower is represented, and in the other the Reaper. This window was the work of Messrs. Ballantine & Son, of Edinburgh. Mr. Edward Williams gives a stained-glass window at the chancel end of the church, by Clayton & Bell. In the side compartments are the Old and New Testament Saints praising the Lord, who is represented in the middle. The lighting of the church has been done by Messrs. Potter & Sons, London; the warming by Messrs. Haden & Son, of Trowbridge; the glazing of the windows by Mr. J. Davies, of Shrewsbury. The decorations at the east end of the chancel, which are not yet completed, are being done at the expense of the vicar.

Rotherham.—The Archbishop of York has consecrated the new church of St. Stephen's, Eastwood, Rotherham, in the presence of a large congregation. The church is in the Decorated style of architecture, and consists of nave, aisles, chancel, organ-chamber and vestry, the total

Miscellaneous.

Lead Poisoning.—Public attention is, we are glad to see, being once more directed to the danger resulting from the use of leaden pipes for water conveyance. That lead poisoning is common when ordinary precautions are neglected is not to be doubted, and only a persistent exposure of the evil of using lead cisterns and, under certain conditions, leaden service-pipes will ever remove the evils. If leaden pipes were only in the conveyance of water from springs to proper cisterns, and the water were to flow in them continuously without plugs or stopcocks, the danger would be trifling. But when water is brought in leaden pipes from a distance of 40 ft. and upwards, and allowed to remain in a leaden cistern until required for culinary purposes, cases of colic, constipation, and insidious lead poisoning, are but too apt to follow after a lapse of time. If the water be slightly drawn from a long distance in lead pipes with very little fall, insidious evils will be engendered. It is also upon record that, when water at a high temperature is transmitted through leaden pipes, the corrosion of the pipes will be enhanced. Moreover, if the water conveyed in the lead pipes be charged with salts of iron, as is frequently the case, soluble salts of lead will be produced, and persons making use of the water for drinking will certainly suffer from lead diseases. The same galvanic action sometimes ensues when iron rust from the mains gets into a service-pipe of lead. Even when leaden pipes are led over the house from the boilers of kitchen fires, the rust in the latter will produce this corrosion, and consequently affect the water for evil. Another frequent cause of lead poisoning results from allowing the suction-pipes of wells containing drinking-water to be made of lead. These pipes dip frequently to within a foot of the bottom of the well, and when taken up, seldom, unfortunately, except from old age, will they be found to be coated outside and inside with carbonate of lead, and to be very much corroded. Lead colic has been traced to the use of a bucket fashioned out of an empty white-lead keg. If pipes of lead are used for the dispersion of the water to various parts of the household, as is commonly the case, at such places where the pipes are sharply bent, corrosion will especially manifest itself. The same excessive amount of deposit will also be discoverable where solder joints and metal stopcocks are in contact with the lead. When mortar or plaster falls into a lead-lined cistern, or is carried into a leaden pipe, corrosion also rapidly follows.—*British Medical Journal.*

Fatal Accident at Kettle College Chapel, Oxford.—A shocking accident occurred at the works in connexion with the new chapel which is being erected at Kettle College, by which Mr. Breathitt, the clerk of the works, was instantly killed. A steam-winch has been in use from the commencement of the building to hoist the materials to the highest scaffold, and the workmen have been in the habit of ascending by the same means. Mr. Breathitt, seated in a wheelbarrow, had been raised to the top-most scaffold in the interior of the building, when, instead of waiting until the barrow could be steadied by one of the men, he attempted to get out unassisted. The barrow immediately swung away from the scaffold, and the unfortunate man fell headlong to the ground, a distance of 70 ft., his head and shoulders striking on the edge of a large stone. He was picked up frightfully mutilated and quite dead.

Hydrants in the Metropolis.—The official Water Examiner says in his last report,—"The number of miles of streets which contain mains constantly charged and upon which hydrants should at once be fixed, in each district of the Metropolis, are as follow:—Kent, 80 miles; New River, 168; East London, 70; Southwark and Vauxhall, 100; West Middlesex, 66; Grand Junction, 41; Lambeth, 90; Chelsea, 50; making a total length of 665½ miles, and the water companies are ready to affix hydrants thereon when required by the authorities. The total number of hydrants erected is at present only 2,523, of which about 2,000 are for private use, and 267 for street watering."

Collapse of a Railway Tunnel.—The Marple Tunnel, on the Manchester, Sheffield, and Lincolnshire and Midland Railways, collapsed, on Saturday last, for about 15 yards. One man was killed and three injured.

The New Observatory, Oxford.—The new University Observatory in the parks, at the back of the museum, which is being erected from the designs of Mr. Charles Barry is making progress. It is in the Italian style of architecture, and the bricks used are the best white Suffolk make. The local papers say the principal part of the building extends from east to west, and is flanked by two square towers 21 ft. in height. The western tower (the Savilian tower) will consist of three stories, the first at an elevation of about 3 ft. above the adjacent turf, a room for the calculators, and a dome for receiving the great equatorial of 12.25 in. of aperture, now constructing by Grubb, of Dublin. The eastern tower (the De la Rue tower) will have only two stories; in the lower will be placed the machine employed by Mr. De la Rue for making and polishing his mirrors, as well as the apparatus of Foucault for the verification of their optical qualities. On the first story, on the same floor, with a work-room for the Professor, a room will be prepared for photographic operations. Lastly, the tower will be surmounted by a revolving dome, for the protection of the reflecting telescope with which Mr. De la Rue has made all his observations. The building to which these two towers are united is to contain a meridian telescope of 4 in. of aperture (Om. 10), with 5 ft. of focal distance; an altazimut, by Troughton & Simms, divided in circles of 18 in. (Om. 45) in diameter, and which, being fixed in the meridian, may serve as an instrument of a height for the instruction of students; and also a reflecting telescope of 13 in. (Om. 32) in diameter. The apparatus, constructed with one of Mr. De la Rue's mirrors, and mounted as an altazimut, will be placed opposite a window large enough to allow observations of the stars an hour before or after their passage at the meridian.

The Sanitary State of Villages.—A paper was read at a recent meeting of the Farmers' Club, at the Salisbury Hotel, London, by Mr. James Howard, of Bedford, on "The Sanitary Reform of Villages." Concerning the scarcity and impurity of the water-supply in the majority of our villages, Mr. Howard said that the fault lay in the neglect and wastefulness of the community. The abundant natural supply could readily be economised in wells or tanks according as the nature of the district would permit. On the subject of labourers' dwellings, he observed the provision of adequate accommodation for the agricultural population was a question of great interest. He had recently built a block of six cottages entirely of concrete, which rendered them warm and dry. There were three bedrooms in each, and the cost of the whole was about 600l. Passing on to the consideration of the sanitary laws, Mr. Howard noted defects, chiefly in the provisions affecting water-supply, sewerage, over-crowding, and infectious diseases, and suggested the granting of greater powers to local authorities to enable them to arrest evils more promptly. Concluding with a reference to the labour question, Mr. Howard, without being an alarmist, thought sanitary reform, improved dwellings, and better treatment at home, were the surest means of disenchanting the English farm-labourer of the allurement of emigration agents. A discussion took place on various reforms suggested in the paper.

New Sanatorium for the Insane.—About eighteen months since a new sanatorium for the insane was commenced at St. Ann's Heath, Virginia Water. It is now being roofed in, and it is expected that it will be completed in another year. The materials used are Portland stone for the dressings, and Suffolk and Reading bricks for the plain wall surfaces externally. The building is approached from the two main roads surrounding the site through lodges and entrance-gates of wrought iron. The principal lodge is for a visitors' entrance, and the main drive up to the building is through grounds laid out and planted. The terrace will be about 1,000 ft. in length. This building being intended for a sanatorium for the insane of different classes in which no patient will be allowed to remain for a longer period than one year, is planned differently from any existing edifice used as an asylum for the insane.

Pure Architects.—Sir: The drawings for the new schools for the village of Arlesley, which is about two miles from Hitchen, are prepared by Mr. Sherlock, of Hitchin, auctioneer, &c., architect, &c., and agent for Moule's earth-closets. They were selected in an open competition of fifty.—O.

Belfast Architectural Association.—A meeting of this Association was held last week, at the Museum, Mr. Robert Young occupied the chair, and Mr. F. W. Lockwood read a paper on "Architectural Style." The lecturer, after addressing the younger members, applied to the practising architects to give their encouragement and assistance at the meetings of the Association. He then traced the history of the chief styles of architecture, showing that these always grew out of the special arrangements and were adapted to the necessities of each particular time, and that we must follow the same principles now. Our architecture must be suited to the new requirements of the age, and be based on all the scientific knowledge of modern times; we must beware of merely copying the forms of the past age, but must learn the great principles which are to be found in the good art of all periods. By honestly making use of every modern invention, and designing shops, warehouses, factories, and public buildings, with special reference to the purposes they were intended to serve, and which purposes have never been known before, we should thus succeed in working out a new style of architecture quite distinct from any of the preceding ones. If they were all earnest and intelligent in their studies the architecture of England might yet once again become the glory of Europe.

Progress of Barrow-in-Furness.—The Mayor of Barrow (Mr. J. T. Smith), at the recent annual meeting of the Town Council of the borough, submitted some interesting statistics illustrating the progress of the town. In 1871 the population of the borough was 18,200. The Corporation had just had the census taken, and had verified this census return to a considerable extent by again going over the more crowded parts of the town, and from that the population was within a trifle of 41,000 people, having more than doubled within three years, the figures showing an increase of 127 per cent. The number of deaths during the year had been 940, which on a population of 41,000 represented a death-rate of 22.92 per thousand. In 1871 there were 2,719 inhabited houses, and now there were 5,600, making an increase of 2,881, or 105.95 per cent., and beyond this there were now 920 houses in course of erection in the borough. The rateable value of the town in 1871 was 63,894l. 15s.; and now it was 123,117l. 10s., making an increase of 59,222l. 15s., or 92.68 per cent.

Oxford Architectural and Historical Society.—The Saturday walks and excursions will be resumed. On Saturday, November 21, Culham and Abingdon are to be examined. At St. Helen's Church, Abingdon, the restoration of which is now complete, the carved oak roof-screen is probably the finest in the diocese. Before leaving Abingdon, it is proposed to visit the new Wesleyan Chapel, now in course of erection from designs by Mr. W. H. Woodman, in the Gothic style. It is well spoken of. At Culham Church, the Vicar will meet the party. Saturday, November 28th, will be devoted to St. Mary Magdalen Church, St. Michael's Tower, and Medieval Cellars in Oxford. In consequence of the thorough restoration of the interior of the church of St. Mary Magdalen, and the structure of the walls being clearly visible, it has been thought well to take the opportunity of visiting it. Mr. W. W. Wilkinson is the architect, and will explain the points of interest. It is proposed next to visit St. Michael's Tower, which is of the eleventh century, and where also the work of restoration is in progress, under the direction of Mr. Bruton, architect, who will meet the party.

An Escape.—The perils that beset building workmen are as great as the dangers of the sea, for whilst the seamen have time for prayer, the landmen are launched into eternity without warning. Last week, a number of bricklayers were piling bricks at the engine-works in Chester-le-street, when the staging covering a deep well gave way, and one man, Thomas Murray, was precipitated to the bottom, a great depth, and about a ton weight of bricks fell with him. Three other men contrived to escape by clatching a pipe. Nearly an hour elapsed before the man at the bottom could be reached, and to the surprise of all he was found alive and rescued, although seriously hurt. The marvellous escape of all concerned had such an effect that the whole of the men on the works knelt down in silent prayer, and did not resume work until next day.

"Papers" at the Institute.—The following papers have been promised, and will be read, subject to such arrangements in regard to date as circumstances may require:—"The Hope of English Architecture," by W. H. White, Fellow, December 14th; "On the Restoration of the Lodge at Sheffield Manor," by C. Haddfield, Fellow; "On Public Abattoirs," with special reference to one lately erected in Manchester, by A. Darbyshire, Fellow, February 1st; "On the Temple of Diana at Ephesus," by J. T. Wood; "On Iron, as a Constructive Material, by C. H. Driver, Fellow; "Notes on Ancient and Modern Work in Egypt," made during a recent Tour, by Professor T. H. Lewis; "On the Decoration of Roman and Byzantine Basilicas," by R. P. Pullan, Fellow.

London Anthropological Society: Iceland.—At the last meeting of this Society, on the 13th instant, Dr. Charnock, F.S.A., President, in the chair, Professor Leitner, Principal of the Government College, Lahore, exhibited some interesting curiosities from Iceland, Greenland, and the Faroe Islands. One result of his tour was, the reading of the inscription of the brass font at Struna Church, which had been given up by Danish and Icelandic antiquaries, but which was simply "*Ritthe vis tye bi*," or, "Success be with thee,"—a salutation addressed by the angel Gabriel to the Virgin Mary. It probably came from Lübeck in the fifteenth or sixteenth century. Similar inscriptions existed elsewhere, of which Professor Leitner took rubbings.

Industrial Dwellings.—On the 13th inst., the row of houses facing the workhouse in the Farringdon-road, which have been erected under the name of the Farringdon-road-buildings by the Metropolitan Association for the Improvement of the Dwellings of the Industrial Classes, were visited by the Right Hon. R. A. Cross, Secretary of State for the Home Department. Among the other gentlemen who were present were Lord Claude Hamilton, M.P., and Mr. Julian Goldsmid, M.P., directors of the association; Mr. Chancellor, architect; Mr. Janson; Mr. C. Gulliff, secretary, &c. The buildings are constructed in five blocks, of great height, each containing seven stories, including the sub-basement. We will give some precise particulars hereafter.

The Society of Arts.—The following arrangements for the Wednesday evenings before Christmas have been made:—Nov. 18, Opening Address, by Major-General F. Eardley-Wilmot, R.A., Chairman of the Council. Nov. 25, "On School Buildings and School Fittings," by Mr. T. Roger Smith. Dec. 2, "On the Expediency of Protection for Inventions," by Mr. F. J. Bramwell, F.R.S. Dec. 9, "On the Protection of Buildings from Lightning," by Dr. R. J. Mann. Dec. 16, "On the Sandblast and its Application to Industrial Purposes," by Mr. W. E. Newton.

Tenders for Road-making.—The Metropolitan Board of Works have received tenders for the formation of carriage and foot ways, with other works in connexion therewith, in Wilderness-row, between St. John-street and Goswell-road, Clerkenwell. There were nine tenders, as under:—T. Turner, 5,900*l.*; Pearson, 5,493*l.*; Nowell & Robson, 4,745*l.*; Stephen Carey, 5,175*l.*; W. Webster, 5,400*l.*; Knight & Son, 5,390*l.*; Coker, 6,000*l.*; Mowlem & Co., 5,300*l.*; Griffiths, 4,760*l.* 12s. The tender of Mr. Griffiths for 4,760*l.* 12s. was accepted, although not the lowest tender.

Utilising Waste Products.—Mr. W. McAdam, of Glasgow, has patented some improvements in utilising waste products of chemical works for constructing bricks or blocks for building or analogous structural purposes. The feature of novelty which constitutes this invention is the employment of chrome waste, in combination or admixture with the soda waste or potash waste, for the manufacture of bricks or blocks for the building or analogous structural purposes.

Bricks and Tiles.—Mr. J. A. Atkinson, of Great Lever, near Bolton, has patented an invention the object of which is to render the surface of bricks and tiles impervious to atmospheric influences. "In performing my invention I prepare a solution of common soil and oxide of lead or other metal, combined with colouring matter if necessary; the solution so prepared is applied to the surface of the brick or tile when dried, but before being burnt."

Dwellings of the Poor and the Metropolitan Board of Works.—At the last meeting of the Board it was resolved, "That this Board agrees with the opinion expressed by the Chairman in the House of Commons on the 8th of May—That it is urgently desirable that the dwellings of the poor should be improved, and will give its best consideration to any measure that may be introduced by the Government for the purpose of effecting that object."

The Institution of Civil Engineers.—At the first ordinary meeting of the new session, held on the 10th of November, Mr. Thos. E. Harrison, President, in the chair, the paper read was on "The Nágpur Water Works; with observations on the Rainfall, the Flow from the Ground, and Evaporation at Nágpur; and on the Fluctuation of Rainfall in India and in other places," by Mr. Alex. R. Binnie, C.E.

The Manchester Corporation propose applying to Parliament in the ensuing session for powers to extend their waterworks, to carry out a number of local improvements, and to equalise rates in the various townships into which the city is divided. It is necessary under the Borough Funds Act, passed two sessions ago, that before going to Parliament the Corporation should obtain the consent of the ratepayers in public meeting assembled.

Sydney.—Some time ago the Jewish congregation of York-street, Sydney, having decided to erect a new place of worship on a site in Macquarie-street, a premium was offered to some of the principal architects of New South Wales for competitive plans, and, after careful consideration, those of Mr. Thomas Rowe were selected as the most suitable. Tenders in accordance with the plans and specifications having been opened, the lowest in amount was found to be about 16,000*l.* The style of architecture is Romanesque.

Artificial Leather.—By the invention of Mr. C. Marston, of Burton-crescent, any cotton, linen, or cloth fabric is immersed for four days in a bath of alum and muric acid dissolved in water. It is then dried and immersed for a few minutes in a second bath composed of waste glove-leather dissolved in water. The fabric is then treated in the same manner as ordinary leather after tanning.

Taking it out of Them.—It was admitted, at a recent meeting of the Bethnal-green Board of Guardians, that there are six inmates of the workhouse, all over seventy years of age, who are employed in the engine-room regularly from four o'clock in the morning till ten o'clock at night, stoking, and that a pint of beer each, which had been allowed them because of the heavy work, had been recently discontinued.

St. Michael's, Cornhill.—This church, which is amongst the most interesting in the City of London, has been re-opened after having been closed for some time in order to undergo thorough renovation and repair. The work has been executed by Messrs. Trollope, from designs furnished by Mr. C. Reilly, the standing architect of the parish.

The Lord Provost of Edinburgh has obtained the contract for the proposed new bridge across the river, the railway station, the tunnel under the park, and other works connected with the new railway at Sunderland. The highest tender was 270,000*l.*, and the one accepted from this Scotch firm is for 219,000*l.*

The Beaufort Chapel, Windsor.—The paragraph in our last (p. 956) headed "The Beaufort Chapel, Badminton," should have stood The Beaufort Chapel and Badminton: the chapel, described as being restored, is in St. George's Chapel, Windsor.

Wood Pavement in Regent-street.—The tradesmen and others residing in Regent-street are desirous that the thoroughfare should be laid with wood pavement, and are taking steps accordingly. At the meeting of St. James's Vestry last week, a memorial, signed by a large number of the most influential inhabitants, was presented by a deputation, who addressed the vestry in favour of the proposal.

TENDERS

For the erection of two houses at Harrow for Mr. W. Winkley. Mr. J. O. Scott, architect:—
Kindell, 2,116 0 0
Braid, Jopling, & Co., 2,300 0 0
Pratt, 2,325 0 0
Smale, 2,899 0 0

For extra works at Ridgeway Oaks, Enfield. Mr. Thomas J. Hill, architect:—
L. & W. O. Patman, 2,493 0 0
Beutley (too late), 398 0 0
Freeman & Sons (accepted), 353 9 0

For two warehouses, Redcross-street. Mr. Coutts Stone, architect:—

	House.	Stables.
Hockley,	25,949 0 0	21,385 0 0
Thomas & Sons,	5,875 0 0	1,360 0 0
Mark,	5,178 0 0	1,283 0 0
Nightingale,	5,125 0 0	3,216 0 0
Crabb,	5,009 0 0	1,160 0 0
Elkington,	4,889 0 0	1,163 0 0
Shurmut,	4,842 0 0	1,242 0 0
Merritt & Ashby,	4,768 0 0	
Perry & Co.,	4,760 0 0	
Bangs & Co.,	4,689 0 0	
Scrivener & White,	4,540 0 0	

For house and stables for Mr. H. C. Forde, at Wimbledon. Mr. John Nicholls, architect. Quantities by Mr. W. H. Barber:—

	House.	Stables.
Patman & Fotheringham,	25,998 0 0	21,385 0 0
Simpson & Son,	5,895 0 0	1,360 0 0
Sykes & Son,	5,254 0 0	1,283 0 0
Nightingale,	5,230 0 0	3,216 0 0
Adamson,	5,225 0 0	1,160 0 0
Bull & Son,	5,030 0 0	1,163 0 0
Herman,	4,913 0 0	1,242 0 0

For the extension of the Promenade Pier at Blackpool, Lancashire, for the Blackpool Pier Company. Mr. E. Birch, engineer. Quantities supplied by Messrs. H. L. Curtis & Sons:—

	Head, Wrightson, & Co.,
Kirk & Parry,	13,713 0 0
Shaw & Co.,	15,600 0 0
Phillips,	13,445 0 0
Laidlaw & Co.,	13,300 0 0

For erection of two new warehouses on the site of Nos. 33 and 34, Maiden-lane, Covent-garden, for Mr. H. D. Clark. Mr. John Wimbis, architect. Quantities supplied:—

Macey,	24,117 0 0
Kilby,	4,023 0 0
Newman & Mann,	3,895 0 0
Faulkner,	3,867 0 0
Lawrence,	3,842 0 0
Scrivener & White,	3,787 0 0
W. & E. Crouker,	3,719 0 0

TO CORRESPONDENTS.

F.S. (yes; go to a solicitor)—Inquirer (patent could not be sustained; plan has been tried and has failed)—J.E.—L.—B.—F.—H.F.—H.B.—W.—J.—H.—H.—W.—L.—T.—E.—P.—Messrs H.—E.—W.H.—E.—Yank.—M.—F.—A.—J.—B.—C.—Sons.—E.C.—R.—Mrs. A.—George.—A.—K.—K.—Co.—T.—R.—C.—N.—T.—C.—Sons.—W.H.—F.—W.—F.—C.—W.—A.—H.—R.—B.—F.—J.—R.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

	Situations Wanted.	Situations Vacant.
Six lines (about fifty words) or under,	6s. 6d.	6s. 6d.
Each additional line (about ten words),	6s. 6d.	6s. 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to residents in any part of the United Kingdom at the rate of 12s. per annum, payable in advance.

By post, 14s. 6d. per annum, payable at the Post Office, King-street, Covent-garden, W.C. to DOUGLAS FOURDRINER.

TRELOAR & SONS,

Manufacturers of

COCOA-NUT MATS AND MATTING,

69, LUDGATE HILL, E.C.

CORK CARPET, FLOOR CLOTH, LINOLEUM, KAMPTULICON,

And all the new Floor Coverings.

The Builder.

VOL. XXXII.—No. 1660.

*Alley's Almshouses,
St. Luke's.*

IN the 13th of July, 1620, Edward Alley (formerly an actor, but then an Esquire) laid the first brick of his Almshouses in Bath-street, and in the following year placed three men and seven women as the first inmates of the ten newly-built houses. The present building is in the midst of a densely-populated district, and seems to be nestling for protection beneath the gloomy walls of St. Luke's Hospital; but in 1620 the houses stood almost alone, in what was a thorough country place. Then some of the choicest fruits in the kingdom were reared

by one John Milton, in his nursery, in Old-street, and in the same place there were acres of land, known as "The Rose ground." Now there is little to remind us of the existence of fruit and flowers. In 1685 the neighbourhood of the Almshouses was looked upon as far enough in the country to be chosen as the site for a Lazaretto, in which the plague-stricken could be received. The City Pest-house stood here until the year 1737, and the lane in which it was situated obtained the name of Pest-house-row. It afterwards took its present name of Bath-street, from its nearness to the public bath, called first "Perilous Pond," and then "Peerless Pool."

The Almshouses were rebuilt in 1707, and now again they have been rebuilt and enlarged so as to accommodate twenty-two persons, or twelve additional to the original foundation.

Alley was one of the most distinguished of that large body of worthies known as "founders," whose claims to our respect have been treated rather lightly by some in the present day. He did not postpone doing good with his money until he could no longer use it for his own pleasure, but he devoted his large fortune to charitable purposes in the prime of his life, while he had vigour enough to superintend the proper disposal of it. He made arrangements for assisting the poor in each of the parishes with which he had been connected. The Fortune Theatre, which produced him a fortune, was situated in St. Giles's, Cripplegate; and in this parish, which then included St. Luke's, he founded the Almshouses in Bath-street. He was born in St. Botolph's, Bishopsgate, and in his will he directed his executors to build ten almshouses in that parish. He lived for several years in Southwark, and made a considerable portion of his money out of some of the places of entertainment on the Bankside, so he left his executors the same directions for St. Saviour's parish. Soon after becoming proprietor of the manor of Dulwich he founded there his "College of God's Gift," and in making arrangements for this his greatest endowment, he did not forget the places in London in which he was interested; for the pensioners and

scholars were to be chosen exclusively out of the four parishes of Cripplegate, St. Botolph, St. Saviour, Southwark, and Camberwell, in which Dulwich was situated. Edward Alley was born on September 1, 1566, his father being an inn-keeper, probably of some little property. Little is known of his early life, but in 1592, when he married Joan Woodward, the daughter of Philip Henslow's wife by a former husband, he had established a high reputation as a player. Thomas Nash twice mentions him in his "Pierce Penniless" as a first-rate actor. He writes,— "Not Roscius nor Æsopæ, those tragedians admyred before Christ was borne, could ever performe more in action than famous Ned Allen." Ben Jonson addressed an epigram to "Edward Allen," and likens him to the same ancients that Nash had:—

"If Rome so great, and in her wisest age,
Fear'd not to boast the glories of her stage,
As skilful Ruscus and grave Æsopæ, men
Yet crown'd with honours as with riches then,
Who had no lease a trumpet of their name
Then Cicero, whose every breath was fame;
How can so great exaltation dye to mee,
That, Allen, I should pause to publish thee?
Who both their graces in thyself hast more
Outstript, then they did all that went before;
And present worth in all dost so connect
As others speake, but only thin a dost act.
Weare this renowne: 'tis just that who did give
So many poets life, by one should live."

Fuller says that he acted so to the life, "that he made any part, especially a majestic one, to become him." Dekker, after mentioning the actor's excellent manner and deportment, refers to his "well-tuned audible voice." He probably gained his fame from acting most of the principal characters on the stage, but he appears to have been particularly renowned for Barabas, in Marlowe's "Jew of Malta," and for the same poet's "Tamberlaine." Thomas Heywood refers to both author and actor in the following lines from his Prologue at the Cockpit:—

"We know not how our play may pass this stage,
But by the best of poets in that age;
The Malta Jew had being, and was made;
And he then by the best of actors play'd.
In Hero and Leander one did gam
A lasting memory: in 'Tamberlaine'
This Jew, with others many, the other wan
The attributes of peerless; being a man
Whom we may rank with (doing no one wrong)
Protes for shapes, and Roscius for a tongue,
So he could speake, so vary."

The profession of an actor in the reigns of Elizabeth and James I. was a highly lucrative one, and Alley's acknowledged merits were probably well rewarded, but he was not the man to depend upon this source of profit alone. He speculated largely in inns and other house property, and in partnership with Philip Henslow, whom he called his father, he was proprietor of several theatres. The Fortune Playhouse, in Golden-lane, was one of these, and Paris Garden, on the Bankside, was another. Alley derived a large part of his property from the former, which was a circular building of brick and tile, well frequented. Thomas Goffe, in his "Careless Shepherdess" (1656), writes:—

"I'll go to the Bull or Fortune, and there see
A play for two-pence, and a jig to boot."

The original theatre was built by Henslow and Alley, and Peter Street, the carpenter, was engaged by them to erect a square building of lath, plaster, and timber, which was totally destroyed by fire on the night of December 9th, 1621. Heywood mentions the sign of the house:—

"The picture of Dame Fortune
Before the Fortune playhouse."

This theatre formed a part of the endowment of Dulwich College, and the funds of that institution suffered considerably in consequence during the Civil Wars. In 1649 the inside was destroyed by a company of soldiers, and in 1661 the whole place was advertised as to be sold. Alley was Master of the Royal Bear Garden, Bankside, in 1604, when he was engaged to take three of his finest dogs to the Tower to fight the lustiest lion there. Stow has given in his "Chronicle" a vivid account of this disgusting exhibition, which

took place in the presence of King James, his wife, and Henry Prince of Wales. In the end the lion died from the dogs, two of which, however, died of their wounds, "but the last dog was well recovered of all his hurts, and the young Prince commanded his servant, E. Allen, to bring the dog to him to St. James's, where the Prince charged the said Allen to keep him and make much of him, saying he that had fought with the king of beasts should never fight with any inferior creature."

In Elizabeth's reign Henslow had been required to assist "the Master of her Majesty's Games of Bulls, Bears, and Dogs," by lending his dogs and bears from the Paris Garden, so that he hoped to have been appointed to this Patent Office, on the first vacancy; but soon after James's accession Sir John Dorington died, and Sir William Stuart was appointed in his room. Henslow and Alley purchased the office of Stuart for 450*l.*, which they complained was a ruinous price, but it was not extravagant if they cleared 500*l.* per annum, as was said. In Henry VIII.'s and Elizabeth's reigns, the favourite day of exhibition was Sunday, which, according to Henslow, "was the cheffest meanes and benefyte to the place"; and when the entertainments were no longer allowed on that day, the proprietors complained of the loss which they suffered. Bear and ball baiting were favourite sports of the English people for many years, and several of the bears obtained great fame; old "Sackerson" was honoured by the notice of Shakespeare, and Sir John Darys, in one of his epigrams, complains that the young gallant forsakes his books

"To see old Harry Hunks and Sacarson."

There is much similarity in the circumstances of Shakespeare and Alley, for both became rich through their steady attention to the business of their profession; both left that profession as soon as they were able to leave it with a competency; and both retired to fill the honourable positions of country gentlemen. The question as to the estimation in which the respectable actor was formerly held is a difficult one. There is no doubt that considerable contempt was manifested for the profession, and such men as Shakespeare and Alley seem to have been eager to leave it. Many of the actors richly deserved the contempt that was heaped upon them, on account of the ill lives they spent. The popular feeling is seen in the writings of Aubrey and Fuller. Aubrey relates the absurd story that Alley was worked upon to devote his wealth to benevolent objects by having seen an apparition of the devil while playing a demon in one of Shakespeare's plays. Fuller says, "In his old age, he made friends of his unrighteous mammon, strutting therewith a fair college at Dulwich, for the relief of poor people. Some, I confess, count it built on a founded foundation, seeing, in a spiritual sense, none is good and lawful money, save what is honestly and industriously gotten; but perchance such who condemn Master Alley herein have as bad shillings in the bottom of their own bags, if search were made therein. Thus, he who outacted others, outdid himself before his death." At all events, we may be sure that when Shakespeare retired to Stratford, and Alley to Dulwich, they at once took that position to which they were entitled by their merits and by their wealth. We have evidence that Alley lived on intimate terms with several distinguished men. He was often invited to the houses of the great, and dined with the Lord Treasurer, the Archbishop of Canterbury, the Bishops of London and Winchester, the Speaker of the House of Commons, the Master of the Rolls, Count Gondomar, the Dean of St. Paul's, &c. He was particularly friendly with Archbishop Abbot, and conferred with him on his projects, and the Earl of Arundel, who had a high respect for his character, signed himself in writing, "Your loving

friend." Sir William Alexander, afterwards Earl of Stirling, who was high in James's favour, addressed some verses "to his deservedly honored friend, Mr. Edward Alleyn," in which occur the following lines:—

"But thee to praise I dare be bould indeede,
By fortune's violence whilst at first suppress'd,
Who at the height of that which thou profess'd,
Both ancients, moderns, all didst far exceede:
This vertue many ways may use her pow'r;
The bees draw honne out of errie flow'r:
And when thy state was to a better chang'd,
That thou enabld wast for doing goodes,
To clothe the naked, give the hungry foodes,
As one that was from avarice estrang'd:
Then what was fit thou seem'd to seeke for more,
Whilst bent to the what was design'd before."

When we consider the social distinctions of rank in the seventeenth century, we shall not be inclined to look upon such evidences of the estimation in which Alleyn was held as of little moment. His benevolent character seems to have been well known before he had made any arrangements for his college, and he received many applications in consequence. In 1610 "St. James's College, at Chelsea," was founded by Dr. Matthew Sutcliffe, Dean of Exeter, for the maintenance of polemical clergymen bound to advocate the doctrines of the Church against the Roman Catholics; but it soon languished for want of funds, and the Rev. Samuel Jeynes addressed a letter "to the worshipful and well affected to all good purposes, Mr. Allen, all health and happiness in this life and in another," requesting him to contribute towards the completion of the college. Jeynes honours Alleyn for the good he has done in his lifetime, and praises him for not having deferred his munificence till after death. Alleyn probably lent a deaf ear to the petition, for the college languished, and in the end the building was given by Charles II. to the Royal Society. Still more interesting are the applications made by Stephen Gosson. The correspondence of the author of the "School of Abuse," containing a pleasant invective against Poets, Pipers, Players, and Jesters," with the delineator of the *Jew of Malta*, belongs to the curiosities of literature. Gosson began life as an author of acted plays, and then became the bitter enemy of theatrical representations. As rector of St. Botolph, Bishopsgate, he came in contact with Alleyn, and in his letters to that "worshipfull" esquire, he subscribes himself "your verie lovinge and ancient frend."

Alleyn's first purchase of Dulwich lands was about 1606, and in October of that year he was lord of the manor. During the next five years he increased his landed property to very nearly its present extent of about 1,400 acres. The land belonging to Dulwich College extends from the summit of the high ground known in its several parts as Horne-hill, Denmark-hill, and Champion-hill, through the intervening valley in which the village of Dulwich is situated, to the crest of the opposite and higher ridge on which stands the Crystal Palace. Alleyn took up his residence at the manor-house, on the western margin of his property, in 1607, but it was not until four or five years afterwards, when being still childless after twenty years of married life, he began to make arrangements for transmitting his name to posterity as the founder of a college. The Charter-house, or Sutton's Hospital, had been founded by letters patent in 1611, and he may have taken a hint from that when deciding on the manner of his endowment. Alleyn began building in 1613, and finished in 1617, in the autumn of which year most of the members of his college were called into residence. He had to suffer from the opposition of Lord Chancellor Bacon, and to experience in consequence many tedious delays, so that his deed of foundation did not receive Royal authorisation by letters patent until 1619, in which year the college was formally established. The college, as thus incorporated, consisted of twelve poor scholars, and as many pensioners in equal numbers of poor brethren and poor sisters, with a governing and teaching staff in addition. The deed of foundation left it within the founder's discretion to frame the ordinances for the government of the college, and he kept the reins of government in his own hands to the close of his life. His code of statutes, framed subsequently to the letters patent, were not signed and sealed by him until Sept. 29, 1626, two months before his death. For nine years, therefore, Alleyn, while living at the manor-house, was the controlling superior of the whole institution. One of the regulations was that the master and warden should always be of the same surname as the founder; and so religiously was this kept up, that in 1670

Anthony Allen, a candidate for the mastership, was rejected for want of a letter in his name; this objection has since been overruled, and one of the best known of the modern governors of the college was old John Allen, the Edinburgh Reviewer, and friend of Lord Holland.

Alleyn seems to have taken a particular pride in his surname, and to have felt that any one bearing it, whether a relation or not, had a claim upon him. On one occasion he invited an Irish preacher to dine with him because he was an Allen. In his diary we find "This day (27th January, 1621-2) I took a pore fatherless child, Ed. Alleyn," and on the 22nd August, 1622, there is another entry to the effect that another "Nedd Alleyn" came to reside at the College. Thomas Dekker also wrote to Alleyn from the King's Bench Prison to introduce to his notice a deserving young man, son of a fellow prisoner, and ended his letter with the hope that Alleyn would "No waye repent the receivinge of such a servant of your own name."

The last years of this benevolent man were uneventful, and his thoughts were principally occupied with the prosperity of the College. On November 13th, 1626, when he made his final will, he was "sick in body." He then left his affairs in order and made his kinsmen, Thomas Alleyn, the master, and Matthias Alleyn, the warden, his executors. On Saturday, the 26th of the same month he died, and on the following Monday he was unostentatiously buried in Christ's Chapel attached to the College.

Alleyn looked forward into the future, and wished to transmit his name to posterity, but he was not likely to have foreseen, that centuries after his death, when every vestige of the houses where he gained his money had been swept away, his foundations would still be flourishing and his name cherished; that his manor would be covered with houses and joined to the great City; or that the Almshouses which he founded in the outskirts of the town would become the centre of densely crowded districts. Men at the mention of whose names he doffed his cap are now forgotten, but his name lives and will long live as one of England's honoured worthies.

The almshouses just now rebuilt in Bath-street, from the design of Mr. T. J. Hill, architect to the Gift Estate Commission, provide eleven dwellings on the ground floor and the like number on the upper floor, or twenty-two in all, in place of the ten as originally standing. Each contains a living-room, 12 ft. 6 in. by 10 ft. 3 in.; a bedroom, 11 ft. by 8 ft. 9 in.; and a small scullery fitted with range and sink, with water laid on. This also forms a passage to the back, and there is a dust-bin, &c., to every tenement. Each room is fitted with cupboards and shelves, and contains a fireplace.*

The tenements on the upper floor are approached by open stone staircases, one of these giving admission to two dwellings. The buildings are arranged in three blocks, a central one of fourteen tenements facing the street, and set back about 38 ft. therefrom, and two detached wings of four houses each, serving to shut out from view St. Luke's Hospital, which premises enclose the site on three sides. This leaves a forecourt, or quadrangle, in the centre, which will be enclosed next Bath-street by a dwarf wall and iron railings and gates.

The architectural style in which the buildings are erected is the Tudor-Gothic of the latter part of the sixteenth century, a little anterior to the time at which they were founded.

The materials are brick, slated roofs, yellow malm for facings; Bath stone for window dressings and moulded heads, strings, plinths, parapets, bays, &c.; and Portland stone for copings.

Messrs. Sabay & Son, of Ironmonger-row, were the builders, and the total cost was £5,500.

"HOW TO BUILD A HOUSE."

We all remember the reply of the artist to his patron, or patron's agent, who objected to paying so much for a drawing that was done in half an hour, and was met by the representation that the artist had been all his life acquiring the power that enabled him to do such things rapidly. And it is a not infrequent case that a life-long perseverance puts into a small compass, and in a brief time, the results of years of thought and study. M. Viollet-le-Duc, for

instance, as we are assured, wrote and illustrated the above-named book,* which now comes before us in an English dress, during the evenings of a two months' surveying expedition among the French Alps. This is a slight enough task compared with the elaboration of the celebrated Dictionary; yet it is probable that none of its author's works will be so extensively read as this, and possible that the more elaborate productions of his pen do not exceed this in value.

The little book is, in fact, the expression of opinions based on many years of thought and study, combined with practical labour, in the field of architecture; a combination the best adapted for forming impartial conclusions, in which neither theory nor practice is exclusively represented. Dissatisfied with the "school" theory of architecture so prominent in the French system of education, M. Viollet-le-Duc betook himself to the study of the Mediaeval architecture of France, and thereupon to the consideration how we could best set about building after the spirit of the architects of the Federal age, the very remains of whose works showed such a purpose and workmanlike concentration of aim upon the object to be attained. We have here embodied in little the lessons which the eminent and indefatigable modern worker has drawn from these sources, and their application to modern requirements, and with thoughtful and philosophical consideration of the conditions of the problem, not without, also, glances of passing satire at the false methods of the day, pointed enough in its way, and yet so delicately and playfully put that it could scarcely cause annoyance to the most sensitive of its victims.

The progress of the new chateau, built in accordance with the true principles of architecture, is set forth on the basis of a little story, of which, however, the incident is as slight as could well be, turning upon the absence from her neighbourhood for a year or so of Mme. Marie N—, the daughter of the proprietor of the old chateau, on the occasion of her wedding tour, and the resolve of the old people to build a new house for the happy pair in preparation for their return. The other *dramatis personæ* are the worthy couple in question, M. and Mme. Gandelau, representatives of an old family long known in the district, their son Paul, aged sixteen, and a cousin, Eugène, who is an architect. Paul is at home in unwonted idleness, his studies at the Lyceum having been interrupted by the calamities of the German invasion; and the idea of himself planning the house for his sister, further fanned by an accidental interview with Master Branchu (a shrewd builder's foreman or small contractor, who is not unimportant on the scene), rises before him as an oasis in the desert of monotonous idleness. The married sister is accordingly telegraphed to for a "programme" for the house, and the following sufficiently characteristic "lady's scheme" comes in return:—

"X.—. From Bateno. To M. de Gandelau. Arrived this morning—all well. Paul has an excellent idea. Ground-floor—entrance-hall, drawing-room, dining-room, pantry, kitchen not underground. 1st floor—study. First floor—two large bedrooms, two dressing-rooms; baths; small bedroom dressing-room; linen-room, closets, attic-bedrooms; cupboards plenty; staircase not break-neck. Marie N—."

Paul soon finds himself puzzled in attempting to provide for these requirements in a plan, though he crams plenty of balustrades and columns on to the elevation. But the architect cousin arrives on a visit, and the scheme is laid before him, and finally it is determined that the house shall really be proceeded with under the direction and under the plans of Eugène, but Paul is to be his clerk of works and overseer, and thus to learn and check at the same time. Master Branchu is engaged as builder, but not by contract, and the state of the country almost compels them to be content with what materials are near at hand,—a condition which affords a good opportunity for some practical remarks on the utilisation of common-place materials that come readily to hand.

It is from the conversations between Paul and his architect cousin that we learn the history of the house, and of Paul's course of practical education as an architect. Paul sees the plans drawn, and is taught how to make the most of space and to utilise corners. The first effect of his education is to make him critical on his father's old house, and even hint a wish to have

* How to Build a House: an Architectural Novelle. By Viollet-le-Duc. Translated by Benjamin Bucknall, Architect. London: Sampson Low & Co.

* See pp. 985 and 989.

that pulled down and rebuilt also. The remarks of the father thereupon are characteristic of the tone of serious yet unpretending thought and feeling, which M. Viollet-le-Duc never loses when regarding the relation of his profession to life and manners. M. Gandelau points out that the house had long been known to the poor inhabitants of the neighbourhood, who inseparably connected it with its occupants,—"they do not need to be shown the staircase that leads to your mother's room on my study, for they know it as well as we do,"—but they would cease to come into a building with which they were not familiar, where everything would have a tendency to repel them if not to arouse envious reflections in them.

"It is undesirable to disturb vulgar associations. Our simple-minded neighbours connect in thought the inhabitant with the house. Change the latter, and they will no longer recognise the former. . . . When you have studied some time, and seen more, you will know that a dwelling ought to be, to a man and his family, a well-suited dress; and that when a residence is perfectly adapted to the manners and habits of those it shelters it is excellent. How many proprietors have I seen who, while destroying their ancestral mansion, to replace it by a habitation conformable, as they thought, to the requirements of the moment, have by the same act, ruptured the tie which attached their family to the humble inhabitants of the neighbourhood. The only reply Paul offered to these arguments was to go and embrace his father and mother; and so better could have been thought of."

By the time the plans and elevations of the chateau are drawn, Paul has begun to find out some of the difficulties of even the most modest architectural achievement; and was curious to know "how Master Branchu, who could but just manage to write and cipher, had been able to build the mayor's house, which was not such a bad one to look at." Master Branchu, it appeared, was a shrewd workman who had his wits about him, and not unfrequently puzzled his architect; which leads to the advice from Eugène, that "as a general rule, in giving an order you should have thought seven times of the objections to which it is liable, otherwise some Master Branchu may start up who with a single word will demonstrate your thoughtlessness." But Viollet-le-Duc is far from giving to "Master Branchu" the position and favour and patting on the back which some English critics pour forth upon him. He is quite kept in his place.

Paul's commencement of a course of study in practical architecture leads to a most interesting and suggestive chapter on building sites, and their treatment under disadvantageous circumstances. In reference to the enduring qualities of stone, Eugène inculcates the necessity of observation on the way the stone has resisted atmospheric action *in situ*, and thinks it important for the architect to go and see the quarries from which his building stone is to come, and notice how the beds stand when exposed to the air, "a thing, I may tell you, our brethren rarely do." An examination of the bellars and roofs of the old chateau leads to useful reflections on what to imitate and what to avoid. This leads naturally to the subject of timber, and the methods of employing it so as to make the most of its best strength out of it, illustrated in a manner which should render it plain to the dullest comprehension. The foundations are set out and the use of the theodolite explained in the next chapter. In the subsequent one "Paul reflects," and the result of his reflections is to ask his cousin whether he has learned architecture this way, by building a house and overcoming the difficulties as he proceeded. By no means! Eugène had been prohibited to an architect for two years, who set him "to copy drawings of buildings, of which I was not told either the age, the country, or the use; then to lay on tints." He afterwards obtained admission to the École des Beaux Arts, where not much is taught, but where they compete to obtain medals and the *Grand Prix*, if you can." Then he was obliged to undertake working for another architect, where he chiefly traced plans, and sometimes made details.—"Heaven knows how." Coming to the conclusion that this would never teach him his profession, he gave up five more years to study architecture in actual buildings, and not merely in those shown me on paper. I set myself to observe, to compare, to see practical men at work, to examine buildings that were crumbling to pieces." At the end of this time he was sufficiently acquainted with his profession to practise it. He was introduced to an agency for Government works, "where I saw methods employed which scarcely agreed with the observations I had been able to make during my previous architectural studies." His remarks on such points were, however, "not well

received." Eventually, Eugène got his start from a commercial company, who were erecting large manufacturing works, and had been laid hold of by an architect who proposed to erect buildings for them in the Roman style, "which was not exactly what they wanted. They did not think it quite to the purpose to build in the plains of the Loire edifices recalling the splendours of ancient Rome." He was introduced to the directors, studied hard to find out all they really needed, made himself acquainted with the details of the manufacture, and succeeded in satisfying them. Many of the directors had town and country houses to be improved or rebuilt, and he became their architect, and thus entered upon a practice.

Such is Eugène's account of his course of initiation. It is hardly fair, perhaps, in Eugène to snub the École des Beaux Arts for not teaching what was not in its programme, and what none of its scholars, save himself, probably asked or expected from it. The object in the École is to teach school architecture, the art of designing correctly in known and approved styles, and of scientific construction; and those objects have been carried out, we believe, very thoroughly. Nor can we frankly side with Eugène when he tells his pupil that he can learn the theory afterwards, and it will be of more use and be more intelligible to him then; that children learn to talk by inducing to speak their necessities, and not by teaching them grammar. The cases are not quite parallel, and there is a good deal to be said on the other hand in favour of knowing the theory first, only the question is as to how it is taught.

We will pass over the history of Paul's puzzles over walling and drains and joinery; his greatest difficulty at this stage was in making a drawing of the windows for light in the haunches of the cellar vaults, with their arched heads in the curve of the vault; a matter which Branchu seemed to find it very easy and natural to execute, though the clerk of the works found such difficulty in drawing it. However, at this stage "Paul begins to understand," and in the next chapter to the one so entitled, we have one or two of Eugène's special contrivances illustrated. One of these is making the "jalousies" fold back into rebated recesses in the jambs of the windows, instead of being hung so as to turn round flat against the outer wall, causing gymnastic exercises in order to get at them; but Eugène's more important novelty is his way of constructing the floors or ceilings, for no plaster ceiling is allowed. The joists are oak, of square section but placed lozenge-wise, so as to have an angle downwards instead of a soffit, and the ends do not go into the wall, but fit into continuous brackets with V-shaped seats for the ends of the joists. Then the lower half only of the joist is seen from below, the space between the middle angles is fitted in by wood panelling, the panelling and the lower faces of the joists are decorated with designs drawn in a single colour on the untouched wood; and this is Eugène's idea of the way to make a floor presentable on the under side, without lathing and plastering it, and thereby, as he hesitatingly avers, at once laying the foundation for rot and decay. As to this last point too many architects can bring painful corroboration of Eugène's views; and the system is sometimes practised in England, as not leaving those dark shadows and deep spaces and angles for the accumulation of dirt which a joisted floor of the ordinary form, when uncoiled, presents. Paul's surprise at finding that the smooth level white expanse which he was accustomed to as a ceiling really contained all this construction of joists, is not overdrawn, if we compare it with the utter thoughtlessness of average people as to the way in which things are constructed; and he is very anxious to know how it is that so many architects make ceilings in this way, and hide all the construction, and "who obliges them to do so?" to which Eugène replies, "It would take a long time to explain that to you;" but the question elicits from his father some pertinent remarks on "the plague-spot of the nation"—the tendency to disguise all imperfections under an outside of finish and show.

Paul begins to find, before this stage of the proceedings, the necessity of being more of a proficient in drawing, and the method Eugène employs to give him the first notion of perspective, simple as it is, may be more effective than some more complicated systems. The clerk of works is instructed to cut pieces of card into the shapes of the various faces of one of the stones, the cutting and laying of which he has been

superintending, to put them together with paste into a model, and then to make a drawing of the model in every point of view. After a little practice of this kind he will acquire the habit of being able to delineate on paper the form of any portion of the work. In copying them he is to mark what is hidden from direct vision by a dotted or a finer line—and here is "perspective made easy;" and as good a plan, possibly, as committing to memory a quantity of rules and formulae (which are forgotten again) for an art which is really attained, in any useful degree, only by practice. The consideration of the staircases forms the subject of the following chapter, and close following on these the "critic" appears upon the scene.

The critic is a M. Durosay, a friend of the family; a gentleman who had read and travelled much, and knew a little of everything. He had been his own architect, and had built a very costly house that had fallen to pieces; his own engineer, and made roads on his estate which were impracticable; and he liked any one who gave him credit for being an infallible judge in matters of all kinds. "If any one had come to consult him on any subject, the moment he was about to step into a railway carriage, he would have let the train go rather than not give a formal judgment with reasons in full. . . . He was fond of repeating this aphorism,—"Light emanates from the shock of conflicting ideas;" but with the understanding that he always played the part of producer, never that of recipient." M. Durosay complained very much of a design for a country house being so shut in; he would have wished to see a portico round it, or a wide verandah. He would have aimed at some resemblance to "those North Italian villas, where the climate is certainly pretty severe in winter and spring, but which are not the less charming with their porticoes, terraces, and wide-open entrance-hall; which have a dignified aspect, and ennobles life." Then there was too little symmetry in the house: a want of that unity which ought to be found in every work of art.

"But," said M. Gandelau, "it is not a work of art that I wish to leave my daughter; it is a good house, convenient and substantial."

"Very good; but you will allow that if we can secure both kinds of excellence, so much the better. For a person of such extreme refinement and so charming in every respect as your daughter, it is but proper that a habitation should be provided reflecting in its exterior the charms and graces of its occupant. It would be a pleasure to you, in visiting Mme. Marie, to see in the distance her little family grouped around her under a portico of delicate architecture, or under a loggia. But this seems to me more like the house of some grave Flemish alderman. In their gables there is a kind of severity which—"

"Come, come, my dear friend, gables are not severe; they are gables—that's all. . . . And I must confess that your Italian villas in the environs of Venice and Verona appear to me very dull and gloomy, with their colonnades and closed shutters. If they built them so to afford tourists models of architecture, well and good; but make no pretensions to amuse or interest tourists, and my daughter shares my ideas in the matter."

"Perhaps—but just now your daughter is travelling in Italy: she is going to sojourn on the shores of the Bosporus; who knows whether on her return she would not be charmed to meet with a kind of reminder of the impressions she will not fail to have experienced there. . . . What do you think of it, Mr. Architect?"

"As for myself," said Eugène, "I am listening, and cannot but be delighted to hear you discourse so ably on our art."

The argument is carried on for some time with little success on the part of M. Durosay, who is at last obliged to be content with the promise of M. Gandelau that when he comes to visit the new dwelling, "a pasteboard portico shall be put up in front of one of the façades, and under the shade some Berri maidens, dressed up as Venetians, and some gentlemen, in scarlet robes, playing on the guitar and bassoon."

After this it is not very surprising that in the next chapter "Paul inquires what architecture is," and whether M. Durosay is a judge of it. The discussion of the subject leads to a wider application, and M. Gandelau, in a reflection on the state of things in France generally, pitifully observes, "You will find M. Durosay's portico confronting you everywhere." A chapter on theoretical studies sets forth very clearly and briefly, among other points, the distinction between the genuine columnar architecture of the Greeks and the pseudo architecture of the Romans. The second chapter under the same heading commences with a dissertation on the value and designing of mouldings, and the importance of work of this kind being adapted in its sections and effects to the nature of the material employed.—"One of these points on which an architect who respects his art ought never to yield." This remark leads to a discussion on the manner in which clients impose all sorts of fancies on their architects, and the difficulty of

the architect so squaring his conduct as to retain his self-respect without losing his means of living; a discussion which in the end, as M. Gaudelou observes, "wanders rather far from mauldings."

The studies are interrupted; for Eugène thinks it right to offer his assistance in the engineering department of the army of the Loire, and Paul is disconsolate enough. His spirits are not improved by a visit to the works at the house, the aspect of which under a stoppage from frost is described in a passage picturesque enough to quote:—

"The works were deserted; snow covered the heap of walling stones, the cut stones, and the scattered timbers. The walls, which had reached a certain height, protected by straw and surmounted by a crest of snow—their surfaces showing brown in contrast with the white veil that mantled them, and some pieces of wood black with damp, gave to these incipient constructions the aspect of the debris of a conflagration. Paul recalled the spot so animated a month before with its bands of active workmen. All were gone, and the soul of this habitation, which he had begun to associate with all the joys of family life, had just quitted it."

How Paul recovered his spirits by dint of hard work; how Eugène returned, and the various questions of timber work, joinery, and smoky chimneys were discussed, not without much able elucidation of each, we cannot specify; nor how Paul was sent on a visit to an eminent civil engineer, and was much interested with what he saw of engineering work, and inquired, "What was the difference between an architect and an engineer?" and how he got a short parable in reply. All this we must leave to those who read the book; the aforesaid parable we could scarcely quote, in fact, without discussing its bearing a little, and we have already outrun our space. Suffice it for the present, that the house was furnished before M^{me}. Marie's return, and the "surprise" managed with due effect. M. Durosay was present on the occasion, and repeatedly expressed his admiration for it as a "charming feudal manor-house."

"But why, my dear sir," said Madame Marie, at last quite weary of the phrase, "why do you call it a 'manor-house' and 'feudal'? I have neither manor nor vassals, and I have no wish to possess any."

In one of his conversations with his architect cousin, Paul, in reply to a remark of the latter, that "the more you know the more you will feel you want of knowledge," inquires, "what good is it to learn then?" "That we may become modest," responds Eugène; "that we may occupy life with something better than those things to which our vanity prompts us; that we may make ourselves of some little use to our fellows, without exacting gratitude from them." With which quotation we may fitly take leave of a book that may be read with pleasure and profit by many others besides architects, and which is not more noticeable for the sound practical information conveyed in it than for the unpretentious earnestness, sincerity, and simple wisdom which light up every page.

THE LATE MR. R. W. BILLINGS.

ON the 14th inst. there passed away one who had been for the last forty years, more or less prominently before the architectural world; some record therefore of whose career will doubtless be acceptable in these pages.

Robert William Billings was born in London in 1818, and at the age of thirteen was articled to John Britton, the well-known antiquary and author, with whom he remained seven years. This connexion naturally fostered, if it did not create, in him a special taste for similar pursuits: accordingly we find him soon after employed with the late F. Mackenzie in illustrating the work "The Churches of London," in a series of views which were chiefly engraved by John Le Keux. He also assisted Sir Jeffrey Wyattville at Windsor, on drawings of the Castle there, and prepared numerous views of the ruins of the old Houses of Parliament after the disastrous fire.

The first publication which he undertook on his own account was the "Illustrations of the Temple Church, London," given both architecturally and pictorially in a very complete manner. In the same way he afterwards illustrated and published "Kettering Church, Northamptonshire," and "Brancepeth Church, Durham." These were followed by still greater efforts, viz., his important works upon "Carlisle" and "Durham" Cathedrals, from his own careful measurements and drawings; also an excellent work of the "Britton" stamp, called the "Architectural Antiquities of the County of

Durham." But his chief production of this kind, and the one with which his name will be mainly associated, was the "Baronial and Ecclesiastical Antiquities of Scotland,"—a noble work in four volumes, containing, besides the letterpress, 240 beautiful illustrations. This undertaking, though a labour of much love, was necessarily also one involving much time, expense, and research, it being upon comparatively untrodden ground. The interesting variety and fidelity of the drawings are deserving of all praise.

Mr. Billings, among other useful qualities, which served him in good stead, was possessed of quick perception, combined with untiring industry. Hence his analytical ingenuity led him to investigate and "Attempt to Define the Geometric Proportions of Gothic Architecture," as exemplified in the cathedrals of Carlisle and Worcester; to illustrate by diagrams the "Infinity of Geometric Design," as exhibited in tracery-panels in the former of these buildings; and the "Power of Form," in a small volume, which was the last he ever published. He became thus, as may be imagined, an expert in architectural devices and monograms, with which he generally sought to identify such buildings as at times came under his control; and this latter branch and his practice as an architect was considerable after he gave up the publication of books. Several mansions erected on the banks of the Clyde are from his designs; also the restoration of the Chapel of Edinburgh Castle (for which he was commissioned by Government); the "Douglas Room" in Stirling Castle, Gosford Lodge, restoration of Hanbury Hall, Warwickshire; House at Kemble, Gloucestershire; Crosby Church, Cumberland; and additions to Castle Wenys, for Mr. John Burns, upon which he was engaged at the time of his death, having built the castle itself many years previously.

With pen, pencil, and, it may be added, burin, Mr. Billings was a practised hand; his facility and correctness of drawing were most remarkable, expressing where needed all the minutiae of detail. Thus he was equally at home, whether drawing upon paper or wood, or etching on steel, as he was occasionally wont to do, many of the engravings in his works being executed by himself. Most of these illustrations are on steel, and he was fortunate in the engravers who assisted him. Besides Mr. Le Keux, already mentioned, we find on the list his able son, the present J. H. Le Keux; also Messrs. G. B. Smith, Saddler, Turnbull, Godfrey, Winter, and others; and, in wood engraving, the well-known R. Braumton, with all of whom he was literally a co-worker. Reference has been made to his skill as a draughtsman, which was especially displayed in his mastery acquaintance with "perspective." The writer of this notice has seen an elaborate early drawing by the deceased of the interior of the then Covent Garden Theatre, which, if he mistakes not, was rewarded by a public medal; also the late Professor Cockerell alluded to Mr. Billings's powers in this branch of art in one of his lectures at the Royal Academy. At intervals of leisure lately he had again occupied himself upon one of his old and favourite themes,—the interior of St. Paul's Cathedral, viewed from the Dome,—an intricate subject, in which he was endeavouring so to modify the rendering of outlying portions as they would be determined by strict rules, as to bring them, so to speak, within the range of possible and undistorted vision. This drawing is on a very large scale, and though, unfortunately far from complete, enough is mapped out to promise a highly satisfactory result, had he been permitted to live to accomplish it.

It remains to add a few words of a more general nature. Mr. Billings had for some time relaxed in his architectural occupations, distributing much of his time and services (for he was never idle), between various public institutions and other engagements in which he was interested. In these, his aptitude for business, energy, and inflexibility of purpose, rendered him a man of mark; consequently his active cooperation was frequently sought, and not unfrequently granted. Among these, he had for a long period been associated with the Crystal Palace, and of late years he regularly attended its Board meetings, having been elected a director. Nor is it too much to presume that to his practical knowledge and vigilance is greatly due the maintaining of so large a building in constant repair, with efficient improvements as circumstances offered.

While actively employed in gathering materials for his books, he naturally resided mostly in the

localities themselves; but afterwards coming to London, he lived for many years in Islington; eventually, however, removing to Putney, where he purchased a good old English residence which had once been occupied by the famous Sarah, Duchess of Marlborough. Such an abode was quite in harmony with his taste, and here he rejoiced to welcome his friends, time after time, with that ready flow of spirits and entertaining conversation for which he was always distinguished. Here, too, he found ample room for the arrangement and display of that extraordinary collection of works of art, and curiosities of various kinds, which throughout his lifetime he had felt so much pleasure in accumulating.

J. DRAYTON WYATT.

THE IMPORTANCE OF NATIONAL INVESTMENTS IN OBJECTS OF SCIENCE AND ART.

POLITICAL economists say that "political economy is to the State what domestic economy is to the family." Wise domestic economy induces the possessors of great wealth to invest it in the most profitable way,—profitable both directly and indirectly. Every wise rich man, after providing for his necessities, devotes a portion of his wealth to the acquisition of objects which, if bought with prudence, not only increase in intrinsic value the longer they are possessed, but delight himself, and confer good and pleasure on others. But at present the national policy of this country in this respect is far behind the policy of the wise individual. The vast earnings of our country are beyond comprehension in magnitude, but the amount of its investments in procuring illustrations of science and art directly useful to productive industry and beneficial to civilisation is insignificant, and it is trifling in comparison with what has been spent by Continental nations. It may be said confidently that the most advanced Continental nations have done in proportion to their wealth much more than we have, and that they are reaping results dangerously aggressive on our own commerce. The existence of our welfare is dependent on our retaining a supremacy in industry. Mr. Disraeli, the Marquis of Salisbury, Lord Derby, and Sir Stafford Northcote have expressed their conviction that the progress of industry depends on the cultivation of science and art, and I hope they will act boldly now that they have the power to do so.

Between 1815 when the National Debt reached its maximum of 861,000,000*l.*, exclusive of terminable annuities, and 1873-4, the debt has been reduced to 727,900,000*l.* If a tenth part of that reduction had been invested in objects of science and art, and were now placed in, say, ten provincial museums throughout the United Kingdom, freely consultable by our industrial producers of all grades, not only would the wealth, the culture, and prosperity of the nation have been greatly increased by it, but the objects themselves would still exist, and their intrinsic commercial value would have increased enormously. It may be said that, inasmuch as the nation will never sell its objects of art, they cannot properly be called "investments." The contingency of sale is remote, but recent experience has shown that millions may be demanded as ransom. We will not collect property for this reason, but the collection of works of art improves our commerce and adds to our national strength and resources, helping us to defy demands for ransom, and is more profitable if administered with reason, than a corresponding reduction of taxation. When an individual makes an investment in land, houses, and the like for the use of his posterity, he does not contemplate the sale of it.

About 3,500,000*l.*, it is said, have been devoted to pay off the National Debt during the year 1873-4. This sum lowered taxation about a penny a head on the population of the United Kingdom, an imperceptible reduction; but what an effect it would have on the productive industry of this country and its civilisation if only a tenth part of this sum (350,000*l.*) had been put aside by Parliament in the collection of specimens of works illustrating science and art applied to productive industry, especially works of foreign origin, in order to show the British nation what its competitors in the markets of the world have done and are doing. What a potential effect would be produced in the great towns of Manchester, Liverpool, Glasgow, Belfast, Birmingham, Leeds, Bradford, Sheffield, Nottingham, Bristol, the Potteries, Newcastle-upon-Tyne, Leicester, Halifax, &c. They would be all set in

tion to provide suitable buildings if Parliament adopted the principle now suggested. The principle of investing should be placed beyond the power of the accidental Government of the day to alter it without the consent of Parliament. At present the surplus revenue goes by law to reduce the debt, but a given part of it could go by legal enactment to provide objects for local museums to promote science and art applied to productive industry.

It is beyond dispute that when works of art are judiciously purchased, such works increase in value far beyond the compound interest of investments in the Funds. The money value of property in fine works of art will continue to increase as long as civilisation advances the world, whilst that of any other form of property is subject to more capricious influences. It is far cheaper to purchase when you are able than to postpone it to the future. Oliver Cromwell, in about 1650, rescued Raffaele's seven cartoons for a sum of only 300*l*. Who can estimate the money value of them now? The value of money has not increased in the same ratio since, as these cartoons have. Everybody has specific instances within his own knowledge of the enormous increase which is taking place in the value of works of fine art. The *Bernal*, the *Wang*, and the *Myer* collections did not cost the collectors of them a third part of the sums the objects realised when they were sold. There are pictures in the Sheepshanks collections which would realise more than ten times the amount Mr. Sheepshanks paid the artists for them.

I trust the Government and Parliament may be inspired with courage to do for the nation what wise rich individuals do for themselves, and to lay down the beginning of a fixed national policy, by investing part of each annual surplus revenue in the judicious purchase of objects of science and art; not for the exclusive benefit of metropolitan institutions, but especially for the benefit of provincial museums.

HENRY COLE.

THE DWELLINGS OF THE LABOURING CLASSES IN THE METROPOLIS.

It appears now to be the general impression at during the next session of Parliament the Government will introduce some kind of measure for improving the dwellings of the labouring classes in the metropolis and other large towns, and in accordance with a request made to him by the Home Secretary at the close of the last session, Sir Sidney Waterlow has just addressed communication to Mr. Cross containing a number of suggestions on the subject, which may be regarded as advice to the Government to the course which ought to be adopted by Parliament for effectually securing a better class of houses for the industrial population of the metropolis than at present prevail.

After stating in the outset that the company which he is connected as chairman has expended 270,000*l*. in providing land and 1,452 dwellings for the accommodation of upwards of 10,000 persons, and that dwellings are, or will shortly be, in course of erection to accommodate further number of about 2,000 persons, at an estimated cost of 70,000*l*., he observes that other associations and individuals have provided similar accommodation in the metropolis for about 10,000 persons. He next alludes to the difficulty of carrying on the work owing to the impossibility of obtaining suitable sites in densely populated districts. The relative advantages and disadvantages of suburban cottages as contrasted with the habitations near to where the labouring classes are employed, are then discussed, the conclusion at which he arrives being that except in cases where the head of the family is the sole bread-winner, suburban cottage residences are not only disadvantageous but impracticable. After expressing his confidence that much good must have been done by the efforts of the different associations in erecting improved dwellings, he goes on to state that, after all, those efforts have not reached the real evil, the building companies, except in very few cases, not being able to purchase and remove houses unfit for human habitation. In continuation he intends that there ought to be compulsory powers for effecting this, which he thinks ought to be exercised only by a public authority, but that the various district boards are, in his judgment, unsuited, for various reasons, to exercise such powers. The philanthropic societies, he says, have been working with their hands tied, and wretched houses, unfit for human habitation,

remain as nests of fever and pestilence, doubling the rate of sickness and death among the occupants, and spreading contagion throughout the immediate neighbourhood. He thus continues:—"I feel sure that you will agree that this state of things ought to be remedied; and the only question that I apprehend can be asked is, in what way can Parliament alleviate this evil without throwing too great a burden on the ratepayers or dealing unfairly with the rights of private property? In what way can Parliament assist in this work, which has hitherto been left so entirely to private philanthropy? What I suggest is that, the Legislature, recognising the local authority which the Metropolitan Board of Works and the City of London exercise over the districts under their control, should impose upon these two public bodies, or upon some other public authority, or upon public commissioners, the responsibility and the duty of submitting to Parliament, from time to time, schemes for public improvements, involving the destruction of houses unfit for occupation, and the appropriation of the sites, when cleared, for the reconstruction of tenement-houses suitable for the labouring population, upon plans to be approved by the local authority in the manner prescribed by the Metropolitan Streets Improvement Act of 1872. Notices would be given, and the various interests in the property would, of course, be dealt with in the same way as if it were taken for a street improvement. I am quite prepared to admit that these improvements would throw some temporary burden on the ratepayers; but only a small annual charge, which would, I think, be more than compensated by immediate and future advantages." He then states that the present relative value of property in the metropolis is 21,000,000*l*., and a rate of one penny in the pound would produce nearly 90,000*l*., or sufficient to pay the interest on 2,000,000*l*., which might be redeemed in forty years if the money were raised by issuing metropolitan consols at 84 per cent.; and he ventured to say, from many years' experience of the subject, that 2,000,000*l*. applied in the mode suggested would remove, to a very large extent, the houses in the metropolis at the present time unfit for human habitation. He urges, however, that upon higher grounds than the pecuniary question Parliament should take action, and that the homes in which the working population in overcrowded cities are compelled to live can only be improved to any appreciable extent by the direct intervention and assistance of Parliament.

LOWNE'S PORTABLE VENTILATION ANEMOMETER.

This instrument is for ascertaining the velocity of currents of air, gas, or vapour, and is specially adapted for mines, public buildings, flues, and so forth. The arrangement is very ingenious. It measures the currents of air by means of fans, placed in a clear opening without any obstruction from the registering apparatus, which is in a separate chamber on the same plane as the fans, so that the whole instrument is quite flat for the pocket when out of use. When in use it stands up in the centre of the case on two dowels. The whole of the works are of extreme sensitiveness; the axes of the fans and first current work in rubies. The dial gives the current that passes the fans in feet. It seems to us that an instrument, so exact and portable as this is for ascertaining the rate of currents of air for ventilation purposes, is a desideratum. It strikes us that ventilation of our public and private buildings will never be very perfect until an equivalent instrument comes into general use. With such an instrument it would only be necessary to measure the ventilating aperture and size of the instrument and take the rate to know in what time a given interval would have the air changed; and with such knowledge necessary ventilation might be expressed by a figure in the same manner as a light-giving aperture may be expressed. With this extremely delicate instrument the perfection or defect of any particular system of ventilation might be obtained, as the fans will move in slight currents, so that the movement of air in any part of an interior might be ascertained. It is stated, as showing the delicacy of the instrument, that if a distance be walked through in still air it will very fairly measure the distance that the instrument moves. This is, we believe, the principle on which the instrument is tested, only that it is moved at different rates by clockwork in an enclosed

chamber,—when error of local currents is quite cut off. Mr. Lowne, who is a man of attainment, tests every instrument with apparatus he has constructed himself, and supplies a table of corrections. He will not pass any instrument of which the workmanship is not quite to his satisfaction.

BUILDERS' BENEVOLENT INSTITUTION.

A GENERAL meeting of this Institution was held yesterday (Thursday), at Willie's Rooms, St. James's, for the election of two pensioners on the funds,—one man and one woman,—from the unjoined list of candidates. Mr. George Dines, president of the Institution, presided, and the poll opened at noon and closed at three p.m. The candidates were:—Evan Jones, plasterer, aged 65 (second application); Robert Noyes, plumber, 76 (second application); William Stribling, carpenter and joiner, 71 (first application); Thomas William Cranstone, builder, 70 (first application); Sarah E. Bear, widow of the late W. E. Bear, plasterer and builder, 68 (seventh application); Jane Rumens, widow of the late J. Rumens, builder, 62 (fourth application); A. N. Williams, widow of the late J. Williams, builder, 62 (fourth application); and Charlotte Day, widow of R. P. Day, late pensioner on the funds of the Institution, 67 (first application). Shortly after the close of the poll, the result was announced by the scrutineers to be as follows:—Jones, 328; Noyes, 471; Stribling, 314; Cranstone, 178; Bear, 2,783; Rumens, 4,243; Williams, 5,348; and Day, 402. The President therefore declared Robert Noyes and Mrs. A. N. Williams to be the successful candidates, and expressed the hope that at the next election, which will take place in May, 1875, a larger number of candidates would be eligible for election.

Mr. Watson (Watson Bros.) proposed, and Mr. Phillips seconded, a vote of thanks to the chairman, and Mr. Bolding proposed and Mr. G. Simpson seconded, a vote of thanks to the scrutineers, on behalf of whom Mr. Stirling responded, and the meeting terminated.

SANITARY STATE OF MINING VILLAGES.

At the Conference of Miners' National Association, Barnsley, the president (Mr. Macdonald, M.P.), in introducing this subject, said there were many mining villages where the owners did their duty, but in sadly too many instances the sanitary condition was the reverse of satisfactory.

Mr. Casey stated that in the village of Sutton-in-Ashfield, Nottinghamshire, they had sixty members, out of which number ten recently died. This alarming death-rate caused them to make inquiries, and they found that within the last month no less than eighty deaths had occurred during the month. Determined, if possible, to find out the cause of this frightful epidemic in so small a place, the association engaged a man to collect water from the pumps which existed in the place. As the man was taking samples, the schoolmaster and two policemen came up to him and made him empty his bottles. At present the association scarcely knew what to do, but they were determined not to allow this state of things to exist any longer if they could help it.

Mr. Crawford (Durham), and Mr. Brown (North Stafford), having given instances of the suffering and misery caused by want of water and defective sanitary arrangements in their respective counties, Mr. Casey, Mr. Brown, and Mr. Robinson were appointed to visit Sutton-in-Ashfield, and make an immediate report upon the state of the place.

The president said if this state of things was allowed to rest any longer the miners would have no one to blame but themselves. If every district would supply him with facts, it would give him great pleasure, from his place in Parliament, to arraign the coalowners at the bar of the nation.

A Refractory Apprentice.—Walter Frederick Knight, late of Russell-street, Gloucester, was charged with deserting from his apprenticeship at Messrs. Fielding & Platt's, engineers. The defendant deserted in June last, and was apprehended under a warrant in Perth, by P.O. Howes, on Saturday. In reply to the Chairman, the prisoner said he was unwilling to return and complete his contract. He was sentenced to a month's hard labour.

WINGHAM CHURCH, KENT.

This interesting church has just undergone a complete transformation, with the exception of the chantry chapels adjoining the chancel, which have not yet been touched, though greatly needing repair.

The chancel was blocked up at the east end by a huge Italian screen, flanked on each side by large monuments, and the unusually beautiful decorated windows north and south were quite concealed. These have been repaired, and the east end filled by a traceried window of five lights (as indicated by the original jambs). The plaster roof has been removed, and a polygonal canopied ceiling of wood panelling with carved bosses substituted for it. The chancel arch, and the arches connecting with the chantry chapels, together with their Parbeck marble shafts, capitals, and string-courses have been restored. The ancient oak stalls have been repaired, and those missing supplied. New book-fronts with perforated tracery have been designed. The flooring, with its ancient memorial slabs, remains entire, the intervening spaces being filled with tiles. The cost of all these works to the chancel has been defrayed by Lord Fitzwalter, the lay rector.

The body of the church (in plan it consists of a nave and south aisle) has been much changed. The old timber construction of the roof and columns has been stripped of the inconsistent elaborate Italian joinery in which it was cased, and the ancient timbers cleaned and brought to view. The entire body of the church has been fitted up with low open benches. The west gallery is removed, and the tower arch and west window, previously invisible, are now exhibited. A new font of Painswick stone is also provided, and an oak pulpit, with perforated panels, on a Cornish stone base. There is also a new oak lectern from the architect's design. A new belfry floor has likewise been constructed, and an oak screen inserted under the tower arch. The church is principally lighted by pendent duplex lamps.

The sanctuary has been paved with plain encaustic tiles. In the course of the restorations an ancient ambury in the centre of the east wall was discovered, and a piscina to the south of it, also in the east wall. There being ample space from east to west within the altar-rails, the table has been brought forward so that access to the ambury can be obtained, which will serve as a credence niche. The ancient stone sedilia still remain.

The total cost of the works will probably be a little under 3,000*l.* Mr. Ferrey, F.S.A., was the architect employed; and the builder was Mr. Charles Jarrett, of Croydon.

SANITARY STUDENTS IN BIRMINGHAM.

At the distribution of prizes, in connexion with the St. George's Science Classes, Birmingham, last week, Mr. George Dixon, M.P., said it was a remarkable coincidence that at this moment in Birmingham they were all deploring the fact that their sanitary arrangements were inefficient, and that great cost and labour, great expense, knowledge, and skill, would have to be brought to bear upon them in order to their removal, and at that time they would find that four young men had given themselves up to the pursuit of the science connected with these sanitary arrangements, and they had achieved a success which would make them—what he hoped it would make them hereafter—peculiarly fitted to deal with this great evil. He would tell them that upon them there was thrown a great responsibility. Their teacher was himself a student. He hoped that the now successful students would hereafter become teachers in their turn, and he hoped that during their life they would be able to do much in spreading that knowledge which would tend to mitigate the sufferings which arose out of a negligence of sanitary laws. But when they praised these students, let them not forget that it was not merely because they had been endowed with great natural gifts, and because, by diligence and assiduity they had turned those natural gifts to account, that they had been successful, but it was because they had been fortunate enough to possess a teacher of extraordinary power. If one student only in a class had gained great success, they might have supposed that that success arose from his own natural talent; but when they found that out of one class all the great prizes had been gained, it could not be that the natural talents of those

students alone had been the cause of their success. They must ascribe it, in great part, to the man who taught them all; and he (Mr. Dixon) had come down there that night with great interest, that he might make the acquaintance of Mr. Clarke, the teacher to whom he referred. He found to his surprise that Mr. Clarke was a working jeweller; that he was entirely self-taught; and all he had done had been done after his daily work. When Ruskin wrote upon the Stones of Venice, he commented upon the great magnificence of the buildings he saw, and made the remark that it was strange and to be regretted that, whilst they admired these wonderful buildings, they had no records of the names even of the men who built them. But that must not be so with them. They must remember that this great success had been achieved not merely by the great merit of the pupils, but by almost the still greater merit of Mr. Clarke.

NEW BANK AT NEWNHAM.

The new bank buildings at Newnham, Gloucestershire, which have been opened for business, stand on the site of the old bank in the High-street, and immediately facing the road from the railway, and form an important addition to the public buildings of the town. The buildings are of Classic character, are constructed with Bridgewater bricks, relieved by moulded cornices, and dressings of Bath stone, and comprise banking-room (25 ft. long by 19 ft. wide, and 16 ft. high), approached from the street by a spacious entrance-lobby; manager's room, strong-room, clerks' cloak-room, voucher-room, &c., the latter rooms being entered directly from the bank-room. The entrance-lobby lies between the new bank and the manager's house, and forms an harmonious link between the two. Over the entrance doorway is carved in a semi-circular tympanum the device of the Gloucestershire Banking Company, viz., a bundle of sticks tightly bound together by cords pulled by four hands, and the motto, "Vis unita fortior." The bank-room is lighted by two large plate-glass windows, which are secured by Bunnett's revolving iron shutters. The fittings of the bank-room are constructed of pitch pine, relieved by panels of yellow pine with mahogany mouldings, and, together with the gas fittings, present an attractive appearance. The rooms are warmed and ventilated by Captain Galton's ventilating fireplaces. The strong-room is constructed in the strongest manner, with firebricks built in cement, and bonded with hoop iron and fitted with Tann's patent reliance fire, wedge, and burglar-resisting door and frame. The works have been carried out by Mr. W. Fream, jun., of Gloucester, from the designs and under the superintendence of Messrs. Medland & Son, architects, Gloucester.

READING GOVERNMENT SCHOOL OF ART.

The thirteenth annual meeting for the distribution of prizes and certificates to the successful students of this institution, and in connexion with several private schools and the science classes, took place at the town-hall on Thursday, the 19th inst. The drawings and paintings of the students, and also the prizes, were exhibited in the hall. Sir John Conroy, bart., presided.

Mr. J. O. Messer (the secretary) read the report of the committee, which stated that the Art School had been continued satisfactorily during the past year, under the management of Mr. Havell. The science classes still continued to suffer from the want of a permanent recognised building. The number of pupils attending the Art School was 134. At the second-grade examination 64 students presented themselves, of whom 34 were successful, and 13 won prizes. In the third-grade, 437 works were sent up to the annual exhibition in London by 76 pupils, 5 of whom were awarded Queen's prizes.

The President said that he thought that they might congratulate themselves on the success of the pupils.

Mr. Forsyth, M.P., then gave his promised lecture, in the course of which he said,—If the present was not a scientific age, it was one in which some of the greatest discoveries in science had been made, and if the English were not a scientific people they could boast of a large number of scientific names. The study of the dead languages was sometimes contemptuously spoken of as having but little to do with the

real business of life, but he believed that the study of languages was a better discipline for the mind than the study of astronomy or mechanics. More had been done in scientific discovery during the present century than had been accomplished for more than 2,500 years before. The Greeks made little or no progress in philosophical science, and although the Romans commanded the world they were utterly ignorant of astronomy. He thought that it was Herschel who said that if a man was confined from childhood in prison, he might be able to reason out the truths of mathematics, but he could never tell what became of a lump of sugar when dissolved in water. As an illustration of this, he might mention that the Greeks attributed the principle of the rising of the water in a pump to the fact that nature abhorred a vacuum. This was received as a sound explanation of every phenomenon, whether hydrostatic or æriform, for more than 2,000 years. What he (Mr. Forsyth) complained of was, that men should quit the domains of science, and substitute conjecture for truth, and unverified hypothesis for reality. Science and art acted together, and one could not say to the other, "I have no need of thee." With regard to harmony and grace, the British people ought to be placed last amongst the civilised nations of the world. Surely they might have grace, variety, and beauty, instead of dreary monotony and uniformity of ugliness. Much might be done to improve the taste for art by giving the people picture-galleries, museums, and pleasure-grounds, and adorning them with works of art.

Mr. Forsyth then distributed the prizes.

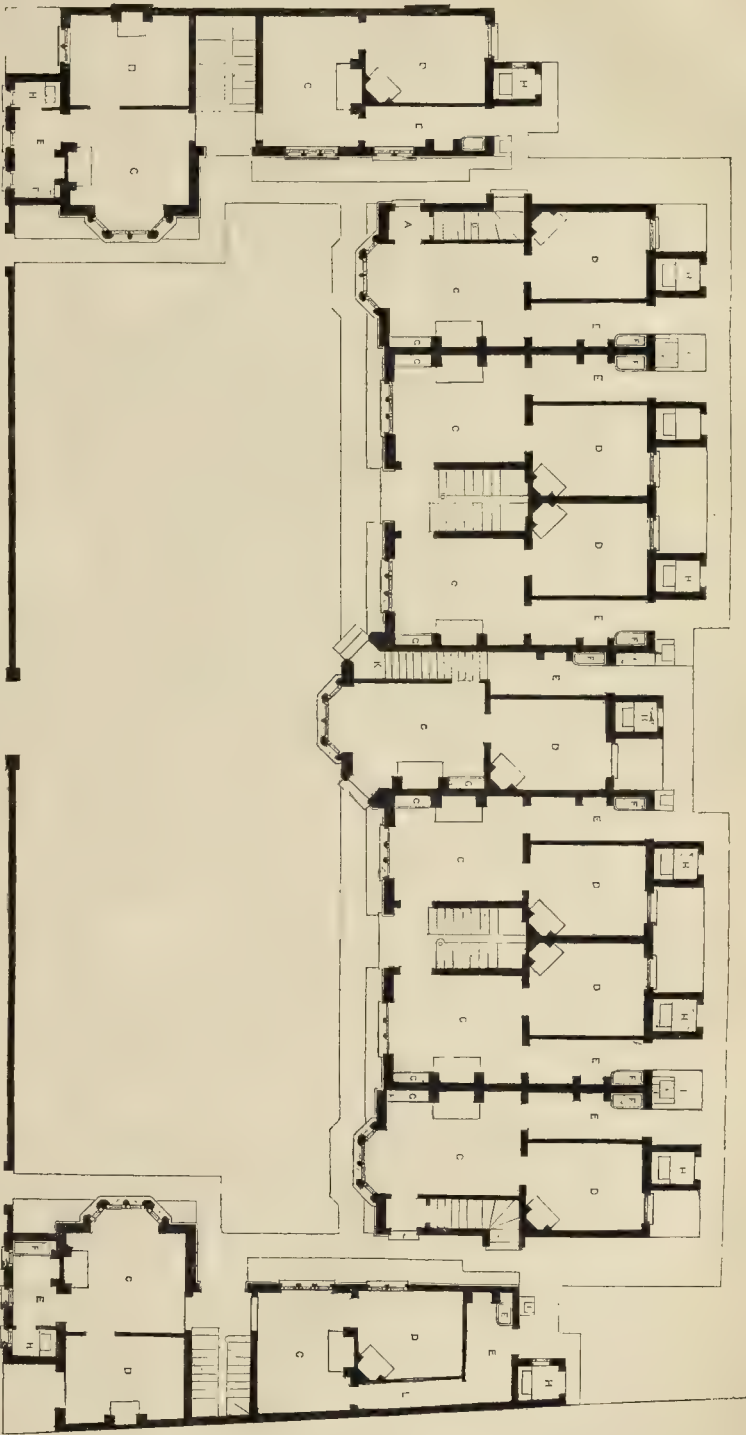
SCHOOL BOARD SCHOOLS.

Rodney-road, Walsworth.—These schools are situated at the corner of Rodney-road and Victory-place, about five minutes' walk from the Elephant and Castle. They consist of two separate buildings, one devoted to the use of the infants, of one story in height, and the other, of three stories, to the boys and girls. The latter being placed on the first, and the former in the second floor, the ground-floor being entirely open (except the caretaker's apartments, &c.), and forming an extensive covered playground for the girls and infants. Each school contains a large schoolroom, with four class-rooms adjoining, the infants having in addition extensive classrooms for the use of the "babies." Each department has separate access, with ample lavatory and cloak-room accommodation contiguous. Especial attention has been paid throughout to the sanitary arrangements, and the play-grounds are exceptionally large and commodious. The elevation of the building is plain, but some effect is produced by the introduction of Portland-stone bands to relieve the stock brick facing and the red brick "dressings." The school will accommodate about 1,000 children, and has been erected by Messrs. Cook & Green, contractors, from the designs of Mr. E. R. Robson, the architect to the Board, Mr. R. Walker acting as clerk of works. The amount of the contract was under 8,500*l.*

Leeds.—Four new Board schools, erected at a cost of 30,000*l.*, and providing accommodation for 3,000 children, were opened last week. Foundation stones for three other schools were likewise laid.

Yelvertoft.—At the last meeting of the United District School Board tenders for the new buildings were received, but decision thereon was deferred until the meeting on the first Thursday in December. The plans and specifications have been approved by the Education Department. It is in contemplation to apply to the Public Works Loan Commissioners for a loan, the repayment to be spread over a period of fifty years.

Royal Horticultural Society.—The Council are informing the Fellows that they have made arrangements for the establishment of a Skating Rink in that part of the gardens lately occupied by the rhododendron tent, and to which there will be a separate entrance. On three days in the week, viz., Tuesdays, Thursdays, and Saturdays, the rink will be reserved for the exclusive use of those Fellows of the Royal Horticultural Society who may elect to become subscribers. On the other three days of the week the public will also be admitted, on payment of an admission fee. Unless we mistake, it will be cheaper to use the rink as one of the public.



A. Porch.
B. Stairs; closet under.

C. Living-room.
D. Bedroom.

E. Scullery.
F. S.H.

G. Cupboard.
H. W. C. I. Washin.

K. Lobby.
L. Passage.

ALLEYN'S ALMSHOUSES, BATH STREET, ST. LUKE'S.

[See pp. 279, 282.]

ARCHITECTURE AND LANDSCAPE.

Mr. H. H. STATHAM read the following paper on this subject at the last meeting of the Architectural Association, and illustrated it with about fifty drawings made by himself for the purpose:—

Bacon commences his essay "On Building" with the curt axiom, "Houses are built to live in, not to look on." The observation, the truth of which from one point of view at least we ought to be ready to admit—for is not the useful foundation of the true in architecture?—savours of the practical wisdom of a philosopher not to be taken in by shows or pretences; and yet the learned Chancellor forgot one-half the truth. He forgot that houses or buildings, of whatsoever class, have to be "looked on," whether built for that object or not. Pictures and statues are made emphatically to be looked at, though unhappily they are not always worth looking at; but there is this to be said in their case, that, if you are displeased with them, you can always put them out of sight somewhere, or give them away to a friend; or, if a man is unfortunate enough to admire a bad painting, at any rate he does it in private, and his taste is not necessarily imposed on his neighbours or on the public at large. But the case is otherwise in regard to a building. Be it good or bad, there it is; you can neither get rid of it nor hide it. It may be a blot upon the landscape,—an annoyance to every one with senses open to such annoyances; but, so long as its owner is satisfied, there is no appeal;—indeed, even if it be otherwise, and if the owner or his architect be stricken with repentance for their deeds, the toy is too expensive a one to be removed and replaced. It behoves, then, those who are going to plant such an object permanently on the face of the country, to consider well what they are doing, and to contrive their production so that it may not be a stumbling-stone and an offence to the traveller in search of the picturesque.

But this very relation of the building to its surroundings—this self-assertion of the edifice as a portion of the scene in which it stands, if it makes one of the difficulties, ought also to be one of the glories of the architect, for this is a kind of compensation to him for the restriction of his art in some other respects. It is useless (at least it seems so to me) to claim for architecture anything like that intensity of interest which belongs to works of art dealing with human feeling and human expression. The most picturesque combination of wall and roof and turret, pleasing though it be in itself, speaks to us but in an uncertain language, compared with that which addresses us from the canvas of a Leighton or a Gérôme, from the marble fashioned after the thought of a Foley, a Woolner, or a Carpeaux. Nor does the production of a picturesque building require anything like that genius and concentrated study, by which alone, and then only with the devotion of a lifetime, the complete power over expression by means of the figure can be mastered. But the architect is the generaliser among artists. The charm of his work is not in itself alone; it is in the understood or expressed relation which it bears to human life on one side, and to external nature on the other. The mansion or the cottage is not the mere stateliness of marble and mosaic, the mere picturesque of timber and tiling. It represents, or it should represent, the decoration of the daily wants of life on the one hand, and the relation of that to the grander decoration or scenery of nature on the other. Inside his building he need not disdain attention to the minutest comforts or graces of life; outside it he need not restrict his interest within any narrower limits than are bounded by the visible horizon. From wherever his building is seen, it becomes a part of the scene, often the central point of interest in it; it breaks the docility of the hill side, or it aids the perspective of the level plain; it rises from the bosom of dark masses of wood, or it looks out like a sentinel from a bleak sea coast; but in each of such situations, or in whatever other site it may be placed, it will be interesting and suggestive in proportion as its architect has appreciated the predominant character of the scenery, and has known how to render his building in harmony with the genius of the place, and with the perspective and contour of the predominant features of the landscape.

At the same time it is no easy matter to theorise, even, upon a subject which from some points of view appears so vague, and which certainly is scarcely reducible to fixed rules. But

hints and suggestions may be gained in looking at what has been done, and comparing the effects of different combinations. Now in regard to the relation of that most conventional and most refined type of architecture, that of the Greeks, to landscape, there is much to interest us, and a good deal has been said on the subject, and that, it must be confessed, in somewhat contradictory tones. The late Professor Cockerell was of opinion that the Greek temples were specially adapted for effect in somewhat rocky and desolate sites; or that the Greeks specially accommodated them to such sites by giving them heavier proportions than in plains; the one statement seems rather contradictory of the other. A contemporary French critic confirms this view, and thinks the temples were designed with special reference to their sites. A distinguished philosopher, Mr. Herbert Spencer, has on the other hand expressed the opinion, in an essay which shows how loosely philosophers can write when they get on unfamiliar ground, that regular architecture cannot by any possibility be suited to an irregular site, and that any picture representing such a combination is essentially unpicturesque. Where shall we find the concord of this discord? I think the philosopher must go to the wall. The remarks of Professor Cockerell in his work on the temples of *Ægina* and *Bassæ* are sufficiently to the point to be quoted. He says that the Greek temples were seldom situated out of or away from cities except on special occasions, as when they were built on the site of some supposed remarkable event. "When temples were thus situated, their remoteness, as well as the grandeur of the scene and the wildness of the country by which they were approached, formed a powerful contrast with the highly-finished object towards which the prayers and footsteps of the devotees were directed. Surrounded by such scenery, we at once admit the fitness of the sturdy and stern proportions, both of the parts and of the whole, so much in accordance with the nature of the site, but so lamentably ineffective in a less conspicuous situation, or when placed in the midst of a crowded metropolis, and on a level with the public streets." I understand this passage as referring only to these temples of unusually heavy proportions. The author continues—"So sensible were the Greeks of this fact, that we find different proportions generally adopted when the temple was placed on a plain or in a city. Generally, too, we may be permitted to remark that architects have adopted a low and horizontal system of architecture to a lofty country, and a perpendicular and aspiring one to a level and flat district, as if conscious of the inefficacy of all attempts at loftiness amid the wonders of mountain scenery, and seeking rather by the regularity of art and succession of horizontal lines, to present a contrast to these rugged irregularities of nature."

Cockerell's remarks clearly point to a view of Greek architecture as a style of contrast to, not of sympathy with, the landscape: contrast at least in regard to the lines of the composition or design. In regard to the relation to the sentiment of the landscape, his remarks are not quite consistent, as he in one passage attributes effect to the contrast of the finished object of art with the surrounding rugged scenery, and in another to the harmony of the latter with the scenery. I believe the latter is the correct view. Contrast of the composing lines, and harmony of the general proportion and character of the building and the scenery, are conditions not only perfectly compatible with each other, but which I believe we shall generally find existing in the most fortunate instances of architectural and scenic combination. We see this kind of effect in the sketch of the restoration of the temple at Agrigento by M. Viollet-le-Duc (taken from an engraving in the October number of the *Gazette des Beaux Arts*); and I do not think this building would be nearly as effective, as part of a picture, if it were placed on a level lawn. At the same time, the harmony of sentiment is preserved here, for there is nothing wild or stern in the site, only a degree of picturesque irregularity, softened to a certain extent by the forms of the foliage.

It is of some interest to note how painters look on the subject, and in what combinations they find their best or most favourite effects. If we take one of the great painters who has made most use of architecture in his landscapes, Claude, we find him in a great measure carrying on the subject for us. Sketching chiefly in Italy, Claude used in his classic architecture

almost exclusively (indeed, I think quite exclusively, so far as columnar architecture is concerned), the taller and slighter proportions of the late Greek and Roman orders. His "*Liber Veritatis*" gives a number of instances of the combination of this school of architecture with landscape, often of a more or less picturesque character, but not stern or rugged, and in many instances of a quiet and restful character, where his favourite architecture is combined with sloping banks and foliage. Now this Late Classic of Claude's goes remarkably well with the trees and the rounded contours of the land; but the Early Doric, I think we feel instinctively, would not do so, unless in a ruined state; and a building in that condition loses its original character a good deal, and becomes, in fact, more or less a part of nature. There is one curious instance in which Claude gives us castles and towers at the foot of a rocky hill, and a circular temple on the top. This seems to me out of place rather; but there is this to be said, that though in a northern climate we connect the idea of inclemency and exposure with a hill-top, the absence of this association in a milder climate may give a different effect. Another point which Claude illustrates I shall have to allude to further on.

We find, then, in the greatest painter of classical landscape (unless we except Gaspar Poussin), the classical columnar architecture associated in the main with landscape either of a quiet rural nature, or with picturesque but not wild or rugged scenes. If we wish to compare with this the impressions of a painter who has shown a special predilection for combinations of Gothic architecture with landscape, we need not go far for instances from a far mightier hand than that of Claude. If the latter is the artist of classic landscape, Turner is still more incontrovertibly the artist of romantic landscape, and, with that, of romantic or "Gothic" architecture. No painter has more largely employed architecture as an integral part of his painted poems—none has more intensely felt its relation to landscape, its value as assisting and intensifying the feeling of a scene, and as giving point to a composition both in regard to outline, and to the opposition of light and shadow. Over and over again we find, in the works of this king of landscape painters, that it is a *building* which gives the key to the expression of the scene,—whether it be a tower rising black and threatening against the light,—a minster or cathedral crossing with its vertical lines the level evening sky, or standing as the centre of the radiations of the rising sun which seem to form an appropriate glory around it,—a castle which seems to stand the one unshakable object amid the driving tumult of a gale on some bleak coast,—a spire which sends up a pyramid of light into the sky,—or, perhaps, some one small building, insignificant under some aspects, but which has been seized by the painter at the moment when a ray of sunlight has found it out, and forms on his canvas the one spot of high light to which all the rest is subordinate, and in default of which the power and meaning of the work would vanish at once. (Illustrated by various sketches from Turner's compositions.) It surely adds one more motive for our interest in architectural work, both in regard to itself, and its relation to nature, to notice how its monuments have been incorporated by scores, by the hand of the greatest delineator of landscape the world has ever seen, in works whose poetic power will be felt and admitted as long as canvas and colours can keep them in being. It is worth while to notice, also, the distinction between the objects aimed at by these two typical landscape-painters of the Classic and Romantic schools respectively. Claude, in his sketches and studies especially (and it is in this form that the bent of the artist's nature is most truly discernible), is evidently aiming chiefly at a graceful and picturesque contour and outline composition, and an idyllic grace almost peculiar to himself. Turner is epic rather than idyllic, and it is at broad and massed effects of light and shadow that he mainly aims; many of his "*Liber Studiorum*" sketches being in fact little more than studies of effect, in which outline is secondary or nearly lost. In the landscape in which his buildings form such important features, the attention is more directed to the wide sweep of distances, or to the expanse of sunlight and cloud-shadows over foreground and middle distance, than to those picturesque irregularities of rock and foliage composition in which Claude found such characteristic pleasure. And the favourite architecture of the two painters

evinces the same kind of contrast, the same leaning towards elegance in the one and towards mass and grandeur in the other; and it would not be possible to point to a more striking instance of the distinction between the classic and the romance feeling in landscape architecture than we find on turning from any one of Claude's elegant compositions, with their colonnades fringed by light foliage, to such a threatening mass as that of Turner's Kidwelly Castle; a kind of thing that no one would have thought of painting before the present century; so far have our perceptions of the picturesque altered,—may we not say, become deepened and extended?—within a recent period.

We shall find suggestive hints in further consideration of the subject, from some of these specimens of Turner's treatment of architecture and landscape; but the important part which Gothic buildings play in his landscapes may lead to the reflection how far the builders of our Medieval cathedrals and churches had any view to their effect in regard to the landscape. Generally speaking, I am strongly inclined to think that the feeling for landscape is a very modern one, and I am somewhat sceptical about the perception of picturesque beauty with which the Greeks are credited. The Gothic architects, however, seem certainly to have had an instinctive feeling in regard to the effect of site upon a design, especially noticeable if we contrast the design and position, for instance, of Lincoln Cathedral with that of the tall thin spires that rise up from the flat country round it. There are no landscape-painters, no Turners and Claudes of the period, to show us how the buildings appeared to them as matter for picturesque illustration; but I noticed the other day, in turning over some of the illuminated MSS. at the Lambeth Palace Library (now open to the public three days a week) some sort of indirect evidence on this point in the filling-in of the backgrounds to the initial letters in one or two works. By the kind permission of the Archbishop, I am enabled to give sketches of one or two of the backgrounds from the "Chronicle of St. Albans," which afford interesting illustration of the manner in which the illuminating artist took note of the effect of distant buildings in a landscape.

Leaving, however, the consideration of what painters of the past have made out of architecture in connexion with landscape, can we, from the hints given us by these and from other sources, arrive at anything profitable or suggestive towards providing material for painters of the future, by so combining our buildings with the scenes in which they are placed that each shall heighten the effect of the other, and that the building, instead of appearing an intruder on the landscape, shall rather appear to be its natural complement, the last grain added to the scene. If it be said that the subject is vague, that you cannot lay down rules in regard to it, that success in such a combination must be the result of innumerable small circumstances and of generally cultivated perception and sentiment rather than of rule: let all this be true (as I think it is), still that is not a reason for avoiding all consideration of the subject, but rather for urging further attention to it. Does it receive sufficient attention at present? There is a story of a man being brought up in a New York police-court for illegally painting an advertisement on the pavement, and that the charge against him was worded "for defacing natural scenery." Would not the magistrates in some districts have their hands pretty full if all the authors of buildings against which such a charge could be levelled were brought up before them?

On this head the remark of a recent French critic is to the point:—

"It is the ensemble of their creations that the modern architects ought to study. It is to commit an error, to isolate an architectural monument from its framework, by confining the attention to analysing the proportions of the structure; for these proportions should be deduced from the ensemble. It is not enough to dispose the masses and study the details, without taking any thought as to the surroundings in which the edifice is to be placed. One must recur to the rules of perspective, and compose with nature before the eyes."

We may congratulate ourselves on having improved in the main the state of things since Repton had occasion to say, in his work on Landscape Gardening, "I have often seen the absurdity of designs being made for a house, where the builder had never seen the situation." Scarcely any architect would do this now; but I think it is true as far as this, that not unfrequently preliminary sketches are made (in

pursuit of the useful and perhaps necessary pastime of hooking a client), before the site has been seen, and then the upshot of the matter is that the original idea, made independently of the site, is fitted to the site as well as may be, rather than disturb an idea once formed. And even when the first plan is made considerably in relation to the site, this is done mainly in regard to provisions for aspect, for shelter, and for practical advantages in drainage and foundations,—in short, there is every consideration as to how things will look from the house, but not enough as to how the house itself will look when it in turn comes to be regarded as an object in the landscape. Now, in reference to this, is not the remark of our aforesaid French critic (M. Alphand, director of public works in Paris) considerably to the point, that the architect should "compose with nature before his eyes"? If the first idea of the house or church, or whatever it may be, were sketched on the spot, on the basis of a little sketch of the scene first, would there not be more probability of pleasing and picturesque combination than if the levels merely are taken, and the scene adjusted to them on a drawing-board? Perhaps also photography might be an important assistance in such a case, in obtaining, without loss of time, two or three views of a site, upon which to test the effect of different combinations. So much by way of suggestion in regard to one form at least of the *modus operandi* which might be adopted in endeavouring to secure harmony between the building and the landscape. Looking at the question a little more generally, in regard to the nature of the problems to be dealt with, we may, perhaps, consider landscape, from an architect's point of view, as presenting four different classes of site; hilly country, flat country, wooded sites, and those in contiguity to water, whether on the coast or inland. We noticed the almost universally admitted theory and practice which suggests that the hills should be occupied by somewhat low and solid-looking buildings, and the plains by loftier and less bulky ones. This is not only, however, for the reason mentioned by Cockerell in the quotation relative to the Greek temples, viz., that architects were afraid of seeming to compete with the mountains; but also because the exposed nature of a site on the summit or brow of a hill inevitably suggests the necessity for strength and solidity of construction; the castle-like building of square proportions and massive walls boldly mounts the hill, the more delicate building with its fragile spirelets and lighter construction, keeps under safe shelter at the base. But this treatment of hill architecture is subject to modifications. Mere elevation is not alone in question, but the character of the eminence also; for what will look well on a bare and precipitous or rocky eminence may look very unsuitable on one of gentler and more rounded character. Looking at Turner's view of "Powis Castle," for instance, I should say that a modern architect would make a great mistake were he to place a building of such massive and castellated character in that position in such a scene. As it stands, it has the prestige and association of antiquity to hallow it; but as a new mansion it would be a mistake. That regularly-sloped hill, with the platform on the top, affords a suitable basis for a structure of less stern and more palatial character. So, also, Kilgarron Castle is picturesque enough as a view with an old castle in it; but the wooded slopes indicated would scarcely bear so rude an intruder, if in a modern dress. In general, rounded undulating hills require the more modest and ornate treatment of the architecture; square and abrupt ones, approaching to the nature of precipices, demand a correspondingly stern character in any buildings that are to look bold enough to have a right to claim footing on them. And something depends on the manner in which the building is accommodated to the ground. On a comparison of examples I think it will be recognised that the quieter and more reposeing effect is gained when the building appears to be placed flat on the surface of the ground, even when on a considerable elevation; the sterner and more monumental effect when it is so treated that its basement is at an irregular level, at one point reaching down into a declivity of the site, at another seeming to climb into a ledge or projection. We see the former effect in Turner's view of Blenheim, which stands fair upon its plateau on a level and extended base, with a look of entire repose: this view struck me as interesting also, as it shows Turner for once in-

dulging in a style not unlike Claude, in the effect of the classic foreground architecture and wooded landscape. In Claude's own compositions, it is probably to be attributed to the level base line that his little circular temples, though placed sometimes on rocks and precipices to match, do not look out of keeping; they have no appearance of really belonging to the situation; they rather look as if they were put down there for ornament and might be taken up again. Instances of the contrary effect are seen in the remarkable view of Lillebonne from Turner. Here the castle seems to rise in the midst like an outgrowth of the rock on which it stands, and into which the outer angles of its towers reach down, while at the inner angles the rock seems to climb up to the towers. Treated thus, a building conveys the impression of being an integral part of the site on which it stands; and (where it can be used) there is no more certain source of architectural power and durability of expression. I have noticed even in such comparatively commonplace things as the tall old Edinburgh stone houses, in High-street and elsewhere, of which the street front looks high enough, but when you come to the back you find the masonry descending sometimes as many stories below the street level to find a firm footing on the steep slope; the effect is quite surprising to eyes accustomed to the flat basement lines of towns built on more sober sites. I was much struck with this kind of effect too in a fine drawing by Mr. Deshon in the chamber of horrors at the last Academy Exhibition (for so the public seem to regard the architectural room), of the tower of St. Antonin, at Pansières, where the treatment of the base of the tower, rising from an uneven rocky site, is so bold that it is difficult to say where the rock ends and the building begins. It is seldom that a modern architect has a chance of realising this kind of treatment; but when he has, it must be his own fault if he fails to produce a powerful and striking effect.*

CHURCH-BUILDING IN ENGLAND.

Sir,—In your interesting article on Church-building in your issue of November 7th, you observed that it was to be regretted we had not the same detailed information with regard to the various Nonconforming bodies. I think it would not be difficult to obtain this information for the purpose indicated by application to denominational headquarters, and in the meantime I beg to furnish you with the following table of the new chapels erected in England during the last eleven years by the Baptists as a specimen. You will see by the report which accompanies this letter that the figures have been carefully collected by the secretary of the Baptist Building Fund, or Society, which has been established for nearly half a century for the purpose of helping in the erection of new chapels by loans, without interest, payable in ten years, and which is therefore in a favourable position for obtaining accurate information.

THE TREASURER.

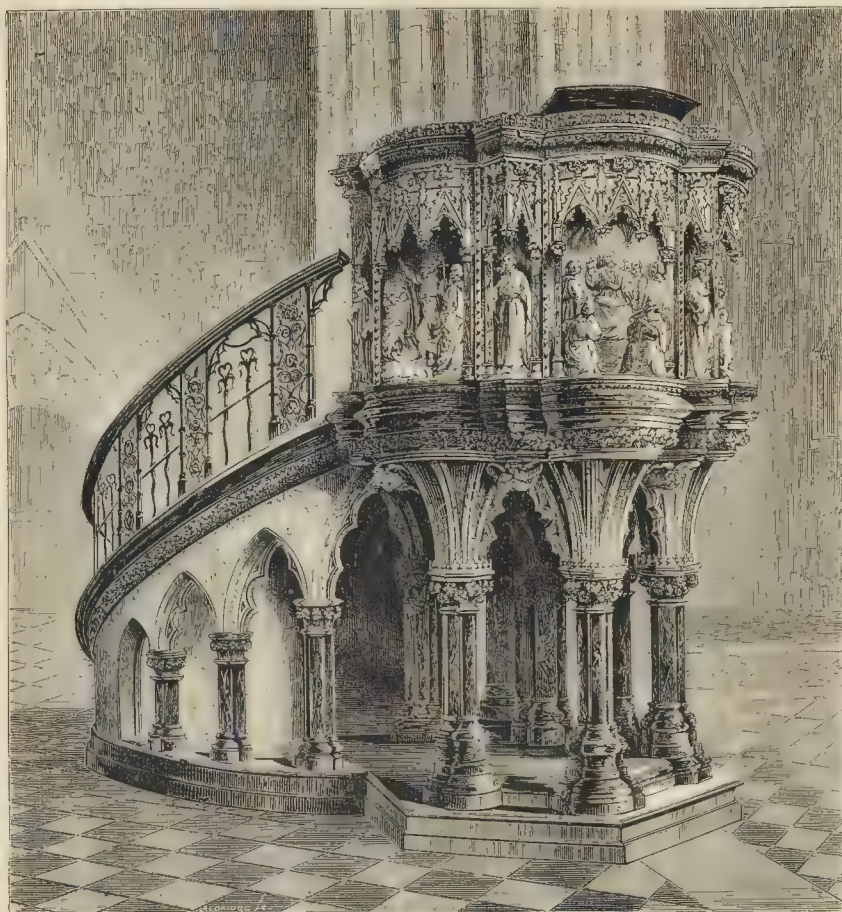
Baptist Chapels erected in England (excluding Monmouth), with the number of sittings provided, during eleven years:—

	Chapels.	Sittings.
1863	24	10,025
1864	37	12,895
1865	44	13,936
1866	33	15,202
1867	19	6,612
1868	37	10,982
1869	36	12,930
1870	28	10,668
1871	40	14,412
1872	35	10,630
1873	25	9,570
	361	127,562

Annual average, 32.63 chapels; 11,532.90 sittings.

A New Church for Battersea.—An appeal is made for funds for the enlargement of the present church, and the erection of a new one in the district of St. George's, Battersea. According to an announcement that has just been made, the only Anglican church, providing for a population of 20,000 persons, all belonging to the industrial class, is the church of St. George's, which has accommodation for a congregation of but 650 people.

* To be continued.



THE NEW PULPIT, WORCESTER CATHEDRAL.—SIR G. G. SCOTT, R.A., ARCHITECT.

PULPIT IN WORCESTER CATHEDRAL.

The pulpit which forms the subject of our illustration, stands in the nave of Worcester Cathedral, and was erected at the sole cost of the Earl of Dudley, to whom the Dean and Chapter are indebted for other munificent contributions towards completion of the cathedral. Judging from the elaborate character of its ornamentation, the richness of the materials, and its magnitude, it must have proved a costly work. It is fixed against the second pier from the chancel arch on the south side. The height of it is about 10 ft. The materials of which it is executed are marbles of various kinds and alabaster, the ornamental handrail being of cast brass.

The plan of the pulpit has been arranged so as to display to the best advantage the sculptured subjects and figures which fill its panels. These subjects are all Bible illustrations of preaching incidents; namely, "St. John the Baptist in the Wilderness," "Our Lord's Sermon on the Mount," "St. Peter on the Day of Pentecost," and "St. Paul at Athens." These panels are separated by niches occupied by figures representing St. Stephen, the first Christian martyr, St. Gregory the Great, St. Jerome,

St. Ambrose, and St. Augustine, the four latter being the Latin Doctors of the Church, all sculptured in white alabaster.

This fine work was designed by Sir G. G. Scott, R.A., and was executed by Mr. James Forsyth.

CAMEO-CUTTING BY LADY ARTISTS.

In the course of the address delivered at the opening meeting of the Society of Arts on the 18th inst., the President thus referred to a subject in which we have long felt much interest. He said,—It is deplored by many, and by none more than by the Council of this Society, that there are so few sources of occupation open to the better educated of our female population. Art has ever been looked to as a source from which might spring profitable employment to many among those who have had the benefit of an art education. "The end of art [said Lord Racon] is to perfect and exalt nature," but to that end it is important that good art should be placed before the people, and to encourage art in connexion with industry is one of the primary objects of our Society. Bearing the foregoing facts in mind, the Society long since pointed

attention to shell-cameo cutting as an industry suited to female artists, and published the necessary information relative to the shells more generally used, in the hope that our countrywomen might in some cases be induced to apply their skill and ability in the production of cameos of a higher class than those generally met with in commerce, the majority of which were, and it is believed still are, the products of foreign workmen. The Society has from time to time offered its medal with the view of inducing attention to the subject, but it is not till the present year that it has been able to award the medal so offered, and it has afforded the Council peculiar satisfaction to do so on the present occasion. The report of the committee on the works of Miss Emily Addis Fawcett was highly commendatory, and they hope that the beginning thus made may lead to large and beneficial results, by inducing other ladies to become producers and competitors for a similar medal in future years. The Council propose to continue the offer of the medal on the same terms and conditions in the present as on former occasions, viz., the Society's silver medal is offered to "female artists, for the best cameo designed and executed on any of the shells ordinarily used for that purpose."



ALLEVYN'S ALMSHOUSES, BATH STREET, CITY ROAD, LONDON.—MR. T. J. HILL, ARCHITECT

CONSTRUCTION OF THE ORWELL PARK OBSERVATORY.*

To design an observatory cannot fail to be, I should think, under any circumstances, a work of considerable interest, calling for the exercise of great care and no small amount of ingenuity; but when, as was the case at Orwell Park, the observatory had to be connected with an existing edifice, so connected as to admit of facility of access, and to combine with the somewhat complicated domestic arrangements of a country mansion, and yet so isolated as to secure complete privacy and perfect quiet to the astronomical observer, the difficulties, I apprehend, are intensified to no small extent. As the observatory, of which I am now about to give some account, formed only a portion of other works which I was called upon to design at the same time in connexion with the house at Orwell Park, I think it may not be altogether without interest, and at all events is essential to the proper understanding of the subject, that I should, in the first instance, trouble you with a very brief sketch of the whole scheme, so as to convey some idea of what the house was before the operations in question were commenced, and what the nature of the requirements were which I had to fulfil. Without this it would be quite impossible for you to arrive at anything like a correct judgment as to the result.

The original house consisted of a square block, to which had, at various times, been added several adjuncts, such as the picture-gallery, billiard-room, and conservatory to the west, and an entirely new wing to the east, embracing the whole of the domestic offices, and beyond that, again, the stable-offices, brewhouse, and laundry-offices, &c. In connexion with these additions the main block of the mansion had, so far as the south front is concerned, been refaced, and made to assume the architectural garb it now possesses. These operations had, at different periods, been carried out by the late Mr. Bacon. Such was the subject for treatment. The requirements of the proprietor were, one or two suites of first-class bedrooms, in which the house was deemed to be deficient, forming state apartments; a Turkish bath; and, though last not least, an observatory with other minor and subsidiary wants not necessary to specify. The main building, comprising the principal apartments, was complete in itself, and answered every purpose required of it. The east wing, comprising the domestic offices, was excellently arranged in point of comfort and convenience, and of a substantial character. It was clear, therefore, that neither one nor the other could be materially altered without disturbing arrangements which were good, and incurring a large and unnecessary outlay. Accordingly I resolved to adopt an arrangement which possessed the merit of retaining the whole of the existing buildings intact, with some unimportant exceptions—while by extending to some three double its then length the principal architectural front of the building, and obviating the inconvenience of the servants' offices overlooking the private grounds. This was done by building up the whole of the windows of the offices which looked to the south, and (by the sacrifice of one or two servants' bedrooms only, which were obtained elsewhere) lighting and thoroughly ventilating from the roof the offices which had previously looked to the south, an operation which proved perfectly successful and satisfactory. This simple expedient solved all difficulty, for the whole space to the south of the east wing was thus made available for the erection of an entirely new wing, comprising the additional accommodation that was required, shutting out from view the ugly and unfinished appearance of the old east wing, and completing the architectural façade of the building to the south. This new wing consisted of a handsome suite of apartments on each floor, so arranged that the rooms might be used together or separately, as occasion required, accessible on each floor by means of a corridor 170 ft. in length; in connexion with which was provided a new principal staircase, a feature of which the house was much in want. At the extreme easterly end of this new wing I placed the observatory, thereby providing a handsome and convenient access from either floor, by means of the corridors already mentioned, and at the same time securing that complete isolation that the peculiar circumstances of the case

called for. The rooms on the principal floor were arranged so that they might be used as a complete suite of family apartments, the proprietor's business-room being at the east end of the suite, in close proximity to which, but properly shut off, were the Turkish-bath chambers, and in immediate communication with which was the observatory above, by means of the private staircase.

Having thus taken a cursory survey of the general arrangement, I will now proceed to describe in detail the portion of the work which more immediately concerns us at present.

To say that an observatory is a place from which to study and take observations of the heavenly bodies, is to repeat a definition familiar to every schoolboy; but, accepting that definition as correct, it follows that the structure is one which is formed for the reception, permanently, of astronomical instruments of the utmost delicacy, and of great intrinsic value, the mathematical accuracy and consequent utility of which would be destroyed by the smallest defect in the constructive properties of the edifice which contains them; and I think, therefore, that I am not exaggerating the importance of the subject when I say that there is, perhaps, no building which calls for more anxious thought, and more careful attention to every detail, on the part of the architect to whose care it is confided. On the other hand, there is perhaps no subject, the peculiar properties of which lend themselves so little to the production of a good architectural effect; so much so, that it has been doubted by Gwilt, whether it is possible to combine such features with beauty of design. And when it is considered, for instance, that the dome of an observatory, intended for an equatorial instrument, such as the one at Orwell Park, must be made to revolve, must have a movable shutter, and must be finished without any lantern or spiral termination, it must be conceded that the doubt which I have alluded to did not arise without sufficient reason. I shall probably illustrate most clearly the difficulties attending the design and erection of such a building, whether viewed from a constructional or architectural point of view, by referring in point of order to what appear to me questions of primary importance, and by explaining how such questions were treated in the case of the Orwell Park observatory.

The first point of primary importance that demands attention in the construction of such a building, is the site. In the case of Orwell Park, this did not admit of much choice, inasmuch as the observatory was required to form part of the mansion. Fortunately, the position of the house, standing as it does on the high banks of the river Orwell, was well adapted to the required purpose. As a rule, however, for general guidance, I believe the best position for an observatory is considered to be the summit of a low hill or rising ground, so as to command the horizon without entailing the expense, and involving the difficulties which attend the construction of a lofty edifice. At Orwell Park the observatory, although standing on high ground, had necessarily to be of considerable height, in order to surmount the adjacent buildings and the lofty trees in the vicinity. It was stipulated by Mr. Airy, the engineer who designed the scientific and mechanical portions of the work, that the floor of the equatorial room should be 6 ft. above the top of the highest chimney in the mansion adjoining, a stipulation which involved a height of 53 ft. from the ground level, and of 72 ft. to the top of the dome, the total height from the bed of the foundations to the top of the dome being 86 ft. It is to be noted also that when an observatory is erected in the vicinity of a river, it should be placed at such an elevation as to be above the reach of fogs, for such may prevail when the sky above is clear and well adapted for astronomical observations. I gather from an article recently published in *Engineering* by Mr. Airy, that he "has frequently seen a dense fog extending as high as 100 ft. above the Thames, at Greenwich, while at the Royal Observatory, 150 ft. above the river, the air was perfectly clear, and the stars brilliant."

The next point of primary importance that calls for special consideration, is the nature of the foundation. It is not so much on account of the actual weight of the superstructure (although in the case in point that was very considerable) as on account of the absolute necessity of securing a basis perfectly immovable, beyond all fear of settlement, and above all free from any chance of vibration. The nature of the

foundation at Orwell Park was a hard loamy sand, which was so firm that for the buildings generally I did not deem it necessary to resort to any artificial foundation, but bedded the footings at once upon the sand. In the case of the observatory, however, where the excavations had to be carried to a considerably greater depth, there were occasionally soft places, with water. The soil in such places was removed, and the holes filled in with concrete, and in addition to this, the whole observatory building was placed upon one solid bed of concrete, 4 ft. in thickness, and extending 30 in. beyond the lower course of the footings. The only possible objection that might be urged against this plan is, that the concrete being one mass, upon which both the outer walls and the central pier of the observatory stand, might act as a conductor of tremor or vibration from the outer shell to the kernel which it enclosed. The chances of this, however, were considered remote in the cases in point, and the result has, I believe, perfectly justified the conclusions thus arrived at. One can easily imagine, however, that were the central pier made to stand upon a foundation separate from that of the building which encloses it, and consisting say of piles driven deep into the surface of the earth, there could be less risk of the pier being affected, even to the remotest extent, by vibration—and in theory, therefore, it may I suppose be conceded that such a foundation would be the most perfect,—but from a practical point of view, the distinction does not appear to my mind to be one of material consequence.

Next in importance, and second only to the foundation upon which it stands, comes the pier or pillar which constitutes the heart of the structure, being the support of the instrument in the observatory above. The difficulty of obtaining a secure support for the instrument, perfectly free from vibration, must of course increase proportionately with the height to which it is carried; and it might possibly be better in some cases where the height is exceptionally great, or where it might facilitate the planning of the lower portions of the building, to introduce more than one support, thereby leaving a clear space beneath uninterrupted by any central shaft. In the case of Orwell Park, Mr. Airy stipulated that the instrument should be supported upon one central pier or pillar, circular in plan, and carried up from the foundation to the height of 60 ft. in one solid and unbroken mass of brickwork. At the base, and for the height of 12 ft., this pier was 10 ft. in diameter; from this point to the height of 32 ft. it was 8 ft. in diameter; and for the remaining 16 ft. it was 6 ft. in diameter. It is perhaps superfluous to state that the brickwork of this pier was of the very best description; but it is worth noting that it was built in mortar, not cement, by Mr. Airy's special desire, the former material being less subject to expansion; and the precaution was taken of carrying up the work slowly, so as to allow the brickwork to set thoroughly throughout the entire mass of the column. At the level of 7 ft. from the top of the pier, a 12-in. hard York stone, from the Idlestone quarry, was inserted, 6 ft. diameter, and again on the top of the pier a similar stone was bedded, which latter formed the upper surface of the column at the exact level of 3 ft. 10 in. below the floor of the equatorial room, and to this stone was afterwards fixed the iron casting which formed the support to the instrument. The one point of supreme importance, which required to be specially attended to in connexion with this pier was, that it should have absolutely no contact whatever with any portion of the surrounding building, from the foundation upwards, just as much so indeed as if it had stood by itself, an isolated pillar. To effect this object I encased the pier with a circular wall of 1½ in. brickwork the whole height from the foundation upwards to the floor of the observatory, leaving a clear space of 6 in. throughout between the outer surface of the pier and the inner surface of the enclosing wall, and thus it became utterly impossible that the pier could be, even to the smallest extent, affected by its proximity to the surrounding buildings. The diameter of this circular wall, as it might be called, was made to diminish upwards, following the diminishing diameter of the pier which it encased, so as not to lose space in the surrounding building, which might prove valuable* for other purposes. The internal diameter of the dome of the observatory was fixed by Mr. Airy at 20 ft. in the clear, and the circular walls which supported it and formed the equatorial room, were consequently required to enclose a space of 19 ft. 6 in. diameter. It

* From a paper by Mr. J. Macvicar Anderson, Fellow, read at the Institute of Architects, as mentioned in our last.

is obvious that had these walls been carried up from the foundations, the space between them and the 14-in. wall enclosing the pier would, especially towards the bottom, have been so limited as to have been practically useless. On the lower floors, therefore, I constructed the building of a much larger diameter, and of octagonal form, measuring 32 ft. from out to out. By this means I obtained a space all round the central pier, 7 ft. 6 in. in the clear between the external walls and the 14-in. inclosing wall already alluded to. This space in the principal floor appeared to me well adapted for, what was one of the requirements of the proprietor, a Turkish bath. I therefore formed an adjunct to the observatory building on this floor, and placed therein the "sudarium" and "tepidarium," being the two hot chambers, and reserved the whole of the space surrounding the central pier of the observatory for the "frigidarium" or cooling chamber. These chambers were heated by a special furnace, placed in the basement immediately beneath, capable of raising the temperature in the innermost or hot chamber to 200 degrees, and a proportionate amount of warmth was also introduced to the other chambers, the whole being so arranged that the temperature in each chamber could be regulated as might be desired. The cooling chamber, which occupied the spaces around the central pier of the observatory, was of octagonal form, and was proposed to be finished in a style of Oriental luxuriance, with shelves of polished marble, a dado and wall linings of coloured marbles, and a veined marble floor, the groining which was executed in plaster being intended for coloured and painted decoration. The large recesses were prepared for luxurious couches, and the chamber was thus intended to form a sumptuous and agreeable lounge for general purposes, as well as for the more immediate requirements of the Turkish bath. The space on the first floor, immediately above, was occupied as a muniment chamber, arched over, as well as the chamber beneath, with brickwork in cement. On the floor above this muniment chamber, the circular, external walls of the observatory proper commence. These, however, were not in any way supported on the brick arches just referred to, but upon a series of sixteen wrought-iron girders, resting at one end on the external walls of the octagon below, and at the other on the 14-in. wall enclosing the central pier, overlapping the latter inwards, so as to form the support to the diminished diameter of the 14-in. enclosing wall above, and receiving about midway between the bearings the circular wall of the observatory. At this level, the space was occupied by a Belvedere, accessible by means of the spiral stone stair leading to the equatorial room above, and from which might be obtained good views of the park and surrounding scenery. For this purpose the walls of the observatory were on this floor pierced with a series of arches, and the junction architecturally between this circular building and the larger octagonal one below, was formed with large scrolls or trusses of moulded and carved masonry, one being placed over each angle of the octagon. The observatory itself, or, as it is otherwise called, the equatorial room, was reached by means of the spiral stair already referred to, at the top of which was a doorway, 6 ft. high by 2 ft. 6 in. wide, the height of the door being thus restricted in consequence of Mr. Airy's stipulation that the extreme top of the observatory wall should be exactly 6 ft. 5 in. above the level of the floor. The observatory, as has been already stated, was circular on plan, 19 ft. 6 in. diameter in clear of the walls, which were 22½ in. in thickness. It was lighted by means of small circular-headed windows in the walls forming incurves externally, the apex of which did not rise above the stipulated height of 6 ft. 5 in. from the floor. Corresponding with the doorway from the circular stair, was another and similar doorway leading to the transit chamber, a small room prepared for the reception of the transit instrument, a necessary accompaniment to the equatorial instrument which Mr. Airy adopted for the observatory. In the floor of this chamber a hard York stone, 5 ft. by 3 ft., was fixed forming the foundation for the transit instrument. It was stipulated that this chamber should be upon a certain axis, which condition I was so far fortunate in securing by placing it on the north-east side of the observatory, corresponding to the turret-stair on the north-west side, in which position they were less prominent than they could have been elsewhere. These projections or turrets for the stair and the transit chamber, it was difficult to make archi-

tecturally effective, in consequence, first, of their destroying the circular outline of the observatory, and, secondly, of the necessity of keeping them beneath the top of the general line of masonry, and finishing them with flat roofs. They were, in short, excrescences to which I did not hope so much to impart beauty, as to redeem them from positive ugliness.

It is not my intention to enter at all in detail upon the construction of the dome, or of the mechanical contrivances for working it, nor yet to allude even to the astronomical instruments, because these will be much more ably and clearly described by the engineer who designed them, Mr. W. Airy. I must, however, be permitted to render this descriptive sketch complete, by referring briefly to one or two particulars. The chief constructive feature of an equatorial room is the dome, which must be made to revolve, and it is, of course, of the greatest consequence that it should do so easily, and without the application of much effort. In the case of Orwell Park, the dome, which weighed about three tons, revolved upon a series of wheels contained in boxes formed in the masonry for the purpose, the motive action being by means of a grooved wheel and endless rope, which acting on a circular rack on the top of the wall, caused the dome to revolve with great ease. The wheel-boxes just referred to, were, I think, sixteen in number, and were formed in the top course of the masonry, and constructed with a stone in front of each, bolted and made removable at pleasure, in case of the boxes becoming choked, or the wheels requiring repair in course of time. The dome was constructed of iron ribs 4 in. thick, covered on the outside with deal boarding to receive the copper sheathing which formed the external covering, and lined on the inside with polished mahogany boards, with joints radiating towards the apex. The walls were similarly lined on the inside with polished mahogany boarding. The dome was provided with a shutter, which was so contrived as to open easily and yet be perfectly weather-tight when closed, and which extended from the base to the apex, forming a complete slit when open on one side of the dome. The casting which formed the support of the equatorial instrument, was securely bolted to the top stone of the central pier which has already been described in detail, and as it was of considerable weight, it was necessary to specify that the contractor's scaffolding should be of sufficient strength to hoist a weight of several tons. The equatorial room was provided with the means of being heated by warm-air flues from the boiler of the Turkish bath below.

It may be thought by some that an observatory is a somewhat unnecessary, as it is no doubt a very unusual adjunct to a country house. But why, let me ask, should it be either? Is there any reason why a country gentleman, the inheritor, it may be, of vast domains and unbounded wealth, who has surrounded himself with the noblest and most elevating productions of human genius, should not occasionally devote himself to the grand, the wondrous study of the works of God in nature and creation? Apart altogether from its scientific importance, is there any study better calculated to sink into utter insignificance all that we esteem to be great and valued? The power acquired by wealth, title, position, the most cherished possessions, and most costly treasures, do they not drop from our affections like crumbling clay, in the contemplation of the great universe, whose limits are boundless space, in comparison with which man, and all he possesses, are but as a drop in the great ocean?

In conclusion, I will only venture to hope that by reading this paper before you, I have demonstrated that it is not impossible to erect an observatory in connexion with a country house, forming an integral part of it, and combining facility of access with complete isolation, and at the same time to treat it in such a manner that it need prove neither an unsightly object nor an architectural eyesore.

THE STATE OF KIMBLE CHURCH.

SIR,—In reference to the letter in the *Builder* of the 21st., would it not be just that the patron of the living, who has a money interest in the appointment of the minister, should to a degree be answerable for the state of the church, where the parishioners are too poor to restore it, or the land proprietors, as is the case in Scotland, where the heritors are bound to uphold?

"SOAPING."

SIR,—It is said that a physiologist can project the entire animal from a fossil bone. There is, doubtless, a certain conformity between the whole and its parts in every being, state, or system of nature. This holds true of an age. Ages have their individualities, and the features of an age are in unison with its general character. You will find that the manners, social life, costume, ornament, painting, sculpture, and literature of the time of Louis XIV. are correlated, and in perfect accord. The trail of the serpent is over them all; and if we turn to England and our own time, the union of characteristics is conspicuous.

In an age when puffing by advertisement is possible, be sure you will find a certain kind of consistency in its other forms and features. Superficial knowledge, spurious art, spurious science, and affectation: quackery everywhere. But there is one consonant, consistent feature of this state of things which we propose to treat by itself, viz., "soaping."

Soaping is a necessary concomitant of a puffing age—and why? Because the success of puffing depends upon the abnegation of thought in the masses. People no longer think for themselves, and a people that no longer thinks for itself is sure to be led by the nose. It is not difficult to lead it, for feeble convictions are soon turned. The assurance of the puff direct, the unflinching puff, is sufficient to give direction to the feeble mind. But there are professions, the members of which are precluded from availing themselves of the puff direct in the advertising columns of a journal, but who in such an age must be puffed nevertheless, and this is only to be effected by soaping.

In order to be soaped, you must soap. If you cannot do this with a good grace and appropriateunction, your chances of success in life will be very poor indeed. You may reap your reward in the future if you have genius, but for the present you will be snubbed, kicked, and set on one side as a disagreeable and impracticable fellow.

To soap everybody alike, of course, would not pay,—would defeat the very aim and end of soaping. The full powers of lather must be reserved for the birds of the same feather as we; for our set, our quackery, our specific, our gilded pill. If any young professional man feels a sense of isolation, an examination of his position will doubtless reveal the cause,—he does not belong to a clique. Forthwith he must choose his set, tender his allegiance, and all will be changed. Henceforward he will have a host of friends whose scapy adulation will lubricate his "ways" and launch him into the murky sea of notoriety. But farewell to independent thought and action; he is now and for ever a thrall. In return, however, for this self-sacrifice, his work, whatever that may be, will be lauded to the skies by the organ of the clique, whose bounden duty it is to soap the fleece of the chosen flock, and to blucken the wool of all sheep which bleat from other folds.

How to get soaped is an important problem, which every one in the present day has to solve for himself. If you know that your little best is very small indeed, a kind of self-knowledge which little understanding very seldom possesses, why choose your set, tender your allegiance at once, and link yourself with its fortunes. But if you be more ambitious, fancy yourself gifted with extraordinary powers, and have a desire to be the soaped of all soapers, the position is somewhat more difficult of attainment. In this case, the better way is, perhaps, to begin by doing something extraordinarily eccentric in politics, literature, or art,—something which no reasonable soul, no one in his right senses, would dream of doing. The critics will then divide and do battle upon the subject, and you will be the hero of one party. Then is the time to "strike ile," and gather round you a host of soaping retainers, and establish your position. You must become president of some society, from which you must skillfully either eliminate or exclude any possible rival luminary. By such means, in a short time you will be surrounded by a legion of soapers. Should you, however, attain to this much without possessing any real force, eccentric, though it may be, you will soon tumble from that height, for soapers look for reward, and should you not be able to confer this, you will find the suds, the prismatic bubbles all subsiding into very flat and dirty water. If, on the contrary, you can continue to astonish the world by your antics, there is

no knowing to what preferment you may be soaped.

Another very effective way of getting soaped, and to a considerable position of esteem and credit, in a clique, is to write a book in its support, using all the sophistry of which you are master, declaring this to be the only band of regenerators, political, social, literary, or artistic.

The most unfortunate man of all in a soaping age, is the man of real ability, conscientious as he is most likely to be, and unable to soap what he does not approve, what he knows to be wrong. The only path open to him is to let the powerful claim his ideas as their own. He may then get a little soft soap, though another get the lather, and all the credit. If he does not submit, woe betide him: there will be no flattering mention to lay to his soul. Rest assured, he will not be

SOAPED.

THE PREVALENCE OF FEVER.

Marylebone.—On the 18th inst., the medical officer of health, Dr. Whitmore, issued his monthly report. The number of deaths in five weeks from diseases of the zymotic class was 68, amounting to no less than 22 per cent. of the total deaths. Of these, scarlet fever was by far the most fatal, and next in order came diarrhoea and typhoid fever. Scarlet fever destroyed 31 children, all under the age of eight years, the great majority of them not having reached the age of five years. The disease appears to be confined to the northern division of the parish, and is chiefly prevalent among the children of the poor in the crowded districts contiguous to Lisson-grove and Church-street. In Dr. Whitmore's opinion, the law as it at present exists for preventing the spread of the contagious epidemic diseases is altogether insufficient, and must continue so until further enactments of a stringent character are added, which shall provide for the compulsory isolation of infected persons, and prohibit all intercourse between them and the healthy until such time as they shall be declared by medical certificate to be incapable of communicating disease. The better classes of society, as a rule, are fully conscious of the danger, and are not slow in adopting measures to avert it; but the poor and destitute are regardless of the simplest precautions, caring neither to protect their own offspring from infection, nor, if infected, to prevent them infecting the offspring of others.

Carlisle.—Carlisle has been suffering from an epidemic of typhus and scarlet fever. The first outbreak was in the last week in April, and since that time above 500 persons have been affected. The fever was at first confined to three places. The medical officer being unable to get the patients removed from their homes in densely-populated courts, the isolation of the infection was not accomplished, and the fever spread from place to place. One of the first centres of infection being near the barracks, the military authorities became alarmed in June; an inspection was made, and some of the more glaring nuisances were removed. At the end of July there were about forty fever patients in the hospitals. By the middle of September there were as many as between 150 and 200 cases of fever in the city. The citizens formed themselves into committees of inspection, who distributed themselves over different districts, and sent to the local authorities reports of what nuisances they had found on their rounds.

Sedgley.—At the usual weekly meeting of the Board of Guardians, on the 20th inst., Mr. Elliott Hollier called the attention of the guardians to the fact that out of twenty-one fever certificates presented that morning by Mr. Egginton, the relieving officer for Upper Sedgley, fifteen were for fever. There seemed no abatement of fever in the above district, and the matter was becoming very serious for the union. The Rev. B. C. Young said it was only the upper side of Sedgley which was being decimated by fever. It is gratifying to be able to state, however, that prompt and energetic measures have been adopted in the direction of supplying a good and much-needed water supply.

Maidstone.—From the report of Mr. Barham, the medical officer of health, it appears that the four fatal cases of typhoid fever, which occurred in the town during October, were not to be attributed either to foul air, defective drainage, or impure water. A stream of water running through a dirty horse-pond, and conducted through pipes direct to the reservoir, cannot be considered a very valuable auxiliary with which to supplement the supply of a town. We believe,

says the *Maidstone Gazette*, it is intended to ask the Water Company if they are prepared to submit the water to an analysis, and we can only express the hope, in the interest of the town, that the analysis will take place before the impurities, which, it appears, may at any time be discharged from the reservoir, have had the opportunity to "settle." Maidstone enjoys many advantages, and generally figures more favourably than other towns in the Registrar-General's returns, but it is possible by the neglect of due precautions in the matter of water and drainage, to over-ride the natural advantages which the town possesses.

Uplowman (Tiverton).—Some shocking fever cases are reported from Uplowman, near Tiverton. It appears from the report of the medical officer of the district, brought before the Tiverton urban sanitary authority, that a family, consisting of a labouring man, his wife, and six of his children, who are under eleven years of age, inhabit a cottage at Uplowman containing a kitchen, pantry adjoining, and two bedrooms, partly divided by a lath and plaster partition, over. A few weeks ago, a son came home ill from Wales. He died on a Monday about three weeks ago, but no coffin was provided until the following Wednesday, and meanwhile exhalations from the decomposing body ran through the ceiling and down the wall of the lower room. Before the corpse was buried three of the children were attacked with scarlet fever, and a short time afterwards the mother and the three other children were also stricken down with the fever. It was reported that the family obtained water from a well which was known to have been fouled by cattle. It was stated that the cottage was, apart from the fever, not fit for habitation.

THE USE OF A WELL.

TRAP V. BONNETT.

At the County Court, Watford, on the 16th inst., an action was brought for payment for the use of a well, tubs, pails, &c.

The plaintiff in this case resided at Leavesden Green, and the defendant was a builder, at Watford. Defendant was doing bricklayer's work at some houses adjoining plaintiff's house, and being in want of water, his men had used plaintiff's well, tubs, &c.

Defendant admitted that his men had used the well for three days, but he said it was by permission of the plaintiff's wife. After that time he hired some one to procure water for the work, and paid 5s. for it.

Plaintiff said that defendant used the water during the dry season when water was very scarce at Leavesden. He charged only 3s. a day for the use of the well, but it was worth 5s. When his well was dry, they had to send a long way for water.

His Honour thought defendant ought to pay for the water and for the use of the tubs. Judgment for plaintiff for 25s., to be paid in a fortnight.

THE SEWERAGE OF HUXTON AND ROBY.

THE existing sanitary condition of these townships being very unsatisfactory, the Parochial Committee have instructed Mr. T. Mellard Reade, Civil Engineer, Canning-chambers, Liverpool, to report to them as to the scheme he should recommend for completely sewerage the district, and disposing of the sewage, and as to the probable cost. The townships are of that mixed rural and suburban character common in the vicinity of large towns. It is desired to carry out a comprehensive system that will meet prospective wants for a generation to come. There is certainly urgent need of action in the matter.

FREE LIBRARIES.

St. Pancras.—On Monday evening last a public meeting of the ratepayers of St. Pancras, convened by the Vestry, was held in the Vestry-hall, Mr. Churchwarden Coleing presiding, to determine whether the Free Public Libraries Act should be adopted for the establishment of a free library in the parish. Mr. Westacott moved a resolution in favour of such an institution, and Mr. Cromer seconded the motion. Mr. Palmer moved an amendment in opposition to the establishment of any such library. On a show of hands, the chairman declared that the number

for the adoption of the Act was 117, and against it, 123. A division being demanded, it was reported that the voters for the adoption of the Act numbered 121, and against it, 150.

Elington.—A meeting was held at the Agricultural Hall on Tuesday evening last for the purpose of determining whether the Public Libraries and Museums Act should be adopted in the parish. Professor Leone Levi proposed a resolution that the Act should be adopted for the parish. After a noisy discussion, a "count-out" took place, which resulted in ayes, 338; noes, 1,435.

Glasgow.—A free library is to be established at Glasgow, by means of a bequest of the late Mr. Stephen Mitchell. A committee of the corporation has been appointed to carry out the scheme.

NEW STREET BETWEEN LEICESTER-SQUARE AND OXFORD-STREET.

At the last ordinary weekly meeting of the Metropolitan Board of Works, Mr. Phillips introduced a numerous deputation from the vestry of St. Anne, Westminster, and a memorial was presented on the subject of improving the thoroughfares between Leicester-square and Oxford-street.

Dr. Rogers, on behalf of the deputation, said for years the subject of an improved street between Leicester-square and Oxford-street had been under consideration. It was proposed that Dean-street should be continued through Gerrard-street and Lisle-street over the site of Saville House right into the centre of Leicester-square. This improvement, he contended, could be accomplished by the removal of about six houses at the end of Macclesfield-street, which stood between Lisle-street and the site of Saville House.

Mr. H. L. Taylor asked if the parish of St. Anne was prepared to pay a moiety of the cost of this improvement?

Dr. Rogers said the locality had no means of taxing the ratepayers for the purpose of making this improvement. It would greatly benefit the district, but they were not prepared to contribute to the cost. Saville House could be purchased for 25,000l., and the six houses for about 7,000l.; altogether the cost would be about 40,000l.

The memorial was referred to the Works Committee.

A WORKMEN'S CHAPEL AT THE SHAFESBURY PARK ESTATE.

ON Saturday afternoon last the foundation-stone of a small chapel in connexion with the Primitive Methodists was laid on a piece of land in Greyshe-road, immediately adjoining the Shaftesbury Park Estate, Lavender-hill, Battersea. The building, to which it has been decided most absurdly to give the distinctive title of a "Workmen's Chapel," has been chiefly promoted by the residents on the Shaftesbury Park Estate, and the site adjoining the estate was secured in consequence of there being a clause in the company's deed preventing the erection of any church, chapel, or public-house on the estate itself. The architect who designed the building, the style of which is a mixed Gothic, is Mr. F. N. Pettingill, of Hull, the acting architect being Mr. A. J. Rouse, of Notting-hill.

A NEW BUILDING ESTATE AT PECKHAM.

THE large plot of land on the north side of Peckham, known as the Rosemary Branch Estate, which for several years past has been used as a cricket-field, and also for other outdoor recreative purposes, is about to be laid out in streets for building purposes. The estate covers an area of several acres in extent, and a short time ago an effort was made by the inhabitants of the surrounding district to secure the ground for the public as one of the open spaces of the metropolis, in a neighbourhood where there is a dense population. The desirability of purchasing it, and laying out the grounds ornamentally, was discussed by the Camberwell Vestry, which eventually decided that they could not carry out the object, and the result is that the estate has been purchased by capitalists interested in building, and is immediately to be prepared for the erection of several streets of houses, which we understand are to be of a superior class. Tenders for the drainage

of the estate and the making of the roads have been received during the present week, and this portion of the work is at once to be commenced. The estate has been laid out for the erection of about 250 houses, by Mr. W. A. Murphy, architect, of Camberwell, and when the buildings intended to be erected are completed, they will afford accommodation for a population of about 1,500.

ENLARGEMENT OF ST. SAVIOUR'S WORKHOUSE.

The guardians of St. Saviour's Union have been requested by the Local Government Board either considerably to enlarge their present workhouse, in John-street West, or to erect new workhouse buildings on some other site, and at the meeting last week, when Dr. Bridges and Mr. Hedley, two of the Local Government Board Inspectors, were present, the question of a site for the additional buildings was for some time under discussion. The various plans which the Board had had under consideration were explained in detail by the chairman. It was ultimately decided to submit the plans of the John-street West site and the Newington site to the Local Government Board, together with the estimated cost of each, and to erect the new buildings on the site recommended by them.

UNION CHAPEL COMPETITION.

UNION CHAPEL, Islington, is about to be rebuilt, at a cost of 15,000*l*. Seven competing architects have been selected, and fifty guineas will be paid to each of the unsuccessful competitors. The instructions have been prepared by Mr. A. Waterhouse, who has been retained by the committee as referee and consulting architect.

A set of instructions from the minister's point of view were sent with those prepared by Mr. Waterhouse, and to these we may refer on another occasion. The committee so far have certainly acted well.

THE MARGATE DRAINAGE COMPETITION.

At a special meeting of the Town Council of Margate, held on Tuesday last, "to consider the amended drainage plans submitted by Mr. Lewis Angell, C.E.," the borough surveyor (Mr. Albert Latham, C.E.) brought up a report which he had prepared thereon, dealing somewhat unfavourably with the amended plans; and, in answer to questions, refused to recommend the Council to adopt the amended plans. Consequently, the meeting separated without coming to any resolution upon the subject; and it is intimated that there is some probability of the amended plans being thrown out, and a conference of all the competitors being convened, to consult as to the manner in which the 800*l*. offered in premiums should be applied. The Council appear to be making a mess of the affair.

FIRES.

THE underground fire, which has been the cause of great destruction in South Shields, has again broken out, and on Wednesday, the 18th inst., a dwelling-house was destroyed by the flames. The house was rendered unfit for human habitation some time ago, and was fortunately unoccupied at the time of the outbreak. Several other houses having been endangered, have been taken down for public safety.

St. Ives House, near Kingwood, the residence of Colonel Wright, of Nottingham, has been destroyed by fire. The fire, which commenced soon after midnight, seems to have originated in the kitchen floor.

One of the most destructive fires which has taken place in Lincoln for several years past broke out on November 20th in the saw and planing mill belonging to Mr. Nusum. The damage is roughly estimated at from 8,000*l*. to 10,000*l*.

An extensive fire at Eastbourne took place on Tuesday night at the business premises of Mr. James Pearless, the well-known builder and member of the local Board, situate at the west end of Langney-road, and near its junction with Termineus-road. The whole of the buildings and extensive stock of seasoned timber were destroyed, and considerable damage was done to the adjoining premises of Messrs. Dip-

lock, Son, & Peplow, the wine-merchants and brewers, and others. Mr. Pearless's loss, it is said, will amount to between 4,000*l*. and 5,000*l*. He is insured to the extent of 2,500*l*. in the County Fire Office. The damage to the malt-house and brewery is estimated at 1,500*l*. The workmen employed in the carpenters' shops are also great losers, the value of their tools consumed being little short of 300*l*.

An alarm of fire was raised during special services in the French parish church at Montreal, on the 9th inst., and the congregation made a rush for the doors. Three hundred people were trampled upon, and many of them were fatally injured.

THE LONDON GAS SUPPLY.

THE Parliamentary notices for the ensuing session include particulars of three Bills, two of which are jointly promoted by the City Corporation and the Metropolitan Board of Works. One of the measures provides for the compulsory sale to the Corporation and the Board of Works of existing gas companies, and for the purchasing bodies to undertake the duty of supplying gas. The second Bill is to give the Corporation and the Board of Works power to construct gas-works at Barking Creek, Crossness, and Wormwood Scrabbs, and supply the commodity over the entire area of the metropolis, for which purpose leave will be sought to acquire land, make connecting railways, piers, and landing-places. The third Bill refers to arrangements for regulating the purity, pressure, and price of the gas, and the duties of public officers appointed to carry out the Act.

It is probably hopeless to expect that these measures will be carried next session, but we may see the beginning of a good end.

THE PRESSURE OF SEWER GAS.

SIR,—We are continually being treated to vague statements as to the pressure of sewer gas on the water seal of traps, and the density of air in sewers, but why do not some of our writers on these subjects give us some facts. It would be very simple for them to fix an ordinary gas-pressure water-gauge on a soil-pipe under and near the trap. If Mr. Henry Matthews, of Bristol, whom you quoted last week, would do this, and tell us the result, we should be able to test his assertion that the dip of 1 in. or 1½ in. in the trap is not sufficient to resist a pressure which he has probably never measured. Again, the exact pressure of gas in the sewer of which Mr. Matthews speaks might be ascertained with a barometer, after making allowance for difference of level. We do not deny the existence of the pressure, nor the importance of the subject, but we cannot remedy the evil until it has been diagnosed in a more accurate and scientific manner.

P.S.—Mr. Matthews's statement that the temperature of our sewers is low, if intended to convey the impression that it is lower than that of the open streets, does not generally apply to London, as in winter the temperature in the sewers is much higher, and only during the hottest days in summer is it cooler.

COAL DUST.

In Belgium and in South Wales coal dust mixed with clay, water being added and formed into so-called *brûquettes* in Belgium, is burnt in common fireplaces. In South Wales the fire is made up of these balls, piled close together, and the interior well packed with fuel early in the morning, and it lasts the whole day. The over-lasting whitewash is paid over the front, and the whole left to burn at its leisure. A peculiar smell may arise from this way of burning the dust, but that is not cared for.

STOCKWELL GREEN.

SIR,—In your impression of Nov. 21st, you say in reference to Stockwell-green:—

"It appears now to be feared that in order to secure the Green it will be necessary to compensate those persons who have purchased plots from Mr. H. by forcing upon them, in addition to paying that gentleman the 1*l*. 4*d*. which he gave for the Green, although it was understood that the lots were let, and the contracts entered into, subject to their becoming inoperative by the Metropolitan Board taking possession of the Green."

To prevent misunderstanding hereafter, I beg to say the plots are not sold, but let on building

agreements, and there is no such clause as you speak of in those agreements, neither has it ever been understood by the parties there that those agreements should be surrendered by the builders without compensation. Mr. Honey has not offered to sell the land in question to the Metropolitan Board of Works for 4,000*l*. I believe the price fixed by the present freeholders is a fair one. Yet it is well those interested in this matter should know that 4,000*l*. is not their price, and those making such statement are not correctly informed. J. C.

At the instance of a deputation from the Lambeth Vestry to the Metropolitan Board of Works, the Board has resolved "that steps be taken for the acquisition of Stockwell Green, with a view to its preservation as an open space, for the benefit of the metropolis."

THE LIFFEY.

SIR,—Accept my thanks for insertion in your paper of note relative to my proposed construction of "Tidal Ship Canals" across England and Ireland, as to effect quicker and safer transit of the increasing traffic, and prevention of wrecks consequent on the present route, about the coasts.

I have pleasure in adding that this practical project is receiving concurrence and support of a "Committee of Directors" for arrangement of preliminary matters in connexion with the object and purposes desired, and necessary for the future, full details and descriptions of the project will follow in due course, when more matured.

I was much gratified in reading report of proceedings in Dublin, relative to the "Liffey River Improvements by Disposition from Sewage" (see *Times*, November 13*th*), in which proceedings were held in consequence of the able article on this subject in the *Builder*, October 31*st*, which had evidently stirred the Dublinians into action, after an immense waste of time in windy declamation and disagreement for many years past. It is to be sincerely hoped that the time has now arrived when the best plan which can possibly be found will be selected and adopted for carrying out this long deferred improvement of the Liffey, which much result in immense benefits to Dublin.

I have devoted considerable time and attention to this subject, and submitted plans of mine for practically removing the present evil, nuisance, and waste of sewage of Dublin, and which plans received marked approbation, but were deferred until more convenient time for real recognition and work. Meanwhile, the evils have continued increasing, until it has forced a necessity for immediate action.

W. AUSTIN, C.E.

POLLUTED WATER AT ACTON.

MR. HEMSLEY, clerk of the Acton Local Board, applied to Mr. BRIDGE (Hammersmith) for summonses under an "Act to amend and extend the Sanitary Laws," passed last session. He said his application was of a peculiar kind, and the first which had been made in the metropolis. The words of the Act were, that "if it should be reported to any sanitary authority that within the district any water is so polluted and injurious to health, they may apply to a justice for an order to remedy the same." In the parish of Acton there were three public pumps, the water of which was polluted and injurious to health. He proposed to summon one person interested in each of these pumps.

Mr. Bridge wished to know in whom the pumps were vested.

Mr. Hemsley said he did not know. He submitted that it was immaterial, as the Act used the words "any water which was injurious to health." Then the authority may apply. The Acton Local Board wished to prevent the water from being drunk.

Mr. Bridge said it was a matter which ought not to be delayed. He was thinking who would be the best persons to proceed against.

Mr. Hemsley said if it was a private pump he should have no difficulty. He was not prepared to say that the pumps were not vested in the Local Board.

Mr. Bridge. Let a summons issue against some member of the Board, and those who are interested in the pumps.

Mr. Hemsley said it was hardly necessary to issue a summons against the Board, as they wished to close the pumps.

Mr. Bridge granted the summonses against persons who were owners of land near the pumps.

AN ACTION ON A QUESTION OF MEASUREMENT.

At the Lord Mayor's Court, on Wednesday, 18th inst., before Sir T. Chambers, M.P., Common Serjeant, and a jury, in the case of *Al Larc v. Boul*, a usual ripple dilemma of opinion was expressed as to the meaning of the term "running foot." The plaintiff sought to recover the sum of 17*l*. 15*s*. for two ornamental iron-work coil cases supplied to the defendant for the purpose of covering some exposed coils of an apparatus for warming his house by hot water.

The plaintiff, an ironfounder, carrying on business in Upper Thames-street, and having a foundry also in Scotland, said that with reference to the cases which were supplied to the defendant at 22*s*. 6*d*. per foot, they were measured and charged for at so much per "running foot," the measurement in doing so, said, of the cases. That was the universal custom in the trade. Iron-work cases were always charged for by the running foot, which included the two sides and the front, and not by the length of the case.

Charles Kennell, in the employ of the plaintiff, said that, from many years' experience in the iron trade, it was his belief that the practice in measuring ironwork was to measure curves, projections, or indentations, and not simply to take the length of the work. He had always measured and charged by the running foot, as in the present instance. The cases supplied to the defendant were charged according to the price agreed upon when the order was given.

Mr. Henry Best (the defendant) said that he resided at Norwood. The house in which he lived was fitted up with a hot-water warming apparatus. There were two recesses of 4 ft. 3 in. each between the windows, where the apparatus was erected, and it was to cover them that he ordered two coil-cases of the plaintiff. They were ordered in March last, and he had prepared his room to receive them, but the cases were not sent home until June; they were scratched, and were not put together, but were in seven or eight pieces; and although charged in excess of the stipulated sum, they were inferior to the quality ordered. He chose to proceed, however, as to the charge made in the number of feet. The plaintiff had charged for the case at 23s. 6d. per "running foot," instead of 22s. 6d. per foot for the length which was the price agreed upon, and which was done at other houses.

Henry Ratcliffe and **Le. Ivatt** at Sydenham, and was a gas and hot water pipe engineer. Had been employed at the Crystal Palace, the Agricultural Hall, and other places. He had bought a great many coil-cases, but their measure had always been taken along the front only. He had never bought by the running foot.

After some further evidence, and his lordship's remarks on the case, the jury returned a verdict for the plaintiff for the full amount claimed.

MONUMENTAL.

Monument to Admiral Sir G. Seymour.—Among the guests who have accompanied her Royal Highness the Princess Helena and Prince Christian on a visit to the Marquis of Hertford, at Ragley, are Count and Countess Gleichen. The Count is brother-in-law of the Marquis, and a cousin of the Queen, and his real title is Prince of Hohenlohe, but as he married a lady of not royal birth, he was told that she could not be received as Princess, and he thereupon declared that he should adopt his lower title. Of late the Count has devoted himself to sculpture. Among his more recent works is a monumental recumbent figure of his father-in-law, Admiral Sir George Seymour, who was father of the present Marquis of Hertford. The monument has been placed in Ragley Church.

Monument to the Earl of Dufferin.—The Earl of Dufferin has attained the rare honour of having his statue erected during his life-time. He is by far the most popular Governor-General whom the Canadians have had since Lord Elgin, and the citizens of Montreal esteem him so highly that they have commissioned Mr. Millmore, a Transatlantic sculptor, but now in Rome, to execute a life-size statue of the Viceroy, at a cost of 2,000*l*.

ACCIDENTS.

Pug-mill Accident near Durham.—An inquest was held on Thursday, the 19th inst., at the Durham County Hospital, on the body of Joseph Rhodes, brick labourer, who died on the 17th inst., at the Hospital. Rhodes was engaged feeding the pug-mill at the Oxhoe Brick Works, when his coat caught in the clutch, and he was drawn in, the upper part of his body being engaged, and mutilated, inasmuch as that he died shortly after being received in the hospital. A verdict of accidental death was returned.

Accident in a Brickyard, Penn's Bank.—Mr. E. Blackburne held an inquest last week upon a man named Joseph Chesters. On Monday, November 9th, the deceased was at work in the brick and tile yard, cutting a chamber, when eight or ten tons of clay fell upon him and killed him almost instantly. He had been at work in the yard about four months, and was said to know his work well, but one of the witnesses called was of opinion that the deceased was rather too venturesome. Verdict of accidental death.

Serious Boiler Explosion.—Four men and two children were seriously injured by the explosion of a boiler at Oaktree Colliery, Aberdeen, on Tuesday, 17th inst.

Fatal Result from the Fall of a Wall.—An inquest was held last Thursday, at the Eastbourne Union House, before Mr. L. G. Fullagar, on the body of Samuel Douch, a labourer, who met with his death under the following circumstances. Jane Douch said deceased was her husband, aged 40. On Friday last he left home at half-past six to go to work. She did not see him again till he was hurt by the bricks falling on him. He said he was removing the bricks from the tank. Alfred Berry said the deceased and he were pulling down the brickwork of the old tank at the railway station. A little piece, about 3 ft. broke off and did not fall, but remained on the top, loose; deceased took an iron bar and knocked ten or a dozen bricks to let this piece down. The piece pitched over and caught him, knocking him off the wall; the brickwork rolled off him, and he got up. Verdict "That deceased died from the shock to the system, and the wound caused by the fall of a portion of a wall."

Fall from a Scaffold.—Walter Scarratt, a joiner, employed at some new buildings in Hanley, on the 18th inst., fell from a scaffold, and was severely injured on the head. He was taken to the infirmary, where he became insensible from effusion of blood on the brain, and died on Saturday. At an inquest, held before Mr. Booth, coroner, on Tuesday, the jury returned a verdict of accidental death.

Accident at Avonmouth Docks.—On Thursday, the 19th inst., the deputy county coroner, Mr. C. Scott, held an inquest at the George Inn, Shirehampton, touching the death of James Coleman, twenty-six years of age, a mason, who died on Monday evening from injuries received at Avonmouth Docks that afternoon. Elisha Knepton, a ganger, stated that on the day in question the deceased was engaged in building a wall. The carpenters required some timber for the purpose of lengthening a "gantling." A piece of timber some 30 ft. long was hitched to the crane, and was lifted up some 16 ft. to pass over some wagons that were in the way. A signal was given for the men to clear out of the way; but the back legs of the crane being lower than the centre one, the timber swung round rather quicker than was expected, and it came in contact with the wall; the nippers to which the timber was attached became unhitched, and the balk of timber fell to the ground. In its fall the timber "casted" from off one of the supports of the "gantling" and struck the deceased causing him to fall. Several men who were near the place caught hold of the deceased before he fell a second time. Witness explained to the jury that the timber, after it struck the deceased, rolled off his back on to the ground. The nippers on this occasion were not timber nippers, but ones used to lift stone. John Smith proved picking up the deceased after he was knocked down, and said that, with assistance, he conveyed him on a stretcher to the railway station; but deceased expired shortly after his arrival there. Verdict, accidental death.

Fall of a Building at Whitworth.—On Wednesday, the 19th inst., a large building, which had been previously occupied as a stable, and more recently by Mr. J. Chadwick, joiner, fell with a tremendous crash, and without a moment's warning. Mr. Chadwick was in his place at the time, in company with a nephew, who was his apprentice, and his niece, who had gone there to play. The noise of falling material attracted attention, and Mr. Chadwick and his nephew and niece, who had fortunately been standing on a parlour floor which had not given way, were rescued from their dangerous position. It was then found that the nephew had been knocked down by the falling material, and his foot was caught between a joist and the flooring. He, however, sustained very slight injuries. The little girl was found lying with her head on her arms, not having sustained any injury; and Mr. Chadwick only suffered from the shock to his nervous system. One part of the building was very old, and the ends of some of the beams were completely rotten.

SCHOOL BUILDING NEWS.

Middlesbrough.—On the 19th inst. the foundation-stone of the new St. John's School, Middlesbrough, was laid by Mrs. W. R. I. Hopkins, of Grey Towers, near Middlesbrough. The new schools will only be at the distance of five minutes' walk from the old schools near the Exchange, will be close to St. John's Church, and more than the old schools. The site has frontages into two streets, Bright-street and Russell-street, the main frontage, which is 245 ft. in length, being in the former. The architects are Messrs. Alexander & Henman, of Middlesbrough and Stockton. On the site of the old schools will be erected a new post and telegraph office.

Newport.—On Monday evening, November 16, a meeting of the subscribers to the building fund of these schools was held in the Marsh Trustees' Room. The Rev. D. Mountfield (chairman) said the meeting was called to hear an account of how the money raised for building the new schools had been expended. He now held the certificate of the Education Department certifying that sufficient school accommodation had been provided for the Newport district. The building cost upwards of 2,000*l*, and this large amount had been voluntarily collected and subscribed. Mr. T. C. Bird (hon. sec.) then

read the account, from which it appeared that the total receipts were 1,953*l*. 7*s*. 4*d*. The expenditure was—Builder, architect, and gas-fittings, 1,633*l*. 15*s*. 9*d*.; printing, legal charges, surveys, and petty expenses, 67*l*. 12*s*. 9*d*.; value of the site given, 200*l*.; leaving a balance in the treasurer's hands of 11*l*. 15*s*. 10*d*.

Odiham.—The first meeting under the new scheme of the Governing Body of the Odiham Endowed School was held on the 17th day of November last. Plans of the proposed new school buildings were submitted to the Governors by Mr. Woodthorpe, of Coleman-street Buildings, London, and having been considered satisfactory were adopted, subject to the approval of the Endowed School Commissioners. The proposed buildings, which will present a handsome frontage, will include a master's residence, with all necessary out-offices, &c., a large and lofty school-room, class-rooms, dining-rooms, and dormitories, and will be a great ornament to the town when completed.

Northwich.—The question of supplying a deficiency of Sunday-school accommodation in connexion with the Congregational Church at Northwich, has for some time engaged the attention of the leading members of that denomination. Hitherto a school has been held in the room adjoining the Town Bridge, and another in the premises in Witton that were formerly used as a day-school. The latter place was found to be quite inadequate to the requirements of that thickly-populated neighbourhood, and the energy of the principal members of the congregation has resulted in the erection of a commodious building, with a frontage in the main street, in what was previously the playground of the day-school, the old building having been converted into infant and adult class-rooms. The erection of the building has been carried out by Mr. W. Leicester, of Northwich, from designs prepared by Mr. S. Drinkwater, of Witton, at a total cost of 1,255*l*, including the purchase of the site, and the furnishings. The large room is 65 ft. long by 25 ft. wide. There are also two new class-rooms, a library, and other appurtenances. The old school-room could not boast of high architectural qualities externally, and internally, when occupied by 150 children on a warm summer's afternoon, could scarcely come under the present sanitary requirements in the cubic space it contained. Mr. Hurst, as treasurer of the building fund, gave some particulars of the finances. As nearly as he could ascertain, the total expenditure would amount to about 1,255*l*, of which 930*l*. had been collected, leaving 290*l*. to be raised. Mr. Thomas had promised to reduce that sum by 50*l*. conditionally that they realised the whole amount during the current year. Thanks were due to Mr. Leicester, the contractor, and Mr. Drinkwater, the architect, for the excellent way in which they carried out their undertaking.

Leeds.—A new school-room has been opened at Knotrop, in the parish of St. Saviour's, by the Rev. Dr. Gott.

CHURCH BUILDING NEWS.

Guisborough.—The parish church of Guisborough, one of the oldest in Cleveland, has been reopened for divine service, after being closed for some months for alterations and repairs. The edifice had been gradually decaying, and was becoming so far unfit for the holding of religious services, that a general feeling was manifested for its restoration; and in the early part of the present year a committee, consisting of the leading members of the congregation was found to carry out that work. The architects consulted were Messrs. Armfield & Bottomley, Whitby, and the plans were prepared for putting in a new floor, re-seating the building, substituting open stalls for the high-backed old-fashioned pews, repairing the walls and pillars, and renovating the interior of the fabric were approved. The contractors were Mrs. E. Howcroft for the joiner's work, Mr. W. Rudge mason work, and Mr. J. Pardy, gas fittings and plumbing. The total expenditure has been about 1,000*l*. Additional pew accommodation has been provided, and sittings, all of which are free, are now afforded for upwards of 1,000 persons.

Wakefield.—The Wakefield Church, which has been undergoing restoration for the past seventeen years, at a cost of upwards of 20,000*l*, has been formally re-opened by the first of a series of services. The restorations include the raising of the tower, the erection of a spire, the removal of the galleries, the substitution of open

stalls for large old-fashioned family pews, the insertion of a number of painted glass windows, a reredos, and new systems of lighting, warming, &c.

Bath.—The parish church of St. Peter, Monckton Farley, has been reseated and fitted. Prior to the alterations and improvements the church was filled with high pews of a most incommensurate and unsightly character, and the nave and chancel were on a level. All this has now been changed. The floor of the chancel has been raised two steps above the nave, from which it is entered through a low stone screen, removed from another part of the building. Behind the communion-table, which is elevated two steps, is a new reredos, of an unpretending character, in Caen stone. These alterations have been well carried out by Mr. Jesse Hayward, of Bath, under the superintendence of Mr. C. S. Adye, architect, of Bradford-on-Avon. The heating apparatus was supplied by Mr. S. Diplock, of Bath, and the lamps by Mr. J. Brown, of Bradford; Messrs. Taylor & Edgcombe, of Bath, executed the carving. The cost of the present improvements is about 600*l*.

Cranborne.—A district church and school have been opened here. The plans being prepared, Mr. Kelford, of Cranborne, commenced the building. The site on which it is erected is a short distance from the high road to Ringwood. The total length of the building, including the master's house, is 64 ft. by 18 ft. broad, of which the church or school-house takes up 32 ft. The building is of red brick, slated, and pointed with black mortar. The windows, of which there are four on the south side, are of stone at top and bottom, with strong wood-frames, and open at the top. The roof, which is 20 ft. high, is of pine, varnished, and the walls coloured. At the east end is a small chancel, entering by a stone archway from the body of the room, and having sliding doors to close it in when the place is not used for public worship. There are lockers for the children's clothes, and every convenience provided, Monie's earth closets being fitted up. The total cost of the whole is estimated at from 600*l*. to 700*l*.

Finsbury.—The old church, parts of which probably formed a portion of the foundation of a Norman building, being considered past restoring, it was decided by the owner and patron, Lord Portman, to rebuild the whole (with the exception of a portion of the tower) on the same site. The services of the late Mr. J. B. Green, his lordship's architect, were engaged, plans were prepared, and the work was at once commenced. The following is a description of the newly-erected church:—With the exception of the tower, the old church (which contained some remains of Norman architecture, and which have been preserved) has been taken down and rebuilt. A stone turret has been added to the tower, finished with a spirelet on the top. The church is dedicated to St. Peter. The building is in the Perpendicular style, and consists of a nave, with clearstory windows, north and south aisles, with chancel, organ-chamber, vestry and south porch, in which the figure of St. Peter is placed in a niche over the entrance-door. The walls are of Tisbury stone, with Box-ground stone dressing for all external work, and all the inside is of Corsham stone ashlar, with moulded arches and string-courses, and richly carved caps and corbels. The roofs are of deal, covered with wood stained and varnished. The curved ribs are supported on massive carved oak angels on stone corbels. The seats are open and of pitch pine, with thick moulded ends and framed backs. The screens between the chancel and vestry, and between the south aisle and vestry, are of pitch pine, handsomely carved. The pulpit is of stone, very neat, and the reading-desk of grained oak. The chancel and aisle floors are paved with Maw & Co's encaustic tiles, and the church is heated by hot-water apparatus from under the organ-chamber. The total length of the building is 66 ft. by 46 ft. wide, of which the nave is 42 ft. by 21 ft., and the height to the ribs in the nave is 52 ft. The church will seat about 300. The east window is of stained glass, presented by Mr. Philip Wright, son-in-law of the Rev. W. Bury, the rector, and given in remembrance of his alliance with the family by marriage. The centre light contains a full-length figure of St. Peter, with the Crucifixion above; and in the other compartments are figures representing incidents in the life of St. Peter. In the south aisle is a memorial window to the late Mr. and Mrs. Matthews, presented by members of the family, containing the four Evangelists and other saints. The west window is glazed with

Powell's stamped quarries, and the remainder of the windows are of cathedral glass. There is a stone reredos in the chancel; this and the pulpit and reading-desk were designed by Mr. W. Trannah, architect, of Blandford, who has succeeded the late Mr. J. B. Green. The church has been built by Mr. Augustine Green, from plans prepared by his late brother, Mr. J. B. Green, architect, of Blandford. The carving is by Bolton, of Cheltenham. A new organ, built by Gray & Davidson, was presented by the Hon. W. H. B. Portman, M.P., and Miss Portman.

Little Aston.—The church of Little Aston (in the district of Stennall and parish of Shenstone), as also the graveyard, was consecrated on Thursday, the 19th inst., by the Bishop of Lichfield. The offertory, devoted to the school-building fund of Stennall, amounted to 66*l*. 17*s*. This beautiful church, dedicated to St. Peter, is in the Early English style. The architect is Mr. Street, and the builder is Mr. Yates, of Shiffnal. It consists of a nave and one narrow aisle, with tower and spire at the north-west, and vestry at the north. The whole has been executed at the expense of the Hon. E. S. Parker-Jervis, and the cost, including endowment and parsonage-house, will amount to something like 10,000*l*. There is a peal of five bells (by Messrs. Taylor, of Loughborough), which rang merrily at intervals during the day. The eagle, well designed and executed, was the gift of Mr. John Vincent Parker-Jervis. The organ was built by Mr. Halmesbury, of Birmingham. The baptistery, according to the *Staffordshire Advertiser*, is somewhat too small, and the west door is not quite lofty enough. Nor is the pattern of the floor composed (like the pulpit, font, and reredos) of the most costly marbles, so arranged as to stand much wear and tear. There is no stained glass in the windows. The church holds 153 and all the seats are free. In addition to the feasting in the tent, every poor house-keeper in the district, and very many others, received eight pounds of beef and a gallon of beer.

East Grinstead.—On Saturday last the Bishop of Chichester re-opened the parish church of East Grinstead, which has been undergoing considerable alterations. The old-fashioned pews have been replaced by new carved oak seats, designed by Mr. J. M. Hooker, of Sevenoaks, architect. The church is now heated by a new system of hot-water pipes, and instead of being lighted with paraffine lamps, is now illuminated with gas. The old plaster on the walls has been removed, and the old lath-and-plaster ceiling has been pulled down. The alterations so far have cost 1,000*l*., and in order to complete the cost of re-pewing alone, 500*l*. more are required.

Books Received.

Bons and Blessings: the Advantages of Temperance. Stories and Sketches. By Mrs. S. C. HALL. London: Virtue, Spalding, & Co. 1875.

Mrs. S. C. HALL's last good work consists of fifteen stories or sketches, illustrated with fifteen full-page engravings, from drawings by E. M. Ward, A. Elmore, F. Goodall, Erskine Nicol, R. Thorburn, Mrs. E. M. Ward, George Cruikshank, P. R. Morris, G. H. Boughton, F. D. Hardy, E. Sherard Kennedy, N. Chevalier, H. R. Robertson, A. J. Woolmer, and W. J. Allen, besides numerous head and tail pieces, designed by the last named. Some few of the stories, such as "Digging a Grave with a Wine-glass," have been published before and widely circulated, and it is no slight recommendation of the book to say that the new ones are as good as the old. Mrs. Hall justly expresses her thanks to the fifteen artists who have powerfully assisted her in combining art with literature, "thus aiding the efforts of the valuable societies that are labouring—earnestly, zealously, and with great success—to convey conviction that 'the national vice' is the national curse, and that the labours of the pastor, the schoolmaster, and all the other engines of religious, as well as moral, social, and intellectual progress, must comparatively fail, while intoxication, not only fills our jails, our lunatic asylums, and our workhouses with poor, but degrades to poverty so many households, and effectually frustrates all efforts for the discharge of duty to God and neighbour." The illustrations are indeed admirable, and but for the personal friendship of the artists no such series could have been given in a book of so small a price as this

is. The one which touches us most is the *Street Waifs* of Mrs. E. M. Ward,—a boy and girl on the doorsteps of a London house on a winter's night. The utter misery depicted, and the grip of the boy's hand on the little sister's wrist affect us strongly. The volume is appropriately dedicated to the Earl of Shaftesbury, and offers itself as a Christmas Gift-book which cannot be too widely made use of.

VARIORUM.

The *Furniture Gazette* speaks of wood-carving in Russia:—"This art is one of the most important branches of Russian industry, which has existed for centuries. Any one who has studied the ancient art-productions of Russia, and who has seen specimens of the so-called ancient Russian monastic carved work, will be struck by the exquisitely delicate taste displayed, which is all the more astonishing considering the imperfect instruments and rough tools which were employed in those days by these self-taught artists. But the art of carving is naturally not confined alone to the artistic and purely ornamental: the peasants of Russia are very expert in all kinds of rougher carved-work, in producing articles of every-day use; many household utensils which with us are manufactured of clay or iron are carved or turned out of wood, such as spoons, platters, bowls, &c. It is this peculiar ability which has made the Russian peasant under proper instruction such an adept in artistic carving in its application to the ornamental art."

Miscellaneous.

Invention for Consuming Sewer Gas.—How effectually to get rid of sewer gas is a problem that has long puzzled engineers and sanitarians. Most of the experiments have resulted in failures, and none have thoroughly succeeded, except in making what was bad a great deal worse. Considerable interest in the question has been excited in Bristol of late, and Mr. T. Harding, of the firm of Colthurst & Harding, Temple Gate, has turned his attention to the subject. At his residence at Knowle he was a good deal troubled by sewer emanations, and he hit upon a plan which he believes will solve the problem of the consumption of sewer-gas. Mr. G. Sorace, plumber, Temple-street, has been associated with the inventor in getting up the appliance. The proposed mode of dealing with the gas is an ingenious one. Connected with the main sewer is a pipe, 2 in. in diameter, and at the top of the pipe is a ball, so fixed that it allows an aperture of a ¼ in. all round, through which the sewer-gas may escape from the pipe. Running up outside the large pipe is an ordinary gaspipe, and underneath the ball at the top of the sewer-pipe a set of burners is so arranged that when lighted they make a complete circle of fire. The ball prevents the sewer-gas from rising through the centre, and it cannot escape through the flame, which entirely surrounds the aperture. The invention, which has been patented, may be easily applied to the public lamps.

Subsidence of a Portion of the New Reservoir at Pontefract.—Last week portions of two large arches at the north end of the new reservoir in course of construction for the storage of water for supplying the town of Pontefract, fell entirely to the foundations, and will consequently cause considerable labour and expense in replacing the same. The natural foundations are admirably adapted for the purposes of a tank, being hewn out of the solid rock. Puddling with clay for about 28 in. in thickness, at the bottom of the tank (which is also laid with bricks, two in thickness), forms the basis of building operations, the walls and pillars of which spring from the reservoir in a series of arches. The pillars at the north end have, it appears, subsided considerably, the arches of which were completed, thus reducing the whole, evidently from the compression of the puddling bed, on which the whole stands.

Bristol.—Need for improved dwellings for the working classes was referred to at a meeting over which Bishop Elliott presided, by the Rev. Mr. Hazledine, who stated that in his parish one court had eleven houses with only one sleeping room in each, and there lived fifty-one persons, twenty-nine being adults. In five streets dwelt 102 habitual drunkards, forty-six of whom were men and fifty-six women.

A Memorial Brass.—The "Old Boys" of the King's School have just had a brass placed in the north transept of Gloucester Cathedral, as a memorial of the late Rev. Herbert Haines, formerly the second master of the school, and an authority on the subject of brasses. The brass is laid on a slab of Pennant stone, 7 ft. by 3 ft. 4 in. The general treatment was designed by Mr. Capel N. Tripp, hon. sec. to the committee, subject to the approval of Messrs. Waller & Son, architects to the Dean and Chapter, and the work has been developed and executed by Messrs. Heaton, Butler, & Bayne, at a cost of 116l. The architectural detail is of the fourteenth century. The figure, three-quarter life-size, is represented in an attitude of prayer and draped in modern Ecclesiastical vestments. The likeness is good. The inscription was written by the Rev. J. Russell Washbourne.

Death of Mr. Tom Hood.—An illness under which Mr. Tom Hood, the editor of *Punch*, had been suffering for some time past, resulted fatally on Friday, the 20th inst. The deceased, who was the son of the late Thomas Hood, the well-known poet, was born at Lake House, Wanstead, Essex, January 19th, 1835. He was educated at University College School and Louth Grammar School, and entered as a commoner at Pembroke College, Oxford, in 1853. His first work, "Pen and Pencil Pictures," was published in 1854-5, and has been followed by numerous novels and books for juveniles. He illustrated his father's comic verses, "Precocious Piggy," and on other occasions wielded pencil as well as pen, and was appointed editor of *Punch* in May, 1865. Mr. Hood was in his 40th year. He was buried on Tuesday, the 24th inst., at Nunhead Cemetery.

Chelsea Parish Surveyor.—Mr. Joseph Pattison, the surveyor to the parish of Chelsea, has sent in his resignation after thirty years' service. Mr. Pattison states that he finds the work in his department so continually increasing that he is not equal to it; and those who know anything of the boundaries of the parish of Chelsea, and the manifold duties imposed on its surveyor, who has daily to walk as far and as fast as a postman on Valentine's-day, will not be surprised. The Chelsea vestry have resolved to write to the various metropolitan vestries for information as to their surveyors' duties and emoluments. The Board of Guardians have pensioned relieving-officers and others, but whether the Chelsea vestry have the power to exercise the pensioning of a "worn-out surveyor" remains to be seen.

Yorkshire College of Science.—An ordinary meeting of the General Council was held in the Board Room of the College on Thursday afternoon, under the presidency of Lord F. C. Cavendish, M.P. There were also present Sir A. Fairbairn, Dr. Heaton, Mr. F. W. Fison, Mr. R. Ford, Mr. S. C. Lister, Mr. O. Nussey, Mr. C. Scattergood, and Mr. H. H. Sales (secretary). The reports from the various committees received the approval of the Council. The business transacted was mainly of a routine character. The Council minutely inspected the college buildings and fittings, which are now approaching completion. The number of students already enrolled was regarded as very satisfactory. Upwards of fifty students over the age of seventeen years are in attendance at the various classes.

Presentation to a Foreman.—The employees of Mr. George Jennings, of Stangate, Lambeth, at a supper held on Saturday, November 21st, at the Mitre Hotel, Stangate, presented Mr. S. J. Merchant with a handsome ornate timepiece. Mr. M. Johnson, on behalf of the subscribers, alluded to the number of years Mr. Merchant had been amongst them, and was happy in being the medium of tendering him the timepiece, as a slight recognition of their respect and esteem, and hoped that he would live long to enjoy it. Mr. S. J. Merchant thanked his late colleagues for their appreciation of his conduct, and hoped that he would still continue to deserve the good opinion they had formed of him. Votes of thanks were accorded to the committee, coupled with the name of Mr. Halligan, secretary.

Metropolitan Management.—At the last meeting of the Social Science Association the question of a municipality for the metropolis was again discussed, and again adjourned. Mr. James Beal declared the sanitary condition of the more densely populated suburbs to be disastrous to the age, and such as would not be tolerated under municipal authorities. The discussion was again adjourned.

Mr. Edward Levan, M.A., F.S.A., died, we regret to say, on the 6th inst., at his residence, Camden-street, in the fifty-sixth year of his age. He was well known in literary circles for his intimate and accurate acquaintance with ancient manuscripts and historical subjects. Educated at Balliol College, Oxford, he held for a short period a classical professorship at Glasgow, and was subsequently appointed by the trustees of the British Museum to the position of assistant in the manuscript department, which he held from 1850 to the time of his death. He acted, also, with great ability, for several years, as one of the honorary secretaries of the British Archaeological Association, and contributed many valuable and interesting papers to its journal.

Industrial Dwellings.—We some time ago referred to the fact that the Improved Industrial Dwellings Company had offered premiums of 250l. and 160l. for the best designs for covering a large site in Goswell-road, on the Marquis of Northampton's estate, and mentioned that twenty designs had been received. We are asked now to say that Messrs. Charles Barry, George Godwin, and A. Waterhouse will assist the directors in arriving at a decision on the merits of each. The designs will, by permission of the Lord Mayor, who is one of the directors of the company, be exhibited at the Mansion House, in a room specially set apart for the purpose.

The Ventnor Local Board have appointed Mr. J. G. Livesey, C.E., who has for nearly eleven years been Town Surveyor of Ventnor, to the office of Consulting Engineer to the Board, at a commission of 31 per cent. on the cost of permanent works to be carried out under his superintendence. The Board intend to appoint some young man, probably without a professional education, to undertake the routine duties of Town Surveyor and Inspector of Nuisances, and to act as foreman over the workmen employed by the Board. If without proper education, how can he satisfactorily perform his duties?

A Wood Paving for Oxford-street.—Owing to an offer on the part of Captain Cooto, for the inhabitants of Hereford-gardens, Hyde Park, to pay one-third of the cost of laying down a wood paving in Oxford-street, opposite Hereford-gardens, so as to obviate the present noise, the Vestry of St. Marylebone have accepted the offer, and intend to carry out the work at once, at a cost of 1,166l., a wood-paving company undertaking to keep it in repair for two years free or cost, and for the next fifteen years at an annual cost of 83l.

The Free Picture Gallery, Brighton.—This institution is to be free for three days a week, and sixpence admission will be charged for the other three days, on the recommendation of the Fine Arts sub-committee. "If," said Mr. Alderman Hallett, "they adopted the committee's plan, they would have a picture gallery in the town equal to the exhibitions of London, Liverpool, and Glasgow. In fact, pictures of the highest class, more than enough to fill a second gallery, had already been offered to them, and the expense of hanging them."

The Denbigh Heredes Disputes.—The opening for service of the Unconsecrated Church at Denbigh was brought to a sudden termination last Sunday. In the morning the curates received legal notices from the Bishop of St. Asaph, prohibiting them from officiating in the church on pain of having their licences cancelled. The rectory, being unwell, and fearing legal proceedings, the services were abandoned. The suddenness of this decision, which came as a surprise upon even the church-building committee, caused intense excitement.

Mortality in Grimsby.—The mortality among children in this township, says the *Lincs. Chronicle*, just now is frightful. Parents all round are trembling for the safety of their little ones. Scarletina is the great instrument of the dread destroyer. We are informed that one undertaker alone, in three days, had no less than thirteen funerals. Of course this is an exceptional case, but still the deaths are shockingly frequent. Children from two to six years of age are the class among whom it is most fatal.

The late Mr. Milner, of "safe" fame, has left a fortune of 160,000l. He directs that one-tenth of this shall be distributed in charities, in four equal proportions of 4,000l. for London and Manchester, where he had extensive agencies, Liverpool, where his works were situated, and Sheffield, to which town he belonged.

The Late Mr. F. Lenox Horne.—The announced death of this gentleman, at the age of 67, will remind some of our readers of a genial lecturer and writer who was first heard some twenty years ago at the Polytechnic Institution. He was the author of several farces, "Two Heads are Better than One," "The Tale of a Comet," played at Drury-lane two or three years since, and some others, and delivered many times a serio-comic musical lecture on "The Use and Abuse of Art." Mr. Horne was the brother of the eminent author of "Orion."

Secretary to Amalgamated Engineers.—The election of a general secretary to the Society of Amalgamated Engineers, in succession to the late Mr. William Allan, is exciting interest amongst trade unionists. There are two candidates,—Mr. John Wilson, who was assistant at the time of Mr. Allan's decease; and Mr. W. R. Horne, who held the same post before Mr. Wilson's election. Only members of the Society are eligible, and the election must be decided by vote.

Stained-glass Window in York Minster. The Yorkshire Archaeological Society has in the press a description, by Mr. J. Fowler, F.S.A., with notes and coloured plates, &c., of a window in York Minster, representing the Life and Miracles of St. William, Archbishop of York in the twelfth century. This window, which was presented to the cathedral about the year 1420, by the family of Lord Roos, of Hamlake (now Helmsley), contains upwards of 800 ft. of painted glass.

New College for Ladies.—The London correspondent of the *Sootsman* says that Mr. Holloway is about erecting, at a cost of something like 100,000l., at St. Ann's Heath, Virginia Water, a new university for ladies, on an estate which he purchased for 25,000l., and that he has charged an architect to draw up the necessary plans. It is understood that the whole affair will cost 150,000l. The plans are far advanced.

Asphalte Paving.—At the last meeting of the Commissioners of Sewers of London, a letter was read from the inhabitants of Chesapeake and the Poultry, stating that the asphalte paving had conducted greatly to their comfort, begging that greater pains might be taken to cleanse it, and expressing their opinion that its slipperiness was attributable solely to the dirty state in which it was frequently left. The letter was referred to the Streets Committee.

New Central Markets for the City.—Last week, Mr. W. Corrie, the City Remembrancer, gave notice of his intention to apply in the next session of Parliament for powers to enable the Corporation of London to enlarge the western exterior of the Metropolitan Meat Market, and to erect a new fruit, flower, and vegetable market on a site near the western extension of the meat market.

A New Mission-hall for Swansea.—One result of the visit of the Rev. Hay Aitken and his fellow missionaries to the town is likely to be accomplished in the erection of a mission-hall, which is to be considered as a memento of the last mission. The committee met on Tuesday last, when it was reported that 740l. had been promised out of the 2,000l. which is the estimated cost of the structure.

A New Synagogue for Brighton.—On November 19th, Dr. N. M. Adler, Chief Rabbi, laid the foundation-stone of a new synagogue in Brighton, in the presence of a representative company of the Hebrew persuasion. The building will be Byzantine in style, and will accommodate 500 persons. Mr. T. Laniton, of Brighton, is the architect.

Building at Carshalton.—Improvements have made great strides in this parish of late years, particularly since the railway station was built in the immediate neighbourhood; but the Public Hall, built in the centre of the town, which will be opened in a few weeks, is the greatest of all. Already several societies have made application for the hall, and we have no doubt it will be used as it ought to be.

The Albert Embankment.—A report from the Works Committee of the Metropolitan Board of Works, on November 20th, recommending that the Lambeth Vestry be informed that the Board were not prepared to entertain the question of extending the Albert Embankment was agreed to.

Tenders, Metropolitan Board of Works.

At the meeting last week tenders were received from the following firms for the execution of the general works in district "A," North of the river Thames, for alternate periods of one, two, or three years—viz., Mr. W. Dunn, Mr. T. Pearson, Messrs. Nowell & Robson, Mr. H. Potter, Mr. Stephen Carey, Messrs. J. Mowlem & Co. The tender of Messrs. J. Mowlem & Co. was accepted for a period of three years.

Labour Market of New York.—The startling fact is vouched by one of our morning contemporaries that at this moment, as near as can be ascertained from careful inquiry, there are no less than 90,000 of the mechanic and labouring classes out of employment in that city.

Ely.—Holy Trinity Parsonage House, in the Nut-Holt, Ely, is now fast approaching completion; the builders are Messrs. Waters & Feast, of Haddenham; the architect is Mr. W. T. Pierce, of Rochester. The amount of the contract is 1,605l. This, with architect's fees, fencing, &c., will render the whole cost 1,800l.

Exhibitions.—The private view of the Winter Exhibitions of the Society of British Architects will take place this, Saturday, November 28th. That of the Institute of Painters in Water-colours is fixed for the following Saturday, December 5th.

Drainage Contract.—The seal of the Oxford Local Board was on the 18th of November ordered to be affixed to Mr. Dickenson's contract for 27,970l. for carrying out the works of Contract No. 4 of the drainage.

Windsor.—It is proposed to erect a new church in Bier-lane, one of the lowest parts of the town. We hear that 950l. have been raised; 400l. more are required. Her Majesty contributes 100l.

The Clyde Shipbuilding Trade.—Shipbuilding on the Clyde, says *Capital and Labour*, appears to be on the wane, and the coming winter is likely to exhibit great slackness of employment.

An Architect Candidate for Paris.—M. Viollet-le-Duc, the architect, is one of the Republican candidates for the Municipal Council of Paris.

Society of Arts.—On Wednesday evening, November 26th, a paper "On School Buildings and School Fittings," was read by Mr. T. Roger Smith. We may refer to it hereafter.

Architectural Association of Ireland.—The opening meeting of the Session was held at the Antient Concert Rooms, on Thursday evening, the 26th inst.

The Late Mr. George Gutch.—We mention with deep regret the death of this gentleman, one of the oldest of the Metropolitan District Surveyors.

Mr. Smellie Watson, R.S.A., died a few days ago. He was one of the few survivors of the band of artists who originally formed the R.S.A. incorporation.

TENDERS

For stabling, &c., for the London General Omnibus Company, at Kensington Park-road. Mr. P. Tosh, architect. Quantities by Mr. W. A. J. Bolton:—

On site.	Extrair
Robbins & Co.	£2,690 0 0 ... £46 0 0
Dover, Son, & Co.	2,461 0 0 ... 30 0 0
Thompson	2,400 0 0 ... 170 0 0
Tyerman	2,393 0 0 ... 111 0 0
Warr	2,339 0 0 ... 72 0 0
Cropper Brothers	2,267 0 0 ... 137 0 0
W. & T. Crocker	2,254 0 0 ... 25 0 0
Turrell	2,216 0 0 ... 112 0 0
Marland	2,195 0 0 ... 95 0 0
Garrud	2,183 0 0 ... 40 0 0
Perkins	2,177 0 0 ... 120 0 0
Hunt	2,153 0 0 ... 30 0 0
Sawyer	2,153 0 0 ... 23 0 0
Niblet & Son	2,150 0 0 ... 45 0 0
Lewis	2,140 0 0 ... 53 0 0
Aitchison & Walker	2,115 0 0 ... 89 0 0
Gill	2,098 0 0 ... 23 0 0
Downs	2,069 0 0 ... 130 0 0
Mason & Britsy	1,997 0 0 ... 165 0 0
King	1,818 0 0 ... 160 0 0

For alterations and repairs to the Victory public-house, Newham-street, Edgware-road, for Mrs. Copas. Mr. H. J. Newton, architect:—

Elbs & Sons	£330 0 0
Brown	315 0 0
Thompson & Smith	311 0 0
Taylor	291 0 0
Hockley	270 0 0
Shurmer (accepted)	262 0 0

For alterations, &c., to Nos. 59, 60, and 61, Lisson-grove, for Messrs. Spencer, Tust, & Goldero. Mr. T. Parker, architect. Quantities supplied:—

Simpson & Son	£2,247 0 0
Temple & Foster	1,972 0 0
Cross & Son	1,780 0 0
Morriemans	1,690 0 0

For building new premises for Mr. Bryett, in the Caledonian-road. Quantities not supplied:—

Perry Brothers	£2,547 0 0
Batchelder	2,373 0 0
Kirk	2,265 0 0

For alterations and repairs to Nos. 5 and 6, Hart-street, Mark-lane. Mr. James Harrison, architect. Quantities supplied by Mr. H. J. Gordon:—

Sewell & Sons	£1,279 0 0
Ennor	1,124 0 0
Brown & Robinson	1,060 0 0
Robson	1,053 0 0
Hobson	1,020 0 0
Merritt & Ashby	985 0 0
Thomas	973 0 0
.....	894 0 0

For additions and repairs to premises, Tenter-street, Whitechapel, for Mr. L. Silberberg. Mr. C. Reilly, architect:—

Turner & Sons	£1,312 0 0
Heaps	1,235 0 0
Newman & Mann	1,238 0 0
Tiddie & Son (accepted)	1,067 0 0

For alterations and repairs to No. 11, Worship-street, for Mr. F. Hunt. Mr. Henry Shaw, architect:—

Sawyer	£377 0 0
Lewis	356 0 0
Boyce	340 0 0

For roadmaking and drainage works at Shepherd's-bush, for the British Land Company, Limited. —

Marshall	£4,200 0 0
Crook	3,906 0 0
Barnfield	3,557 0 0
Pizzey	3,555 0 0
J. & S. Williams	3,440 0 0
Richardson	3,350 0 0
Keble	3,288 0 0
Thompson & Son (accepted)	2,720 0 0

For erection of buildings, Norton Folgate. Mr. C. Fowler, architect. Quantities by Mr. Lovegrove:—

Wall Brothers	£1,997 0 0
Crabb	1,960 0 0
Baugs	1,874 0 0

For first section of Mount St. Marie's College, Kilburn. Mr. E. Welby Fagin, architect. Quantities supplied by Mr. M. O. Harris:—

Lascelles	£2,160 0 0
Merritt & Ashby	2,080 0 0
Home	1,889 0 0
Watson	1,910 0 0

For roadmaking, Wilderness-row, for the Metropolitan Board of Works:—

Coker	£6,000 0 0
Turner	5,900 0 0
Pearson	5,493 0 0
Webster	5,400 0 0
Knight & Son	5,390 0 0
Mowlem & Co.	5,300 0 0
Carey	5,175 0 0
Nowell & Robson	4,845 0 0
Griffiths	4,760 12 0

[From this it would appear that the observation in our last that the accepted tender was not the lowest was incorrect.]

TO CORRESPONDENTS.

T.C.N.—R.A.S.—T.C.G.—T.S.—M.B.—W.C.T.—G.G.—J.C.—W.C.—C.B.—W.S.—H.J.—H.P.—P.T.—C.D.—J.A.—H.W.—F.—J.W.—J.H.—H.G.—C.—W.—P.—M.—G.—G.—J.H. (inquire of the Committee).—Clerk of Works (we should conclude it was a misprint for "clerk of works").—F.B. shall be given after we have published the plan. Yank. n 1961.

We are compelled to decline pointing out books and giving addresses. All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the author.

CHARGES FOR ADVERTISEMENTS.

	Situations Wanted.	Situations Vacant.
Six lines (about fifty words) or under ..	8s. 6d.	4s. 6d.
Each additional line (about ten words) ..	0s. 6d.	0s. 6d.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied, direct from the Office, to residents in any part of the United Kingdom at the rate of 12s. per annum. Payable in Advance. Multiple copies accepted for amounts under 5s. Any larger sum should be remitted by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to DOUGLAS FOURDRAINER.

Advertisements cannot be received for the current week's issue later than **THREE o'clock p.m. on THURSDAY.**

The Publisher cannot be responsible for TESTIMONIALS left at the Office in reply to Advertisements, and strongly recommends that COPIES ONLY should be sent.

NOTICE.—All communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 46, Catherine-street, Covent Garden. All other Communications should be addressed to the "Editor," and not to the "Publisher."

Bath Stone of best quality.
RANDELL, SAUNDERS, & CO. (Limited),
Quarries and Stone Merchants.

List of Prices at the Quarries and Depôts; also cost of transit to any part of the Kingdom, on application to
Bath Stone Office, Corsham, Wilts. [ADVT.]

Asphalte.
Seyssel, Patent Metallo Lava and
White Asphaltes.
M. S T O D A R T & C O.
Office:
No. 90, Cannon-street, E.C. [ADVT.]

Seyssel and St. Jean Asphaltes.—The Société Française des Asphaltes, Limited.
MINES, WORKS, AND DÉPOSITS.—Garde Bois Lovagny (Seyssel Basin); St. Jean de Marnefols (Department Gard); Paris, 14 & 16, Rue Curial; London, Hackney. Works executed with guaranteed natural Rock Asphaltes, in Mastic and Powder. Merchants, Shippers, and Contractors supplied.—GEORGE FINCH, Jun., Secretary, No. 27, Cornhill. [ADVT.]

Whitland Abbey Green Slates.—These Quarries are now fully opened out, and are producing Slates in all sizes, and in any quantity; sound, and of choice green tint.—For samples and further particulars, apply to the MANAGER, at the Quarries, Narberth-road, R.S.O. [ADVT.]

Patent Selenitic Cement, with double the usual sand, is much stronger than ordinary mortar. Plastering finished in much less time at less cost. Excellent substitute for Portland cement for Concrete at less than half its price.—6 Wharf, Belvedere-road, Lambeth, S.E. [ADVT.]

Bills of Quantities, Specifications, &c., Lithographed by ROBT. J. COOK & HAMMOND, 29, Charing-cross, & Broadway, Westminster, S.W. with accuracy and punctuality. Plans and Drawings Copied, Traced, or Lithographed.—[ADVT.]

CHAPPUIS' NEW PATENT "LUMINARIUM."

BEST & MOST EFFECTIVE DAYLIGHT REFLECTOR.**PRICE LIST OF VARIOUS QUALITIES OF REFLECTORS.**

Universal	3s. 0d. per sq. ft.	Argento Crystal	5s. 0d. per sq. ft.
Silver Fluted	4 0	Luminaria	6 6
Silver-plated Copper			
8s. 6d. per sq. ft.; &c.			

Special Reflectors are constructed purposely for special cases; also for artificial light, gas, lamp, lime, electric, &c.

P. E. CHAPPUIS,
PATENTEE AND MANUFACTURER.
No. 69, FLEET STREET, LONDON.

The Builder.

VOL. XXXII.—No. 1661.

Iron and the Smith.

GENERALLY the discovery of iron is understood to have been long posterior to that of bronze. While it is as yet impossible to affix exact chronological dates to the first introduction of any of the elder metals into the service of man, it is ascertained, beyond reasonable doubt, that the employment of gold was earlier than that of bronze, and that the manufacture of bronze preceded that of iron. Silver is interposed (perhaps in the first instance by the poets) between gold and bronze; but of the justice of that attribution it is difficult to form an opinion. It is, however, easy to

understand that metal which is found in a virgin state, as in the case of gold, would more readily yield its resources to human industry, than metal found only in a state of ore. But even here we must speak with some reserve, as we are aware of the actual existence, although rare, of tolerably pure virgin iron, in the form of meteoric deposit, while we are unable to cite an instance of virgin bronze.

[But while we cannot reduce the date of the earliest work of the smith to historic time, there is no reason to doubt the sequence of the various metals, in so far as they were known to or used by man. It is rather the philosophical, than the historical, or chronological, date which we thus attain; but that is ample for our present need. At a distance of time which is uncertain, but which is to be measured by millenniums, rather than by centuries, and which may differ widely in different regions of the earth, the earliest inhabitants of our planet who have left any indications of their affinity to ourselves carved rude implements of stone, horn, and bone. Almost as early as any marks of industry of this nature, are the relics of a contemporary art. Man began to ornament, so far as we can tell, as soon as he began to work. With the lapse of time, the rude flakes of flint, or the hammers made of some hard stone, assumed greater elegance of form and delicacy of finish. During the period which has been termed the neo-lithic age of civilisation, bronze first made its appearance. Late in the bronze period, and, comparatively speaking, late in the historic period, we are accustomed to place the discovery of iron, to locate it in Crete, and to attribute it to the Idæan Dactyli.

Pliny, in his *Natural History* (xxiv., 21), says, "Of all metals the veins of iron are most abundant." The metal is mentioned, under its Greek name *sideron*, by Thucydides, Euripides, and Æschylus, as well as by Xenophon. The earliest note of the word occurs in the Book

of Genesis (iv. 22), where Tubal Cain is mentioned as the instructor of every artificer in brass (or rather bronze) and iron. The word here used, which is also translated iron where it occurs in the Book of Ezekiel, is *barsal*, which is derived from an Aramaic root meaning to pierce. Another word, *paldah*, cognate forms of which also occur in Arabic and in Syriac, is used by the prophet Nahum (ii. 4), and is explained by Gesenius to mean steel. It comes from a root meaning to cut. The Hebrew *barsal* appears as *parzal* in the Book of Daniel. It is difficult to identify either of these words with the Greek form, although that is originally allied to both the Latin *ferrum* and the English *iron*. We are, however, relieved from any doubt as to whether iron was known in the time of Moses, 3,400 years ago, by the discovery of a wedge or plate of iron embedded in the masonry of the Great Pyramid itself.

This instructive relic, like the half-fused magnifying lens found at Pompeii, throws much light on questions of early workmanship. It has been a great puzzle to those who attributed the first use of iron to a date not much more than 2,900 years back, how such sharp and well-defined hieroglyphics could have been cut, by the ancient Egyptians, on porphyry, granite, and the hardest stone. It may, indeed, be the case that, when bronze was the ordinary material for tools, the coppersmith had some secret as to the production of a very hard temper, now lost. But this is, at best, only a guess. From the certain proof that iron had been produced and wrought in the age of King Cheops, 5,400 years ago, we can better understand how the innumerable and exquisitely-sunk symbols and figures were wrought on tombs, temples, and sarcophagi. And more than that, from the great similarity in the mode of treatment, that prevailed from the time of the Ptolemies back to the very earliest known Egyptian inscriptions, we have something closely approaching a proof of the use of iron as far back as the fifth Egyptian dynasty, if not in the time of Menes himself; that is to say, six thousand three hundred years ago.

From that earliest use,—date it when we may,—the art of the founder and of the smith has advanced, with enormous strides, to our own times. If we distinguish the manufacture from the fabrication of iron,—that is to say, if we draw a line between metallurgy and smith's work,—there may be some reason for the opinion that, while the former is still in a state of rapid progress, the latter has passed its zenith. We are not about absolutely to insist on this point. Of the truth of the former position there can be no doubt. We must explain what leads us to entertain a suspicion as to the latter.

The great mechanical characteristic of the present age is the substitution of steam-power for manual labour. The signal for this enormous change,—a change which, it is not too much to say, is tending entirely to revolutionise the relations of mankind to the world on which they dwell,—was given by the genius of Watt. Our own eyes have witnessed, our own hands have laboured at, step after step in the mighty transformation. We can remember when, on one occasion, on the completion of a locomotive engine by Mr. Stephenson, steam was got up, and the machine, though well up to its duty on the rails, was unable to propel itself over the floor of the factory. The inference thence drawn, and not unnaturally, by the first engineers of the day was, that it was pure loss of time to turn attention to the propulsion of steam-engines on the common roads. This was hardly a third of a century ago, and what do we now see? At almost every county bridge, in some districts, at least, of England, a notice is affixed that the arch will not bear the weight of a traction-engine! Who has not seen these uncouth giants tracking their heavy and resistless course over the

country, training behind them wagons, and quaintly-shaped machines for scarifying and torturing the face of the earth, with apparent indifference to their number or their weight. Two very simple improvements have overcome the impossibility imagined by Mr. Stephenson. One of these is the old mechanical method of reduction of speed by cog-work. The piston travels at the speed which best suits the evaporative power of the boiler. The driving-wheel revolves at the slow pace fitted for progress over the road. This slow, irresistible, progress is rendered possible by the great breadth of the wheels, and by the oblique grooving recently introduced on their circumference.

What has been done in the locomotive, from the express engines of Mr. Brunel, able to take a train over the low gradients of the Great Western Railway at the rate of seventy miles an hour, to the slow but mighty traction engines, and the self-moving agricultural engines of today, is going on in every department of the work of the smith and the fitter. Machines, not indeed endowed with intelligence, but unerring in their discharge of duty, and themselves the offspring of the noblest mechanical intelligence, now deal with iron almost as a swallow deals with mud. They forge, roll, hammer, plane, punch, and drill. They turn out hammered or pressed iron, untouched by the hammer of the smith, in every form; from the gun that weighs thirty-five tons, to the hair spring of a watch. Hardly any tool can be named which is not produced, or likely to be produced, more readily, accurately, and cheaply, by machinery than by hand. But this great facility does not tend to improve the handicraft of the smith.

If we contrast this state of things with that which prevailed three hundred years ago, we shall see that against all our gain,—and we are among the last to undervalue it,—we have to set off a certain loss. The highest skill displayed in the work of the smith was found in the craft of the armourer. To that craft a fatal blow was given by the tilting-lance of De Montgomeri, when, in curious coincidence with the prophecy of Nostradamus, it entered the helmet of Henry II. of France. Three influences thus combined; and led, within a couple of generations, to the disuse of armour, and thus to the extinction of the most skilful, workmanlike, and artistic employment of the smith. These were, the death of the King of France, which was too serious a matter to result, without producing a powerful effect from the amusement of the tourney; the increasing excellence of gunpowder and guns; and the reign of a female Sovereign in England. When we look at the armour of the time; when we note that the tilting armour, which by the introduction of the pauldron, and other devices, had lost its symmetry, attained the weight of a hundred pounds *avoirdupois*; when we observe the exquisite delicacy with which the Milanese armourers wrought the mail that was like steel gossamer, or the scale or folding plate that fitted the limbs like the carapace of a lobster,—we may well be of opinion that few smiths of the nineteenth century can hold a candle to their ancestors of the sixteenth.

Connected with the extreme care that was given to the fabrication of defensive armour, was that bestowed upon offensive weapons. The fame of two descriptions of sword-blades has been established since the Middle Ages, and even since the crusades. One of these is the Toledo rapier, a long, straight sword, the undoubted excellence of which must, we believe, be chiefly attributed to the original quality of the ore employed by the makers. The other was the Damascus sabre, or scimitar, a curved blade, of such exquisite temper that, when handled by a master of that description of fence, it could cut in two with equal ease a floating scarf of gauze or silk, or the neck of a horse, or of his

sider. The excellence of the Damascus blades we are disposed to attribute rather to the skill and patience of the smith, or at least of the maker of the iron, than to the original quality of the metal. For it is to the repeated working up of scraps, and rusty scraps, of iron, that the beautiful mottling of the Damascus blades is due. It seems to us not improbable that these numerous welds, none of which are so perfect as to have been obliterated under the hammer, act like the teeth of a very fine saw, and thus cut with a keenness unattainable by a more homogeneous and smoother edge. It should, however, be borne in mind, that the difference between the iron produced from different ores, in our present stage of metallurgical practice, is extreme. There is an iron made in our North Midland counties which is so hard that it is almost impossible to break up old castings made of it. On the other hand, when the French *usines* began to make rails, some twenty-one years ago, an English fitter, with a cold-chisel and a hammer, could cut one of them in two in less than a quarter of an hour.

The earliest use of iron, as an offensive weapon, was probably in the form of arrow-heads. Bright points of this nature, which are said to be a thousand years old, are preserved with great reverence in the museums of that wonderful country, Japan. It is far from improbable that meteoric iron was, in the first instance, thus employed. At all events, the purity of the metal, and the care and patience with which it was wrought, were extreme. Among the antiquities of India is to be found an iron column, so large and so perfect, that we could not produce the like at the present time, without the aid of steam machinery.

After the demand for the highest class of smith's work,—that is to say, armour, and offensive weapons intended to pierce armour,—had ceased, the decorative taste of Italy, of Germany, and even of our own country, was gratified by the production of much admirable ornamental iron work. Park and garden gates tasked the skill, and displayed the taste, of the smith. The uniformity of a line of iron palisades was agreeably broken by flourishes and scrolls; each of which was stamped by a certain individuality. In the South Kensington Museum are to be found fine specimens of English and Roman work of this nature. Much ironwork is now in rapid decay throughout the country, which it would be a good deal to rescue from destruction. We saw a beautiful specimen of this kind, not so very long ago, on a *pignon* in the High-street of Rochester. In other places the intelligent care of the proprietors, and the renewal of painting and of gilding, have kept the ironwork of the seventeenth century as fresh as that of to-day. Such are the goody scrolls and flourishes that adorn the Town Hall of Guildford, and decorate its great projecting clock, erected in 1681.

To the demand for this bold, permanent, and manly kind of ornamentation a fatal blow was given by the increasing skill of the moulder and of the caster. The heavy railings recently removed from the west end of St. Paul's Churchyard were among the first, if not the very first, in which cast was substituted for wrought iron. It is said that the enterprising contractor made much money by his ingenuity in this respect. Economy soon prescribed laws of retrenchment as to ornamental ironwork; and here again, as in the case of the invention of gunpowder, the increased use of iron was made at the expense of the occupation of the smith.

The points to which attention are now chiefly directed, with regard to iron, apart from the mischievous result of ill-regulated competition in producing, for the smallest price, the largest possible quantity of inferior metal, are its reduction from the ore without the intervention of manual labour; the chemical purification of the metal, and the removal of those minute proportions of sulphur and of phosphorus which destroy its tenacity; and the production of steel, or carbonised iron, by simple procedures. There is, perhaps, no instance in which mechanical invention is removing a greater curse from labour than in the case of puddling iron. Those who have watched the process, or who have studied the beautiful representations of furnace-work given by the graceful pencil of Moritz Retzsch, in his illustrations to Schiller's "Song of the Bell," are aware of the exhausting nature of the labour undergone by the puddler. It is, we think, the hardest labour now performed by man. As involving a certain amount of experienced judgment, it is of a higher grade than

that of the brick-moulder; but the suffering it involves from heat is far keener than that inflicted, in the latter case, by cold and damp. For dirt they are about on a par. It is always the case that those occupations which, from their danger or their hardship, command extra wages, have a demoralising effect on the workman. At the same time, just in proportion to the danger, especially if there be any risk of life, is it found that any attempt at introducing an easier process is steadily and fiercely opposed by those who think that they have acquired a vested interest in their craft. The manufacturers of iron are, to a great extent, at the mercy of the puddlers; and the chief gainers by the high wages which this arduous work rightfully earns are, no doubt, the brewers. It is, therefore, in the interests of morality, of public health, and of the elevation of the workman in the social scale, no less than in that of the manufacturer and of the purchaser of iron, a source of great satisfaction to find that the experiments recently made on the mechanical puddling of iron have been so satisfactory, that it seems now to be only a question of time as to the entire disuse of the hand-puddling process.

Anything which tends to make manufactured iron at once cheaper and better is a boon to the smith. It is the bad quality of common iron, rather than any fallacious defect in the metal, which renders the architect often averse to the employment of smith's work, when nothing else is so truly appropriate. We must conclude that what renders one sample of iron less tenacious than another is some chemical impurity in the metal, which it is within the power of perfectly instructed metallurgical skill to remove. These admixtures are often extremely small, if measured by any test but that of the depreciation of the quality of the iron. Measured by that test, their presence assumes extreme importance. Mr. Kircaldy, by his numerous experiments, has added no small amount of positive knowledge to that which we possessed before, on the actual resistance of various makes of iron, both to tension and to compression. In his "Experiments on Wrought Iron and Steel," we find the breaking-weights of iron bars to range from 160,520 pounds per square inch of fractured area in the Swedish R. F. charcoal iron, to 63,883 pounds per square inch of fractured area in Russian C. C. H. D. iron, a difference not far short of three to one. In iron plates, looking at domestic production only, the breaking-weight per square inch of fractured area ranges from 92,468 pounds in Yorkshire plate, to 43,460 in common Scotch ship-plate. This is more than two to one in favour of the Yorkshire iron. It is also a very suggestive comparison with reference to naval security.

An uncomfortable suspicion pervades the public mind,—and even professional men are not altogether free from its influence,—that, under some unexplained circumstances, the texture, or molecular arrangement of iron, used in buildings or in machinery, undergoes a mysterious change. Fractures of axles or of tyres in railway collisions are the phenomena which have been chiefly cited as requiring this very alarming explanation. Many writers have ridiculed the idea; but ridicule is an unsatisfactory substitute for scientific analysis. It has, however, been pointed out, that "the two different appearances, respectively known by the terms 'a fibrous fracture,' and 'a crystalline fracture,' are produced by the iron breaking gradually in the one case, and suddenly in the other. Hence, when the appearance presented was fibrous, it only proved that the piece had been torn asunder; when it was crystalline, that it had snapped." This view, which is not matter of theory, but the outcome of experiment, fully explains all the phenomena of fracture which have led to the idea of some unexplained structural change. It is of the first importance, to the architect as well as to the engineer, that the facts should be known. An unexplained, mysterious danger, such as would be that of such a molecular change, if it could possibly occur without ascertainable cause, is more to be dreaded than any of those casualties which it is within the power of competent science, backed by competent care, almost absolutely to preclude.

By immersing specimens of iron in dilute hydrochloric or muriatic acid, the foreign impurities are removed, and the texture of the metallic portion is exposed to examination. Long immersion in water,—or, at least, in some water,—has the same effect; as we have witnessed in the bolts of a sunken vessel that had

been for some fifty years exposed to the alternate action of fresh and salt water, in the river Seine. Thus treated, puddled iron rolled, or wrought iron in its lowest state, as in Scotch and Welsh puddled bars, presents a woolly appearance. In iron of a superior quality, the appearance presented is that of very fine threads or hairs, lying closely together. This is remarkable in Farnley and Bowling iron, as also in Russian bar. Swedish tilted bars present, even to the naked eye, a beautiful silvery variegated appearance. Of the beautiful Styrian iron, which is so highly prized in Italy, and which was probably employed by the famous armourers of Milan, we regret that we have found no analysis, or definite scientific description. It is most evident,—to use a mode of expression that has recently come into favour,—that there is iron and iron, no less than there are smiths, and that there have been smiths.

PLAN AND MAP DRAWING.

Is plan-drawing an "art"? Or is it rather to be called a science, a business, or a "craft"? The question suggests itself, incidentally, in looking through the new work on the subject by Mr. G. G. André,* who frequently uses the terms "art" and "artistic" in reference to the comparative excellence of various ways of getting up plans. The words perhaps are not used with any very definite intention of claiming them as the most suitable expressions; they come readily to hand, though expressions of narrower significance would have met the case. Plans and maps, however complicated in their details, and whatever labour may be expended in working them up to a neat and highly finished appearance, are essentially little more than a collection of conventional signs, the use of which has been tacitly agreed upon for the representation of certain classes of objects or localities. Whatever is worth doing is worth doing well, nevertheless; and it is desirable both that these systems of shorthand should be put upon paper in as intelligible and as neat a way as possible, and also that a uniformity of language, so to speak, should be adopted as far as practicable; so that to those who have to study them, a collection of plans may convey at a glance the information they are intended to give, even without the addition of written commentary to any great extent.

The book before us aims apparently at assisting both these ends; the first ostensibly, the second at all events incidentally. The author's avowed object has been to produce a book "which may claim a place in every drawing-office, be it that of the topographer, the hydrographer, the surveyor, the military, civil, or mechanical engineer, or the architect. Even should he have failed to reach the high mark at which he has aimed, he hopes, with some degree of confidence, that he has at least succeeded in producing a book which the experienced draughtsman will find valuable as a book of reference, and which the pupil may constantly consult with profit." The latter part of this aim has undoubtedly been attained, and the work will be a very useful and instructive one to put into the hands of any beginner in the business of topographical draughtsmanship. The value of such a book to the "experienced draughtsman" will depend a good deal on the extent to which it is, or can be made, a standard of reference for recognised methods of representation, in regard to which there is no real standard at present. Certain things are done in the same way in most plans, but details, such as the representation of slopes and gradients, or of special classes of ground, receive very different treatment from different hands, and in different parts of the country. In the Government drawing-offices, as the author points out, certain mechanical arrangements of shading are specified and adhered to for certain conditions; but it is impossible to ensure uniformity in these things throughout the country, any more than in the method of getting up architectural elevations, unless by a common consent of surveyors and draughtsmen, which it would be very difficult to obtain. And as to the methods of operating, we should doubt whether receipts are of use to any "experienced draughtsman"; because each man has his own way of working derived from his

* The Draughtsman's Handbook of Plan and Map Drawing: including Instructions for the Preparation of Engineering, Architectural, and Mechanical Drawings, with numerous illustrations and coloured examples. By George G. André, C.E., M.S.E. London: R. F. & N. Spon (and New York).

own practical experience, which is, beyond a certain point, the best guide in such matters. As an educational book, however, there is a great deal of information compressed into a small compass; and it may be suggestive also to advanced workers.

A book of this kind has, however, a sufficiently extensive interest, if we consider the great amount of work of the class to which it refers, which is daily carried on in the country; nor has the subject been so exhausted as to render a few words on it superfluous. The present work is divided into two parts, of which the first is occupied with what its author calls "essential elements," and the second with "applications." Under the first division are comprised "The Drawing Office and Furnishings; Geometrical Problems; Lines, Dots, and their Combinations; Colours; and Shading." In regard to the first section, the author rightly urges the importance of good instruments, if there is to be any good work; and the beginner may be quite sure that there is no worse bargain in the world than a box of cheap drawing-instruments. In details, Mr. André is not always correct. The pencil-point in a bow pencil should not be kept exactly the same length as the steel leg, but a trifle shorter, otherwise it cannot be used nearly so fast or so readily without a constant tendency to unsettling the steel leg by the greater pressure of the pencil on the paper. The "centre" must have a firm hold, and the pencil, which traverses the circumference, lean lightly on the paper. Nor is "drawing-paper passed between the ribs" an efficient way of cleaning the pen; it should be blotting-paper, tolerably fine and not too woolly in texture, otherwise it will leave particles behind it. Directions for setting the pen when worn are given; but the young draughtsman will be wise to take the author's advice, and send the pen to a professional doctor for so delicate an operation. Besides, it is a waste of time and labour for a draughtsman to do laboriously and with difficulty that which the practiced workman can do so much more quickly and efficiently. A useful hint to the young draughtsman is, that a line should be drawn from rather than to the point at which the greatest exactitude is necessary; in drawing radii directed from the centre and circumference of a circle, for instance, commence your line at the centre. The rest of the directions in this part of the work are not open to question, and the geometrical problems include the delineation of all the necessary geometrical figures.

"Lines, dots, and their combinations" lead us to rather trivial matters, which might be dealt with more shortly and simply. The pupil condemned to "line" a river or a pond on a map may be glad to find his drudgery dignified, and to learn that there is "ample scope in it for the exercise of taste and judgment, and in proportion to the taste displayed, and the judgment exercised, will be the effect of the work when executed." George Herbert thought sweeping a room might be a fine action, if carried out in the right spirit; and we suppose it is the same with shading plans, though the sweeping is the healthier exercise of the two. The delineation of trees is a somewhat less dry operation; but we are shocked at the lax morality indicated in the statement that "the addition of a tree here and there improves the appearance of a drawing." No doubt; but then, where's the typographical accuracy? Henceforth we shall be forced to look with painful suspicion upon the map-draughtsman's tree, placed "here and there."

The chapter on colouring contains useful instruction in regard to a branch of draughtsman's work (we speak, of course, of flat tinting) in which a good deal of care and practice is required to produce a neat and good result. We question the statement, however, that every surface looks better with two washes than one: our experience is that colouring looks best and clearest which is done at once, in one wash; and the waste of time in the double work could only be justified by a very decided superiority in the result. (The principles of plan-colouring are very arbitrary, for while some classes of objects are usually coloured with reference to natural tints, others are as habitually used in an arbitrary and conventional sense. Why, for instance, are roads on plans to be coloured yellow? There is no natural suitability in the colour, and certainly the effect is not pleasing. The scale of colours given for materials in connexion with building agrees tolerably well with the most usual practice, but not altogether; it is not usual nor suitable, for instance, to represent concrete and masonry by the same tint (sepia); tiling is

omitted from the schedule; and "Indian red," which makes its best representative, is given to "mahogany," which is a much less important item, in most cases at least. In regard to architectural drawings of the more mechanical type, we may observe that there is much room for improvement in the practice of many offices in colouring; without attempting to make of a plan or elevation a "picture," or give to it what Mr. André would call "artistic effect," there is at least room for securing a certain harmony of tints, and not offending and hurting the eye by those raw combinations of bright red and yellow for brick and timber work which we not unfrequently see. A cardinal rule, Mr. André observes, in the art of map-colouring, is that everything shall be in keeping; "nothing shall unduly obtrude itself; and in a coloured plan, *spottiness*, as it is called, should be studiously avoided. Forest, brushwood, and cultivated land should be represented by tints of about equal intensity, and the same equality may be observed for grass-land, marsh, water, and sand, but the intensity should be less than in the former case." We can scarcely say that the author has realised his own instructions in the small specimen map affixed in the position of a frontispiece to his volume. We should call this, if not exactly a "spotty," at least a very pronounced style of plan colouring, from which we must conclude that the author's predilections are in favour of that heavy manner of getting up plans of this kind, with strong tints and darkly-shaded hills, &c., which has the merit of being clear, and not readily effaced, but which, we must confess, renders a plan, to our thinking, about as ugly and unattractive a way of covering paper as could well be devised. It is certainly possible to get up coloured plans with much more refinement of effect than is shown in this instance.

The chapter "on shading" gives us the "council of military education" scale of line shading for representing approximately different degrees of inclination, and gives some good suggestions for the filling in of hill shading; a practice which is of importance as affecting the appearance and the truthfulness of a plan, and which requires some care and patience to ensure a good and truthful effect. Of the two main systems of shading, by lines drawn vertically from the summit to the base of the supposed hill, or by groups of lines, ring-fashion, round it, we should certainly recommend the former, as looking best and presenting least trouble in execution; but the horizontal system may have its advantages when it is intended to add shading as an additional illustration to a system of contour lines.

The "Application" portion of Mr. André's book commences with remarks on the importance of lettering, in regard to scale and style, in which again the illustrations given are little to be recommended as models, though the advice itself is good enough. There is a certain style of lettering titles, &c., peculiar to the map-draughtsman, and of which the specimens given here are only too typical; a kind of ostentatious display of penmanship without a grain of artistic feeling, which is repelling, and at once distinguishes this style of drawing from an architect's drawing. Mr. André's lettering is behind the age, we can assure him. A short method of setting out the smaller divisions of a scale, by which any looking best and presenting least trouble in execution, is made to achieve the object without repeated trials, is worth the draughtsman's attention (p. 71), and may save him many settings of his "hair-trigger." As a general rule, we dislike the elaboration of scales, with mock tablets, borderings, and flourishes (which again are typical of the map draughtsman); the scale should not be obtrusive, and it is waste of time to set about ornamenting it ostentatiously. Perhaps the same may be said of titles, which on architectural drawings are often to be seen carried to an almost absurd extent of intricacy and laborious trifling.

The observations, at some length, on plotting surveys, give clearly the main points to be attended to. The statement that in a survey, "owing to the inequalities of the ground, all measured lines are liable to be recorded a little too long," seems to ignore the unquestionable fact that a practised and careful hand will take note of and allow for these, as may seem requisite, in the process of chaining. The surveyor should not be content with taking the chain over the ground just as it comes, and then allowing a percentage for error; he should accustom himself to notice the lie of each chain, and allow slightly for inequalities in planting his

"arrow"; by careful attention to this complete accuracy may be attained even after going over very broken ground, and "stepping" the chain up and down hill.

Map-drawing, especially the sketching and subsequent delineation of the contours of hills, is carefully described; in obtaining the general contour and proportion of a hill, the author recommends a station on the summit, and the approximate sketching of two or three contour lines, commencing with the base, as the ground-work for a more detailed survey; "a skeleton," as he terms it, "of horizontal curves numbered as to inclination and heights. . . . The greatest difficulties to be overcome in eye sketching are,—1st, that of converting a perspective view into a plan; and 2nd, in forming a just conception of the intersections of different slopes at their bases. Hence the rule to project first upon a sketch all the lowest lines or watercourses, and then the highest parts or summits." The chapter on mechanical and architectural drawings, on the other hand, is very deficient, so far as these latter are concerned, and we may safely say that the example of a coloured perspective sketch (plate 24) is not "such as are frequently made by architects" nor by any means requiring "high skill and taste" on the part of the colourist. The author has gone "beyond his last," and is writing of what he has evidently very partial knowledge of. A remark as to the effect, in geometrical and mechanical drawings, of a sharp white line left at each angle between the line and the colouring, is true; it should, however, be on one side and not the top, only, of each surface of colour; representing, in fact, the opposite of what is sometimes called "dark-lining." Some of the French architects obtain this effect in a shorter and simpler way than that recommended by Mr. André, by taking off the colour at the edge with the point of a sharp knife; this produces an admirable effect, bright and yet not hard, in application to the jointing of masonry,—just picking out the arisings which are supposed to catch the light.

The specimens of map-drawing, especially of characterising detail, among the plates at the end of the book, are much better and finer in style than the frontispiece drawing, and give specimens of a method of indicating nearly every kind of ground and of natural object. So far as this part of the subject goes, Mr. André's book can be fully recommended; but in regard to architect's draughtsmanship there is little to be said for it, and its author has obtained for it a larger sphere of usefulness than it is likely to have. But as a surveying draughtsman's guide it will be very useful, and has been got up with care and attention.

THE DECORATION OF ST. PAUL'S.

At a meeting of the executive committee on the 27th of November, the Dean of St. Paul's read the resolutions adopted by the Chapter, which were as follow:—

"That, though the Dean and Chapter have given a general approval to the designs submitted by Mr. Burgess, they think that, considering the divided state of opinion in the Executive Committee, and also in their own body, it is desirable to suspend for the present any attempt to proceed with the decoration of the cathedral. They recommend that steps should be taken for rescinding the agreement with Messrs. Burgess & Pannose, which has been found to be highly inconvenient in its working. They hope that the committee, in dealing with Mr. Burgess, will treat him with the liberality to which, in their judgment, his professional eminence and his services alike entitle him. That, subject to the expression of an adverse opinion in the Executive Committee, the Dean and Chapter deem it advisable to withdraw the permission given by them on the 21st of July, that temporary experiments should be made on the walls of the apse of the cathedral, with a view to illustrate the effect of Mr. Burgess's plans. That these resolutions be communicated by the Dean to the Executive Committee."

Mr. Beresford Hope, M.P., then proposed, and Mr. W. Longman seconded, the following resolution:—

"1. That this Committee, in compliance with the resolution passed by the Chapter of St. Paul's on the 3rd of November, agree to suspend for the present the work of the decoration of St. Paul's; 2, that this committee will not press the experimental painting of the apse; 3, that this Committee is of opinion that the rescinding or revising the agreement with Mr. Burgess should also, for the present, be postponed."

Mr. Walter, M.P., speaking from his own dearly-bought experience, was of opinion that when matters had got into such a difficulty as that in which the decoration of St. Paul's was at present, the only course was to get rid of the architect and to start again entirely free.

Sir Gilbert Scott, R.A., considered it unfair that Mr. Burgess's engagement should be entirely

cancelled, and would vote for Mr. Beresford Hope's motion.

Mr. G. Cavendish Bentinck then moved an amendment to the motion as follows:—

"To leave out the last paragraph following the word 'Appe,' in order to add the words, 'And this Committee is of opinion that steps should forthwith be taken for rescinding the agreement with Messrs. Burges & Penrose.'"

Ultimately, however, the following resolution, proposed by the Dean and seconded by Canon Gregory, was carried by a majority of nine to four:—

"The Committee agree to comply with the recommendation of the Dean and Chapter of St. Paul's, that steps should be taken for rescinding that agreement with Messrs. Burges & Penrose, which has been found to be highly inconvenient in its working."

It was then proposed by the Dean, seconded by Mr. Longman, and carried unanimously, that "the question of Mr. Burges's remuneration for work hitherto done be referred to the finance committee."

A fuller report of the proceedings, together with the copy of a letter addressed to the Dean by Mr. Burges, will be found in the *Times* of November 28.

Mr. Bentinck has published a letter to show that Mr. Burges, in the designs he submitted, has not adopted, as instructed, "the style of the best Italian architects and artists of the sixteenth century."*

THE LATE MR. GEORGE GUTCH.

MR. GUTCH, whose much-lamented death we mentioned in our last, was the son of the late Rev. John Gutch, formerly rector of St. Clement's, and Registrar of the University of Oxford. He was pupil and assistant to Mr. George Saunders, architect and chairman of the Commissioners of Sewers for Westminster and part of the county of Middlesex, who designed and built the elegant suite of sculpture galleries at the Old British Museum, then Montague House, for the reception of the Townley collection of marbles, and who had the revision of the building accounts for the erection of Somerset House. Under this master Mr. Gutch acquired great practical knowledge, and through the influence of Mr. Saunders as a county magistrate, was appointed to the district of Paddington under the powers of the old Building Act of George III., and which he held for upwards of fifty years. He was also eventually surveyor to the extensive building estate of the bishopric of London in the same parish, and it was under his superintendence that this important quarter of the metropolis has been covered. Mr. Gutch was highly esteemed by his friends and colleagues for his honourable character and genial manners, and was ever ready to assist his professional brethren in any difficulties, and to relieve the wants of the poor or unhappy by his benevolence. He was in his 84th year, and was buried in Paddington Cemetery.

HOW FEVER IS PROPAGATED.

ON the 27th of November Dr. Hardwick, the coroner for Central Middlesex, held an inquest at the Sun Tavern, Gray's Inn-road, touching the death of William Stone, aged fifty-four, of 2, Leopold's-court, Baldwin's-garden, Holborn.

In the course of the inquiry, —

Mr. Francis H. Birch, relieving officer, stated that he visited the house, and in a second-floor he found two bedsteads. On the first bed was a young woman, aged 19, and a child 20 months old. On the other one, the other side of the room, were three children, aged 11, 9, and 6 years. All had the fever. The deceased said he thought the fever was from the stench of the house, and that the dust had not been removed for two months. There was no cover to the water-cistern, no water on at the closet, no traps to the sinks, and the windows would not let down from the tops. He reported the case to the sanitary officers, but the room had not been disinfected, nor anything done.

The Coroner said it was a fearful thing to find a case like this, where there were four children with fever, and the father of them, through ignorance or neglect, not going to the parish for proper nourishment for them, and likewise himself going to work, running the risk of carrying the fever to a house where he was at work. Cisterns should all have covers, for water draws all the smell to it.

* The Completion of St. Paul's. A Letter to the Very Rev. the Dean of St. Paul's, Chairman of the Executive Committee, London: Harrison & Sons, St. Martin's Lane.

The jury returned a verdict that the deceased expired from fever, or blood poisoning, accelerated by the unsanitary condition of the house, and want of proper nourishment.

PROJECTED IMPROVEMENTS AT THE ANGEL, ISLINGTON.

SIR, — I would advocate as an essential feature in this improvement, the desirability of commencing with the house next the Philharmonic, on the Islington side, and the removal of the entire block of houses (all of an inferior character), thence to a point of junction with the main line of houses in the City-road, approaching by a suitable curvilinear line: this alone would relieve the enormous down side traffic.

NUNC AUT NUNQUAM.

THE PROPOSED PUBLIC LIBRARY AT BETHNAL-GREEN.

MR. J. HALL, one of the members of the Bethnal-green Vestry, has not a very favourable opinion of the industrial habits of the labouring population in that district. During the discussion of the proposal to adopt the Free Libraries Act at the meeting of the Board last week, it was strongly opposed by Mr. Hall, who remarked that "every one knew that workpeople now could scarcely be got to work three days a week, and if they had a free library to go to, he doubted if they would work at all, but fluctuate between the library and the workhouse, enjoying free literature and free living." The Vestry were, however, almost unanimously in favour of the project, a resolution to call a public meeting on the subject being carried *nem. con.*, a committee being appointed, with instructions, before holding such meeting, to place themselves in communication with the authorities of the South Kensington Museum, with a view to ascertain whether the public library could not be connected with the Art Library and School of Design, which the Government has undertaken to establish at the Bethnal-green Museum.

SCHOOLS OF SCIENCE AND ART.

City School of Art. — On Monday evening, the 30th ult., the annual distribution of prizes awarded by the Department of Science and Art and by the School Committee took place in the Bishopsgate Schools, Skinner-street. This institution is one of the oldest in London, having been established in 1841. There are now in the school 120 students, mostly artisans. The chairman (the Rev. W. Rogers, rector of St. Botolph's) said that the school was originally intended for artisans in the silk trade. The importance of learning drawing was obvious, but it was desirable to combine the study of science with art. Lord Henry Lennox, who distributed the prizes, said he was convinced that the expenses of the country must be enlarged for the purpose of increasing art and technical knowledge, if our citizens were to compete in beauty of design with Continental artisans, in taste and ornament as well as in superior workmanship.

Oxford School of Science and Art. — The annual distribution of prizes to the successful students of the Oxford School of Science and Art took place on Saturday evening, 21st ult., in the Town-hall, Oxford, in the presence of a numerous and influential assembly. Prince Leopold had promised to distribute the prizes, but through ill health was compelled to decline, and Dr. Acland, Regius Professor of Medicine in the University, who had expressed his willingness to supply the vacancy, was absent through having been bitten by a dog. The Dean of Christ Church, Dr. Liddell, therefore, presided. Mr. Gamlen (secretary) said the committee were of opinion that the school could not, for the present at least, be maintained without an annual subscription of 60l. The number of persons who attended the art classes and received instruction in drawing during the session was 109, of whom twenty-four were students at the day classes, and the remaining eighty-five at the evening classes. The total number of students in the science classes was 155, as compared with 105 last year; the number presenting themselves for examination was 100 (last year eighty-seven). These 100 candidates gained in all 140 successes at the examinations in May last, sixteen in the advanced stage, and 124 in the elementary stage.

Dr. Liddell, in the course of his remarks, read some extracts from Professor Acland's intended address, as follows: — The science departments of the nation at large available for teaching the working-classes were twenty-five years ago only in progress of formation. The Great Exhibition of 1851, the fruit of the sagacity and patriotism of the Prince Consort, fixed public attention on what are, in the present state of the civilized world, the foundations of manufacturing skill. A great educational department was begun. The Museum of South Kensington, the offspring of this development, though not even yet fully consolidated, receives from the public purse 250,000l. annually, directs art-studies in over 2,000 elementary schools and in 124 schools of art. Science-studies are conducted in 1,182 schools. There are in the country more than 350,000 students of science and of art. Of the twenty-three scientific subjects in which the Privy Council contributes aid, there are hardly any which, besides their intrinsic value, do not contribute largely to the understanding of practical art. For improving some trades the highest qualities of thought are demanded. Building in all its departments may be classed under this head. It would be superfluous to point out what an endless variety of mathematical, chemical, and metallurgic principles are hourly brought before the mind of an intelligent railway engineer. The technical applications of careful drawing are of course as numerous as are trades and professions. In the making of drawings, or in the copying of designs, all the manufactures and trades in short, in which decorative as well as mechanical skill is called out, a delicate appreciation of the natural world, of beauty, of form, and of colour, and of composition or grouping is eminently required. The prizes were then distributed, each recipient getting a few words of encouragement from the Dean.

Certificate School of Art. — On Wednesday evening, 25th ult., the annual meeting and distribution of prizes in connexion with this School of Art was held in the Schoolroom, Fisher-street, in this city. The Mayor of Carlisle presided. The report of the committee stated that the school had been doing good work. "In the second grade examination in freehand, geometry, perspective, and model drawings, seven have obtained prizes, and thirty-two certificates of merit. In the third grade, eight prizes of books were awarded; one free student has been appointed, and one full certificate gained. 707 works from this school were also sent to London for examination. The committee have this year offered prizes for the best paintings of a group in oil or water colour, open to all the students in the school, and the result has been the production of some very creditable paintings."

A GAUGE FOR SPECULATIVE BUILDERS OF WORKMEN'S HOUSES.

SOME speculative builders at Hawick, Scotland, have solved the question as to the remunerative nature of cheap workmen's dwellings; and, at a public sale last week, it was found that the houses sold readily, and considerably above the upset price.

The first block offered was a block of twenty "quarter houses" in concrete. The houses on the ground-floor, which consist of two rooms, were offered at the upset price of 95l., and brought from 109l. to 110l. Those on the upper floor, which have attics in addition to two rooms, were put up at 130l., and brought 147l.

Four half-concrete houses, containing double the extent of accommodation of the others, were offered at an upset of 300l., and sold for that sum.

Four "quarter houses" of stone and lime, on the upper floors, were offered and sold at 190l. The ground-floor houses in the same block were offered at the upset of 135l., and sold for 141l. Thirty-two houses were offered and sold directly to intended tenants and working men. Attached to each is about a rood of garden-ground.

A Hundred Accidents at One Building.

Building in Italy would seem to be a peculiarly dangerous occupation. A new office is being erected in Rome for the Ministry of Finance. The other day a workman fell from the scaffolding and was killed, making, it is asserted, the hundredth victim of accidents upon the same building.

NEW BUILDINGS, FARRINGTON ROAD,

FOR THE METROPOLITAN ASSOCIATION FOR IMPROVING THE DWELLINGS OF THE INDUSTRIOUS CLASSES.

THESE new buildings were formally opened, as we mentioned, by Mr. Cross, the Home Secretary, on Friday, the 13th of November. They consist of five blocks of buildings seven stories in height, erected upon a plot of land having a frontage of about 300 ft. to the Farringdon-road, and an average depth of about 100 ft. The original idea was to erect one long range of double buildings facing the Farringdon-road on one side and a large courtyard on the other. This was, however, abandoned in favour of the present scheme of five blocks at right angles to the Farringdon-road. The advantages claimed for this arrangement are:—

(1) The subdivision of paved courtyards which serve as playgrounds; (2) the equalising the aspect of the several sets of rooms; for in the original idea one-half the dwellings would have looked on the road, and the other half on to the old buildings on the side: now all the dwellings get a glimpse of the road, and are as far as aspect is concerned on an equality; (3) economy of space, for in the first plan accommodation would have been obtained for dwellings equal in extent to only three of the present blocks; (4) the reduction of spread of fire.

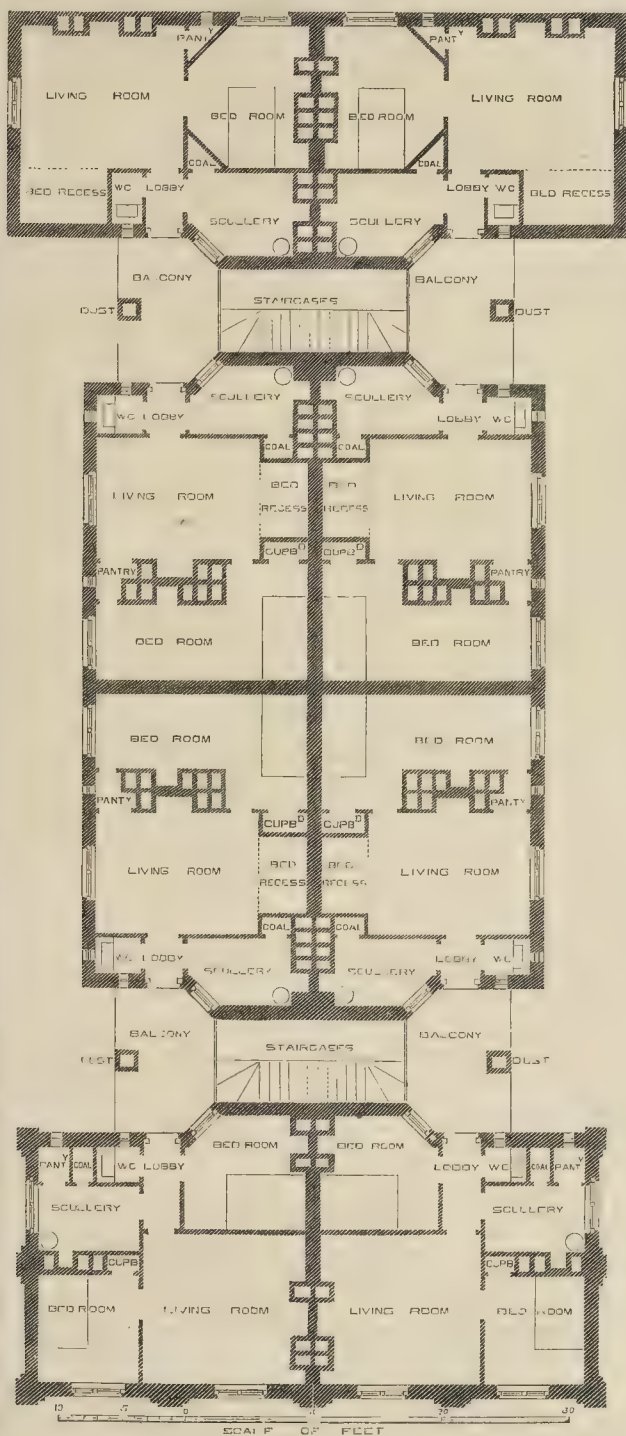
Having determined upon the position of the blocks, the next step was to determine the principle which should be worked out. The two ideas which were kept steadily in view in working out the plans were,—(1) That each dwelling should be complete in itself; and (2) that privacy should as far as possible be obtained for each dwelling. Of course the general idea of a gallery-plan first presented itself, but the two serious objections to this arrangement are—(1) Diminution of light by the overhanging galleries; and (2) entire want of privacy. This idea was therefore abandoned. There were also objections to what is known as the external staircase plan, especially when carried out in double sets of dwellings. After mature consideration the plan adopted was submitted to the Directors of the Company as embodying three important advantages:—(1) Complete privacy ensured by what may be called the balcony plan, whereby the staircase is continuous from bottom to top without the necessity of a visitor passing a single doorway; in other words, no doorway opens on to a public passageway; (2) completeness in each set of rooms; and (3) ventilation through the blocks; to which might really be added a 4th, namely, the spread of fire being reduced to a minimum, and the access from any floor remaining intact.

The general idea being thus settled, it was obvious that the scheme, to be successful, should include dwellings of various sizes, and as the irregular form of the back boundary rendered it necessary to have the blocks of various lengths, it became easy to arrange the plans as to obtain the required diversity in the accommodation. It was, however, determined, that whatever the total accommodation might be, each dwelling should have a small scullery, fitted with grate, copper, sink, and coal-place, and a water-closet, approached in all cases from the entrance-lobby, and not in any case from a room. The accommodation provided includes the following arrangements:—

1, a living-room with bed-niche; 2, a living-room with one bedroom; 3, a living-room with bed-niche and one bedroom; 4, a living-room with two bedrooms; 5, a living-room with bed-niche and two bedrooms.

In every instance, attached to the foregoing accommodation is a scullery, &c., as before described; also a small pantry; and in every case the water-closet has a window opening to the open air. The rents of these various sets vary from 4s. 9d. to 10s. per week.

As regards construction, the walls are built of stock bricks, with red brick bands. The floors throughout are constructed with rolled iron joists embedded in concrete made of gas-breeze and Portland cement, of which materials all windows and door-heads and steps are made. In all cases the floors of living and bed rooms are covered with boarding on joists. The roofs are flat, laid with Val de Travers asphalt, and serve as drying-grounds. The soil-pipes are of stone-ware, and run up in a straight line from the drain to the roof, whence they are continued to a further height of about 10 ft. in iron. The closet-trap on each floor, and the surface water-trap on roof, communicate by a junction with the soil-pipe. In the centre of each balcony is



PLAN OF THE NEW BUILDINGS IN THE FARRINGTON ROAD,

For the Metropolitan Association for Improving the Dwellings of the Industrious Classes.

a dust-shaft, with an iron self-closing door on each floor.

The buildings find tenants, we are informed, as soon as finished.

We give a plan of one of the blocks. On the ground-floor next the high-road some shops are provided.

The total cost of the five blocks, including the paving of the courts between the blocks is a little under 40,000*l*.

The architect is Mr. Fred. Chambers, of Finsbury-circus; the builder, Mr. James Brown, of Finsbury-pavement.

ESSENTIALS IN CONGREGATIONAL CHURCH BUILDING,

FROM THE MINISTER'S POINT OF VIEW.

DR. HENRY ALLON gave the following notes to the seven architects who are to send in designs for rebuilding Union Chapel, Islington:—

The two great essentials of a Congregational Church Building are:—Adaptation (1) for *Preaching*, and (2) for *Worship of the Congregation*.

I. *Preaching*.—In Congregational services the sermon is longer and more prominent than in Episcopal services. It is essential, therefore, that every person should see and hear the preacher, without conscious effort. Hence (1) there must be no obstruction to seeing—of internal supports, intercepting lights, lights on wrong levels, &c.; and (2) the acoustic properties of the building are of fundamental importance; the form of the structure, and especially of the roof, should be specially considered and adapted for hearing. The sermon must be heard *without strain*, either of the ears of the auditory or of the voice of the preacher. It seriously interferes with impression for the hearer to be consciously making an effort to catch the preacher's words; and with effectiveness for the preacher to be solicitously straining to make himself heard. No preacher can afford to speak on the strain through a sermon of forty or forty-five minutes. It therefore follows (3) that the preacher must be in vital contact with his hearers. Eloquence, as has been justly said, is in the audience; the preacher's inspiration is not his theme only, but also the manifest sympathy with it—the kindling eyes and interested countenances of the people. If, therefore, he is separated from them by any such space as disables him from easily catching these, his inspiration must be entirely subjective, and necessarily partial. Hence, the height of the pulpit, and its distance from the nearest pews on the ground-floor, as also in the gallery, should be reduced as much as possible. The galleries should also be constructed at such an angle as will enable persons in the back pews easily to see the preacher. In many churches the preacher sees and is seen by only the front row. Sufficient space round the pulpit and table-pews must, however, be provided for weddings.

II. *Worship*.—(1) *Prayer* in Congregational churches is not Liturgical, but *Extemporaneous*. Hence, whatever necessity there may be for easily hearing preaching, it exists with still greater emphasis for easily hearing prayer. The preacher may be loud in addressing an audience; he who prays cannot shout in addressing the Almighty. The devotional feeling of the congregation is seriously disturbed and hindered, when it is necessary to strain the ear to catch the words of extemporaneous prayer. Where Liturgical prayer is used, familiarity with the prayers that the preacher reads renders it much less important that he should be articulately heard. Thus, except during singing, the congregation *through the entire service* are dependent upon hearing the words of the minister. (2) *Worship* is not choral, but *Congregational*. No hymn, chant, or anthem is sung in which the congregation does not join. The idea, very largely realised in Union Chapel, is that the whole congregation shall sing from music-books in four-part harmony. The choir, technically so called, is therefore only part of the singing congregation; its function is simply to lead it. It should therefore be in it, and of it—under no circumstances separated from it. It should be felt in its lead, and control of the Congregational song, but not seen or even heard apart from it. Hence it should be so placed as to be part of the congregation. The great attainments in musical worship of the entire congregation are, in my judgment, to be chiefly attributed to this arrangement, and could not be realised with a separate choir in a choir gallery; for which, consciously or unconsciously, the congregation listens. The

choir must of course be contiguous to the organ, and in possible communication with the organist. If, by any projection of the manuals of the organ, he can be placed in front of them, all the better. These practical requirements of Congregational services are so essential, that, however desirable architectural congruity and artistic beauty may be, they must, in my judgment, be paramount. Our church buildings are for use, not for the realisation of conventional ideas, which often unfit them for use.

THE STUDY OF ANCIENT ARCHITECTURE, AND ITS APPLICATION TO MODERN USE.*

"It was indeed to be wished that some invariable standard could be discovered, whereby to decide the merit of every production of art."—WARR.

"In truth, we want rather art than stuff to satisfy our greatest fancies."—FRENCH.

It is now well understood that no advance in the art of architecture can be realised by adhering to one particular order or style, perfection must be sought by a careful study of many examples, and not from that of an individual nature. Stewart tells us, "that imagination, by a careful study of nature, employs one part of her works to correct another, and collects into a single ideal object, the charms that are scattered among a multitude of realities." As regard sculpture and painting, this method of proceeding has always been the rule which influenced the ancient artists; the Greeks, in particular, were eminently successful in enforcing this point.

The several examples of Classic architecture vary much in their relative proportions; the art is not advanced by strictly adhering to or copying any one pattern, the architect who selects beauties from all, and avoids peculiarities, or defects, will best advance the art. It requires great caution in deciding what ought to be imitated.

The mind of an architect enriched by a profound knowledge of all the works of ancient and modern art, will be fruitful in proportion to the labour and care bestowed in investigating them.

Rejecting the works of past ages, and ignoring all precedent, would be a retrograde movement, and actually placing each generation in a state of infancy. Sir Joshua Reynolds has forcibly shown that real genius is only gained by building on the past. Nothing can come of nothing.

The idea of constructing buildings to last for ever, is absurd; but I do think that our edifices should be so built as to last long enough to educate a few succeeding generations. The triumphant appeal of an Irishman, a lover of antiquity, who, in urging the superiority of the old architecture over the new, said,—"Where will you find any modern building that has lasted so long as the ancient?"—although a bull, was not so bad.

It will consequently be found that the most successful architects were those who were best acquainted with the works of their predecessors. Exact imitations are not to be made; the architect must imitate only in spirit; and the knowledge of ancient architecture, which is diligently sought in early days, should be retained through his professional career. A settled intercourse with all the best and most important works is thus secured. It is impossible to successfully design unless this course be adopted.

An architect, when designing, should always have a master at his elbow. He ought to consult the greatest authority in each style, not for the sake of copying, but he must try and excel it. If he falls short of its excellence, he will still attain a respectable mediocrity.

Greek and Roman architecture have been both studied with equal application. These are not practised with sufficient regularity by the French,—or, indeed, the English,—who seldom or never know either grammar or architecture by principles. Although classic architecture is not the prevailing fashion, still it

"Must stand acknowledged, while the world shall stand." COWPER.

And be compared to—

"Flowers,
That never will in other climate grow." MILTON.

Compositions, rather than inventions, should be the aim of the architect; the heaven-born genius only can produce absolute novelties. No immortality can be gained by producing wild, new-fangled, and licentious designs, which pro-

ceed from a morbid thirst of creating new objects and new forms, having parts without unity, magnificence without order, and richness without taste, exciting the ridicule and contempt of the judicious, and the applauses of an unthinking multitude.

It is a mistake to suppose that the execution of a work in valuable materials, such as bronze, brass, or the richest and most variegated polished marbles, or granites, will ever supersede, or vie with, the more precious properties of true taste, based upon proportion, natural form, and beauty, exhibited in mean materials, such as clay, brick, plaster, or cement. It is the soul or mind in the work that should claim the admiration, and not the material.

The mixtures of styles will never create a new and perfect style of architecture. All such attempts have signally failed, being contrary both to the principles of Nature and reason. The mule, the offspring of the horse and ass, may be, as far as regards its anatomical construction, as perfect as its parents, yet in form and proportion is but a mongrel, and is not permitted to reproduce its species. The same result has always been realised when attempts have been made to combine Greek and Gothic architecture in the same building.

The architect of the period will also not progress without seeking the aid of positive science, as deduced from metaphysical philosophy. The origin of positive science has been traced to philosophy, and with much reason, as "out of evil cometh good." Thus, astronomy came from astrology,—chemistry from alchemy,—physiology from anguaries. The architect must steer clear of stylarism, as the relics of past ages, although advisable to study, are fast disappearing before the advancing light of reason. The current of knowledge and improvement rushes on so strongly that they who hesitate to commit themselves to it will soon be left behind, and serve only the disgraceful purpose of enabling us to measure the force and rapidity of the stream. By science the architect learns to control one natural power by another, and often to guide to a salutary end that which appears most threatening. Thus it teaches him to alter the course of heaven's destructive lightning, to stem the power of water so that it may serve our purposes, to sway the consuming operations of fire, and to force from it the most important services. The revolutions, places, and periods of the celestial bodies serve him for distinguishing times and seasons, and for dividing the world into different regions; the meteors afford him prognostications of the weather; the winds sail our ships, drive our mills, and move other machines. Empedocles's magic was only the profound knowledge he had acquired in whatever was most abstruse in nature.

Still,—

"Nature and art, indeed, have bounds assign'd,
And only forms to things, not beings, give." POPE.

In the works of nature utility appears to have been the primary consideration, and beauty rather a result than a first cause; as Juvenal says, "Wisdom and nature, are they not the same?"

In designing an edifice, the plan and section ought to be carefully contrived prior to the elevation, the latter being dependent upon the former. The peacock's plumage would ill become a domestic fowl and *vice versa*; for the same reason the decorated front of a palace would ill suit that of a warehouse. By studying the wonderful formation of natural objects, the architect would derive more instructive knowledge than is to be found in all the buildings of antiquity. It is well to recollect that although an architect is a designer or creator, he has mental materials afforded him, not only from antique examples, but from nature; and after all he is merely a compiler compared with the wisdom of the Creator, who formed the earth, which was "without form and void."

A new style may arise from the structural wants of the present or a future age, but can never be created by masking new buildings with either Classical or Mediæval architecture, however well adapted to the uses of former periods, although having nothing in common with modern requirements.

An essayist in 1625 urges that "that which is past is gone and irrevocable, and wise men have enough to do with things present and to come; therefore they do but trifle and disturb themselves to no purpose who labour in past matters." An architect cannot endorse the above, as the works of our ancestors are full of instruction.

* By Mr. W. Pettit Griffith, F.S.A. Read before the Liverpool Architectural Society, December 2nd inst.

New styles and new inventions may be compared to new wine; they must be tested by time before they can be appreciated. It requires the comparative experience of ages to determine what is most durably satisfactory in the works of art,

"And only likes what death has made divine."

Bishop Konnet, who formed an antiquarian and historical library for a cathedral church, and deposited it in Peterborough Cathedral, says 'that of all things history is least understood by the generality of mankind, and, what is very strange, people are for the most part least able to judge of the history of their own times. They have a partiality to one side and a prejudice to another; they have their presumptions and their conjectures, and, like some distempered heads, have a sight so uncertain that it deceives them more than blindness itself could do.'

It is not many years since that all who were unread in the writings of Vitruvius were hardly deemed worthy to rank with qualified professors. There can be but one opinion regarding the origin of Grecian architecture, Vitruvius's opinion, although amusing, requires no serious refutation; if Assyrian and Egyptian architecture had never existed our attention might have been arrested by trunks of trees suggesting columns, &c.

The history of architecture has still to be written to be of any value to the architect. The origin of the Doric order, given by Sir W. Chambers in bad perspective, as derived from trunks of trees, with at stones or slates on the top, having the spaces between the ends of the joists closed with clay, &c., and the ends of the joists covered with thin boards, out in the manner of triglyphs, is not only improbable and absurd, but there is no authority for anything of the kind; the Greeks borrowed their ideas from buildings of stone, not from those of wood; they simply refined and reduced to order the works of former ages; this they accomplished with consummate ability.

It has been recently asserted by an eminent architect in his lectures at the Royal Academy, that Greek architecture was in the main of spontaneous growth, the Doric being strictly and completely Greek. It was universally believed by the ancient philosophers that insects were spontaneously generated from putrefying substances, an opinion now only maintained by uneducated persons. We have likewise no spontaneous creations of architecture.

Art did not spring up to perfection, but gradually rose. The sculpture of Greece was the growth of years until Phidias carried it to the point beyond which it could not go.

Egyptian architecture offered to the Greeks many ideas. On the Egyptian temple may be traced the germ of the triglyph. This may be seen in the entablature, a series of six reeds parallel to each other from top to bottom, i.e. perpendicularly and placed similarly to the Greek triglyphs, and at a certain distance apart. The reeds are curved, so are the drops in the Greek capital. For many years the text-book in the Royal Academy, is now very properly repudiated, although the oldest professional work extant, is exceedingly incorrect and mostly fabulous. The origin of the Corinthian capital may be cited as one instance, among others, whose type may be clearly observed in many of the Egyptian capitals, in which the lotus and palm-tree were used, and even volutes were employed.

Sir G. Wilkinson has shown, in his "Ancient Egyptians," vol. iii., p. 310, that by removing the upper part of the lotus-bud capital, and bringing down the abacus, it presents the Grecian Doric capital. Fluted columns were also used by the ancient Egyptians. Sir C. Barry noticed polygonal columns of sixteen sides in a temple at Thebes.

Assyria, also, supplied the Grecian architect with brain material, not in wood, but in stone; the germ of the honeysuckle, Ionic volute, polygonal columns, foliated bosses, &c., may be traced.

No doubt, in primitive times, when mankind lived in woods, upright trunks of trees were employed to form huts, with large beams placed in the upward trunks; the Greek architects, however, with a knowledge of all the buildings of stone in Egypt and other countries, never could have had recourse to the huts of barbarians or their ideas.

In the foregoing paper Gothic architecture was not included. Architects of the antique school did not recognise the Gothic; they ignored it; of course, through not understanding

it, Mediæval architecture has many incongruities, seriously, but amusingly, pointed out by Evelyn; he terms it a certain fantastical and licentious manner of building, called modern or Gothic; congestions of heavy, dark, melancholy, and monkish piles, with slender and misquise pillars, with trite and busy carvings, full of fret, lame statues, sharp angles, jettings, loce, and other out-work, and crinkle-crinkle, clumsy buttresses, nonsense insertions of various marbles imperceptibly placed, turrets and pinnacles thick-set with monkeys and chymæras. Although not treating of this style of architecture on the present occasion, nor endorsing Evelyn's very flattering description of it, it may be observed that the Classic or Antique architecture possesses deformities quite equal and more unnatural than many in the Gothic style,—such as centaurs, satyrs, ox-skulls, termini, &c. There is no doubt that Classic and Gothic architecture, when used, can be rendered more beautiful by the omission of the above-named vagaries.

True taste or beauty in design cannot exist in a building excessively loaded with statues, canopies, suits in niches, emblems, finials, bas-reliefs, flowers, and other gorgeous decorations, without a foot of plain surface to be seen in the whole front.

In the present period but little time is devoted to study, and one of the greatest signs of its absence is the growing love for colour in lieu of form. The first ideas of beauty are derived from colour,—in infancy the mind is pleased with brilliant colouring long before it perceives form. The raw countryman is delighted with colours. Addison says, "the eye takes most delight in colours." Stewart enforces that "from the admiration of colours the eye gradually advances to that of form; beginning first with such as are most obviously regular. Hence the pleasure which children, almost without exception, express when they see gardens laid out after the Dutch manner; and hence the justness of the epithet, childish or puerile, which is commonly employed to characterise this species of taste; one of the earliest stages of its progress, both in individuals and in nations." The same love of regular forms, and of uniform arrangements, continues to influence powerfully, in the maturity of reason and experience, the judgments we pronounce on all works of human art, where regularity and uniformity do not interfere with purposes of utility.

Much has been written on uniformity, and it undoubtedly is a component part of building. To give two towers to a church, one containing a belfry and the other a vacuum, is an evident absurdity. If one tower be placed in the centre the uniformity is preserved.

Uniformity has always been considered a *sin* *quod non* in beauty. A popular poet in 1736, says:—

"Near some fair town I'd have a private seat,
But uniform, not better, not too great;
It should within no other things contain;
But what are useful, necessary, plain;
Methinks 'tis nauseous, and I'd ne'er endure
The needless pomp of gaudy furniture."

This uniformity, considered to be so essential by many, has been denounced by a powerful writer. True,—

"Stones upon stones the orator has piled
With swelling words, but words will build no walls."
CRATINUS.

This writer's argument is, that if one part always answers accurately to another part, it is sure to be a bad building; and the greater and more conspicuous the irregularities, the greater the chances are that it is a good one. Many edifices on the Continent prove the absurdity of supposing that simplicity and uniformity are incompatible with the rich diversity of Mediæval architecture. In some buildings the symmetry is destroyed by intentional irregularities, as in Straßburg Cathedral, but it is quite an exception to the general practice. In Gothic buildings generally a severe regularity and uniformity is observed, and the strictest harmony of design may be traced throughout the copious and luxuriant decorations. Schlegel asserts that instances of intentional neglect of symmetrical proportions are rare exceptions; for Gothic architecture is no less governed by laws of symmetry than that of the Greeks.

Finally, it may be regarded as an undoubted fact, whatever may be urged to the contrary, that uniformity if not always the result of utility, is closely allied to beauty. And further that a careful observer of the varied works of nature will not hesitate to admit this as a rule. It has been wisely said by Oersted, that the remembrance of the glorious times of old, and the

hope of a richer future, are all the present age can give to art; but dwelling with these thoughts, apart from external influences, the knowledge of the beautiful may yet be guarded in some faithful hearts, and though no living chords may now respond to theirs, time must at length give a new impulse to the soul, and sublimity and beauty once more become attainable.

THE PRINCIPLES OF DRAWING, GEOMETRY, AND COLOUR, AS TAUGHT AMONGST THE HINDOOS.

EDINBURGH ARCHITECTURAL ASSOCIATION.

At the last meeting of this association held in the rooms, 37, George-street, a paper was read by Alex. Hunter, M.D., on "The Principles of Drawing, Geometry, and Colour as taught amongst the Hindoos." Geometry, said the reader, has been cultivated for many centuries in India, both among Hindoos and Mahomedans as a branch of science as well as a necessary element of education. The theory as well as the practice has been thoroughly understood by the educated natives, and the principles upon which it has been taught, not so much in schools as in the domestic circle, prove that geometry has had an importance assigned to it in former times by enlightened minds who foresaw that it might be made the means of improving the taste and diverting it to the study of simple and beautiful forms. The mode of teaching geometry to children is very simple and impressive, and the materials employed are of the cheapest. A Hindoo child is first taught to draw with the points of the fingers on the floor covered with sand to the thickness of half an inch. The surface of the sand is made level with a straight piece of wood or a piece of split bamboo. Dots or depressions are first made in the sand with the points of the fingers held at certain distances, the thumb, fore, and little fingers being generally employed as the compasses. At first the eye is accustomed to judge of distances by the position of dots,—the next step is to connect these dots by straight lines,—then to draw straight lines regularly between the dots,—then to prolong these lines till they meet beyond the dots. Square forms are usually selected as being the easiest for a child to draw, and more attention is bestowed on educating and accustoming the eye to judge of distances than in drawing perfectly straight lines. At first plain squares are drawn preserving the dots; then various combinations of the square, vertically, horizontally, or diagonally arranged. This is, perhaps, the most impressive way of teaching the various uses and combinations of the square, and of educating the eye to judge of its relative size and value for filling given spaces, as it can be seen at a glance, and without much effort on the part of the child, which squares are large and which small. The multiplicity and variety of these patterns in which the square forms the basis are very instructive. This system of instruction has the advantage of explaining itself, without being perplexing or intricate, and of accustoming the child to draw lines in a bold, free way from the shoulder and not from the wrist, as in our systems of drawing. The patterns are usually drawn at first from 18 in. to 2 ft. in length, so that each square would vary from 2 in. to 4 in. After a facility of drawing them with single lines has been acquired, they are done on a larger scale with double lines with the fore and little fingers. Curved lines are then added to complete the border of the pattern. The square is looked upon by the Hindoos as the most important geometrical form, and the basis upon which the measurements of their designs and patterns are to be laid down. These illustrations may have a special interest, as they were drawn by the Hindoos themselves, and many of them had been in use in families from whom they were purchased as the ordinary patterns in daily use in Hindoo families. They hardly deserve the name of drawing lessons, as there is both a religious and a caste importance attached to them, for the different trades and occupations of the Hindoos are indicated by the patterns which are drawn in white on the road in front of the houses. In some families there are as many as 1,200 patterns in use, and it is occasionally the boast of the women who draw them, that they can go on for three years giving a new pattern every day. The name given to this kind of pattern in Southern India is Moghob, and when girls are about to be married, one of the tests of her domestic education is the number of these patterns which she can draw. There

is some sense in this, for it is an index of the care that has been bestowed on her domestic education, and a proof to her neighbours that she has been taught to clean the house, and to say her morning prayers to her preserving or her destroying deity. Amongst the Buddhists and the Early Hindoos the square was supposed to be typical of the solidity of the earth; the triangle, of fire; the circle, of the sea or water; and the crescent, of air. To these the later Buddhists added a fifth element, or the winds, represented, in some instances, by a pyramid with turned-up points, as seen in many of the pagodas of Burmah and China, and in a few of India. But to return to the square and its uses as applicable to ornamental purposes. The Hindoo child is taught to examine and to reproduce for itself, and to attach some meaning to each; for instance, in several of these patterns we see a central square, with numerous others arranged about it in pleasing combinations, each square touching the next, but the idea of solidity or continuity destroyed, and an approach to decoration given by the mere arrangement of a few straight lines within squares. You will have no difficulty in detecting that the ideas for some of these patterns have been suggested by bamboo mats, others by grass mats, and a few by cloth weaving. After a facility of drawing in sand, square forms, and patterns of simple combinations of straight lines has been acquired, the child is taught to draw them on the cleanly-washed mud floor or on the stone steps at the door; but the style of drawing differs materially from the methods followed in Europe. A little chalk or chunam in fine powder is held in half a coconut-shell, and the points of the fingers are dipped into it. A succession of dots is laid down to mark the leading parts of the pattern, the lines of which are drawn by sprinkling the powdered chalk, and not by drawing with a point as we do. In this way a steady hand and a bold freedom of style are acquired, which are frequently carried to great perfection in after-life by both Hindoo men and women when designing patterns for weaving. In order to make the patterns more attractive to children, various simple but cheap and tasteful modes of combining colours with the drawing and geometry are had recourse to. One of the most common methods is to fill up the squares or spaces with coloured powders, and either to trim up the lines of junction with a split and pointed bamboo, or to pull some flowers to pieces, and to arrange the petals along the sides of the squares, so as to hide the inequalities; for this purpose the flowers of the white jessamine are most frequently selected; sometimes the yellow jessamine is used. The coloured powders used for filling up the spaces are natural ochres for the reds, yellows, browns, and purples, mixed with chunam to give brightness. When the following colours are used, — turmeric, king's yellow, orange and yellow, chromates of lead, or red lead, — the materials with which they are mixed are arrowroot or starch. When delicate blues or lakes are employed, the material with which they are mixed is kaolin or porcelain earth. The object of using these different substances with particular colours is to avoid the chemical action of the lime on some of the colours when applied to a wet floor. This shows a considerable knowledge of chemistry. It will also be remarked that the colours are at first used in their purity, and the chalk, kaolin, or starch is added to brighten the effect. In this simple but ingenious way great numbers of patterns are produced. The use of secondary colours, as green, purple, and orange, is taught by simply washing the floor after it has been coloured with the three primaries — red, blue, and yellow. The effects of the tertiary colours, — russet, in which the red predominates; olive, in which the blue; and citron, in which the yellow is in excess of the other two, are often very beautiful when these are interspersed with other colours. On looking over a number of these patterns, it will be remarked that blue is used very sparingly, and always of a very tender shade, and that its place is often supplied by a grey; that white and black are chiefly employed in thin lines or partitions between colours, and seldom as principal masses. It may not be out of place to remark that the effects produced by these colours, flowers and green leaves on the mud floor are far brighter than can be produced in an illustration. It is customary to wet the floor with rice water before sprinkling the colours. As yet the natives of India have seen very little of the fine arts beyond a few busts, and statues, and bronzes of our Indian celebrities, and these not always by our best artists. The works of Chantrey, Foley,

and Weekes have riveted their attention; but there are others of our townsmen, as Brodie, Lawson, Clark Stanton, Webster, and the two Stephenses, who are rising, or have already risen, to eminence. Let us try to put some of the best works of these and such like artists before the Hindoos, and if we assist their own modellers and sculptors to produce similar works of their own countrymen, we shall be doing a service to India by helping them to throw aside some of their prejudices of caste, and their more degrading sculptural obscurities. Art in India was far grander and purer 2,000 years ago, or during the early Buddhist period, and there are sculptures still in fine preservation, from having been carved in granite, that show proofs of a careful study of chaste and simple nature. In order to make art telling in India, we must teach them to make it profitable, and if possible cheap, for there are but few patrons of real art in India. Some of the lectures on art industry which I delivered in Edinburgh last year touched the hearts and the sympathies of some of our townsmen. I trust that this year more may be inclined to come forward to help on the cause.

ARCHITECTURE AND LANDSCAPE.*

BUILDINGS placed on the side or slope of a hill are susceptible of rather different treatment from those on a summit. There is not so much room for boldness, for the building is, as Dugald Dalgetty would have said, "slighted or overcrowded" by the hill, and in general a square low form seems the most suitable for hill-side architecture. This is especially the case where the hill forms a tolerably regular slope, in which case the form of a rather horizontal building forms a kind of break or parenthesis in the slope when viewed in profile. An instance is shown in the view of the summer-house of the Villa Madama, taken from Percier and Fontaine's "Maisons de Plaisance"; and in Turner's "View of Mailleterie," where the white house, terminating the long slope of the hill, is really the point of the picture. Irregular groups of buildings on a hill-side are nearly always pleasing, and are a favourite incident with Turner, as in his view of Greville, and in a very effective sketch in the "Liber Studiorum," which I have not unfortunately had time to copy. But single buildings in such a situation are generally best kept long and low in outline; and while a building on the summit of a hill seems to demand some sort of cupola or finish, by way of crowning the edifice, on the side of a hill this is lost and is not needed, as the building never suggests itself as a final point in the composition, but only as an incident *en passant*. An instance of a remarkably picturesque terminal building on a hill summit, varied in skyline and yet quite sufficiently solid and massive for the position, is given in the sketch, from a photograph of a palace at Cintra.

Buildings on a flat and undiversified plain present little for remark, as the architecture in such a case has it all its own way, so to say, and the only thing to be observed in relation to the nature of the site is to take care that the building has sufficiently elevated features to compensate for the low level of the site and the want of a position of vantage to see it from, and to enable it to be seen at a considerable distance. This is in regard to a wide plain out of the neighbourhood of mountains; but in a low site surrounded by hills the case is very different. A certain elevation is still necessary, but it is useless for the architect to think of competing with the mountains, though I know one or two cases where this has manifestly been attempted (in regard to massiveness of scale and general proportionate size I mean), and his best chance of a pleasing effect in such a site is to accept the humble position in which he finds himself in regard to nature, and to give to his building that appearance of simplicity and repose which will cause its position of retirement under the shadow of the protecting hill to appear perfectly natural and suitable. In the case, again, of a country neither absolutely flat nor bordered by hills, but varied by tolerably uniform and gentle undulations, a long horizontal treatment of building will be effective, as affording a kind of definite line for the eye to rest upon amid the wavy and uncertain contour of the landscape. This I think it is which gives a charm and a suitability to such a symmetrical horizontal building as the Villa Albani, backed as it is by

an undulating country of no particularly marked character in one respect or another.

The combination of architecture with a wooded country seems a more precarious matter for consideration than the two previous conditions; partly, perhaps, because we are accustomed to associate with trees such a multitudinous idea both in regard to the number of species, and the endlessly varying lines and break of contour which they produce. Yet by one of the most respectable authorities on such subjects, the matter is condensed into a very few words. Repton, in his work on landscape gardening, says that from a landscape-gardener's point of view there are only two styles of architecture, the horizontal and the perpendicular, or Grecian and Gothic; unless, he adds, we may name a third under the head of the fantastic, or, as it may be called, the Chinese. The worthy gentleman means what we should now call "teagarden" architecture, still preserved in many of our parks. His views about architecture, if we consider them in detail, are certainly old-fashioned, but there is plenty of good sense and good taste in Repton, and many of his suggestions are very well worth considering in the present day. Proceeding with his simplification theory, he classes trees also into two main divisions, the round and the pointed. As to the relation between these and the two styles of architecture, he is of opinion that "trees of a pointed or conic shape have a beautiful effect with Grecian architecture; though an association with the ideas of Italian painting, where we often see Grecian buildings blended with firs and cypresses, may also have some influence on the mind." There is no doubt that association of this kind does influence us very much in such matters; so much that it is not easy always to discriminate between the result of association and that of unbiased judgment. But I am inclined to think Repton's decision is a perfectly reasonable one, and that trees of a vertical tendency and of a tolerably symmetrical character of growth do blend well with a horizontal building. At all events, I think it quite clear that they do *not* go well with a vertical one; they confuse and weaken its effect. Repton's necessary conclusion is, of course, that Gothic buildings go with round forms of trees, because, he says, "they have a varied skyline, and hence are peculiarly suited to sites where the shape of the ground hides the lower part of the building, while its roofs are relieved by trees whose forms contrast with those of the Gothic outline." We do not in the present day (at least, I hope very few of us) go about, dropping a Grecian building on to the country here, and a Gothic one there, just as fancy and the nature of the site may determine; but in their essential meaning, these remarks, if true, are as true now as when they were written. Further on we find sentiments on the subject of combination of the house with landscape which are quite refreshing:—"When the lawns, the woods, and the water, and the general face of the surrounding country are on so extensive a scale, the only means of preserving the same characteristics is by extending the plan of the house also; and how can this be effected unless we adopt the Gothic style of architecture? In Grecian or modern buildings it has been considered an essential part of the plan to conceal all the subordinate appendages of the mansion. Gothic enables us to use these in extending the design." Now, though the dear old man's notion of Gothic would probably horrify most of us, yet there is excellent sense and true perception of architectural treatment in this. Repton illustrates this by the view of Bayham, which I have copied, where he points out how the size and extent of the buildings, which are formed round a large quadrangle, are clearly traceable through the contours of the foliage, and thus the idea of largeness and extent is conveyed which could never have been obtained had the house been combined into a single block, and the offices planted out of sight. Indeed, upon this system, formerly so universal, and still practised to a great extent, of planting the offices out of sight, Repton is sarcastic, saying that he has often been required to plant trees for this purpose, which, during the lifetime of the architect and the owner, never do conceal the offices, and which, in the lives of their successors, always have to be cut down, to give a free circulation of air to the buildings. One other remark is worth quoting, viz., that "no form of building, as a rule, looks so insignificant in a landscape, in proportion to its actual size, as a cube," a fact which I have had occasion to verify myself.

* By Mr. H. H. Statham. See p. 986, ante.

in an instance I shall mention, and which is owing to that form presenting nothing to lead the eye in any direction, of length, breadth, or height. He adds very pithily that symmetry may make an extensive building look "small; irregularity will make a small building look large." In referring to Repton, I have purposely avoided alluding to anything connected with landscape gardening, which is the main subject of his paper, because my object in this paper was to speak of architecture only in its connexion with natural landscape in its widest sense. But I would advise those interested on the matter to look up Repton: allowing for the difference in the architectural insight and knowledge in his day, they will find a great deal that is both sensible and suggestive. He was the acknowledged authority in his own day; and one of the most amusing chapters in Jane Austen's best story, "Mansfield Park," describes a dinner-table discussion as to the beautifying of a mansion and grounds, in which "Mr. Repton" is frequently referred to as constituting the court of final appeal. The principles he advocates, and which in the main, I think, are correct, would lead, however, to the construction of Greek architecture cannot well be assimilated with rounded and irregular foliage forms; which I should scarcely adopt; indeed, though I fear I am about to draw upon myself the contempt of the majority of my audience, I must confess that I never see the open colonnades in Hyde Park gates, and the trees in the park through them, without being pleased with the effect; and here, I think, is again the condition of contrast of line; the symmetrical grace of the Greek "order" with the unsymmetrical grace of the living foliage. As a combination of another kind may be noted the effect of the large, heavy, dark forms of the yew-trees in the Hampton Court gardens, with the palace as a background, of which I made a sketch just as a kind of reminder. The trees might have a better architectural background (with all deference to Mr. Stevenson), but the general effect is the same, and may stand as an illustration of the combination of conical trees with a heavy mass of horizontal architecture; the cone form is not acute or strongly marked, to be sure, but the character of the foliage is spiky, not rounded. The question as to the character of trees which ally themselves best with a building, however, really depends very much on whether we consider it in regard to natural scenery or to the formation of an artificial garden effect. In the latter case the trees are planted in some more or less symmetrical relation to the building, and really become a portion of the architectural effect; and perhaps Hampton Court comes more under this category. The consideration of this is, however, as I observed, but of my present subject.

If we consider architecture in its relation to the sea and to sea-coast effect, there cannot be a shadow of a doubt to what form of expression the building the aim of the architect should be directed. In all our associations the sea is connected with ideas of power, grandeur, or of a desolating fury of the elements; and in many of the finest coast scenes the facts tally with the associations for a considerable part of the year at least. The whole expression of a building to face the sea should be one of stern power and solidity. It should have the air of being rooted and buttressed in the rock, beyond all fear of being shaken or threatened by the invasion of the winds and waves. To my thinking, the architect could hardly have a commission more calculated to stimulate his enthusiasm for the more poetical side of his profession than the command to place upon a site overlooking the open ocean a building which should be in keeping with such a position. All the grander and more monumental effects of architecture, which modern life seldom gives occasion for, and even scenes as involving useless expenditure, are here not only permissible to him, but are actually the required elements of success in his undertaking. He has a right, by the very conditions of the problem, to be liberal in the thickness and massiveness of his masonry, to discard all prettiness and trivial ornamentation, to reduce the area of his window openings, to give to his walls that broad expanse of solid stone which shall seem as impervious to all buffeting of the wind laden with the salt sea spray, as is the rock itself; he has to realise the fine line of the poet-laureate, where he likens one of his heroes to a tower:—

"That stood four-square to all the winds that blow."

The painters are emphatically with us on this

point. Look at the style of building which Turner seeks for to heighten the effect of some wild coast scene, as in the one named from Pembroke Castle. Imagine, for a moment, the outlines of Eton College, which (though not much in the way of architecture, strictly judged), plays its part so pleasingly as an ingredient in that quiet evening river scene—imagine it transferred to the scene of Pembroke Castle. The impression is that it would be gone in a moment. It is vexations to think that (partly owing, I suppose, to the nomadic or intermittent nature of sea-side populations), sea-side architecture in general is marked by so exactly the reverse of the characteristics I have endeavoured to describe—that sea-side houses are commonly the type of all that is sham and rickety—and that on a visit to any place renowned for its fine coast scenery, where there are not old remains, the certainty (almost) is that the only building we shall find there in keeping with the feeling of the scenery will be the lighthouse.

In inland sites, water is a most valuable assistant and adjunct to architecture, lighting it up and reflecting its features under new conditions of tone and shading; so much so that I have sometimes wondered that more frequent effort has not been made to bring artificial water into sufficiently close combination with building to produce a united effect as one composition. Of course, many considerations come in here, which often interfere sadly with the picturesque. We cannot very well erect buildings in the middle of a stream; but how picturesque they might be when so treated, we may gather from the instance of Pilsa Castle, which I take from a small engraving in Mr. Seddon's "Rambles in the Rhine Provinces." River banks, however, are not, in any sense, unsatisfactory architectural sites (unless very low), and there is something very pleasing and suggestive in seeing the course of a river marked by the varied outlines of successive buildings on its banks. In the case of merely ornamental architecture, monuments, &c., a combination with water might very often be resorted to with great effect, as in the case of the monument in the centre of the circular water in Bushey Park, which is a trumpery thing in itself, but which, as I saw it the other day completely reflected in calm water, backed by the splendid autumn tints of the trees repeated in the reflection, contributed to an effect which was worth remembering.

No architectural object plays so important a part in landscape as a tower. In a flat country it is invaluable as an addition to the landscape, and is itself then in the most favourable situation for effect. But it is not ineffective in the neighbourhood of hills, provided they are not so near or so large a scale as to dwarf it. Turner, in his "Salisbury," gives great effect to the spire by taking a view which causes it just to break the line of the hill behind, evidently with intention; and in his remarkably effective view of Harfleur, the great spire, white in the light, is rather aided in effect than otherwise by the sloping lines of the hills to the right. These, and other instances in Turner, would suggest that, under such conditions, a tower and spire should be so placed that, from the best point for a view of them, they should appear to overtop the hills, and break upon the sky. In speaking of towers, it may be noticed that Claude, in his architectural subjects, almost always places in some part of his picture a plain, heavy, round tower, as a kind of foil or contrast to his columnar or Renaissance architecture. Turner seeks for contrast in his tower subjects, but he seeks for it in light and shadow; and where he has two objects of this kind, of about the same size and importance, he almost always puts one of them in light and the other in shadow. The original sketch in the "Liber Studiorum" for the "Greenwich" picture in the National Gallery, is an instance of this, and the two spires in "Coventry." Since it became my fortune to live almost, I may say, under the towers of Westminster, I have been constantly struck with the beauty of this effect; these two towers, at either end of the Westminster Palace, seem to have all kinds of expressions as different lights fall on them; and you may step out and find the Victoria Tower clad in purple and fine gold, resplendent and glowing, while the Clock-tower wears an almost threatening aspect; turn a moment after, and behold, the scene is changed, and the Clock-tower is all glitter, and its prouder neighbour has relapsed into gloom. If, then, the aspiring architect has the rare good fortune of having to erect anything large enough

to have two towers, let him keep them sufficiently apart to afford room for this varied play of Heaven's light upon them, this constant poetry of architectural expression. I cannot quit this subject without remarking on the interest and charm of the various views of the Victoria Tower which you get in coming down the Thames, from Putney or Chelsea. It is worth while to go a little way up the river to watch the effect of this tower as you come down again, and the varied aspects and perspective positions which it assumes.

Few things in architecture effect are more striking than the use often made of towers in the Mediæval French châteaux, where the dwelling part of the chateau is placed on a high rock or plateau, and the tower seems to plant a foot on the ground below, as if as a sentinel. Any one who examined the French *Commission* drawings in the International Exhibition must have been struck with the prevalence of this arrangement, and its remarkable effect upon architectural expression, as well as on plan and construction. Turner was evidently taken with it, as his view of Chateau d'Amboise indicates. In such a case, too, the almost rocky sternness and bare aspect of the tower forms the connecting link between the dwelling and the landscape. In modern mansions there are gentler methods of effecting this desirable object. Sir Charles Barry attached great importance to this gradual connexion of the house with the landscape, by extending its base, so to speak. The description of the way in which this was effected at Fresham Hall, in Staffordshire, under great disadvantages, always pleased me very much. Canon Barry (in his *Life of Sir Charles*), says,—"The hall was surrounded by lawns and paddocks, reaching down to a lake. These were converted into a succession of gardens of regular design, stepping down by terraces from the house to the lake, and by balustrades, vases, statues, and flights of steps, so connected with the architecture of the house as to spread out its base, and give it the dignity and apparent height which its natural position forbade." A connexion with the landscape may be formed even by other buildings around the principal one, and repeating to some extent its lines. The view of the Villa Caprarola, from Percier and Fontaine's book, seems to me an instance of this. I call that a remarkably fine and homogeneous composition; and it is so partly owing to the repetition of the horizontal lines and square forms of the principal edifice by the succession of smaller buildings stepped down the rock, and without which the contrast between the remarkably square, symmetrical form of the villa, and the rough, rocky character of the site, would be somewhat too rough and abrupt a transition. The way that a building leaves the ground is not without effect on its expression; and this may be noticed in two extracts from Mr. Billings' book on the Baronia Antiquities of Scotland. Borthwick Castle is a notable instance of the effect that squareness and mass may produce in a barren district, and rising from broken ground; but Udny Castle, a building of much the same characteristics, rising from a smooth lawn with a background of trees, seems quite out of place,—a mere excrescence unfitted to the scene. As an example of the poetic effect to be derived from a rude old building treated in harmony with the landscape, I would instance a fine painting by Millet, called "The Old Stone House," in the Exhibition of the Society of French Artists in New Bond-street.

The part which buildings play in giving scale to the distance in a landscape is very important, and if the architect has any regard for the effect of his building on the scenery, he should endeavour to give it an outline and proportion which will harmonise with the scale of the landscape, and to place it so as to afford an opportunity for assisting perspective effect. An instance of the value of a building in regard to this latter point is seen in the study of Claude (sketch referred to), where the small building on the distant plain, evidently, from its outline, a building of the same class and size as that near the foreground, contributes largely towards increasing the scale and effect of the distance.

The question of colour and tone is important, too, in its effect in connexion with landscape. In the course of the expedition of this society into Northamptonshire, when I was a somewhat indolent member of the party, we visited a place called West Deeping, where there was a quiet old brown stone church, of not very remarkable interest. At all events, it did not tempt me into sketching, and I strolled round to look into the water rustling through the mill-dam, and in

so doing opened out a view of a brand new parsonage behind the old church, all red, black, and yellow brick, tuck pointed, and everything proper. I did not get over the shock for some time, and perhaps you will feel as unkindly towards the brick parsonage as I did, if I say that it first suggested this paper. This part of the subject, however, is far too extensive to go into at the close of a paper, but I think a general means of avoiding harsh and crude effects, is to aim at employing as much as possible the building materials of the district, because these are what form the basis of the tone of the landscape; and though any new building looks raw and crude at first in the landscape, it will, if built of a material indigenous to the district, very soon begin to assume a harmonising tone. Not, however, that I would by any means speak slightly of brick as a picturesque material, but I confess to an absolute hatred of the buff or yellow brick. It harmonises with nothing; it is gaudy when new, and insipid and toneless when weatherworn. But a rich-toned not-too-bright red brick looks very well in combination, especially with a wooded country. I noticed an observation in Repton (if I may refer to him once more) that a large red house is not displeasing, though he seems to think a small one is. I was struck with this, having observed in the architectural room of the Academy the last two or three years a tendency towards large red houses; and one I remember very well, though I forget the architect, where the red tone was carried in an almost uniform tint over the roofs also, by means of tiles. The site was well wooded close up to the house, and the effect, as shown in the water-colour drawing, was exceedingly pleasing. As to small houses, most of us remember the red house at Northampton. There is something also to be said for white in a landscape, where grace rather than richness is the prevailing character. You will perhaps think I am naming rather a trivial instance, but in walking up St. James's Park on some recent autumn mornings, I have been much pleased by the effect of the long white front of Carlton-terrace glittering in the sunlight, and seen through a network of thinly-clad trees. It would be pleasanter to think it was marble, no doubt; but let compo. have a good word for once. This kind of combination of pure white building with a screen of trees was liked by Turner, who has given a fine instance of it in his imaginary scene, called "The Garden of Boccaccio," in the National Gallery.

There is one other point on which I should wish to raise a question, and that is in regard to a very prevalent and increasing disposition on the part of some of the ablest members of our profession, who again are imitated by their juniors, towards what can only be described as more or less a "rustic style" for large country-houses. Some of the compositions of this kind seen from time to time in exhibitions and in the illustrations of the architectural journals, are so picturesque in themselves, and are in the best instances set forth by such capital and artistically effective drawing, that the judgment is disarmed on looking at them. Yet it is open to serious question whether this is, after all, the thing. In the first place, it may be doubted whether the comparative refinement and culture of modern life, in regard to which there is now little real distinction between the country and the town, meets with the best architectural expression in a building which conveys the impression of being a group of cottages thrown together into a house, with a turret added as a leading feature. Then, in regard to the connexion of the house with the landscape, I used the word "picturesque" in regard to this style of house, and it is so, but it seems to aim at including all the picturesque within itself, and presenting, one might almost say, the aspect of landscape and house in one. The limited degree of attention I have had to give to the subject goes far to convince me that rustic buildings, except on a small scale, and under special circumstances, are not effective in rustic places. The house should distinguish itself from the landscape more, and seem intended only to imitate the irregularity of nature. It is an artificial thing, and should not lose a certain degree of artifice. On the whole I cannot but think that it is the architecture of movement that we want most in towns, to give relief and variety to our streets, and the architecture of repose in the country, where the movement and variety are supplied by Nature herself.

Finally, let me say that if the reflections here presented be thought somewhat vague or deficient in practical bearing on the work of our

profession, still I venture to think the consideration of architecture from this point of view is not without its value, as leading us a larger view of the interest and value of the art in its connexion with nature, and also as counteracting a tendency just now to think a little too exclusively of detail. It was partly on this latter ground that I thought the subject specially worth a little attention just at present. Of late years there has been a great reaction in favour of artistic furniture of every description, and whereas the architect formerly had little or nothing to do with the interior decoration of a building, now, in not a few cases, he takes a certain pride, and his client also, in having everything designed in one style, and with relation to the main character of the house. This has led to a great deal more attention to ornamental design, and apparently to a kind of theory in some quarters that such is the real business of the architect. The result is that we sometimes find buildings in which all the internal fittings are admirable, but of which the external design, or what is in strict sense the architecture, is uninteresting or positively ugly. The more the architect has to do with the fittings of his building the better, generally speaking, both for the building and for himself. But do not let him forget the larger and more important part of his task. His carpets and chairs and wall-papers soon decay and are changed, and in any case affect only the comparatively few who live in and are entertained in the house. But the exterior, the architectural composition, is in sight of all; he has the whole landscape for the theatre of his art, and his building, if constructed with true monumental stability, is a permanent contribution to the features and expression of the country. Let him treat Nature with due reverence, and she will not be slow to second his efforts. She will adorn his work with her own rich tints, surround it with her living verdure, pour upon it the magic of her fleeting lights and shadows, and make it a portion of her own everlasting yet ever-changing pageantry.

THE BRITISH MUSEUM AND SOME THINGS WANTED.

In these days of universal education it is a matter of no small interest to ascertain, not only who are being educated, but also what, and where, and how sufficient, are the means provided for those who either are already educated, or are educating themselves. This is a point of immense importance, and is a little new, for it does not seem as yet to have attracted the notice of that important body the London School Board, or other educational body. A few words, therefore, on it, and especially to a point in it which immediately concerns not a few earnest and industrious students and workers in the "literary pasturage," as Carlyle has it, may perchance prove of some service.

It has been well and certainly most truthfully said, that very much of the intellectual strength of modern England is expended in its newspapers and periodicals, and "reviews"; and judging by the almost daily increase of them this must be true. Of their popularity and interest there can be no sort of doubt, and the good service they render in very many ways is equally sure and certain. Many and many hundreds and thousands of readers there are who would never hear, much less know of, the new books, and thoughts of the thinking world, but for the monthlies, and reviews, and quarterlies which tell of them, and what they portend, and so ably at times criticise. We cannot, therefore, do otherwise than feel intensely interested in them, and can but wonder at the difficulty some find in at times getting sight of them at all. How is this, in these days of printing and reading? This question leads us to many considerations; but, first of all, to the present position of that great national repository of books, great and small, the British Museum Library. We hope to do a little service by calling attention to it. It is the library emphatically, and the last resource always in seasons of literary doubt and perplexity. Of the vast utility, of this great national collection of books, there can be no doubt, but with all this there are deficiencies and hindrances in it, and connected with it, which none but those who use it can well estimate. It is to call attention to these, and to suggest an addition and alteration here and there, that we now venture a word or two.

We would mention at starting that there is no special room in the reading department of the Museum for periodicals, and the quarterlies, and

what may be termed the *current literature*. All complete books, and printed matter of all kinds first go into what may be termed the private apartments of the Museum; to that portion of the library, that is, wherein the public are not admitted. There they remain,—for such we believe is the rule,—for a certain time before they get into the regular library, and so to be asked for and obtained for the purposes of reference or reading in the usual way. It is difficult for those who do not use the Museum as a matter of necessity to estimate the inconvenience of this rigid rule. It is sometimes almost a matter of dire need to get sight of a quite new book or review, if only for a few minutes. The book is a costly one, and hard to come at, and in the Museum alone is it certain to be found, almost west from the press; but it cannot be seen consequent on this too rigid rule. It is all the while lying, may be, with vast piles of others, uselessly "doing nought," there perchance to remain till well nigh the end of the year, when, with others, it is catalogued and bound, and then passes in the usual official way into the regular public library, and so into the possession of the readers, like the books of older date, and more familiar aspect. It is to this inconvenience and evil then that we would call attention in the first place, and suggest, if possible, a remedy. Might there not be a separate room—say the *old Reading Room*, in use before the new circular building was erected—put apart, and to be used expressly for quite new books, and numbers as soon as published, and for all periodicals, and magazines, and reviews, and books which come out in parts. These books, and monthly and weekly literature to be written for, and given out to readers, and returned by them in the usual way, so as to prevent this room being used as a mere place of pastime. It would be as a place for "reference" that we would devote this new room, and as a place wherein the current writing and thoughts of the immediate present might be come at at all times, and in a convenient way. We cannot but think that such new room in the British Museum would prove a great public boon, especially to many connected with the press, and supply great want, and do an amount of good which it would be very difficult to over-estimate. We ask for it the attention of the powers that be, who can withhold or give so much.

We could say a good deal more on this fertile theme by going into details, and by pointing to specialities, but must forbear. We would, however, add, that for the "home" literature inquirers such an addition to the Museum would prove a boon hardly to be estimated. And even more so in respect of the "foreign" reviews, and current printing, so much greater as appears than our own, large as it is. Few at present can estimate what this would do, for mere figures and statistics convey but little to the mind in such matters. But the sight of the books, especially when fresh from the printing press, must needs prove impressive and convincing. We should then see what the ever-plodding and industrious German does, weekly, monthly, and quarterly, in the way of thinking, and writing, and printing. And the Frenchman, for we suppose he stands next. And then in their turn all the other European printing powers might be made visible almost as soon as they themselves can see the results of their magic labours. We may mention in passing, and it is well worth note, that some of the foreign typography and "registering" as it is technically termed, is right pleasant to look at. Some astronomical tables from St. Petersburg we lately saw were quite works of art, so neatly and artistically was all done. We need not mention only, for the subject might lead us far, the Oriental pamphlets and newspapers, and even monthlies,—from Constantinople, Calcutta, Bombay, and even much farther off than these. They too are remarkable in very many ways, and instructive to glance at when fresh from native hands,—doing their work so differently from our own way of work.

It would be really difficult to suggest anything connected with the National Library more useful and handy than this addition to it would be. It would at once place before those who could make good use of it a complete view and all the weekly and monthly, if not daily, of the mental or literary state of the world,—from London to Calcutta, and from New York to Yeddo. There are no present means of getting at this except by the most tortuous and out-of-the-way, nay, by almost impossible, roads and processes,—to say nothing of the expense of it, far as that is beyond all private means, however ample. It must be,

however, as we have said, and it is important to note this, through a new department in the Museum specially organised for the work. What is needed is, that the new thought and printing of the world come to us at once, without waiting till the "loose numbers" are completed, and bound up into volumes. We want to see the new numbers as they appear, and as soon as published. A "Review" three or six months' old has in a measure passed away; for the new number, wet from the press, is but too apt to totally hide it. We cannot but think that the present Museum Library would itself gain enormously by this division of its labours; and that the standard "Reference" Library might be immensely improved, and certainly enlarged, through the weight thus taken from it. The great distinction would be, that the old Library, as it now is, would embody past thoughts and past writings, while the "new room" would enshrine the last and newest thoughts, and the very latest writings and printing all the world over.

We are here treating of a speciality, and so must not wander far from our point, but there are so many little things admiring of "improvement" in and about the British Museum Library, to say nothing of the general Museum collection itself, that we hardly know where to leave off. It is only those who habitually make use of the Museum that can duly appreciate the shortcomings, and awkward hindrances, small in themselves may be, but not a little perplexing. We content ourselves with but one or two: a hint may be of service, and can do no harm. *Bookbinding* is surely an artistic trade, if ever there be one, and if the contents of a book be the one thing needful to look at, as no doubt it is, still these same contents have an added charm when bound together in a suitable and strong and artistic way. All things are improving, so we are on all hands perpetually assured, but bookbinding is certainly an exception. If any one curious in these matters will take up and look at attentively an old-fashioned and foggy papered tome, in full red or green covered leather binding, with its gilt lines, and quaint devices, and with perchance a finely-drawn "coat of arms" of its former owner on the face of it, then will be known what bookbinding really does mean, in an artistic sense. It is positively dangerous sometimes to open wide a smartly-bound and quite new book, for it may be—sometimes it is so—that the leaves start, and betray not only their own weakness, but that of the incautious reader! Surely the binding in the national library ought to be *model work*, both artistically and mechanically? It is neither. And then, but once more, and to confine ourselves to books. Books without end! Those who may look with some interest on this slight notice of things literary will perhaps have wondered at the selection made of "books of reference" in the public reading-room of the British Museum. We can hardly imagine on what plan this has been done. It would be impossible to conceive a more useful and comforting surrounding than a good library of well-selected books of reference of original editions,—by the way, not cheap reprints. It is impossible to know and to remember everything, all at a moment's notice; but all difficulty vanishes when you are surrounded with dictionaries and helps to memory, considerably brought together, and judiciously arranged. We hardly dare to pursue the subject, for it is wonderful to think of how few there are of "world" books; but of these surely there ought to be a well-bound copy of each one within reach here in this great library, e.g. the best descriptive account of each separate country of the world, and its best history. Surely these would be more useful as "books of reference" than the multitude of forgotten back volumes of the older reviews? We might go on; but all will know what a good library of "reference" ought to be. We commend these stray thoughts to the notice of those who can take action on them, and can do so much practical good by taking a little thought to the subject matter of it. In the present great national library and in our proposed "additional" room there must be, indeed, ample opportunity; but it all requires a little thought.

We cannot, as we have said, afford space for details, but still a few may usefully be glanced at here and there. But a few months back an official notice was published of the number of *German* books and printed matter issued by the German press; and it was found that in the last year it was no less than three times the number of our own, enormous as that number is. A

wonderful fact. These are certainly the golden days of printing and publishing, and it is almost a subject to be wondered at that no effort has been made to make this mass of reading, as it appears, visible and useful to the public. We cite this by way of striking instance: Germany printing, as it would appear, more largely than any other European nation. It would be curious to inquire as to what proportion of this is *reprint* and translation, and what portion original work. Goethe, the master spirit of the Germanic literature,—to adopt that comprehensive phrase, might well feel surprised could he but see the number of new books,—mental printings,—every year published.

And this leads to one other subject of no small attractiveness, artistic if there be one, and that is the purely national character of the illustrations, and engravings, and woodcuts, to be found in the foreign publications and books. They are different from our own in many ways, and are as instructive, as telling of diverse nationalities, as are the very languages themselves in which the books are written. It would indeed be a boon were these visible as they are published,—to be glanced at, and may be studied. It would be a constant reminder of the turning of the literary world, its perpetual progress, and every new aspect!

THE RAILWAY MILEAGE OF THE UNITED KINGDOM.

In the general annual report on railways, which Captain Tyler has just laid before the Board of Trade, he gives the total length of railways at present open for passenger traffic in the United Kingdom. The entire length in England, Ireland, Scotland is 16,082 miles, of which 8,687 miles are laid with two or more lines, and 7,395 miles with single lines of rails. They are distributed as follows:—In England, 11,369 miles; in Scotland, 2,612 miles; in Ireland, 2,101 miles. Notwithstanding the large number of miles in operation, the report states that the railway system is far from complete, in regard either to mileage or to improvements on existing lines. As the traffic increases, new portions of line become necessary in certain localities for the conveyance of passenger or fast traffic, independently of goods or slow traffic. It is added that many districts are still without railways, and in want of branch lines, and that partially to supply these wants the aggregate length of railways authorised by Parliament during the years 1870, 1871, 1872, and 1873, and not yet constructed, alone amounts to more than 1,800 miles.

STOCKWELL GREEN.

NOTWITHSTANDING that the Metropolitan Board of Works have given notice of their intention to apply for an Act in the ensuing session of Parliament to enable them to obtain possession of Stockwell-green, in order that it may be secured to the inhabitants as an open space for recreative purposes, the preparations for building upon it are vigorously proceeding, nearly the whole of the trees, and a considerable portion of the turf, having been removed within the last week or two, and it is stated that building will actually be commenced almost immediately, and the probability therefore is that before the Metropolitan Board of Works can obtain their Act of Parliament several blocks of houses will have been erected, the owners of which will, of course, have to be compensated. The proceeding is causing great dissatisfaction amongst the residents in the neighbourhood, and is a source of much irritation. It is regarded as an attempt, more clever and ingenious than fair, to take advantage of the certainty of the Metropolitan Board obtaining powers compulsorily to purchase the Green in order to obtain compensation, at the expense of the ratepayers, for the buildings which will probably be erected before the Act comes into operation. Of course, those who have entered into building agreements with the freeholders have a perfect right to adopt the course which they are pursuing; and, viewing the matter as a mere business transaction, there is nothing to be said against it. With respect to the letter signed "J. C.," which appeared in the *Builder* of last week, we are informed that that portion of it which states that Mr. Honey has not offered to sell the land for 4,000l. to the Metropolitan Board of Works, is irreconcilable with the statement made by Mr. Honey's brother at the meeting held at the house of the former in Stockwell-road, on the 15th of October. On that occasion it was stated that the sum of

4,000l. had been paid for the Green, and Mr. William Honey, solicitor, is reported to have said at the meeting that his brother had no wish to make any profit out of the purchase. It is perhaps due to Mr. John Cobdell, who appears to be connected with the purchase of the Green, that at the same meeting he openly advocated the site being built upon, remarking that the land was too small to be of any use as an open space.

THE RISING GENERATION IN NEW SOUTH WALES.

THE New South Wales Public School League for making primary education national, secular, compulsory, and free, have issued a manifesto, and not before it was necessary, for it is estimated that in this colony one-third of the children of school-age are receiving no education. In due time these children will become citizens, and it is neither fair to them nor safe to the State to let them grow up in ignorance. The first and chief aim of the league is to make education universal by adopting a national and uniform system, that shall embrace all children of school age within the colony, and that shall be based on the common and equal rights of all members of the commonwealth.

What they call for, in brief, is this:—All children of a given age to be either receiving or in possession of a given minimum standard of literary knowledge,—the age and standard to be fixed by Parliament. This standard to include the course of instruction now in common use in public schools; denominational schools to cease to be certified or supported by the State. Parents and guardians neglecting to educate their children to be compelled to send them to public schools, if sufficiently available, to receive the minimum of instruction provided by the State. No fees to be charged for this minimum, and all subjects beyond that to be left for the decision of Parliament. The great aim of the League is to have every adult inhabitant of New South Wales able to read and write.

MESSRS. WARNER'S PUMPS AND WINDMILLS.

THE use of wind, though at one time general, has gradually been abandoned, and one of the most valuable force-producing agents is allowed to run to waste. Let us hope that a new era is about to commence, when the wind and our streams will be enlisted to do the work which has hitherto had to be accomplished at great cost by steam power. The patent annular sail windmills made by Messrs. John Warner & Sons, Cripplegate, offer the means to this end. The principle is at once simple and effective, whilst the power obtained may be utilised for any of the various purposes to which steam and water power are generally applied. A strong frame supports the annular sail, which fills the place of the ponderous arms with their complicated sails of the olden time. A great number of these machines are already in use, and, according to the testimonials received by the manufacturers, have given great satisfaction. Machines of this kind, indeed, might with great advantage be introduced into mining enterprise, and would be the means of effecting economy.

The same firm make a treble-barrel portable colliery force-pump, which has the advantages of being easily transported, taking up little room, and requiring no mechanical aid, a pony being all that is required for its working. The pony is attached to an arm which is fixed to the axle of an inverted crown-wheel, gearing into a horizontal pinion-wheel, on whose axle are three cranks, working into the pistons of the respective pumps. A constant stream is thus kept up, and an air-chamber, acting as a cushion, relieves the machinery and pipes from all unnecessary strain. These pumps are capable of forcing water up to a vertical height of 100 ft., besides sending it for a long distance in a horizontal direction. These machines are already in use at a great number of our larger collieries and iron-mines. The machines are manufactured by the old-established and well-known firm of Messrs. John Warner & Sons, of The Crescent, Cripplegate, London, and have acquired a high reputation for their simplicity, durability, and great adaptation for dip workings.

The catalogue of windmills manufactured by this firm contains the descriptions of a variety of machines, which are destined to play a great part in the future of many undertakings.

OLD WESTMINSTER.

OLD ENTRANCE TO DEAN'S YARD,
WESTMINSTER.

Few of our Metropolitan improvements have been attended with greater transformations than those effected in recent years near the Abbey Church of Westminster, and even the old inhabitant of the district, when passing into the north-west angle of Dean's-yard, finds his ingenuity somewhat taxed in attempting to identify the old with the present site.

Two short streets, a stone and marble mason's yard, several small, but neatly-built tenements, one public-house, a veterinary surgeon's and farrier's shop, coach-house and stabling, an archway, the never-failing cobbler's stall, and the old house under notice, originally occupied the ground on which the modern Medieval block of buildings now stands.

Passing from the Broad Sanctuary to Dean's-yard, the time-worn mouldings of a broad arch, filled in with rubble and brick-work, indicated a remnant of the Gate House Prison. On the right was the mason's, then the tenements before mentioned, in which quiet lodgings for gentlemen were advertised by the small card in the window, and these, with the public-house, terminated the length of Flood-street. It was a retired and quiet nook, the silence of which was only broken by the clink on the anvil of the neighbouring forge, and the crar, crar, of the mason's saw.

Immediately before us, in the angle made by Flood-street and Little Dean-street, stood the quaint old house so well known to Westminsters as "Mother Beakley's."



It was a little square tower of timber, lath, and plaster, pierced with several lights of leaden casements, but the lower, or shop window, was a curiosity of stout cross-beam and upright framing, the superficial contents of which more than equalled that of the yellow time-stained and discoloured glass which filled the spaces.

Here the morning draught of milk was vended to the early scholar, for it was partly dairy, partly early breakfast-house, a place whence messages were taken, or to which they were brought, and parcels delivered. The descent to this primitive Temple of Diana was by several stone steps, for the pavement of the street was about level with the window-sill, and the paved kitchen presented a heterogeneous assemblage of casks, straps of books, hockey-sticks, rolls, cricket-balls, and milk-cans, the presiding genius over which attended to the minor domestic requirements of the Westminster boy.

Many a generation must have passed away during the existence of this relic, which had probably formed some portion of the eleemosynary buildings, and must have been a familiar object with the earliest scholars of the foundation. The primitive club-room must have been known to every boy that filled a place in Westminster School, from the days of Dr. Busby, to those of Dr. Goodenough.

But as great a change has taken place in the habits and manners of the boys as in the locality, and the regulations in connexion with them are now considerably improved.

OLD WESTMINSTER.



What Old Westminster boy but would remember the battles of the Scholars' Green?

In the old days there existed but a post and rail fence around it, and a short cut across it was frequently a temptation to the pedestrian; but woe to the trespasser if the boys were there. At that time, when the noble art of self-defence was fashionable, the Westminster boy was proud of displaying his prowess on any such occasion. There were no police then, and the population of the town could not have been one-half if a third of the present. A street-keeper or Bow-street officer generally contrived to keep out of the way, and so the fight went on uninterruptedly until satisfaction had been obtained.

On some such occasions an obstinate "coaly" has been known to exercise the active muscular powers of a King's scholar for an hour or more. If Greek met not Greek, he nevertheless objected neither to coaly, baker, dustman, sweep, nor other if trespasser, without further fear of the disgrace save that of being worsted in the encounter.

A considerable amount of Vandalism mingled itself with what then passed for manly independent spirit. Within a quarter of a mile of the spot there existed a cockpit, at which matches were fought at frequent intervals, and many a "green coat and top," whilst betting on the barbarous sport of the time, would remember the locality in associations of his boyhood with his college experiences of the immediate neighbourhood.

In passing through the Dean's-yard toward the cloisters you seem shut away from the noise and bustle of the world, and the Scholars' playground, so frequently the scene of dispute, is surrounded by an iron railing. Latterly, in the summer of each year the specimens of the window gardening in the neighbourhood are exhibited. Prizes are awarded to the successful competitors in this humble but painstaking horticulture.

The old watchman's box under the College wall has disappeared, and his lantern long since been extinguished. The street-keeper has been supplanted by the helmeted policeman, in whose belted tunic we trace no resemblance to the square and long-tailed skirts and chimney-pot hat of his antecedent brother in 1832.

If many of our old relics have disappeared, much of coarseness and rudeness of manners has been swept away with them, and in the recollection of an "old site" and comparing it with the present we feel that there has been a slow but vast change in the habits, feelings, and manners of the population, and of which the railway system has been the pioneer; but, as in the human constitution, the too rapid or the too

slow circulation will be found equally detrimental to health, we can only desire that the boon of progress may never disturb the good which lies at the bottom of many of our institutions, although much of the rubbish which has accumulated in and about them may with advantage be got rid of.

VAN DUN'S ALMSHOUSES.

Between Chapel-street and the narrow turning known as St. Ermin's Hill, in the Broadway, Westminster, the above charitable institution existed until but recently. Cornelius Van Dun was a soldier in the service of our King Henry VIII., and the almshouses were erected about the year 1577.

They retained much of their primitive character when sketched in 1862; but the alterations in the neighbourhood since the building of the St. James's Park Station of the Underground Railway have at length swept away every vestige of them.

Their site is now scarcely recognisable, midst the rubbish of partly-demolished buildings; but the charity, it is to be assumed, has been removed to another and more agreeable one for its recipients.

Stow, in his survey of London and Westminster, mentions them as standing upon "St. Hermit's" Hill; and in Rocque's map this hill is clearly marked as bordering on the fields. Even at the commencement of the last century this neighbourhood retained much of a rural or suburban character, sufficiently so for the church yard of the new chapel (now Christchurch) to be considered as the pleasantest about London and Westminster.

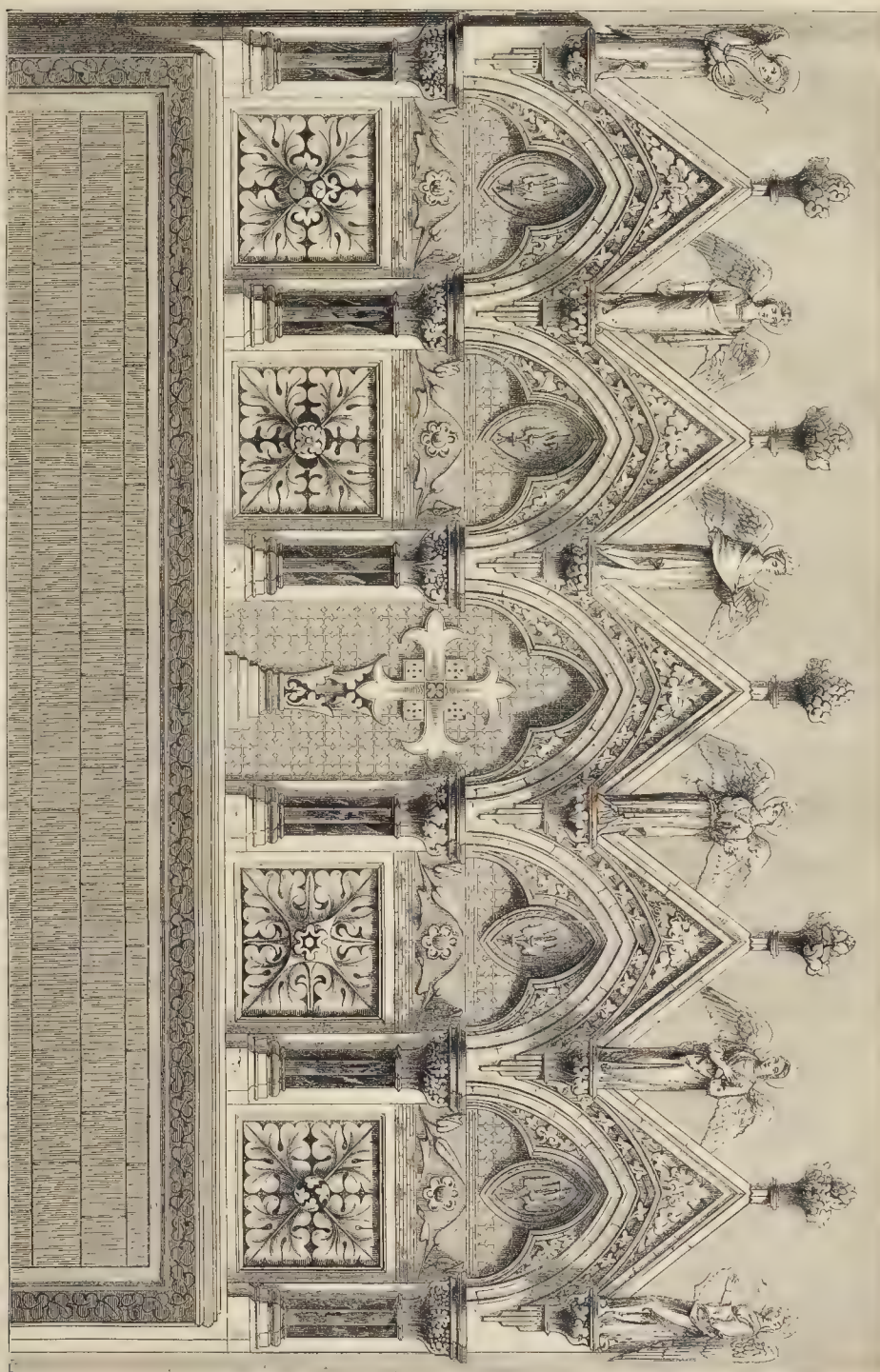


Van Dun's Almshouses.

Archbishop Laud was a liberal contributor to this chapel, built in 1631, and in its churchyard were interred Sir William Waller, of the Parliamentary army, who died in 1638. In this overcrowded burial-ground was a memorial of Margaret Batten, who was buried here in 1739. Her portrait is preserved in St. Margaret's Workhouse, in which she died (as asserted) at the advanced age of 136 years.

In this locality were situated the mansion and grounds of the Lords Dacre of the South, known as Stourton House. A portion of this site is to be recognised in the neighbouring thoroughfare of Stourton, or Strutton Ground.

In the adjoining manor of Tothill, held in the reign of Henry III. by the Chancellor Maunsell, we find a right royal feast given in 1256, when the king and a vast assemblage of courtiers and others were entertained under tents and pavilions. Some interest is awakened by the circumstance that the site on which these almshouses once stood was a spot sacred alike to the Briton, the Roman, and the Saxon. The "Thoth" of the Egyptian is identical with the Hermes or Mercury of the Greek and Roman, as also with the Tuisco or Tent of the Saxon; whence the main street or thoroughfare of the old town of Westminster derived its name. The hill of "Hermes" and the tent-hill of the Saxon are the same, and the name which Stow gives it, and by which it seems to have been known, is a curious coincidence, since the transition from "Hermes" to St. Hermit is not very difficult of



THE REREDOS, CARLISLE CATHEDRAL.—MR. STREET, R.A., ARCHT.

solution. The mound once sacred to this tutelary divinity of merchants and wayfarers, is now a heap of rubbish; the Caduceus and Pegasus have taken refuge in the locomotive and telegraph hard by; but through the long vista of time perhaps this transition is not greater than the annual setting up of the May-pole on the neighbouring village green, or the wayside inn and cottages with their gardens yet in the remembrance of the octogenarian.

REDOS, CARLISLE CATHEDRAL.

The redos erected in Carlisle Cathedral, and of which we give a view, was designed by Mr. Street, R.A., and executed by Mr. Thomas Earp, of Lambeth. The central portion, that behind the communion-table, is of alabaster, the columns are of Purbeck marble, and the panels are filled in with Venetian mosaics. The arched at the sides, running north and south, is of yellow Mansfield stone; the cornice is of Purbeck marble, as are also the labels of the arches; the columns are of Rosso antique marble, and the panels between of rich inlaid marble work. There are also two screens of the same materials, filling up the spaces between the large columns on the north and south sides, and on the south having the sedilia and credence-table. The whole is now completed; and, in addition, the sanctuary floor is being laid with encaustic tiles and marble; there are also three new marble steps from the choir to the sanctuary floor.

EXCLUSION OR NON-EXCLUSION IN ARCHITECTURE.

In the course of a presidential address to the Liverpool Architectural Society, at the opening of the new session, Mr. Joseph Boulton, after naming the various journals which have been established in connexion with the profession of architecture, and describing the scope and present condition of the existing metropolitan and provincial architectural societies, said,—If we turn from this brief retrospect of comparatively recent efforts to consolidate floating units into a profession to the earlier history of architects and architecture, we shall find little trace of that compactness which distinguishes the learned professions of divinity and law. It is true that the term architect is used by Horodotus very much in the sense in which it is now employed, including the civil engineer also, and that mention is made of the Ionian Corporation of Architects; but little is absolutely known of the actual position of those elder brethren, of their training, and of the esteem in which they were held. If the thread of history be taken up at a later period the clue is still untrustworthy. But little is known of the society of Freemasons, and how far the architect among them was more than chief workman, as the term literally signifies. It is doubtful if, in many cases, the architect was not of the religious brethren for whom the edifice was constructed; and when he was secular, whether he was not one of the workmen, who was advanced to that position of "leading hand" in consequence of his superior ability in design or workmanship, after having worked with the chisel, and passed through most of the detailed labour by which architectural design is matured. Take, for example, the description given by Gervase of William of Sens, one of the well-known architects of Canterbury Cathedral. He was not only *vir admodum strenuus*, but *in ligno in lapide artifex subtilissimus*. In the present day it is not considered necessary for an architect to be a very cunning workman in wood and stone; yet it seems highly probable that not only William of Sens, but every other architect in those days, when not one of the regular clergy, was a skilled workman; and it is not impossible that William himself was both, at the time his unfortunate accident interrupted his work upon the cathedral.

Take, again, another period, that of the Renaissance, and who will say of any of the distinguished men who designed the monuments of that period that he was a trained architect? Neither Leonardo da Vinci nor Michelangelo in Italy, neither Wren nor Inigo Jones in this country, can be included in that category. And, later still, turn to Dance, of the London Mansion House; Chambers, of Somerset House; or Fowler, of Kensington; and where are to be found the credentials which authorised them to practise as architects?

The lesson which it appears to me is to be

drawn from the hasty review I have presented is this—that the exclusivists are premature in their efforts to define strictly who is an architect; in trying to do so they may exclude some who would be most valuable. The first step, I apprehend, is to gather together all who are desirous of being architects, and are likely to conduct their practice creditably to themselves and to those who may be associated with them. In the present stage it seems to me very unreasonable to designate the persons cited as exceptional men; for the list may be indefinitely increased, and it will then be found that the exceptional men are the rule, and regular practitioners the exception. Besides, let it be asked, in what respect were those men exceptional? and if it be answered, in their great ability as architects, will the esteem for those not so exceptional be increased?

But it is fair to assume that hitherto architects have not formed a profession, at any rate, to borrow a legal phrase, within the memory of man, and that the task has yet to be accomplished. Should it be urged that the exceptional men have hitherto sufficed to meet the demand, the rejoinder will be found in the wretched deficiency of taste, propriety, and skill in building generally, and in the sentiment that the public ought not to be content with the service that they have had hitherto, which, as a whole, was bad, because only exceptionally good. That it is more to the public advantage to have all buildings in an architecture which is good up to a certain level, than to have a few above that level, and everything else fathoms deep below; and that so long as reliance is based upon the exceptional the rule must be bad.

But reasoning of this kind presupposes, on the part of the public, intelligence by which it can be appreciated, and I apprehend few will venture to assert that intelligence is general, much less universal. Now, in the present day, whenever any important change is desired in public opinion, or public action, it is found expedient to enlist as many as possible of the public to attend when the subject is discussed, or to read essays on the subject. If architects are to adopt a similar policy they must organise meetings, make those meetings attractive, and induce the public or those who lead the public to attend, so that they may be interested in architecture, and then have that interest matured into intelligent appreciation. To complain of the want of intelligence and to exclude from the opportunity for improvement those who are accused of being deficient, appears to me eminently unreasonable. In this aspect the various county and diocesan architectural societies are doing good service, though alloyed with a certain amount of pedantry and dilettantism which is regrettable, but which, possibly, will disappear as the members become more familiar with architecture, and with all its practical relations. In all ages the priesthood and the clergy have been the best friends of architecture; and when they and the public get beyond the limits of amateurism, they will better realise the great responsibilities of an architect, and will be reluctant to interfere with the results of his special study. In all branches of knowledge it is usually found that the ill-informed are presumptuous in the little they have acquired, while the better-informed are content to rely on intelligent advice. The former are ever ready to patronise pretenders and quacks, while the latter are too wise to believe in the intuitive possession of knowledge and skill, which they know can only be acquired by laborious study and lengthened experience. The competent man has nothing to dread from the criticism of the well-informed; and so, as it appears to me, every architect worthy of the name should strive to make the public well-informed, in order that shallow pretension may not be encouraged to his disadvantage.

There are, indeed, those who appear to dread the diffusion of a knowledge of architecture, lest every man become as wise as themselves, and the number of untrained practitioners be indefinitely increased. But, in addition to the beneficial results which, as suggested above, may be expected to attend a more general architectural cultivation, the proper check upon the surreptitious assumption of an architect's standing is to give to the architect the protection of a stated examination and a diploma, and the public would participate in the protection, as they would have guaranteed that the possession of a diploma indicated a known minimum of training. It may be many

years before the profession may obtain such a recognition from the Legislature; certainly they cannot expect it until they have acquired the influence which only union can give, and can prefer their claim potentially. A chartered Institute, that represents but a small fraction of the recognised architects of the kingdom, and local societies, which include only half of the known resident architects, cannot exercise much weight on either national or municipal councils. Yet there have been many occasions on which the influences of the profession might have been usefully employed if the profession had any influence; as it is, the Institute has been serviceable on occasions, and in Nottingham and in this town the local societies have also been useful, and possibly similar effect has been felt in other towns; but it is manifest that the influence of the whole must be greater than that of a part, and the more comprehensive the Institute or a local society may be the more will its influence be acknowledged.

In this aspect the co-operation of influential laymen is of great importance; but, then, they must be intelligent on architectural topics before they can be really efficient aids for architectural purposes. To reproach laymen with ignorance and apathy, and to withhold opportunities for acquiring information and interest, is a policy eminently unjust and suicidal.

As respects the co-operation of builders, it appears to me most desirable that their co-operation be secured. The tone sometimes assumed when this topic is discussed seems to me very shortsighted and not a little presumptuous. The same persons who are very happy to associate with those whose skill is applied to the execution of the more æsthetic parts of a design,—sculptors, artistic painters, and decorators,—appear to shrink from contact with those who undertake the more constructive features. Now, both classes are essential to all good architecture; and the constructors are the more essential, because, as now practised, there is much architecture on which the scope for the artistic classes is very restricted; whilst there cannot be any architecture without building.

The jealousy, to speak candidly, which is frequently manifested towards builders appears to me very unwise, besides being extremely undignified. There is, or ought to be, sufficient scope for both, with a clear line of demarcation; and also many occasions in which their harmonious co-operation is most desirable, if not essential.

I hope the architect does not exist who has not consulted with builders and with intelligent artisans, and benefited from both. Considering how much knowledge is required to form a perfect architect, it is almost impossible to conceive of any man who possesses a mind so cyclopaedic as to have all the information ready upon all occasions. His practice must be confined to one line, and be also very limited, and the sooner the younger members of the profession rise above the shallow notion that it is derogatory to seek aid from those of more experience in any branch of construction, or art, the better for the best interests of their profession and themselves. Now, whilst I would be as jealous as any of the interference of non-professional persons in the regulation of professional practice, I deem it of great importance that men experienced in the various branches of construction should be induced to attend the society's meetings, and to contribute the results of their experience to the general fund; and I am convinced that the interchange of opinion and the comparison of various experiences would be of service to all,—to the builder as well as to the architect. Who would not be delighted if Phidias were present to relate the growth of the Parthenon, the devices by which the blocks were conveyed from Pentelicon, inspired by his genius, and placed in the positions designed for them? And if his garrulity should run on over the polychromatic decorations, the preparation of the surface, the manufacture of the pigments, the combinations of colours,—whether these and other proportions were determined by experiments *in situ*, or predetermined in the study,—all those topics would be full of interest as of instruction, and every architect would delight to hear Phidias the tale unfold. Yet some of these are matters of construction; and, if the men were equally competent, I see not why those details should be more interesting from Phidias than from the ancient representative of the modern contractor. But then there are builders who profess to be architects, or really have a trained architect in their establishment. This, doubtless, is a fact

not favourable to the friendly regard of other architects; but, then, why does the phenomenon exist, and what is the remedy? I apprehend it is due to the ignorance and apathy of the public, to which reference has been made already; and that architects generally would say that the combination is as undesirable as would be one between a physician and pharmacist; yet apothecaries have existed, and if not now to be found, the reason is in the greater enlightenment of the public, and in the efforts of both pharmacist and physician to prevent such a mulish monstrosity. If the combination in one person or firm of the architect and builder is bad, the evil can only be corrected as was that in the treatment of disease. At any rate, so long as so many of the public, including royalty itself, prefer the combination, architects and builders who object have no other resource than to work together until they are able to attain the result which has been gained by the physicians and pharmacists.

Let me remind you of one who is or has been a contractor for railways, and is also one of the most eminent authorities in architectural history: whose works, when he followed the profession, were esteemed as among the best results of patient research and artistic feeling, and who, since he has abandoned the practice of the profession for the more lucrative construction of important lines of intercommunication, continues to enrich its literature with learned and valued treatises on topics of great interest. The gentleman to whom I refer still holds an honourable position among the Fellows of the Institute: and when he lends his ever acceptable presence at the critical examination of an ancient structure, or to the popular elucidation of architectural history, is welcomed with the respect and enthusiasm due to one who clothes learned erudition in unaffected language, through which the treasure he has laboriously acquired is rendered accessible to all.

No one would presume to question his right to retain an honourable position in the profession; but in conceding that it appears to me the principle of exclusion is shown to be fallacious when strictly interpreted. Thus the admission into a professional society of those who do not follow the profession, but are engaged in the practical development of designs, becomes merely a question of degree, to be determined upon the qualifications of the individual proposed, and not on his relations to a class. This being so, it is to be hoped that individual recommendations will be esteemed with all reasonable liberality.

OPEN SPACES AND BUILDING OPERATIONS AT THE EAST END.

THROUGHOUT the Parliamentary borough of Hackney, which includes the parishes of Bethnal-green and Shoreditch, building operations are somewhat rife; but the great majority are of a minor character. The battle for "open spaces" is being fought out well in Hackney in continuation of the Epping Forest victory. Hackney-common is safe from building speculations, and has lately been slightly improved by the Metropolitan Board of Works, by the construction of a few passable walks across it from different angles. The open space known as the Downs, which is another considerable common, is a subject of litigation now between the Lord of the Manor and the Metropolitan Board of Works. If arbitration does not settle the matter shortly, it is feared the issue must be tried by a tedious and expensive process. Already the Hackney-downs have been inclosed in part, and a fence erected; but pending the decision, the Metropolitan Board of Works have them under their surveillance. The third open space, popularly known as the "London-fields," which has long been a matter of reproach from its neglected state, is now being improved. Lately, some very indifferent trenches were dug for the purpose of draining this ground, which, according to the season, is either an arid common or a dismal swamp. Last week, after repeated expostulations on the part of the denizens of Hackney, the Metropolitan Board of Works set some teams to work in ploughing up the barren waste preparatory to laying the common down in grass, preserving, of course, the immemorial pathways across. The London-fields, some years since were stealthily encroached upon by speculative builders on the western side. On the eastern side, near to London-fields Railway Station, some well-built red brick family mansions still exist, erected in the eighteenth century

when the common in front was really "fields," and afforded a pleasant look-out across the open country over Dalston and Kingsland, and extending to Islington, and farther due north and north-east. The long-retarded and urgently-called-for improvement of "London-fields" will be a boon to the inhabitants dwelling in the close streets and courts on either side of Hackney-road. It will be a blessing, too, if properly laid out and cultivated, to the sickly children who attend the new School Board School in the immediate vicinity, one of which schools faces the southern end of the "Fields." The focus of the ancient hamlet yept "The Triangle" has undergone several changes in its appearance of late years. Old buildings have disappeared one by one, and shops have usurped the place of mansions built in the reign of Anne and the first George. West-street, which is used for a short cut *ad Goldsmith's-row* to Hackney, is totally unable to afford a safe ingress or egress through the Triangle. One line of vehicles must wait while the other is passing, and in the effort to force a passage or to take advantage of each other, carmen and horses are often severely injured. West-street calls for immediate widening by demolishing the old house property on the northern side, which is not of much value. On the site of the old Mansion House, opposite the Triangle, whose demolition we noticed some months back, three houses with shops, of a better description than are usually erected in the district, are now in course of completion. Some of the features of the old mansion are retained in the architecture of these fronts, such as dividing and projecting brick pilasters and cornices on head, of same material. On the western side of the immemorial Triangle a public hall is being erected, to supply the wants of the neighbourhood, the Hackney Town-hall not being procurable, owing to certain restrictions in the lease for ordinary public meetings apart from the local body. A piece of land situated between the Bethnal-green Museum and St. John's Church, is now being turned into a small people's garden in connexion with the Museum. This is done at the instance of the authorities of the South Kensington Science and Art Department. There has been much delay over this small affair, and it seems to have been left as a legacy from the last Government to the present, who are certain to finish it. Judging from present appearances, the elongated strip of land taken from Victoria Park, and which led to much agitation upwards of two years ago, is now all built upon. The Park Preservation Society, established to preserve this and other spots, failed to secure this strip of land, owing to the hard terms of the late First Commissioner of Works. The houses erected on this strip of Park land are of the cheap speculative kind, and, as usual, the builders dug out the sand from the foundations, and from the road in front particularly, to a depth ranging from 12 ft. to 18 ft., filling up the excavated pits with all sorts of rubbish. Neither the Park land nor the public Heath has been preserved in this and other instances in the district. At Hackney Wick, upon those notorious "shoots" we described last year in our articles on "Homes in Homerton" and the vicinity, a new School Board school is being erected. The uncovered Hackney Brook, or open Marsh sewer, runs close by. A great depth has to be sunk here for a stable foundation for this school, considering that the filled-up soil, or rather scavenger, extends in places from 6 ft. to 9 ft. Under this it is veritable swamp, or the original marsh land. Surely a more suitable spot could have been found for the erection of a school. The wants of the locality demand the immediate erection of a school, or rather schools; but a spot at a higher altitude, we think, could have been secured, instead of picking out the lowest spot in the district. Several manufactories are crowded together here on the low ground, and the smell emitted by their waste substance, and the smoke of their chimneys, do not add to the salubrity of the neighbourhood. A portion of the open Marsh sewer alluded to a year ago has been covered over recently to the extent of about 300 yards, or perhaps more, and its continuation, which we stated to be an absolute necessity, is now determined upon. By covering in this foul sewer, and continuing it in an almost straight line to Lea Bridge (by diverting its old course), much land will be saved, and the health of the district improved.

At the North London Station, Amburst-road, Hackney, a station-master's residence is about being built, and lower down in the same street the site is mapped out for branch premises for

the London and County Bank.* Alongside the building a new thoroughfare will be opened, commencing with, and in continuation of Cold Harbour-lane, entering into Mare-street, near the head of Dalston-lane. As soon as a suitable site can be secured a new Presbyterian church will be erected in South Hackney or near to, for the wants of the congregation lately worshipping at Albion Hall, London-wall. The lease of the Albion has expired, and St. Thomas's Hall, South Hackney, is now being utilised for the temporary accommodation of the Presbyterian congregation. Some of the Shoreditch projected improvements we have already indicated, and we may speak of them in detail on a future occasion.

SCHOOL BUILDINGS AND FITTINGS.

In the paper on this subject already referred to, Mr. Roger Smith, after treating of the general arrangement of schools went on to say:—

The staircase most suited for children's use is one where the open space with which we are familiar by the name of well-hole is replaced by a brick wall. The steps ought not to be too long, as it is rather desirable not to induce children to go up or down more than two abreast. I believe a length of 4 ft. 6 in. to be ample, and 4 ft. or even 3 ft. 6 in. enough. The steps should not be high, not more than 6 in. rise. There ought not to be any "winders" (the name by which the steps triangular in plan which wind round at the turn of most staircases are called), and in their place there should be landings; lastly, the flights of steps should be short, and the whole ought to receive plenty of light and air. These precautions are taken to reduce to a minimum all chance of serious accident, and to promote the welfare of the children. In a school of any size it is not only desirable to have two staircases, one for boys and one for girls, but it is an excellent plan to arrange the steps so that two sets of stairs may occupy the space of each staircase, an arrangement which it is not often difficult to carry out. When this is done each class-room may open into the landing of a staircase if wished.

The tall buildings which require such staircases are no doubt proper in a large city, where land is very dear, where daylight is apt to be much interrupted near the ground, and where a rather pure stratum of air is to be met with in the upper stories of the building than it is to be found below; but where there is sufficient space, free air, and ample light, one-storied buildings are best. The covered playground, formed under a lofty building by carrying it on piers and arches, is often less desirable and comfortable than a shed built for the purpose. It is more apt to be draughty, gloomy, and damp, and when it is adopted it should be carefully arranged, so that the sun may shine well into it for some considerable part of the day.

How to warm, light, and ventilate a large school-house is, perhaps, the next question which presents itself. The lighting, as has been already observed, should be as far as possible from the left hand, and the windows should be ample. An area of 1 ft. of window surface to 80 cubic feet of interior space in the room ought to be sufficient if the windows are well placed. For infant-schools a top light, and for drawing-classes a north light high up are required. The best aspect for a school is a subject that has been debated, some advocating a north aspect as securing the steadiest, purest light, and being free from the inconvenience of glare; others preferring a south aspect, notwithstanding the fact that occasionally during the summer blinds are needed, and inconvenience is felt from the sun's direct rays.

I believe there can be little question that the last is the soundest opinion, that sunny rooms are far more healthy and far more pleasant than those which the sun never reaches, and that, in a climate so cheerless as ours, this consideration ought to prevail over every other. The question of gas-lighting requires perhaps more attention than it often receives; good burners, plain strong fittings, and a place for the lights which will bring them tolerably near the children, and at the right positions for giving left-hand light, are the chief requisites.

The question of heating is, to a certain extent, mixed up with artificial ventilation, and both ought to be looked at together. During the summer months the windows afford what is now often called natural ventilation, and an un-

* How many bank buildings do the London and County Bank Company now possess?

sparing use of this suffices if the windows reach to the ceiling, and are capable of being freely opened without draughts, to keep the school and class-rooms fresh and sweet. The best form of window for this purpose I take to be that often known as a hospital-window, fitted with a series of casements, each of which is hinged at the bottom, and opens by its top falling back inwards towards the room. The external air is freely admitted by these windows, but its current is directed upwards towards the ceiling, and a very ample volume of air will enter without perceptible draught. It is quite possible to open and close casements so arranged by an apparatus which is simple and effectual, and which I have had made by Mr. Gibbons, of Wolverhampton, and have applied to two London Board Schools. This I name, because in some hospitals a very costly method of doing the same thing may be seen at work, and committees have, I believe, been deterred from using this, the best, form of school-window, by the fear of being obliged to go to great expense in providing gearing by means of which to work the casements.

For many months in the year in England, it is not comfortable, or indeed safe, to carry on a school with open windows; and during part, perhaps we may say nearly the whole, of the same period, heating by some artificial means is necessary. This circumstance offers an inducement to make the motive power furnished by the heating arrangements, as far as we can, effect ventilation also.

In small schools, and in places where fuel is cheap, the open fire, which every one can understand, is on the whole the best means of warming, as it combines a powerful ventilating agency in its chimney, with direct radiated heat.

It is very desirable, however, to combine an inlet for fresh, warm air with the open fire in the grate. Many contrivances for doing this are in use, and it is only necessary here to say that they almost all proceed on the principle of utilising the otherwise waste heat radiated from the back and sides of an ordinary grate to warm a volume of fresh air which is poured into the room. Outlets and flues (adjoining the chimney smoke-flue if possible) should also be provided in order to carry off readily a portion of the vitiated air, and where these inlets and outlets are at all well proportioned to the size of the school or class-room to which they are connected, and are disposed with judgment, they will supply a very considerable and useful amount of constant, insensible ventilation.

In large schools it must be held to be the more economical and more scientific course to use a heating apparatus for the whole building. The cheapest apparatus, both as to original cost and probably also as to the amount of heat obtained from a definite consumption of fuel, will be hot-water pipes carried into the school-rooms and class-rooms, and exposed in the rooms. A large amount of heat is directly radiated from the heated iron surface, and a large amount is also distributed by the circulation of the air of the room, which becomes warmed by contact with the pipes, rises, and is replaced by another portion of cool air. But this circulation in no way assists ventilation; the pipes themselves are an obstacle, sometimes a dangerous one, to free circulation, and the radiated heat is often extreme; while if the system is such as to permit the surface of the pipes to be heated above a very moderate temperature (and this is the case in all systems which I have had an opportunity of examining where the pipes are of small bore, and the circulation is at high pressure), the air becomes desiccated (and I believe, deoxygenised), and general discomfort ensues, such as militate seriously against the efficiency of the whole school.

My belief is, that a system in which the fresh external air is heated within a chamber in the basement by contact, not with a furnace, but with a mass of low-pressure cast-iron hot-water pipes, or flanged vessels, and is then conveyed through flues or channels to each room of the building, is the best system of warming for a large school; corresponding flues or other suitable outlets being provided for the outgoing current, for which, of course, provision must be made in the original construction of the building. It is not cheap; but if efficiently done, as it has been for me, by Messrs. Price, in one instance, and Mr. Boyd, in another, it provides at one and the same time warmth and fresh air.

Such buildings as I have now described are the appropriate and convenient home for a school in which the three departments of infants,

girls, and boys, are distinct, in which, in either boys' or girls' school, there are a head teacher, a certain number of certificated under-teachers, and a certain number of pupil-teachers. This, as I have already mentioned, is not the system in the most advanced schools on the continent of Europe. In Switzerland, Austria, and notably in Prussia, schools are arranged so that every class shall have its own class-room. The building contains class-rooms seating ordinarily about sixty each, connected together by suitable corridors and means of approach, and a large assembling-room, called the *aula* or hall, not usually large enough to receive all the pupils at one time, and not used as a schoolroom, in the sense in which we employ the term, at all. The whole forms a very compact, square block of buildings, admirable as a rule in every particular except its ventilation, which is generally defective.

It was desired, when the School Board for London commenced work, to try the experiment of building a school on this plan, and it eventually fell to my lot to design and carry out for the Board the school which they built on the class-room system, or as it is often called, the Prussian system, at Jonson-street, Stepney. This school, originally designed for 1,000 children, was subsequently replanned on a still larger scale, and as built affords accommodation for 1,675 children, of whom 575 are infants. With regard to the infants' school, which occupies the lowest floor, no special remark is necessary, except that it is divided into two equal and similar schools.

On the first and second floors occur the departments for boys and girls respectively. Each school possesses eight class-rooms, intended for sixty children each, and these rooms are grouped round a large hall, measuring 40 ft. by 75 ft., of which they occupy one side and the two ends. In this hall is an end gallery, and it is intended that both in the hall and on the gallery a class should be taught. The original cost of this building was extremely moderate, comparing it with the cost of many Board schools in London and elsewhere, not exceeding 7l. 12s. per child, and though it would not have been quite so economical if built for a much smaller number of children, still a school of the same general plan need never be a costly building.

This building varies to a certain extent from the Prussian model. The variations were partly due to the determination to obtain a very large hall, in which all the boys and girls could be assembled at one time, and partly to my desire to secure thorough ventilation. The ordinary Prussian school is a very solid compact block, and often has a central corridor, and so there is really no chance of ventilating the class-rooms completely. At Jonson-street I suppressed the corridor, making the class-rooms open directly into the hall, and I introduced windows at the side of all such class-rooms as are corner rooms in the building. Elsewhere I introduced large windows in the wall, separating the class-room from the hall, treated the latter as a magazine of fresh air, and by this means secured the thorough ventilation of every class-room. In winter the warming by warm fresh air, accompanied by a system for the extraction of vitiated air, keeps the class-room sweet and airy.

I regret extremely that a second school of the same general character, but smaller in size, which it had been intended to erect, from Mr. Robson's designs, was abandoned. It would have been an interesting experiment and extremely likely to prove successful.*

This class of school, though the time has not yet fully come for it to be built in this country, is the elementary school of the future. It, or something very like it, is the middle-class school of the present day, or, to speak more correctly, the leading principle of it, a class-room for every class, and a general room for assembly, is the leading principle upon which middle-class schools are being designed, built, and conducted. I may refer to the Cowper-street Middle-class School, the magnificent new Merchant Taylors' School, and the schools proposed to be built by the Grocers' Company as examples of the class-room system. As time goes on there can be little doubt that elementary schools will conform to this model. Already, taking one of Lancaster's schools of seventy years ago as at one extreme of the scale, and a complete Prussian school as at the other, the planning of English school-buildings has advanced at least halfway.

* Illustrations of this school, as of many others, will be found in our volumes.—Ed.

By slow degrees a greater and greater amount of isolation for the classes has been introduced.

First, came the breaking up of Lancaster's Macedonian phalanx into classes, and grouping them about a large room in full view of each other; next the placing those classes all on one side of the school-room, with curtains separating them; then came a single class-room; then two or three each to open solely out the school-room; and now one-half the school receives class-room accommodation, and the class-rooms are made so far independent of the school-room that the pupils taught in them have distinct means of entrance and exit.

These steps are all in one direction, and though at the present moment members of school boards may be unable to see their way further, there can be no manner of doubt that when next a change is made it will be made in the direction of more class-rooms; it seems, therefore, matter for some regret, that among the very many elementary schools now being erected in Great Britain, so few should be adapted to the most advanced mode of education practised in Europe.

Of the fittings required by a school, the benches and desks are by far the most important, not only because they are wanted in large numbers, but because they directly influence the success or failure of instruction and discipline, and their size and arrangement dictate the dimensions and shape of the school-rooms and class-rooms. The desk is required to accommodate the book for reading, the slate for cyphering, the copy-book for writing, and perhaps the music-book for singing, and it must provide storage for books not in use; its height, slope, shape, and distance from the bench must be regulated accordingly. I will dismiss at once those hybrid contrivances in which the unfortunate desk is also required to form part of a tea-table, or to disappear altogether, and become the back of a church-bench, believing that every such complication adds to the difficulty of making it efficiently perform its legitimate functions. The bench ought to be exactly at the right height for the pupil, both as regards its height from the floor, its height below the desk, and its distance from the front of the desk, and it ought to be of the right shape for easy sitting. The length of the desk and bench, and the spacing generally, are to be regulated by the desirability of gaining easy access to each child's work.

The other fittings of a school, while of course they require care, are not of the same vital importance as the benches and desks, and need not, I think, be dwelt upon here. Nor shall I attempt to do more than name, and then, in the most cursory way, some of the miscellaneous matters of which the school architect ought not to lose sight. It is indispensable to a well-ordered school for it to have ample water supply and efficient drainage; proper lavatories; sufficient cloak-rooms and cap-rooms; adequate conveniences in a detached building, approached under cover, and of simple construction; a covered playground to each department; a supply of pure drinking-water for the children; a class-room so lighted as to suit a drawing-class; in some girls' schools a class-room of large size as a needlework-room; one or more teachers' rooms; accommodation for a resident care-taker, or sometimes a teacher's residence; storage for fuel (and sometimes a committee-room), ought all to be provided in every complete school. There should, if possible, be no corridors, and where they do occur they must be roomy, direct, and well lighted. A playground of due size is also necessary for each department, and there should be provision for lighting it on dark evenings if there be gas in the buildings. If possible, the entrance for boys should be in a different street from that for girls and infants; at any rate, it should be distinct.

Nothing which can get out of order should be introduced if it can possibly be avoided. Everything should be of the best and strongest, for it will have to stand rough usage. Nothing through which an accident can occur should be introduced; and if it is found that by mischance any place where a child can fall through, or fall over, or any dangerous spikes or open water-cisterns are within reach of an adventurous lad, they should be at once removed at any cost, or completely protected. Nothing by which a child can be hurt should be knowingly permitted, or if discovered allowed to remain; no dark corners or places where fresh air cannot come should on any account be tolerated; and no pains should be spared to make the smallest details of

the building and of its furniture as appropriate as possible to the purposes of the school; and here let me say the managers, the teachers, and the architect should work together. Many minor matters are best understood by those who have the practical working of a school, and if it were possible, as a new school-house approaches completion, to secure the principal teachers, and to give such finishing touches to the arrangements as would suit their methods of working, there can be no doubt that after-expense would often be saved, and increased satisfaction would be felt by the managers. Lastly, but by no means least, all these matters should be thought out in good time, and at sufficient leisure, so that they may be introduced into the original contract for the building, and the heavy additional cost which always attend modifications made during progress may be avoided.

It has been my especial desire to embrace this opportunity of advocating before an audience capable of forming a judgment upon them the claims of the class-room system. So many classes, so many rooms, is the rule in many schools in Scotland, and Scotland is ahead of England as to education. The same thing is the universal rule in Prussia, and Prussia also is ahead of England. It cannot be denied that, absent from the noise and the distractions of a large common school-room, the class can better concentrate its attention upon its work, and its teacher can better give his energies to what he has to do. It seems certain that the same teacher would do better work in a class-room than in a general school-room, not only from the fact of being undisturbed, but also from being more thrown upon his own responsibility. He has, in the general room, the head-master to fall back upon in any difficulty, but while shut up with his class in their own room, he has far more need of self-reliance and firmness, and will certainly be a better man. The system seems undoubtedly destined to reach elementary schools in time; but if it really be the best system, it appears a matter for regret that at the present moment, when schools are being established by hundreds, and millions are being laid out upon costly and permanent buildings, we should rest content with a compromise, and should not, some of us at least, boldly decide to adopt the very best method that we can in our school management, and should not construct our buildings in such a manner as to be capable of being worked on that method.

Mr. Lucraft, in the course of the discussion which followed, asked for some information as to the drawing-class room, and Mr. Smith has since forwarded the following:—

"The great essential for a drawing-class room, is that it should have ample north light. The windows should be high up in the room, their sills probably 5 ft. from the ground, and their heads as high as possible. A room of rather long proportions will be found convenient, and the more lofty it is the better will it be lighted. If it is very large it is best lighted from the sides, if moderate in size a light from one end will suffice. A central skylight will not be found quite satisfactory, but one running partly up the slope of the north side of the roof, if the class-room is on the top story, may be used. More floor space will be taken up by desks and stands for drawing, however compactly arranged, than is required by children in an ordinary school or class-room. Facing the light there should be a row of strong hooks high up, from which flat plaster casts or diagrams can hang, to draw from, and lower down two or three large brackets on which to stand a round cast, such as a bust. If geometrical drawing is taught, a continuous table, about 2 ft. 6 in. wide, should be fixed under the window-sills. A closet for keeping casts and cases, and a press for diagrams and drawing materials are desirable, and it is very useful to have one or two lavatory basins immediately adjoining the drawing-class room. The walls had better be tinted of a light neutral grey colour, and the ceiling whitened. The whole of the light on a drawing in this room should come in from one side, and no cross lights should be allowed."

Drainage of Tooting Cemetery.—The Wandsworth Board of Works have consented to co-operate with the Lambeth Burial Board in obtaining an efficient drainage system for Tooting Cemetery, by resolving to spend 600*l.* in the erection of a sewer along the road running past the entrance of the Cemetery, if Lambeth will contribute 600*l.* of the money.

PROJECTED PUBLIC WORKS—RAILWAYS, DOCKS, HARBOURS, PIERS, AND BUILDINGS.

PRIVATE BILLS IN PARLIAMENT.

ACCORDING to the notices which have been given with respect to private Bills, and the plans which were deposited on Tuesday, November 30th, in compliance with the standing orders of Parliament, the total number of private Bills which will be submitted during next session, is 296, of which a large proportion are in respect of projects involving building and other constructive works of considerable magnitude. Several of the Bills are in respect of extensive local improvements, and the construction of public works and buildings in some of the large towns and centres, in various parts of the country, as well as within the metropolitan area, whilst the Bills in connexion with docks, harbours, and piers are unusually numerous. The applications for powers to construct new gas and water works will also be found to occupy a considerable time before the Parliamentary Committee. As compared with last year there is a falling off in the number of applications for railway projects, which need not excite surprise. But as regards the several undertakings before named, there is a sensible increase as compared with those submitted during the session of 1874, in proof of which it may be stated that whereas last year there were only 60 gas and water Bills, the number of Bills under this head to be investigated next session is 77, in addition to 12 applications to the Board of Trade for provisional orders, making 89 in all, whilst the number of Bills of a miscellaneous character is 96, against 80 Bills of the same nature submitted last year. Of the 115 railway Bills, 35 are applications for powers to construct entirely distinct lines by newly-incorporated companies. The Tramway Bills and Board of Trade applications are limited to 9, and are for powers to construct tramways in Salford, Manchester, Liverpool, Hull, Middlesbrough and Stockport, Bristol, Glasgow, and Belfast.

The Bills connected with projects within the metropolitan area are 41, out of the entire number of 296, and may be classified as follows:—12 in connexion with railways, 8 gas, and 20 in respect of undertakings of a miscellaneous nature. Of the Railway Bills, one is an application by the Metropolitan District Company to construct a railway in continuation of their line from Hammersmith, passing under the Broadway, to join the Kensington and Richmond branch of the London and South-Western Railway. The Bill also seeks for powers to purchase the piece of land on the Thames Embankment, abutting on the company's station at Westminster and St. Stephen's Club. The Hounslow and Metropolitan (new Company) seek for powers to construct a line from the Hammersmith Station of the District Company to Hounslow. The Aldgate and Bow line (rejected last year) is revived by two bodies of promoters. One Bill is for powers to construct a line from Aldgate to Bow, forming a junction there with the East London Railway. The other project, called the Eastern Metropolitan, is also for powers to construct a line from Aldgate to Bow, to join the North London line. The Midland Company promote a Bill seeking powers to construct a new branch at St. Pancras, called the St. Pancras Connecting Line, commencing by a junction with the company's coal-siding lines, and terminating in West-street, St. Pancras. The Bill also contains a clause giving the company powers to purchase a large number of houses in several streets in St. Pancras, between Phoenix-street and Easton-road, on the north and south, and Skinner-street and Brewer-street, on the east and west, for the purpose of erecting on the site new warehouses and other buildings. Another clause of the Bill is for powers to construct a new line at Brixton, to be called the Brixton Station Branch, commencing by a junction with the London, Chatham, and Dover Company's Metropolitan Extension line, near Canterbury-road, and terminating on a piece of vacant ground in Brixton, where the company propose to build a new station and warehouses. The Great Northern Company have a Bill applying for powers to purchase land on the east side of York-street and the north end of the Maiden-lane tunnel, for extension works at King's-cross. The London and North-Western Company apply for powers to purchase land in Bloomsbury, Holborn; also in Poplar, between Russell-street and the Thames, and adjoining land belonging to the East and West India Dock Company, for the

purpose of constructing new works. The London, Chatham, and Dover Company apply for powers to purchase the South London and Crystal Palace Company's Railway. The London Central, Metropolitan and South-Western Junction, East London, and Metropolitan Companies apply for extension of time for the construction of works already authorised.

Of the eight bills with reference to the supply of gas in the metropolis, three are promoted jointly by the Corporation and the Metropolitan Board of Works, and were noticed in the *Builder* last week. In addition to these the Gas Light and Coke Company have a Bill seeking powers to purchase land for the erection of new works in the several districts of Kensington, Kensal-green, Woolwich, Ham, and Barking. The Commercial Gas Company apply for powers to construct new works for the manufacture of gas and chemicals. The Imperial Gas Company have a Bill for increase of capital and the construction of new works. The Phoenix Gas Company promote a Bill for amalgamation with all or any of the companies south of the Thames. There is also another Bill for amending the Metropolitan Gas Act of 1860. This Bill provides for regulating the mode of testing the illuminating power; and also for regulating the supply of gas and meters. The Bill further provides for dissolving the whole of the companies, and amalgamating them all into one company. It also contains a clause to enable the Metropolitan Board of Works, the Corporation of London, or other local authority, to purchase the whole of the rights and interests of the companies by the issue of perpetual annuities, yielding an income equal to the statutory dividend.

Amongst the Bills is one of a novel character with reference to the metropolitan water supply. This Bill provides for the transfer to Royal Commissioners of all the powers, property, liabilities, and duties of the several companies now supplying the metropolis with water. By this Bill the New River, East London, South-west and Vauxhall, West Middlesex, Lambeth, Chelsea, Grand Junction, and Kent Companies are to be dissolved, and their affairs wound up, and the shareholders are to be paid by annuities, and the directors and officers to have compensation guaranteed, by the Government; and the Commission is in future to supply water to the inhabitants.

In addition to the above there is an unusually large number of projects in the metropolis involving the construction of highly-important works, and the outlay of a heavy amount of capital. The Corporation have a Bill for powers to still further enlarge the western extension now in progress, of the Metropolitan Meat and Poultry Market, by extending it at the south and west sides, and erecting a new fruit, vegetable, and flower market. It is proposed by the Bill to improve the present approaches by widening King-street on the north side, and also to make a new street to Charterhouse-street, and another new street from Charterhouse-street to the junction of Snow-hill and Farringdon-road. In making the new streets portions of the London, Chatham, and Dover Railway, now in open cutting, are to be covered in, and portions of the proposed new streets and approaches are also to be covered in. The proposed new buildings are to be called the Central Markets, and when completed it is provided by the Bill that Farringdon Market shall be sold, and the site sold. The Corporation also have a Bill for new works at the Foreign Cattle Market, which has already been noticed in our columns. The Metropolitan Board of Works have three Bills. In one of them powers are sought, amongst other things, for making an approach to the Thames Embankment by widening and opening out Savoy-street. The Bill provides for widening Savoy-street by setting back the east side of the Chapel Royal and the east wall of a house in the Strand. The embankment is to be approached through the Duchy of Lancaster's wharf, and a bridge is proposed to be constructed over Savoy-street to connect the Duchy House with the buildings on the west side. The Board also promote a Bill for freeing the bridges across the Thames, and likewise another Bill for purchasing Stockwell-green. There is also a Bill giving powers to the Metropolitan Board and the St. George's, Hanover-square, Vestry to make a new street from Farm-street to Mount-street. Another Bill gives powers to the Metropolitan Board and the Vestry of St. Mary Abbott, Kensington, to widen Church-street on the north side, near Holland-street, and Silver-street, as far as High-street, Notting-hill. A Bill of

very formidable character, under the title of the "City of London Land Station, and Subways," is promoted by a body who propose to purchase a large quantity of valuable property in the neighbourhood of Walbrook, Queen Victoria-street, and Cannon-street, with powers to construct a subway, and make shafts or openings from the street surface to the level of the subway. The Bill provides for the erection, on the site of the land purchased, of shops, offices, and other buildings of a superior character, and underneath a portion of the site acquired to erect a railway station for the use of the companies using the present or future underground railways in the metropolis. A Bill is also proposed for enabling the Commissioners of Public Works and Buildings to acquire land and houses in the neighbourhood of Star-yard, New-square, Pancroney-lane, Carey-street, and Lincoln's-inn, or the purpose of constructing new courts of justice, and other courts and offices for making better provision for the Supreme Court of Judicature, and its judges and officers. The President and fellows of St. John's College have a Bill in which powers are sought enabling them to sell the present site of the college and almshouses, and to lay out the site for roads and squares, and to grant building leases; and also to obtain powers to acquire another site for the erection of a new college and almshouses. The Crystal Palace Company apply for powers to enable them to grant building leases on the company's lands, and also for powers to purchase the Aquarium and Wurttemberg Stuffed Animals Companies. There is also a Bill giving powers to a new company to purchase the Regent's Canal and Dock, and to make several improvements and extensions, by enlarging the Limehouse basins, constructing a river wall or embankment 600 yards long; a landing-stage, 20 yards long; and other riverside works at Limehouse; together with a railway to connect the canal with the Great Eastern Railway. The London and St. Katherine's Dock Company have an application for powers to construct a new dock in extension eastward of the Victoria dock, and also two new piers or jetties. A Bill is likewise promoted for the enlargement of the Southwark Borough Market, by purchasing Adelphi-lane, and erecting new buildings on the site for additions to the market. The Pneumatic Despatch Company apply for powers to lay down tubes from the existing tubes in Drummond-street, opposite the Euston Station, to the St. Pancras Station. Also to lay down another tube from the existing tube in Holborn, opposite Broad-street, Bloomsbury, passing under Great and Little St. Andrew streets, Upper St. Martin's-lane, Cranbourne-street, Leicester-square, Coventry-street, and Piccadilly, terminating at a depot to be constructed at the Regent's-circus. The Bill promoted by the St. Pancras Vestry, to acquire possession and control of the old church of St. Pancras, has already been noticed in our columns.

Amongst the Bills promoted in the provinces there are several town improvement Bills, indicating that works on an extended scale are contemplated in many of the large towns. A Bill promoted by the Corporation of Bradford provides for the construction of several new streets, and the widening of others. In order to carry out a portion of these improvements powers are sought in the Bill to take down Christ Church, and build a new church on another site. The Bill further gives the Corporation powers to purchase about 160 acres of land for the construction of two public parks. The Barrow-in-Furness Corporation promote a Bill of a very comprehensive character, which provides for materially extending the area of the borough. The Bill contains stringent provisions with reference to the site, elevations, and mode of construction of houses and buildings, clauses being introduced with special reference to the height and dimensions of houses, the materials used in construction, the thickness of walls, and other particulars, together with provisions for drainage and general sanitary arrangements. Powers are also sought in the Bill for new water and gas works. A Southport Improvement Bill contains a clause providing for the extension of the area of the borough to the extent of 1,682 acres. A Cardiff Improvement Bill also contains provisions for the extension of the limits of the borough; the construction of new streets and bridges; the improvement of existing streets and bridges; the erection of new markets and slaughter-houses; the extension of the cemetery; and the purchase of a large plot of land for a park and recreation-ground. A Stockton Im-

provement Bill provides for the erection of a large new cattle-market, and a general market, for which powers are sought in the Bill to purchase six acres of land. The Bill further seeks powers to make a new cut in the river Tees, and to enclose land now forming a portion of the bed of the river, on which to construct a new dock, wharfs, and warehouses. An Improvement Bill promoted by the Manchester Corporation seeks for powers to widen a portion of Deansgate, and several other principal thoroughfares in the City. A similar Bill, promoted by the Corporation of the neighbouring borough of Salford, contains provisions for constructing thirteen new streets, and widening, and otherwise improving twenty other existing streets. The Bill also provides for the construction of a new bridge across the river Irwell. An Improvement Bill, promoted by the Corporation of York, contains a clause for the construction of a new bridge across the river, with new roads on each side of the river to the bridge. There is also an Improvement Bill promoted by the Bristol Corporation, in which power is sought to take down and remove the parish church of St. Werburgh, and to sell the site of the existing churchyard and the rectory-house, the Bill also providing for the purchase of another site for the erection of a new parish church and rectory-house.

Amongst the numerous Gas and Water Bills there is one providing for a great extension of the Wakefield Waterworks, including the construction of seven large new reservoirs. A similar Bill, promoted by the Corporation of Oldham, contains provisions for the construction of five new reservoirs and eight aqueducts. The Manchester Corporation have also a Bill authorising the construction of five large new reservoirs, and a similar number of aqueducts; whilst the Bradford Corporation are likewise seeking powers to increase their works by the construction of three enormous reservoirs, one of which is proposed to be 800 yards in length.

The Bills in connection with docks, piers, and the improvement of harbours are 14 in number, some of them of great magnitude. Amongst the projects under this head, one of the heaviest of the proposed undertakings is the Wisbeach Dock and the improvement of the river Nene. A company to be incorporated under the Bill propose to make a cut or channel in the river Nene, 1,800 yards in length; also to construct a wet dock in the bed of the river 94 acres in extent, together with a cut or lock from the river to the dock, and likewise to construct quays and landing-places, and to erect warehouses, sheds, wharfs, and other buildings. The Board of Trade also apply for a Bill for the extension of the Government pier, and for the construction of new piers and works at Dover. The Milford Dock Company promote a Bill, giving them powers to alter and enlarge the docks, as already authorised; also to construct a new lock, 500 ft. long, and 70 ft. wide, and a graving dock 700 ft. long, and 93 ft. wide; also to build a Custom-house near the docks.

A WONDERFUL OIL WELL.

The operation of "striking oil" in the United States is being carried on almost daily in every promising locality, and new "wells" or springs are continually being opened. Amongst the new wells lately discovered in Pennsylvania is one which deserves notice on account of its extraordinary yield of oil. Near one of the mushroom towns which this new industry has created, called "Petrolia," is a celebrated well called "Parker's Well," which is now, however, put quite into the shade. Taking the road from Petrolia and Parker's Well, soon after leaving Central Point, the traveller observes the words, "No smoking permitted here," in conspicuous places. After a ride of about two miles and a half the top of the hill is reached, where a loud roaring noise is distinctly heard, and eighty rods farther on brings us in sight of the well. A dense fog or mist envelops the derrick, engine-house, and tanks, while fully 1,000 persons are to be seen there gazing on the wonder of Armstrong county. The derrick has conspicuously placed upon it, in large letters, "Bosa Well" and "Creswell City." There are two 250-barrel tanks full of oil; also two 1,200-barrel tanks, one of which is full. Three dams, one below the other, catch the drippings; and the rivulet beyond, we are told, for ten miles of a circuitous route to Alleghany River, is covered with oil. There are two 2-in. pipes connected with the well, one of which is shut completely off, and out

of the other flows a steady stream of oil with immense force. There is no perceptible intermixture in the flow, and as it rushes into one of the 1,200-barrel tanks the foam and spray envelope the whole surrounding atmosphere in a dense mist. A trustworthy gauger informs us that he had gauged the well three times since the stream was turned into the 1,200-barrel tank, and he found it doing 1,750 barrels, and he estimated the leakage to be at least fifty barrels per day. He further stated that, in his opinion, the well started off out of the two 2-in. pipes, at the rate of 2,500 barrels per day. He also claimed that, although this was most incredible, he believed that if the full stream were turned on now it would do at least 2,000 barrels. The well is said to be the largest ever struck in the lower region. A farmer since the discovery has offered to sell his adjoining farm of 100 acres for 100,000 dollars, which ten days previously, for farming purposes, would not have brought 1,000 dollars. The surveyors are at work laying out Creswell city. The Parker's Well stands about two miles and three-quarters east of Petrolia. The number of wells drilling on the belt east of the most easterly well in the neighbourhood is six; namely, two on the Snow Farm; one on the Steel Farm; the Gushford Well, 1,000 ft. deep; the Crawford Well, 800 ft. deep; and the Prentice Well, 1,450 ft. deep. The latter is half a mile due west of the Parker's Well.

IMPORTANT WORKS IN WALES.

SEVERAL public works of an important character are projected in Wales. Amongst the schemes for which notices have been given that application will be made to Parliament next session, we notice, first, the revival of the project for the construction of a railway up Snowdon. Notice has been given that an Act will be applied for in order to construct a railway up Snowdon, on the principle, it is stated, of the Rigi railway in Switzerland. It is pointed out that the contemplated line will commence near the Llanberis Railway Station, climbing up the hill until it terminates at the well-known spring called Fynonddwr-ogor—a distance of about 900 yards from the summit. Another important undertaking is the construction of a new bridge over the Conway. Notices have been issued for power to incorporate a company to make and maintain a bridge over the river Conway at Talycafn, midway between Llanwrst and Conway. At the present time there is no bridge between these two towns which are ten miles apart; and it is considered that the proposed new bridge has become imperatively necessary. The Carmarthen Local Board also contemplate a number of improvements. In accordance with the terms of their Bill, they desire powers for the construction of waterworks, and the supply of water for the utilisation of sewage, compulsory purchase of land and other property, markets, &c., together with an extension of the local Board district. The Cambrian Railway Company are desirous of powers for the extension of their line from its present terminus at Pwllheli to Porthcddinlleyn Harbour, and also the construction of a pier, fifty yards long, in the harbour. With regard to the new communication with Leland, which would thus be furnished, it is pointed out that Porthcddinlleyn is a not unlikely rival to Holyhead in the competition for the Irish trade. The London and North-Western Railway Company do not seem to have many projects of importance in North Wales, although it may be mentioned that they intend to take certain lands, houses, and buildings in Holyhead for the purpose of making new roads in lieu of the present ones, adjoining their passenger-station. Improvements are further projected in regard to the drainage of the Flintshire mines. The Bill relating to the matter sets forth that powers are desired to construct certain drainage works for a number of mines and mineral lands in Flintshire. These powers comprise the formation of a number of tunnels or levels in the township of Cershallough: one 1,210 yards long, another 450 yards, and a third 1,210 yards. The promoters also ask for powers to levy tolls, &c., in the district benefited by the drainage works. With regard to improvements in Rhyl, it may be noticed that plans are now prepared by the London and North-Western Railway Company for the erection of a splendid new station at Rhyl, and it is expected that the work will shortly be commenced. Rhyl is also to have a new town-hall, and the laying of the corner-stone is fixed to take place on December 8th,

which will be celebrated by public rejoicings. Some complaints have been made in the town that this work has been commenced before the plans were agreed to and signed by the surveyor; but, be that as it may, the old hall is being fast pulled down.

IMPROVEMENTS AT DOUGLAS.

AN extensive scheme for the improvement of the town of Douglas, in the Isle of Man, is now being carried into execution. Its principal feature is an embankment on the shore, entirely closing in the town, which may be described at present as having its back to the sea. This embankment will commence at the end of the pier recently built by Sir John Coode, C.E., and terminate at a point contiguous to the present Parade and Marine House. It forms, in fact, a continuation of the present road, which partly skirts the Bay of Douglas, called Castle Mona-road and the Promenade, and conjointly will afford an uninterrupted marine promenade several miles in length. In width, the new part will be only a few feet less than that of the Thames Embankment. It is to bear the name of "Loch Parade," given to it by its designer, in honour of the Governor of the Isle of Man, under whose auspices all its recent important improvements in the island have been made.

The other portion of the work consists of a new street, twenty yards wide, to be called Victoria-street. It will start at the end of Loch Parade, near the Queen Victoria Pier, intersect the embankment at its widest part, then run through the heart of the town, to the foot of Prospect Hill, which is the main artery of Douglas.

The entire improvements are being carried out from the plans of Mr. C. O. Ellison, of Liverpool, the architect to the Local Improvement Board. The marine portion is being executed under the superintendence of Mr. W. Powell, C.E., the resident engineer of the harbour works.

The sea-wall is being built of concrete, varying in thickness from 1 ft. to 8 ft., the face ramped, and finished on the top with a bold curved nosing to throw off the sea. The joints between the blocks are formed with deep sinkings, giving a massive appearance, but the irregularity of the courses somewhat detract from an otherwise noble work. One set of steps on to the shore is now being provided for, and others are to follow, the end being finished with a broad slope or jetty, which will enable vehicles to pass on to the shore.

The formation of the embankment reclaims a large quantity of valuable land, which it is intended to lay out for the erection of terraces of marine residences, hotels, &c. The land and sea views are, it may be mentioned, very fine, and the temperature in winter is said to be equal to that of the South of France. Victoria-street will be principally a business thoroughfare, and consist of modern shops with houses over them. It crosses the leading thoroughfare as at present existing, and gives access to every part of the town.

One part of the reclaimed land is set apart for an aquarium and baths, and a culvert is already built under the promenade for the supply of the sea-water, which is so pure that no filtration tanks will be constructed. The well-known fisheries of the island are expected to afford a constant supply of marine curiosities. It is also intended to erect a theatre on some part of the embankment, and doubtless other public buildings will follow.

The whole outlay of this scheme will not be much under 40,000l., but so great is the quantity and value of the reclaimed land, and the estimated increased value of other property arising from the improvements, that the actual cost to the town will not be likely to reach a quarter of that sum.

THE NEW PUBLIC OFFICES AT GREENWICH.

THE Greenwich District Board of Works are in negotiation for the purchase, from the trustees of the Bluecoat Girls' School, of the building in Greenwich-road known as Denmark House, and the adjoining land eastward,—as a site for the new Board-room and offices, which they have determined to erect. The whole property has a frontage of 82 ft., with an average depth of 105 ft., for which 1,500l. have been offered by the Board, or at the rate of about 3s. 6d. per foot.

SCARTH MEMORIAL HALL AT STAINDROP.

LAST month, at Staindrop, near Raby Castle, the chief seat of the Duke of Cleveland, was laid, by Mr. J. W. Pease, M.P., the foundation-stone of a public hall for the town, which, in honour of the late Mr. J. F. Scarth, head agent for the duke, is to be called the Scarth Memorial Hall. The Scarths have for many years acted in the important and responsible capacity of agents to the Duke of Cleveland, and the present agent is Mr. W. T. Scarth, the son of the gentleman in perpetuation of whose memory the inhabitants of Staindrop, assisted by residents and the tenantry of his Grace in the district, have now inaugurated a good social and intellectual work. On the death of Mr. Scarth, in 1872, it was determined to enter upon a scheme of supplying the town with a public building in which meetings, concerts, &c., could be held, and where also there could be provided a reading-room, library, and other attractions, and it was felt that Mr. Scarth's name might well be handed down to posterity in connexion with the work. It was decided that the hall should bear his name, and forthwith steps were taken towards bringing it to a head. Most of the money needed was obtained from subscriptions given by people in the district, and a portion by means of a bazaar, &c. Mr. Scarth had always evinced a warm interest in any movement which concerned the educational and moral advancement of Staindrop and the neighbourhood, and it was generally felt to be a wise and happy idea that of combining in a testimonial to his worth an enterprise which would be a great social and intellectual boon. Mr. J. W. Pease, one of the members for South Durham, was, with his brothers, one of the earliest subscribers to the fund. Of others who have contributed to the scheme may be mentioned Mr. Morgan Vane, Mr. Dodds, M.P., and Mr. E. Backhouse, M.P. The estimated cost of the building is between 1,800l. and 1,400l., which has been provided within 200l. of the sum, and with 150l. or 200l. in addition, the necessary furnishings and fittings will be completed.

Messrs. Ross & Lamb, of Darlington, are the architects who have been consulted, and who will superintend the erection of the new hall. The style adopted will be the French Renaissance. The building will be of stone, and will have some pretensions to ornamentation. The large room—for meetings, lectures, concerts, &c.—will be 57 ft. by 32 ft., and 23 ft. high; it will have a gallery and platform, and will accommodate 400 people. Behind will be what is called the Club-room, and available for other purposes; the dimensions being 25 ft. by 12 ft., and 11 ft. high. Over this is a reading-room of the same dimensions. The contracts are expected to be fulfilled, and the building ready for opening, in August next.

THE LAW OF EMPLOYER AND EMPLOYED.

MR. RUPERT KITTLE, the judge of the Wolverhampton County Court, and who is also a member of the Lord Chancellor's Committee in Bankruptcy, has just given his legal opinion as to the implied conditions of hiring and service.

1. As to the mutual obligation to work and find work? The employer cannot, by reason of his trade, be relieved of his responsibility to employ the day-man, or, in the alternative, to pay him his day's wages; or, to the piece workman, of the responsibility to pay him what would be the reasonable result of his day's work. He has entered into an obligation to find full employment, and this is one of the employer's ordinary trade risks. The law imposes it upon the master, who cannot relieve himself of it, except by terminating the contract of service by giving the notice customary in the trade.

2. As to the short supply of materials? I have before held,—and although differences from my opinion have been strongly and publicly expressed, yet I reiterate,—that providing materials is another trade risk to be incurred by the employer. I now say, as a lawyer, that it would be no answer to the averment of a breach of contract by not finding employment, that the employer could not economically provide the necessary raw materials for his servant to bestow his labour upon. The contract of hiring and service, like all other contracts under the English law, must be submitted to a reasonable interpretation. The workman is not bound to do or

suffer for not doing an impossibility,—he is not bound to work if he is sick or disabled.

The master, on the other hand, is not bound to employ, if by any accident beyond his own control he is prevented so employing. He is not responsible for loss of time resulting from breakages of machinery, or occasioned by the illness of workmen whose labour must precede that of others. But the employer must use due diligence in employing proper machinery and proper fellow servants.

The employer will be no more relieved in law from compensating a workman for loss occasioned by selecting or continuing to employ an inefficient or an untrustworthy man than he would be in selecting an ill-constructed, unsound, or untrustworthy machine. He has no more right to subject his workmen to loss by knowingly continuing to employ a drunken foreman or engineman than he has by knowingly continuing to work unsound machinery.

THE COMMISSION SYSTEM.

ROBERT V. RUTTER.

THE plaintiff in this action, at the Durham County Court, before Mr. E. J. Meynell, judge, is an agent for a Sunderland building society, and the defendant is a contractor and builder, of Brandon.

The sum sued for was 11l. 6s. for commission, alleged to be due for introducing the defendant to building work.

The plaintiff stated that a number of workmen and others had built houses at Brandon by obtaining advances of funds from a building society of which he was an agent. The defendant, Mr. Rutter, contracted for the erection of several of the houses, and it was arranged between Mr. Rutter and himself that he (witness) was to have a commission of 3l. for each house he got him to build. He took three men to defendant's office, and they gave Mr. Rutter the contract to erect their houses, and he also promised to pay witness 2l. for any other house he got him to build. Witness then got him five more houses to build. Defendant then paid him 10l. on account, leaving a balance of 3l. due.

In cross-examination the plaintiff said he had been two years agent to the building society, and all that he had to do was to forward the money he received and not to find customers. The three men got advances through witness of 181l. each. He got a commission for collecting the subscriptions, but had never received anything from the three men named, but they asked him to find them a contractor, and on account of the promised commission he recommended the defendant.

Evidence was adduced if the defendant's offer and promise to pay the commission. The defendant said the plaintiff called at his office, and asked him to build certain houses, and to send in a tender, and he did so. The plaintiff said, "At these are certain builders below you, if you keep the thing any way near, I will get you the contract, providing you give me a commission." He replied that he had no objection to give him 2l. a house, and when he got the first payment from the society he gave the plaintiff 3l. With regard to four of the houses, the contract was made with the parties themselves, and it was not in consequence of any recommendation of the plaintiff that the parties came to witness.

The plaintiff, on being recalled, said he never let the houses to the lowest tender. Another builder's list was lower than Mr. Rutter's. He did not think that Mr. Rutter had added the commission to his contract price. The defendant afterwards said he had been wrong in his tender, in consequence of the rise in the price of bricks. The Judge gave a verdict for 2l. per house, with costs.

MASTER AND SERVANT ACT.

JOHN JONES, a scoop-drawer and stoker, in the employ of the Phoenix Gas Company, Southwark, was summoned before Mr. Benson, under the Master and Servant Act, for leaving his employ without giving the usual week's notice.

Mr. Hale, on behalf of the company, called George Today, foreman at the works, Barking, who said that on the 27th of June last he engaged the defendant as "scoop-drawer," at the weekly stipend of 38s. 9d., paid every Friday evening. At the time he was told that a week's notice was required on both sides, and printed notices are posted up in the office and lobbies. He worked up to the 13th inst., when he was paid his week's wages. He, however, did not return.

In answer to Mr. Benson, witness said he did not give any notice of his leaving, although he well knew that it was required. The defendant had complained to him about the new scoop, which weighed about 70 lb., and contained about 1 cwt. of coal. He was exposed to a great heat, and was paid accordingly.

Mr. James Francis Broadwood, assistant engineer of the gasworks, said that the defendant was quite able to work the scoop, as it was much more easy than the old one. In consequence of his leaving without notice it had put him to considerable inconvenience, but they only put the loss down at 20s.

Mr. Benson convicted the defendant, and ordered him to pay 20s. and 2s. costs.

THE NEW BANK AND POST OFFICE, ASPATRIA, NEAR CARLISLE.

THIS block of buildings, now in course of erection by the Cumberland Union Banking Company, and intending to serve the purposes of a Bank and Post-office combined, is now rapidly approaching completion, and will form a striking architectural ornament to the town. They are built principally of the red sandstone of the neighbourhood, relieved with dressed stone of a greyish white from Shawk quarries. They were designed by Mr. D. Birkett, of Carlisle. The buildings comprise three distinct sets of business premises, the westernmost being fitted up as a combined establishment in which the duties of Mr. Forester's original occupation will be carried forward, the centre will be devoted to the rapidly extending business of the Aspatria branch of the banking firm, the east end being assigned to the accommodation of the post-office and telegraph departments, which have also shown a marked development during the last two years. The plans of the architect have been well developed by the builders, the contractors being for the masonry department, Mr. Henry Grave, of Aspatria; for the carpentry, Messrs. Bawlings & Hewitson, of Aspatria; plasterers' work, Mr. Ormerod, of Carlisle; painters and plumbers' work, Mr. George Goodall, Aspatria.

COTTAGE HOSPITAL, ENFIELD.

THE foundation-stone of the new Cottage Hospital was laid on Saturday last by Mrs. James Whatman Bosanquet, of Claysmore, Enfield. The building is of one story, and provides for men's and women's wards, four beds in each, one extra small ward, one bed-operating room, nurse's room, kitchen, scullery, bath and store rooms, and W.C.s. The architect is Mr. T. J. Hill, of the City-road, and the builder, Mr. A. Fairhead, of Enfield. Total cost is estimated at 1,080*l*.

SERIOUS FIRES.

Fire among Workshops.—On Tuesday night, the 24th ult., a fire broke out in the midst of a number of workshops, in Newcastle, upon a piece of ground between Bath-lane and Westgate-road, belonging to Messrs. Herdman & France, joiners and builders; and, besides occupying workshops upon the site, they have also workshops let off to Mr. Cockburn, implement manufacturer; Mr. Angus, coach-builder; Mr. Henderson, painter; Mr. Craig, painter; Mr. Bell, cooper; Mr. Carrick, painter; Mr. Guthrie, furniture dealer; Mr. Mason, picture-frame maker; and Messrs. Glen & Liddell, coopers. A great amount of damage was done. Some men had been working late in one of the workshops, and it is supposed that the fire had originated in some sparks left by them.

Fire at a Cotton-mill.—A fire broke out in Constantine's Mill, Droylsden, near Manchester, on the 28th ult. The mill is a large one, and contains 12,000 spindles. Alarm was at once given, but before the arrival of the fire-brigade the roof fell in, and the building was totally destroyed, except the ground-floor, which is fire-proof. The damage is estimated at over 13,000*l*. The origin of the fire is unknown.

Fire at a Timber Merchant's.—About midnight on Thursday, the 26th ult., a destructive fire was discovered in the extensive works of Mr. Newsum, timber merchant, of Lincoln. The fire is supposed to have originated in the engine-room, and being favoured with a breeze, speedily extended to the yard and outbuildings, which were stored with a great amount of timber. It was discovered by the foreman, who resides on the premises, and who at once raised an alarm. In a short time the whole mass of timber and outbuildings were in a blaze, and it was not until the arrival of a steam fire-engine from Wellington (the property of Mr. Revill), that any stoppage could be put to the flames. This engine, fed from the Witham, poured torrents of water on the burning mass, and eventually the flames were got under. The premises are situated in a thickly-populated part of the city, and fears were entertained for the safety of the adjoining property. The damage is estimated at about 10,000*l*, and Mr. Newsum is not insured, the Insurance Companies refusing the risk until the erection of certain walls which were near completion.

Large Fire at a College.—A great fire broke

out in Blackrock, in the suburbs of Dublin, early on Saturday morning, at the French College. At the time of the fire there were 264 students in bed, but no lives were lost. The fire originated in the linen-room, and spread with great rapidity to the library, bandroom, and dormitories, comprising the west wing of the college, which was completely destroyed. Many valuable musical instruments, as well as the contents of the fine library, were burned. The loss is estimated at between 5,000*l*. and 10,000*l*. The clothes and furniture of 270 students were also consumed.

Destruction of 100 Fathoms of Firewood.—On Saturday morning last, the Metropolitan Brigade were called to a fire at the timber yard of Mr. George Martin, Cranbrook-street, Old Ford. An immense stack of about 100 fathoms of firewood, occupying a plot of ground nearly 1,000 feet square, was destroyed, and two horses were burnt to death. The origin is unknown. The loss will mainly fall upon the Union office.

Fire at a Packing-case Maker's.—On Saturday morning last, a fire happened at 28, Welclose-square, in the occupation of Messrs. H. Smith & Co., packing-case makers, and resulted in the entire destruction of a building of four floors. The Guardian office bears the insurance.

EXPLOSIONS.

Greenwich.—On the 27th November an explosion occurred in the sewer at the junction of Clarence-street and King-street, Greenwich, to the no small alarm of the neighbouring residents. The sewer, it appears, has been undergoing some repairs, and the workmen had left for breakfast only a few minutes before the explosion took place. The iron covering of the man-hole at the corner of the street, and the ventilator a few yards off, were blown up, and the former was projected by force of the explosion to the other side of the street. Several paving-stones and a quantity of earth were also dislodged, and the windows of three or four houses on each side of the street were more or less wrecked.

Wakefield.—An explosion of gas occurred on Tuesday, the 24th ult., in an office attached to Messrs. Martin & Guest's timber yard, the gas it is supposed, having accumulated in the building owing to the laying of some mains in an adjoining street. The office boy was found to be insensible, and the office nearly destroyed.

Barnmouth.—A serious explosion of gas took place at the residence of Miss Orrod, on Wednesday, the 25th ult. The butler took a lighted candle to ascertain the source of an escape, and the usual result followed. Much damage was done to furniture, windows, &c., and the butler, as the penalty of his folly, had his face badly burnt and his whiskers singed. It seems necessary to be ever repeating the advice to open windows and doors before attempting to discover the escape of gas with a light.

CO-OPERATIVE EMIGRATION.

SIR,—I think some such system as that proposed by "Lover of Progress" in your pages is practicable, and, for one, should be disposed to join a company of the kind going out to Canada, rather than Australia, the latter being too far from the old country. I know something of "shanty life" and "roughing it" in the backwoods, having spent nearly two years in different parts of the States.

A capital of 100*l*. per man, I think, would be quite low enough, as the minimum; it would ensure the colonists being a more provident and superior class, not so likely to run away from any difficulty that might turn up. It would be also advisable, in my opinion, to secure a larger quantity of land than your correspondent speaks of, in the value of which a rapid rise would take place as population and immigration flowed into our model colony. The best plan would, I judge, be the Wakefield system. One great, I think the greatest, evil in emigration by your correspondent's plan would be removed, namely, that of being put down in the midst of a lot of hungry land-agents, knowing no one, feeling a little disappointed in the country, as most do on arriving, very lonely, and, unless possessing a stout heart, beginning to be despondent, especially when one has left many friends and pleasant associations at home. "Lover of Progress" does not say anything about the fair sex. I really think they would be necessary to the well-being of the young colony; in fact, having spent some months in a mining

district of the States without having spoken to a woman, and hardly seen one, though there were 200 or 300 men, that cannot say much for a plan of that kind; the proper system would be, I think, to transplant a village as well as possible from the old over-populated country to the new, putting it down by some railroad or river. Some few would have to go out first to make necessary arrangements, putting up a few shanties, &c.

I would have every one undergo an examination as to his character and ability for work, to prevent disappointment when there. The great majority would necessarily be farmers, but a few of all kinds of artisans necessary to the well-being of the colony would be taken.

A great saving would be effected by co-operation, especially in distribution, and no one being idle, capital would rapidly accumulate. Every one knows that in any civilised community, were all to work two or three hours per day, it would be quite enough to supply them with necessities, and many luxuries; but, as our colony would not be content with working in that way, we should add to our capital rapidly; also, by reducing the middle-men,—men employed for protection, such as policemen, who here have to be supported from the hard-worked brain and muscle of the working man,—a wonderful economy would be effected.

I hope many will take up the idea commenced by "Lover of Progress," and soon the preliminary steps will be taken by the way of offices, and so on.

YANK.

STRIKING DIFFERENCES.

A Wesleyan chapel is about to be built at Hastings, Mr. W. Pocock, architect; and fifteen builders, after duly pricing out all the items, thus state, we are told, the sum which each thinks he ought to have for executing it:—

Boshall	27,430 0 0
C. & H. Burchell	6,551 0 0
Perigee	5,592 0 0
Parke	5,435 0 0
Stentford	5,287 10 6
Niblett & Son	4,918 0 0
Potter	4,559 0 0
Wood	4,483 0 0
Arard	4,374 0 0
Vidler	4,294 0 0
Winter	4,276 0 0
Womersley	4,230 0 0
Pattinson	4,229 14 0
Wilson	4,210 0 0
H. & C. Hughes	3,945 0 0

THE BOOK OF KELLS.

AN explanation was given some time ago in the Dublin correspondence of the *Times* of the erroneous statement respecting the disappearance of the Book of Kells, as mentioned in the *Builder*, p. 957, ante.

What happened, it seems, was this. The book was brought over by the librarian of Trinity College, Dublin, under the impression that it ought to be rebound, and that so important a work should be done by the workmen employed in the British Museum. He brought it to Mr. Bond, keeper of MSS., British Museum, and took his receipt for it. Mr. Bond dissuaded him from meddling with the present binding, which, though mean and common for so precious a volume, was still in a strong condition.

He, however, requested Mr. Bond to keep it for a time, to give opportunity to scholars to inspect it. On his return to Dublin the Provost and Fellows learnt, for the first time, what had been done without their knowledge and authority,—and they sent a messenger to Mr. Bond, by whom the MS. was returned to them accordingly.

Mr. Bond enlightened the College authorities as to the condition of the MS., which was suffering much deterioration, and they thanked him for his suggestion for its future preservation, which they thought highly important.

It was the error of bringing the MS. over to England without the knowledge and sanction of the College authorities, which occasioned alarm, and gave rise to rumours.

London School Board Expenses.—Speaking at a meeting at Westminster on Friday night, Mr. George Potter, one of the members of the London School Board, gave an account of the proceedings of that body, and said the sum it will have expended on education up to March next would amount to 1,032,000*l*.

LIABILITY OF BUILDERS, COMPANIES, AND OTHERS TO RECOUP RATES LOST THROUGH DEMOLITION OF RATEABLE PROPERTY.

Tax Court of Common Pleas have just decided a point of law of some importance to parties rebuilding, making new streets, railways, and public improvements. Some years ago, the same law point was settled by the Metropolitan Railway Company recouping the parish of Chelsea about 10,000l. for the loss of rates. In that case, however, the loss was permanent. In the present instance, the loss of rates is likely to be restored by new buildings.

The parish officers of St. Mary, Lambeth, claimed upwards of 8,000l. from the Metropolitan Board of Works, for rates which the parish had been deficient, during the construction of the Albert Embankment.

The arguments of counsel, for and against, would fill a number of the *Builder*! but Mr. Justice Denman, who delivered the judgment of the Court, laid all the chief points bare. He observed that the questions submitted to the Court were, whether the Metropolitan Board of Works were liable to pay the deficiency, or any part thereof, in the poor-rate and land-tax, under the Thames Embankment Acts; and if so, whether the plaintiff could legally enforce the arrears from 1885 to 1870 in a lump sum. One of the Acts recited that the Board of Works should be liable to pay the deficiency of rating upon property taken by them until the completion of the works. There had been a variety of argument as to the meaning of this section, but the Court were of opinion that the meaning was that the Board should stand in the position of the occupiers of the demolished houses, and pay what those persons would have paid if the Board had not taken the houses, and the amount payable by the Board was what the parish had lost upon these assessments down to the time when the works were completed. It had been argued that the Board was discharged from liability, as the deficiency was not demanded from them from time to time when the rates were made, because the ratepayers were a shifting body, and could not now be indemnified; but the Court were of opinion that the liability was not extinguished by delay, and that the demand down to May 1870, could legally be made a lump sum. The Court also thought that the overseers of 1871-72 were entitled to enforce the payment. The amount payable by the Board would be the aggregate of the rates that would have been payable by the owners or occupiers if the property had not been taken; but they would be credited with the amount of rating upon new buildings erected upon the new sites. The question of costs to be reserved. Judgment for the parish of Lambeth.

In connexion with this decision there is a probability of more than one contemplated street improvement brought forward by speculative building companies being reconsidered.

MONUMENTAL.

Monument to the Duke of Kent.—Her Majesty's memorial altar-tomb of his late Royal Highness the Duke of Kent has just been finished, and placed in St. George's Chapel, Windsor Castle, upon a site at the west end of the south aisle of the nave close to Beaufort Chapel. The tomb has been erected upon a broad platform of darkly-coloured marble, forming a rich and handsome pavement. The alabaster sarcophagus, ornamented with quatre-foil panels, is surmounted by a white marble effigy of the Duke in a recumbent position, clothed in his robes. The head rests upon a tasselled cushion, the left hand lies upon the breast, and in the right hand is a sword. The feet of the statue are towards the east, and beneath, upon a sunken tablet, is a dedicatory inscription in Latin. Mr. J. E. Boehm has executed the figure of the Duke of Kent. The tomb was designed by Sir G. G. Scott.

Foley's Statue of General Stonewall Jackson, for Charleston.—This statue is nearly completed at the Manor Foundry, Chelsea. It is of heroic dimensions; a single figure, standing, with a drawn broadsword in the right hand; this hand grasps, while it rests on, the hilt of the weapon: the point of the sword is placed on a piece of rock at the side of the figure, which is thus sustained, and in leaning on it sways slightly towards its support. The costume is modern,—a horseman's short tunic, girt by a broad belt, and buttoned close on the chest, with a military collar. Strong riding-boots, reaching above the knees, and rather loose trousers, complete the dress; the head is bare.

The late Mr. Black.—The citizens of Edinburgh, without regard for sect or party, have resolved to erect a monument in memory of the late Mr. Adam Black, who twice filled the office of lord provost, for nine years represented the city in Parliament, and for the long period of sixty years discharged important public duties.

Monument to Jeremiah Horrocks.—It is proposed to do honour to Jeremiah Horrocks by erecting a tablet to his memory in our National Mausoleum at Westminster. The Dean and Chapter of Westminster having given permission for the erection of the tablet in the Abbey, subscriptions are being collected to defray the expenses. The Rev. R. Brickell, rector of Hoole, who occupies "the same old pulpit from which the Lancashire orators spake of his higher duties," will receive subscriptions.

SANITARY MATTERS.

Birmingham.—The mayor (Mr. J. Chamberlain) has intimated his intention to carry out, during his year of office, a comprehensive scheme of sanitary reform for the borough.—It is intended to invite the attendance of sanitary committees of corporations, medical officers, and others especially interested from Manchester, Liverpool, Leeds, Sheffield, Bristol, and other towns, to a conference on sanitary questions, to be held in Birmingham in January.

A private meeting of gentlemen interested in sanitary matters has been held in the Town-hall Committee-room, for the purpose of offering suggestions respecting the forthcoming Sanitary Conference in Birmingham. The Mayor presided, and explained that the questions upon which papers would be read and discussion invited, would probably be the Sanitary Condition of large Towns and the Dwellings of the Working Classes; and that invitations had been sent to a number of gentlemen in various parts of the country who would be likely to assist in the deliberations of the conference. Suggestions were invited, and a number of hints were thrown out.

Exeter.—The question of providing a comprehensive sanitary scheme for Exeter, and one which, by dealing with the whole matter of the disposal of the city sewage, will include, by necessary implication, the subsidiary question of freeing the river from its present impurities, is once more about to come before the town council in a practical form. The city surveyor has already formulated a scheme for the purpose, the execution of which, it is estimated, would cost something like 30,000l., and this plan will shortly be submitted to the town council by the committee to which the whole question was referred.

CHURCH-BUILDING NEWS.

Kingston-upon-Thames.—The reopening of the church in this parish has taken place. The church, which consists of chancel, nave, tower, and porch, and is of very early date, has undergone a thorough restoration. The old square pew-gallery, pulpit, and desk, have been removed and given place to open benches of English oak in the nave, and seats of wainscot in the chancel, which is seated stall-wise. There is ample space in the sanctuary, and the whole floor is laid with encaustic tiles, from the works of Mr. B. Minton Taylor, Stoke-upon-Trent. The communion-table and rails are of solid oak. The pulpit, which has a stone base and oak top, occupies the north-east angle of the nave, and a lectern stands on the opposite side. The stonework generally has been restored. The tower is divided from the nave by an oak screen, and is intended to be used as a vestry. All the windows, doorways, copings, &c., have been restored or renewed, in accordance with the original designs, and the stone walls pointed. The roofs are boarded under the old rafters, and formed into panels by moulded ribs, the nave ceiling taking the shape of the rafters, the chancel being wagon-beaded, with moulded ribs. A new feature in the church is a porch designed by the architect, Mr. Robert Wheeler, of Tunbridge Wells, under whose superintendence the restoration has been carried out by Mr. C. J. Berry, of Lewes, builder.

A church of St. Pancras, Kingston, was originally erected in the eleventh century by William de Warrene and Isabella, his countess. The present structure was built in the fourteenth century, in the Second Pointed style, and, after a lapse of 500 years, it has fallen to the lot of the Rev. John Goring, of Wiston Park, to restore the edifice (at whose sole expense, nearly 2,000l., the work has been done).

Wall (Lichfield).—The church of St. John, Wall, near Lichfield, has been re-opened after having undergone renovation, involving the decoration of the chancel and the re-arrangement of the seats for the choir, which have been placed stallwise at the east end of the nave, and open benches have been substituted for pews through the chancel. A painted window, by Ward & Hughes, representing in the centre the "Good Shepherd," and on each side the "Blessed Virgin and St. John," has been inserted in the chancel, and underneath it are fixed tiles, which form a reredos.

Little Aston.—On Thursday, the 19th ult., the newly-built village church, dedicated to St. Peter, at Little Aston, in the diocese of Lichfield, was consecrated by the Bishop of Lichfield. The church has been erected from

designs by Mr. G. E. Street, R.A., at the cost of the Hon. S. Parker-Jervis, of Little Aston Hall. The architecture of the edifice is Early English Gothic, with lancet-headed two-light windows, deeply recessed inside with splayed jambs; the east and west windows are a three-light and five-light respectively. The church comprises nave, chancel, north aisle, and vestry; internal dimensions being from east to west, 72 ft., and width from north to south 32 ft. 6 in. The baptistery at the south-west angle of the nave is semi-circular, and projecting from the main line of building externally. The vestry, in which is placed the organ, is on the north side of the chancel. At the west end of the north aisle is the tower, and the communication to the ringing-floor is by a York stone spiral staircase. In the belfry, which is only 9 ft. square, is placed a peal of five bells (the tenor weighing 5½ cwt.), erected by Messrs. Taylor, of Loughborough. The height of the tower and spire is 95 ft. The branches of the spire are surmounted by sunk pinnacles, with foliated finials. The church is built of a light red sandstone. The faces of the walls are of wrought stone; the general walls are finished with a boasted face, and the dressings are rubbed. The north aisle is separated from the nave by arcing of three arches, the columns of which are circular on plan, with moulded caps and bases. The lead glazing is with cathedral rough plate, with a border of white glass. The organ was built by Messrs. Halmshaw, Birmingham, Mr. Street supplying the design for the oak case. The font consists of a Caen stone moulded base, surmounted by marble and alabaster shafts, supporting an octagonal bowl, the panels of which are inlaid with polished Italian marbles of various colours; the panels of the pulpit are similarly treated. The chancel steps and pavement are of marble. The pulpit, font, and chancel pavement were executed by Mr. James Forsyth, London. The reredos, executed by Mr. Thomas Earp, London, consists of a Parbeck marble moulded plinth. The centre portion, over a super-altar of Devonshire marble, consists of five compartments or panels, the framework of which is in alabaster, carved. The altar, which is raised five steps above the nave floor-line, is of oak, as is also the altar-rail, with brass standards. The church is heated with hot air, the apparatus for which was supplied and erected by Messrs. Haden, of Trowbridge, and is built to accommodate 153, including children. The works have been carried out by the builder, Mr. R. Yates, of Shifnal, under the supervision of the architect's clerk of the works, Mr. J. W. Randle. The cost of the whole work, exclusive of the value of ground, is about 5,500l.

East Hardwick.—On Wednesday, the 25th ult., the Archbishop of York consecrated the new church at East Hardwick, near Pontefract. The foundation-stone was laid in October, 1872, by the Marquis of Ripon. The total cost has been about 2,500l. At the close of the Archbishop's sermon a collection in aid of the building fund was made, which amounted to 53l. 13s.

Strabane.—The Duchess of Abercorn has laid the foundation-stone of a new church at Strabane. The old church was founded there by the Duke's ancestors, 260 years ago.

Wymington.—This is a small but interesting village, some five miles from Wellingborough. Its parish church possesses several features of interest, and forms one of the noteworthy churches in the county of Beds. It occupies the site of an older church. The present building stands as a monument to the piety of John Curteys, a lord of the manor of "Wymington," and Albreda, his wife—a "Seynt John" being a member of the St. Johns of Bletsoe Castle—the record on their tomb still existing in a good state of preservation in the church, setting forth that the church had been built anew (*de novo*) by them. The date of the structure, as nearly as may be fixed, was 1377—the last year of the reign of Edward III. It is considered one of the best specimens in the county of the late Decorated style. As it was built five hundred years ago so it remains now in its main features. The windows are of a pronounced character, the tracery assuming graceful forms, and inclining to the Flamboyant. The east window, of five lights, is a fine specimen of the period. The architectural ornamentation of the church includes trefoils, crockets, and crockets. The church consists of nave, north and south aisles, south porch, chancel, lady chapel, and chapel dedicated to St. John the Evangelist, and vestry.

which, with the exception of the vestry, are all under one roof, which is still covered with the original lead. There are also a tower and spire, each of which are ornate. In the south wall of the chancel, within the communion rails, are two edilia and a canopied piscina, all examples of the Decorated period. There are several interesting brasses in the church. Just below the window of the Lady chapel are the remains of an altar to the Virgin, of the Perpendicular style of architecture. On the left is a piscina, and in the right jamb of the window a Perpendicular niche has been inserted, in which in all probability, an image of the Virgin was placed. The edifice is now in all the glory of whitewash; the seating is capable of great improvement; the tower arch is built up and plastered; and in other respects the desirability of restoration is manifested.

Houghton.—The parish church of Little Houghton has recently undergone extensive restoration. The old edifice had fallen into a dilapidated condition, and its restoration and enlargement have now attained completion. Formerly the church consisted of the nave, south aisle, and chancel, and the present old emulated tower. A north aisle and an organ-chamber have been added, while the old part of the edifice, with the exception of the tower, has been substantially rebuilt in the Decorated style. The tower arch has also been displayed by the removal of an ugly west-end gallery; the tower chamber being thus thrown open to the nave and lighted by two single-light stained-glass windows. An oak screen, surmounted by cross, separates the nave from the chancel. The pulpit is a low, carved oak structure on a stone base, and approached by stone steps. The tops of the choir-stalls are also of carved oak. The church has been entirely re-seated with comfortable open seats of stained deal. The restoration, which cost altogether about 3,000*l.*, was carried out from the designs of the late Mr. Buckridge, by Mr. Geo. of Daventry. Besides the above alterations and restorations several new features have been added to the chancel. A new east window has been erected, and a new reredos constructed as a memorial of the late William Mayhew, esq. The east window, which is by Messrs. Hughes & Ward, represents Christ's appearing in the midst of his disciples after his resurrection, and bears the inscription, "Peace be unto you." The reredos, a piece of carved oakwork, consists of three panels: the left and compartment representing the Annunciation, that on the right hand, the Adoration of the Magi; and the central compartment, Our Saviour in His glory, bearing the symbols of His divine sovereignty, and surrounded by angels. The figures are carved in alto-relievo. Two memorial stained-glass windows have also been erected on the south side of the chancel.

Watcote.—On Wednesday evening, the 18th, St. Paul's Church was re-opened by the Rev. G. W. Woodhouse, M.A., vicar of Albrighton. The old-fashioned pews in the body have been moved and replaced by open seats of pine, stained and varnished, the doors having also been taken away from the seats in the galleries. The chancel has been remodelled and rearranged, the floor having been raised about 1 in. and laid with encaustic tiles; the organ brought down from the loft and placed on the north side; seats provided for thirty-two choristers; and the old pulpit, which stood on the north side, dispensed with, and a new one of oak elegant design placed on the south side with entrance from the vestry. A new heating apparatus has been put in by Mr. Haden, of Cambridge. The whole of the interior has been repainted with colours of sober tint, relieved by stencillings. The cost of the alterations will be about 600*l.*, towards which about 450*l.* had been promised prior to the opening service. The work has been carried out by Messrs. Rowley & Cox, builders, under the direction of Mr. Chamberlain, architect.

Willesborough.—The new Free Church (Christ Church), Willesborough, which owes its erection to the munificence of Mr. Joseph Foster, of Rotterdam, was dedicated to the worship of God on the 25th ult. The site of the church on the high road to Hythe, and about half a mile from Ashford. The material employed is chiefly Kentish rag, with Bath stone dressings. The apex of the roof is 48 ft. from the floor, and springs at a sharp angle from the side walls, which are 60 ft. in length. The width is 36 ft., the east side has four lancet windows, and there are corresponding windows on the west side. There is an entrance porch facing

the Hythe road, over which is a window of three lights, and on each side a circular light. At the opposite end of the church is a larger three-light window. The glazing is of the greenish-tinted cathedral glass now so much in vogue, with light orange-coloured margins. There are three rows of sittings, constructed of pitch pine, stained and varnished.

DISSENTING CHURCH-BUILDING NEWS.

Silverdale.—The foundation-stone of a new Congregational chapel was laid at Silverdale on Monday, 16th inst. For some time past service has been held in the Temperance Hall, but more suitable accommodation having become indispensable, a public subscription was set on foot, and many donations were made by the Congregationalists of North Staffordshire. The site of the new chapel is about the centre of Victoria-street. The building will be a plain Gothic structure, having a porch and tower. There will be a small gallery at one end. Land has been secured for a school at the rear of the chapel, but the building of a school will remain as a work for the future; so, for a time, the edifice will serve both for chapel and school. The place is to seat about 400 people, and the cost is estimated at 1,500*l.*, including land and all other charges. The architect is Mr. W. P. Sugden, of Leek; and the builder, Mr. Bennett, of Burslem. The foundation-stone was laid by Mr. Arthur Nicholson, of Leek, in the unavoidable absence of his father, Mr. Joshua Nicholson, through indisposition.

Deerfield.—A new Unitarian Chapel, superseding one built in 1717, has been opened at this place.

Cambridge.—After being in the hands of the contractor, Mr. F. Thoday, for about seven months, the new Baptist Chapel in Fitzroy-street (Eden Chapel) has been opened for divine worship. The building, the plans for which were drawn out by Mr. H. S. Thoday, is brick-built, and will cost about 2,000*l.* It is approached from Fitzroy-street by a flight of stone steps, at the top of which, in a vestibule, a pair of doors to the right and left open into the chapel. It is said that the building will afford accommodation for about 730 people. The plain open benches with inclined (red-deal) backs are of pitch pine, the floor declining about 1 ft. from the entrance to the pulpit. The pulpit and rails are also of pitch-pine, the gallery-front being made of red deal, with perforations. There is a baptistery between the pulpit and the communion-rail, which is kept covered except for special occasions. The building has a queen-post roof, with small cast-iron ventilators. The gallery is supported on cast-iron columns. The windows are filled with rough-plate glass. There is a school-room beneath the chapel, besides vestries and other accommodation. The building is warmed by Hayden & Son's hot-air apparatus, and is lighted with gas, the fittings for which were erected by Mr. W. Audley.

Books Received.

Practical Hints on the Erection of Places of Public Worship, compiled for the Congregational Chapel Building Society. By the Rev. J. C. GALLAWAY. Third edition. London: Snow & Co.

The Congregational Chapel Building Society's main object and reason of existence is to promote improved and satisfactory church building, and the little manual of which, after nineteen years, a third edition is now published, has doubtless materially helped towards the end in view. It is written in a good spirit, and contains much information likely to be useful to bodies desirous of erecting chapels. It very properly urges the appointment of a competent architect as of the first necessity, and the information it affords is to enable committees and others concerned to make up their minds as to what they want, and to give proper instructions to their architect.

VARIORUM.

MESSRS. MARCUS WARD & Co. (Chandos-street), evidently exercise care in the selection of the stories they publish, and the artists they employ to illustrate them. We have now before us a pile of their new story-books for old and young readers; for example,—"Country Maidens," by M. Bramston; "Christmas at Annesley, or, How the Grahams spent their Holidays," by Mary E.

Shipley; "A Very Young Couple," by the author of Mrs. Jerminham's Journal; "Our Games," a Story for Children, by Mary Hamilton; and "The Twin Brothers of Elfvale: a Story of Norwegian Peasant Life Fifty Years ago," by Charles H. Eden; and we can recommend them all as very interesting and fitting. The coloured illustrations in "The Twin Brothers" are particularly good of their kind.—As to the *Latchet*, we get the following from the *Bible Educator* for December:—"Latchet (subst.). Synonymous with the modern lace (of 'boot-lace,' 'staylace'), of which it is diminutive, used only in the A. V. as a 'fastening of a sandal,' 'a shoe-string.' Gen. xiv. 23, 'I will not take from a thread even to a shoe-latchet,' where Wiclif's version has 'the thong,' or 'the lace of his shoe.' Isa. v. 27, 'Neither shall the girdle of their loins be loosed, nor the latchet of their shoes be broken.' Mark i. 7; Luke xiii. 16, 'The latchet of whose shoes I am not worthy to unloose.' *Latchet* is a derivative from the Latin *laqueus*, 'a snare,' through the Italian *laccio*, 'a thong,' 'a string,' and its diminutive *lacciolo*, and the French *lacet*—all related to the A.-S. *laecum*, 'to lay hold of,' 'to catch.' The word *latch*, both in the substantive and verb form, is now restricted to the fastening of a door, but was formerly used in a much wider signification,—e.g., by Chaucer, for a 'snare,'—

'Love will none other birde catch,
Though he set either nettle or latched.'
(Rom. of Rose, 1624.)

And by Shakespeare,—

'I have words
That would be howled out in the desert air,
Where hearing would not latch them.' [lay hold of them].
(Macbeth, iv. 3.)

The first part of Cassell's *Family Magazine* (in its new form) contains as a frontispiece a charming engraving by Mr. C. Jeens, from a drawing by Mr. Millais, called "A Reverie," which, however, we have somewhere seen before. The number itself is an excellent one.—With the first part of Cassell's "Illustrated History of the United States," just now published, is presented an engraving of "The Landing of the Pilgrim Fathers," from the original painting by Charles Lucey. It is of large size, and altogether a remarkable woodcut.—The new number of the *Leisure Hour* describes Houses in New Guinea:—"Each dwelling here, as at Katua, is of great length, built on lofty piles, and provided at each gable-end with a wide verandah and a ladder. The interior of this spacious edifice is dark and gloomy, the thatch covered with soot. They build on piles for security against alligators and serpents, and to escape the annual inundations. The flooring is of cabbage-plant. On both sides of the interior are slight partitions of bamboo, large enough to admit a man and his wife, who sleep (on the bare boards. No door or screen exists. Between every couple of sleeping-berths is a circular mass of moist clay, where at sundown fire is lighted. Close to each berth is a shelf for tinder (bark of the *Melaleuca*) and firewood. On this soft bark infants sleep. In one large house at Torotoram there was accommodation for from sixty to eighty couples. The chiefs have houses of their own. In each village there are two large houses, one for boys, the other for girls. Elderly custodians, armed with long sticks, are expected to keep the young people in order. This custom obtains on Saibai and Bampton Island, proving those islanders to be colonists from the mainland. Their houses are thatched with the leaves of the *ago-palm*, which grows freely in all parts of western New Guinea."

Miscellaneous.

The Preservation of Clapham-common. The Metropolitan Board of works, who are now the conservators of Clapham-common, in compliance with the wishes of the residents of Clapham, determined to permit the Common to remain intact and as an open space free to the public. No turf, mould, gravel, &c., will be allowed to be dug or taken off the common, but the privilege of ratepayers having rights to pasturage will not be interfered with. Some young trees have recently been planted by the roadside, and the common, already studded with forest trees, will present a park-like appearance. The ponds of stagnant water are to be purified, and the common drained, but the intention of converting it into a pleasure and recreation ground is entirely abandoned.

Geology of Gloucester.—The construction of the Sharpness Docks has not been without special interest to the geologist. A submerged forest converted into peat was found in the excavations lying towards the river bank. Mr. W. C. Lucy made an examination of the "diggings" as they proceeded, and read a description of the forest to the Cotteswold Club last year. From this we learn that the peat bed into which the forest has been transformed lies in a hollow. Its maximum thickness was 14 ft. The trees were chiefly oak, alder, beech, and hazel. Hazel nuts were found quite perfect. The wood forming the peat of the underlying portion was much decomposed, with some fine sand in it. Some of the oaks were of considerable size, one measuring as it lay 80 ft., and 2 ft. 9 in. in diameter at the top, and more than 5 ft. at the bottom. About 2 ft. from the bottom, were found a fine head of *Cervus elaphus*, with the antlers apparently cut off by some rude implement, the antlers and jaw of a small deer, the head of a horse and *Bos longifrons*, the skull of a dog, and the tusk of a boar. About sixteen years ago the head with horns attached of a very fine *Bos primigenius* was found. In all probability, the land in this part of the Severn Valley, and the lias beds at Gloucester and beyond Tewkesbury, were eroded, after which a vast forest growth must have gone on for ages.

Law of Principal and Agent.—The question determined in the case of *Hamer v. Sharp*, was one with reference to the binding effect of an authority given by a vendor of real estate to an agent for the sale of it. The plaintiff was the purchaser, and the defendant the vendor of the property in dispute. Prior to October, 1872, the defendant was the owner in fee of some freehold premises in Bradford, and he gave Mr. Longbottom, estate agent, Bradford, this memorandum of instruction:—"I request you to procure a purchaser for the following freehold property, and to insert particulars of the same in your monthly estate circular till further notice." Mr. Longbottom advertised the premises for sale (with, as the plaintiff insisted, the defendant's knowledge) till January, 1874. The plaintiff then contracted with Mr. Longbottom for the purchase of the premises for 2,800*l.*, and paid him a deposit of 280*l.* in respect of the contract. The plaintiff insisted that Mr. Longbottom had full authority, as agent of the defendant, to enter into the contract. Vice-Chancellor Hall said he should hold that when an authority was given to an agent, having regard to the fact that it related to landed property, the agent should, as a matter of course, state something with reference to the limitation of the title. Consequently, it must be considered that such a document as the one now in dispute did not authorise the agent to sign a concluded contract on behalf of the vendor.

The Sheffield Society of Artists.—A meeting of artists was held last week, at the King's Head Hotel, to receive the report of a committee appointed at a former meeting to take steps to form an Art Society in Sheffield. Mr. William Pool was voted to the chair, and the rules suggested by the committee were then discussed and, with slight alterations, passed. The following gentlemen were elected members of the society, viz.:—Messrs. James Baldock, H. F. Crighton, William Ellis, T. B. Hardy, J. H. Hawksworth, Robert Hudson, jun., William H. Pigott, James Poole, William Poole, Richard Smith, Theophilus Smith, Read Turner, and Arthur Wilson. Mr. Richard Smith was elected president, Mr. H. F. Crighton, vice-president. Messrs. Smith, Crighton, Pigott, Hawksworth, and Turner were elected a committee; and Mr. C. Swindell, treasurer and hon. secretary. The Society thus formed has long been needed in Sheffield, not only to bring artists together in friendly emulation, but to assist the public in discriminating between good and inferior art. The temporary office is at 61, Fargate.

Peal of Bells for St. Paul's Church, Chippenham.—At the time of the erection of this church, accommodation was provided in the belfry for a peal of eight bells, but up to the present time it contains only three. During the last few weeks steps have been taken to provide for the other five bells, and an appeal for subscriptions for the purpose has been liberally responded to. About 200*l.* have been subscribed, and Mr. Poynder has consented to provide and fix at his own expense, the tenor bell, at a cost of about 130*l.* The cost of the five bells will be about 360*l.*, and the order has been given to Messrs. Myers, of London, to complete the peal, which will be executed by Easter next.

Sanitary Prosecution.—At the Aston Police Court on Friday, 27th of November, Mr. Henry Bird, commercial traveller, Erdington, was summoned for "that he did unlawfully and knowingly let a certain house, at Erdington, in which a certain person had previously been suffering from small-pox, without having the said house properly disinfected, contrary to the form of the statute." He was further summoned for unlawfully and knowingly selling, or causing to be sold from the said house a carpet and other articles, without having them disinfected. Mr. Bedford said the evidence for the defence told in his favour. It appeared that precautions had been taken by the defendant, but at the same time he had committed an offence against the Act of Parliament. The house should not have been let in the way it was, therefore they would fine him in the mitigated penalty of 4*l.*, the second case being withdrawn. The question of costs was then considered, and on the defendant agreeing to pay 5*l.* towards the costs, the fine was reduced to 40*s.*

Precaution against High Tides.—At the usual weekly meeting of the Metropolitan Board of Works on the 27th of November, the Works Committee of the Board submitted that it was desirable the Board should obtain from Parliament powers to require the vestries, district boards, and owners of property abutting on the Thames, within the metropolitan area, to make proper walls and defences for the protection of their parishes and districts from floods. Mr. Richardson, deputy-chairman of the committee, said that as the water, besides injuring property in the vicinity of the floodings, went down the sewers, and had to be pumped up again at the several stations, thereby occasioning great expense to the ratepayers, the improvement was very desirable. A resolution in accordance with the suggestion of the committee was adopted.

Cabmen's Rest in Glasgow.—By the kindness of Mrs. John Burns, of Castle-Wemyss, the cabmen of Glasgow have been provided with what must be to them a most valuable gift,—a house of shelter while they are waiting at the cabstand. The "Rest" has been placed in proximity to the George-street stand. It is 14 ft. in length, 7 ft. in breadth, and 13 ft. in height, while it is constructed for the most part of glass,—a range of windows, two of which are movable, running right round within 4 ft. or 5 ft. of the ground. The "Rest" has been strongly constructed by Messrs. McIntyre & Jack, Glasgow. It is likely that, should this experiment be successful, such houses will be erected at the greater number of the stands throughout the city.

Meeting of Carpenters and Joiners.—On Monday last, a special meeting of the carpenters in Leicester was held at Mr. Fox's, the Fish and Quart, Church-gate, at which the following resolutions were unanimously adopted:—1. That employers be solicited for an advance in wages of 9*d.* per hour from the 1st of June, 1875. 2. That the overtime clause be altered, viz., time and a quarter from six till eight p.m.; that from eight p.m. to five a.m. time and a half. 3. That six a.m. shall be the uniform hour for commencing work in shops, and that in all unprotected buildings men shall commence work at seven a.m. and leave at five p.m., six weeks before and six weeks after Christmas, and to receive 1*d.* per hour extra to men working in shops.

Medical Officer of Health and Analyst for St. James's, Westminster.—The Sanitary Committee have reported on the appointments of medical officer of health and analyst, recommending that the union of the two offices be confirmed; that the duties to be performed, in addition to those prescribed by the several Acts of Parliament relating to the appointments be similar to such as were performed by Dr. Lankester; that the annual salary be 200*l.*, viz., 150*l.* as medical officer of health, and 50*l.* as analyst; and that an advertisement for candidates to fill the appointments be inserted in the medical papers. The report was agreed to, and advertisements ordered accordingly.

Child Murder in St. James's, Westminster.—At a recent meeting of the Vestry of St. James's, Westminster, Dr. Hardwicke, acting medical officer of health, said that the infant mortality amounted to about 50 per cent., and he did not know what the poor would do in their small rooms if all the children lived. Among illegitimate children the death-rate was often as high as 90 per cent.

The Proposed Conservatory at the St. James's Theatre.—A short time ago a proposal was made by the lessees of the St. James's Theatre, King-street, to erect a conservatory over a portion of the portico, and the permission of the Metropolitan Board of Works was sought to carry out the object. The Board referred the matter to the St. James's Vestry for their consideration, and that body have refused to sanction the undertaking, stating, in a communication to the Metropolitan Board of Works, that they consider the erection of such a structure objectionable.

The St. James's Hall Company have purchased further properties in Piccadilly, and intend erecting more extended buffets, grill-rooms, and other conveniences in connexion with the Hall and Restaurant. The frontage in Piccadilly will be about 46 ft. The altered plans are now nearly completed. The elevation in Piccadilly will be Italian Gothic mostly in red terra cotta and red Mansfield inlaid with mosaics. Contracts have been entered into with Messrs. Dawney for the ironwork; Messrs. Gibbs for the mosaics; and Messrs. Johnson, of the Ditchling Potteries, for the terra cotta. Mr. Walter Emden is architect.

Blasting Operations, Forest of Dean.—One day last week some extraordinary blasting operations took place at Plump Hill limestone quarries, near Mitcheldean, in the presence of about 2,000 persons. In the explosion one ton of powder was employed on a shelf of rock, the shots being fired with Brain's patent battery, placed 100 yards distant from the quarries. The result was the displacement of some 8,000 tons of stone without the slightest accident.

Odcombe Church.—Literary men may like to take note that Odcombe Church, Somersetshire, where Tom Coryat hung up the shoes in which he performed his 900 miles' journey in Europe, is about to be restored and enlarged. The shoes remained in the church till 1702,—i.e., ninety-six years. The outcome of the "peregrinations" of the "Odcombean log-stretcher," as he called himself, was the famous "Cruities." Tom's father was rector of Odcombe,—*Ateneum*.

The Channel Tunnel Company have given notice of their intention to apply to Parliament, during the ensuing session, for power to take lands at the foot of the cliff in St. Margaret's Bay, about three miles from Dover, in the parish of St. Margaret-at-Cliffe, and all the beach and foreshore between Ness Point and Coney Burrow Point, for the purposes of their undertaking. Should they succeed the works will be immediately proceeded with.

Laying Off of the North Yorkshire Ironworks.—The works of the North Yorkshire Ironworks, at South Stockton-on-Tees, have been closed in consequence of the inability of the company to obtain orders at a price that will cover the cost of manufacture. These works, when in full employment, employ some 600 or 700 hands.

Rivers Pollution.—On Thursday, the 10th of December, a conference will be held at the Society of Arts to discuss "The steps to be taken to insure prompt and efficient measures for preventing the pollution of rivers." The chair will be taken at three o'clock by the Right Hon. Lyon Playfair.

Indian Iron Trade.—A wealthy firm in Calcutta, resolved to be among the first in attempting the revival of the Indian iron trade, will shortly open new works in the Beerboom district, near the Synthesia station on the East India Railway.

The Cleveland Literary and Philosophical Society, Middlesbrough, has resolved to erect a suitable building for a library, lecture-hall, and a museum, in Corporation-road, at a cost of about 4,000*l.*

A Sewage System for Taunton.—On Tuesday, the Local Board adopted the Hilt scheme for the utilisation of sewage, which is in operation at Wimbledon, where it was inspected by two members, the medical officer, and the surveyor.

The Architectural Union Company.—The annual general meeting of this company was held at the House, in Conduit-street, on Wednesday last, when a very good dividend was declared.

Baths, Alnwick.—The Duke of Northumberland has just erected baths and washhouses at Alnwick, at a cost of nearly 10,000*l.*

The Builder.

VOL. XXXII.—No. 1662.

First Principles in Sanitary Work.

E are not agreed upon the principles upon which sanitary science shall be applied, and its practical application is therefore difficult, and often impossible. Differences of opinion and strife in trade may be understood, but strife in sanitary work is anomalous. Here we have sanitary reformers spending the best years of their life in trying to do what a number of other people resist. Why is this? If the object is a proper one it is proper to all alike. Is it true or not, that, so long as we can maintain our own health, that of others is no concern of ours? Are we openly to declare the national principle to be,—“Every man for himself, and Devil take the hindmost?” We do now, under cloak, act upon that principle. The advantage of openly declaring it would be that we could proceed to legislate upon that basis, and exterminate those who cannot maintain their own health without our help. This has been the tendency of our legislation for many years; but we stop short of criminality, as we define it: we only half kill; it is by accident that people die outright, if those occurrences are accidents which are the results of disagreement and carelessness of the conductors of affairs.

The genius of trade and materialism has taken so firm a hold of us during late years that even the health of the people is made subservient to trade rules. It was well that local sanitary authorities should be appointed, but the members constituting these Boards are those chiefly whose rule of life is,—“Every man for himself, and Devil take the hindmost.” This is the true rendering, but the favourite expression is,—“Every man for himself, and God for us all.” This, however, is an evasive and meaningless expression; it is shirking the performance of a duty which we cannot deny lies upon us. To make the sentiment practically applicable, it should be,—“Every man for himself, and Government for us all.” But we are afraid to entrust to Government of the country with arbitrary power, even on the broad and impartial subject of our health; and we deal with questions of public health in the narrow and selfish spirit in which we trade with each other. The genius of trade and materialism has foisted upon us a bastard, who says,—“Nobody knows anything for certain. Do as ye will; play the devil with your own constitutions if ye will; what is't to me? Have we not—I and my friends, the few who know,—admitted in your interests the great principle of ‘the freedom of labour—the sanctity of contract and of law’? What more do we want, ungrateful consaitle? Go, then, and do

as ye will, and if your children grow up in evil habits, and become deformed in body and mind, what is't to you? Nobody knows anything for certain; therefore, ye ignorant people, submit to no dogmatic teaching, either for yourselves or your children.”

What accord can there be between such principles as these and those of the physical health of communities,—those of sanitary science? None at all; and until we recognise this we shall make no true progress. Certain professors have, indeed, asserted the great “progress” we have made of late years, and, truly enough, we see some persons grow rich; and this may be the sort of progress meant; but the tendency of our legislation has been to make the rich richer and the poor poorer,—comparatively, that is to say, with the means of living, and of living healthily. And this is the touchstone of the system. Compared with his means of living healthily the poor man is worse off to-day than he was formerly. He is driven,—or induced, which is practically the same thing,—into unhealthy neighbourhoods to find work. This doctrine of “the freedom of labour—the sanctity of contract and of law” seems outwardly to be just, but what does it practically amount to? It is a mockery under present circumstances. When a workman finds he can get a better day's pay elsewhere than in the place in which he lives he goes to it without a thought whether the place is more or less healthy than the place he leaves. He has no knowledge in the matter. He does not, exercising his judgment, deliberately choose the other place because, on the balance of advantages, he prefers it; he is led into a trap; and, having settled in the new place, and his difficulties of removal having increased, he submits to circumstances over which he has no control, and degenerates in condition. And if he leaves a healthy place for one unhealthy, to say that he has freedom of choice where he will live, and that he and his family may be healthy if they will, is a mockery of justice; he cannot help himself to a supply of water, to drainage, or to any other public sanitary necessity. The first part of the formula—the freedom of labour—having been granted, he is made accountable for the second—the sanctity of contract and of law. Outwardly this is a true principle, but only the imperial government of the country can make its application just, by seeing either that the common people have education in matters concerning their own health sufficiently to enable them to distinguish at once between a healthy place and one unhealthy, or that all places be made alike healthy, so far as that can be done by sanitary science. Trade rules must take second place, unless they can be squared with the necessities of sanitary science. We must have health first, next we must have morality, and then what commercial prosperity we may. But without health and morality our prosperity will be not of a lasting kind. It has been said that the proper function of a Government is to follow, not to lead, public opinion; but the real opinion of the public is never asked. The public want water, want drainage, want fresh air in houses, want sound and wholesome meat and drink, and are willing to pay for them; but how shall they get these things? By applying to the local sanitary authority? Well, as in this so in other cases, there is no rule without exception, and sanitary authorities do sometimes listen to some part of a request of the people in whose interests they sit, but as a rule they give the consideration of the health of the people a secondary place to that of the cost of establishing and maintaining it, and, in accordance with trade principles, tell the people to provide these things for themselves individually; thereby forgetting the very reason why they sit as a sanitary board at all. But in doing so they only follow the lead of the imperial Government. What more convenient guides can members of

local sanitary authorities have than the professors who apply the rules of trade to the health of the people? The soundness of their philosophy is readily taken for granted, seeing that it relieves the members of local sanitary authorities the trouble of considering whether drainage and water supply, fresh air, and other things which sanitary reformers say are necessary, should be provided or not. Let the people provide themselves with these things. That is the answer to applications of this kind.

And it must be so while the principles of action remain what they are. The individual members of local sanitary authorities hold in scorn every unjust action, perhaps; but, as a public body, they vie with each other who shall be most popular with those whose sole care is the smallest possible rate for sanitary purposes. Justice goes to the wall when opposed to self-interest for want of an acknowledged principle upon which it can be upheld. A member of a sanitary authority is afraid to do the justice which his head and heart combined command, because there is no principle,—except that one of trade,—which is acknowledged by all to be true, upon which to act. The individual members are like strangers in a foreign land, bringing with them their native habits, but wishing to conform to the customs of the country if only they know what those are; and they ask for and find not any authority on these questions. An hour's despotism in this matter would do us a vast deal of good. For the purposes of trade, which is an individual and a local affair, we are, no doubt, better without despotic Government; but for the health of the people, which is neither an individual nor a local affair, but a national one, the case is different. We must have the masses healthy and moral, to begin with, then they may maintain their position, and resist the tendency of trade rules to grind down their opportunities. These are they who are to be chiefly benefited by sanitary work, but they cannot pay the whole cost of it; they can pay their share, but it is the larger ratepayers who must pay the greater part of the expense; and these make the rates, or they nominate and get men sent to the Board who will do what they require, that is, nothing; and those who are chiefly benefited by sanitary works may then whistle to the winds for their consolation. It does not pay immediately to supply them with water, to remove the refuse from their houses, and to do those many other things which are necessary to the health of a community, and which vary in their kind with the circumstances of the ground upon which people dwell; and upon which the greater number must dwell, whether they will or not. The whole question resolves itself into the simple one of authority or no authority. Is there, in human deformity and misery, any principle of self-rectification? Experience does not show us any in communities, possibly because any germs of improvement which there might be, if Nature were left to work out the cure without interference, are swamped by fresh accretions of the evil conditions. And yet those who apply trade rules to sanitary work say, “Let be; let Nature work; let us see how supply and demand will work; let be; let the rich grow richer and the poor poorer; it is a law of Nature and cannot be resisted.” Those who say this do not wish it to be otherwise, and they excuse themselves by attributing it to a natural tendency. It is the tendency, however, not of Nature, but of the laws we have made for our own governance. But if it were a veritable law of Nature we ought to regulate it. It is a law of Nature that, upon ground which has been cultivated and afterwards left alone, weeds grow and thrust out better plants; but where we dwell we are the arbiters, and we resist the natural tendency of the earth to grow weeds if weeds seeds are sown. In a state of Nature there is

progressive development of inherent powers, producing beauty, but if the process is interfered with unintelligently deformity ensues, and on cultivated ground it is only by intelligent interference that weeds are prevented and beauty produced. Similarly, in a state of civilisation people deteriorate when left alone.

It is then our province to resist the tendency of evil habits, dirty, crowded houses, impure water and air, and all other insanitary conditions, to deform the minds and bodies of those over whom sanitary authority needs to be exercised; and this wholly and fully, and arbitrarily, and not in the hesitating manner in which we have hitherto conducted our sanitary affairs,—a manner which truly reflects the two chief motives of our action, viz., to hoodwink sanitary reformers with a show of doing something to remedy acknowledged defects, while at the same time doing nothing which might go to the root of the evil and have the effect of raising the status of the helpless, and making it possible to them to maintain an improved position, while at the same time checking the tendency to over-accumulation of wealth by those who have already started on the way of improvement, and who follow without hindrance the natural tendency of the human mind to exaggeration.

The proper work of a sanitary authority is to make morality of the people possible by laying for it the foundation of health, without which it cannot exist,—cannot, rather, continue. Whether only that nation is prosperous whose people are healthy and moral is for the consideration of statesmen. If it is so, then our prosperity is not of a lasting kind. The people of Great Britain are neither healthy nor moral. The rich are too rich, and the poor too poor, for either health or morality. Neither are the middle class at all different; they are dependent on the other two, and take the tone of their life from them; they are neither leaders nor followers, but middle men, who imitate the faults of the one and grind down the opportunities of the other. The genius of which we have spoken has had no long a run of influence in the country that its principles have become ingrained in us; and at a Sanitary Board questions often arise of which the majority of members have no sort of conception, in any way; and whatever the merits of a question may be, argument is thrown away, for the majority try every question by the standard which is the rule of their lives, and that is, will it pay? If the return of an immediate percentage of the money necessary to be expended can be guaranteed, the work may be done; but if the repayment be based on other considerations—such as that sickness in those who produce wealth is a direct loss to the community—the argument is not understood; and yet it is capable of demonstration that it is so, and that the prevention of those insanitary conditions which induce sickness and ill-health in workmen and their families is an actual saving of money to the ratepayers, and an actual gain to the employers of the workmen. But it is not on this ground that a sanitary authority should stand. Higher duties appertain to this position. The public health is the public welfare, and should not be left to be wrangled over by local authorities, in its main principles. It is not of much consequence into how many classes we may divide ourselves, but it is of vast consequence to each of us that we should all be healthy. If we were all equally healthy, there would be less separation into classes. The scorn of dirt and repugnance to disease keep people apart, when, otherwise, they would be glad to associate; and it is not the outward mineral dirt contracted by a workman in his daily occupation which is objectionable (for that may be washed off daily), but it is the deformity of body and mind which is the object of dislike. It is not necessary that he should be deformed. He is so not by his own fault—except in a very small degree—but by the neglect of his forefathers, chiefly; and greatly by the neglect of those who know his condition and will not help him to a better one.

Royal Architectural Museum.—The Goldsmiths' Company have presented 50l. to the Royal Architectural Museum, Westminster, in aid of their drawing and modelling classes for art-workmen. An exhibition (free) of the drawings and models sent in competition for the prizes for designs for plate offered by the Goldsmiths' Company will shortly be held in the museum.

THE ORNAMENTAL TREATMENT OF PLANTS.

THE beauty and interest of natural vegetation has, in reference to art, a twofold aspect. There is the pure beauty of growth and colour and texture, as an object for the imitative hand of the painter, who may endeavour thus to make the flowers live over again on his canvas, and to mimic their bloom and freshness in such flower-pieces as Fantin and others have charmed us with. In these paintings it is the facts of nature which the artist has observed and endeavoured to imitate. But there is the secondary use of these children of nature, as suggestions and types for ornamental art, not strictly imitative, but looking to the general qualities rather than the details of nature; imitating on principle and logically, not naturally and artlessly. There have been not a few works published with the object of illustrating the natural flora, and others intended to show the types of conventional ornament derivable from it; but there have not been many which aimed specially at bridging the passage from the natural to the conventional, and showing the reader the original object side by side with suggestions for its adaptation in artificially-designed ornament; and some illustrations printed with this intent have lacked the important element of colour. We may therefore welcome the new work on the subject by Mr. Hulme,* as a by no means superfluous contribution to a most interesting and fascinating branch of artistic study, the elements of which he has arranged in a more systematic manner than has generally been the case, and which can hardly fail to be suggestive even to advanced students of decorative art.

"Ornamentists," says Mr. Hulme in his preface, "too commonly overlook the treasures that Nature scatters around them, and, by a slavish adherence to a few set forms, deprive themselves of a valuable means of imparting enhanced interest to their work. No remedy for this can be so effectual as personal study and familiar acquaintance with rural scenes; but as, unfortunately, such opportunity of quiet study is frequently out of the power of the designer, either from press of work or other restraining cause, he must be content, at some loss both of pleasure and profit to himself, to derive his material from the labours of others." The author thinks, and not without reason, that a good many are deterred from a study of plants by the repelling technicalities of botany. They are ready to exclaim with Wordsworth,—

"Enough of science and of art;
Close up those barren leaves;
Come forth, and bring with you a heart
That watches and receives."

as they recall some such passage from a botanist's description, as—"Leaves ovate-oblong, subserrate, pulverulent-tomentose." We confess we are with the poet, and against the botanist, in so far as flowers are to be looked upon either as objects of delight in nature, or as suggestions in art. These multifarious Latin compounds may be necessary for the classifications of the botanist, that he and his fellows may understand what they are referring to (though we hope less uncouth nomenclature might be invented); but why trouble the artist with classes and genera at all? All that he wants is the forms and colours,—"he cares not for their names, they owe him nothing,"—and he can observe for himself which plants and flowers are most commonly found together, and are therefore likely to harmonise best in decoration. This by way of a general protest, rather than against Mr. Hulme in particular, who is apparently not a bigot for botanical nomenclature. Still, why meddle with it at all, in connexion with such a subject as this? It is merely bringing the artist down from a study of Nature's works to a study of what certain men have been pleased to call them. And how much more suggestive and poetical are the plain names in "the vulgar tongue"! Wordsworth has a beautiful little poem (two, if we remember rightly) on the "Lesser Celandine," but he could hardly have managed a poem on *Ranunculus ficaria*.

However, "hard words break no bones," we may be told, and Mr. Hulme's illustrations at least are comprehensible and comprehensive enough. They consist of forty-four coloured plates, mostly occupied with accurate illustrations of various forms of plant and flower, in a majority of cases accompanied by slight suggestions

of the treatment of one or more of the flowers on the page as conventional ornament, with which also the last four or five of the plates are exclusively occupied. The plates are simply described and commented on in the text, which is distributed into chapters corresponding to each plate. We must question, however, the statement with which the description of Plate 1 sets out. Plants, it is said, may be selected for ornament from two motives, their intrinsic beauty, or on account of an inner meaning involved in their use; and "the second is the nobler aim, as the pleasure to be derived from any work of art will be in direct proportion to the thought embodied in it." This, if we may be pardoned for saying so, is a piece of the cant of the day; for certainly that must be the higher beauty which proceeds direct from nature rather than that which merely depends on an arbitrary meaning affixed by some one. "The thought embodied in the flower" merely comes to this, that some men at some time or other agreed to use it as a symbol of shorthand expression of this or that quality. That may give it a kind of additional interest, but only of a secondary and subservient nature. The real expression of ornament is something more vague, certainly, but very much more fascinating than this merely arbitrary meaning tacked on to it.

In touching on the question of symmetry in ornament and nature, Mr. Hulme speaks more to the point, and illustrates the theory very lucidly, especially in pointing out that "the higher the order of work, the less must be the mechanical symmetry become obtrusive; for instance, in a church window moulding, the cusps on one side should just agree in position and be identical in form with those on the other; but in the stained glass occupying the field of the window itself, the apostles or martyrs must, while maintaining due unity of grouping, show also variety of position and action. You can put two similar leaves back to back, and the effect may be good; but if you try and put two figures back to back in exact symmetry, you will find in the result you have only degraded them." Nor can we treat flowers or leaves either in this symmetrical manner, until we have taken from them some of their natural freedom of line and arrangement and reduced them more to the condition of types of form; and this we must do if we are to use them as part of the architectural ornament. Literal representation may demand the finer hand and eye, but then it will not join itself to, or become part of the decorator's scheme; it will only be added art of another class.

Various means of obtaining symmetry, or combining symmetry with variety, are suggested by Nature herself, in the arrangements of the leaves and petals of plants. Thus plants having their disc in a horizontal plane, and which we, therefore, look down upon, are mostly stellate or multi-symmetrical in character; while those which, like the pansy, have their disc on a more or less vertical plane, are generally bi-symmetrical. The multi-symmetrical or stellate dower-form, we may observe, has come to be very much affected by ornamentalists of late, as much in ornament for vertical as for horizontal positions; this, therefore, is contrary to the rule of nature, and seems also a mistake in ornament, where vertical surfaces seem to demand a design of a vertical tendency, the circular and completely symmetrical forms being reserved for horizontal positions. These matters are, however, governed very much by fashion, rather than by much consideration of principle; nor will we say that such a rule can always be rigidly adhered to. The symmetrical arrangement of leaves differs much more widely than that of flowers; and, though generally keeping a certain law, runs to a great extent of irregularity at times. Where not visibly symmetrical in growth, leaves are usually found to grow in a spiral succession around the stalk, frequently with a fixed number of leaves to each spiral, at times with a varying number. Mr. Hulme has found this variation very great in some plants, and he notices it as "a universal law in vegetable organography, that the greater the number of parts the less regular they are. Thus the plants with opposite or two-leaved arrangements are most constant, but when three leaves compose the ring, a variation from the normal number is occasionally met with, while the fluctuation is most marked where the normal number is greater. In 100 whorls of the goosegrass that we counted to test this, thirteen were composed of six leaves, thirty-eight had seven, forty-one had eight, while the remaining eight had nine." These principles in regard to

* Plants: their Natural Growth and Ornamental Treatment. By F. Edward Hulme, F.R.S., F.S.A., &c. Marcus Ward & Co., London and Belfast.

the growth of leaves cannot be disregarded in any ornamental treatment which approaches the freedom of nature, and may even be suggestive where a more conventional treatment is aimed at. The actual forms which leaves assume are, however, of even more importance to the ornamental designer than the method of growth, as they certainly affect the nature of his design in a much more marked and definite manner. The collection of some of the more marked forms of leaf in Plate 4 affords many suggestions for variety of effect, both by outline and by the marking and filling of the surface of the leaf; and Mr. Hulme draws attention to the marked distinction of character given by the absence of the usual point from the end of the leaf, and the presence of a slit or indentation in its place, as in the Ginkgo-leaf (fig. 41), an adaptation of which would be almost sufficient in itself to give character to a design. "Shepherd's purse" (fig. 62) is another very suggestive leaf for the carver; and in Plate 6 we see in the leaf of *Begonia wotonensis* (fig. 76) an interesting example of the unsymmetrical leaf, with the point almost at a right angle with the insertion of the stalk, instead of being opposite to it. The leaf of "bulbous crowfoot" (fig. 132) is an admirable decorative leaf of the divided and serrated class, and we may contrast with this the leaf of the "overlasting rose" (fig. 163), with its plain, broad surface, and the beautifully delicate curves of its edges; a leaf which, with its scarlet and white flower, would furnish material for an admirable diaper for part of a stained-glass window. The "tulip-tree leaf" (fig. 170), another of the plain and comparatively smooth-edged leaves, affords again, in its broad outline and blunted point, a new character. The long three-fingered leaf of the "corn crowfoot" (fig. 208) is shown transformed into a thin, flowing scroll ornament, and also a sprig diaper, in black and white alternately on a blue ground, with good effect; and a somewhat similar method of treatment is shown in the conventional design attached to the drawing of the "wolf'sbane" (fig. 228), which is shown as a sprig ornament, in dark on a light medallion, the whole repeated as a diaper on a dark ground. In an ornament formed on the spotted nettle (*Lamium maculatum*, fig. 259), the form of the leaf is combined with the colour of the flower; leaves of the same form, but green and pink, alternately being used. This is an idea capable of many variations, and enables us to press into the service of ornament the most characteristic quality of the flower, its colour, even when its form may not be very well suited for the designer's purpose. As a type of leaf for ornamental use, Mr. Hulme points out the sycamore (fig. 36) as especially valuable, from its subordinated form, the centre lobe imitated in lessening proportions by the side and base lobes; and it has, in fact, been used a good deal. There is no doubt, however, that ornamental leafage in general runs into too great a similarity of forms, and designers are apt to repeat one or two excellent types, instead of seeking what more may be found of interest and variety from forms that have been less used heretofore.

In noticing the stalks which carry the leaves, our attention is directed to a distinct source of effect in their sections, so peculiarly suited often to the situations in which they grow; and Mr. Hulme gives among others the section of the stalk of some sedge plants, a hollow triangle with the edge acting as a cutwater against the stream, just on the same principle applied by the engineer to the piers of his bridge. To give the sections of stems, however, alongside of sections of Gothic piers, is merely to represent accidental coincidences in things which have no relation to one another of any kind; and it would have been better to have left out this feature of the book, which may merely serve to mislead the student towards the exploded error of the vegetable origin of Gothic architecture. Fruits, as distinct from flowers, may form important features for the decorator, especially those of the kind called *delicatus*, that is, which split open on ripening; a circumstance which in itself forms a feature for design. The indehiscent fruits, which drop off when ripe, are used not infrequently in decoration; the present inclination seems to be towards an adaptation of the orange, in wall papers and such things, as a bright object amidst green and grey diapers of foliage.

But the flowers are the centre and glory of vegetation, and the high lights, so to speak, of decorative design which is based on vegetation. The most beautiful among them, however, are not

all equally available as ornament. We can scarcely fancy, for instance, anything much being made of the rose in decoration; its beauty is too rich and vague, too dependent on texture and odour, and too little defined in form, for any painting but that which is naturalistic and imitative: it will not be conventionalised down into the requisite plainness and regularity, without resigning all its life in the process. Those flowers which lend themselves most kindly to the ornamentist's art are those in which (in general) the colour is brightest and most pure, and especially in which form is most clearly defined. Considering this latter quality especially, we are surprised not to find anywhere in Mr. Hulme's book a mention or representation of the "gum cistus," that architect's flower *par excellence*, with its broad disc of radiated white petals, and its symmetrical circle of dots round the yellow centre. Taken with its characteristic dull green foliage, this is a plant that is almost ornamental work ready made, yet it is very rarely used in decoration, though a favourite with painters. Another flower of remarkably decorative character is the "passion flower," which also we do not find here, but which gives one of the richest and most characteristic combinations of colour, texture, and design of any that we know. * Where, as in a large majority of blossoms, there is not this natural symmetry, it becomes the part of the artist to extract from the natural blossom its typical form, to reduce it to a formal expression of the elements of its beauty, so as to harmonise with the rest of his work. To do this well requires no little delicacy of perception as to form and character, and we must say that Mr. Hulme gives one or two excellent instances of this kind of translation of the natural flower into the language of art. We especially like his treatment of the "clustered bell-flower" (plate 16), wherein the ornament the type of a cluster of bell-shaped blossoms springing from one centre is completely kept up, but the form which in the original blossom is a somewhat ragged-looking irregular bunch, becomes in the ornament a series of regular symmetrical-looking groups of five such blossoms, arranged within segments of circles which intercept each other. The buff-tinted leaves which accompany them in the ornament are, perhaps, in regard to colour, a hint taken from the light under side of the leaf of the natural plant. This is a very good example of this kind of conventional treatment, and in itself suggests a good deal. Others which may be cited as good are the treatment of the ground-ivy leaf as a wall diaper (plate 18); that of *hepatica* as a running ornament in white and green leaves intertwined (plate 24), in which the device is adopted (which often gives rise to new and very pretty forms in ornament) of taking the half leaf only for a good many of the foliations, as if "in profile," alternated occasionally with the complete form. We may suggest in passing that a great many hints for effective and quiet variations of tone may be obtained from the conjoint employment in ornament of the tones of the upper and under side of the same leaf (whatever it may be); as is well known, the tone generally varies, and often affords very delicate and harmonious combinations of secondary and tertiary tints. In Plate 26 is a good example (fig. 218) suggested by the flower of *Erodium manescori* (foreign), in which the springing of a bunch of flowers, each with its own stalklet, from each main stem, is made the suggestion for a very pretty radiating design, where the green of the leaves forms the background, and the white and red of the flowers form the colours of the superimposed ornament, but varied and contracted in a manner different from their arrangement in the actual flower. This also gives a suggestive hint to the designer, that, in elaborating a design upon the basis of this or that flower, he is by no means bound, if he restricts himself to the actual colours of the original, to arrange these colours precisely in the proportion or manner of nature; he is rather to be encouraged to be bold in his treatment, and to make nature's colouring the foundation for

* Mr. Hulme refers to the "lily of the valley" as a flower for decoration, though giving no illustration of it. There is, in reference to this flower, an exquisite verse of Shelley's in the "Sensitive Plant" in which he says that,—

"The light of its tremulous bells is seen
Through their pavilions of tender green."

Has any painter of flowers verified or represented this effect of the lustre of the white blossoms through the semi-transparent leaves? We have not had an opportunity of verifying it since remarking the passage, but have no doubt it is from the poet's own observation.

new combinations of his own. In Plate 38, "Yellow stone-crop," with its small green leaves, is disposed into a diaper in two forms with very pretty result. The Plates 41, 43, and 44 show more elaborate specimens of design, based upon different natural specimens, and with no little merit both in form and colour; an exceedingly characteristic and original one (fig. 324) is derived from the leaf of the white trefoil, and 323 is a design based on the lesser celandine, "the points worked out being," says the author, "the multiplicity of blossoms starring the ground, and the carpeting of leaves so characteristic of the natural plant"; the result being a very effective diaper of black leaves on a gold ground and gold leaves on a black ground in alternated hexagons, with the small circular white flower as the centre of each. For the other suggestions of design in these plates we may refer our readers to the book; only drawing attention to two remarks of the author's in connexion therewith, "that in the introduction of any vegetable form into ornament the leading lines (stems, &c.) should be clearly represented," and "that ornament appear to have a growth of its own, and not be merely placed in its position unconnected with what is around it; and, secondly, that "it has not been the author's aim to produce a series of designs that might be, at slight expenditure of thought and labour, adapted to various commercial purposes, but rather to refer manufacturers and designers alike to that wealth of fancy that may be so readily developed and utilised by a consideration of the beauty and wealth of Nature, and by an adaptation to ornamental purposes of those general principles of plant growth, and those varied details that repay a closer study, that would render the work produced at once more novel in conception and more beautiful in effect than would probably be the result of a merely modified treatment of some idea which, once novel and possibly good, has since got too well worn to be able to claim any credit on the first score; while even its recurring goodness, assuming that it possesses it, is after all not wholly desirable, since it usurps the place that some other equally beautiful and fresher form might have taken, and imposes a narrowness of scope that the abundant wealth of floral beauty does not justify."

Fully concurring in which sentiments, we take leave of Mr. Hulme with sincere thanks for a careful, sensible, and suggestive work on a very beautiful subject; the compilation of which, we can readily believe, has been, as he says, a great pleasure to himself, and which, itself, can hardly fail to give a similar pleasure to his readers.

VIOLETT-LE-DUC ON "ARCHITECT AND ENGINEER."

IN referring recently (p. 980, *ante*) to the eminent French architect's *novellette*, "How to Build a House," we alluded to a certain little parable put forth in reply to the hero's question, "What is the difference between an architect and an engineer?" The following is the apologue in question:—

"There were once two little twins who resembled each other so much that even their mother could not distinguish them. Not only were their features, height, and gait the same, but they had also the same tastes and abilities. They had to work with their hands, for their parents were poor. Both became masons. They acquired skill in their calling, and they worked equally well. Their father, a narrow-minded man, thought that these four hands which wrought at the same work with equal perfection, would produce more and do still better by allotting separate labours to each pair. To one of the pairs, therefore, he said, 'You shall only do underground work,' and to the other, 'You shall only work aboveground.' The brothers thought this scarcely reasonable, as they had been accustomed to help each other in both sorts of work; however, as they were obedient children they complied. But whereas hitherto these workmen had agreed and had co-operated to the advantage of the work, from that time forward they did not cease to dispute with each other. The one who worked above the collar maintained that his foundations were not suitably prepared; and the one who had the latter asserted that the conditions of their structure were not respected. The result was that they separated, and as each had now become habituated to his particular work, he remained unfit for anything else."

As we observed before, it would have been impossible, or rather undesirable to quote this passage without a word or two on its bearing, though it is worth attention as the concentrated expression of the conclusions of an eminent and thoughtful architect on the relation of the two professions. Some little time back we devoted a few words to this subject (see *Builder* for October 16, 1869), pointing to conclusions somewhat different from that so tersely put by M. Violett-le-Duc. We inclined, and do incline,

rather to the opinion that a division of labour is an absolute necessity, and that the attempt to combine in one person the various experiences in mechanical science and in art which are demanded for every sort of structure, must fail except with peculiar and unusually constituted natures, capable of going through any amount of mental labour, and of comprehending the details of an almost infinite variety of work. Indeed, it may be doubted whether any person in either of the professions can be named who has given evidence of being capable of carrying on the work incident to both with anything like equal success. The author of the above-quoted parable perhaps comes nearest to it himself; yet even he, by his own showing, is not an example of this admirable Crichton, since he does not regard architecture, either theoretically or practically, as that "high art" which many of its leading professors in this country consider it to be; a profession involving a power of designing almost everything, from figures to foliage. On the contrary, the view of architecture implicitly conveyed in the book from which the above quotation is taken, is that of a profession requiring practical knowledge, common sense, and that general artistic perception best described as "good taste," and all this squares as well with the profession of engineer as with that of architect; it should do so, at least, only the last item is unfortunately little existent and little professed, even, in the more practical profession.

Among those who are most in earnest for the future well-being of the architect, in short, there are two sections holding two opposed and somewhat extreme views; those who would have us all artists, and resolve us, in fact, into sculptors and painters, and those who would resolve us into engineers. The latter tendency is on the increase, as far as we can see, and was touched on in the course of some able remarks by Mr. Herbert West, who opened the discussion on Vaulting at the Institute on Monday, when he observed that the great builders of antiquity, could they revisit the earth, would sympathise more with the St. Pancras-station roof and the Albert Hall than with any of the neo-Gothic churches,—the former expressed and supplied the necessities of the day. There is truth in this, no doubt; yet it can hardly be pretended that the structures in question are very beautiful, however well constructed and truthful.

On the whole we may concur with the French architect in thinking that the nominal and ostentatious line of demarcation drawn between the two professions is a mistake to some extent, or, at least, is too hard-and-fast a division. It leads to a kind of encouragement to the architect to neglect construction, and an encouragement to the engineer to neglect beauty and expression in his building. And what M. Viollet-le-Duc hints is very true, that the existence of the two professions in their present very distinct form tends to lead each to a feeling of antagonism towards the other, and an indisposition to any system of mutual improvement or advice; though we must say that this kind of stiffness is much more pronounced with the engineering profession than with the architects. It may be admitted, therefore, that a breaking down, by degrees, of the nominal wall of partition between the two professions, would have a beneficial tendency in softening the spirit of antagonism which at present exists; and that there is discernible a certain tendency in this direction. The real division of labour, absolutely necessary for the varied and complicated constructions of the present time, would still exist, just as the division of labour exists in the medical profession, or at the bar; not by any professed division in the ranks, but by that natural "falling into his groove" which most men achieve, through becoming reputed as able in some particular branch of the profession. Thus if the titles "architect" and "engineer" were really to become merged in some one title common to both, the actual division of labour between practical and artistic men would still be kept up, but without that spirit of rivalry and opposition which at present distinguishes both professions, and prevents them giving each other that mutual help which they might afford. So far we may go with the French architect in his amalgamation theory, but not further. It is more a question as to nomenclature than as to the actual facts in the relation of the two professions.

A New Roman Catholic Seminary is to be established in the diocese of Southwark, at a cost of 17,000*l*.

ARCHITECTURE IN IRELAND.

ARCHITECTURAL ASSOCIATION OF IRELAND.

THE session of 1874-5 was opened last week by a *conversazione*, at the Ancient Concert-rooms, Great Brunswick-street.

Mr. W. M. Mitchell, president, delivered an inaugural address, the following portion of which will doubtless interest our readers:—

There has not been much in the architectural world during the last twelve months to call for any special notice. The abnormally high range of prices during the last three years, which brought certain kinds of buildings almost to a stand-still, has apparently reached its culminating point, and now exhibits a slightly downward tendency, so that we may hope for a more moderate and settled scale than has prevailed for some time past. The prospect of a cheaper market, combined with the good effects of the late bountiful harvest, will probably exercise a stimulating influence on the building trade during the coming year, and produce proportionately better employment for ourselves. There has been, however, considerable activity amongst works of a public description during the last twelve months. The various contracts in connexion with the river walls and docks, the new buildings at Messrs. Guinness's brewery, and other engineering works, have all made due progress. The widening of Essex Bridge being now completed, we are in a position to form some opinion as to the effect of the altered structure. Every one will acknowledge its greatly increased convenience, as well as the skilful and economic manner in which the enlargement has been effected. What has been gained in convenience has, however, in my humble judgment, been lost in beauty. The old bridge, steep and clumsy as it was, had yet a quiet massive dignity and fitness of its own, which gave proof that its designer, the Architect Sempie, was concerned for the artistic excellence of his work as well as for its durability. Those who regard the renovated structure, with its mean-looking lattice girder parapets, cast-iron ornament, and useless granite cornels, must regret that its clever engineer did not take counsel with some man of taste, and so have avoided these blemishes on a work of much public utility and engineering skill. I think it will be admitted, that if we do not always shine in the application of scientific construction to our works, neither do our fellow-workers, the engineers, allow themselves to be troubled with many artistic scruples of conscience when designing the ornamental portion of their structures. We must acknowledge that, though highly useful, their railway bridges and other works are not graceful. It would be a great gain to both professions, if they would confer together more frequently than they do, on those portions of their designs which belong more properly to the other's province. We should then have fewer ill-constructed houses on the one hand, and fewer ugly bridges on the other.

Turning to matters more closely connected with ourselves, we notice with pleasure the steady progress and excellent workmanship of the Christ Church buildings. The Synod Hall and its auxiliary buildings being now roofed in, we are able to form an adequate idea of what the effect of the whole will be when completed. The idea of retaining the old church tower, and making it the dominant feature of its own group, as the central tower of the cathedral is of the larger pile, is a very happy one, and the massing of the whole, each part being complete and distinct in itself, yet united by the bridge over the intervening roadway, promises to be very imposing. We can now see clearly how unwise it would have been to have carried out the original plan, of placing the Synod Hall at right angles to and on the same plot as the cathedral, as such an arrangement would have brought the old and the new buildings into direct competition with each other, and would have marred the only open view of the cathedral we possess. Further west, the fine church of St. John is receiving its finishing touches, and the scaffolding having been removed, we have now a clear view of the splendid west front. Despite some weakness in the tower, it is to my judgment the most beautiful and best proportioned modern church front in Dublin, and the only matter for regret is, that its site should be so unworthy of it. Pursuing this route, one is surprised at the number of costly and handsome warehouses, affording satisfactory evidence of the growing prosperity of this once fashionable, but latterly neglected quarter. It is to be hoped, now that the Christ Church buildings are approaching completion, that a vigorous and

sustained effort will be made to carry out that long-projected thoroughfare from Dame-street to Christ Church-place, and so rid us of the steep and tortuous ascent of Cork-hill.

Public improvements are certainly not carried out rapidly in Dublin, though I am not going to say a word in detraction of our well-abused Corporation upon this occasion. But in prospect of a large increase of income (about 25,000*l*. a year, I believe) which it is expected will be derived from the rating of our public buildings, we may not unreasonably expect that this long-delayed improvement will receive the attention it deserves, and that we shall soon see this public disfigurement removed. With the immense improvements and embellishments which are being carried out in every large town in the United Kingdom, Dublin presents a humiliating contrast. Little or nothing has been done towards this end by any public body, and what has been accomplished is due to the munificence and public spirit of private citizens.

We have reason to congratulate our vice-president, Mr. Drew, on the opportunity which has been afforded him, in the extension of the Hibernian Bank, now in progress, of giving the features of its fine front their due position and proportion. Formerly the building gave me the impression of being somewhat overweighted, an impression produced, no doubt, by its loftiness and relative narrowness; now, however, that its length is being doubled, this unavoidable defect will completely vanish, and the stately and imposing façade will assume perfectly harmonious proportions.

Those who have watched the direction of public taste, as shown by the buildings of the last twenty or thirty years, have, I consider, abundant evidence that the æsthetic wave which is one of the most remarkable features of this Victorian epoch, has penetrated Ireland in all directions. Its influence, however, has hitherto been chiefly confined to the domain of ecclesiastical and public buildings, including offices under the latter term. And while we cheerfully acknowledge the immense strides which have been made within this period of the architecture of these, we must regret that the same rate of progress, or anything approaching it, has not been manifested in the most important province of all our dwelling-houses. No doubt there have been many large country houses built, some of them of real artistic excellence, within this period. It may be mentioned too, as illustrating the increasing prosperity of the country, and as being in other respects an encouraging fact in this era of absentee landlords, that there are at present in process of erection two mansions of the largest size, the cost of each of which will considerably exceed 50,000*l*. But the discouraging fact remains that the average houses of the middle classes amongst us are much below those of the same grade in either of the sister countries, both on the score of excellence of accommodation and æsthetic design. This backwardness is, I conceive, to be attributed mainly to the strong conservative feeling of our public on art matters. They have a prejudice against any picturesque arrangement of their houses, as productive of discomfort internally, and as being unsuited to the climate, and they cling, with a devotion worthy of a better cause, to the square block of their grandfathers' day, with its square sash-windows, and walls neatly plastered, and more or less ornamented with cornice and dressings composed of that chaste material. Internally, the arrangements are of the simplest. The apartments are arranged right and left of the hall and staircase, which are carefully adapted to act as a huge shaft to carry all the winds that blow through the house when the front or back door shall be opened. I do not exaggerate when I assert that nine-tenths of the middle class here look upon a house of this sort, if it be fairly well built, as being the *summum bonum* of domestic architecture. Well, gentlemen, it will be for you to break through this thick crust of prejudice, and to prove to our employers that they will be the gainers in comfort and in all other respects, by allowing you to bring artistic treatment and common-sense arrangement to bear upon their work. If you are faithful to your convictions, you will be rewarded with success in the end, for there are many indications that a desire for something better is growing among the public, so that we may hope to see the day when the class of house I have just alluded to, will be the exception instead of being the rule.

The prevention of disease by means of improved sanitary arrangements, occupied the

attention of Parliament during last session, and a measure to amend and consolidate the previous Acts was passed. This has recently come into force, and our public bodies have been engaged for some time past in appointing special sanitary officers for their respective districts under its provisions. If I mistake not, we are but on the threshold of this description of legislation, and that, for many years to come, such enactments will figure prominently on the statute-book. Statistics having conclusively demonstrated the fact of the diminished death-rate, which invariably results from the adoption of proper sanitary precautions in populous towns, we cannot remain contented with our efforts until the mortality in such places shall have been brought within the limits of healthy country districts.

In Dublin, the field of operations is so vast, that we may assert with truth, that what has already been done in this direction is as nothing to what remains to be accomplished. We have to cope with the evils of overcrowding in its direct form. Old houses, designed and adapted for the use of a single family, are tenanted by a dozen or more in each, so that their inmates literally swarm like rabbits in a warren, with a complete absence of cleanliness or even decency, from want of the requisite sanitary appliances. I have myself seen sufficient of these dens to make me surprised that the death-rate of Dublin is not double its present figure, high as that is.

It behoves us architects, therefore, to devote our best attention to this most important subject, and to study by the light of physical science to construct the buildings committed to our care with an anxious regard thereto. In particular, I would urge upon you the vital importance of having a well-arranged and perfectly constructed system of sewerage provided for every dwelling. In dealing with old houses, where nothing is known about the sewers, make it a rule to insist, as far as possible, upon having them opened and carefully examined. If they prove to be perfect, such knowledge will give certainty to the owner, and consequent peace of mind on the subject. If, on the other hand, they be found defective, you will have discovered the root of what might prove a fatal mischief if not detected. Take especial care to provide for the thorough ventilation of your pipes, and in particular of the cess-pool, that chief generator of sewer gas. If it should be thought that I have laid needless stress on this point, I would ask you to remember, that the evil consequences of its neglect are so tremendous as to make it an imperative duty to insist on its paramount importance to life and health.

The value of a thorough knowledge of construction, and the proper application of the various materials in building, is so essentially the first requisite of an architect's education, that I feel constrained to touch upon it here. It is wonderful to consider the apathy which exists upon the subject. Take the average pupil who has served his articles, and presumably completed his professional education, and examine him on the most elementary questions of every-day construction, and in most cases, I fear, you will find him deplorably ignorant on the subject, although he will probably be able to get up, and tint very prettily, an elevation or even a perspective, and will hold decided views on the relative merits of rival styles.

THE FATE OF STOCKWELL-GREEN.

FROM the proceedings which took place at the meeting of the Lambeth vestry last week, there now seems little, if any, reason for hoping that Stockwell-green may be spared, notwithstanding all the efforts which have been made to secure it, and, from the present position of affairs in reference to it, the meetings which have been held on the subject, as well as the action taken by the Metropolitan Board of Works in giving notice for a Bill in Parliament for its purchase, are all apparently destined to be fruitless, the site being now manifestly, to a great extent, in the hands of the builders, and the fears which we expressed last week, that it will shortly be covered with houses, are likely to be fully realised. It will be seen from what follows, that instead of 4,000*l.*, which was to have purchased it, nearly double that sum would be required.

At the meeting of the Lambeth Board, a letter was read from the solicitor to the Metropolitan Board of Works, stating that if some arrangements were not entered into with the

private individuals interested in the land, it would probably be at once built upon. This letter elicited a discussion, in the course of which it transpired that several members of the vestry were aware that building upon the Green was a foregone conclusion. Mr. Reid remarking that, as the parties interested had given the proper notice, it was out of the power of the vestry to stop them from building; whilst Mr. Andrew added, that if the land was not secured at once it would undoubtedly be built upon. This was supplemented by some remarks from Mr. Percy Wells, who observed that it was a pity Mr. McArthur had gone to the Metropolitan Board and fixed the sum at 4,000*l.*, adding that, from the first, he had been of opinion that it would cost more like 8,000*l.*, and that it was not likely that three builders would sacrifice their prospective rights for nothing. Mr. Taylor, the representative of the vestry at the Metropolitan Board of Works, remarked that when the memorial and deputation, headed by Mr. McArthur, came before the Metropolitan Board, the Board was led to understand that 4,000*l.* would purchase the interests of the owner, and that if that sum could be raised the building upon the Green would be prevented. Mr. McArthur also stated that if the Metropolitan Board would contribute half, he thought he could raise the other half by subscriptions, and to that the Board assented. He (Mr. Taylor) had, however, heard since that the sum now required was 8,000*l.*, and that other interests had sprung up, and would have to be compensated, and in that case he was afraid that there was little chance of retaining the Green as an open space. These remarks called up Mr. Honey, solicitor and a member of the vestry, who is professionally concerned for the owner of the land. This gentleman's observations may be said practically to have settled the matter, as he openly admitted that, after communicating with the Metropolitan Board, and receiving an official reply, he had advised his client not to delay building. The discussion ended with the letter being simply received, without any action being taken upon it. It is, therefore, not too much to predict that Stockwell-green, as an open space to the public, is, in all probability, lost.

THE PROPOSED PURCHASE OF THE REGENT'S CANAL AND DOCKS. EXTENSIVE DEMOLITION OF HOUSES.

THE Limehouse Vestry intend to take action in respect to the proposal by a new company to buy up the Regent's Canal and docks. At the meeting of the Vestry last week, the clerk stated that the parish would be very much prejudiced by the alterations and new works for which the proposed company intended to apply to Parliament, unless the principle upon which the company's premises are rated be altered. He explained that the Regent's Canal Company were not rated like the dock companies and other organisations owning wharfs and warehouses, as by a clause in their Act they are able to avoid being rated on their earnings; and it was therefore of great importance that an effort should be made to obtain a repeal of this clause when the Bill came before Parliament. Mr. Hawkbridge, one of the members, said that those who knew St. George's and Shadwell need not be told how ruinous would be the effects of a great extension of dock and warehouse room to local trade and interests unless rating was provided for. In the course of the conversation which followed it was stated that more than a thousand houses were marked for demolition in the plans which had been deposited in respect of the Bill for the proposed works. Authority was given to the officers of the Vestry to obtain a *locus standi* to oppose the Bill, with the view of protecting the interests of the parish.

THE STREET BARS AND GATES IN THE METROPOLIS.

THE question of freeing the metropolitan bridges from toll came up for discussion at the meeting of St. George's, Hanover-square, Vestry, last week, when it was proposed that so far as that parish was concerned, it was not desirable that the bridges should be so freed from toll at the public expense, unless accompanied by a removal of all the gates and bars erected across streets in the parish. The proposal led to a discussion as to the difficulty of abolishing the bars in different parts of the metropolis, in the course

of which it was stated that the question of dealing with these bars was not easy, inasmuch as there were 163 bars in London erected on what was actually private property. The vestry did not think it desirable to entertain the proposal. It seems to us that Parliament ought to do it. There is a limit even to private rights.

SUPPRESSED GENIUS.

SIR J. NOEL PATON, in addressing the students of the Royal Scottish Academy on the 1st inst., made the following happy remarks:—

It has been said that there is no suppressed genius; that when the thing so called is within a man, it will assert and develop itself in spite of adverse circumstances. But I fear sad experience goes to prove that the race of "mute, inglorious Miltons" is not confined to the parish of Stoke Poges, and that the amount of intellectual energy dissipated in every generation in unavailing conflict with ignorance, poverty, and disease is very great. The will and the wings may be given, yet both prove powerless for flight, through the weight of adverse destiny. Of this terrible law I had some years ago a touching illustration. Wishing to represent in a picture the chrysalis of a common white butterfly, and having too vivid a conception of the object to paint it from memory with any sense of satisfaction, I had three specimens sent me from the country. They were sent by a very intelligent gamekeeper, packed in fine cotton, and enclosed in a small tin shot-box. I painted in my chrysalis, replaced it beside its sisters in the shot-box, and put it away on the shelf of a cabinet, I suspect with no thought of the creature beyond the instinctive impulse to preserve from injury a thing so fragile and so beautiful. This was in early winter. Spring came. Summer and autumn followed, with more than their wonted splendour. It was again winter, when, in searching for something else, my eye fell on the little shot-box. Taking it up, I removed the lid, almost mechanically, for my mind was preoccupied, and quite unprepared for the sadly suggestive sight that presented itself. There, immediately beneath the lid lay a dead butterfly, — one beautiful wing outstretched against the polished metal in white perfection; the other, partially undeveloped, and still entangled among the cotton. Here surely was matter for thought. The chrysalis I had painted as tenantless was now indeed empty; the "antennal tomb" had been burst asunder by the living Psyche within. The divine voice had called to her, as the divine voice once called to the swathed sleeper in the rock-tomb at Bethany, "Come forth!" and forth she came. Impelled by the divine instinct of her being, she had battled bravely and strongly through the dense superincumbent impediments. She had all but shaken herself free from the close clinging fibres; but there was no one to roll away the stone, to unloose the bands and let him go. Above her was the solid disk of iron, cold, dark, impenetrable. Against such an obstacle as this what could poor Psyche do? And thus, while her winged kindred were abroad in the summer air, and

"The children were calling,
In a thousand valleys far and wide,
Fresh bowers,"

the fiery spark within her had burnt itself out in unavailing conflict with the inevitable. Will and wings had indeed been hers, yet there she lay dead before me; her powers undeveloped, her aspirations unfulfilled,—the victim of circumstances. Lower down I found her sister. She, too, had heard the call, had felt the quickening impulse, and struggled to obey. But for her circumstances had proved yet more adverse. She also had burst her cements, but her wings had never been unfolded; and she, too, was dead. I doubt not to the third sister also the voice of the Master had penetrated; but her grave-clothes were unrent,—"She died, and made no sign." Before such an audience as this, it may seem a mere waste of words to insist on the supreme importance to the artist of thorough and early culture. But we have heard it maintained that an elaborate system of art-education which of necessity implies a more or less prolonged subjection of the recipient to the influence of other minds,—is unfavourable to that development of idiosyncrasy which we call originality. But worthy originality in any of the arts may be defined as a new and unexpected development of the beautiful; and it is inconceivable that any originality which will bear this definition can be the outcome of ignorance. Further, I contend

that the artists whom the world has recognised as the most original,—the men whose works form the landmarks in the history of art,—have invariably been the most perfectly educated, that is, the most perfectly acquainted with the principles and practice of their predecessors.

TECHNICAL EDUCATION.

In consequence of the statements that have been made from time to time with regard to foreign competition and the want of technical knowledge on the part of the artisans of this country as compared with the workmen abroad, and the importance of technical education having been recognised by several successive Trade Union Congresses and various organisations of working men, the Council of the Society of Arts some time since decided to establish technological examinations as supplementary to the science examinations of the Government Department of Science and Art, for the purpose of developing and encouraging technical knowledge and skill in various branches of manufacture. The Council have just issued a circular inviting working men to enter themselves as candidates for examination in the coming year in some of the arts and manufactures of the country. These examinations are to be held annually, and the subjects selected for 1875 are—cotton, paper, steel, silk, carriage building, pottery and porcelain, gas manufacture, glass making, cloth manufacture, agriculture, silk dyeing, wool dyeing, calico bleaching, dyeing and printing, and alkali manufacture. A certain amount of knowledge of general science will be required from each candidate, and this test will be furnished by the examinations of the Government Department of Science and Art. Certificates of three grades will be awarded, and prizes and scholarships are offered for competition. Workmen in the above-named industries are especially invited to become candidates, the only qualification being a competent knowledge, theoretical and practical, on the part of the candidate, of his employment. Any person working at any of these trades is invited to enter some one of the many branches of the Science and Art Department, for the purpose of qualifying himself for examination in the particular industry in which he is engaged. Not only will the candidate be entitled to a certificate according to his proficiency, but there are money prizes offered for competition, and there is also a scholarship of 100 guineas to be awarded to the best candidate in cloth manufacture.

HERTFORD SEWAGE WORKS.

The management of these works by the corporation of Hertford has ceased for the present. An arrangement was entered into last spring with the Phosphate Sewage Company, by which the company agreed to hire the deodorising works, and dispose of the town sewage, the corporation paying them a certain sum for ridding the town authorities of the burden and trouble of the sewage, and the company paying a fair rental for the works. The works being encumbered with about 100 tons of refuse and sludge, it was impossible for the company to commence operations. Attempts were made first to sell, next to give away, this sludge; but it was a difficulty to be rid of it at any or no price. However, the clearance was at length effected, and the Phosphate Sewage Company came into possession of the works. It is an adventurous enterprise on the part of the company. The great change for the better consists in the application of the phosphates, which is the first portion of the process, and this, when mixed with the solid portions of the sewage, forms, with subsequent admixtures, the manure of the Phosphate Sewage Company.

SANITARY MATTERS.

Sanitary State of Handsworth.—Mr. J. B. Welch, medical officer of health, reported, Dec. 3, that even in the houses of the better classes of Handsworth grave sanitary defects were frequently found, if they were not commonly present. In many, little or no care had been taken as to the position and arrangement of the water-closets, which were not unfrequently placed in situations where their proper ventilation was impossible. The drainage of the town was in the highest degree defective. In some streets superficial pipe drains had been laid for the removal of the surface water, but in other streets no drains of any account existed, and the surface water, and

in a few cases house drainage, ran down the gutters, and simply escaped by sinking into the ground. In some cases house-drains, water-closets, and middens had been connected with the superficial drainage, and no means of flushing them existed. The report then went on to treat of the "dumb-well" and midden system existing in the parish, both of which, it was pointed out, constituted sources of water pollution; the wells, especially in some of the poorer class of tenements, being situated within a few yards of the middens. Mr. Welch concluded with some general remarks on the enforcement of a regular and systematic cleansing of the middens, and by a reference to the water supply. There were very few houses where the water supply was not contaminated.

The Hartlepool.—Hart, a small village between Castle Eden and Hartlepool, has suffered severely from scarlet fever, sixteen deaths having occurred recently in a population of 147. The fever, it is said, is now on the decline.

Pollution of a Stream.—The Guardians of Easby Union, acting as the local sanitary authority, on the 3rd inst., prosecuted Messrs. Gardner & Co., brewers, for polluting the stream running to the south-west of Ash, and thence to Wingham. For the defence it was alleged that the pollutions complained of were caused by the sewage, and the refuse of the slaughter-houses, but the magistrates ordered that the defendants should cease, within one month, to send the waste water from their brewery into the stream.

STUDY OF ITALIAN ARCHITECTURE.

WITH reference to Sir W. Tite's legacy of 1,000*l.* to the Royal Institute of British Architects, to be applied yearly in the manner best calculated to promote the study in England of Italian architecture, the President and Council have decided that they will in each year award a sum of money to such person as shall become entitled to the Tite Prize on certain stated conditions, or apply the income in such other manner as shall from time to time be determined by the said President and Council in conformity with the terms of the bequest.

The subjects of competition may be as follows, but the President and Council do not limit themselves to these subjects:—(1) Measured drawings of some existing building in the Italian style of architecture; (2) sketches of existing buildings or parts of buildings in the same style; (3) essays on Italian architecture; and (4) designs in the Italian style, or other evidence of proficiency in that school of architecture.

When the Council decide that the interest in any year shall be devoted to other objects than a prize, such objects may be: The establishment of a course of lectures in England on Italian Architecture, or some kindred subject; the purchase of books, casts, or other objects calculated to advance the study in England of Italian Architecture, and to supplement the "Tite Donation" now in the Institute Library.

SEWAGE MANURE.

DURING the last two years a sub-committee of the Town Council of Leeds have been carrying on experiments to test the comparative value of the following materials as fertilisers:—Street sweepings, stable manure, Peruvian guano, "native manure" (a mixture of native guano and night soil), native guano, and sewage mud. These six varieties were applied to as many plots of grass land, each half an acre in extent, and the results noted. In their report last year the sub-committee stated:—"The native guano was calculated at the rate of 3*l.* 10*s.* per ton, and it will be seen that the result is slightly superior to that obtained by the same value (30*s.* worth) of Peruvian guano, at 15*l.* per ton; and whilst it is admitted that the Peruvian is exhausted in the first year, it is claimed for the native guano that the effect will be seen for one year or more afterwards. The committee propose to test this by allowing the several plots to remain exactly as they are without any fresh dressing, and see the result next year." This plan has been pursued, and now the second year's report has made its appearance. On this occasion the sub-committee remark that the season has been very unfavourable for grass, on land such as that at Knostrop, where the trials were conducted. Putting the two seasons together, the value of the hay above the cost of the manure and labour

was greatest with regard to the stable manure, native guano coming next. The excess value of the several plots ranged as follows:—Stable manure, 2*l.* 11*s.* 2*d.*; native guano, 2*l.* 4*s.* 10*d.*; Peruvian guano, 1*l.* 15*s.* 9*d.*; "native manure," 1*l.* 14*s.* 5*d.*; and sewage mud, 1*l.* 9*s.* 2*d.*. In the case of the street sweepings there was a slight deficit. The native guano, although priced as high as 3*l.* 10*s.* per ton, yielded more profit than the Peruvian guano, valued at 15*l.* per ton. The native guano from Leeds is said to be comparatively poor, the selling price per ton being only 2*l.* or 2*l.* 10*s.* It is urged, on behalf of the Native Guano Company, that the stable manure was exceptionally cheap coupled with which the seasons were unfavourable to dry manures.

SCHOOLS OF ART.

South Kensington.—The annual distribution of the prizes awarded to the students of the South Kensington School of Art, in connexion with the Science and Art Department of the Committee of Council on Education, took place in the lecture theatre of the South Kensington Museum on the 3rd inst. The Duke of Richmond in the chair. Mr. Barchett (head master) read a report which stated that the prizes consisted of gold, silver, and bronze medals, and Queen's prizes, consisting of books, the total number being over 100, and they were won by the students of the school in the local and national competition of 1874, the number of national prizes being fifteen. The total number of students during the year has been 728, viz., 390 males and 338 females. The Council of the Art Union of London in July, 1873, offered two premiums, one of 35*l.* and one of 15*l.*, to be competed for by past and present students in schools of art in Great Britain and Ireland in which painting on pottery was taught. Both prizes were taken by students of these schools—the first by Mr. R. Abraham and the second by Mr. J. Eyre. The fees paid by the students last year showed an increase of 92*l.* 10*s.* over the preceding year.

Leicester.—On Tuesday evening, 1st inst., the annual meeting of the Leicester School of Art took place at the Town Museum, when the prizes awarded to the students attending the School of Art, by the Science and Art Department were distributed by Mr. Albert Pell. The fees paid by students during the year ending 31st July were 201*l.* 0*s.* 7*d.*, against 107*l.* 5*s.* 8*d.* received in 1873. The income of the school had slightly exceeded that of the previous year, owing to a legacy of 50*l.* The total number of students who attended the school last year was 260; this year there have been 274. Last year 1,094 works executed by the students were sent to South Kensington for examination; this year 904 were submitted. Last year was the second occasion on which the school had obtained a "Queen's Prize of Books. It had this year not only obtained a Queen's prize, but also a 'silver medal.'" This is the highest prize yet awarded to the school, and, excepting only ten "gold medals," is the highest prize given by the Department.

Derby.—The Marquis of Hartington distributed the prizes to the successful students at the Derby School of Art last week. He said the national efforts for the study of art in this country dated almost entirely from the Great Exhibition of 1851, which proved that, however great might be the enterprise and energy of our capitalists, and the industry of our workmen, however successful we might be in the production of articles of utility, we were still at a disadvantage, in comparison with foreign countries, when it became a question of combining beauty with utility and cheapness; in fact, when it came to the question of the application of art to industry, we were obliged to acknowledge that in this respect other countries were our superiors. Considerable progress had of late been made, and about a quarter of a million was expended annually in the promotion of the study of art. Alluding to the absence in this country of local museums, and to the art collection at Chatsworth, his lordship said he was satisfied it would greatly increase the gratification of his father if some arrangement could be made by which the objects there could be rendered of greater advantage to students of art. He also pointed out that the School of Art in Derby depended for its support almost entirely upon local contributions and the fees of the students; but he trusted that both town and country would respond to the appeal of the committee by finding the means for erecting a suitable building.

LAND TENURE AND INCLOSURE.

In the course of the opening address at the Institution of Surveyors, Mr. Thomas Hukinson, the president, said.—France has pursued, with regard to the organisation and distribution of her land, a course entirely opposite to that which has obtained in this country. France has no law of primogeniture, and only a limited power of testamentary disposition. The law compels a division of estate on the death of the owner. The effect has been a minute subdivision of landed property, the creation of peasant proprietors, and, after an operation of eighty years, the result is unsatisfactory. It is the opinion of M. Lavergne, and of other competent judges in France, that the subdivision of land there has reached a point which threatens serious evils, and tends to retard the progress of the country. In two generations the division of property in France has reached, in special cases, less than the fiftieth part of an acre, and whole communes are now subdivided into estates of less than 6 acres. As we are invited to follow in this path of fundamental change of our land laws, it will be well for the advocates of change to consider what answer is to be given to the results which I have stated.

Some advocates of change appear to be of opinion that a subdivision of land into small properties, thus giving to a great number of persons what is called the magic of ownership, will offer greater security for public order and greater stability to public institutions. Although there are, no doubt, exceptional causes to account for it, I may observe that this effect has not followed in France. . . .

The great development of trade which occurred about 1770, consequent on the discovery of coal, had an important effect on agriculture. It created a demand for labour and for the produce of the land which, in the then state of agriculture, could not easily be met. It called attention to the restrictions and discouragements to improvements imposed by the system of common fields and common rights which then extensively prevailed, and with that sagacity, happily not uncommon in our race, our ancestors, without indulging in abstract theories, like true practical philosophers seeing and feeling a present evil, set energetically to work to devise a remedy. They applied voluntarily to Parliament for power to convert the common lands into severalty, and to extinguish common rights, and, in very many cases, tithes also, and thus laid the foundation of our modern system of agriculture, and conferred an enormous benefit upon the nation.

Those who would have a clear view of the condition of the England of that day should carefully examine for themselves the condition of land tenure, both as respects ownership and occupation, which then existed. It is deeply interesting in many ways. It is tolerably certain that the state of our commons and open fields as then existing had undergone no change for many centuries; they were very much under the same conditions of tenure which had existed among the Teutonic tribes, and spread by them over Western Europe after the disruption of the Roman Empire, and which still prevail in many parts of the Continent. It is more than probable that this same system is even of much higher antiquity; for the interesting researches of Sir Henry Maine, published in his "Village Communities of the East and West," show that the Teutonic mark has too many points of resemblance with the Indian village communities to be the result of mere coincidence, but point to a common origin.

To show the difficulties under which cultivation was then carried on, I will refer to the parish of Epperstone, where I reside. The parish contains 2,323 acres, and was inclosed in 1768. It is a typical example of a large number of parishes in the Midland counties. The village stands near the southern boundary of the parish, surrounded by small homesteads; the meadows by the village stream; the arable fields, three in number, in which every owner had one or more plots, in different and distant parts of the parish. The commons for pasturage were distant from the village, and the woodlands, affording pasturage, fuel, and wood for repairs, were on the boundary of the parish.

The allotments in the arable fields do not average half an acre each, and a single farm, neither better nor worse than the rest, contained 70 acres in 146 plots. The arable fields were held in severalty till the crops were carried, and were then subject to common right. The mea-

dows were held in severalty till the hay was cut, and was then open to common right. The common pastures were common all the year, and here the cows of the parish were milked, more than a mile from the homesteads, along a road which, in my time, was not passable for horses or carriages in winter, and not very commodious in summer. The milkmaids of that day carried along the road the produce of the cows, in pails, upon their heads, a practice which deserves notice in connexion with the habits and condition of the same class in these days, who now think it degradation, and generally decline to milk cows anywhere. No buildings could be erected on any part of the parish, except in the village homesteads, on account of common right; all the produce had to be carted along unmetalled roads; all the men and horses, in carrying on their daily labour, had to pass great distances to and from the land. No turnips could be grown upon the arable fields for winter food; no artificial grass for pasturage. It is not too much to say that, if these conditions existed now, a considerable part of the parish would yield very little rent, and others be scarcely worth cultivation.

The same parish is now occupied in nine farms in consolidated areas, with houses and premises in central positions, yielding an average rent of 33s. per acre, and a produce at least fourfold greater than it could have done prior to inclosure.

I am carrying this description further than is proper for the proportion of an example; but, before leaving it, I wish to draw attention to the condition of the parish prior to inclosure, because it gives the nearest glimpse I hope we are ever likely to see of Communism. For though history repeats itself, and there are, even now, persons who think something like Communism might be tried, it is clear our ancestors were of a different opinion.

Those who will look carefully to the condition of our common fields will see indications of a continued struggle against Communism, when it was possible, and that the principle that every man will work best when he works for himself was not absent from the minds of the landowners of those days.

The arable fields were not common while the crop was growing; the crop would depend upon the manure and labour applied; therefore, the corn crop was not common, but only the stubble and weeds, which, on each plot, would not differ much in value. So, again, the meadows were not common till the hay-crop was carried. The hay-crop would depend upon the manure applied; so the hay-crop was not common; but the after-growth, the value of which on each plot would vary little, was common. Again, the common pasture, upon which no manure or labour was applied, was common, because the number of cattle pasturing upon the common being known and limited, a pasturage in common gave to each an equal share. So little were the owners disposed to give up to common use what could be held in severalty, that the contrivance of the lot meadow and shifting severalties, by which each owner held a plot in turn, was probably intended to secure to each owner in rotation every part of the field; so that if one part should be better than another, he should enjoy it himself in his turn, and not submit to its being treated in common.

I find that in this neighbourhood more than 40,000 acres were inclosed between 1765 and 1795; the rights of common and usages of culture were in every case the same.

Considering the prejudice which has lately been excited in the public mind with reference to inclosure, it is important to note that in none of the cases I have mentioned, nor in any other cases of rural inclosure with which I have been connected, have I ever known a case where a right of common belonged to any person who was not an owner of house or land in the parish. There was no such thing as a right to turn on a cow or pig, or even a goose, except in connexion with land, and for all such rights every owner, however small, was fully compensated, and compensated by an allotment in the land itself. It should be remembered, too, that the whole transaction was voluntary, not enforced by the Legislature, but sought for by the landowners, and that they themselves selected the commissioners who were to decide upon their claims.

It has, however, been stated, that millions of acres of waste land have been inclosed, upon which the poor had rights that were never compensated, and of which they have been defrauded. We, who have to deal with inclosures, know that

it is a pure fiction, that such a thing was impossible, and that it has no foundation in truth.

There can surely be no greater responsibility than is incurred by persons who, at any time, and particularly in a time of unusual excitement, make statements of this kind which cannot be verified.

Considering the many and undoubted benefits which the inclosure of commons and open fields has conferred upon the country,—benefits so unquestionable that they are acknowledged by every person conversant with the subject,—it is remarkable how easily a prejudice can be created when arguments are tinted (perhaps unconsciously) by personal interests or political views.

A case of this kind occurred in my own county with reference to the inclosure of the commons and commonable lands surrounding the town of Nottingham. The opposition to inclosure was so persistent that it succeeded in delaying the inclosure for more than half a century after the increasing population of the town urgently required increased building space. The common lands, about 1,100 acres in extent, surrounding the town, extension of building had become impossible. The pressure of the population was so dense that in part of the town 500 to 600 persons lived upon an acre of ground. The freemen of Nottingham claimed the rights of pasturage during portions of the year, and the land-owners held considerable portions in severalty for the rest of the year. The freemen were a numerous body, and, being voters, exercised considerable influence at elections. It was their firm conviction that their interests would be injured by inclosure, and it answered the purpose of others to agree and confirm them in that belief. The value of the freemen's rights of pasturage was not worth more than 150s. a year, and the land itself, while subject to those rights, was not worth to the landowners more than 100s. per acre.

After many attempts at inclosure had been made and failed, Mr. Hawkesley made a report to the Health of Towns Commission, which attracted much attention, and created a strong public feeling in favour of inclosure. The landowners succeeded in obtaining a Bill for inclosure, and, in 1851, the allotments were made free from all common rights. The result, after twenty-three years, is that a large proportion of the land has been covered with houses and manufactories.

The land, before inclosure, worth only 100s. per acre, has been sold by the yard at prices varying from 2s. to 11s., and, probably, averaging 6s. per yard. The freemen, whose income from the pasturage was not more than 150s. per year, had an estate allotted them after inclosure which now produces 3,700s. a year, and as great part of this is from leasehold ground-rents, it will, in future, be much greater. The town of Nottingham received allotments for an arboretum, for public walks, recreation and cricket grounds, of over 100 acres, and the general benefit to the town in health and wealth is hardly calculable. Yet popular prejudice, encouraged by political partisans, delayed this beneficent work for many years; and it is to be feared that prejudices equally unfounded, and views equally mistaken, are now prejudicing the public mind against inclosures which, if carried into effect, would conduce to both private and public advantage.

Following the great inclosures in rural districts, which changed the whole state of agriculture, and gave to it a new life, came the opportunity to put farming on an economical basis. Houses and buildings which before were separated from the land, could be erected in the centres of consolidated and enlarged holdings, the cultivation of roots and rotation of crops freed from restriction, and the land adapted for the use of improved implements and machinery, which, prior to inclosure, were of little avail.

The outlay upon these works was very great; but property being mainly in the hands of wealthy owners, it could be provided; and the introduction of turnips was, of itself, an important event. These roots, cultivated anciently in Holland, were introduced into England, with great success by Lord Townsend, in the reign of George II. They have since become the basis upon which the rearing and fattening of stock are founded, and have given fertility and value to all the light soils of the country.

I attribute the great development of English agriculture in recent times, in no small degree, to the existence of large estates. These, as a rule, present the best examples of management, and have generally led the way in all improvements.

What is greatly needed is a full and impartial

history of the land. There is the most absolute ignorance on the subject. Mr. Mill, and, following him, many others, have asserted that the number of landowners in England does not exceed 30,000. This, however, has been discovered to be an error, and is a singular instance of the careless reading of statistics even by distinguished writers, and of elaborate arguments based on mere delusions.

Mr. Disraeli, in 1850, stated in the House of Commons that, in the three kingdoms, it was reckoned that there were 250,000 landed proprietors; and, considering the gross misconceptions, prejudices, and misrepresentations which are widely diffused and credited by intelligent people, with reference to land, and its supposed concentration in the hands of a small class, it is most desirable that the facts should be authoritatively ascertained.

Another point on which much has been said is the alleged monopoly in land. Now this is a question which appeals at once to our own experience; and it has always been matter of astonishment to me that, in the face of facts patent to everybody, and published in every day's newspapers, such assertions can be made. The advertisements of estates for sale, in a single copy of the *Times*, are a sufficient refutation.

We all know that there is no fixed commodity more constantly and widely dealt in than land; that the supply in the market is generally adequate to the demand, and oftentimes more so; and that there is no difficulty in any person purchasing land in almost any quantity, and almost anywhere. If an artisan wishes a plot for his own residence, or for the investment of his savings, he can have it. In the vicinity of our great towns, land is being sub-divided and sold to thousands of working men for these purposes. The misconception is hardly less in respect to the supposed increase of large properties.

So far as my observation has gone, the great bulk of the land has been purchased by persons who have made their fortunes in trade; and the land so purchased is either an abstraction from an old estate, or the new purchaser has simply displaced the ancient owner.

With the sale and purchase of land which is constantly going on, and which is almost the special business of our lives, it is difficult to understand what is meant by the cry of "Free Land," when every man is free to buy what land he pleases, free to occupy or let it, free to sell it while he lives or devise it at his death; it would seem that freedom can hardly be more complete: happily our institutions have assured to us this freedom; but the statements of those who advocate change seem to indicate a desire to restrain rather than to enlarge our liberty of action.

The system of large or small farms is one of those economical questions which will adjust itself by giving both a fair field. Both are good in their proper places, and under proper conditions. In all dairying and pastoral districts, where the principal labour is manual and domestic, where machinery and large capital give less advantage, small farming does, and probably will, hold its place, and in suitable situations, in the vicinity of large towns, where land is cultivated partly for garden produce and partly for the supply of dairy produce, small mixed farms of arable and pasture may and do succeed; but, in the cultivation of arable lands, large capital, steam power, improved machines, and more intelligent direction, are advantages against which the small farmer cannot compete.

Those who urge the creation of small owner-ships in land and small peasant farms, should remember that they recommend nothing new, but a return, to a great extent, to a system which has been tried and failed; and to invoke, as some propose, the action of the Legislature, is merely to repeat the errors of the past, and disregard the teachings of experience. In times long past, Parliament assumed the powers of fixing wages, of prescribing how much land should be attached to each cottage, and restraining owners from converting arable land into pasture. These attempts failed in their object, and the intelligence of the country outgrew such illusions. In later times the Legislature has been appealed to, not to direct or restrain freedom of action in dealing with land, but to remove hindrances to the full development of its resources, and, in this direction, it has conferred the greatest benefits. The inclosure of commons, the commutation of tithes, and the power of charging limited estates with the cost of necessary improvements, are the fruitful results.

Mr. Chaffield Clarke, in the discussion which

followed, very properly pointed out that there were two sides to the questions which had been discussed by the president.

ST. MARY'S CATHEDRAL, EDINBURGH.

In our volume for 1873, full particulars are given of the competition under which the design by Sir Gilbert Scott for the proposed cathedral in Edinburgh was chosen; and there, too, will be found the architect's own statement of the principles which had guided him in making the design, and an exterior and interior view of it.* Since the decision of the trustees, very important changes have been made in the design. The nave of the cathedral has been lengthened by one bay, and two western towers have been added. We now give a view of the building as determined on, and now in progress, and will add a complete plan in an ensuing Number. As finally arranged, the plan consists of a choir, with north and south aisles; transepts, with east and west aisles; nave, with north and south aisles; a spire at the intersection of the transepts; and two western towers. To the north of the north chancel aisle is the library, an apartment measuring 30 ft. by 19 ft. 6 in.; and from the east bay of this aisle a vaulted passage leads to the chapter-house, which is 30 ft. square, but cleverly worked into an octagon at the roof. The choir measures 60 ft. 9 in. long, and 29 ft. broad; the aisles, 16 ft. broad, and is divided into four bays. The transepts measure 35 ft. 4 in. long, and 30 ft. 9 in. broad; the aisles, 13 ft. 7 in. broad. These transepts project one bay beyond the aisles, an arrangement that many object to on account of its being unnecessary in a church where there can be only one altar; but which was probably necessary from the constructive arrangements in connexion with the four great diagonal buttresses of the central tower, and one which will produce many charming perspective views. The nave measures 114 ft. 10 in. long, 33 ft. 9 in. broad, the aisles, 13 ft. 7 in. broad, and is divided into six bays. The western towers measure 16 ft. 10 in. square inside. The total length of the cathedral externally is 262 ft. 2 in.; the internal length, 238 ft. 6 in.; and the breadth across the west front is 98 ft. 6 in. The choir, all the aisles, and the central crossing and chapter-house, are vaulted in stone, and the nave in wood. The height from the floor of the choir to the key of the vaulting is 53 ft.; from the floor to the crown of the vault of the centre crossing is 66 ft.; and from the floor of the nave to the apex of the vaulting is 71 ft. The height from the ground to the top of the central spire, excluding the finial, is 275 ft., and the height of the two western spires is 209 ft. 9 in.

It will be interesting to compare these dimensions with a few of the Scottish cathedrals and abbey churches. Glasgow is 319 ft. long, 63 ft. wide, and 225 ft. to the top of the central spire. St. Magnus, at Kirkwall, is 228 ft. long and 56 ft. broad. St. Andrew's Cathedral, 350 ft. long; St. Mary's Cathedral, Iona, 160 ft. long; and Dunfermline Abbey Church, 276 ft. long.

Sir Gilbert Scott states in his report that he

has founded his design on the earlier phase of the Early Pointed Architecture, just as the Transitional work is developing into what is generally known as Early English; and this profession is borne out in the fine design with which his name will be associated. The influence of Holyrood may be traced in the choir, and Jedburgh in the doors. The three gables over the west entrance, although not peculiarly Scottish, recall Elgin, Jedburgh, and Kelso. The composition of the east window is also, there is every reason to believe, somewhat similar to what the east end of Jedburgh must have been. The Mediaeval architects of Scotland do not appear to have been successful in the construction of spires, as the few that remain are both late and bad. The spires of the new cathedral are not, therefore, based on anything which may be called Scottish. The transition from the tower to the spire is generally from a square to an octagon, and is that part of the structure where the peculiarity lies. In Sir G. G. Scott's design the transition is accomplished by means of turrets with pinnacles at each angle, rising, in the case of the central tower, from the bottom of the belfry, and in the case of the west towers from about half-way up the belfry stage. This mode of effecting the transition may be seen in the towers of Grantham, Barnack, and Sutton St. Mary's, in England; and Contance, Angers, and many other places in France. The composition

of the gable of the south transept deserves especial attention, and is one of the most happily conceived arrangements that the exterior presents. The interior is divided vertically into the orthodox divisions of ground-story, triforium, and clearstory. It has been objected that the nave has a defect, the piers of the ground story do not appear equal to the mass above them; they are so in reality, but the eye, which is more subtle than knowledge, is not satisfied. Plain cylindrical and octagonal columns do not contrast well, it is urged, with the fully developed features seen everywhere else. Doubtless this has been done to reduce the usual indictment against pillars as being obstructions to a minimum, and the architect would doubtless point to New Shoreham Church, Sussex, where the two are used *vis-à-vis* in the choir, a work of the same style, round columns on one side, clustered on the other, both with triforium, clearstory, and groining complete.

The site of the cathedral is on the vacant ground at the west-end of Melville-street, and to the south of East Coates House, the axis of the cathedral coinciding with the centre line of Melville-street. It is intended to preserve East Coates House. All the competitors proposed to do this, feeling no doubt the value of it as providing a scale to the cathedral.

The contract for the building has been taken by Mr. G. W. Booth, of Gosport and London, for the sum of £7,830l. This amount does not include the two western spires or chapter-house, or any of the furnishings and decorations.

THE APPROACHES TO BILLINGSGATE MARKET.

WITH the improvement of Billingsgate market itself, already commenced, it is reasonable that the question of improving the approaches to the building should be carefully considered. The existing streets leading to this great centre of the London fish trade, though not by any means the worst specimens of public thoroughfares to be found in London, are at any rate among the worst of those through which much traffic generally passes. The number of wharfs and warehouses in Lower Thames-street, and the consequent number of drags and wagons incessantly moving to and fro, or drawn up at the edge of the footway, discharging or taking in "cargo," demand a considerable expanse of roadway, as well as of footpaths; yet the fact is that two railway vans can barely pass one another at a walking pace in the road, and it is impossible in parts for two men to walk abreast on the "pavement." Fortunately for foot-passengers, the pace of the vehicular traffic is slow, or the continual forced descent into the roadway of one of two passing pedestrians would prove as dangerous as it is annoying. The filthy, greasy, muddy state of the whole street would hardly give a foreigner the idea that it is a thoroughfare through which thousands of pounds' worth of goods daily, even hourly, pass; and the wonder is that its "cabined, cribbed, confined" space will accommodate so much as it does.

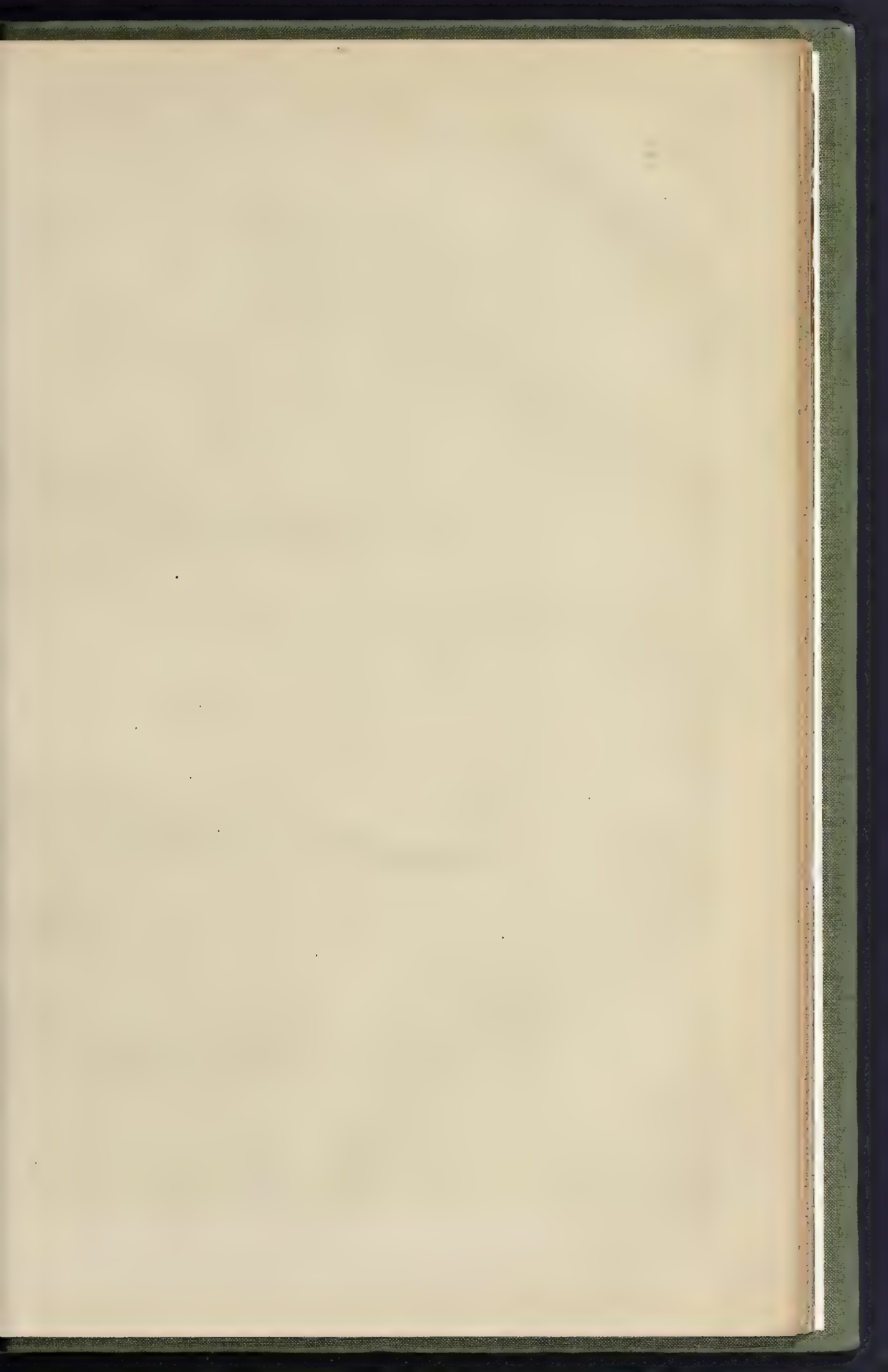
The Improvement Committee of the Corporation of London have under consideration the advisability of improving the street accommodation, and widening the approaches to the market, and several plans have been submitted for the purpose. One of these plans involved the removal of the Monument, which it was proposed to re-erect in some other situation, but the popular feeling against such a proposal, and the great cost of the undertaking, have combined to secure its rejection.

An alternative plan was the formation of a new street from Monument-yard, without touching the Monument itself, and Lower Thames-street, at a point opposite the market, the cost of which was estimated at 88,000l., and a third project was the widening of Lower Thames-street on the river side, from the market to the entrance to Adelaide Wharf, the cost of which was calculated to be 300,000l.

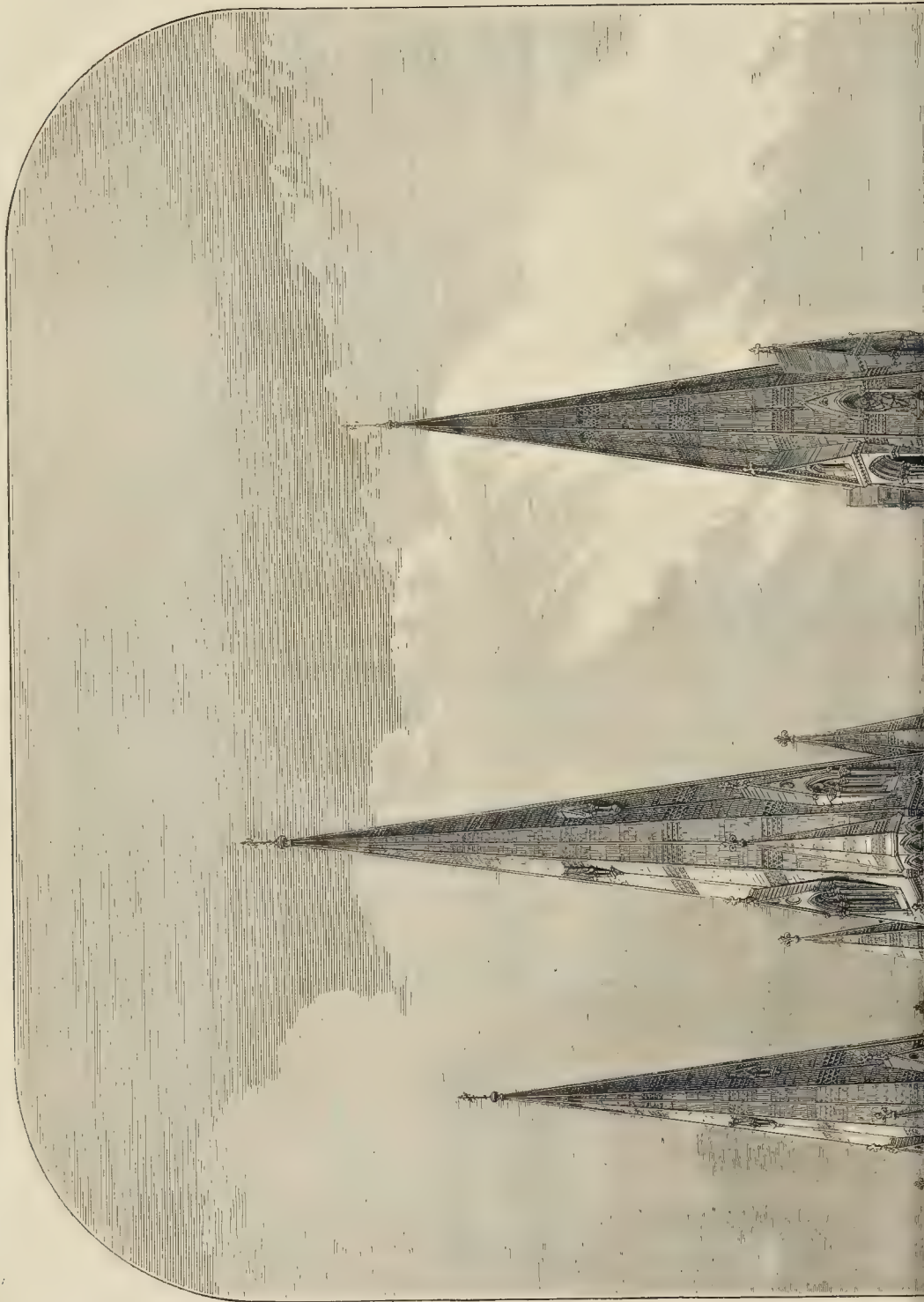
The former of these two alternative plans was suggested, in substance, in 1862, and the City architect has recently submitted a similar scheme, which contemplates the creation of a new street, 55 ft. wide, in the same general direction, the cost of which is estimated at 525,000l.; while a fourth scheme proposed a new street to start from Eastcheap to the same place opposite the market, at a cost of 162,000l.

Whichever course is adopted, the necessity for some improvement is self-evident, and the most careful consideration should at once be given to the question.

* Vol. xxii., pp. 97, 108, 105, 107, &c.



THE BELLER, DEC. 12, 1874.





ST. MARY'S CATHEDRAL, EDINBURGH.—SIR G. GILBERT SCOTT, R.A., ARCHTET.

VAULTING.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of the members, held on Monday evening, November 30th, Mr. George Valliamy, V.P., in the chair, the following gentlemen were elected:—Messrs. C. O. Ellison, John Welshman, John T. Wood (follows), and Messrs. James W. Forge, Edward J. Martin, C.E., F. C. Noley, Charles H. Shoppee, Walter L. Spiers, T. J. Street, and James Weir (associates).

The Secretary announced with regret the deaths of Mr. George Gutch, Mr. Atkinson and Mr. Thompson, and also that of Mr. R. W. Billings, who had formerly been a member of the Institute.

Professor Donaldson, referring to the career of Mr. Billings and Mr. Gutch, of whom notes have already appeared in our pages, spoke with his usual kind and hearty eloquence of their respective merits.

The Secretary then read a letter of acknowledgment from Mr. Street, with reference to the recent presentation of the gold medal which had been conferred on him after it had been declined by Mr. Rankin.

Several donations of money and books to the Library having been announced.

Professor Donaldson took this opportunity of calling attention to the very valuable collection of architectural books now to be found in the library of the Institute, and was of opinion that, without doubt, it was the best architectural library in the whole of the United Kingdom. He believed that no architect need come there in despair of finding the work he required. Professor Donaldson then called attention to the concluding paragraph of an address delivered by Mr. Boulton before the Liverpool Architectural Society, on a recent occasion, which contained a reference to the relative positions of architect and workman. "So in all good architecture," Mr. Boulton said, "those who truly help to act with honour to themselves,—the artisan as well as the architect,—are great, and the latter should ever remember his most honourable appellation means nothing more than 'chief worker.'" Such an opinion the Professor thought was derogatory to the dignity of the profession, inasmuch as it was nothing more nor less than putting architects and workmen in the relative positions assigned them by a writer in the *Quarterly Review*. He was sorry to find such a remark in any lecture, for it was not at all calculated to raise the profession or the lecturer in the estimation of the profession, when he considered himself merely as a workman.

A discussion then took place on Mr. Eagle's paper on "Vaulting," which has already been fully reported in the *Builder*.

Sir Edmund Beckett, Q.C., upon being called upon to open the discussion, confessed that he was taken by surprise. He had been asked to attend the present meeting, he thought, because he had formerly read a paper on "Domes," but he did not see much analogy between domes and vaulting. There was this essential difference: a dome stood on a supporting surface all round, while a vault rested on four points only. He had pointed out in his paper on "Domes," that there must be an essential difference between vaults and domes; but he would rather, with the permission of the chairman, adjourn his remarks until some other gentlemen had taken part in the discussion.

Mr. G. H. West, in some written observations, stated that he agreed with Mr. Morris in wishing that he knew more of Roman vault construction, for the little that he had seen at Nîmes and Arles had filled him with extreme admiration. The buildings in those two towns were strongly imbued with the Greek spirit, and in thought and artistic feeling were far superior to many buildings in Italy. M. Viollet-le-Duc had gone into Central Syria to discover the origin of the Romanesque buildings of the South of France; but at Nîmes and Arles every point on which he laid stress was found in quite as great perfection as at Chagra. These buildings were the more important, since it was certainly for them that the architects of the Cleric or Clugny school drew their inspiration, while the Northern or Ile de France school owed not a little to the builders of Clugny. The Romans used two sorts of vaults,—the barrel-vault, and its derivative, the groined or intersecting vault. The Romans, in building a barrel-vault of masonry, which comparatively they seldom did, instead of making the courses break-joint as we did, composed it of a series of juxtaposed arches, made up of very large stones of uniform size.

At each joint a centre was placed, and no continuous centering was necessary, while one template would serve for all the voussoirs. There were many examples of this vault at Nîmes, Arles, and Pont du Gard, and the same system was made use of so late as the end of the twelfth century, as in the wonderful bridge over the Rhone at Avignon. Still further economy was obtained in the so-called Baths of Diana at Nîmes, by separating these juxtaposed arches by about their own width, and using them as centering, to carry the concentric covering of thin slabs, as described by Mr. Eagles. A still further step was taken in the outer ground floor gallery of the amphitheatre. Here there was a transverse arch carried on corbels against each pier of the arading. These arches carried a continuous centering, on which a rubble barrel-vault was laid. When the Romanesque builders began to vault the naves of their larger churches, they naturally made use of the barrel vault, for they found a difficulty in covering an oblong space with an intersecting vault, and it was not always possible to cut up the nave into square compartments. Besides, all these early vaults were meant to support the tiles without any wooden roof, and the barrel-vault was therefore indispensable. This was constructed by means of a permanent centering of transverse arches, like that at Nîmes, while the aisles were covered by a series of wagon-vaults, perpendicular to the nave, and concentric with the pier aisles. These perpendicular barrel-vaults thus formed a continuous buttress against the central vault. This system, which existed at Limoges, and was common in Poitou, had several inconveniences. The only windows possible were in the aisle walls; the upper part of the vault was in darkness; and there was no triforium. It was curious, though, that they never hit upon the system adopted in the twelfth century in certain wooden roofed churches of Champagne, of placing a separate roof over each vault, and so getting windows over the piers of the nave. This system gave rise to a series of churches of extreme interest, all more or less resembling the Basilica of Maxentius at Rome. The earliest examples of them were Notre Dame des Dames, at Avignon, and St. Trophime at Arles. From them arose a set of churches, which they would do well to study more closely in England, as it did not seem right that the Church of England should let herself be beaten hollow by the Nonconformists in the matter of making buildings adapted to her services. The three-aisled cruciform church was about as ill-adapted to their purposes, especially in great towns, as any form that could be invented. In his (Mr. West's) opinion, he could imagine none more fitted for their requirement than such buildings as the two churches in the town of Carcassonne, the Tam Church, and that of the Cordeliers at Toulouse, and lastly and especially the Cathedral of Albi. In all these there was a wide nave, without aisles, vaulted generally by a Gothic vault, and lighted by rose-windows in the wall arches. The buttresses were brought inside the church, and the space between them was converted into chapels, roofed, either as at Cordeliers, and originally at Avignon and Arles, by a series of barrel-vaults perpendicular to the nave, or, much less reasonably, by a Gothic vault. Mr. West then went on to notice how every slight modification of the arches and the vaulting led to alterations throughout the entire building, and described the methods employed in filling in, observing that Gothic architecture was the result of the closest possible reasoning. The Mediæval architects were anxious to build like the Romans, but did not content themselves with merely copying the outward form of their buildings. They considered that if in Roman vaults a skeleton was needed to carry the outward form, it was right that this skeleton should be shown, and that every member should tell its own tale,—that form and structure should go hand in hand,—and if one had to give way, it must be the former, and not the latter. By following out this principle, instead of keeping the form, in the Roman vault, regardless of the results to which they were tending, they ended by creating the most complete system of architecture which the world had seen, and one whose beauty no one would deny. For the last 300 years they had been copying outside form, and every style in turn, and they might go on for ever copying and commenting upon Roman and Greek, Gothic and Queen Anne, without producing a true architecture. True architecture was that which was true to its programme and true to its means,—

which exactly, scrupulously, and economically fulfilled the conditions imposed by a want, and employed its materials without waste, according to their qualities and their properties. That which was considered the all-important question, the form, was but a secondary consideration, certain to be satisfactorily fulfilled by adherence to the ruling principle. Mr. West could not help thinking that if Ictinus and Agrippa and Robert de Concy could come back upon earth, they would each claim as Greek, or Roman, or Gothic, not the Walhalla or St. George's Hall, not St. Peter's at Rome, nor the colonnade of the Louvre, nor any of the foremost modern Gothic buildings, however beautiful they might be, but, in spite of all their faults and possible lack of beauty, such buildings as the Crystal Palace and the Albert Hall, the roof of St. Pancras Station, and the dome of the Vienna Exhibition, Menier's chocolate manufactory at Noisy, and the parish church of Rambouillet. The architecture of a people ought to be the expression of its daily life and wants, and homogeneous in all its parts. Such was Gothic architecture; but could the same be said of theirs?

Mr. Edmund Sharpe (in a communication which was read by Mr. Charles L. Eastlake) said that he felt very much honoured at being invited to take part in the discussion; but his engagements precluded him from attending in person. He wished, however, to offer a few remarks in writing, which he would have made if he had been present. There could be no doubt that the introduction of vaulting in the churches of the Middle Ages affected their design; but this was not so much the case in those times and in those countries where the simplest and the earliest forms of vaulting were prevalent, such, for instance, as in Belgium, where the cross-vault was very often employed. There was, however, one device of those builders, which was very well worthy of notice, before he passed on to consider anything else. Throughout the whole of the south of France barrel-vaults, whether circular or pointed, were generally erected in the larger churches. In the case of these larger churches it was not uncommon to support the wall on which the main vault rested by throwing half the weight, as it were, on a semioval barrel to the base of the wall. They had in this device the actual or probable realisation of the flying buttress, which became the detailed form and chief support of vaults at a later period. One of the most notable instances of the kind was to be seen in a remarkable church at Toulouse, probably erected about 1090. The vault became not only the fireproof covering of the building, but the chief principle of the whole design, and from this time the architects of the period thought of designing downwards instead of upwards. They began their design by first laying out their main vault. They next designed the arches to carry these vaults, and the mouldings with which the whole was to be girded. They, lastly, decided on the form of the piers, so that instead of beginning to arrange on the ground plan and cover it with a building, they did the opposite. He was confirmed in this impression by the remarkable fact that if the plan of by far the greater part of their cathedrals, as presented by a horizontal section of the walls, had been laid down on paper, it would be found that it presented almost invariably the true form of the Latin cross. A capital specimen of the longitudinal barrel-vault might be seen in the White Tower Chapel of the Tower of London. The quadripartite vault might be seen in Peterborough Cathedral. The pointed arches in the construction of vaulting, and the causes of its early appearance there, as well as in other arches, had been so frequently illustrated by him that they required no further comment at this time. The more frequent adoption of this beautiful mode of constructing a church was more desirable than the gaudy decoration of walls and fittings. As an encouragement to those who might agree with him in this matter, he might mention that every means existed of acquainting themselves with its cost. The use of hollow fireclay bricks might be so introduced as to render unnecessary the use of flying buttresses. It might also contribute to architectural effect.

Sir Edmund Beckett was glad to hear two at least of Mr. Sharpe's remarks referred to, the one with reference to using the beautiful designs or contrivances of vaulting in preference to the many gaudy attempts that they saw around them, and heard of for decorating buildings in other ways. As to the use of hollow bricks,

they were employed by Professor Cockerell in the vault of the Cambridge University Library long ago, although not in the most scientific manner. As to barrel-vaults, they could not stand unless upon an enormously thick wall. Mr. Eagles had denounced fan-vaulting as debased, because the multitudinous ribs did not serve any constructional purpose. But it should be remembered that these ribs were the lineal descendants of the ribs in the earlier vaults, and that the vault to which they were attached was a perfect construction. They might make any kind of arch with undecorative features, but, mechanically speaking, that seemed to him to be the simplest way of looking at the principles of vaulting. The vault was a perfect good construction, without ribs, though he was not an admirer of the latter as much as that of Middle Gothio, yet he did not think it at all fair to run down that which was the only genuine characteristic of the Perpendicular style. Perhaps he might add, too, that "Perpendicular" men were the greatest tower architects. As to fan-vaulting, he really considered it a distinct and original feature, and as they talked a great deal about arching in architecture, let them give the poor Perpendicular the credit it deserved.

With respect to the question of congregational churches, if it were true that the prevailing type of church was so unsuitable to modern requirements, it was strange that the Dissenters were everywhere building aisled and clearstoried edifices, so that one hardly knew a chapel from a church now. Referring to the article in the *Quarterly Review*, which had been mentioned, Sir Edmund said that he was not given to praising architects, but he had read the article in question, and was satisfied that the man who had written it never had designed anything. He (the speaker) had designed a great many things in his time, and designed them possibly very ill; but he would be very sorry indeed, he said in conclusion, to leave that part of the work to the very best workman he ever saw yet.

Mr. Chanoellor was pleased to hear Sir Edmund Beckett speak in defence of "poor Perpendicular" with regard to fan-vaulting, because the author of the paper, Mr. Eagles, was very sweeping with regard to this subject. After referring in detail to several specimens of thirteenth-century work in this respect, he went on to say he was of opinion that if a vault could be constructed with no flying buttresses at all, this could not be called a costly way of doing the work. As to tracery in it, that did not seem an essential part of the work at all.

Mr. Brower was of opinion that the ribs in vaulting were not constructional, and in quoting instances, he referred to a church in a town of Brittany, and another in the Abbey at Netley. They seemed in the state that all the ribs had actually tumbled out, and the vaulting still existed whole and entire. He thought that this went, to a certain extent, to prove that, even in the thirteenth century, ribs were simply ornamental features, and that in point of fact they did not support the roof, or act as centres. Referring to one or two specimens of peculiar vaulting, which he, the speaker, had met with, he said they proved that the ribs were really an ornamental feature, and certainly not in many cases an attractive feature. All the examples he had seen went to prove that the rib in point of fact was by no means of structural necessity, but was used simply for the purpose of accentuating the angles of vaulting.

Mr. Edward Hall was of opinion that the ribs must necessarily be of a constructive character.

Professor Kerr said that the real question raised in the discussion was whether in vaulting they had a mode of construction which was capable of being revived to any advantage in the present day, and whether it was likely to be carried to any greater perfection than it formerly displayed. They were all agreed that the Mediæval system of vaulting was as near perfection as anything could be, and that the system which was then particularly practised was more creditable, perhaps, to the ingenuity and to the skill of that school of designers and builders than anything else. They had now other modes of construction and other materials than stone to deal with, and the whole spirit of scientific construction was far in advance of such a system of roofing as that afforded by vaulting. The arch, even, had been almost totally abandoned by engineers, and it seemed to him that the science of vaulting was now interesting chiefly from an archaeological point of view.

TRANSITION IN ARCHITECTURAL STYLE. ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting of the members was held on Friday evening, the 14th inst., Mr. G. H. Birch (president) in the chair, when the following gentlemen were elected members: Messrs. R. Healing, J. M. Kennard, H. W. Beale, T. W. Barker, A. S. Cook, J. E. Drower, A. Tresser, C. F. Henson, H. H. Francis, and E. W. Coldwell.

Mr. S. Flint Clarkson (secretary) announced that that day fortnight Mr. Edmund Sharpe, who accompanied the members on their autumnal tour to France last August, would deliver his lecture with regard to the excursion. As it was anticipated that there would be a large gathering, and a great many drawings and diagrams would be exhibited, the meeting would take place at some other rooms, which would be advertised in the *Builder*.

Mr. A. Payne then read a paper on "Periods of Transition in Architectural Style." He commenced by stating that he wished to treat the subject in a general and historic sense; to consider what influence the great intellectual and moral changes which have transformed the face of the world in their era had had on the art of architecture, and their reference to the architectural phenomena of their own times. The question of style in architecture occupied an entirely different position in the present day from what it had ever occupied before. In the present day, in almost every city in Europe, they might find a street which had perhaps a Gothic Church, a Greek public building, a Renaissance mansion, a Byzantine synagogue, and nineteenth-century shops, within the space of a few yards. Now, antiquity showed them that an ancient Egyptian built in Egyptian, a Greek in Greek, a Gothic builder in Gothic. Why was it, he asked, that we did not always build in the style of the nineteenth century, and what was the style of the nineteenth century? Why did the Romans adopt Greek architecture? Why was it abandoned by degrees from the third or fourth century to arise? What caused so-called Gothic architecture to arise? Why did it come to a sudden stop in the sixteenth century? Why was it revived in the nineteenth? Where were they in architecture, and where were they going to? These were some of the momentous questions to which he wished to invite their attention that night. The theory that he ventured to bring forward to account for the changes was this:—Wherever they found a great intellectual development amongst mankind,—such a development, for instance, as was produced by a new birth of religious ideas,—there they would find growing up a new style of architecture, and a new civilisation. He proposed applying this theory to the history of the world from the time of Greece, and to see how it was borne out by facts. The palmy days of classic art might be said to have been the heroic days of Greece. The Greek possessed a religion of which a writer had said, that "the life of the Deity was blended with all that existed in nature, and found its consummation in man." Every faculty of man seemed by them to be educated and carried to the very highest degree of culture. Their philosophy, literature, and poetry had been the admiration and pattern of succeeding ages; and in nothing did they achieve greater triumphs than in the arts of sculpture and architecture. From Greece a few centuries took them to another and equally extraordinary development of classic civilisation—that of Rome, a kindred nation, springing from the same generic race, and with the same religion and the same architecture, but of a very different character. The ancient Roman despised learning and intellectual culture, and was content to borrow his literature and his arts from the Greeks. He was a man of action, and took "material power" for his watchword. Now, could they not see this character exactly typified in the works left behind by this great people in the fact that they had no distinct architecture of their own, but only borrowed and debased that of the Greeks, and that all their best works were done by Greek artists. Coming to the dark ages, and the decline of Rome, even a superficial glance at the writers of those times would show that, along with the breaking up of the imperial power, intellectual and religious ideas were in a state of confusion that amounted to chaos. A spirit of practical research and sceptical criticism had been abroad and undermined, amongst the people the faith of their forefathers. As one generation waxed old and feeble, another, strong and vigorous, with

new ideas and fresh aspirations, rose to take its place. So was it also in art and intellectual development. One religion or civilisation had no sooner become perverted, or unsuited to the age, than a new form or development of truth was found gradually leavening the world, inspiring the minds of men, and spreading far and wide its life-giving stream. The great and over-riding power was the Christian religion, warming men's hearts with a higher virtue and self-denial than was ever possessed by the ancient Roman, and a more poetic imagery than was ever known to the ancient Greek. The best work he knew on Early Christian architecture was that of Count Vogüé. They must all have been astonished, on first looking through its pages, at the magnitude of the changes introduced in the architecture of buildings erected for Christian use as early as the third and fourth centuries, and how plainly those changes foreshadowed the subsequent Mediæval developments. At this time the West of Europe was overrun by hordes of barbarians. Rome was in ruins. The seat of the Roman Empire and the chief city of the world was Constantinople, so that they might well expect to find in it, as was the case, the links of the chain which united classic and Christian art. After considering what were the causes which led to these seeds springing up in the East being transplanted to the West of Europe about the tenth and eleventh century, and there producing such a plentiful harvest in the Middle Ages when completely freed from their classic progenitors, he went on to say that they could at this period, from existing buildings, trace the stream of architecture as it flowed along the most used routes from Syria. They noted the Byzantine stream, running from Syria and Constantinople, planning a cathedral at Athens, and the magnificent Church of St. Mark at Venice, besides other minor churches. Italy seemed to catch the contagion, and to wake from her lethargy, and the Romanesque style in its more mature form arose, in which they saw a strong blending of the Syrian, and Eastern, and classic elements. After tracing this stream of style, running through the heart of Europe, nearly to the shores of the Northern Ocean, and down to the Mediterranean, and at the South of France, he said that he thought that no country showed more completely the steps from Romano-Syrian to the Northern Gothic than the South of France. The dictionary of M. Viollet-le-Duc, particularly under the article "Architecture," gives a series of examples which formed a complete chain between the two styles; and, under the article "Construction" and section "Vaults," the author showed step by step how the changes took place, chiefly on account of problems to be solved in roofing over gigantic cathedrals in stone, when, after repeated trials, the pointed arch was found the only one to answer the purpose. About the eleventh century, the new style, now called Gothic, had fairly taken root in the powerful nations of England, France, and Germany, who, putting their own individuality into it, advanced side by side in carrying it to perfection. From the eleventh to the twelfth century might be said to be the very brightest period that had ever appeared for architecture. In comparing for a moment the buildings erected during that period in their own land, and those erected since, he would direct their attention to the number of magnificent cathedrals, many of them in progress at the same time, all of consummate art; and to the countless abbeys and monasteries. Would any age of the world, he asked, show such a variety of form, and such originality and grace in design? In turning to the other side of the page, they found the following:—In the religious architecture of the present age they had St. Paul's Cathedral, a very noble building, but with scarcely a religious atmosphere, so to speak, about it. The greater part of the rest of the page was blotted and smeared with an infinite number of tame and milk-and-water copies from the works of their forefathers—works which if they could be beheld by the architects of Canterbury Cathedral or Westminster Abbey would be enough to make them shiver in their tombs. The great characteristic of modern times was a development of material and physical science; and if they should gauge accurately the opinion of the age, they would find that their art and aesthetics in general were pretty playthings. But it was not impossible that this exclusive attention to material science might be a sign of the degeneracy of the age. They must remember that architecture was not engineering, nor a material science, but a fine art, which was sprung deep in the inner and spiritual part of

their nature; but was this any reason why they should endeavour to go back again, architecturally speaking, to the Middle Ages? Witness how rapidly the Gothic revival had run through all the changes backwards, from Tudor to Early English, and after looking in vain for rest for the sole of her foot, was now either taking a dive into the abyss called Queen Anne, or soaring aloft to woo the long-forgotten Romanesque. Witness how it chiefly obtained in the religious world,—a world where one might still live or endeavour to live in the atmosphere of the Middle Ages. Witness what modifications it required before adapting itself to secular buildings. If there be any truth in the theory he had advanced, that architecture and moral and mental development kept equal steps, and went hand-in-hand, they could as soon go back to the manner, habits, and thoughts of the Middle Ages, as induce the mass of the people to adopt Medieval as national architecture; and it, of course, equally followed that they could as soon go back to the manners and customs of religion of the ancient Rome and Greece as adopt their architecture as entirely ours in every detail. Looking at the architectural world, they noticed confusion and conflicting ideas, in modern times, as to style; and looking at the religious world, they observed, as they might expect, an equal confusion; but there was no need to despair of that which was essential to a time of transition. It needed no prophetic eye to discern that out of the chaotic existing elements a glorious future might be preparing. Never was the world so bound into one as at present. An idea originating in one quarter of the world was flashed to the antipodes, with the rapidity of lightning, by the electric telegraph. What was contributed for the welfare of mankind by the different genius of each nation was becoming daily the property of all. What vast materials for the gradual development of a new style. Never before had all the lessons of the past been so completely laid before the present; and never had there been such skilful workmen—so many building materials, and such power to manipulate them. Yet something was wanting, and that something was,—first, a general love of beauty in everything, diffused everywhere through all classes of the community; secondly, original thought to bear upon the architectural problems of the day, not too much trammelled by the past, and the rejection of all architectural features not required by modern needs. These were the principles which had developed the noble styles of the past; and why should they not give birth to the yet more noble styles of the future?

Mr. Sulman thought that Mr. Payne had done good service by bringing into prominence the influence of the Romano-Syrian work in the course of his excellent paper.

Mr. Marnock considered that it was folly to erect a new style of architecture to be evolved unless new requirements arose with regard to it. True it was, however, that some new requirements had arisen with respect to railway stations and such like; but he was of opinion that these wants were met by the existing styles of architecture.

Mr. Phené Spiers said that there was no doubt the influence of the Romano-Syrian work had been comparatively overlooked. When the work of Count Vogüé was first published, it took architects and archaeologists by surprise to be informed that such magnificent buildings were in existence in Central Syria. He was of opinion that the style of the present day would be as distinctly recognisable 200 years hence as any style that had gone before it, and that mixture and jumble as it was, it would too truly reflect the feelings, morals, and religion of the English people.

Mr. Aston Webb thought that the theory of Mr. Payne with regard to the break of continuity in Gothic style would not hold good if it was based on the downfall of the Papacy, because in France the Papacy had always continued to be the dominant religion.

The Free Libraries Act in Bethnal-green.—At a meeting of the ratepayers of Bethnal-green on Monday last, the Rev. Septimus Hansard in the chair, it was resolved, by a large majority, "That the Public Free Libraries Act, 1865, be and is hereby adopted for the parish of St. Matthew, Bethnal-green, Middlesex." The chairman declared it unnecessary to take a poll.

EFFECTS OF THE LATE GALE IN THE METROPOLIS.

Hackney.—On Sunday, the 29th ult., between twelve and one o'clock, a severe gale of wind and storm of rain prevailed at Hackney, and whilst it was at its height a new building in the course of erection for a floor-cloth drying factory, at the east end of Dunlase-road, Clapton-park, consisting of two walls standing at right angles to each other, 75 ft. and 45 ft. in length respectively, and 40 ft. high were blown down. The whole structure was laid almost to the ground, with the exception of three pillars or corners. The building is the property of Messrs. Ridley & Co., of the firm in Essex-road, Islington, and the builders are Messrs. Pettigrew & Moyes, of Park-terrace, Stoke Newington. The building fell with a crash, but no person was injured.

Clerkenwell.—An accident also occurred in Baker-street, Clerkenwell, through the high wind that prevailed, at some new buildings that are in course of erection there by Messrs. Wheeler & Warren, of Notting-hill. The wind caught the scaffolding and forced them down. In the fall the scaffolding pulled down the whole of the side wall, broke the poles, and also the telegraph wires. No one was injured.

Notting-hill.—The shutters of the premises in course of erection by Mr. Ross, of Blenheim-crescent, Notting-hill, at the junction of the Gray's Inn-road and Pentonville-road, were blown out. No one was injured.

Finsbury.—A greenhouse at the corner of Old-street, St. Luke's, and City-road was blown down and much damaged. Two hoardings were also blown down, one at Finsbury-avenue, belonging to the Great Eastern Railway, and the other in Hill-street, Finsbury, which was in front of a house that is being pulled down.

Westminster.—About 200 yards of the hoarding surrounding the site of the Royal Aquarium and Summer and Winter Gardens, near Westminster Hospital, were carried away by the gale, and several persons had a narrow escape by the falling debris. In Parliament-street the sewers became choked by the heavy rain, and the foot-path became impassable for several hours, until the water could be run off. The parks were strewn with broken branches.

DESTRUCTIVE FIRES.

Ashton.—On Tuesday, Dec. 1st, the work-people engaged at Union Mill, Ashton, were alarmed by the cry of "Fire!" and all hastened to make a speedy exit, but some, jumping through windows on the upper stories, were either burned severely or otherwise hurt. The whole of the pile was demolished, besides some 900 spindles, representing a loss of 9,000l. to 10,000l. The property was insured in the Yorkshire Fire Office.

Dundee.—On Saturday, Nov. 28th, a fire occurred in the spinning-mill, in Douglas-street, Dundee, belonging to the Park Mill Spinning Company, and before it was extinguished property to the value of about 12,000l. was destroyed. How the fire originated cannot be explained. The whole building was almost entirely destroyed. About 300 persons are deprived of their means of livelihood. The loss is covered by insurance effected with the Northern, Liverpool and Globe, Westminster, North British, and Mercantile Insurance Companies.

Stourport.—On Sunday morning, the spinning-mill belonging to Messrs. John Brinton & Co. at this place was discovered to be on fire. The building, which is a three-story one, contained a large quantity of expensive machinery for the preparation and spinning of worsted. The premises were completely destroyed, the damage being estimated at about 5,000l. The property was insured. Between eighty and ninety work-people will, it is said, be thrown out of employment.

Droylsden.—A cotton-mill, worked by Mr. Joseph Constantine, of Droylsden, but belonging to Mr. Samuel Oldham Lees, of Davyhulme, Manchester, and another, has been burnt down. The fire originated at the headstocks of one of the mules, either through friction or spontaneous combustion. The mill, which is five stories high and twelve windows long, was entirely gutted, and damage was done to the amount of 13,000l., which is covered by insurance in the Imperial and Phoenix offices. A fire occurred at the same mill some eighteen months ago, which destroyed the easterly portion of the building, and which has not since been rebuilt.

Oldham.—Early on Saturday morning last the Crompton Mill Company's premises, near Oldham, were partially destroyed by fire, and damage done to the extent of 5,000l.

Manchester-square, London.—On Sunday last a fire, caused by the over-heating of a hot-water pipe, happened at Hertford House, Manchester-square, the residence of Sir Richard Wallace, M.P. It was extinguished by two firemen, who attended with hand-pumps, the damage being confined to a portion of the flooring and joisting in the picture-gallery, on the first floor.

DEPRESSION IN THE TIMBER TRADE IN THE NORTH.

CONSTRUCTIONAL ironworks, with their girders, roofs, rolled beams, joists, fitches, and other appliances in the place of wood, have damaged the timber trade of the North of England, and may be, elsewhere.

The largest timber firm in Sunderland, many years established, has fallen principally by a large fall in the price of timber, and the difficulty in disposing of their very extensive stock.

In the metropolis, the competition of Iron v. Timber has been foreseen, and at one of the great Baltic timber wharfs, the firm, we are told, have, to a profitable advantage, cut up and imported Norway and Swedish timber for firewood. Big timber in London is, however, fetching a good price for supports to condemned buildings, and for scaffolding uses, and the West India Docks timber-ships arriving daily, can scarcely supply London builders with the pine and fine woods required.

RISE AND FALL OF WAGES.

Advance of Wages in the Nail Trade.—A meeting of some 2,000 nailers was held at Bromsgrove last week, when it was stated that all the masters had agreed to give the 10 per cent. advance on the 1873 list of prices asked for by the men, but some of the employers had drawn up an agreement for the men to sign previously to taking out iron, binding them to work only for the master who supplied them with the iron, and fourteen days' notice on either side to be given before such employment was to cease. The chairman (Mr. H. Ince) and Mr. T. Crawford, who read the form of the agreement, denounced it as unjust to the men under the peculiar circumstances of their relationship to the masters, working, as they did, with their own tools, in their own shops; but the latter speaker said something should be done to put a stop to the practice of the dishonest workmen in the trade, who took out iron from all the warehouses where they could obtain it, and failed to work it in, and the committee would assist the masters in that matter as far as they could. A resolution was passed that the men should not sign the agreement; and it was stated that the masters were giving out iron without any reference being made to the agreement.

Reduction of Wages at Hull.—The masters of Hull have resolved upon reductions affecting thousands of hands. On the 1st of January next, boiler-makers, iron shipbuilders, shipwrights, &c., will be reduced 10 per cent., and joiners 5 per cent. Reduction in the piecework rates will also be required to come into operation at the same time.

"MR. ARTHUR SKETCHLEY."

A WEEK or so ago we accidentally entered the lecture theatre of a Literary Institution in the suburbs of London, and found a crowded audience listening well pleased to the mingled wisdom, stolidity, and vagaries of our quainfold friend, Mrs. Brown. Every sentence brought its laugh, producing that mingled succession of lulls and swells which shows the entire possession taken of his listeners by the lecturer, and must be so pleasant and encouraging for him to listen to. Some capital songs were added, and the whole went swimmingly. The complete control of countenance which is absolutely necessary for success in such works, Mr. Sketchley possesses to a marvellous extent, and no stray smile throughout the entertainment occurs to throw the slightest doubt on the reality of the relation. Since Mr. Sketchley first introduced the irrepressible Mrs. Brown to the British public, she has become an institution; she has expressed her opinions,—and very distinct and pronounced

these usually are,—on numerous public events, and these have been made into little books which have sold in thousands. As a humorist available to the public, Mr. Sketchley at the present moment stands quite alone. One point is specially worth noting, that throughout his recitals of the sayings and doings of Mrs. Brown no touch of coarseness or indelicacy ever appears, easy as it would be to slide into such an error. Mr. Sketchley came upon the scene an educated, accomplished, and genial gentleman, formerly a member of one of the learned professions, abandoned through conscientious scruples, and in all that he says and does the genial gentleman is still apparent. Some of our friends in country institutions may be glad to hear that this most agreeable entertainer is still, evidently, now and then to be had. May his shadow never be less!

FATAL EXPLOSION AT NEW SOUTHGATE.

SINCE the Regent's Park explosion there seems to have arisen a tendency to repeat such accidents, as though it were a general law that after a large catastrophe minor ones must follow. Gas explosions at this time of year are especially prevalent, and we last week reiterated the caution so necessary as to attempting with a light to discover gas escapes. But carelessness or ignorance is not easily conquered. Again another explosion has occurred, with fatal result. On the 3rd inst., at New Southgate, Middlesex, the fronts of two houses were blown into the road, and a third house was damaged. It originated either in a house occupied by Mrs. Danes, a dress-maker, where several assistants were at work, or next door, partly occupied by a carpenter and partly by a Mrs. Kennedy, one of whose children, an infant, was killed, and she herself died shortly afterwards. Several other persons were injured.

For some time past workmen have been engaged in laying the main gaspipes, which are placed under the side pavements, and not in the middle of the street. At two of the houses the inhabitants during the last few days had observed a strong smell of gas pervading the basements for which they could not account, as no gaspipes have been laid down in their houses. It is therefore conjectured that the mains outside were defective, and that the gas had thus escaped, and found its way through the foundations. Late on Thursday evening a lodger went into one of the lower rooms with a lighted candle, and the explosion at once took place. When the wounded persons were taken as far as Woodgreen, a heavy wagon, drawn by three horses, came into collision with their vehicle and smashed it. A fresh conveyance was, however, procured, and they were finally conveyed to the Great Northern Hospital, where they are now lying in a very precarious condition.

THE WAGES OF SHIPBUILDERS ON THE CLYDE.

THE shipbuilders on the Clyde have found it necessary to reduce the wages of the hands employed both in the marine engineering and shipbuilding departments of their business, and the men having been under notice, the reduction from 5 to 10 per cent. is expected generally to take effect this week. The Shipbuilders and Engineers' Association state that they have hitherto been paying an exceptionally high rate of wages, which no longer admits of their carrying on a remunerative business. The employers state that when the hours were reduced from 54 to 51 hours per day, it entailed a loss, to one firm alone, of 18,000*l.* on the work which they had in hand, and which they were compelled to complete. From meetings which the men have held, they appear to have themselves arrived at the conclusion that the times are against them.

CHARING-CROSS IMPROVEMENTS.

A COMPENSATION jury, presided over by Mr. Farrer, the high bailiff of Westminster, was engaged on the 2nd inst. at the Sessions House, Broad Sanctuary, to assess the sum to be awarded by the Metropolitan Board of Works to Mr. Bax, dealer in waterproof materials, for his premises at Charing-cross, adjoining Northumberland House, which were required for the improvements now being made and the new street to be formed. The claim was for up-

wards of 10,000*l.* Sir Henry James, Q.C., and Mr. Patchett were for the claimant, and Mr. Hawkins, Q.C. (with whom was Mr. Philbrick, Q.C.), appeared for the Metropolitan Board. The case on the part of Mr. Bax was, that he had carried on his business for thirty-six years, and had a lease now of fourteen years to expire, at 140*l.*, which was worth, it was alleged, 440*l.* He had taken new premises in Cockspur-street at 500*l.* a year, for which the premium was 2,750*l.*, and the alterations would cost 1,000*l.* The traffic would be reduced two-thirds at the new premises. The surveyors for the claimant were Mr. Green, Mr. Pritchard, and Mr. Hudson; and for the Metropolitan Board, Mr. Driver, Mr. Rushworth, Mr. Wheble, and Mr. Chadwick. A large claim was made for the loss occasioned by the removal to the new premises as well as for the leasehold property. Counsel having addressed the Court, the high bailiff summed up, requesting the jury to divide the verdict as to the leasehold and the business interest. The jury gave a verdict of 1,368*l.* for the leasehold, and 2,686*l.* for loss by removal and fixtures, making 4,054*l.*

IRON SHIPS.

THROUGH the rolling mounds of Biscay-bay, the devoted *La Plata* forged on her way, with a noble but hapless band. Three days prior to that Sunday dire, they sat in happy homes. She was skilfully guided, all doing their best, for their iron ship's fight with surge-ridged crest. Ah! a shout, "A leak!" Let us draw the curtain, and seek the cause, in things material, iron laws. Examine the inner side of iron ships, you can pick off flakes of oxidized chips; thus, daily, thin plates become thinner. Recently, a Royal ship, with 500 men, was started with decayed plates no thicker than tin. They are surveyed (?), it is avowed, then off they go. Alas! there is no hanging yet for sending seamen below—more's the pity! Mr. Editor, my atmospheric remedy you published two years since; but it is vain to expect improvement where power is not linked to sense. Difficulties are overcome in many simple ways; but official dotards view inventions new by the light of other days. On the *Rialto* we will meet them in public as men; but decline to enter the portals of worse than a pirate's den.

R. T.

ANTIQUITIES OF YARMOUTH.

THE Town Council of Yarmouth desiring to see a building erected suitable for the purposes for which the hall of the Tolhouse is now applied, intimate that this ancient structure will have to be demolished. To obtain the desired object, it is necessary to destroy one of the most interesting examples of a municipal building yet remaining in the kingdom? Some of the inhabitants think not; and Mr. Chas. John Palmer makes a strong appeal in its favour, which appeal we endorse. Before the work of demolition commences, it may be well to consider the following suggestion:—Clear this ancient hall of the wooden gallery and erections with which it is now encumbered, and restore it to its original proportions, with an open-timbered roof of the period. The town will then have a spacious apartment, forming, like Westminster Hall (on a smaller scale), a spacious and useful ante-chamber to the law courts, which can be built behind it. We trust the Town Council may be induced to pause before they commit what many persons will think "an act of Vandalism."

CHRIST CHURCH, CHALTON STREET, ST. PANCRAS.

This church has recently been re-opened, after having been decorated. The works were entrusted to Messrs. Pitman & Cuthbertson, under the direction of Mr. Billing (of the firm of Newman & Billing, architects). The roof of the chancel is ornamented with a vertical pattern, the colours being grey, red, and black, upon a white ground, and with red radiating stars. The stonework of the three east windows are relieved with black, marone, red, and gold. A conspicuous part of the decoration of the chancel is the text which runs round the whole of the upper part of the wall and under the windows:—"Holy, Holy, Holy, Lord God of Sabaoth, heaven and earth are full of the majesty of Thy Glory," in old English characters. The lower part of the walls is painted white, with a curtain

pattern, diapered in green, red, and gold. The church has a high-pitched open roof, and the principal timbers are ornamented with a simple yet effective pattern in black, white, and red, the purling being light blue. The columns supporting the arches in the nave and the galleries are slightly ornamented in gold upon stone colour, marone, and blue groundwork, the gallery-fronts oak, and coloured chambers. The entire cost has been defrayed by the gentleman who built the church, Mr. Geo. Moore.

TRAPS AND SEWER GAS.

SIR,—In reply to "L. R.," I may say I have tested the resisting power of the ordinary water-trap, and refer them to the report of Messrs. Parkes and Sanderson as to the sanitary condition of Liverpool, and to the further report of the borough and water engineer upon the condition and ventilation of the sewers. The latter report being, one might say, a continuation of the former, and in which they will find dealt with the "density," "pressure," and "temperature" of sewer gases, and also the "evil" "diagnosed" in an "accurate and scientific" manner; let me, however, caution them against drawing too conclusive analogy from Liverpool in the interests of London.

H. M.

PROMOTERS' LIABILITY TO RECOUP RATES.

SIR,—With reference to the case reported in your last issue, the Parish of Lambeth v. The Metropolitan Board of Works, I would beg to suggest a question. If builders and other promoters of street improvements are liable for deficiencies of rates on demolished properties, are they not entitled to the selling freehold value of the enhanced rates accruing upon properties of greater rateable value than those demolished?

This may be calculated, according to the current price of money, at twenty-five to thirty years' purchase of the increased rate, and would in many cases form a premium on the enterprise. If unoccupied houses pay no parish rates why should the act of pulling them down revive the liability?

THOS. CHAS. SORBY.

WHITECHAPEL CHURCH.

On the 7th inst. Dr. Middleton applied at the Consistory Court (Dr. Trieman, chancellor of London), for a licence or faculty to pull down St. Mary's Church, Whitechapel, and build another on the site. Mr. O. Coops, M.P., had offered 12,500*l.*, and the parish would collect 6,000*l.* more. The chancellor, being satisfied as to the plans and provision made for the graves, decreed a faculty as asked for.

SCHOOL BOARD SCHOOLS.

Great College-street Schools, Camden-town.—These schools, the seventy-second opened by the Board, are situated at the angle of Reed's place and Great College-street, within a short distance of the Camden-road station (North London Railway). They occupy a very open and commanding position, which will yet be further improved when the contemplated alterations in the surrounding houses are carried out. The schools consist of an L-shaped block of buildings three stories in height, the ground-floor being devoted to the infants and babies, the first-floor to boys, and the second to girls, the two latter being approached by a double staircase, contained in an octagonal tower, which forms a feature in the elevation, and provided with cloak-rooms and lavatories to each on the half space. Each division contains a large schoolroom, with three class-rooms adjoining, with mistress's room in the tower. The sanitary conveniences are well arranged, and the playgrounds of good size. The elevation is of the usual character, in stocks and red bricks, relieved by the introduction of buttresses at some of the angles, &c. Accommodation is provided for 800 children, at a cost of 11*l.* 15*s.* 1*d.* per head, including the purchase of the site, &c. Mr. E. R. Robson, of the School Board for London, was the architect; the contractor being Mr. R. Mann, of Kentish-town, and the clerk of works Mr. E. Sibson. The schools were publicly opened by Sir Charles Reed on the 3rd inst., at a crowded meeting of ratepayers and others. At the conclusion of the meeting, a selection of music was performed by

a choir of thirty voices, under the direction of the clerk of the works.

Stourbridge.—At the meeting of the Board, on the 30th ult., tenders for the erection of the Board schools, in accordance with the plans of Mr. Smallman Smith, the architect to the Board, were considered. The tenders, which included school buildings, master's and mistress's residences, and clock-tower, were as follow:—

Rhesley	24,321 19 11
Stourbridge	4,193 0 0
Binnia & Sons	4,140 0 0
Horton	3,958 0 0
Chapman	3,958 15 1
Bennett	3,814 10 0
Guest	3,676 0 0
Foster	3,533 10 0

Subject to the approval of the Education Department, the tender of Mr. F. Foster, of Leamington, without teachers' residences or clock-tower (£2,168 1), was accepted.

WIRES IN CHURCHES.

Sir,—We are in a "fix." We happen to have under our charge a fine parish church of cruciform plan, consisting of nave, with north and south aisles; choir, with north and south aisles, north and south transepts, and central tower. All the interior is open, extending from end to end 240 ft., with a central height of nave and choir of 70 ft. Of course the aisles are separated from the nave and choir by stone arcades, supported by massive stone columns, and the ceilings of such aisles are only about 35 ft. from the ground. All the ceilings throughout the church are of groined stone. The pulpit stands at the corner of one of the tower piers. Our difficulty is that a very large proportion of the congregation (which may be estimated as somewhat over 2,000) cannot hear the words which the reader or the preacher may utter. Soft, clear voices, however, hear better than full-toned, rich, powerful speakers. Now, Sir, can we by any adjustment of "wires" nullify the effect of the resonance in our church? If so, will your able correspondents tell us how high to place them, at what distances, how many, of what material, and of what size? We are given to understand there are a great number of wires in Gloucester Cathedral, and no benefit has resulted from them. Is this because there are too numerous, or wrongly placed, or of improper material or size? On the other hand, we read and hear of many instances of success resulting from their use. Any information of real practical value will be thankfully received by
THE CHURCHWARDENS.

THE DECORATION OF ST. PAUL'S.

Sir,—There appearing to be a strong impression abroad as to the authorship of the design lately set aside by the Committee, perhaps you will kindly allow me to say that, whatever its merits, Mr. Burgess is solely responsible for it.

The position occupied by Mr. Penrose is simply that of architectural adviser to the committee. Your friend of this will oblige.
G. MCD.

COMPENSATION FOR INJURY.

WISE V. JACKSON AND SHAW.

This was an action at the Court of Exchequer, on December 2, to recover compensation for serious bodily injury sustained by the plaintiff in consequence of the alleged negligence of the defendants' servants. On the 8th of May last, whilst the plaintiff, a carpenter, was passing through Downing-street, carrying a plank upon his shoulder, he was struck to the ground by a piece of timber belonging to a hoarding then being taken down in front of the new Colonial Office falling upon him. He was conveyed to Westminster Hospital, where he remained about two months. He had received severe contusions, and suffered in consequence much in his spine and kidneys. He had also been attacked with epileptic fits. Messrs. Jackson & Shaw were contractors for the works connected with the Government building, and they were held liable to the claims of the plaintiff in consequence of the accident. On the part of the defendants it was denied that there had been any negligence in the removal of the hoarding in question; and that it was blown down by a severe gust of wind, causing the accident complained of. It was further shown that the defendants had offered to send him into the country at their expense, and also the situation of timekeeper at 9d. an hour.

The jury found a verdict for the plaintiff—damages, 90l. The judge said it was due to the defendants to say that they proved their willingness to do the best they could for the man.

ACTION FOR DAMAGE DONE IN BUILDING.

SMITH V. MOORE AND ANOTHER.

The defendant was sued in this action (Court of Queen's Bench) to recover damages caused to the plaintiff's premises, goods, and business, in consequence of alterations made on the defendant's premises.

The plaintiff is a baker, whose shop is in Goswell-road. The defendants are Messrs. Moore & Copestake, linen-drapers, having premises next door to the plaintiff's. Towards the end of 1871 the defendants wished to alter their premises, and gave notice to the plaintiff, under the Metropolitan Building Act, of their intention to do so. The alterations necessitated the taking down of the party wall between the plaintiff's and defendant's houses. The contract was taken by Mr. King, a builder. The plaintiff complained that there was great carelessness in taking down the wall and shoring up his house and doors, and that there was not sufficient protection put up to keep the

rain and wind out while the party-wall was down. The defendant's case was that there was no damage done, except what was inseparable from such work, and that all damage was made good and everything reinstated, and, in fact, that the house was in a better condition after than it was before the alteration was made. At the close of the evidence.

The Lord Chief Justice, in summing up, said that very important questions were raised, one of which was whether a person who had the power which is given him by the Act of Parliament to another person is liable for the negligent acts of that person. His lordship pointed out that the Metropolitan Building Act, which gave to people the power of pulling down portions of other persons' premises for the alteration or improvement of their own, also says, that whatever may be damaged by such work shall be reinstated and made good. Here, he said, the plaintiff claims on two grounds,—first that he has been damaged by negligent acts of the defendant or of the persons employed by him; and, secondly, that the damage which has been done otherwise than by negligence has not been reinstated or made good as it should have been.

The jury, after an hour's deliberation, found that the plaintiff's house had been damaged by the work; that the hoarding had been kept up for an unreasonably long time; and that the plaintiff's stock had been injured and damaged by negligence of the workmen, and they assessed the damages at £407, for which sum the verdict was entered for the plaintiff.

Leave was reserved to the defendant to move upon a point taken by Mr. McIntyre, as to the liability of the defendant for the negligence of the contractor.

A CLAIM FOR DILAPIDATION.

LEACOCK V. THOROLD.

This was an action at the Clerkwell County Court, for the recovery of £12 6s., being the cost of certain dilapidations said to have been caused by the defendant. The plaintiff was the executrix of the late Mr. Leacock, of No. 7, Powell-street West, St. Luke's, and was represented by his son. A house situate in Skinner-street was owned by plaintiff, and was let to the defendant, Thorold. There was an agreement between the defendant and the plaintiff that the house was to be given up in as good condition as when taken, fair wear and tear excepted. The defendant having found another tenant, left the house to the plaintiff, who found that the house had been badly used; the kitchen floor had been broken, a partition had been broken down, a fire-stove taken out, doors left off their hinges, and ironing boards torn away from the back of the stove. He employed a Mr. Mitchell to do the work at a cost of 13l. 5s.

Mr. James Mitchell, builder, of 46, St. John-street, Clerkenwell, said he was engaged by the plaintiff to repair the house in Skinner-street. About two years ago he saw that the stove had been taken out to enable the defendant, who was an electro-plater, to have a furnace so that he might use the kitchen as a workshop. The amount he charged was 12l. 10s., which was a fair and reasonable sum.

Mr. Peckham, for the defendant, said that when the defendant went into possession, he gave the plaintiff 5s. as a security for the proper protection of the fixtures in the house; therefore, there was that amount to come off the plaintiff's claim. His Honour was against the defendant. Mr. Peckham had good room for complaint against the plaintiff, because the defendant left the house in June, and never heard a word about dilapidation until last October, when it was too late to employ a surveyor to see what the real cause of complaint was.

His Honour said, he could not see that a case had been made out by the plaintiff, because he did not see that the real condition of the house was when the defendant entered it. The damage done by the removal of the partition was acknowledged, and then he understood that there had been some damage to the front of the house in the removal of defendant's furniture from the house. Taking all these matters together, he thought if the plaintiff was still in possession of as the defendant would amply cover all loss, and that his judgment would be for the defendant; but each party would have to bear their own costs.

THE QUEBEC INSTITUTE.

The second session of the Quebec Institute since its occupation of the premises in Lower Seymour-street, Portman-square, was inaugurated on Tuesday, the 24th ult. The Quebec Institute aims at affording means of study and self-improvement to persons of both sexes. During the past session 653 students joined the classes; and that number fifty-four presented themselves for examination in connexion with the Science and Art Department and the Society of Arts, and fifty-one obtained prizes or certificates.

Lord Lytton, after regretting the absence of the Earl of Lichfield, expressed his satisfaction at the success which had so long attended the operations of this Institute. Institutions of this kind were among the most hopeful means in these days for the continuance of the prosperity of this country, and for averting the dangers which some believed to be threatening that prosperity. This institution was one of those societies which had sprung into existence thirty or forty years ago, for the intellectual cultivation of the people, and in particular for teaching the principles of scientific and art workmanship. These were among the most hopeful means we had for averting the dangers which some saw in these days to the continuance of the prosperity especially of the working people of this country. It was a question whether in these days there were not at least two great discoveries or inventions from which we might anticipate a long period of wealth and prosperity. He meant the

railways and the telegraphs. None of them had the least idea what would be the ultimate results of these two great inventions. There were 800 persons employed in the telegraph office at St. Martin's-le-Grand, two-thirds of whom were young women; and it was a fact, that in that room, to save time, messages were sent from one end of the room to the other by telegraph, instead of by a boy. The railway and steam-engine were merely the means to an end. How were those thousands of telegraphic messages calculated to increase the enlightenment and prosperity of this country? Could anything be more clear than that they would do nothing like the amount they could do, that none of those great mechanical appliances would be anything like what they ought to be unless guided and directed by well-educated people? Therefore it was that they desired to see the people of this country well instructed, cultivated in their minds, and able to apply themselves to the objects which they were to promote. He believed human industry would always enable the population of the world, down to the lowest, to have that amount of comfort and reasonable enjoyment which they ought to have. The energies of a country like this would never be exhausted.

His lordship then distributed the prizes to the successful competitors, to each of whom he made an encouraging observation.

ACCIDENTS.

Fatal Accident at a Pumping Station.—On Friday, November 27th, Mr. Bedford held an Inquiry at the Board-room, Mount-street, Grosvenor-square, respecting the death of William Bacon, thirty-nine, a workman employed at the pumping-station, at Chelsea, of the metropolitan main sewer. It appeared from the evidence of Henry Goodridge, the foreman of the works, that on Saturday last the deceased and another man were engaged in lowering an immense pipe (weighing no less than 10 tons) to the bottom of the sewer. One end of the pipe rested on the wooden stage and the other end was suspended by an iron girder and chains from another stage above. "All right" was cried out from below, and two wooden supports were taken away. Just as the tube was beginning to swing, the girder and chain broke, and the pipe fell upon the deceased and crushed him to death. Witness said the girder was not strong enough to bear the weight, but for many years the same machine had held immense weights.

Accident at Steel Works, Rotherham.—On the 1st inst. an accident occurred at the Phenix Bessemer Steel Works, the Lokes, Rotherham. Mr. J. Hammill, stock-taker, of Mashborough, was employed, with several men, in taking account of metal used, when the table of a hydraulic lift broke, and a quantity of pig-iron fell upon him. His left leg was fractured in two places, and he, as well as several of the other men, had a very narrow escape from being killed by the falling metal. The same lift had previously broken in a similar manner.

A Sewer Fallen in at Ipswich.—On the 4th inst. Captain R. H. Lloyd-Anstruther, adjutant of the 2nd battalion Suffolk Rifle Volunteers, was driving with a lady across the Cornhill, when just at the entrance of King-street the ground gave way beneath the pony's feet, throwing the pony down, and cutting its knee, besides breaking the shaft of the phaeton. The cause of the accident appears to have been this. The sewer is composed of 12-inch but-pipes. Owing to a stoppage the sewage found its way through one of the joints, made a way for itself in the earth around, gradually increasing the aperture till there was but a thin crust of road above it. The pony setting its foot on this thin crust, the surface fell through.

Fall of Brickwork.—An accident occurred on Monday afternoon on a scaffolding between some houses now being erected in Camden House-road, Kensington. Some brickwork at the top of the building gave way, carrying a portion of the scaffolding with it, and injuring several of the workmen engaged. Five men were removed to the hospital, and one was in imminent danger of his life.

Fall of a House.—Two men were killed at Bristol on Monday by the falling of a house in course of removal in Old-market to make room for a new brewery.

Accident with Machinery.—At Messrs. Adams's brassfoundry, Bristol, one of the workmen was killed and frightfully mutilated by coming in contact with machinery in motion.

Fall of the Crown of an Oven.—An inquest was held at Blewberry on Tuesday, December 1, on the body of Albert Williams, of Blewberry, mason, aged thirty-seven years. Deceased was employed by Mr. John Hall, of Blewberry, baker, to build him an oven, which, in the course of erection, had to be filled with mould to form the crown. The deceased was inside the oven, engaged in removing the mould, when the crown of the oven suddenly gave way and fell on him. On being taken out after a quarter of an hour's work, it was found that the unfortunate man was quite dead. Verdict—accidentally killed.

MONUMENTAL.

The City Statues.—The Surveyor said he wished to bring the condition of the bronze statues in the City before the Commission. They were not in a worse state than the other statues of bronze in London, but their condition was deplorable. To keep them in a thoroughly good condition would require a large annual outlay, but he asked the Commission to refer the matter to the Streets Committee, to see if they could not devise some means of improving their condition at a small annual outlay. The recommendation was adopted.

Memorial to Sir E. Beckett.—It is announced that this memorial is, at the request of the family, to take the form of a canopy to protect a statue which will be provided by the children of the deceased baronet. It would certainly have prevented further delay had such a fact been announced to the public meeting held at the Mansion House last week. The commission for the statue, it is stated, has already been given to Mr. Noble, a sculptor fully competent to do justice to the work entrusted to him.

Deceased Academicians.—The busts of six late members of the French Academy have been placed in the Institute; they are:—The Comte de Chabrol, by Petre; Stanislas Julien, by C. Dageorge; Villenain, by Lequien; Baron Larrey, by Meunier; Baron Dupuytren, by Halon; and Meyerbeer, by Baujaik.

Edgar Allan Poe.—The grave of Edgar Allan Poe will soon be marked by the monument it should have had long ago. A design has been secured which is considered good and appropriate.

Monument to the National Hero of Roumania.—In Bucharest, the other day, Prince Charles, who was accompanied by the Princess, unveiled the statue of Michael the Brave, whose name, he said, recalled the memory of the most glorious period in the annals of the country, when that prince had fought for the defence and independence of Roumania.

Monument to an American Poet.—Americans propose to erect a monument in honour of William Cullen Bryant, the distinguished poet and journalist, who recently attained his 80th birthday.

Monument to Manin at Venice.—The Royal foundry of Munich has just cast successfully the monument which the city of Venice is about to erect to Manin, on the square which bears the name of that illustrious citizen. The model of this memorial was furnished by the Venetian statuary, Luidgi Porro.

VARIORUM.

The current number of *Belgravia* includes a charmingly written paper on "Mr. Irving in 'Hamlet,'" by Mr. Charles Lamb Kenney, in which the great merits of the personation are forcibly pointed out. Mr. Kenney has that connoisseurship in acting as well as the felicity in discriminating and expressing nice distinctions and differences of shade and colour with which he rightly credits his name-giver, Charles Lamb, and it is to be hoped the public will often have the advantage of his abilities in this direction. At the present moment, when an intelligent interest in actors and the drama is fast increasing, such criticism as Mr. Kenney can obviously give would be of the greatest value, and should be secured in the interest of the art. As to the exchange of fine works, the *Art Journal* says,—"The Prussian Government has sought from that of Italy, as we are informed by *La Fédration Artistique*, permission to have moulded and cast the most famed works in marble or bronze to be found in Florence. This application has a more especial reference to the Venus de Medici, the Medicean Vase, the David of Michelangelo, the

Perseus of Benvenuto Cellini, and the celebrated friezes which Donatello and Luca della Robbia sculptured for the Duomo, but which are, at present, in the Museo Nazionale. A fine-art consultative commission, to which this matter was referred, has given an acquiescent decision, but upon the express condition that the moulds shall be prepared by the most skilful Florentine artists,—that only one work shall be in hand at a time, so that the public may not be deprived of the view of more,—that a perfect proof of each casting be made for Italy, and the moulds also shall be preserved as her property."

The *Popular Educator* for December gives this information as to the preparation of lampblack:—"When about to prepare lampblack, the manufacturer forms for himself a sort of coffer or box. This is accurately closed at every joint, but at the top a sort of ventilated stopper-arrangement is placed. This is provided with a number of holes, over which a sort of cone or case of linen cloth is fastened. At a convenient distance from the box and cone a narrow-mouthed furnace is constructed in such a way that as the waste tar products are subjected to heat, the vapours given off from them find their way through a channel or passage up into the box and to the interior of the covered linen bag. Here the hot fumes, charged as they are with carbon, in a minute and in fact almost an impalpable condition, become condensed, and the rich black powder, resulting from the condensation, rapidly and thickly deposits itself on the interior of the linen cone or bag, and as continuous volumes of thick, heavy smoke, which are produced by the constant addition of fresh fuel to the furnace, flow outwards and upwards, they continue to contribute their quota to the deposit in the cone. This in time becomes so thickly coated with carbon that it becomes necessary to remove the contents. This is done by first thoroughly beating the outsides of the cones with sticks, and then passing the powder downwards through channels to barrels placed for the reception of the lampblack."—Messrs. De la Rue & Co. have issued, as usual, their "Indelible Diary and Memorandum Book" for the coming year in all shapes and sizes, and every degree of elegance: it is a positive pleasure even to touch some of them, so soft and satiny are they. The new year! 1875! Good luck-a-day, it seems but a week ago that we were recommending those they issued for 1874, now nearly passed and gone!

Miscellaneous.

Eastwell Park.—Some two miles or so from the town of Ashford is Eastwell Park, the country residence of the Duke of Edinburgh. It is mentioned in Domesday, and was given by the Norman conqueror to one of his adherents. Subsequently it passed into the possession of various families, and finally into that of the Finches, Henegages, and Wincheleses. The first Earl Wincheles died in 1633, and his monument still remains in the church. The second Earl Wincheles, who took a prominent part in the restoration of Charles II., died in 1689. The same Earl Wincheles was called on to render aid to James II. in 1688, when he took refuge in the neighbouring town of Paversham, in his attempt to escape to France. Tradition has it that a natural son of Richard III., after an interview with his father prior to the battle of Bosworth in 1485, and at which his father promised to acknowledge his son in case of victory, betook himself here from Leicester after that fatal fight. At Eastwell he remained incognito, occupied himself as a bricklayer, died at the age of eighty-one, and was buried in the church in 1550. The park contains, we believe, nearly 2,000 acres, and is well timbered. The edifice is, for the most part, of modern date, and of mean appearance; but other portions date from the time of Elizabeth. Recently a temporary structure has been erected to serve as a Greek chapel for the use of the Duchess. The mansion was lately leased to the Duke of Abercorn, and since it has come into the occupation of the Duke of Edinburgh very extensive works have been carried on.

Hampstead Hospital.—At a meeting of the Metropolitan Asylums Board on Saturday, December 5th, a motion "that the intention on the part of the Board to convert the Hampstead Hospital into one for infectious diseases be abandoned," was rejected by a majority of thirty-one to three.

The Question of Wood Paving.—At the Paddington vestry, on the 1st inst., a report was brought up from the highway committee relative to the repairing of Edgware-road, Finsbury, and Westbourne-grove with an improved wood paving. It set forth that the cost of laying 6,200 yards in Edgware-road would be 3,900l.; Finsbury-street, 5,500 yards, 4,125l.; and Westbourne-grove, 3,900 yards, 2,925l.; the Improved Wood Paving Company undertaking to keep it in repair for two years free of cost, and to keep it in repair for the next fifteen years at the rate of 1s. 2d., 1s. 4d., and 1s. per square yard respectively. The committee had received from Mr. Haywood, the City engineer, a letter stating that to show that the Commissioners of Sewers were satisfied with the paving, they had ordered that Bishopsgate and Aldergate-street, St. Martin's-le-grand, Angel-street, and King Edward-street should be laid with it at once. These matters had been fully investigated, and the committee recommended that no action should be taken in respect of the roads at present.

Panic in a Church.—Lamborne Church, Berkshire, is a structure of the Norman period, surmounted by a tower, which has long been in a dangerous state. About a century ago the tower was bound round with iron outside, and inside a frame was put up on which the bells were hung, so as to spare the walls as much as possible the weight and vibration of the bells. Mr. Street, R.A., and several other architects have examined the tower, and pronounced it to be in a dangerous condition; but as yet no steps have been taken to put it in a proper state. While the parishioners were seated in the church on Sunday morning, Dec. 6, a loud noise on the roof was heard, and most people came to the conclusion that the tower was falling. The congregation quickly vacated their pews. The vicar suddenly closed his sermon, and, with the surpliced choir, made a rapid exit. On examining the exterior, it was found that the noise was caused by a quantity of plaster falling from the tower upon the roof of the church.

Precautions against Fire.—In February last a portion of the largest cotton-mill in Brighouse, and one of the largest in Yorkshire, was completely destroyed by fire. The portion saved from the ravages of this fire has been rebuilt, and is on the point of completion. It had also suffered from fire in 1866. Immediately after the fire in February last, the proprietor (Mr. James M. Stott) determined on having means and apparatus adopted to subdue any fire that might occur in the future, and entrusted the fitting up of the remaining portion of the mill, which is seventy yards long, and seven stories in height, with fire-extinguishing appliances, to Messrs. Inman, Stones, & Co., of Brighouse, manufacturers of fire-extinguishing apparatus, who have now completed it. In each room there are two fire-cocks, with hand-pipe and hose-pipe attached to them, ready for use at a moment's notice. Other mill-owners in the neighbourhood are following Mr. Stott's example.

Free Libraries.—Mr. Gibb's work on the operation of the Public Libraries Acts shows that Manchester possesses six free libraries, issuing about 555,085 volumes per annum; Birmingham has five libraries, which in 1872 issued 286,873 volumes; Wolverhampton issued 91,599 books in that year; Leeds issued 304,293; Sheffield, 244,819; Bradford, 117,000; Leicester, 138,149; Bolton, 16,231; Nottingham, 6,147; Blackburn, 28,788; Birkenhead, 52,633; Rochdale, 17,247; Middlesbrough, 33,073; Cambridge, 48,595; and the Yorkshire Union of Mechanics' Institutes, 319,560. Besides these statistics, Mr. Gibb gives some information regarding the amount of local taxation necessary to produce these results. It appears from his calculations that, to approximate the book supply of St. Pancras to that of Sheffield, a rate of but little more than 3d. would be required.

Opening of the New Masonic Hall at Derby.—On Thursday, December 3rd, the new Derbyshire Masonic Hall, in Gower-street, Derby, was formerly dedicated by Bro. the Marquis of Hartington. The banqueting-room is 45 ft. by 30 ft., in front of which are committee and retiring rooms. A stone staircase leads to the upper hall, which is 58 ft. by 30 ft. and 20 ft. high. Mr. G. H. Sheffield, of Derby, is the architect, and Mr. G. Woodwiss the builder. The attendance numbered 200 brethren, who went in proper procession from the lower to the upper room.

Sanitary Works in Russia.—The sewerage of St. Petersburg has for a long time past occupied the attention of the governing body of that city, and, as might be expected, the war of rival systems has violently raged there, the struggle being between the water-flushing plan, the Lierneur system, and various path methods of removal. The city engineer, Connt Stuckenberg, was appointed to examine and report upon the subject, and he accordingly spent much time in travelling about for this purpose. He devoted considerable attention to the Lierneur system in operation in Holland, and the result appears to be that it is selected to the exclusion of all others. It is stated that Dr. Stuckenberg, the well-known financier and contractor for public works, has undertaken to put the system into the whole of St. Petersburg for the sum of 28,000,000 roubles, equal to nearly 4,000,000. sterling.—*Public Health.*

Sanitary Works Association.—Announcement is made of the incorporation of this company, with a capital of 150,000*l.*, in 15,000 shares of 10*l.* each, for the purpose of carrying out, under the supervision of eminent scientific and practical men, works acknowledged to be essential to the welfare of the general public. These are stated to consist of household or domestic sanitary works, including arrangements for railways, bank and public buildings, &c.; also under the head of general or public sanitary works, sewerage, water-supply, construction of public baths and washhouses, public provision for disinfecting clothes, houses, &c.; provision for public mortuaries, the removal and disposal of refuse from houses, &c., not being sewage, and further to assist in the development of good sanitary inventions, and in special cases to obtain exclusive rights in them for the purposes of the association.

Street Paving, St. Pancras.—A report was received on the 4th inst. from the Works Committee of the St. Pancras Vestry, forwarding a report of Mr. W. B. Scott, chief surveyor, as to the heavy expense of maintaining the roadway of Manchester-street as a macadamised road, and stating that the cost of paving the roadway with 6 in. by 3 in. granite sets, on 9 in. of concrete, will be about 2,560*l.*, which, if borrowed at the rate of 4*l.* per cent. interest, the annual average payment of interest and principal to pay off the loan in twenty years will be equal to 188*l.* per annum, being a less sum than the cost of maintaining the roadway as macadamised road, with the traffic that is now thrown upon it, and recommending that the street should be paved, and the cost thereof defrayed by a loan, to be repaid with interest in twenty years. The report was adopted.

Sinking of a House at Hythe.—A misfortune has occurred in the construction of the New Station-road which will probably cause some expense to the ratepayers of Hythe. On a bank close to the road is a prettily situated residence called Spring-grove Cottage, in the ownership and occupancy of Mr. Rolfe. A cutting has been made at the side of this house, and at the last meeting of the Council it was stated that cracks had appeared in the walls, and the premises are now desolate and seemingly in the first stage of ruin. Workmen are busy supporting the embankment with a strong wall. The new station at the top it was feared would slide down in the same way as Mr. Rolfe's house, and underpinning with massive stone-work to a great depth has been going on for months.

Counting the Buckets.—Many of the readers of the *Builder* have seen working on the Thames a steam dredger, named the *Sampson*, with an endless chain of laden buckets rising at a low level and disappearing at a higher altitude. The *Sampson* of the Thames has, it seems, been moored at Hartlepool, and as it works by tide Sundays are perforce called in as a working day. Miners are an inquisitive body of men, and on their leisure day a number watched the *Sampson's* buckets go up and down, and tried to count them. Having reached 1,000, they gave up their task, exclaiming, "Sampson was a strong man, but, by gum, lads, he never lifted so many buckets of mud as this fellow, and keep at it as he does; when will the last bucket stop, eh?"

Purchase of Metropolitan Gas Works.—The Metropolitan Board of Works, on the 4th inst., adopted a report recommending the purchase of all gas companies' works within the metropolitan area.

Dangerous Pavements.—On the 1st inst., the Westminster coroner held an inquiry at Knightsbridge into the cause of death of Mrs. Bridget Nolan, aged 51, the wife of a builder, living in Jubilee-place, Chelsea. The deceased, in company with her husband, was walking along the Brompton-road when she accidentally slipped off the kerb into the road. At the spot where she fell the pavement is considerably above the level of the roadway, and the poor lady pitched with fearful violence upon her head, fracturing her skull in two places, death being almost instantaneous. The jury returned a verdict of accidental death, and some of them expressed an opinion that the sooner such high pavements were done away with the better.

The Enlargement of the University of Edinburgh.—A public meeting was held on Monday, the 7th inst., in Willis's Rooms, King-street, St. James's, for the purpose of bringing before the notice of those resident in London the proposals for extending and improving the buildings of the University of Edinburgh. The Duke of Edinburgh took the chair, and in the course of his address, said that 70,000*l.* had been subscribed for the enlargement of the University. That sum was not enough, and now an appeal was being made to the graduates of Edinburgh scattered throughout the world and to the rich Scotchmen resident in the metropolis to supplement this sum so as to bring it up to 100,000*l.*

Gas Superseded.—The town of Whiteley is now lighted up with petroleum in lieu of gas. The three years' contract between the Improvement Commissioners and the Gas Company has recently run out, and the company refused to enter into another contract under 2*l.* 15*s.* per lamp per season (they doing no repairs), the old price being 2*l.* 5*s.* per lamp (they doing all repairs). The demand was rejected by the commissioners. The Gas Company declared they would not take less. The commissioners purchased petroleum lamps, advertised for persons to light them, &c., and now the town is lighted with petroleum.

The Gasworks at Bognor. The winds of Saturday and Sunday having caused some defects in the shaft, the active manager, Mr. J. Hammond, jun., secured the assistance of members of the Volunteer Fire Brigade. After planks had been placed on the roof of the condensing house in case of falling bricks, the brigade at intervals threw large quantities of water on to the shaft, and so cooled it. They continued to do this until between two and three o'clock in the morning, when it was considered that danger was over. It is now evident that the whole of the shaft must be taken down.

Purchase of the Birmingham Water-works.—A special meeting of the Birmingham Town Council has been held, to consider the question of the purchase by the corporation of the water-works undertaking. The market value of the company's shares is now 1,010,000*l.*, the capital having been doubled in ten years. The council have authorised a committee to prepare a Bill for a transfer by agreement or a compulsory purchase, and to negotiate terms. The medical officer of health's analysis of a number of wells in the town, showed that in many cases the water was worse than the sewage itself.

Bracket Lamps, St. Pancras.—The View Committee have recommended the adoption of some general resolution to regulate the erection of bracket lamps, and that, except under specially objectionable circumstances, the chief surveyor be authorised to intimate to applicants that there is no objection on the part of the Works Committee to the erection of such lamps, provided that when the same are intended to project over the private way or forecourt, the height of the lowest part of the bracket shall be at least 6 ft. 6 in., and that over the public way the height of the lowest part shall be at least 7 ft.

Destruction of Kennington Manor-hall. The old Manor-hall of Kennington, in Lower Kennington-lane, Lambeth, which has for some years been appropriated as a reformatory, known as the Female Philanthropic School, is about to be pulled down for street improvements. The Manor-hall was built in the reign of James I., and stands on the site of an ancient Royal palace, which was the favourite residence of Edward the Black Prince, for the palace being pulled down the Manor-hall was built upon its site, and was for some time the residence of Charles I. when Prince of Wales.

Fall of a Platform.—A rather alarming accident occurred last week, at a concert which was being given in Christ Church Mission-rooms, Gordon-street, off Great Homer-street, Everton, Liverpool. Whilst the concert was proceeding the platform, on which were 250 children, gave way. A scene of confusion followed, but fortunately but few were injured, the fall being a comparatively short one. One boy had his thigh fractured, and two or three dislocations occurred; other injuries consisting only of sprains and bruises.

Building at Balsall Heath.—At the Balsall Heath Board of Works, on the 2nd inst., Mr. Aroher gave notice of his intention to move, at the next meeting of the Board, the intention of the Board to enforce the following bye-law:—"That within one month after any work or building of which notice was given had been completed, the builder or person by whom such work has been done shall give notice to the local surveyor thereof, and the surveyor shall forthwith proceed to survey such building or work, and shall report to the Local Board thereon."

Charge of Stealing Joiners' Tools.—At the Liverpool Police-court, James Bourke was charged with stealing a quantity of joiners' tools belonging to George Shaw and Andrew Hay, and William Lythgoe, who keeps a broker's shop in Stanley-street, was charged with receiving the stolen property with a guilty knowledge. The evidence showed that Lythgoe purchased them from the prisoner Bourke, and afterwards offered them in pledge at a pawnshop. Both prisoners were committed for trial.

Termination of the Carpenters' Strike at Middlesbrough. The carpenters employed at Messrs. Rayton Dixon & Co.'s iron shipyard, Middlesbrough, who have been out on strike about nine weeks, resumed work on the 5th inst. A large proportion of the demands of the men have been conceded, though it is stated that these concessions have been made in order to prevent so large a number of men being thrown out of employment at this unfavourable season.

Portico and Balcony in Berkeley-street, Piccadilly.—The Committee of Works have reported that the Earl of Shrewsbury is about constructing in the public roadway in Berkeley-street an area, and to erect over it a portico and a balcony. Notice was at once to be given that the Vestry opposed this work, and the clerk was directed, in case his lordship persisted in carrying on the work, to place the matter at once in the hands of the parish solicitors.

Widening of London Bridge.—A petition signed by 3,633 merchants, traders, and others carrying on business in the City of London and the borough of Southwark, was presented last week to the Court of Common Council, asking that body to take steps for the widening of London Bridge. Its prayer was supported by Mr. Locke, M.P., Colonel Beresford, M.P., Mr. Laing, M.P., Sir H. W. Peck, M.P., and others. The petition was referred to the Bridge House Estates Committee.

The New Opera House in Paris was opened on Tuesday, the 1st inst., and was, of course, crowded. M. Charles Garnier, the architect, had an ovation. The privileged spectators, according to the *Times* correspondent, left, dazzled by the wonderful edifice, where marble, bronze, gold, and light are blended as in a dream of the "Arabian Nights." Others found the auditorium very small compared with its surroundings.

Branch Free Libraries at Sheffield.—On the 7th inst. the foundation-stones of two Branch Free Libraries at Sheffield were laid by Alderman Fisher, chairman of the Free Libraries Committee. The cost of the two buildings will be nearly 10,000*l.* One of them is at Upperthorpe, a suburb of the town, in which the School Board has erected two schools, and the other at Highfield, another suburb.

Banbury Railway.—The contract for the construction of the Banbury and Cheltenham Direct Railway has been taken by Mr. W. F. Lawrence, of Clifton, the contractor for the Bristol Port and Channel Docks, the Clifton Extension Railway, and other important public works. The extensive plant necessary for the undertaking is, we hear, being delivered at various points on the line.

The Croydon Surveyor's Salary.—At the Local Board, on Tuesday, the 1st inst., Mr. Walker's salary was raised 75*l.* per annum.

A "Crowning In" at Sedgley.—"Swags" are common enough in the Black Country, but a monster one has just happened in the new Tipton-road, Dudley. Lord Dudley's mining operations have dropped the whole width of the road some 20 ft., and the "swag" has cut off the gas and water supplies of Coseley and Wallbrook, two populous villages. The whole of the traffic has been diverted by way of Coseley.—*Birmingham Daily Mail.*

Extensive Paving Project, Hackney.—A report of the General Purposes Committee gives a list of the streets in which it is proposed to expend the 10,000l. which it had previously been determined to apply to the Metropolitan Board of Works for permission to borrow for the purpose of improving the footways of the district. It is stated that the total surface of new pavement to be laid down under this scheme is 199,590 ft.

Tooting Cemetery.—A letter was read at the Lambeth Vestry, on the 8th inst., from Mr. Thomas Morris, Clerk to the Burial Board, transmitting a resolution of the Board, passed on the 24th ult.—"That plans and specifications for effectually draining the Tooting Cemetery be prepared with all possible dispatch; and that the Vestry be solicited to allow Mr. McIntosh to superintend the drainage." The required permission was granted.

A Step in the Right Direction.—The *Kent and Sussex Courier* (Unbridge Wells) announces that the Local Board of Tonbridge have decided to call upon the builders of all new houses to make connexions with drains and sewers outside the house, and not inside, and they will refuse to sanction any plan which is not in compliance with this order.

Destruction of Houses in St. Pancras.—The Midland Railway Company have resolved to renew their application to Parliament for powers to construct a connecting line in the St. Pancras district. The scheme, it is said, involves the destruction of the habitations of about 10,000 or 12,000 poor persons. The St. Pancras Vestry intend to oppose the application.

Gift of an Orphan Asylum.—The *Française* says that the Duc de Montpensier has just bought an estate at Anteuil for 400,000 francs, on which an orphan asylum is to be erected, which will be under the charge of M. Roussel. The estate and building, when completed, are to be presented to the "Œuvre des Orphelins," of which the duke is president.

St. Margaret's Church, Lynn.—At a meeting of the committee of the Art Loan Exhibition, held Dec. 3, it was resolved to apply the proceeds of the recent exhibition, viz., 580l., in the following payments towards the restoration of St. Margaret's Church, viz., 180l. for restoring the west window, and 350l., a moiety of the cost of reseating the nave and the aisles.

Portsmouth District Waterworks.—At their Board meeting on Thursday, the directors of this company accepted, provisionally, a tender for the construction of the entire works (including the purchase of the existing works) for the sum of 24,896l., the works to be completed within six months from the date of order.

Science Lectures at Shoreditch.—The science lectures for the people at the Town-hall, Shoreditch, were resumed (in connexion with the Trades Guild of Learning) on Wednesday evening, Dec. 2, when Professor Clifford, F.R.S., delivered the first of a series of lectures, "On Seeing and Thinking." Mr. J. Norman Lock-year, F.R.S., presided.

Epping Forest.—There was some discussion at the meeting of the City Commissioners of Sewers, on Tuesday, Dec. 14, respecting the recent judgment of the Master of the Rolls on the subject of Epping Forest. It was stated that the litigation had cost the Corporation 30,000l.

Electricity for Lighthouses.—An important extension of the application of electricity as an illuminating agent is about to be made by the Trinity Board. The two lighthouses on the Lizard Point are to be fitted with the requisite apparatus for the production of the electric light.

The Nuisance Inspectorship at Stockton. There are ninety-six applications for the office of inspector of nuisances at Stockton. The salary is 100l. a year, and a special committee is appointed to examine the different letters and testimonials.

Rateable Value of the Metropolis.—An official yearly return shows that during the past twelve months the rateable value of property within the metropolis had increased to the extent of 408,184l. and now reached the stupendous sum of 21,189,843l.

Gravel and Hogging.—Six tenders have been received by the Paddington Vestry, and that of Mr. William Studd, to supply sifted gravel at 3s. 1d. per ton, and unsifted at 3s. per ton, was accepted.

Islington.—It has been resolved by the Islington Vestry to place a new clock in the steeple of the parish church, at a cost not exceeding 300l.

Hull Waterworks.—There are 102 applications for the office of engineer to the Hull Waterworks.

Fine Arts at Salford.—There is to be a new fine-art gallery at Salford, adjoining the museum in the Peel Park.

TENDERS

For warehouse, Queen Victoria-street and Great Knightbridge-street, Mr. Herbert Ford, architect. Quantities supplied by Messrs. Karslake & Mortimer:—

Bayes & Harnage	216,734 0 0
Kilby	15,678 0 0
Adamson & Sons	15,670 0 0
Colls & Sons	15,638 10 0
Williams & Son	15,238 0 0
Drowe & Robinson	15,198 0 0
Peto, Brothers	15,048 0 0
Elkington	15,028 0 0
Kirk & Co.	14,901 0 0
Scrivener & White	14,386 0 0
Newman & Mann	14,369 0 0
Lawrence	14,344 0 0
Brass	14,798 0 0
Smale	14,233 0 0
Nightingale	13,785 0 0

For Westbury-upon-Trym, Stoke Bishop, and Shirehampton drainage, Contract No. 1. Messrs. Russ & Minns and Mr. A. W. W. Goulter, engineers:—

Newman	214,320 0 0
Summerfield	9,876 0 0
Rumbold	9,974 12 8
Neare & Sons	9,085 4 11
Furniss	8,880 0 0
Jones & Jenson	8,430 14 0
Bagbird	8,300 0 0
Davis	8,266 0 0
Baker	7,850 0 0
Vickers	6,979 0 0
Cooker	5,099 0 0

For the erection of a synagogue, minister's residence, talmudic, and schools, Middle-street, Brighton, for the Hebrew congregation. Mr. J. Lanison, architect. Quantities by Mr. B. H. Nunn:—

Valcham	28,396 0 0
Scrivener & White	6,580 0 0
Newman & Mann	6,580 0 0
Ancombe	6,454 0 0
Dove, Brothers	6,445 0 0
Patching & Webster	6,440 0 0
Manley & Rogers	6,399 0 0
Lockyer	6,243 0 0
Barnes	6,250 0 0
Chappell	6,215 0 0
Cheesman & Co. (accepted)	6,200 0 0
Merritt & Ashby (too late)	6,175 0 0
Howard	5,935 0 0

For rebuilding the London Provident Institution, Bloomfield-street, for the Metropolitan Railway Company. Quantities supplied by Mr. Sydney Rogers:—

Chappell	24,982 0 0
Colls & Sons	4,578 0 0
Trollope	4,782 0 0
Jackson & Shaw	4,772 0 0
Tolland & Hansen	4,673 0 0
Newman & Mann	4,538 0 0

For a new building, in Rose-street, Newgate-street, for Messrs. H. P. & N. Jones. Mr. John Wimble, architect. Quantities supplied:—

Chesbrough	21,450 0 0
Kilby	1,328 0 0
Scrivener & White	1,298 0 0
Morter	1,185 0 0
Newman & Mann	1,180 0 0
Faulkner	1,178 0 0

* From an error in the lithography, this tender, we are informed, was delivered 986l.

For sundry alterations and additions to premises, Union-street, Commercial-road, Whitechapel, for Messrs. Gaudier & Sons, Mr. Sargent, architect. Quantities supplied by Messrs. Osborne & Russell:—

Tarrant	23,980 0 0
Bewell	3,965 0 0
Hill, Higgs, & Hill	3,610 0 0
Young	3,570 0 0
Newman & Mann	3,533 0 0
Colls	3,344 0 0
East	3,270 0 0
Merritt & Ashby	3,250 0 0
Pritchard	2,807 0 0
Brass	2,900 0 0

For the erection of new Board Schools, at Newcastle-under-Lyme, Staffordshire. Messrs. Hay & Oliver, architects. Quantities by Mr. A. Deane:—

Webber (accepted)	23,154 18 8
-------------------	-------------

For house and outbuildings, at Harestone Valley, Caterham, Surrey, for Mr. George Gibbons. Messrs. Rutley & Blacknell, architects. Quantities supplied by Mr. H. Blacknell:—

Smith	25,374 0 0
Newman & Mann	5,091 0 0
Downs & Co.	4,970 0 0
Prescott & Taylor	4,839 0 0
Ward	4,813 0 0
Hyde	4,800 0 0
Roberts	4,749 0 0
Downs & Co.	4,712 0 0
Tongue	4,490 0 0
Garratt	4,426 0 0
Holledge & Smallage	4,317 0 0

For additions and alterations to Eden Cottage, Beckenham, Kent, for Mr. C. A. M. Hoare. Mr. Thos. Archer, architect. Quantities supplied:—

Downs & Co.	21,848 0 0
Nightingale	1,828 0 0
Graham	1,746 0 0
Hooker	1,685 0 0
Ellen	1,688 0 0
Newman & Mann	1,647 0 0
Sharpington & Cole	1,613 0 0
Gammou	1,545 0 0

For warehouse, Queen Victoria-street. Mr. Herbert Ford, architect:—

Bayes & Harnage	24,394 0 0
Colls & Sons	4,367 0 0
Kirk & Co.	4,360 0 0
Adamson & Sons	4,312 0 0
Scrivener & White	4,273 0 0
Kilby	4,266 0 0
Browne & Robinson	4,229 0 0
Peto, Brothers	4,228 0 0
Elkington	4,184 0 0
Newman & Mann	4,117 0 0
Brass	4,097 0 0
Nightingale	4,060 0 0
Smale	4,068 0 0
Williams & Sons	3,967 0 0
Lawrence	3,862 0 0

For alterations to Nos. 59 and 63, Westbourne-grove, for Messrs. Cox, Sons, & Staiford:—

Clark & Co.	21,210 0 0
Greenwood & Sons	1,199 0 0
Temple & Forster (accepted)	1,157 0 0
Cox	1,121 0 0

For rebuilding the Bromley Rice Mill, Middlesex. Messrs. A. & C. Harston, architects:—

Bangs	25,969 0 0
Sheffield	5,179 0 0
Harrie & Wardrop	4,975 0 0
Shurmer	4,888 0 0
Thomas & Son (accepted)	4,555 0 0

For a pair of villas, at Wandsworth, for Mr. W. H. Strange. Mr. Rowland Plimbs, architect. Quantities supplied by Mr. Sidney Fowler and the architect:—

Gregory	21,805 0 0
Adamson & Son	1,732 0 0
Taylor	1,737 0 0
Scrivener & White	1,648 0 0
Messom	1,619 0 0

For building dwelling-house, boundary-walls to wharf, &c., Lower Charlton, Kent, for Mr. Alfred Ardoun. Messrs. William Gosling & Son, architects:—

	House.	Boundary-walls.
Raby	2,480 0 0	281 15 0
Griffiths	420 0 0	91 7 0
Pulman	410 0 0	89 0 0
Cropper, Brothers	332 8 6	51 11 8

For church, at Polegate, Sussex. Mr. R. K. Blessley, architect:—

	Nave, &c.	Upper part of Spire.
Perigoe	23,277 0 0	2,410 0 0
Torkington	2,518 0 0	330 0 0
Cheesman & Co.	2,480 0 0	1,340 0 0
Roberts & Co.	2,964 0 0	261 0 0
Foster	2,379 0 0	270 0 0
Bruton	2,350 0 0	300 0 0
Stemming	2,341 0 0	270 10 0
Vidler	2,323 0 0	240 0 0
Steele	2,300 0 0	240 0 0
Oxley	2,250 0 0	230 0 0
Skinner	2,239 0 0	261 0 0
Peerless	2,174 0 0	235 0 0
Longley	1,894 0 0	253 0 0
Elridge	1,830 0 0	241 0 0

TO CORRESPONDENTS.

J. R. G. A. Woodman—J. H. P. B. C. J. L. H. E. T. T. H. — P. & C. H. A. Dr. E. J. K. O. J. P. T. T. L. W. G. S. D. E. S. Spero Melora.—A. W. W. G. J. H. C. E. J. P. C. M. D.—E. S. (no one can prevent him adding C. E. to his name).—A Friend to the Lane (no client would submit to the introduction of such an element of uncertainty)—W. H. S. (we are unable to send)—H. A. (the remedy proposed is too much like that proposed for the cure of smoky chimneys).—"Put out the fire"—Warning and Ventilation (in type)—F. E. (in type).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

Note. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

SPECIAL NOTICE.

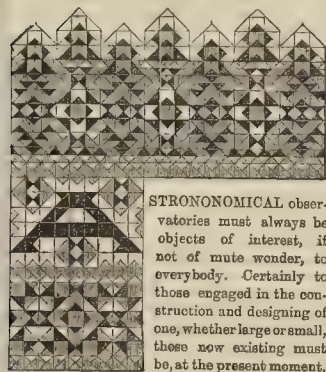
Christmas Week.—The BUILDER for the week ending December 26th, will be published on **Thursday, 24th inst.**, at the usual hour.

Advertisements for insertion in that issue must therefore reach the Office before Three o'clock P.M. on **Wednesday, 23rd inst.**

The Builder.

VOL. XXXII.—No. 1663.

The Royal Observatory, Greenwich: a
Glance at it.



ASTRONOMICAL observatories must always be objects of interest, if not of mute wonder, to everybody. Certainly to those engaged in the construction and designing of one, whether large or small, these now existing must be, at the present moment,

of more than common interest. It is something of a puzzle to properly and expressively design an observatory: to so construct a building devoted to the purposes of astronomical observations as to show exteriorly that it is devoted to that purpose; and yet at the same time to possess an architectural character. An observatory is filled with machinery, and the building must fit itself, come what may, to the requirements of that machinery, and delicate and complicated enginery. It is, as we say, a difficult art problem; but at Greenwich, in the quaint old observatory there, the problem has, we think, been pretty well accomplished. The Greenwich Observatory looks like an observatory, and the closer you get to it the more scientific it grows. It is a good architectural object as well, and from the "silent highway" it is a slightly and picturesque landmark enough. It contains, as may well be imagined, a host of scientific wonders, to test both the skies above and the earth beneath; and the memorable astronomical phenomenon, the Transit of Venus, happening in this year of grace, may be our excuse, if any be needed, for saying a word or two about it, and its special work. Greenwich Park, "says the Guide-book, is an open undulating piece of ground, 180 acres in area, finely wooded, and well stored with deer, its surface is diversified, and its appearance altogether exceedingly picturesque." And so without doubt it yet is, but the London spirit of "improvement" is, it is to be feared, somewhat sadly encroaching on this picturesqueness, and "looking after" the place too much. It is wonderful to think of how touchy Dame Nature is, and how very soon she resents all interference with her own, and sometimes rather rough, ways of work. The trees in Greenwich Park, like those in Kensington Gardens, are gradually but surely growing longer and barer stemmed, and their branches thinner of leaves. How is this? and what remedy is there for it? If any there be. Would not the leaving Dame Nature to her own solitary ways of work for a short time do a great deal, and bring back a little of the old wild luxuriance of the place? It is worth attention, before it be too late, on the part of those in authority.

But to the Observatory itself. We have had opportunity lately of seeing a little into its wonderful things, and its searching into Nature's secrets, for which it possesses so ample an apparatus. It is placed some 160 ft. above the river,

which flows at its base. It was erected by Charles II. for the astronomer, Flamsteed, so well known for his enthusiastic devotion to his favourite science. With its external aspect all are familiar, and its four picturesque towers, or angle turrets, and its tall windows, seem to mark it out as a place devoted to the purposes of astronomical observation, and as a building to hold telescopes; and if this be not enough, its semicircular dome, with its movable shutter, must convince any one, to say nothing of the time-marking "ball" at the top of one of the angle turrets. But it is, of course, the inside of this quaint building which is of most moment, holding as it does the apparatus, and wherein the work goes on which confers so many benefits, and where the "true time" is kept for the world. A bare list, and but a list, imperfect though it must be, of the Observatory's many departments may be of interest. We hardly know which should come first, but perhaps the manuscript works of the older astronomers deserve the earliest mention. It is truly and really wonderful to think with how little and how imperfect and how rude an apparatus the older astronomers did their work. Newton's Observatory in Leicester-square, could it but be "restored," and shown to modern astronomical eyes, would hardly be credited. By the side of the magnificent and gigantic triumphs of mechanism to be seen here, Newton's telescopes, and means of star-gazing, and counting, and distance calculating, were indeed simple and small, and as nought; and the wonder with which the world of science must ever regard his labours, must ever increase, as his "observatory" is contemplated. It was pretty much the same with not a few of his successors. They were truly men who worked with their heads, if any ever did! There are royal roads to not a few things of human interest, but most assuredly astronomy is not of their number. The library of printed books comes next, for it is but the more permanent form of the original MS. records. It may be noticed, here as an artistic matter of interest, that some of the Star catalogues compiled at the observatories of Paris and St. Petersburg are models of neat and accurate printing, and what is called "registry." Here there is a complete record in MS. and type of what has been done in astronomical observation, and calculation, and imaginings, wonderful indeed to think of in all ways.

But the main purpose of an observatory building is to hold the marvellously contrived and constructed instruments and apparatus which, in these advanced scientific days, are needed to do the work of the modern astronomy. And first and before all there is the great transit circle, which does so much careful and continuous and accurate work. Nothing, we may be sure, that can be seen at all escapes the searching glance of its tube. Astronomical observations are tests, indeed, of the efficiency of human workmanship, and the goodness of materials, for if the workmanship could but be as accurate in practical carrying out as it is in theory, and it is fast nearing this, then would "the time of a body on the meridian be accurately that at which it passes the telescope's central wire." But, alas! for human shortcomings, these conditions can never be accurately and perfectly fulfilled, or, even if fulfilled on one day, they could not be so on another, on account of the shifting or yielding of the supporting pins, or of some part of the instrument. It is only by allowing for these that the final truth can be got at; and here it is that the mind gets the better of matter and workmanship, and arrives at results which the material instruments by themselves, wonderful as they are, cannot attain. A marvellous process! It may be interesting to note that in the "Nautical Almanack," without which the mighty trade of the country must and would come to no small grief,—for it guides the

mariner in his long way over a pathless sea,—there are given the places of stars, the observations of which have been kept up unremittingly during the greater part of a century! Here the transit instrument is never idle. We name only the "chronograph," the "altazimuth," the "siderial clock," and the "mural circle," each of them needing a small treatise almost to explain and exemplify, more particularly, perhaps, the last, with its almost miraculously "divided circle," and six, or rather three pairs of "reading" microscopes. Next comes the great equatorial, not fixed to the meridian like the transit instrument, but searching about, in all parts of the visible heavens, for stars, and comets, and nebulae, and all else, new or old. When fitted with the "spectroscope," a modern instrument which has revealed so many wonders undreamt of in the antique astronomy, and proving the whole visible universe to be kin,—with this it is specially adapted to sweeping round the sun's limb, with a view to mapping out the "prominences" now always so anxiously looked for in total eclipses of the sun. All these marvels of constructive inventiveness and manipulative skill of hand are here, and more than we can recount; and some of them not only this, but possessing as well not a little artistic merit in their form and proportions, though it must be confessed that there are openings here for improvements. A machine, however cleverly designed, and constructed, and effective, may not unfrequently be made more so by paying a little attention to its form artistically looked at, *e.g.*, as in the small metal mouldings to be found in it, and about it, every here and there. To the artist, therefore, these things are not without a strange interest. It is worth a little thought to find out, and to come to feel sure of, the fact,—for a fact it is,—of how much there is to be yet done in this way of wedding art, fine-art, to machinery, and more especially fine and delicate machinery, such as the astronomers are so familiar with.

We do not do more than just name the magnetic apparatus, the marvels of magnetism, and its strange daily and mysterious movement, about which Humboldt felt so deep an interest,—going, as it does, into the very essence of things, and seeming to unite almost matter and force. Then the meteorological, with its self-registering instruments, in constant action, thus to obtain uninterrupted record of magnetic changes, "elements of earth-currents," and of atmospheric changes. It may interest many to know that the Westminster clock, full of architecture at least, and the Lombard-street Post-office clock, are both regulated, and their errors corrected, from Greenwich. At Lombard-street the "current" at noon "starts the clock, which stops some few seconds previously, or at noon of its own time, the clock having a gaining rate." At no less than 600 offices, in direct communication with the Central Telegraph Office, including the railway termini, there is "a 10 a.m. current" from Greenwich, so that it regulates most of the post-office and railway clocks in the kingdom. We thus, as it will be seen, owe not a little of our correct time-keeping to the Greenwich Observatory, and the work done in it. It may be useful to know that the errors of the Westminster clock were below one second on 67 per cent. of days, below two seconds on 26 per cent., and below three seconds on 6 per cent.; so that this clock at least may be trusted. All these complicated and careful works, ranging through space, are conducted under the unflinching superintendence and with the personal help of the Astronomer Royal, Sir G. Airy, the successor of Pond and Maskelyne, Bradley, and Flamsteed.

These few passing thoughts about this famous observatory are just now more especially interesting, from the fact of the transit of Venus observations, no less than seventy observers

in as many places, having been at work; and from the fact more particularly of the many months' preparations which were made for it here. A most ingenious model of the Sun and Venus moved by clockwork was contrived by the Astronomer Royal, with mounted telescope at convenient distance through which to observe them. This model was in use for many months, for the purpose of practising the observers, and to make them familiar with the difficult and delicate work to be done. It showed the transit in miniature,—bright sun disc, black planet, black-drop, and all in a most instructive and "life-like" way, whether looked at closely, or as viewed from a distance through a large mounted telescope. In all ways, therefore, is this Royal Observatory at Greenwich of not only momentary, but abiding interest; and we could well go on, and, by diving into details, say a good deal more that would interest. But one item more, a singular one, as showing how refinements in machinery draw forth corresponding mental, and even bodily, refinements and individualities, and bring out what is termed in the observatories the "personal equations of the observers." It would seem to be impossible to make two things exactly alike in art; certainly nature does not do it. No two observers do the same work, even with the same tools, exactly alike: there is always a difference; and here it becomes the subject of almost mathematical measurement and record. Mechanism itself becomes artistic!

ON "THE HOPE OF ENGLISH ARCHITECTURE."

ROYAL INSTITUTE OF BRITISH ARCHITECTS.*

"In the reign of Edgar, the Isle of Ramsey, in Huntingdonshire, belonged to a nobleman named Aylwyne, who was attracted to Oswald, Bishop of Worcester, by the sanctity of his department, and during a long and holy conversation with the bishop, it came out that Aylwyne having been long ill, was cured by St. Benedict, and received a mission to erect a monastery in the island. Oswald having in his diocese 'twelve brethren in one village who had cast behind their backs the lusts of the flesh, and were only warmed with divine love,' and who would willingly undertake the charge, proposed, like the famous man of business that he was, at once to go with Aylwyne and inspect the place. And then explaining to his companion that 'while erecting there a temporary mansion, we shall also be erecting, if our faith fail not, a mansion eternal in the heavens—Let us (said he) commence at once last the devil should take occasion of any delay to breathe a colder spirit upon us. Let me, therefore, send hither a certain man faithful and approved in such works, under whose management a little refectory and dormitory may be prepared.' Ednothus was sent, who laid out the grounds, enlarged the chapel, and added other buildings according to Oswald's plan. Ednothus had the care of all the out-door works. He, during the winter, provided the masons' tools of wood and iron, and in the spring he set cut the plan of the foundations and dug out the ground. He was, in fact, the chief of the workmen, and he made a fine building of it. The central tower of the church, however, began to crack, and Ednothus had to report the failure to Aylwyne, who agreed to find the money for the restoration. The labourers approached the tower by the roof, and going stoutly to work razed it to the very ground, dug out the treacherous earth, made the foundation sure, and again rejoiced to see the daily progress of the work. What a contrast all this is to our present condition and practice! The nobleman 'attracted to the bishop by the sanctity of his department,' the memory of the vow after recovery; the 'twelve brethren in one village who had cast behind their backs the lusts of the flesh'; the fear of the 'cold breath of the devil'; a bishop who could make a plan, and the 'man faithful in works'; the cleverness and alacrity of the labourers, and their 'rejoicing in the progress of their work,' are such a pathetic vision that our retrospective view confirms the holy Oswald's prescient declaration, 'Verily, this is another Eden, preordained for men destined for the highest heaven'; a remark that has not reached our ears respecting the scene of any recent architectural effort.

Such was the system of artistic practice that for six centuries served to make England the finest scene of architectural display that the world ever saw. The workmen 'worked after their manner'; they were totally without extraneous artistic tutelage. . . . The masons were, of course, largely employed on ecclesiastical buildings; not under the patronage of the clergy, however, but, on the contrary, rather patronising them." *The Quarterly Review*, Oct. 1874, p. 365.

An old and venerable *Review*, long eminent for the respectability of its conduct and its contributors' opinions, has lately carried on a war of epigram and assertion against the whole profession of architects, not only of this country, but of all civilised countries. Shielded by theegis of a learned editor, and that of a publisher whose name is almost historical, a writer of no mean powers of description and invective has passed so sweeping a condemnation of the art-system of Europe, and hurled so much personal abuse at individuals, as to weaken a case still further impaired by exaggerated advocacy. Nevertheless, I have the conviction that he has been influenced by a conscientious desire for the reform and advancement of the building art, and

that regard for the public good has prompted him to write; although in these days of rapid composition it is not the fashion to admit that opponents may be disinterested, statesmen patriotic, or philosophers sincere. An article, entitled "The Hope of English Architecture," appeared in the *Quarterly Review* of October last; another article on "The Completion of St. Paul's" was published in October, 1872; and a third, which was called "The State of English Architecture," and which obtained no small notoriety, occupied the first place in the number for April, 1872. These three articles are so intimately allied, both in mode and matter, that it is impossible to reply to one without touching upon the substance of the others; but if I have preferred to adopt for the title of this refutation "The Hope of English Architecture," it is because that article has an advantage over the two others which preceded it, for it is written with the ease of a gentleman and the felicity of a scholar; and if at the conclusion of my paper it should be proved that I have "rushed in" where wiser men would have hesitated to tread, upon my own shoulders must rest the responsibility of its preparation.

The *Quarterly Review* reminds the public that nowadays, "instead of a class of noble working men we have the architectural profession—a number of soft-handed gentlemen."* The majority of architects may justly own the soft impeachment. But in any calculation of the value of things past and things present some allowance is always made for the altered state of human feeling. Although there may not be much difference, as far as the manners of the Senate and the Bar go, between the Rome of Cicero and the England of Lord Palmerston, the age in which we live is more heedful of life and suffering, both of man and beast—more effeminate, in fact—than any known one which has preceded it. Those men who, in the first century, first promulgated a system of morality more perfect than the world had hitherto enjoyed were of low origin; and some of them belonged to that very class which the *Reviewer* has properly extolled; yet it is questionable whether the cause of truth and virtue would be advanced if the present rulers of churches—teachers of the gospel—were to effect the semblance of an impossible humility. But there is a practical illustration of the great changes which, during even the last two hundred years, have contributed to the softening of humanity. Lord Macaulay tells how in the time of Charles II. the clergy were regarded "as a plebeian class,"—mere menial servants; and a chaplain, though permitted to partake of "the corned beef and carrots" with his master's family, was expected to leave the table when "the tarts and cheese-cakes made their appearance."† Swift wrote, in the time of George II., that "in a great household the chaplain was the resource of a lady's maid whose character had been blown upon, and who was therefore forced to give up hopes of catching the steward."‡ It is impossible to doubt that the general morality of the kingdom is better to-day than in the time of the Stuarts and the earlier Georges, yet parsons are become too "soft-handed" to mate with waiting-maids; and their flocks are too wise not to perceive the strength that is imparted to doctrine taught in the phrase and manner of a gentleman. The present state of the navy affords a similar illustration. Whatever opinions may be entertained of it by Englishmen, foreigners still regard it with very much the same respect as their ancestors did. Yet those who have visited Her Majesty's ships know that to command them it is necessary to be a gentleman as well as an officer. But in days when British ships sometimes succumbed to the Dutch and the French, the British Naval officers were "a strange and half-savage race. All their knowledge," says Macaulay, "was professional; and their professional knowledge was practical rather than scientific. . . . Their deportment was uncouth. There was roughness in their very good nature; and their talk, when it was not made up of nautical phrases, was too commonly made up of oaths and curses."

In the article, entitled "The State of English Architecture," occur the following passages:—"The old builder had not heard anything about the profession of art. He was a simple workman and would make the plan, arrange the elevations, and be in fact the foreman of the

work." "When all our workmen are again restored to intelligence and thought, and are relieved from the bondage that professionalism inflicts upon them, we may reasonably expect that they will again be filled with the 'Spirit of God' to devise curious works." "The workman, instead of being, like Issachar, 'a strong ass crouching down between two burdens,' would be relieved of the double incubus of architects and law, and begin to have his own again."

In the article on "The Completion of St. Paul's," is the following passage:—"Workmen should not merely do the work, but should make the entire design. An intelligent workman is far more to be trusted than any of our sketchers and schemers."

In the article on "The Hope of English Architecture," the ruling idea is developed in the following passages:—"The inspired workman feels the necessary and for ever varying rules of art." "The habitual notion of the middle and superior classes that the workmen are inferior in . . . the higher qualities of lively genius and imaginative mind is very English. In fact, these men are frequently above their betters in power of mental application and endurance." "The public should aspire to cultivate the social and artistic friendship of the master-workman." "But we may hear that the upraising of the workman is a revolutionary project, and that its tendency would be to shatter the foundations of society. . . . These true gentlemen would soon become the efficient balance-weight of all society." "The emancipated workman, gloriously impelled, must always be, and is, the only real hope of English architecture."

Very similar opinions to these have been expressed during the last eighty years by the orators and rhetoricians of a neighbouring country. Having personally mixed with French workmen, almost constantly for ten years, I have heard a great deal of this sort of language, and have believed in it; but happily I have since participated in the anarchy and confusion to which it inevitably tends. Some years ago, an ardent and high-minded reformer advanced a proposition which, analysed, would have virtually led to dividing the lands of the rich among the poor. Something of the same nature is now proposed for the building fraternity. Because the brains of an ordinary workman are only ordinarily developed, and those of an architect are enlarged by education, social refinement, and travel; because living British architects have successfully contested the palm with native talent in European cities; because they have successfully erected buildings side by side with native ones in Germany, Italy, and France; because, at the present hour, a professional man of moderate attainments can always earn, either with pen or pencil, a moderate subsistence; and because, in matters of art, the public are inconsistent and illiterate,—therefore, architects must be abolished, and "noble working men" be installed in their places, under the direct patronage of those who are naively invited to worship the pewter image which an irresponsible *Reviewer* would set up! It is well to avoid any approach to flippancy in the examination of an important subject. The utterances of a writer, whose sponsor is the editor of the *Quarterly Review*, are regarded by the public in a serious light:—"By the God of Friendship," cries he, appropriating the language of Socrates, "I must beg you, Calicles, not to jest, or imagine that I am jesting with you, for you will observe that we are arguing about the way of human life, and what can be more serious than this to a man who has any sense at all?"§ Nevertheless, it is logically certain, that an argument which is humorous in itself must afford honour, even in a serious attempt to refute it.

Had there not been a substratum of truth in the strictures upon modern professional practice published by the *Quarterly Review*, no reply would have been necessary, because the public, even if deceived for a time, soon undecives itself. It is well known to professional men, that isolated sentences from the writings of M. Viollet-le-Duc and others, can be quoted to support the *Reviewer* in parts of his argument and some of his assertions. Years ago, M. Viollet-le-Duc said that as he belonged to no school, so he was certain to have all schools against him. Of late he has written with exorable bitterness. Among his opponents is the mass of artistic mediocrity who held sway at the close of the Second Empire; and he has always had to endure the organised

* By Mr. William H. White, Fellow. Read at the Ordinary General Meeting, held on Monday, the 14th inst.

§ "State of English Architecture," page 305.
† "History of England," chap. iii., State of England in 1695.

§ "Completion of St. Paul's," p. 396.

hostility of the Central Art School of France. But, as he himself has admitted, his repeated attacks against the unpractical nature of French education, and the small scientific knowledge displayed by ordinary French architects, do not equally apply to this country, because it is the custom of English architects to show, drawn to a large scale, all the various constructive details, and the mode of combining them; and to draw to their real size all mouldings, and similar important details, and this before beginning the mechanical execution of a building. In France, the details of roofs, girders, windows, staircases, and doors, are often left to be done by the contractors' assistants; and, among our neighbours, it is only recently that the small but compact Gothic school have introduced a more workmanlike habit. With them, as it is with the English, a building is built upon paper by the "master-of-the-work," before it is entrusted to the master workmen. There is fundamentally, small difference between the conscientious architect of to-day and his brethren of the best period of Medieval art. Then, as now, the "master-of-the-work" contributed "knowledge, but not manual labour";* then, as now, he knew much of men and countries; then, as now, he was called to foreign lands and from foreign lands, to construct not one, but many buildings. And this I hope to show principally from the learned researches of M. Viollet-le-Duc, than whom, in my poor judgment, there does not flourish a better exponent of the history and philosophy of either ancient or Medieval architecture.

But first it is necessary to clear the ground of the thick underwood of error and exaggeration which, though frequently cropped, is constantly shooting up again. A great fuss is always being made about "national" art; and the chronic evaporation of weak patriotism over what is popularly called "Early French Gothic," is a periodical nuisance that sets aside both history and common sense.† From the tenth to the twelfth century, the centre of the art of Western Europe was the Abbey of Cluny; and in the eleventh, twelfth, and thirteenth centuries, art radiated from France into Germany, Spain, and England. Until the fourteenth century, the common architecture of France and England developed similarly and together. After the fourteenth century, the architecture of one country developed independently of the other; and then art in England became national,—because at that period only commences the history of the English nation. When King John was driven from Normandy, "the Norman nobles," in the language of Macaulay, "shut up by the sea with the people whom they had hitherto oppressed and despised, gradually came to regard England as their country, and the English as their countrymen." . . . In the fourteenth century, the amalgamation of the two races was all but complete, and there was scarcely anything in common between the England to which John had been chased by Philip Augustus, and the England from which the armies of Edward III. went forth to conquer France.‡ It is an exaggeration to say, as the Reviewer says, that the "system of artistic practice (which he advocates) served for six centuries to make England the finest scene of architectural display that the world has ever seen."§ Any one who has climbed the walls of Carcassonne and Avignon; the mountains of Auvergne and the steeps of Languedoc; who has penetrated the cities of Brittany; seen Norman churches, halls, and abbeys; the monuments of religions, civil, and military splendour which crowd the old province of Ile-de-France, must admit that, though a few English cities may have rivalled in beauty a few French ones, the Paris of Philip Augustus was as superior to the London of King John as the Paris of Louis XIV. surpassed the London of Queen Anne.

In the year 909, William, Duke of Aquitaine founded the Abbey of Cluny. A bull of John XI. dated March, 932, confirmed the charter of William and freed the Abbey from all dependence upon any king, bishop, or count whatsoever, and the relations even of William himself. Gauzon, the first architect of Cluny, was a *Chuniste* and formerly Abbot of Baume.¶ The great church

was completed by a Fleming, named Hezelon, who, before entering at Cluny, taught at Liège. The kings of Spain and England furnished the funds necessary for the completion of this large building.*

In 1009,† Hughes, of Farfa (in Italy), set one of his disciples, named John, to examine the place, and describe the uses and usages of Cluny. His work in MS. is in the Vatican Library, No. 6808 ‡; and it contains information which is nowhere else to be found at the present day. From the Abbey of Cluny, issued for more than a century, nearly all the men who succeeded in evolving order out of the chaos which had hitherto reigned, and who founded similar establishments throughout a great part of Western Europe, from Spain to Poland. "The greatest prince was not educated in the palace of kings with more care than was the meaneest of children at Cluny,"‡ where professors, architects, and doctors were educated together with clerks, ambassadors, bishops, sovereigns, and popes.

Since the eighth century, the large abbeys and even the priories had established round their cloisters and on their domains workshops of carriers, carpenters, joiners, smiths, goldsmiths, sculptors, and painters. Those workshops, although they were composed indiscriminately of clerks and laymen, were amenable to discipline; and the work was methodical. But about 1119 the Counts of Nevers claimed certain rights over the town dependent upon the abbey of Vezelay, and a very pretty quarrel ensued between them and the abbots. The inhabitants sided for a consideration with one Count William of Nevers; and no sooner free than they established themselves into a *commune*, which they fortified.§ The insurrection spread; and the beginning of the twelfth century is remarkable as the period when the working classes left the seclusion of the cloisters, and formed themselves into lay corporations or guilds, in imitation of those originally organised by the religious establishments; though in changing their centre they merely changed their direction, and instead of working inside the cloister they worked outside of it. Then probably other trades besides that of the masons took the prefix of free. Once out of monastic leading strings, architecture, like all the other arts, became an "*état*"; that is, a trade, business, or profession; and that the extraordinary impulsion given to it at the close of the twelfth and the beginning of the thirteenth centuries was the work of a very few men is proved from the similarity of form and details which exists in the principal buildings erected at that time in France, Western Germany, England, and Northern Spain. It is remarkable that many of the buildings erected during the course of the thirteenth century evince so much neglect in their execution as learning in their system of construction.¶ Buildings were hastily begun, the works hastily stopped, and as hastily recommenced. Much, and that quickly, was required for little money; and the wise deliberation and superintendence of the central authority seems to have been often wanting.

It is a popular superstition that because Medieval churches and cathedrals are composed of parts known to have been built at different periods that therefore they took several centuries to build. The fact is that people in those days never "restored";¶ they pulled down, added, and rebuilt; and the manner in which they did these things may still be seen at Laon Cathedral. Everything movable and immovable of the Sainte Chapelle, at Paris, was completed in less than eight years. Notre Dame was begun and entirely finished within sixty years.** The idea of dedi-

* Cluny is in the Department of Saône et Loire, 200 miles S.E. of Paris. In the early part of the twelfth century, 2,000 religious houses adopted the discipline of Cluny, which alone of those in which the rule was observed retained the rank of an abbey; the others were all simple priories. The church of the monastery was above 800 ft. in length. The monastery was three times plundered: before the last pillage the library contained 1,800 manuscripts. All the monasteries of this order in England were governed by foreigners, had more French than English monks in them, and were not only subject to the foreign houses of Cluny, La Charité sur Loire, and St. Martin des Champs at Paris, but could be visited by them only.

† "Ann. Bénéd." t. iv. p. 207. See the article "Architecture," p. 123 of M. Viollet-le-Duc's Dictionary, in which quotations are given from the Abbé Ducher's work on Cluny.

‡ "Udalrici Actus. consuet. Clon. Mon." lib. ii. c. xiii.—"Bernardus Cons. canob. Clun." p. 1. c. xxvii. c. "Lettres sur l'Histoire de France," p. 412. Aug. Thierry, Paris, 1874.

§ Viollet-le-Duc.

¶ See some excellent remarks upon "Restoration" in the "History of Gothic Revival," ch. vi. C. L. Eastlake. Longmans, London, 1872.

** Viollet-le-Duc.

cating a new cathedral at Rheims to "Our Lady" was started in 1211, and the first stone was laid on the 6th of May, or the 24th of July, 1212. Divine service was celebrated in the building on the 8th of September, 1232, although it was not completed until 1241. A honorary canon of Rheims has published an exhaustive history and description* of this building; and although I admit that a great deal of sentimental romance concerning the origin of Medieval architecture has been written by cathedral canons, still men like the Abbé Corf must be listened to with attention. He says,—"*Rheims Cathedral is the cast in stone of a single idea (d'une seule idée)*. It is made in some sort in the image of the Trinity. In its height, its width, its length, the edifice is divided into three parts; three floors, three naves, the principle of which is divided into three almost equal portions,—the nave proper, the choir, and the sanctuary." To this technically true description M. Viollet-le-Duc adds,—"*At Rheims, more than anywhere else, the work of the master was respected; and if any one wished to form an idea of what must have been a cathedral conceived by an architect at the beginning of the thirteenth century, let him go to Rheims.*" Is it possible to suppose that the harmony which reigns throughout the majority of Medieval buildings, not only in France but throughout Western Europe, the scientific exactness which marks their construction, the order in which their members strengthen and counteract each other, were produced by gangs of workmen, superintended not by one foreman, but by a gang of foremen, each working independently of the other, according to his fancy or his will, and with no other guiding influence or central authority than that same "spirit of God," or "inspiration," which each shared more or less with his fellow mortals? Surely there is nothing better to compare to such a hypothetical state of things than the proceedings of a certain army in a late famous war, where regiments were marshalled under the banners, not of the State, but of political parties; and impulsive soldiers, asserting their individual rights, acknowledged no authority until the inevitable hour when officers and men with one accord surrendered to a disciplined and scientific conqueror.

That there is sometimes abuse in the relations between the brains and the limbs of the building body—that a more direct communication than is possible at present between the architect and the working man would be advantageous to both,—few professional men will deny. But a remedy for this defect will not be obtained by blowing out the brains. Even presuming that many of our Medieval brethren worked with the chisel as well as the pencil, it by no means follows that if modern architects learned to use the chisel, their work would be equally as good as that of their predecessors. As well argue that because Phidias and Ictinus were slaves (for which there is only the Reviewer's assertion), therefore no future building can equal the Parthenon until slavery be re-introduced. Because Hindoo artists built domes which all Christendom has failed to surpass, or even understand, therefore modern artists must learn to squat upon their hunches and eat curry-bab with chopsticks. There is no doubt; to take a particular case, that viaducts and bridges would be more beautiful and better built than they are at present, if there existed co-operative societies whose special work was confined to bridge-building, such as those which flourished in France in the twelfth century. The well-known ruined bridge at Avignon, begun in 1178, and finished in 1183, was the work of the *Frères Hospitaliers Pontifes*, which was a religious order, established in 1164, at Maupas, in the diocese of Cavillon. The duties of the order consisted in building bridges, establishing ferries, and rendering assistance to travellers on the banks of rivers. Like the other brotherhoods, it was disciplined; and there were consequently both practical and scientific members of it, forming a concentration of technical talent devoted to a particular object, and the construction of a particular form of building. It may be urged that the modern representative of such an order is a Government department of works. But if there is similarity between them, there is also this difference—that whereas, originally, several communities devoted themselves each to a speciality—now one Government department embraces several specialities; and the discipline,

* "Histoire et Description de Notre Dame de Reims," Ch. Corf. Dubois, Reims, 1861.

* Plato.

† Mr. Cavendish Bentinck, M.P., in his "Letter to the Dean of St. Paul's" (page 4), objects to Mr. Burgess, because that architect "has preferred in architecture the heavy cumbersome forms of Early French Gothic." Harrison & Sons, St. Martin's Lane.

‡ "History of England," chap. iii.

§ "Hope of English Architecture," page 365.

¶ "Cluny au XI. Siècle," Par l'Abbé Ducher, 1851. Lyon et Paris.

which was a reality in the Middle Ages, has no other signification in the present one than an apparent devotion to "red tape."*

DISCUSSION ON "THE HOPE OF ENGLISH ARCHITECTURE."

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of the session, held last Monday evening, the 14th inst., Sir Gilbert Scott (president) in the chair, the following gentlemen were elected:—Mr. John Honeyman, Mr. Lewis H. Isaacs (Fellows); and Mr. Francis H. Collins (Associate).

The secretary (Mr. Eastlake) announced, with regret, the decease of Mr. Fulljames; and the president testified to the ability of this gentleman, who was, he said, many years ago concerned with the repairs of the Cathedral at Gloucester.

Mr. William H. White (Fellow) then read a paper, entitled "The Hope of English Architecture," which we print on another page.

At the conclusion of the paper, a long and animated discussion took place.

Mr. W. White had listened with great pleasure to the paper, as he had no doubt that all present had, for the subject was one of great interest, the author having thrown out the true outline of the development of architecture by the means he had named. How it was possible, he said, for a reviewer to make such a series of blunders as this one had in the article in question, it was almost impossible to conceive. The question that arose to his (the speaker's) mind was, whether too much regard was not paid to what the *Quarterly* writer had said. To suppose, on the one hand, the possibility of a lot of crude argument, having even the remotest amount of scientific knowledge requisite for the laying down the general area of those buildings, which decorated the Middle Ages, it was simply preposterous; and to think, on the other hand, that such buildings could be laid down, either without the greatest intelligence, the greatest research, which was, he thought, the point of Mr. White's lecture.

Mr. L'Anson said that his attention had only lately been directed to one of the articles in question, in the reading of which there were, he considered, two or three fallacies. As he understood the article, the writer's view was that there was no novelty whatever displayed in the architecture of the present day; and he contrasted that want of novelty with the originality of the works of the Middle Ages and the Greeks; but he (the speaker) thought that he was entirely in the wrong, and that there was a great novelty displayed in buildings now. In looking back, centuries ago, to the works of the Greeks and the Middle Ages, they did not think, perhaps, of the generations which had passed between one development of art and another. There never was, he would say, originality of art; it had all been developed from something else that had gone before it; and there was nothing less original. He believed that the Victorian epoch would leave its mark, and would be as distinct a school, and as full of thought and genius, as other schools that had gone before. Whether or not succeeding generations would see in them that which revealed the wonderful simplicity of the Greek architecture, or the grandeur of the Gothic architecture, it was not for him to say; but the present time was as productive of good original works as any that preceded it. The writer in the *Quarterly* was unfortunate in many parts of his article. He spoke of uneducated artists erecting important buildings. Amongst others, he spoke of a mason erecting a magnificent dome of a church, near Malta. Whatever it might be, Mr. L'Anson said that he did not know; and the writer also alluded to the important works of art produced by the "Industrial Dwellings Association." If these were types which he alluded to as "important works of art," he (the speaker) did not understand him. He pointed out, also, the successful results of co-operative industry in some works in the Wandsworth-road, on which works it was believed that the master workman was employed, on account of no artistic power which he had, but simply because he was a foreman, and would ask only a sum of 40s. or 50s. a week, so that he was an economical man to employ. For all that, the speaker agreed with Mr. White, that there was a certain amount of truth in the article in question. He could not help thinking that

architects did not give all that time and attention to the works which they might, and perhaps ought, to give; but the state of society was such as to make all artists strive to keep pace with the great leaders of other professions, and unless they were adequately paid they could not do this. It was almost impossible for an architect to devote the whole of his time to the erection of one building. There was no doubt, if the architect were more liberally and handsomely remunerated—something different from the 5 per cent.—he might, with advantage, devote his whole time to the study of every stone in the building, which it was now almost impossible for him to do.

Mr. Phene Spiers then, by the aid of the blackboard, gave a chalk sketch of the Porton Hall, Regent-street, Westminster, which the writer in the *Quarterly* so much admired, and convulsed the room with laughter at his description of the ignorance displayed in its design. The building, he said, was of stock bricks, covered over with cement; and the moulding was the only one that could have been drawn by the workman in the *Quarterly*; but he doubted whether the reviewer had been to see the building itself, or whether any one would take the trouble to go and see it.

Mr. Curzon objected to the manner in which the preceding speaker had referred to the working man.

Mr. Hall thought that it must be exceedingly unfortunate if any prejudice was raised against the working men or their buildings. He had endeavoured to urge the great advantages that would accrue for architects if more cordial relations existed between architecture and the workmen. He did not care very much what became of the mere constructor. In the North of England, the system of employing several master workmen existed, and it was possible to show clearly that it would be to the advantage of architects if a similar system were observed generally in the metropolis. However, whether they should arrive speedily at that system or not, was not of much importance to his present argument, which was this, that architects should take considerable interest in their relations with the building artisan. He had endeavoured to convey to workmen such information as he possessed himself, as regarded the principle of design of particular classes of buildings. He had conducted parties of workmen over buildings, and had never found any disposition on the part of workmen to consider that he was doing anything that was repulsive to them, in the way of teaching them, from his higher position, when compared with theirs; but, on the contrary, he had felt that there was, in all cases, a great appreciation of the position of the architect. He had endeavoured to show them that, prior to their having work to do, some one's head must have been at work designing and contriving.

Professor Kerr was of opinion that the workman of the present day was being made a great deal too much of, and they ought not to contribute to raise him to a false position, from which he must some day or other fall. This was a question which interested themselves as architects, and was apart from the question of master and workman. He thought that it would be a mistake to attach too much importance to the influence of that gentleman, whoever he might be, who wrote the article in the *Quarterly Review*. Professor Kerr hoped that he would have been present, for he would have received attention and courtesy, as was always the case with strangers who came to the Institute meetings. The question raised was of the greatest interest, whether the state of discredit, or alleged fictitious supposed discredit, in which the English architect was before the public, was justified. The alleged condition of architecture, as a fine art in England, was that it was at the lowest possible position; that every one of them connected with architecture ought to be extremely ashamed to be connected with it; and that future generations would look upon it with contempt. He, however, thought that this was not the case. Assuming, as their critics did, that this was the case, they then attacked the architect, saying that he had no sympathy for the architecture of England at the present day, being, as their theory would involve, surrounded by unfavourable conditions. They expressed no desire to assist architects, however, with their superior knowledge, so as to escape from this state of degradation into which architecture was placed; but they attacked architects both "tooth and nail." The controversy had at last reached this pass, that

remedies were being suggested, and as the last remedy—the latest—there was this "inspired workman." There was something like a substratum of truth in the idea that, if the workman were inspired, he was possessed, by some supernatural instinct, with all the information, skill, and imagination which the great architect was supposed to be possessed of, then something might be done which the architect who was not a workman, might not accomplish. But they must look at the world as it was; architects were universally respected by the workmen, and they should bear in mind that their function was separate from workmen. Now, who was it who complained against architects and the profession of architecture? The complaints and assaults were of two classes. There were always in every profession, whatever it might be, a few unscrupulous self-assertors. In the profession of architecture, fortunately, they had but few, but they would not denounce them. They were all agreed, however, in this,—that there had been self-assertors in this profession in former generations. This had been the end of the historical natural law, which had encouraged them to a certain point, like

"Tautling ambition, which o'erleaps itself,
And falls on the other side."

These persons had elbowed their way up into a supreme position in the architectural profession; and they consequently died of a broken heart, in consequence of the ridicule which had assailed them. There were, however, fewer of that class of self-assertors in the architectural profession than in any other. But now they came to a much more influential and objectionable class of critics,—the hysterical reviewers of the present day. They had any number of men who were at their wits' end for a subject upon which to exercise their powers. They were idle from force of circumstance; they desired distinction, and would find a subject upon which they could write to distinguish themselves. Certain of these gentlemen had fastened upon architecture, and, as he had hinted, had always been received at the meetings of the Institute with great favour; and that had been in most cases a mistake, in his opinion. He could understand a man of science coming into their room to lay before them his opinion, but he could not understand a man who could handle a pencil coming there and dictating principles of art, and suggesting principles upon the existence of which they knew from the first that he did not understand. The true aim of architecture was comparatively humble, and, in the great majority of cases, it was simply to lend a grace to buildings, which could be made graceful; and the question before them seemed to be, Was the architectural profession of England at the present day fulfilling its function fairly well? He ventured to say it was, for all ordinary works, the ordinary beautification of buildings, according to their various systems, was pronounced to be sufficient. The public at large was satisfied. If they went into the City of London, the buildings there were admired; if they went into the country, there were to be found hundreds of churches which were unpretending, but sufficiently designed in beauty. It was only writers in *Reviews*, and writers of books, who wrote of what they did not understand, who expressed any disrespect of architects. Speaking of drawing competitions, the speaker went on to say that they were a nuisance universally adopted. The true remedy of this state of things, he was not going to suggest, in contrast to the remedy of the theory of the workman. The true one, however, was that which Mr. White had put forward in his valuable paper, viz., in the study of the philosophy of art. The profession of architects should cultivate, he said, architectural criticism, and all would be well; they had forgotten it for a time; but Professor Kerr was of opinion that they would soon see a return to its common sense in many forms, and in this form, and then they would leave amateurs behind many steps. At the present day architects devoted too much time and attention to what was written by amateurs on architecture. It might interest some of the members of the Institution to know that he (the speaker) was a relative of Joseph Hume, who once told him that he had found the working classes to be by far the most intelligent, and infinitely the most honest; but he (the Professor) did not agree with Mr. Hume in that respect, for that gentleman saw the working-classes of England from a distance, through some disordered medium. A great many persons had adopted Hume's views, and carried them a great deal further. The

* To be continued.

working man of England, the speaker continued, was all very well in his place, but was not so well out of it. The hope of a workman was that he would be content to be a workman while he was so, and to escape from that condition as soon as possible.

Sir Edmund Beckett, O.C., referring to Port-calls Hall, Regent-street, Westminster, ridiculed it even more than Mr. Phénix Spiers had done, and doubted whether the writer in the *Quarterly* had really seen the building. With regard to the unpopularity of the architect, he did not agree with Professor Kerr that the public was so well satisfied with the present state of architecture.

Professor Kerr: I said ordinary architecture. Sir Edmund Beckett: Then, what about extraordinary?

Professor Kerr: I except the extraordinary.

Sir Edmund Beckett said that he was afraid that he must say that the public were not quite satisfied with the "ordinary"—that was here and there. He was in hopes of hearing from Mr. White more on his views of what architecture was. There was a great deal more to be expected from a connexion between the architect and the master workman. He did say that from experience he had found very great advantage from hearing what the master workman had to say on certain subjects. As an instance of this he gave an account of some work which was executed by an architect at Doncaster, which shortly after its completion fell down and killed a man. This work was executed by an architect, which showed that men might go into practice, and be employed in great buildings, without knowing anything of the elements of their business. He would ask the Institute if they gave their members really good practical education. He thought that the Institute should take steps for preventing architects running out into the world without properly knowing their profession. He confessed that he was in hopes of hearing a great deal more of the real practical hope of architecture in this paper of Mr. White's. Perhaps it was not a pleasant thing to hear, but the public were not satisfied with the present state of architecture. The only criterion was whether they gave constant satisfaction. A great many of the buildings of the present day were built to be admired only for a short period. The idea now was to make an impression. They heard of people going to visit old buildings, but they never saw them visit modern ones. The only real test was, He did modern buildings give satisfaction? He knew that they did not; and that they ought to take means to make it as difficult as possible for the public to employ a man who set up for a practised architect and who was not fully alive to his profession. He was glad to hear something said against the practice of competition, for he knew that architects were driven into it; but the mistake was partly in themselves. Every government competition that had taken place had ended in disappointment of one kind or another. There were competitions for the Foreign Office—a most unhappy affair. He ventured to say that there had not been in England a satisfactory result of a competition which could not be got in another way. This was partly the fault of the Government, which had fallen into the habit of regarding competition as necessary, because the public required it. Every town council thinks itself a good judge of drawings, and plans were necessarily deceptive. A man must go in for competition with the hope of winning; and in every case of competition, plans were sent in that would not otherwise be submitted for any other purpose. It was not entirely the fault of committees and Government that they had this state of things; but it would be well if all the leaders of the profession would set their faces against it, for it would never produce any good. Suppose they had done this with the Law Courts, but they dared not employ an inferior man there. In conclusion, Sir Edmund urged the profession strongly to set their faces against the competitive system.

The President said that, as it was so late, he would reserve his remarks for the adjourned meeting, which would take place on the 4th of January, 1875, when a cognate paper would be read by Mr. Stephenson, on the subject of the master workman and architects.

Bursting of a Sewer.—At Kearsley, between Bolton and Manchester, the main sewer burst on the 11th inst., and flooded a large portion of the town.

ENLARGEMENT OF SKETCHES AND PHOTOGRAPHS.

WITH reference to the conversion and enlargement of the sketches which Mr. Sharpe has been allowed to select, into wall diagrams, for the purpose of illustrating the lecture which he is to deliver to the Architectural Association, on this 18th of December, on the "Ornamentation of the Romanesque, Transitional, and Lancet Periods in the North of France," as exemplified in the churches visited in the French Excursion, Mr. Sharpe offered some suggestions which may be useful to others:—

Enlargement.—I send some cheaply-made, 3-ft. wooden pantographs for immediate use. They are fitted up with pivots, pointers, and pencils.

The pivot must be firmly fixed on the left-hand side of the drawing-table by means of the teeth with which it is furnished, and which ought to be well sunk into the table.

The pantograph must then be fitted on to the pivot through the hole in the brass slide on the long left-hand branch of the pantograph; this brass slide must then be placed and screwed down at one of the divisions marked 3, 4, 5, or 6, according as the sketch is to be multiplied in size, 3, 4, 5, or 6 times.

The pointer must then be similarly passed through the hole in the slide on the left-hand one of the two short middle arms, and the slide fixed at the corresponding number on this arm.

The pencil must lastly be fitted in the same way to the only hole at the extreme end of the right-hand long branch.

The drawing to be enlarged having been previously pinned down or fixed to the table at that part of it travelled over by the pointer, the artist passes the pointer over the sketch, and the pencil, if properly adjusted, will trace on a blank sheet of paper the outline of the sketch enlarged the number of times indicated by the figure of the division at which the pivot and pointer are placed. The details can be filled in with the free hand, or, if preferred, be also accurately traced. The instrument should be made to work with perfect freedom, by rubbing the joints with French chalk or otherwise. The pencil should be very soft: otherwise this arm will have to be weighted.

The paper best adapted to these large diagrams appears to be the large cartridge paper made by Waterlow, cut to the following size,—30½ in. by 22 in.

Drawing Materials.—Use Stanley's liquid India ink (Great Turnstile, Lincoln's Inn-fields); *Reed-pens* for all the larger lines, cut and nibbed like a common quill pen, whether for ruled lines or those drawn with the free hand; the finer lines may be drawn with soft steel pens; and the thick black shadows with a sable brush or broad reed pen.

The advantage of the reed pen is the firm and even stroke that you get from it whether made under pressure or used lightly. You may have the nib, and consequently the line, as broad or as narrow as you please. All the woolly membrane or lining of the reed must be taken away, or the line becomes uneven and rotten.

The drawings will all be mounted on a ground of slate-coloured calico, with which the walls will be covered; and the sketch when enlarged must be cut round with seissors so as to leave only the subject, *deprived of all the margin*; the diagram will then stand out in good relief, however few be the lines upon it. Hence the less shading, and the fewer lines put on the paper the better; the effect will be brought out better by broad black shadows, as if caused by a bright sunshine falling nearly fall on the subject, laid on with a brush, than by many lines.

The rapid way in which sketches can thus be enlarged, and converted into admirable lecture illustrations, and the excellent practice it offers to the architectural student, has only to be tried to be appreciated and enjoyed.

THE PROMENADES OF PARIS.

THE large and elaborately illustrated work on this subject, the title and particulars of which were appended to our recent article on ornamental gardening (see p. 942, *ante*), led us, in the first instance, to some general comments on that subject, suggested by the admirably written introductory essay; and we may now proceed to give our readers an idea of the manner in which the main object of the book,—the history and illustration of the pleasure-grounds at Paris, has been carried out.

The comprehensive illustration of the whole pleasure promenades of a great city is a task not often undertaken, except in a mere guide-book form, and we are certainly aware of no instance in which it has been done on the scale and with the completeness of the work before us. The book is divided into four sections (besides the introduction before spoken of), illustrative of the "Bois de Boulogne," "Bois de Vincennes," "Flora Ornamentale des Promenades de Paris," and "Les Promenades intérieures de Paris;" the latter section including the public roads, as well as the interior parks (Parc de Monceaux, Parc de Buttes Chaumont, Parc de Montsouris, and Champs Elysées), and the places and "squares"; for our neighbours have borrowed the latter word from us, though they treat the thing somewhat differently.

This particular matter of the "squares," in fact, is perhaps what most strikes an English reader as a distinctive feature in these representations of Paris promenades; for if we have given the French the word (a convenient one, distinct from the more vague *place*), they have practically very much amplified and extended our meaning of it. Any one accustomed only to the English "square,"—an area of grass, with starved-looking trees, and some railings round,—would be struck, in looking through the illustrations of the Paris squares as collected here, with the far more ornate and effective treatment which such a city breathing-space receives in Paris. It is rather a little grove in the midst of the streets and buildings, almost always with its centre object of architectural interest, large or small. Among those which illustrate especially the garden treatment are the Square du Temple and the Square des Batignolles; the latter with its large trees, winding walks, and artificial water, being quite a little park in character; while its irregularities are balanced and harmonised with the adjoining lines of street and railway by its double alleys in straight rows round the exterior. The Square des Arts et Metiers, formed in 1863, and of which we reproduce the illustration,* is a somewhat more formal example. It is laid out in straight alleys, formed by rows of chestnut-trees, the centre alley leading up to the principal entrance of the Conservatoire des Arts des Métiers, from which the square takes its name. The decorative features consist of four fountain-basins, adorned with figures representing Agriculture, Industry, Commerce, and the Arts; and a Victory column, commemorative of Orsman achievements. Among the squares in which a building on a larger scale forms the central object, a curious instance is the Square de la Chapelle Espiratoire, where the building from which the name is taken (built by Louis XVIII. to commemorate the former use of the ground as the Madeleine Cemetery) stands skew to the general lines of the square, with an odd and unsatisfactory effect. The Square de la Trinité, of which we give a view (p. 1052), takes its name from the fine church designed by M. Ballu, drawings of which have been exhibited more than once in England (there was a model of it in this year's International Exhibition), and which has received praise for its harmonious composition and clever treatment of detail, even from those who might have little sympathy with the style affected by the architect. The centre object of the Square de la Tour St. Jacques (this we also illustrate), from which the site takes its name, has a history, and has not been preserved without some little difficulty. It is a sixteenth-century addition to a twelfth-century church, which once stood hemmed in on all sides by the small houses and mean little streets which formerly occupied the site. The church and the hovels immediately adjacent to it were pulled down a good many years ago, but the tower was saved by the forethought of an architect of the city, who contrived to get inserted in the *précès verbal* of the sale of the estate of the ancient church, that the tower was not included in the sum named; and as no farther bid was made, it remained. In 1838, it becoming known to a member of the municipal council that the inheritors of this remnant of church property were anxious to sell it, he laid the matter before the Government, and led to the tower being purchased as an architectural monument and ornament of the city, for the sum of 250,000 francs; in which also there is a lesson and example for certain other Governments notoriously indifferent in such matters. Since 1855 the transformation of the neighborhood, by the construction of the

* See p. 1049.

Rue de Rivoli and the Boulevard de Sebastopol, brought out the tower as a central object, with a wide space around it; and it was then carefully restored by Messrs. Ballu & Roguet, and the dilapidated statues copied by various sculptors, and replaced. There is in all this a care for architectural monuments as such, and an absence of predominance of merely utilitarian considerations, not often met with in these practical and economical days.

Among the Places, which, as distinguished from the Squares, are but few, the most noteworthy is that called Place du Roi-de-Rome, which was a part of the "house cleaning" preparatory to the Exposition Universelle; the district of Trocadéro, extending between Chaillot and Passy, having been long neglected, and become a receptacle of "toutes les immondices" of Paris, this occasion was taken of transforming it on a great scale, making a centre circular place on an elevated level, in which nine boulevards met, these several streets ascending by gradations to the level of the place. The plan was modified in operation, and "extended so as to give it the same development as the Champ de Mars"; the slopes being made steeper in order to produce, practically, a vast amphitheatre, "from which the whole population of Paris might witness the fêtes of the Champ de Mars." The work was carried out during the years 1866-7, at a total cost of nearly three million and a quarter francs.

Of the interior parks, the Champs Elysées is that which is most historic and celebrated, though hardly realising the boast of its high-sounding name, so redolent of the pseudo-classicism of "le Sticla." Its commencement was in a less pretending manner: the account of Jaiillot (in his "Recherches sur la Ville de Paris") is that "opposite the Tuileries garden there were formerly scattered divers small houses, irregular and isolated, accompanied by gardens, trees, and arable land. Marie de Medicis had bought a part of this land. In 1616 she caused it to be planted in three alleys, formed by four rows of elms, and closed by iron gates at each end. This promenade, known by the name of Cours-la-Reine, was destined for that queen and her court when she wished to take the air in her carriage"; it was, in fact, a kind of royal and private Rotten Row. "In 1723 the trees which had been planted were removed, and others substituted; the rest of the site, as far as the Faubourg St. Honoré, was appropriated partly for tillage and partly as a warren." In 1670 the site generally was planted with trees, forming many alleys, and then took its present name of the Champs Elysées. In 1765 it was re-planted, and more numerous alleys formed and distributed on a new plan, and the two groups in marble, known as the Chevaux de Marly, were placed as ornaments. Subsequently *cafés* and a circus, and other public entertainments, were licensed in it, till, in 1855, the building for that year's Exposition was erected in it. Thus the Champs Elysées, made as a royal drive in its original form, had become a people's park; but it was found that the place was still not attractive enough in its aspect to retain the crowds of holiday-makers, and in 1858 the Municipal Council conceived the project of transforming into gardens the spaces between the avenues, and with this change, and a systematic arrangement of more artificial amusements and attractions, it is now the most popular holiday resort of Paris, "and is admitted by strangers to be without its rival in the world,"—which is rather a rash statement.

The small park of Monceaux, designed in 1778 by Carmontelle, under the orders of the then Duc de Chartres, is a marked contrast, in its informal character and winding walls, to the Champs Elysées; a contrast which it is very well to keep up in these kind of city breathing-spaces, and which certainly is not followed in our own parks, the character of which is singularly alike, and without character (to adopt Pope's paradox about women), that of Kensington being perhaps the most marked; but otherwise all seem very much the same. It is a great advantage to be able to choose a highly artificial garden in straight alleys, or a naturalistic park, according as your immediate impulses lead you, or as the weather may render one or the other most pleasant and attractive. In the revolutionary period, this park was declared the property of the State, and became a public promenade, but was never a very popular one: it was restored by Louis XVIII. to the descendants of the Duc de Chartres, whose representative in 1862 again restored it to the State as a public

park. Its "resurrection," however, as M. Alphand terms it, came about in 1860, when the Government, which had acquired a part of the estate, entered on extensive repairs and embellishments in connexion with the park, and re-edified the Rotunda and other ornaments (in somewhat poor taste), made grottoes and cascades and everything as it should be. These latter objects are very picturesquely made out by French landscape gardeners; but we cannot say so much for the semi-architectural adjuncts, ruined temples and other curiosities, which would (we hope) be considered very much behind the taste of the day in England, at any rate.

The Parc des Buttes-Chaumont is another park *au naturel*, the effect being helped in this case by the picturesque nature of the site, which is uneven and hilly, and further broken up into precipices and caverns by the process of quarrying at different times. The distinctive point in it is a high rocky island, rising out of water, and crowned by a small circular temple at the highest point, in a manner reminding one of some of Claude's pictures. Grottoes and cascades again come in here, and are fully illustrated by engravings. The idea of forming this park arose, in the first instance, it appears, from the fact that the abandoned quarries and the waste land adjacent had become a haunt of dangerous characters, from whom it seemed desirable to reclaim the territory. It was commenced in 1860, and finished completely about six years after.

Under the heading, "Voie Publique Plantée," we have representations of most of the boulevards, that form of ornamental street for which Paris has set the fashion for the world. The favourite system in the modern street-planning of Paris, of leading boulevards up to a central point at tolerably acute angles with each other, instead of laying them out at right angles, as the general tendency of modern cities is, offers many opportunities for picturesque effect, but at the same time tends to awkward forms of cutting up the building sites between the lines of road, besides rendering the process of finding his way more difficult to the visitor. We may remark how much the view of the Avenue de l'Impératrice shows the want of a more formal arrangement of trees, to lead up with something like architectural stateliness of line to the Arc d'Etoile at the extremity of the vista; the effect, as existing, is far too irregular and ragged for an avenue so placed, and intended to some extent as a road of state. Among the lesser places, the pretty effect of the Place du Théâtre Français may be noticed, with its two triangular gardens, divided by a broad road that crosses one of the diagonals of the space, the other diagonal being unmarked.

Into the more extended descriptions and illustrations of the better known Bois de Boulogne and Bois de Vincennes we cannot go in detail here; it must suffice to say that the history, aspect, and architectural embellishments of these celebrated parks are set forth on the same scale, in proportion to their extent and importance; and we must refer readers who have not visited, or wish to know more of these "promenades," to the book itself, which ought to be in all good public libraries. We may observe, however, the fortunate manner in which the glades and walks are arranged in the Bois de Vincennes, so as to have the appearance of being the result of natural growth and unartificial effect; and at the same time may regret that there is not more of architectural interest or merit in the structures scattered about it. The "park style" of architecture, by which we understand that kind of meaningless prettiness which seems concentrated specially to buildings in ornamental parks, is far more predominant here than one could wish.

The whole subject of park architecture and decoration receives some suggestive illustration in the book of which we are writing, in which are included elaborate and minute drawings of the lodges, gates, railings, and all the ornamental adjuncts of a park, besides diagrams of the sewers and other practical works in connexion with the parks and boulevards. The drawings of these latter (sections of sewers, &c.) illustrate and explain some of the models which were in the International Exhibitions, such as the wagons for cleansing the drains, &c., the special use and application of which was not so evident in the models themselves. Some of the sections of drain given, and the method of cleansing them by means of wagons run on rails, which are fixed along each side of the invert or waterway of the sewer, and can thus be easily run along them to

any extent, are worth attention from those whose special business it is to attend to such matters in the sanitary arrangements of great cities. As to the more architectural portion of the adjuncts of the Paris parks, so much cannot be said. There is a large *cadre*, or polygonal covered pavilion, for instance, in the Bois de Vincennes, which has a plate to itself, and is drawn in a most finished manner in plan, elevation, and section, but "there is nothing in it"; the ornament consists of that method of pierced wood-work (flat) which the French are fond of, but which is capable of being used with far more artistic feeling and effect than they put into it; the design is poor, and the whole thing has a cardboard look, anything but satisfactory, and certainly not worth such careful illustration, except as a part of the effort at absolute accuracy in everything. The Fontaine des Innocents in one of the squares is a more pleasing specimen of ornamental building, with its square centre pavilion, and the water dropping in little cascades down the steps on each face; this is an older fountain, of another day, which formerly stood in a side position, backed by other buildings, and with, therefore, only three sides; and which was recently moved to its present central position, and received the addition of a fourth face and flight of steps to complete the design. Details which are given of the railings, lamp-standards, and other iron-work of the parks do not impress us; but the ornamental railings of some of the squares, especially the square Montholon, show very good and original design, rich without heaviness; and the Square Louvois has something a little out of the way in this respect. The panorama building in the Champs Elysées is simply ugly, having neither the dignity and grace of classic architecture, nor the picturesque of Gothic. Of some fountains, of which illustrations are given, that of the Place de Madeleine, with its basket (as one may call it) of shrubs and flowers forming the middle basin, is very pretty and fanciful as a design, but is quite out of scale, the details and general contour suggesting the idea of a much smaller and more delicate piece of work than it actually is. In all these matters of architecture and architectural embellishment in the public places of Paris, we should say that the spirit of Paul Gaudelau's "cousin Eugène" is but too much wanted. Perhaps he had already offered his criticisms, and found them, in this case, as in others, "not well received."

The illustration by maps, plans, elevations, and views, of all the details of the Paris promenades and parks, does not, however, exhaust the scope of the work before us, for an important section is added, giving a description and botanical classification of the various flowering plants introduced into the parks and squares, accompanied by the best specimens of realistic representation by this method that we have seen. A similar classification is adopted in regard to the trees planted in the parks, accompanied by statements, arranged in parallel columns, of the climatic origin of each tree, its best use in plantations, its height, &c. The average value of the flowers and trees is stated; and throughout the book the cost of each class of work for each park and boulevard is, as far as we observed, tabulated. This provision will give a value to the book beyond that of a mere drawing-room table album, as it will be useful as a reference in forming an idea of approximate cost for works of the same kind as those which it illustrates. In one respect, however, the practical value of "the Promenades of Paris," and even its eligibility as a book of entertainment, has been somewhat injured by the very effort to make it as handsome and imposing a volume as possible, which has led not only to the employment of a splendid and very thick paper, but to a width of margin which brings it almost to a cumbersome size and weight, and (we confess) has rendered the examination of it, with a view to these remarks, a work of some physical labour. In short, the book is a show volume, but contains an amount of practical information not often found in show volumes. Whether its completion will stimulate any enterprising author and publisher to undertake an illustration of London parks and promenades in a similar style we do not know; but we fear much must be done in this neighbourhood before there can be materials for illustration at all equal to those which, in spite of all their sins against the best taste, can be found in the Promenades of what a modern poet has called "the Capital of Pleasure."

PARIS SQUARES.



SQUARE OF THE ARTS AND SCIENCES.



SQUARE OF THE TOWER OF ST. JACQUES.

WARMING AND VENTILATION.

HAVING during the last thirty years given much time and thought to the subject of warming and ventilation, and spent no inconsiderable amount of money on practical experiments, I think I may venture to make this the subject matter for discourse. Much as has been said and written on these topics, my own experience teaches me that we have still a great deal to learn; and, with respect to ventilation, while it has become a household word, there is scarcely one house in a thousand where you find any practical improvement upon the state of things which existed fifty years ago. If any subject therefore needs ventilating, may we not say it is that of ventilation itself? It is with some degree of diffidence that I approach the subject, but should I succeed in imparting any fresh information upon it, I shall hope to elicit from you such an amount of discussion as will either testify to its value, or point out where I am wrong; at any rate, I fully expect it will enable me to carry away one or two ideas in exchange for those I may suggest.

The two divisions of the subject are so intimately connected that it is difficult to treat of them separately, for it is beginning to be admitted that no system of warming is perfect which does not to some extent combine with it a renewal of the air, and consequently, efficient warming may perhaps be said to be neither more nor less than good ventilation. Let us, however, for convenience' sake, take warming first into consideration:—

So far as this subject has reference to the generating and retaining of the animal heat of our own bodies, we certainly ought by this time to have acquired some fixed notions thereon, for if there is one subject more than another to which man has devoted his care and attention it is this. Carrying about with him as he does perhaps a more wonderful warming apparatus than ever was invented, one half of his life may be said to be spent in collecting and furnishing it with fuel in the shape of food, and in preserving the acquired heat by means of clothing. Whether it will account for the number of books which he has written about Cocker's Furnaces, Consumption of Fuel, and Stoking, it is difficult to say; but man is by nature a stoker, the very first act he performs is that of stoking, and the first intelligible cry he utters is for more fuel.

Our business, however, is to treat of warming by artificial means. The furnaces we have to consider are those of brick; the channels for conveying the heat are of masonry or metal; the outlet through which it is radiated is either an iron grating or a boarded floor. We may, however, perhaps be able to gain some information (as will be hereafter shown) as to the mode of preserving the heat in our buildings of brick and stone by comparing them with that mysterious temple in which man takes up his habitation.

As a means of generating artificial heat, the first thing we want is fuel; and touching which, what is there with which we can more effectually blacken our fingers and brighten our hearths than coal? If, as Solomon asserts, "Where no wood is the fire goeth out," the latter must at one time have been the universal fuel, but having burnt up all our surplus timber, we fall back upon coal. When both these fail as articles of fuel, we shall have to look out for other sources of heat, and possibly we may be obliged to have recourse to friction; and thus it is comforting to know that we need never starve.

We are told by Bernard in his history of warming, that a shrewd American, the machinery of whose factory was worked by water power, wanted to make the latter also available for producing heat; and to effect this he built a clamber underground, in which he placed a couple of large iron circular disks. With the aid of a little extra shafting these disks were made to revolve rapidly on each other; the outer air being brought into contact with the same through a subterranean channel, and with the frictional heat thus acquired was conducted by flues into the several rooms of the mill. Whether wholesomely or not the inmates were by this means most effectually warmed at all times of the year except one, but this unfortunately happened to be when the heat was most required, viz.—when the frost came and stopped the water-wheel: had the Yankee been aware of it, he might have had the satisfaction of proving the

truth of the statement, long before it was made,—that heat is only another phase of motion.

We have now to consider how the heat derived from coal may be utilised, so that we may receive the greatest possible amount of it before it escapes up the chimney. In our domestic buildings we must look to its radiating power as preferable to any other, and if economy be our object, the slow combustion German stove probably offers the greatest advantages; but with the less imaginative Englishman, seeing is believing, and he will not be disposed to consider himself thoroughly warmed unless he can look upon a blazing fire in an open grate; and talk as you like about extravagance, he will go on contenting himself with the heat generated from 1 cwt. of coal, while he pays his coal-merchant for the additional 8 cwt. which are consumed with no other gain than that of keeping the birds from building in the chimney-tops. Preach as we may, luxury will still prevail, and as long as we can afford to eat and drink as much at one meal as would provide wholesome and sufficient food for eight, I do not see how we can consistently deplore one act of extravagance more than another. There is, however, a way by which we may economise the heat of an open fire, and that is by making it serve the purpose of ventilation as well. To promote this laudable object, every day now brings with it the announcement of a fresh patent in the shape of a ventilating stove. The principle, doubtless, is good; but we must carefully guard against the admission of air at too high a temperature, otherwise it loses its vivifying property, and that is why radiated heat is so preferable to that obtained by other means.

The plan which I adopted some ten years ago of introducing a rectangular cast-metal tube into the back of my fire-grate, fixed in a horizontal position, communicating at one extremity with a shaft into which the outer air was admitted, and at the other with an inlet flue, opening into the room on the projecting side of the chimney-breast, is a very simple mode of tempering the fresh air before it comes into the room. The certainty of its action is made manifest by pasting a piece of paper by its upper edge to the frame of the aperture. When the door is shut this will be found to remain at an angle of 45° with the wall, and when open it shows by the fall of the paper over the orifice that this special supply of air is no longer needed. Now, if this inlet is placed near the ceiling, and the iron tube is covered with such a thickness of firebrick as will keep the temperature at something like 65° Fahr., you will have one means of ventilating an ordinary sitting-room; for the fresh air must then come mingling with that of the room before it finds its way to the chimney opening, and the continuity of its action gives to the inmates a wholesome supply, independent of the raw or uncooked air which comes in through ill-fitting doors or casements; and so long as the little paper janitor shows itself to be on duty, we need not trouble ourselves about having Arnot's valves, or ceiling apertures, for the purification of the air will be as certain as that of water in a pond, where the service and the overflow pipes are simultaneously in action.

Another source of artificial heat is in the gaselier. Like fire and water, gas is a good servant, but a bad master; and in ninety-nine houses out of a hundred it is simply a licensed despot, who revenges himself for the light he cannot help giving by poisoning the very air to which he is indebted for life and brilliancy. The designers of our ordinary gaselier confine their attention to its shapeliness; but handsome is that handsome does. A thorough-bred horse unharnessed is a handsome sight; but to drive him at our pleasure and secure him from kicking he must be well bound and strapped to the shafts of a vehicle. So must it be with gas. We require its heat and light, but in order to dispense with the accompaniment, which comes in the shape of carbonic acid, the burner must be attached to a shaft as well, and that shaft must be a smoke-shaft. Some fifteen or twenty years ago I patented a mode of gas-lighting which provided for the escape of the products of combustion, and for the admission of fresh air in exchange; but the following up of this demanding more time than I could spare, I made a virtue of necessity and let the public have the benefit of it, or as much of it as is found in Benham's (formerly Rickett's) ventilating lamps. For general purposes of illumination and reading, the globe-lamp last named is admirably adapted; but being a fixed light, and consequently placed at a considerable height from the floor, it must

necessarily be either inefficient or wasteful for reading and working purposes. Since the radiation of light is inversely, as the square of the distance, and 2 ft. from the table being a convenient height for a lamp, it follows that, at double the distance, it would require four times as much flame to give the same amount of light. To effect this object, I have the copper smoke-tube of my lamp made in two pieces, so that the one may slide within the other when the lamp is not in use; but as a proof of the absolute necessity of the smoke-tube being near to the burner, and likewise of the utter inutilty of ceiling apertures in general as outlets for foul air, I need only tell you what I discovered by sheer accident, viz.: that with all the rarifying heat of an argand burner immediately under the mouth of the tube, if the tube itself is turned into any other flue than that of the ordinary chimney, the pressure of the outer air is so great that it is necessary, if there be a fire in the room, to light the lamp while the door is open; a few seconds, however, will suffice to establish an upward draught, and then, whether the door be open or shut, the action is maintained, and during such action the smoke-tube serves the double purpose of purifying the air and warming the room.

Having thus disposed of the warming and ventilation of the sitting-room with its luxurious open fire-grate, we will be bold enough to invade the kitchen, and there we shall find (especially in the summer time) that luxury consists in being less lavish of our fuel. I fear it is useless to attempt any reformation here unless we begin with the cook herself. Within the range of invented things there is nothing so wasteful as an English cooking-range. Suppose, when the family is reduced to two persons, we are content to dine off a mutton-outlet, a dish of eggs and spinach, and a sweet omelette, and we have the temerity to look into the kitchen an hour before dinner-time, we shall probably find the cook standing at a respectful distance in the front of a twenty-guinea stove, shading her eyes from the fierceness of a fire sufficiently large to roast an ox, and, probably, making use of a meat-bastener for no other purpose than that of a screen. But, as I am trenching rather upon the subject of roasting and warming, I will, having had my fling, turn my attention to buildings of another description. Before doing so, let me just observe how especially applicable, on account of its simplicity as well as for its economy of heat, is the air-flue system of ventilation, last named, to the habitations of our working classes, where, in the common sitting-room or house-place, a fire for either warming or cooking purposes is burning all the year round, and then in combining with the same a special provision for the escape of foul air, we may positively convert our back-to-back tenements into dwellings quite as wholesome as those in which there is a through draught. In such buildings, all that is required in addition to this inlet-flue is to let the staircase serve as an extracting shaft, which may be done by making a valve opening over the ground-floor doorway, and placing an ordinary wind-coal over an aperture made in the roof. The constant influx of slightly-warmed fresh air at the lower room necessitates an upward draught on the staircase, and a stagnant atmosphere with all its evil concomitants can no longer exist. An inexpensive alteration of this kind of back-to-back buildings would represent the advantages otherwise gained in double houses; and if this paper produces no other fruit than such a reform in the dwellings of our poorer brethren, it will more than compensate me for the trouble I have taken in writing it.

In factories and workshops steam is found to be as convenient a mode of warming as any; but as provision is rarely made for such an admission of fresh air as will protect the work-people from exposure to cold draught, I would suggest a way of doing this, which I have found as efficient as it is simple. Assuming the pipes to be near to the outer wall, they need only be enveloped at intervals of 3 ft. lengths of tubing about 1 in. more in diameter than the steam-pipe itself, and by connecting these with the outer air by means of T branches running through the walls, we secure an uninterrupted supply of moderately warmed fresh air, which enters the room at the extremities of the annular space formed by the two pipes, and a gradual renewal of the air is the result. This motion in the air I have found may be considerably accelerated by forming extracting flues in the walls of the factory, communicating by underground channels with the shaft of the engine chimney

To give to steam the same advantages which hot water has, there should be facilities for shutting it off from a portion of the piping to meet the changes of temperature in mid-seasons, otherwise it will be found (as I discovered to be the case) that when the steam is turned off before the cold weather has quite gone, the annular spaces above named are sure to be plugged up with cotton waste or paper, thus proving that while the value of fresh tempered air is fully appreciated by workmen, they prefer a stagnant atmosphere to any supply which comes in the shape of a cold draught.

I adopted this principle of warming and ventilation at the Nottingham Lunatic Hospital with such success, that the Commissioners of Lunacy published a detailed description in their Blue Book for the year.

Assuming that we have arrived at some definite mode of warming and ventilating domestic buildings and factories, we will now consider those of larger bulk, and here our difficulties may be said to increase.

I do not share in the common opinion that a large room is necessarily more healthy than a small one, except as to the temporary advantage of there being a greater stock of air to draw upon. It seems to imply that its sanitary condition is dependent upon this rather than upon a constant renewal of the air. Hence we hear of people associating defective ventilation with the lowliness of their rooms, and even scientific men disparaging hospitals which do not provide so many given cubic feet of space per bed. Take, for example, a railway carriage with half a dozen people in it. If hermetically sealed, the air would not last them as many minutes; but suppose it to be one by a night train, with all the seats or couches occupied, how is it that you may, with closed windows, travel from London to York without any inconvenience? Certainly not from having 800 to 1,000 cubic feet per bed, but because you are carried along with such rapidity through the air, that even the small slide ventilators are sufficient to effect a constant renewal of the atmosphere within.

Take, for the converse, some of our largest churches, where for a congregation of 1,000 you have something like 500 cubic feet of air per head to begin with, or where the space is so vast that the supposition of there being no necessity for doing more than using up the stock of air within is perhaps pardonable; but only try the effect of entering the building suddenly from the fresh air, at the close of a Sunday evening service, while all the lights are burning, and you might positively taste the gassy and noxious atmosphere. Or, for a startling hypothesis, suddenly seal up hermetically every aperture in the Albert Hall, during a grand oratorio, and I will venture to say that a man could live longer breathing through the chinks of a clock-case than he would there; at any rate, he could live long enough to prove the fallacy of making cubical contents the primary test of the sanitary condition of a building.

The warming and ventilating of large halls, and other places of public assembly, are fraught with many difficulties; and after so many failures have been made therein, it may seem somewhat bold of me to attempt to overcome them; but, with all due modesty, I will venture presently on a solution of the problem. I will not take up your time by describing how I have hitherto either partially succeeded or wholly failed in so doing; suffice it to say, that I have tried some eight or ten different methods of warming buildings of this class; and among others, I may mention hot-water pipes under the floor, and coils above it; steam in boxes, pipes; and even in gallery columns, furnaces with horizontal flues; stoves, with vertical ones; pavement fire-holes with down-draughts; underground cookles with up-draught; and among other patented modes, I have tried one which may be said to consist of drawing the air out of the church, taking with it the respirations of the congregation, and after cooking it in a cellar below, pouring it out again on their devoted heads through a hole in the wall. With one or two exceptions, my experience prompts me to confess that all these systems are more or less unsatisfactory.

I have, however, come to the conclusion, that the only wholesome kind of heat is radiated heat; that this must proceed from the floor, and be so uniformly dispersed that it is not felt in one part of the room more than another. The mode of applying it will depend very much upon the construction of the floor, and the vehicle we make use of in conveying it; but whether that

vehicle be water, steam, or air, I should consider it as objectionable to admit the latter into the room as a heating medium as I should the two former. It is one thing to use hot air as a direct means of warming, and another to admit a tepid stream of it into a room for the purpose of ventilation.

In a music-hall, or ordinary assembly-room, where the floor is a boarded one, I would adopt "Perkin's small pipe high-pressure system of warming" (so successfully carried into operation at the present time in buildings of this description, by Mr. Gibbs, of Liverpool); but I would so far vary in general application as to distribute the piping over, or rather under, the whole area of the floor,—in which suggestion, I may observe, Mr. Gibbs heartily concurs. The piping should be conveyed up one joist space and down the other, and be accessible only from below; and where there is a sub-story, it should be shut off from the same by flat boarding hinged to the lower edge of the joists. The heat thus obtained would be uniformly radiated into the room through innumerable perforations in the floor-boards, not too large to render the surface objectionable for dancing purposes, or too small to allow of their being speedily clogged up with dust.*

THOMAS C. HINE.

TRADE SOCIETIES CONNECTED WITH BUILDING, AND THEIR PRESENT CONDITION.

From the annual reports of the following Trade Societies it appears that those that are allied in some way to building operations are in a flourishing state.

The Amalgamated Society of Carpenters and Joiners can muster 12,789 members and 249 branches, being an increase of 1,553 members, with available funds amounting to 30,450l. The Friendly Carpenters and Joiners' Society have also 9,295 members and 140 branches, with 6,685l. funded, and an increase of 609 members.

The Amalgamated Engineers, Machinists, Millwrights, Smiths, and Pattern-makers have enrolled 42,382 members belonging to 357 branches, with a capital of 200,923l., and an increase of 1,307 members and 42,610l.

The Ironfounders, with 11,775 members and 103 branches, have a capital of 48,885l., with an increase of 525 members and 1,121l. in funds. The Boiler-makers and Shipbuilders muster 13,137 members, with 135 branches, and have 39,178l. banked, being an increase of 1,614 members and 14,050l. in capital.

It will be seen from the above that the Amalgamated Engineers stand first on the list, but there is reason to assume that when the report of the Operative Stonemasons' Society appears, the Engineers will not be, if at all, far ahead of the Masons, either in numbers or capital. The Bricklayers, Plasterers, and Painters have not yet published their annual reports, but neither Trade Society approaches the others in numbers or funds.

The following brief extracts from the reports may be interesting to the building world:—

The Amalgamated Society of Carpenters and Joiners, whose head-quarters are at Manchester, last year expended in donations, 586l. in making good their members' tools; 5,865l. for the members falling on the sick fund; 1,248l. for funerals; 800l. for accidents; 97l. for superannuation; 2,964l. for trade privileges,—meaning strike pay, arbitration and conciliation expenses, law, and travelling; 466l. in benevolent grants; and 155l. in grants and loans to other trades. The secretary, Mr. Prior, instances the fact of increased wages being the rule in districts where the trade society has its branches.

The Friendly Operative Carpenters and Joiners' Society expended during the year for sick and superannuation benefits the sum of 3,091l.; for replacing tools lost by fire and other losses, 210l.; strikes are set down as costing 2,265l., of which 942l. were for the Bristol men, 68l. to Sheffield, 532l. to Liverpool, 147l. to London, 167l. to Newport, 89l. to Leamington, and 128l. to Belfast, and small sums to other towns. The funerals cost 992l., being 10l. for each member's death, and 4l. for members' wives' funerals. The working expenses reaching 3,153l., and the expenditure was 11,868l. The secretary has published a very useful table of wages and hours of working in different towns, from which it appears that the number of hours varies in most towns, both

summer and winter, from 49 to 60. Thus, Blackburn averages but 49 working hours in the week; Sheffield, 50; London, 52½; Belfast, 54; Liverpool, 55; Manchester, 51½. The highest wages are paid in America, 32. 15s. per week; London comes next, with about 11. 19s. 4½d. weekly; Manchester, 11. 16s. 4½d.; Liverpool, 11. 14s. 4½d. Sheffield, 11. 11s. 3d.; Belfast, 11. 11s. 6d. The Frome builders, in Somersetshire, are credited as being the worst paymasters in the kingdom, giving their carpenters and joiners 11. sterling per week, with the longest hours.

The ironfounders, who are daily getting more connected with architects and builders, in their sixty-fourth report, give some valuable statistics, and show a total expenditure of 24,995l., out of which 7,778l. were paid in donations; sick members received 5,216l.; funerals cost 1,800l.; superannuations, 2,171l.; accidents, 1,437l.; emigration expenses of members to be returned, 1,124l.; assistance to other trades, 150l., whilst the whole management of this well-managed society cost but 2,287l. During the last twenty-six years of its existence the society has expended the large sum of 481,535l. in assisting its members.

THE TIDAL OVERFLOWS IN THE THAMES.

CONSTRUCTION OF STREET WATER-DAMS.

MR. GOODWIN, a member of the St. Saviour's Board of Works, some time ago introduced to the Board a proposal of his for preventing the influx of water into the courts and alleys consequent upon the tidal overflows of the Thames. His proposal is the construction of water-dams at the entrances of the several courts; and at the last meeting of the Board the Paving Committee reported that they had had the proposal under consideration, and recommended its adoption. The Board confirmed the recommendation, and decided at once to construct these water-dams at the entrances to the several courts and alleys along Bankside. The same subject was brought under the consideration of the St. George's, Hanover-square, Committee of Works, at their meeting last week, on the reading of a letter, from her Majesty's Office of Works, repudiating any liability to provide against such overflows, and throwing the responsibility on the vestry. Mr. Walter Taylor proposed that the vestry raise the road by the river side, remarking that there was no security that the recent high tide would be the last. He urged that the raising of the road was a simple and not costly means of preventing the damage caused by the overflows, and that the loss of property by them was considerable. This proposal was opposed by Mr. Davy, who said that if the scheme were carried out the water would be driven elsewhere, and that the real remedy for the evil was to build a proper river wall. This again was resisted by Mr. Barlow, another member, who contended that the vestry had nothing to do with the river, and that if the parish once took to raising the roads, there was no saying where they would have to end. The question was ultimately adjourned for the surveyor to view the road, and make a report.

PROPOSED CHURCH AT LA VILLETTE, PARIS.

We illustrate in our present number the Church of Ste. Marthe des Quatre Chemins, La Villette, Paris, now about being erected from the designs of Mr. George Goldie, of the firm of Goldie & Child, who was the successful competitor for the work in a limited competition.

The church will give considerable accommodation; it is 170 ft. long and 60 ft. wide internally, and 150 ft. high to the groined ceiling.

At the west end is a vestibule with a gallery over, both in the tower open to the nave by triple arches; upon either side at the ends of the aisles is the baptistery and a mortuary chapel. Upon each side of the chancel are the sacristies, with a communication at the east end. Under the sacristies are the heating chambers, &c., and above are rooms for catechism, opening to the chancel by an open arcade. The chancel groin and roof are special features, being some 10 ft. higher than the nave.

The whole of the church will be groined, and will cost, exclusive of the three residences for clergy, about 10,000l.

Brighton Winter Exhibition of Modern Paintings.—The collection is now open and a very interesting one.

* To be continued.



SQUARE OF THE TRINITY, PARIS.

[See ante.]



PROPOSED CHURCH OF LA VILLETTE, PARIS.—MESSRS. GOLDIE & CHILD, ARCHITECTS.

BY WHOM ARE INVENTIONS MADE?

In the course of a paper at the Society of Arts recently, on the "Expediency of Protection for Inventions," Mr. Bramwell, F.R.S., said,—"The bulk, one might almost say the whole, of real substantive inventions have been made by persons not engaged in the particular pursuit to which those inventions relate. Take a few instances. Watt was not a maker of steam-engines, the fire-engines of his day, but he was a mathematical instrument maker; Arkwright, the inventor of the "water twist," was a barber; Cartwright, the inventor of the power-loom, was a parson; Neilson, the inventor of the hot blast, was wholly unconnected with smelting operations; he was the manager of gasworks; Wheatstone, who has done so much for electric telegraphs, was engaged in the manufacture of musical instruments; and Ronalds, the very originator of the electric telegraph, had nothing to do with the visual telegraphs in use in his time; Bessemer, who has so enormously increased the manufacture of steel within the last quarter of a century, was in no way connected with that industry. The fish-joint for railways, the greatest improvement in permanent way that has been made since railways were introduced, was the invention of a carriage-builder. I trust I have given instances enough to establish my position, that the great substantive inventions are made by persons unconnected with the manufacture or art to which those inventions relate; and we can readily see why this should be. The person who has been brought up to pursue any particular manufacture has, even before he had sufficient knowledge to be able to appreciate the merits and the principle of the processes he was taught to follow, been trained in the belief that "certain ends are to be obtained by particular means." Under such circumstances, it is difficult for even a powerful mind to break through the trammels which have been imposed upon it, and to approach the consideration of the subject of the particular art with the same broadness of view, and power of detecting and grasping the true principles upon which that art is based, as would be possessed by a mind devoting itself to the subject for the first time, and thus the man unconnected and unprejudiced in the art is more likely to make a substantive invention than is one who has been trained in it from his youth. Improvements of detail such a person may make; but there, in all probability, will be the limit of his inventions.

One can understand that a man who had been taught from his boyhood to make steel by the process of cementation,—that is, by packing bars of wrought iron into brick boxes containing charcoal, and exposing the whole for several days to considerable heat, and thus carbonising the iron and producing blistered steel,—might, not unnaturally, devise some improvement by which this process could be expedited, though one can hardly imagine such a man breaking with the traditions of the industry, and casting away the whole process of cementation. But one bringing a totally fresh mind to the consideration of steel manufacture would, in all probability, study the question from the very beginning, and would say, "What is steel? What is wrought iron? What is cast iron?" and when he discovered that steel was something between cast iron and wrought, that is to say, it contained less carbon than the one, and more than the other, and when he found that cast iron was a cheaper article than wrought iron (wrought iron being commonly produced from cast by practically abstracting the whole of its carbon), would seek a means by which he might abstract from cast iron, not the whole of the carbon, to leave wrought iron, but so much of the carbon as would leave steel. To one brought up in the steel trade, the very word "steel" would be associated with the addition of carbon, and it would be most unlikely that he should attempt the manufacture by a process which had for its object the taking away of carbon. Once concede that the great inventions are made by "outsiders," then it appears to me that to continue this, the highest class of invention, protection is an absolute necessity. An inventor must needs in every case make trials and experiments, and these, as a rule, can only be conveniently done in places where the manufacture is being exercised; but now we are assuming that the inventor is not engaged in the manufacture, he has therefore either to incur great expense to make his experiments,—an expense in many cases prohibitory,—or to

forego the experiments altogether, or else he must seek the aid, and trust to the honour of, some manufacturer.

Imagine a country clergyman who has some knowledge of chemistry making an invention of an improvement in smelting iron ore. If he were a man of real ability, as I have supposed, he would appreciate the great complexity, and the many practical difficulties, of that process, and he would know that nothing short of a trial of his invention in the actual furnace could assure him that his method would not be frustrated by some such difficulty. What, without a Patent-law, is that inventor to do? Forego the trial? Devote 5,000*l.* of the large property which usually belongs to a country clergyman to the erection of an experimental blast-furnace; trust to the honour of a manufacturer; or give up the invention? I think the probability is, he would pursue the last course, and that thus the invention would be lost to the community. But even supposing the preliminary difficulty of a practical trial not to exist. Assume, for example, that the invention be one such as that of the "Giffard Injector" already mentioned, one of the most substantive of the present day. This might have been tried in private by its inventor without insuperable difficulty, even although he were wholly unconnected with any of the mechanical arts, and he might have perfected his invention in every detail. But when he had done this, what would have been his chance of reward? How would he have set about reaping the pecuniary benefit which he would desire, and which would be his reasonable due? Would he make up his mind to forego all his usual habits of life, and to become a manufacturer? Say that he did so, and that in spite of the difficulties to which I shall have to revert, he succeeded in making a certain number of the injectors for sale, and that then he knew enough of business to obtain purchasers for them, what would be the inevitable result? As I have already said, when taking the instance of this implement as one impossible to make the subject of a secret manufacture, the very first mechanical engineer (a steam-pump maker) into whose hands one of these injectors fell, would say, "Here is an implement that appears likely to compete seriously with the use of steam-pumps. Why should not I make it? At present I know it is being manufactured by the inventor only, a person who was not brought up to the trade, and who is living in a purely agricultural district; it is a hard case if I cannot hold my own against him!" Thereupon the steam-pump maker goes to work, with all the advantages of an established factory, with his befitting plant, its staff of superintendents, its foremen, and its body of workmen to produce injectors, and with a whole system of travellers and agents, and the advantage of a large connexion, to dispose of the injectors when made. What chance would the inventor have, in his capacity of manufacturer and seller, against such an organisation as this? Obviously, none; therefore, as it seems to me (equally obviously), he (foreseeing this) would not have bestowed the thought necessary to invent, and even if he had, he would not have incurred the labour and expense of experimenting upon his invention.

THE FLOODS AND THE BRIDGES OF SOUTHERN INDIA.

The late floods in the Madras Presidency have proved exceedingly destructive to the railway and other bridges in the inundated districts. The fine structure which spans the Palur, and connects the town of Vellore with the north bank of the river, was one of the first to give way. Although the bridge was at a great height above the bed of the stream, it was reached by the enormous mass of water which swept down from the Holali tank, and no fewer than sixteen of the arches succumbed. The Holali tank when full is estimated to contain 12,000,000 cubic yards of water. The Gooiatum railway bridge lost five of its arches. The fine Chittravutti Bridge, which had forty spans of 70 ft., and was supported at each end on ten masonry piles on wells, with nineteen intermediate piers of screw piles, suffered a loss of five stone piers. The Pampunee Bridge was also broken; but at the time of the despatch of the mail the extent of the disaster had not been ascertained. The bridge at Pennair, which is the largest on the north-west line of railway, with the exception of that over the Toongabudra, had two piers carried off. This damage is in itself comparatively

slight, for the structure has twenty-four spans of 70 ft., all upheld by masonry piers; but the bridge is on the main line of railway, and its disablement interferes very seriously with the traffic. The Cheyair Bridge, where four years ago a serious and fatal accident took place, through the bridge having given way during a flood, and a passenger-train being precipitated into the river, has again broken in two places. The special correspondent of the *Madras Mail*, who visited the scene of the recent disaster, says:—"The destruction of the works on the river is awful. First, the bridge on the south side of the island: this has stood, with the exception of the right-hand northern abutment, which has been swept clean away, leaving the girder that was resting upon it hanging in the air. But a gap of nearly 200 ft. has been formed on the island, the embankment, girders, and all having been swept from under the rails, which are swinging in the air like a chain. Till to-day (Oct. 28) it was impossible to pass this breach, as the force of the stream below admitted neither of fording nor of getting a raft across. I ought to explain that the fifth pier has all but given way. The masonry is much cracked, and the pier has declined at an angle from the perpendicular of fully twenty-five, perhaps thirty degrees, causing a very sensible depression of the rails at this spot. Next as to the bridge on the north side of the island. Here, too, one abutment has gone at the south end, and at the opposite end, on the north bank of the river, the destruction has been complete,—the abutments and three of the piers, with all the girders and rails that were upon them, having disappeared." A new bridge was in course of construction near the broken structure, which it was intended to replace. The iron cylinders had all been sunk and several of the masonry piers were completed. The flood carried away two of the cylinders, but the finished masonry remained firm. In addition to these great catastrophes many of the single-arch bridges in Southern India have been destroyed; and very great expense must be incurred, and a considerable time must elapse, before the means of communication can be restored to their former condition.

WALTHAM ABBEY CHURCH.

At the Oxford Architectural and Historical Society Mr. James Parker has lectured on the History of Waltham Abbey Church. Mr. Parker passed in review the various stories respecting the death of Harold, and considered that Mr. Freeman had said all that could be said on this matter, namely, that the story, as told by William of Poitou, and others who follow him, of the body being buried on the Sussex shore, might be reconciled with the general fact that the body was carried to Waltham, if this is allowed to be a subsequent translation; but that the wild story told by the author of the "Vita Haroldi," and his unsatisfactory testimony as to Harold's flight was not worth a moment's consideration. The chief and most accredited story was told by the writer of the "De Inventione Crucis." Mr. Parker proceeded to analyse the thirty-three chapters of this interesting tractate, deducing from the several points on which he laid stress, that it was written about the year 1145, and that when the author speaks of having to leave the monastery in which he had been brought up from childhood, and in which he had lived fifty-three years, it was partly in consequence of the houses of the Canons then being burned down, and partly in consequence of his partnership in the disputes between Geoffrey and of Mandeville and William of Anjou. Professor Stubbs had dated the chronology for the events in the writer's life from the year 1177, when the Secular Canons of Waltham were turned out to make room for the Regular Canons; but Mr. Parker contended for the former date, on the grounds which he brought forward. If he was right it would leave a very important flaw in Mr. Freeman's argument, that the building now existing was Harold's, and which he adopted in the controversy which went on in the pages of the *Gentleman's Magazine* some few years ago. The argument was that as this writer lived throughout Henry I.'s reign, and had his information from the old Sacristan, who was living in Harold's time, and in his history mentions and describes Harold's Church, but speaks of no rebuilding, the original church was existing up to the time of his writing. The author, again, of the "Vita Haroldi," who mentions the change from the Secular Canons to the Regular, in

1177, wrote after 1205, and describes Harold's Church as the one he saw. But on comparing the two descriptions, Mr. Parker contended that they obviously referred to different buildings. The author of the "De Inventione" saw Harold's building, and the author of the "Vita Haroldi" saw the church, as we see it (in part) now, but naturally thought that it was Harold's original church. This writer mentions a fact in 1205, but there is no evidence but that he wrote his treatise some ten or twenty years afterwards, and we did not know, so far as is shown by his writings, that he had any intimate knowledge of the early history of the Monastery. There is consequently a long hiatus between 1145 and—say—1200, during which time the church might well have been built. The writer in the *Gentleman's Magazine*, by insisting that the architectural style of the building proves it to be of Henry I.'s reign, gave the advantage to Mr. Freeman, but as he (Mr. Parker) contended that it was of the latter part of Stephen's reign, or the beginning of Henry II.'s reign, there was not only no historical evidence against the rebuilding, as he had shown that there was a great hiatus between the two historians, but incidentally there were two events recorded, either of which might have been the cause of the rebuilding, one in Stephen's reign, the other in Henry II.'s.

THE NEW DWELLINGS IN FARRINGTON ROAD.

Sir,—Having long taken a great interest in the subject of dwellings, and also visited many of the blocks of dwellings erected by the association under whose auspices the new houses in the Farringdon-road have been completed, I, in common with many others, was anxious to see what improvements had there been made on former designs.

It seems ungracious to find fault, but, in the interest of those who are to live, hereafter, in new buildings of a similar character, I venture to call your attention to the following points regarding the new buildings in the Farringdon-road. I make these remarks in no captious spirit, but solely with a view to throw light on an interesting subject, and trust you will not object to insert them:—

1. There is no thorough ventilation. This is owing to the dwellings having been placed back-to-back. (See plan, p. 1003, ante.)
2. The dwellings are only partially self-contained, each "lobby" being for the use of joint tenants, between whom "differences" are sure to arise.
3. The scullery looks well enough on plan, but, owing to the overhanging balconies above, it is in reality almost dark, quite dark, in fact, for the purposes of cooking, when one is standing before either the fireplace or the copper. Certainly it would be impossible to cook in this room, and, as a matter of fact, the cooking-ranges are placed in the living-rooms; but many of the tenants object to this, and properly so, I think. The wives say that with the range in the living-room it is impossible to "keep the place tidy or decent," showing, I fear, that either the wives are in advance, or the plan is behind the times. I believe that the majority of working men would be glad to live decently and in order, "if only the arrangements of their homes admitted of this."
4. Some of the bedrooms were pointed out to me as being as dark and ill-ventilated as the sculleries! and the flues between the living-rooms and bedrooms are much in the way, and take up much of the already scanty space allowed for the bedrooms. All flues should be carried up in the party-walls.
5. I cannot help thinking that the water-closets are badly placed. The foul air must pass into the dwellings, being driven thence by the fresh air which enters through a tiny window placed in the outer wall of the water-closet.
6. The whole of the windows are far too small. Those in the sculleries, and some of the bedrooms, are only 1 ft. 9 in. by 2 ft. 6 in.
7. As regards the position of the staircases. There are many objections to the position chosen in this case. It prevents, as we have seen, the thorough ventilation of the dwellings by means of doors and windows, which is so necessary in all dwellings, but especially in those of the class now under consideration; and there is a waste of frontage, for, if these dwellings had been erected in blocks of only half the depth or width, and had the staircases been placed as I venture to think they might be, at the back of each

block, a large amount of frontage would thus have been saved, and, owing to the lesser depth or width from front to back, a greater number of blocks could have been built on the site in question. The extra expense would not have been greater, and there would have been no sacrifice of principle.

In the minds of all,—rich and poor alike,—there has been for some time past a steadily increasing desire to return to those old principles of "domesticity" which have been in abeyance, alas! for so long a time. These "Industrial Dwellings" should undoubtedly be so planned that the working man, in his tenement of three rooms only, might still feel it to be his castle, so to speak, and that he dwelt there without any loss of those home associations so dear to English people.

FRANCIS BUTLER.

Sir,—In the Farringdon-road buildings it would be an improvement to make the outer door an iron gate, or otherwise of open work, and to have the house door inside the entrances to scullery and W.C., and so cut off communication between the sewers and the interior of the house. All traps and other apparatus are a mere mockery, delusion, and a snare, and do not prevent the drains acting as typhoid conductors as surely as telegraph wires conduct electricity.

J. M.

THE NEW CITY BANK, LUDGATE-HILL.

THE new bank buildings in Ludgate-hill, which have been for some time in course of erection for the City Banking Company, whose chief establishment is in Threadneedle-street, are now nearly completed, and will be opened for business at the commencement of the coming year. The Ludgate-hill elevation of the building is 40 ft. in width, and is carried to a height of 80 ft. In addition to an extensive basement, it consists of a lofty ground-floor, and four stories above. It is built of Portland stone, carved and ornamented with a free introduction of polished red granite. The bases on the street level consist of massive piers in grey granite, with drafted margins, supporting a polished and moulded granite plinth, 9 in. in depth. Above this, the elevation of the ground-floor, which is 19 ft. in height, is carried up with double rusticated piers or pilasters on each side, the principal entrance, on the east side, being faced with polished granite columns, 17 ft. high, supporting a segment headway of the same material, above which there is a carved and moulded Portland stone arch. There is also another entrance at the west angle, uniform in architectural design and material with that just named, which leads to the upper portion of the building. The ground-floor contains a large three-light window, with polished granite columns on each side, and divided by square iron piers. A carved and moulded cornice surmounts this portion of the elevation, immediately above which, at the foot of the first-floor windows, a balustrade, 2 ft. in depth, is carried across the frontage. From this balustrade there are double pilasters, surmounted by capitals, carried up to the top of the third story. Each story has a range of five windows, the central portion being of three-lights, uniform with those on the ground-floor, and divided by polished granite columns. The triple central windows of the first story have richly carved and ornamented arched heads, with figure-head key-stones, and vermiculated spandrels. Above the third floor windows there is a channel string course, and the whole is surmounted by a bold projecting trussed cornice, 3 ft. in height.

The basement of the building contains substantial strong-rooms, with iron-faced walls and doors, together with the keeper's apartments, lavatories, &c., and the whole of the front portion of the ground-floor, 39 ft. by 40 ft., will be occupied as the banking-house. The ceiling and walls of this apartment will be decorated and enriched. The upper portion of the building is intended to be let as offices and chambers.

The architects are Messrs. John Tarring & Sons, of Basinghall-street, and the builder is Mr. Shurmer, of Lower Clapton; Mr. J. W. Weekes has superintended the erection of the building as clerk of works.

The United States International Exhibition of 1876.—We understand that Lord Derby has intimated to the United States Minister in London, and through him to the Washington Cabinet, that a Commission will be appointed to represent this country at the Exhibition to be held in Philadelphia in 1876, in celebration of the hundredth year of American Independence.

THE EMPLOYMENT OF ART STUDENTS.

At the meeting held for the distribution of prizes gained by students in the Salisbury School of Art,

Mr. Alfred Seymour, in the course of an address, said the school were exceedingly fortunate. They had near them at Willton gentlemen and firms who were able and willing to give prizes for patterns for carpets, and those patterns would be reproduced through their looms, and would so carry the fame of Salisbury far and wide. They had also here another gentleman, Mr. Watson, who had been kind enough to give a prize, and there were some exceedingly creditable drawings here which he understood that gentleman was going to perpetuate also by having them transferred upon ware. He was very glad to hear that, two or three of the patterns were exceedingly good. There were others of the patterns a little too ambitious, and in one or two instances he might have cut a leg off a tea-pot, or altered a little the form of some of the vehicles by which the tea was meant to be conveyed to the lips, for it was one thing to be classical, and another thing to be too classical. It was one thing to be conversational, and another thing to have what was called a gift of the gab. There were cups and cups, as there were teapots and teapots, and the first thing to be considered in all matters of utility, domestic or otherwise, was that we should have before us the thing which was most adapted to the express use to which it was to be put, the least likely to meet with accidents, and the most likely to stand well the wear and tear of general usage. Anything which did not combine those qualities could not stand for any length of time; and if they looked at the Etruscan vases and examined the shape of those of them which formed the early models of all our old ordinary utensils of the present day they would find them formed on the highest and truest of geometrical principles. Not a curve or a line was in them that was the result of accident, but of study, and that result was a permanence of beauty and elegance which had survived centuries of barbarism, and which could not be surpassed by any modern forms. Last year he spoke to them on Greek art, and he would again, he hoped without wearying them on that subject, say, "Study the highest models you can get." He had referred to Etruscan art, which was the highest of its order they could have. Let them study all that was highest, purest, and best, and reject all that was puerile and false, and while they rejected the false and accepted only the true and the beautiful, let them study at the same time that everything which they invented, everything to which they turned their attention, should be absolutely and accurately adapted to the use for which it was intended. Let them be actuated always by the highest motives, and endeavour, as far as they could, to carry out in their mind a fixed line of thought which would lead them to invent and to carry out the actual wish, and idea, and thought which first originated in their brain. They should never put a single line on paper without a specific reason for it, and should never be for a moment thoughtless about what they were trying to do, but should bring all their best energies to bear upon a study which should yield fruitful results in the future.

Praise was given to the master of the school, Mr. Harris.

DISTRICT SURVEYOR FOR PADDINGTON.

At the last meeting of the Metropolitan Board of Works the following presented themselves as candidates for the appointment of surveyor for the district of Paddington, viz. — Messrs. A. Allom, W. A. Baker, T. Blashill, A. Bovill, J. Clarkson, H. H. Collins, T. H. Eagles, B. Fletcher, C. A. Gould, B. Gregg, H. Gundry, Howett, R. C. James, H. Jarvis, jun., L. Karalake, C. O. Lane, G. Lansdown, W. C. Leonard, H. Lovegrove, F. R. Meeson, R. P. Notley, A. Peebles (D.S.), W. T. Piper, R. Richardson, T. R. Smith, F. Todd, J. G. Turner, W. Waine, R. Walker, F. Wallen, T. H. Watson, and T. W. Willis.

Mr. H. Gundry was eventually elected, Mr. Watson being second on the poll, Mr. Collins third, Mr. Walker fourth, Mr. Gould fifth, and Mr. Fletcher sixth.

Mr. Thomas Woolmer, A.R.A., has been elected a Royal Academician, in the room of Mr. J. H. Foley, R.A., deceased.

INSTITUTE OF PAINTERS IN WATER COLOURS.

THE Institute has seldom been stronger in drawings, presenting the higher elements of art, than in the present (ninth) "Winter Exhibition." Although a large number of the works exhibited are really highly finished drawings, rather than "sketches and studies," still the latitude which this titular character of the collection allows for broad and freely-treated drawings is, on the whole, beneficial to the artistic quality of the exhibition, the general tendency of the Institute being a little too much towards high finish, rather than force and feeling. Mr. Absolon contributes no less than fourteen works, one of which is a frame containing some eight or ten separate studies of figures, the product of "sketching club" meetings. Among his contributions is a "sketch" (22) of an interior, with a figure of a cloaked cavalier, and "Not quite Enough" (41), are instances of almost more than his usual power; the face of the old man smoking and meditating on the deficiency of coppers to pay the score, is a masterpiece in its way. The two larger studies for the "Raising of Lazarus" are out of the artist's real sphere, and scarcely come up to the height of such a subject; the dread and surprise of the bystanders is of a very quiet nature, as if they were not unused to such wonders. One or two of the "sketching club" figures, especially "On the Look out" and "High Wind," admirably natural in action; as "eventide," a sketch of a drowned woman clasping her little child, lying on the beach. Among highly-finished works, Mr. Linton's "Tristram and Ysolt" (54) will bear much looking at; it is beautiful in the fine but not hard finish, the delicate tones of colour, the sweet face and undulating away of the body in the figure of the princess; everything is in keeping, even the green leaves of the plant which just rises above the balustrade have a notable effect in the scheme of colour. The artist's two single-figure pieces (70 and 77) are equally admirable in execution, though of less interest in other respects. Mr. Herkomer, in his "Gossip" (40) shows as much finish, but without the softness and delicacy of Linton's work; it is absurd to call this water-colour, for it is loaded almost to the extent of relief with opaque pigment; but there is much power and truth in the fearless delineation of detail in strong sunlight. His smaller work, "Der Bittgang," a mournful procession of five peasants towards some shrine in the foreground, shows much feeling in the delineation of the various expressions of humble piety; the young girl who comes third in the group is beautiful. M. Bouvier sends a larger work than usual, representing his well-known half-French, half-Pompeian-looking girls, of somewhat meagre development, engaged in a dance; the centre figure is very elegant, but the attempt to represent the movement of the dance is scarcely a success. Mr. Valentine Bromley's "Shifting Camp in Nebraska" is an interesting and effective study of local custom and costume. Mr. E. H. Fahey's contributions are very pleasant; "Washing Day" (18) and "The Dairy" (297) are both very carefully and brilliantly executed studies of English farmhouse building, combined with figures; the former is the most important; perhaps the comely lass at the pump is not doing her work very vigorously in spite of a somewhat long arm, but the general result is charming. Mr. Hugh Carter deserves high credit for two works in very different styles, "Hair-cutting Day at a Charity School" (27), which is almost pathetic in its humour, and a "Staircase in Holland House" (65), a masterly piece of broad sketchy treatment of interior effect, in which dark wood and wainscot and crimson cloth combine in a rich harmony. All the drawings exhibited by Mr. J. Syer are marked by fine free treatment, and true feeling for atmospheric effect; perhaps the best is "Barnmouth" (296). Mr. Orrock's studies of rainy and wintry seas are original and truthful in a way, but the effect of rainbow light, brought out into a glow by contrast with the cold grey tone of the rest of the drawing, when used twice over (as in Nos. 42 and 102) degenerates into a receipt, a character of which all these drawings partake a little; the least so, perhaps, is the "Study at Arran" (161). Mr. Rowbottom has been in the dockyards, and interests us not only by his large and fine drawing of a man-of-war hulk in Portsmouth Harbour (200), but also by his small studies of dockyard detail (144). Mrs. Jopling has scarcely succeeded in making the "Cinder Pit" (116) interesting

as a picture; her clever study of a "Spanish Girl" (208) keeps up her prestige better. Herr Carl Werner's "Church of the Holy Cross" (35) presents the artist's usual splendid finish in the painting of decorated interiors. Several works by Mr. J. A. Houston, R.S.A., show originality and power both in feeling and execution; the "Bed-chamber, Knowle" (195), is an excellent specimen of an interior delicately made out in all the details; and "What has Happened?" (262) is a question pointedly enough suggested by the hat and rapier, the violently stamped heel-marks and red stains on the ground in a quiet woodland glade. Mr. Louis Haghe's large and powerful drawing, "The Roman Forum," will attract many, in spite of a little sensationalism in colouring; and his admirable realistic drawings of portions of the International Exhibition rooms of 1851, with their gay crowds of visitors, are of interest now, and make capital pictures too, in spite of an almost unavoidable hardness and brightness. We must not forget among the figure subjects the works of Mr. Green, whose "Glass of Beer" (14) and "Sentinel" (258) are full of solid merit in their author's peculiar way; and Mr. Gow's "A Rout" (64), and "News of the Old Regiment" (266), may be named as able works of a similar school; the taller of the two long-coated figures in the second picture has a kind of family likeness to the retired military man who plays the part of "Connoisseur" in Meissonier's well-known work. The names of Mogford, Hargitt, and Harry Johnson are well represented, though we do not know what the latter artist has been aiming at in his "Bass Rock," the water in which is, to say the least, puzzling in texture and tone. Mr. J. H. Mole's contributions have much to admire in them, particularly "Shrimpers" (169). Among other good works are "Trifles" (87), by E. M. Wimperis, a very powerful piece of mountain scenery; "From the Cliffs near Etrebat" (136), by Walter M. May; "An Outdoor Study near Hastings" (148), by E. Beavis; "The Old Mill, Winter Morning" (193), by T. L. Rowbottom; "A Man-at-Arms" (338), by C. Cattermole; "Showery Weather on the Coast" (242), a remarkably fine study, by T. Collier; "Autumn Evening—Retraining from Work" (275), by W. Small; "Aldness Barn, Isle of Skye" (306), by James Fahey; and others. Mrs. Harrison, one of the earliest of the professed flower-painters in our exhibitions, continues the practice of her art as well as ever, and her "Anemones" (12) is as bright and lifelike as could be wished; and we must not overlook, on one of the screens, some specimens of the art of John Tenniel, known to many who seldom visit exhibition-rooms, among which is the fraternisation between the English lion and the Persian "chat," and that masterly piece of sly humour, the "Two Angurs," one of the happiest hits of which the pages of our friend *Punch* can boast.

THE SOCIETY OF BRITISH ARTISTS.

AMONG the numerous works to be found in the large rooms in Suffolk-street, some which rise above the general level are the "Spanish Beauty," by W. E. Miller, a very pleasant study of a pretty head; J. K. Thomson's "Winter Sunshine"; A. J. Woolmer's "L'Atelier" (56), which hardly explains itself, but is effective nevertheless. "An Interesting Book," by Haynes King, may be looked at (60), as also Gow's "Venetian Senator" (66). "Le Palais du Franc, Bruges" (80), by W. L. Wyllie, is an admirable little thing; and F. Slocombe's "Fisherman's Wife" (79) displays feeling as well as original treatment. "A Point of Controversy" (102), by W. A. Walker, is brilliant if not very refined; and H. Craven's two little views on the Thames (110, 260) are good. G. Harvey's "River-side—Morning" (144); Miss Martineau's pine-trees (200); and F. Slocombe's "Good News" (205), are to be noticed. In "Ecclesiastical" (231) C. Calthrop gives a very good picture of Medieval monks and of a cathedral cloister, with, however, the odd oversight that painters often make, of studying the buildings in their present dilapidated state, forgetting that in the periods of "monkery" represented the cathedrals were comparatively new. There is real humour and good execution of a not very refined kind in T. R. Ashton's "A Lord of Creation" (302), lolling at the garden-door, eye-glass in eye and cigar in mouth, languidly receiving a flower handed to him by

one of the suppressed sex. Miss A. Smith's illustration of "Give us this day our daily bread" (406), under circumstances where the petition seems only too much needed, shows feeling; and C. Miles's "Sunset after Rain in a London Street" (419), if a little overdone, has some novelty and power. Among water-colours are two scenes from Ludlow, by A. B. Donaldson, and one or two of Miss Alldridge's good figure studies. There are other good water-colours, and the average of work in this department seems higher than that among the oil paintings.

THE CONVERSION OF TOOTING COMMON.

It appears that a portion of Tooting Common will now immediately be converted into a public park and recreation ground for the inhabitants, the claims as to the rights of pasture and other privileges having been settled. It is stated that the manorial rights of the lord of the manor have been purchased and made over to the Metropolitan Board of Works as conservators, and that that body will now at once proceed to lay out the ground as a park, which it is expected will be opened to the public in the spring or early in the summer of next year.

MAIDENHEAD WATER SUPPLY.

In July last an advertisement appeared in our columns, inviting Civil Engineers to compete, and offering a premium of £50, for the best plan "which should fulfil the requirements of the Local Government Board." Eight or nine competitors, and the number was subsequently reduced to two, viz., Messrs. Gotto & Beasley, of Westminster, and Mr. E. Pritchard, of Warwick. After consideration it was decided to accept the plan submitted by Messrs. Gotto & Beasley; and at a meeting of the Town Council, on the 4th inst., those gentlemen were awarded the premium. In the discussion which took place respecting the relative merits of the plans submitted for final selection, Mr. Pritchard's scheme was well spoken of, and a vote of thanks to him for his plans was unanimously passed.

Although the Town Council have gone to some considerable trouble and expense in obtaining plans for the proposed works, it is still uncertain whether they will be carried out by the town or by a private company, for in fact two distinct companies have during the past month given the usual notice of their intention to apply for a provisional order.

ST. MARY'S CHURCH, SEYMOUR-STREET, SOMERS TOWN.

THE church, which was erected between forty and fifty years ago, by Inwood, the architect of St. Pancras Church, is in the pseudo-Gothic style of that period. Although now a separate and distinct parish church, it was built as a chapel-of-ease to the mother church of St. Pancras, and was fitted up with galleries and high box-pews in the then most approved chapel style.

Although the galleries still remain, the fronts have been decorated by painting, and the whole of the high pews on the ground-floor have been cleared away, and open benches, with sloping backs and carved bench-ends, have been substituted, all executed in pitch pine. The centre aisle and chancel have been paved with encaustic tiles.

A new pulpit of Caen stone has taken the place of the former tall erection. The new pulpit is of a hexagonal form, five sides of which—the sixth being the entrance—are filled in with trefoiled niches with shafts of Egyptian green marble, containing figures in alabaster of Our Saviour as the Good Shepherd, and the four Evangelists. The angles of the pulpit are enriched by Devonshire marble columns, having foliated capitals and corbels. The die of the pedestal supporting the pulpit is of Cumberland alabaster. The stairs are of oak, with ornamental scroll-railing formed in brass and iron.

The reredos, which is a conspicuous addition to the church, is executed in Caen stone, consisting of an arcade of five trefoiled compartments, divided by Irish green marble shafts, with carved stone foliated capitals. The spandrels between the arches are filled in with carved natural foliage, taken from the passion-flower, the lily, bryony, hawthorn, &c., the whole surmounted by a carved cornice. The arcade of the reredos is filled in with inlaid marble and alabaster, the

centre of each compartment being occupied by an inlaid circle of marble upon a diaper of alabaster and dove marble, the centre circle containing a floriated cross of Jatte Fleuri marble, with jewels of Rosso d'Antico, upon a ground of Egyptian green, surrounded by a border of black and yellow marble; the circles on each side of the central one having the sacred monograms; the outer circles the alpha and omega, inlaid in Jatte Fleuri upon green marble, in the same manner as the centre. The upper portions of the arches, above the springing, are filled in with trefoils, quatrefoils, &c., with jewels, in various marbles. The lower portion of the reredos below the arcade, is filled in with panels of alabaster laid in diagonal squares.

The walls and groined ceiling have been decorated by painting, and texts of Scripture have been put upon the walls in various positions, treated in an ornamental manner with scroll-work, &c. The east wall on either side of the reredos contains the Commandments, &c., arranged in panels, formed by scroll-work, in gold and colour, with intermediate panels of diaper work and borders in gold on red grounds.

The architect was Mr. James E. Colling. The pulpit, reredos, and font, have been executed by Mr. John Underwood, who also presented the alabaster figures in the pulpit; the seatings, reading-desk, and other wood-work by Mr. Robinson Cornish; the coronas, standards, and other gas-work by Mr. Gawthorpe; the standards of altar-rail, pulpit-stairs, &c., by Messrs. Jones & Willis; and the painted decorations by Messrs. J. & J. King. The works up to the present time have cost about 2,500l., and much yet remains to be done.

THE RATING OF THE CRYSTAL PALACE.

At the Surrey Sessions, during the sitting of Friday, the 11th inst., Mr. Hardman was occupied the whole day hearing the appeal by the Crystal Palace Company against the assessment of their property in the hamlet of Penge, made by Messrs. Castles & Son, valuers, appointed by the assessment committee of the Croydon Union. The company had notice of the assessment on the 6th of September, 1873, and by the valuation the property of the company in the hamlet of Penge was assessed at 24,000l., it having previously been assessed at 19,500l. Mr. Meadows White and Mr. Oppenheim appeared on behalf of the company, and Mr. Clarke and Mr. M. Williams for the Union.

Several witnesses were called, whose evidence went to show the value of the property in the palace and grounds, and likewise the expense of repairing the building and making alterations of various departments. The case was adjourned till Saturday for the respondents to go on with the case.

Mr. Clarke having then addressed the Court in favour of the assessment, and called witnesses, the chairman assessed the value at 16,692l., and granted costs against the respondents.

DESTRUCTIVE FIRES.

Rope and Twine Manufactory destroyed at Stroud.—On the 9th inst., the extensive rope and twine manufactory of Mr. Frederick Wathen James, situated about a mile from Stroud, was destroyed by fire. One building was a couple of stories high for about 50 ft., and attached to this was a one-story building upwards of 100 ft. in length, and both contained valuable machinery, the whole of which was totally destroyed. In addition to this, there was a large quantity of sacks, cocoa-nut matting, and other manufactured goods, and these likewise met the same fate. The damage is estimated at between 2,000l. to 3,000l., and is covered by insurance. The fire is supposed to have originated from the furnace-fire.

Another Mill near Oldham destroyed.—Early in the morning of the 10th inst., Windsor Mill, Hollingswood, near Oldham, the property of Messrs. King, Brothers, Manchester, was totally destroyed by fire. The mill contained 24,000 spindles and thirty-three single carding engines. The flames burst out in the third story, and within an hour the premises were a mere wreck. The damage is estimated at 25,000l., which is covered by insurance.

A Mill at Blackburn burnt down.—The mill of Messrs. Porter & Co., Whalley Banks Bridge, Blackburn, has been destroyed by fire. The loss, which is estimated at 15,000l., is partly covered by insurance.

Fire at a Railway Station.—At about two o'clock on Tuesday morning, the Newport Station, Isle of Wight Railway, was burnt down, and a large quantity of tickets and books destroyed.

Great Fire in Boston, U.S.—A destructive fire has occurred in the business centre of this city. Conflagrations took place simultaneously at various points, and the shipping was endangered. The loss is estimated at one million dollars.

WORKING & SCIENTIFIC SURVEYORS.

The clerk of the Upton Snodsbury Highway Board, Worcestershire, having reported that there were thirty applicants and one informal applicant for the appointment of surveyor, the names of Mr. Vaughan, Mr. Farr, Mr. Harvey, Mr. Trigg, Mr. Such, Mr. Bullock, Mr. Savage, Mr. Frappell, Mr. Thornburgh, Mr. Clifford, Mr. James, and Mr. Mason were retained for selection.

The vice-chairman spoke in favour of the election of Mr. Bullock, explaining that hitherto the Board had taken care to engage scientific men as district surveyors. The plan, however, had not succeeded. A difficulty had always arisen through such officers failing to keep the expenditure within their estimates. There was a habit of going beyond the estimates, and a neglect to refer to the Board before incurring expenses for unprovided work. That seemed to be the result of taking scientific surveyors. He thought another plan should now be tried, and a working surveyor taken for once—one whose abilities had raised him from the ranks. He knew Mr. Bullock and his capabilities. He was well recommended by the surveyors of Ombersley. He had worked as a foreman in this district, now had charge of forty miles of roads at Ombersley, and had proved himself the best of working surveyors.

On a show of hands, nineteen were held up for Mr. Bullock, and seven for Mr. Thornburgh; whereupon the election of the former was declared.

ROYAL ACADEMY AND ARCHITECTURE.

The Travelling Studentship has been awarded to Mr. Philip Marvin; the first medal for architectural drawing to Mr. Francis L. E. Pither, and the second to Mr. E. Mearland.

COMPETITION: ABERYSTWYTH.

The Corporation of Aberystwyth recently advertised for designs for first-class houses, to be built in Victoria-terrace, facing the sea. Several designs were sent in, and the town council have unanimously selected that submitted by Messrs. Szlumper & Aldwinckle, architects, of London and Aberystwyth.

THE PROPOSED HOSPITAL FOR INFECTIOUS DISEASES AT HAMPTSTEAD.

The managers of the Metropolitan Asylum District Board have prepared an elaborate statement for the information of the President of the Local Government Board, with regard to the proposed erection of a hospital for infectious diseases at Hampstead. The statement in the first place shows what has been done by the Metropolitan Asylums Board in establishing hospitals for the benefit of the Metropolitan poor suffering from infectious diseases, and then it gives the fullest information respecting the proposed hospital. The managers assert that the fear of contagion from convalescents frequenting the health is quite unfounded, as no convalescents are ever sent out from the hospitals of the managers until the medical superintendent is satisfied that they are free from danger to themselves and others. Nevertheless, Hampstead-health is the very last place that should be used for it.

At the weekly meeting of the Metropolitan Board of Works, on the 11th inst., deputations from the Vestry of Hampstead, as well as St. Pancras, and from the inhabitants of Hampstead, were introduced, and memorials presented on the subject of the proposed hospital for contagious diseases to be erected at Hampstead, praying the Metropolitan Board to join with them in preventing the erection of a building for contagious diseases at Hampstead.

Mr. Harvey, on behalf of the Vestry of Hampstead, said they addressed the Metropolitan

Board as trustees of the public. They recognised most fully the necessity of such hospitals, but they felt the site chosen was not the best that could be selected, on the grounds of the liability of the danger to health, and in consequence of the hospital being connected with one of the main thoroughfares, the carriage-way of which was entirely blocked, the sheds being only a few yards from it.

Mr. Witenhall, representative of the St. Pancras Vestry, pointed out the contiguity of two railway stations to the Heath. At holiday time these stations poured out thousands of people for recreation in this vicinity.

Mr. F. Grant appeared on behalf of a committee of the inhabitants of Hampstead. The soil had been shown to be unfavourable to the passage of drainage, and in other ways unsuitable for the erection of such a hospital.

It was stated that the proposed hospital was only 230 yards from the Lower Heath, Hampstead, and from 60 to 100 yards from the Hampstead-Heath Station.

Mr. Le Breton moved, and Mr. Furniss seconded, the motion, that the memorials should be referred to the Works Committee for consideration and report.

On a division being taken, the numbers were—for the motion, 26; against, 4.

SCHOOL-BOARD SCHOOLS.

Long Eaton.—This School Board has agreed to accept the plan for new schools sent in by Messrs. Clarke & Son, architects, of Nottingham, and to give Messrs. Giles & Brookhouse, architects, Derby, the 20l. premium, as the second best. The schools will accommodate 647 children.

Foulsham.—At a meeting held by the School Board, last week, the members unanimously appointed Mr. Jno. B. Pearce, of Norwich, their architect.

Poringland.—The Poringland United School District have instructed Mr. Jno. B. Pearce, of Norwich, to prepare the necessary plans and specifications for the enlargement of the present school.

Cannock (Staffordshire).—Messrs. Hay & Oliver, of London and Bath, have had their designs chosen in an open competition for board schools and residence at Cannock, Staffordshire.

Nottingham.—A second school is about to be built by the Nottingham School Board, at a cost of 10,000l.

Brome (Norfolk).—The School Board received tenders for the erection of a school and teacher's residence for this parish last week, from plans prepared by Messrs. Pells & Son, Beccles. Mr. Hindes, Beccles, 926l. 5s. 6d.; Mr. Botwright, Bungay (accepted), 911l. 10s.

SANITARY MATTERS.

Result of Bad Drainage.—At a meeting of the St. Austell Board of Guardians, Mr. N. F. Stephens, medical officer of health, reported that a stone-cutter (a widower) residing at Carne Grey, in the parish of St. Austell, has had six children down with typhoid fever, and that two of them had died. Mr. J. Samble, sanitary inspector, reported that Charlestown was the very worst place in the district as regarded drainage and proper closet accommodation.

Renewal of Fever at Darwen.—Fever of a virulent character has again broken out at Darwen, no fewer than nine fresh cases, it is said, having occurred during Saturday and Sunday in last week. Several of the sufferers under medical treatment show fatal symptoms. A special commission from the Local Government Board is expected there shortly.

Fever at Dundee.—The medical officer of Dundee reported to the Police Commissioners last week that the spread of typhoid fever in the town was to be attributed to the fact that the bedrooms of a house in which several cases had occurred, opened from a dairy from which milk was dispensed to the public.

Inspector of Nuisances, Evesham.—A conference took place on Monday, December 7th, between the Mayor and the Rural Sanitary Authority, as to the joint appointment of one person as inspector of nuisances for the two sanitary districts. The Rural Authority decided to lay the following terms before the Town Council:—That Mr. Blanchard be appointed inspector for the two districts at a salary of 180l. a year, 100l. of which will be paid by the Rural Authority, and 80l. by the Urban Authority.

Sanitary Prosecutions at Sutton.—At the

Sutton Petty Sessions last week, several persons were summoned by Mr. Thomas Allen, sanitary inspector of the Aston Union, for sanitary offences. Henry Hodson Plant was charged with neglecting to comply with a notice to cleanse and disinfect a house at the Driffield, Sutton Coldfield, which had been infected with scarlet fever. The Bench fined the defendant 1s. for each day of neglect, and costs. William Macvittie, of Penn-lane, Edlington, and Thomas Inston, of Park-road, Boldmere, Sutton Coldfield, were summoned for not removing nuisances from premises owned by them. The defendants were ordered to complete the necessary work to the satisfaction of the inspector, and to pay the costs of the proceedings.

ALLEGED BREACH OF CONTRACT.

SMART AND OTHERS v. BATEMAN.

THIS was an action at the Nisi Prius Court, Manchester, to recover damages for an alleged breach of contract. The Plaintiffs, Messrs. Smart, Lyall, & Smith, are builders, carrying on business in Great Mount-street, Manchester, and the defendant was Mr. Bateman, of Middleton Hall, Derbyshire. The action was brought to recover payment for work done in the preparation of plans and specifications, and damages for the breach of a contract whereby the defendant had let to them for the erection of some villas and garden walls upon his estate and failed to carry out. The jury found a verdict for the defendant.

RAILWAY COMPENSATION AT PLYMOUTH.

A JURY was engaged at the Duke of Cornwall Hotel, Plymouth, last week to fix the amount of compensation to be paid by the South Devon Railway Company, to Mr. W. Derry, of Houndcombe House, for certain portions of the Houndcombe property required by the Railway Company for the purpose of the new joint station in the North-road, Plymouth. It appeared from the evidence that Mr. Derry had expended on Houndcombe House and grounds nearly 15,000l. In 1873 the South Devon Railway Co. obtained an Act of Parliament which gave them power to acquire additional land, these powers including the land in question. It was intended to use the land for the purpose of a station, and the quantity required was 2 roods 25 perches, nearly three-quarters of an acre, the whole extent of Mr. Derry's land being five acres, part being garden and ornamental grounds, and part meadow, the meadow being the portion then under consideration. The compensation which Mr. Derry demanded was from 7,000l. to 8,000l. Mr. Keate, architect, Plymouth, valued the land required—25,586 ft. at 1s. per ft.—at 1,420l. 6s., and that the deterioration in the value of the property caused by taking the land as a station would be 800l. The total compensation he assessed at 2,220l. 6s. Mr. Fitch, builder, thought the land was worth 1s. 2d. to 1s. 3d. per foot, which would make about 1,800l., including the 10 per cent. for compulsory sale. The damage done to the property residually he should consider 700l., which would make 2,500l. Mr. Nicholas Verren, builder, calculated that the land was building-land, worth 15d. per foot, and 8d. per foot should be added for compulsory sale and residuary damage—making 2,850l. 12s. The railway company had offered 1,500l. for the land in dispute. Mr. James Hine, joint architect of the Guildhall, valued the land at 1s. per foot; he would add 10 per cent. for compulsory sale, and estimated the residential damage at 700l., making 2,272l. 6s. Mr. Driver, of Whitehall, valued the land at 1s. per foot, 1,400l., and made his total 2,232l. For the loss of the pleasure of Exeter, surveyor to the South Devon Railway Company, valued the portion of land taken at 650l. 10s., 10 per cent. added for compulsory sale, and 5s. and that the 500l. for residential damage was fair. Mr. Higney, surveyor, Wells, valued the portion of land required at 714l. 12s., which, with additions for residential damage, &c., would make a total of 1,940l. Mr. Henry Drew, surveyor, Exeter, and Mr. E. Ryder, surveyor, of Parliament-street, Westminster, gave similar evidence. The jury returned a verdict to the effect that the value of the land and the compulsory purchase amounted to 1,000l., and the residential damage 600l.

CONDITION OF BAKEHOUSES.

YOUR correspondent, "T.," has sent you the condition of some London bakehouses. I can add one to the list, and a more dangerous and disgusting case I never saw. A few days since I went to work over the water in a bakehouse which required a new cistern; the man had just taken the business, and of course was not answerable for the state of things, and I have no doubt his predecessor was ignorant of the cause of the dreadful smell there was in the bakehouse every now and then. The cause of this was that the waste-pipe of the old cistern was in direct communication with the drain, the supply-pipe to the bakehouse being about 20 ft. long, and passed over the oven. It was soldered into the side of the cistern some distance from the bottom, and had a perforated zinc cone soldered over it, to prevent any substance passing down the pipe. When the water in the cistern was below the pipe, which was every day, the heat from the oven made the 20 ft. of pipe act like a long fire, and drove the sewer-gas into the house, which impregnated the sediment from the water. So, when the tap was turned on, and there was no water in the pipe, the stench was unbearable. The men could not account for it, and occasionally upon the drain-pipe came through, which made them think of having a filter; but the plumber, having to put a new tap to the pipe, saw the cause of the smell, and drew out some of the dangerous sediment in the pipe, which accounted for the dreadful smell. Who knows how many have suffered from eat-

ing bread made with water passing through that pipe? He had previously altered the waste-pipe, and disconnected it from the sewer. I ask again, with your correspondent "T.," where are the inspectors? A WORKMAN.

MYSTERY OF COMPETITIONS.

SIR,—In answer to the advertisement of the Cannock School Board, offering premiums for designs for two new schools, I, as a competitor, took the trouble to prepare two sets of designs, and received them returned without thanks, and not even the carriage paid. Now my grievance is, that after twice applying in a polite manner for the result of the competition, I got no answer. I should think, in common politeness, if not as an act of justice, all competitors ought to be informed if the premiums have been awarded, and to whom. Perhaps, if you will kindly insert this in your valuable paper, some of your readers may be able to give me the information I ask. R. A. C.

FREE LIBRARIES.

Lambeth.—A memorial has been presented to the overseers and churchwardens of Lambeth asking them to convene a public meeting in accordance with the provisions of the Act, for the purpose of taking the sense of the ratepayers as to the establishment of a free public library in the parish. The requisition has been influentially signed, and there is a strong feeling in Lambeth in favour of the proposal. It is expected that the subject will be discussed at the next meeting of the Lambeth Vestry.

Sheffield.—A report has been published of the use made of the Free Public Libraries by the public during the last twelve months, of the additions by purchase and donations to the stock of books in each library, and generally of the condition in which the libraries are left at the close of the labours of the committee. It appears,—

"That from September 1st, 1873, to August 31st, 1874, the Central Lending Library was open on 267 days; the Upperthorpe Branch Library, 273 days; and the Brightside Branch Library, 276 days. The issues of books to readers on these days were:—From the Central Lending Library, 123,958 vols., or a daily average of 464 vols.; from the Upperthorpe Branch, 60,256; or a daily average of 220 vols.; from the Brightside Branch, 70,631, or a daily average of 257 vols.; or a total of 254,845 vols., and a daily average of 941 vols."

The proper maintenance of a museum, added to that of a central lending and reference library, and three branch lending libraries, will, it is to be feared, leave but inadequate resources out of a penny rate to future committees for the purchase of books. The report says:—

"The insufficiency of the rating power of the Libraries and Museum Act of 1855, is already felt in other boroughs besides our own; and twenty-one years' experience of the value of the Act would, your committee think, lead the Legislature to look favourably upon a proposal to extend the permissive rating power of the Act from one penny to twopence in the pound, if the Town Council, in conjunction with other municipal authorities, should see fit to press for such an amendment of the Act."

NOTTINGHAM.

SIR.—In your impression of the 12th inst., you gave statistics showing the number of volumes issued by the principal Free Libraries in England in 1873, including Nottingham, which you state issued 63,487 vols. Allow me to state that during that year the Nottingham Free Library was open to the public during 168 days (and that during the portion of the year in which the issues are usually the lightest), in consequence of the prevalence of the small-pox epidemic in Nottingham, and that the circulation during that time was 74,908 vols., or a daily average issue of 439 vols.

I might here state that during the past library year we issued 135,721 vols., being a daily average issue of over 461 vols. J. POTTER BRISCOE, Principal Librarian.

METROPOLITAN COAL DUES.

ON Saturday last a deputation of manufacturers living within the metropolitan police district, but outside the area of the Metropolitan Board of Works, waited on the Chancellor of the Exchequer to pray that the Government might give no encouragement to a Bill promoted by the Metropolitan Board of Works for the purpose of freeing twelve bridges from toll, which it is proposed to effect by continuing the 9d. coal-tax for fifteen years.

The Chancellor of the Exchequer said,—Of course they did not expect him to express any positive opinion at present. He would like, however, to hear what those who were present would say with regard to an argument used by the deputation of the Metropolitan Board of Works, when it had been pointed out that although this tax would fall upon a considerable district, who would hardly benefit from freeing the bridges of tolls, the whole district benefited very much by payment of rates on the part of the metropolis for roads and bridges.

In reply the speakers denied that the rates of the duty area were lightened by any metropolitan contribution.

IMPROVED DWELLINGS FOR THE WORKING CLASSES.

A PUBLIC meeting of what is called the Model Houses Association, for improving the dwellings of the industrial poor and for the diffusion of sanitary knowledge, was held last week at the Quebec Institute, Lower Seymour-street. The Earl of Aberdeen occupied the chair.

Sir Thomas Chambers moved the first resolution, which affirmed the necessity of rigidly enforcing statutes which bear on the sanitary condition of both the urban and rural populations, and that adequate remedies should be demanded for the reduction of the frightful mortality arising from preventable diseases.

We do not know that the Association has as yet done much beyond meeting and talking. As to the goodness of their professed object of course we agree, but we are not sure that we do so in respect of their proposed mode of action. However, we shall see when they come to publish a balance-sheet.

SCHOOL BUILDING NEWS.

Whitby.—The opening of the new National schools in connexion with St. John's Church, for the benefit of the west side of the town of Whitby, has taken place. The schools are built on a site in Meadowfield Park, and are planned to seat 600 children, viz., 150 boys on the ground-floor, 150 girls on the upper floor, and 200 infants on the ground-floor. The architect is Mr. E. H. Swales, of Whitby; and the builder, Mr. W. Langdale, of the same place. The cost of the schools is about 1,800l. The foundation-stone was laid by the Archbishop of York, on the 15th of March, in the present year.

Concey.—On Tuesday, the 8th inst., the new and enlarged National School was inspected and formally opened by the Bishop of Ely. The school, a substantial brick and slate building, erected for the accommodation of 100 children, has been built at a cost, including teachers' residence and fittings, of 700l., this sum being provided at the voluntary expense of the rector and landowners of the parish. Being under the inspection of the Education Department, the whole is of a substantial character. Mr. Oldfield, the architect, and Messrs. Roberts & Cornwell, the builders, have spared neither pains nor expense in endeavouring to complete their work to the satisfaction of the building committee and the Government inspector.

STAINED GLASS.

London.—A new stained-glass window, presented to the Corporation by Mr. Deputy Harris, has just been fixed in the Guildhall. The subject illustrated is the Restoration of the Charter of the City: referred to by Macaulay ("English History," vol. 2, p. 462-3), thus:—"It was determined that the charter of the City of London, which had been forfeited six years before, should be restored, and the Chancellor was sent in state to carry back the venerable parchment to Guildhall." The subject occupies the entire window, with the exception of the spandrels in the upper portion, in which are inserted the arms of the donor and the Saddlers' Company, of which he is a member. The window was executed by Messrs. Gibbs & Moore, of Southampton-row.

Farnworth.—The east window of Farnworth parish church has been filled with stained glass. The five main compartments contain illustrations of the Nativity, Baptism, Crucifixion, Resurrection, and Ascension of our Lord. The tracery has a centrepiece of "The Lamb" surrounded by cherubim, and in openings to either side are angels in adoration. In the groups prominence has been given to St. John, to whom the church is dedicated, and his emblems are introduced in the tracery over the centre light. Underneath the whole is inscribed "To the Glory of God, and in affectionate remembrance of Thos. Benson Crompton, and of Jane Crompton, his wife, 1874." The artists are Messrs. Ballantine, of Edinburgh.

Memorial of the late Bishop Wilberforce.—The east window of Beauchamp Church, Berks, where Bishop Wilberforce was to have preached on the day of his funeral, and would have stood godfather to the vicar's child, has been filled with stained glass in his memory, the Bishops of Winchester and Oxford and others having joined with Mr. Russell. The work has been executed by Messrs. Clayton & Bell, from designs by Mr.

Street. Bishop Wilberforce is represented at the bottom of the window, kneeling, the pastors staff resting on his shoulder, and the mitre on the ground beside him.

Shipton Church.—The new east window of Shipton Church is now completed. The lower part of the window illustrates eleven incidents of our Lord's Passion, namely:—The agony in the garden; the Disciples asleep; the betrayal; Peter warming himself; Pilate bringing Christ before the people; Pilate washing his hands; the scourging of Christ; mocking and crowning Him with thorns; bearing His cross; the centre light portraying the crucifixion and burial. The tracery forming the upper part of the window represents Christ on His throne, surrounded with cherubim, virgins, martyrs, and saints; two other circular lights are symbolical of the old law and the gospel. The whole was designed and executed by Messrs. Hardman & Co., of Birmingham, at a cost of 300l.

Books Received.

The Boy Joiner and Model Maker. By ELLIS A. DAVIDSON. London: Cassell, Petter, & Galpin.

THIS is one of those books for popularising science and mechanics the production of which has been long a speciality with its publishers. It aims at being a practical guide for a boy in the use of tools in making "numerous articles for use and ornament," and in general as a rudimentary book of the joiner's craft. The book is copiously illustrated, in the first instance with representations of the different tools, accompanied by short and clear directions as to their use, and in the subsequent parts by drawings of the objects supposed to be made by the boy joiner, and for the putting together of which full instructions are offered him. There is a little too much attention, perhaps, to the mere amusement of making models (such as windmills, model railways, &c.), which can hardly teach a boy real joinery so well as the putting together of things which are to have a practical use. There is a great deal of instruction, however, as to these; but we must regret that the boy joiner should have set before him such poverities in the shape of design as the book-desk, fig. 81 (literally "joiner's Gothic"), or the summer-house, fig. 103, and others. If the authors of these useful books would contrive to give good design as well as good practical information, in their examples, we should look with much more satisfaction at the result.

VARIORUM.

"THE British Almanac and Companion for 1875" is as useful and instructive as ever. It includes a curious and interesting paper on the Arabic Numerals, by Mr. E. A. Axon. The writer arrives at the conclusion that the Arabic numerals are due to a double stream of Hindoo culture, the first by the medium of the Neo-Pythagoreans producing the graphic abacus, and the other through the Arabs of Spain bringing the full benefit of Hindoo arithmetic to the nations of the West. What a mighty instrument it has been in our Western civilisation it is unnecessary to repeat. Ocean Telegraphy, and Sanitary Law, are also treated of, and Mr. James Thorne contributes his usual carefully-written summary of works connected with Architecture and Public Improvements, besides a retrospective chapter on the pictures of the past year.—"Turnaside Cottage," by Mary Senior Clark, author of "Lost Legends of the Nursery Rhymes," and "Katie Summers, a Little Tale for Little Readers," by Mrs. Charles Hall, are two more of the pretty story-books, with very pleasant illustrations, published by Marcus Ward & Co.; and from the same firm comes "Aunt Charlotte's Stories of French History for the Little Ones," by Charlotte M. Yonge, author of "The Heir of Redclyffe," which said stories begin in the year 150 B.C., and end the day before yesterday. They are as interesting as if there were no truth in them, and give a vivid picture of the country of which they treat, leaving a strong impression that the rulers of poor France have been mostly scoundrels.—"Mr. Punch's Pocket-book for 1875" is illustrated by Messrs. John Tenniel, Charles Keene, and L. Sambourne, and contains its usual accompaniment of funny tales. The front piece represents the interior of a club-house appropriated to both the sexes, an idea not

so far from realisation, perhaps, as the artist may fancy.—Two serial works of considerable value to many persons outside of the businesses more directly interested are announced for publication in *The Printing Times and Lithographer*, which commences a new series with the new year. One of these is a treatise on English Orthography, in which will be discussed the changes which words undergo in the formation of their plurals and other inflections, the composition of derivative and compound words, and various cognate matters, of which neither dictionaries nor grammars give any account whatever. The other is a thoroughly practical treatise on Lithography in all its methods, with the auxiliary photographic and typographic processes. The latter is especially valuable at a time like the present, when Lithography is receiving such a remarkable development.—*The Engineer* prints *à la Paris* Mud.—A French journal gives the following particulars respecting the value of the mud of Paris, for which it states the contractors pay 600,000*fr.* annually to the municipality for the right of taking away. It is sold for manure at from three to five francs per cubic metre, and thus yields a revenue of about 3,000,000*fr.* Out of this amount the expenses of sweeping the streets and carting away the mud must be deducted. The scavengers and other employees of the contractors are under the superintendence of the authorities, the entire staff being composed of several thousand persons. In 1823 the amount paid for the right of collecting the mud of Paris was only 75,000*fr.*, in 1831 it was let for 166,000*fr.*, and in 1845 it reached the sum of half a million of francs.—*The Furniture Gazette* gives the following note on sharpening saws:—"The first thing to be done is to run a file down along the edge of the teeth, till by looking along the edges you see them range in a direct line; you may then set your saw in the following manner: lay the blade on a smooth piece of lead, or, for want of that on the end of your trying-plane, then with a small square steel punch give a gentle blow on it with the hammer. After placing it on one of the teeth, do the same with every alternate tooth; then reverse the saw and punch the teeth on the other side, and look down your saw that the teeth are equally set; then begin with your file at the part of the saw nearest the handle; to sharpen your file to a good point, you must hold your file so that it shall make an angle with the saw-blade of about 30°, or two-thirds that of a mitre angle, observing to lift the file for every alternate tooth in an opposite inclination, and bringing each tooth to a very sharp point. Keep the upper edge of your file very nearly level and horizontal. Every tooth will then represent a sharp chisel and cut as it goes, without tearing, as is often the case, from not paying attention to these particulars."

Miscellaneous.

Remains of the Castle of Winchester.—There yet remain some of the fragments of this once formidable fortress. The erection of the new county buildings uncovered the basement and part of an apartment in one of the round towers overlooking the city, and this has been left as a memorial of the castle. The Hampshire Friendly Society having purchased the old house on Castle Hill, to remove it to make new offices, from the designs of Mr. T. Stopher, architect, of this city, the destruction thereof has uncovered the remains of another round tower, which are massive and solid, and sorely trying to the tools of the labourers. Under the tower, according to a local paper, runs a subterranean passage in the direction of the ancient fosse, and, doubtless, once the saltpore of the castle. This passage, which is one of three, is beautifully constructed—all of them zigzag in their course,—and have steps here and there to make them more easily defensible, and here and there are arches which once had doors, the deep bolt-holes remaining still. Squared chalk is largely used in the construction of the passages, which are in excellent preservation, and worthy of an inspection. They run, one in the direction of the foundations of a square tower, nearly opposite the County Hall, another to the city ditch, and the third towards the West-gate, while a fourth passage exists in the neighbouring gardens communicating with the city. Two cinns have been found, one, in perfect preservation, being a "small brass" of Constantine the Great. This is as good as when it left the moneyer's stamping iron.

Manchester and Salford Ladies' Sanitary Association.—The annual meeting of this Association has been held in the Mayor's Parlour at the Town Hall. The Bishop of Manchester, who presided, in the course of his address said there could be no doubt that the present high rate of mortality in the poorer districts of the town was mainly attributable to the miserable condition of the people's houses. A class of houses in which it was impossible for people to live decently and with comfort were being replaced by structures of an improved character; and he was happy to think that the new rows of houses to which the dispossessed population were obliged to migrate were being built under conditions more favourable to health than those under which they had lived hitherto. Mr. S. M. Bradley said it was impossible to protest too strongly against the madness which animated the minds of anti-vaccinators. It had been demonstrated that vaccination was proof against small-pox, and that re-vaccination was efficient in preventing any fatality from the disease, because in the report of Dr. Seaton, who had held a Government inquiry on the subject, it was shown that nurses in hospitals who had been re-vaccinated, and who have to pass through places actually saturated with poison, had escaped infection.

Meeting of Glasgow Joiners.—A largely-attended meeting of the Glasgow branch of the Associated Joiners of Scotland was held last week in the Crown Hall, Sauchiehall-street, Glasgow, with regard to the code of by-laws framed at the recent conference between masters and men. The chair was occupied by Mr. John Smeaton. Mr. James Grant gave an account of the proceedings of the conference. The adoption of a rule fixing the hours of work for the different portions of the year—viz., 51 hours from 16th February to 2nd November; 45 hours from 3rd to 30th November, and from 19th January to 15th February; and 39 hours from 1st December to 18th January—was proposed by the secretary, Mr. McIntyre; but an amendment by Mr. James Wallace, to the effect that the by-laws relating to the work-hours remain as in the old code, was carried by a majority of nearly 200 votes. It was ultimately decided by a majority of nearly 300 to adopt an amendment in favour of each day standing by itself, time and a half being paid for overtime. The third proposed rule was accepted with some modification. The fourth rule having been disposed of, the meeting adjourned, after arranging to meet again for the discussion of the six remaining rules.

Land at Charing-cross.—A claim for the freehold property, No. 3, Charing-cross, required by the Board of Works for making a new street to the Victoria Embankment, in respect of which Northumberland House is now being demolished, has been settled by arbitration, at the Westminster Palace Hotel, before Mr. John Clutton as umpire. Messrs. Fuller & Fuller, of Backlersbury, were instructed as surveyors on behalf of the freeholders by Mr. S. A. Lane, of Essex-street. Messrs. Clark & Glazier were called in support of the claim, and these gentlemen gave evidence to the effect that some property in the neighbourhood of Charing-cross had within the last few years risen 100 per cent. in value. On the part of the Board, however, Messrs. Driver, Abbott, and Wimple were called as witnesses. Mr. Hawkins, Q.C., and Mr. Philbrick, Q.C., represented the Board as counsel; and Mr. Theisiger, Q.C., and Mr. Meadows White the claimants. The premises in question were let on lease to Mr. Hobson for an unexpired term of fourteen years from Christmas next at 150*l.* per annum. Mr. Clutton's award has just been received, and amounts to 5,065*l.*, which is equal to a reversionary value of 500*l.* a year, or 100 per cent. improved value.

Nottingham Mechanics' Institution Science Classes.—The Duke of St. Albans, Dec. 11, presented the Queen's prizes to the students of the Nottingham Mechanics' Institution Science Classes connected with South Kensington. He said the skilled artisans had greatly reduced their hours of toil, and this increased leisure represented a loss of many millions sterling to the country. It had been questioned whether this leisure was a gain to themselves, and this depended on the use they made of it. That their employers did not begrudge it to them was shown by the conduct of Sir J. Whitworth, Mr. S. Morley, M.P., and others in offering prizes, scholarships, &c., for proficiency in scientific study.

Opening of a New Church at Genoa.—The English Church of St. John the Evangelist, at Pegli, near Genoa, was opened for divine worship on Saturday, November 28th, by a special dedication service. The foundation stone was laid on January 14th, and before the end of June the whole exterior was completed. It is simply a spacious nave and chancel (and will hold 120 persons), with a small vestry on the south side. Mr. Archibald Hay Currie, acting as voluntary architect, marshalled the procession from the terrace of the hotel to the church, headed by the clergy in surplices. The garden in front of the west porch had been laid out with evergreens and camellias, and an arch was made over the entrance-gate, on either side of which waved the flags of England and Italy. At the porch a halt of a few minutes was made before the closed door, while Mr. Currie delivered the keys of the church to the oldest member of the Building Committee. A bazaar at the hotel was afterwards held, in which Italians and French, as well as English, took much interest, and which realised about 1,000 francs. The church was decorated with ferns and flowers.

The Largest Telescope.—A telescope of immense proportions has been for some time past in course of manufacture at the Paris Observatory, but is still far from its termination. It was commenced in 1865 by M. Leon Foucault, but the death of that savant, and the events of 1870 and 1871 interrupted this work, which was subsequently resumed under the direction of M. Wolf. The power of the new instrument will exceed that of those of the Cambridge and Herschel telescopes, hitherto the largest known; its length will be 49 ft., and its diameter 6 ft. 6 in., while the dimensions of Herschel's were only 40 ft. by 5 ft. The mirror will be of glass, but the surface will be faced with gold or silver. The glass will be cast at Saint-Gobain, but the mould in which it is to be cast will be alone a work of six months. It will next have to be adapted to the required curve, and to be polished. The last preparation will occupy twenty days, and will have the result of transforming the shape of the surface, which from spherical will become parabolic. The telescope will be provided with a moveable staircase.

St. Andrew's Church, Plymouth.—A lecture was delivered at the Plymouth Institution, by Mr. J. Brooking Rowe, on "St. Andrew's Church, Plymouth." This interesting, and, for the West of England, exceedingly large church, is being carefully restored, under Sir Gilbert Scott, R.A., architect. The whole of the old seating has been removed, and new seats in wainscot oak are taking their place. These are rich in detail and profusely carved, both as regards the bench-ends and the enrichment of the fronts and backs. New wall-plating has been carved in the chancel, and angels upon corbels support the chancel roof at intervals. This roof has also been picked out with colour with good effect. A new font is being made by Mr. Harry Hems, of Exeter, by whom the whole of the wood-carving throughout the church is being executed. The works are at present being carried out under the direction of Mr. Nath. W. Vickers, as clerk of works.

Action for Drainage Works.—On Monday, at Westminster, before Mr. Baron Amphlett and a special jury, the case of Dover Sons & Co., contractors, of Theobald-road, against the Rural Sanitary Authority of the district of Tonbridge, came on for hearing. The action was brought to recover the sum of 333*s.* 19*s.* 2*d.* for work done, and materials supplied on certain drainage works at Hadlow. It appeared that the plaintiffs had entered into a contract to do certain works for 177*l.* odd, but owing to a communication from Mr. Rodger, of Hadlow Castle, an alteration had to be made, and notice had to be given the plaintiffs not to proceed with the work. The judge having intimated that it was a case which should be referred, the leading counsel on either side agreed that a verdict should be entered for the plaintiffs, subject to the master being referred to Mr. Turner, barrister.

A new Plastic Material for modelling, invented by Guidice of Genoa, has been adopted for figures and ornaments in the modelling school of Genoa, as well as by many sculptors. It is said not only to remove some of the difficulties of modelling, but to increase the facilities of the process. It is lighter than clay, having a specific gravity of 1.35, and does not shrink like clay on drying, nor harden like wax, but retains its plasticity and softness at all times.

St. Bartholomew's Chapel, Chatham.—On Tuesday in last week a meeting of the committee for promoting the restoration of the ancient building known as St. Bartholomew's Chapel, Chatham intra, was held at St. Bartholomew's Hospital, New-road, the Dean of Rochester, chairman of the restoration committee, presiding. The Rev. Dr. Bailey read the report prepared by Sir Gilbert Scott, who had inspected the chapel, which dated from 1078, in which year it was built and founded by Bishop Gundulph, the builder of Rochester Cathedral and Castle, and the Tower of London. Sir Gilbert Scott described the chapel as well worthy of restoration, as a considerable portion of the original Norman structure still remained. The plans for the restoration of the building were laid before the committee, and were greatly admired. The work will involve an outlay of about 2,000*l.*

Art Treasures at Lartington.—Visitors to Lartington Hall speak highly of the art-treasures in this building, and of the decorations of several of the principal apartments. The Rev. Thomas Witham (the owner of the Lartington estate) permits the hall to be viewed three days in each week, thus giving the public the opportunity of beholding the paintings, statuary, and other objects of art. In the museum are priceless cabinets of geological and mineralogical specimens. The wood-carving by Signor Bulloiti, in another portion of the hall, is not excelled even by the carvings of the same artist at Alnwick Castle. The picture of the Crucifixion, by Le Brun, in the chapel, is a close imitation of sculpture. The village of Lartington is so neatly kept as to attract attention. It has tastefully-planted shrubberies, beds of flowers, fountains and reservoirs of water, all supplied through the munificence of Mr. Witham.

Proposed Auction Mart for Appleby.—On Saturday, the 5th inst., a number of gentlemen met at Appleby, to take into consideration a proposal to form an auctioneering company and erect a new auction mart for that town and district. Up to the present time farmers in the neighbourhood had experienced great difficulty in getting rid of their stock without entailing considerable expense, as when fat stock was taken from the Appleby district to other markets three days were frequently required before the seller reached his home. It was said, a building suitable for an auction-mart could be built for 500*l.*, but if it was found necessary they could expend 5,000*l.* upon it. It had been suggested that the shares should be 5*l.* each, so that all classes of farmers might participate in the benefit.

Novel Engineering.—A strange story comes to us from Hurdul of the peculiar doings of the Public Works Department in that district. It seems that the streets of Hurdul are so low that during the rainy season they remain under water for days together. In order to make them fit for traffic and travellers a drain four miles in length was dug last year; but, unfortunately, the end of the drain next the town was lower than the other end! Having learned by experience that water objects to flow up an inclined plane, the assistant engineer and overseers are hard at work levelling and surveying in every direction, and it is to be hoped that this year their efforts will be attended with complete success.—*Times of India.*

Improvement of Dwellings.—A conference was held at Leeds on Monday, under the auspices of the Leeds Social Improvement Society, to consider certain proposals for the improvement of the dwellings of the poor in Leeds. Mr. W. B. Denison presided. Miss Octavia Hill, of London, described the mode in which such a work had been carried out in the metropolis, and an interesting paper on the subject was read by the Rev. F. J. Wood. A resolution was passed expressing the opinion of the conference that there is a great need of improvement in the dwellings of the poorer classes in Leeds, and that the attempt which is being made to secure this end by the Leeds Improved Dwellings Company deserves the cordial support of the public.

The Drainage of Maidstone.—The river Medway being greatly polluted by the drainage of Maidstone, the Local Government Board are pressing the Corporation to adopt remedial measures. Mr. Lewis Angell, C.E., has been instructed to report upon the best means of drainage and sewage disposal applicable to the case.

Additional Water Supply for Richmond.

The additional water supply for Richmond, Yorkshire, was opened last week by the mayor, Mr. Alderman Croft. The Victoria Reservoir, besides the pipe laid down from Lord Zetland's property to Coalsgarth Springs in 1837, is now supplemented by a larger pipe from the same source. The supply from the former was, on the 10th inst., cut off, so as to show the force of the new one, and all being in readiness, Councillor Mason, chairman of the committee on waterworks, cut the string, when, the floating-ball regulating the new supply descending, an abundant rush of the purest spring-water at once entered the reservoir. The mayor then formally declared the works opened.

Local Taxation.—According to a Blue-book just issued, the total expenditure by local constituted bodies during the year 1872-73 was 32,600,000*l.*, of which enormous amount 26,000,000*l.* were raised either by rates (18,000,000*l.*) or by loans (8,000,000*l.*) on the security of rates. Besides this 4,000,000*l.* were raised by tolls and dues, and 175,000*l.* by loans on security of such revenues. The total sum granted by Parliament in aid of rates during the year was 1,166,000*l.* In future, however, the local authorities will be better dealt with, as the liberal aids given by the last Budget add nearly 1,000,000*l.* to the subsidies heretofore paid from the Imperial Treasury.

Invention for the Discovery of Fire.—A dramatic author in Paris, who does not wish to be named, has invented a very simple apparatus which, in case of fire, shows in what part of the building the fire has begun. With this apparatus, instead of searching for an hour and a half to find the seat of fire, as was the case the last time the French Opera House was burnt down, an electric bell will immediately apprise the administration that fire has broken out, and a board will show in what part of the house. This invention has been adopted throughout Belgium, where it has been enforced on all the theatres by the Government. (?)

Fatal Scaffold Accident.—On Wednesday, the 9th inst., an accident happened at a four-story house which is being built in Paterson-street, Dundee. A scaffolding was erected inside the building, about 40 ft. in height, and shortly after six men had begun to work upon it the structure gave way, and fell through the joisting of two flats to the ground. Two of the men fell to the ground, and were killed on the spot. The other men were picked up severely injured. The other men succeeded in saving themselves by catching hold of the wall when they felt the scaffold giving way.

Lostwithiel.—It is intended to enlarge the House of Mercy, near this town, by the erection of a wing, the designs of which have been prepared by the Rev. F. C. Hingston-Randolph, rector of Ringmore. The plans are in the style of the existing building, erected several years ago. At present, the probationers' ward only will be erected, as a memorial to the late Prebendary Tatham, rector of Bocomoo and Broadoak, and one of the proctors in convocation for this diocese. The new chapel, which has been in progress for many months past, is rapidly approaching completion.

Fall of a School.—A serious accident occurred at the Rainham National Schools (which are built on a site given to the parish by a member of the Tafton family, who own a great deal of property in this neighbourhood), on Thursday (last week). While a number of the children were in the playground a large portion of the brickwork of the building gave way, and fell outwardly upon several of them. Assistance was promptly rendered, and after some difficulty the children were extricated from the debris, when six boys were found to be seriously injured; the life of one is despaired of.

Death of a Belgian Artist.—Baron Wappers died in Paris, which had been his place of abode for twenty years, last Sunday. He was born at Antwerp in the year 1803, and was a pupil of Herreyns and Van Brée. His "Episode of the Siege of Leyden" was exhibited in 1830, and created a sensation. In 1832 he was appointed first professor at the Antwerp Royal Academy of Fine Arts, and became the director in 1840, a post which he held till 1863. Leopold I. created him a baron, and appointed him royal painter. He received the ribbon of the Legion of Honour in 1844, and became an officer of the Legion in 1855.

The Fishmongers' Company.—Mr. Alderman William Lawrence is now the Prime Warden of this ancient and important company, and on Thursday in last week presided with distinguished success at a banquet given by the governing body in the Company's Hall at London Bridge. The guests included the Master of the Rolls, General Sir Garnet Wolseley, Admiral Sir Astley Cooper Key, Vice-Chancellor Bacon, the Lord Mayor, the Syrian Patriarch of Antioch, the Bishop of Jerusalem, General Beadle, Admiral Powell, C.B., Baron de Worms, Vicomte de Stern, and more than a hundred others.

Belfast and the British Association Meeting.—At a meeting on Saturday, in Belfast, at which the Mayor presided, an allocation was made of the surplus of the local fund subscribed for the expenses attending the late meeting of the British Association in that city in the following manner:—To Queen's College, for magnetic apparatus, 120l.; Presbyterian College Library, 50l.; Methodist College Library, 50l.; Botanic Gardens, 50l.; Belfast Museum, 50l.; Mechanical Laboratory in Queen's College, 100l.; debt on Horticultural Society's Flower Show, 37l.; Working Men's Institute, 100l.

Temple Bar.—The City Lands Committee of the Corporation, in reference to Temple Bar, recommend in their report that the whole structure, or as much of it as they may deem advisable, should be at once taken down and removed, and that they should be authorised to consider the best course to be pursued in order to obtain the largest amount of public convenience at that spot, and to confer with the Government and the Commissioners of Sewers on the subject. We cannot screw up any sympathy for the "Bar," and would not give sixpence to help set it up on any other site.

Sale of the Tullieries Garden Gaslights. The whole of the lamp-posts, with their burners, glass globes, brackets, &c., in short, all that served for lighting the Tullieries gardens with gas, have been sold by public auction in one lot. The first bid was 8,000l., and the biddings rose to 9,010l., or 360l., at which the lot was knocked down to M. Lacarrière, the constructor of the chandelier in the New Opera House, who has to clear all away in ten days. There are 9,009 large glass globes and 8,100 smaller glass globes among the articles comprised in the lot.

American Waterworks.—New waterworks have recently been completed at Hudson, New York. The water is pumped from the Hudson River, forced to a reservoir at an elevation of over 300 ft., and thence distributed throughout the town. It is stated that the height of the reservoir makes fire-engines entirely unnecessary. On a trial of the works on the 20th of November, eleven streams were thrown simultaneously at various parts of the town to heights averaging 175 ft., and at a given signal, seven hydrant streams were concentrated and reached to a height of 120 ft.

Bedford-square.—According to the *Garden*, the Duke of Bedford has commissioned Mr. Meston to rearrange and, in part, re-plant Bedford-square. The old specimen trees in our neglected London squares are by far the finest we have ever seen in any city, and the capabilities, so to speak, of these squares are, in other respects, so remarkable that a little good gardening and good taste are all that is required to make the old squares of London very beautiful.

New Danish Lutheran Church in Newcastle.—The memorial stone of a new Danish Lutheran church, now being built in Maple-street, Newcastle, opposite the Grammar School, was laid on the 7th inst., by Mr. Theodore Borries. The building is designed in the Gothic style of the Early English period, by Mr. F. R. N. Haswell, North Shields. It will accommodate about 185 persons, and will be available to all Danes, Norwegians, Swedes, and Swedish Finlanders. It is estimated to cost 2,500l., of which 1,700l. have already been subscribed, leaving 800l. still to be gathered.

"The Ornaments Fabric."—The Rev. Scott F. Surtrees has opportunely published from the seventh report of the Deputy Keeper of the Public records, an extract bearing upon the above vexed question. It is the copy of a proclamation issued by Edward VI., in the sixth year of his reign, forbidding the use of sundry vestments, altar-cloths, and other ornaments, which will be perused, at the present time, with special interest.

Surveyor to the Shelton Board of Health. At the monthly meeting Mr. E. B. Hamilton presided. For the office of Surveyor and Assistant Overseer there were twenty-five applications, three of whom were selected to attend that meeting, viz., Mr. W. A. Thompson, Leeds, Mr. J. Mortimer, Darlington, and Mr. W. A. Makins, London. Seven members voted in favour of Mr. Makins, two for Mr. Mortimer, and one for Mr. Thompson. Mr. Makins was accordingly appointed, and will enter upon his duties with the beginning of the new year.

The Future Bow-street Police Station.—The negotiations which have taken place for the purchase of the Queen's Theatre by the Government are likely, it is said, to result in the sale of that building at a sum between the 60,000l. which was asked, and the 50,000l. which was offered. The theatre would be the future Bow-street Police Court, the police station being established in the same block. It is proposed to continue to the Queen's Theatre the name of Bow-street.

Painting of the Hackney Board-room.—The House Committee of the Hackney District Board of Works, reporting as to the painting and decorating the Board-room and corridors of the hall, recommended that the work be carried out in accordance with drawings prepared by Messrs. Grace & Sons, of Wigmore-street, and laid before the meeting. The estimated cost of the improvement was 300l. The report was adopted.

The Shipbuilding Trade.—The iron ship-building firms of Stockton, South Stockton, and Hartlepool, employing some 4,000 men, have resolved to give notice to all classes that a reduction of 10 per cent. on time, and 15 per cent. on piecework wages will come into operation on the 1st of February next. Business is said to have been conducted at a loss during the past few months. It is believed the reduction will be agreed to.

Canton to Engine Proprietors.—James Jenner, of Mayfield, pleaded guilty to using a steam-engine within 25 yards of the centre of the highway, at Mayfield, and to its not being sufficiently screened so as to prevent it from being dangerous to passengers. The Bench told the defendant he was liable to 5l. each day, and they fined him in the nominal penalty of 1s. and costs.

The Transit of Venus.—At a meeting last week of the Astronomical Society, at Burlington House, London, the Astronomer Royal spoke at length on the observations of the Transit of Venus. He thought that more than half the important stations had been successful. The failing half were principally in the Russian chain of stations. An important British station in Japan had been completely successful.

Hop Poles on Fire near Boughton.—Between seven and eight hundred Norwegian hop poles, valued at about 30l., the property of Mr. Thomas Parton, were destroyed by fire at Bushby Close Farm one day last week. The poles were being "dipped," when the creosote boiled over into the furnace of the tank, and set them on fire, and there being a strong wind, they were quickly consumed. They were uninsured.

Fall of Two Cottages.—Two cottages in the course of construction, and very near completion, have been entirely blown down at Tonge Brent, near Bolton. A few hours before, a portion of Radcliffe-road, which runs by Bradford Park, gave way, and about thirty yards of the road was carried away for half its width. The accident is attributed to the late heavy rains having loosened the foundations of the road.

Foremen Builders and Clerks of Works Institution.—The Lecture Session for 1875 will be opened at the Institution, 9, Conduit-street, W., on January 13th, with a lecture by Mr. Frederick J. Furnivall, M.A., on "Geoffrey Chaucer, Poet, Clerk of Works to Richard II." The second lecture will be by Mr. Henry B. B. Wheatley, on "Old London Buildings," on February 10th.

Bessemer Steamer System applied to Railway Cars.—A car is now in use on one of the French railroads to which the Bessemer steamer system has been applied. The car is hung on elastic springs, and the motion whilst travelling is said to be almost imperceptible.

The Val de Travers Asphalt Pavement. Company have received instructions to lay the courtyards and gateways of the New National Gallery with their compressed asphalt.

The Frost and the Roads.—We were glad to observe that the main thoroughfares in St. Pancras were this week, as also during the late frost, sprinkled with gravel in the early mornings; thus saving horses from the distress and accidents which too often prevail in the metropolis during the winter.

The Price of Gas.—The Cirencester Gas Company announce that the price of Gas will be reduced to 5s. per 1,000 ft. on the 1st of January next, with the usual discount of 5 per cent. for prompt payment. The Old Swindon Gas Company intend to reduce their price to 5s. 10d. per 1,000 ft. with the new year.

Opening of a British Workmen's Institute.—On Monday last, a British Workmen's Institute, to be called after the late Mr. Candlish, M.P., was opened at Monkwearmouth, in Sunderland, by Mr. Gourley, M.P., who was supported by Sir Henry Havelock, M.P., and other gentlemen.

New Protestant Church in Paris.—*Le Figaro* says that Sir Richard Wallace has purchased a piece of ground at the corner of the Rues de Morny and François Premier, and that a new Anglican church is to be erected. A square, handsomely decorated, is to front the building.

Saint Monday.—Dr. Boyd, preaching in Exeter, recently, calculated that the loss to the workpeople engaged in the woollen manufactures, the cotton trade, and the brickmaking trade, alone by "Idle Monday," amounted to 7,800,000l. per annum.

New Lecture-Hall and Museum, Cleveland.—The Cleveland Literary and Philosophical Society, Middlesbrough, has resolved to erect a suitable building for a library, lecture-hall, and a museum, in Corporation-road, at a cost of about 4,000l.

Ipswich Fine Art Club.—It has been determined by the members of the Ipswich Fine Art Club to hold an exhibition at the commencement of each year, the first exhibition to be held in January next. Mr. E. Packard, jun., is the hon. secretary.

Romsey.—A painted glass window has been placed in the Abbey Church, at the expense of Messrs. Edward & Henry Tylee, of London, in memory of deceased relatives of their respective families. The subjects are Christ receiving little children, and the Good Shepherd; the artist is Mr. Gibbs, of London.

Music Scholarships.—About a thousand pounds have been subscribed in Liverpool for the purpose of establishing scholarships in connexion with the National Training School of Music at South Kensington.

Woodcuts by Albert Dürer.—At Rio Janeiro have been discovered thirty-seven woodcuts by Albert Dürer, in fine condition, the subject being the Passion of our Lord, and dated 1524.

New Museum of Science and Art.—The object of Sir Stafford Northcote's visit to Ireland is said to be connected with the establishment of an extensive museum of science and art in Dublin.

Chew Stoke, Somerset.—A new rectory-house is to be erected at Chew Stoke for the Rev. J. Ellershaw. Mr. Wm. Chew Gilling is the architect. The tenders varied from 3,590l. to 3,150l.

Coalpit Shale Bricks.—Bricks of very fair quality are being made in South Staffordshire of coalpit shale, a material which proves well adapted to the purpose.

TENDERS

For Branch Bank for the Stourbridge and Kidderminster Banking Company, Worcester. Mr. H. L. Florence, architect. Quantities by Mr. L. C. Riddell:—

Jones & Allen	27,500	0	0
Dixon	7,390	0	0
Wells & Drew	7,534	0	0
Binman & Son	6,850	0	0
Walford	6,825	0	0
Everal	6,499	0	0
Collins & Collis	6,460	0	0
Wood & Son	5,313	0	0

For the erection of a new warehouse, Queen's-road, Bayswater, for Mr. W. Whiteley. Mr. J. E. Saunders, architect. Quantities supplied:—

Trollope & Sons	231,640	0	0
Higgs & Hill	30,840	0	0
Collis	19,785	0	0
Tarrant	19,504	0	0
Bowles	19,577	0	0
Merritt & Ashby	19,333	0	0
Brass	19,197	0	0
Elkington	15,200	0	0

The Builder.

VOL. XXXII.—No. 1664.

Retrospective.



LANCING backwards it will be seen, that during 1874, several of those subjects which, at the commencement of the year, menaced us with so many distinct centres of disturbance, have gradually sunk more nearly to the level of rational and useful discussion. In the matter which, perhaps more closely than any other, concerns the future welfare of this great country, namely, the relation between the labourer, in every department, and the employers and supporters of labour, while

the year has seen its fights and its struggles, they have resembled the waves of a sinking, rather than of a rising, tempest. The great experiment as to agricultural labour has not had the result that was anticipated by many. In fact, it may be thought that more good than evil has arisen from the agricultural contests of the year.

For while the farmers and employers of labour have had ample and unmistakable warning that they must, both in money payment and in general attention to the wants and comforts of those whom they employ, rather exceed than fall short of the bare demands of justice, the labourer has learnt much. He has been shown that all is not gold that glitters; that there is a crook in every lot; that the golden tales of the fairy lands that await him, if he can only cross the ocean, have an ugly reverse; that even migration from his own county to another, in which the rate of wages is higher, is not an unmixed advantage to the emigrant. While very much is yet to be desired on both sides, the prospect of a just, peaceful, and honourable adjustment of agricultural relations is brighter than it was. Meantime, none of us should close our eyes to the mode in which the engineer is throwing his sword, or rather his hammer, into the scene; we mean to the annual improvement and extension of labour-saving machinery applied to the purposes of agriculture.

A matter which has been almost more at heart with a large body of our friends and supporters than the labour dispute, we mean the sanitary question, has made, during the year 1874, a certain amount of progress. We take no merit to ourselves for foreseeing, at the commencement of the year, the turn which all public affairs were about to make. But we did see enough, as our readers will bear us witness, to counsel those of our friends who were eager to come to Parliament to make up for the loss of the great opportunity that had been thrown away by the draught of the last Sanitary Bill, that 1874 would be no time for sanitary legislation. Such, indeed, turned out to be the case. While fully admitting that very much remains to be done, we cannot but regard with satisfaction the evidence constantly accruing of the extension of knowledge of sanitary matters amongst the public at large. At times, indeed, we may regret to see points of pure theory, such as the question of "germs," discussed with as much heat as if great practical results depended on the imme-

diate adoption of one or other of the purely medical hypotheses. But if the matter be regarded in a practical light, the disputants are only renewing the case of the quarrel about the gold and silver shield. We know, and the public is clearly becoming more possessed of the knowledge, that fever is a constant attendant on neglected drainage. Whether that fever spring from "germs," conveyed in some manner from former patients, or whether it be a self-sprung malarial, to which the depression of vital energy, produced by the vapours of neglected drainage, mainly contributes, does not matter a single farthing to the sanitary engineer. His duty is simple and plain: he knows that pure water and pure air are requisite for health; and his labours to assure those requisites are in no way dependent on either a positive or negative view of the doctrine of "germs," nor can these requisites be allowed to stand over for the discussion of minute and possibly insoluble questions of vital chemistry.

One of the great subdivisions of the Sanitary theory, the prevention of the pollution of rivers, has been brought very fully before the public attention, at the close of 1874, by the Society of Arts. It is satisfactory to observe how, on this occasion, the divergent and opposing views of different sections of sanitary reformers were expressed with so much mutual consideration and respect. Exaggerated ideas of the value of the chemical elements of sewage have been tacitly abandoned, and it has been rather to the subject of the positive injury occasioned to our rivers and streams by converting them into sewers, than to the supposed loss of profit thus accruing, that practical attention has been turned. In the further efforts, in which we shall be happy to bear our part for this important object, we are anxious that these things should be borne in mind. The first is, that a well-devised system of irrigation is at once a sanitary facility, and a source of wealth. Secondly, the economic value of the rivers of the country as fishing grounds, if restored, is of a high order. Third, that any efficient dealing with the question must provide for the purchase and demolition of a considerable number of water-mills, which are the occasion, both of water-logging large areas, and thus rendering them unproductive, and of preventing irrigation in other districts, on the plea of the right of the millowner to the entire water power. The introduction of steam mills, which, in some places, occupy the very premises of the old and disused, or partially disused, water machinery, will facilitate that great engineering reform, than which few things will be more conducive to the public health.

In the special pursuits of the architect and the builder a general and active industry has met with but little check during 1874. We took occasion to show how steady and rapid has been the increase of some branches of this activity; we mean the erection of houses and the building and rebuilding of churches. Annual returns, on this latter subject, are greatly to be desired. Taking decennial periods, we have seen what is the average rate of increase; and in pointing out that the statement that we now build two churches, from foundation to spire, every week, is now under the mark, we show reason for the assertion that, at no period of history, have so many churches been built in one European country, within a year, as has been the case in England, in 1874. Restorations and renewals, which are not included in this goodly count, are at times even more important than are new buildings. *Apocryphos* of this subject of rebuilding we may mention the unusual case of the demolition of a church which had been entirely rebuilt within less than forty years; but in which the want of foresight had made no provision against the encroachments of damp, from the winter overflow of the river Wye, and in which heavy projecting galleries, instead of

adding to the available area of the church, destroyed the utility of those portions of the nave which they oppressed. We refer to the parish church of St. Nicholas at Guildford; where an enlarged and well-designed structure is now rising on the old site, including the interesting mortuary chapel of the ancient family of which Sir Thomas More was a member.

Amongst the details of ecclesiastical architecture, so far as literature is concerned, for which the year will be memorable, the foremost place must be assigned to the proposals for the decoration of St. Paul's. It was with much regret that we found ourselves compelled to oppose the projects of an able and eminent architect. The views which we put forward have, since, been advocated by other pens. The voice of the public has been so unmistakably in favour of our view of the matter, that the features which we condemned are now no longer under discussion.

The year 1874 has witnessed the beginning and the end of two characteristic buildings, the demolition of which will yet further change the face of London. Northumberland House is dismantled, and in course of destruction, and Temple Bar looks like an invalid on his last legs. On the other hand, the long-orying scandal of Leicester-square has been removed. Our columns have described the garden which has replaced that disreputable wilderness.

Another important architectural feature of the past year has been due to the action of the various School Boards throughout the country. The various systems practised in America, Austria, Prussia, Belgium, France, Switzerland, Sweden, have all been studied by English architects, and some notice of the result was given in our number for the 30th of May (p. 451, *ante*), as well as elsewhere in our volumes. By the close of 1873, as there mentioned, eighty-six new schools were either completed or under weigh. The number of 800 children was proposed as that for which it was usually most desirable to provide in one school, in order to avoid the necessity of the little creatures having to walk too long distance from their homes. Attention may be recalled to the fact that, in Sweden, gardening forms a part of the educational system.

Of the public and private buildings completed or commenced in 1874, we have, from time to time, given descriptions, and, frequently, views. Among these we recall our notices of St. Stephen's Club, Westminster,—Mr. John Whichcord, architect; the National Training School of Music, Kensington,—designed by Lieut. Cole; the block of buildings, comprising Hotel and Shops, adjoining the Holborn Viaduct,—Mr. E. Evans Crock, architect; the New Billingsgate Market, fronting the river Thames, now being erected by the Corporation of the City of London, from the designs of Mr. Horace Jones; specimens of street architecture at 43, Chesapeake,—Mr. R. L. Roumieu, architect; and at 74, Cornhill,—Mr. Thomas S. Smith, architect; these are metropolitan buildings. In the provinces we may recall the restoration of the church of St. Mary Redcliff, Bristol, of which we gave a view; Nutfield Priory, built for Mr. Joshua Fielden, M.P.,—Mr. John Gibson, architect; the Manchester Aquarium,—Mr. M. Sænor, architect; the Mortuary Chapel of Mr. Digby, of Sherborne Castle, erected in the cemetery of Sherborne, Dorset, of which we figured the portal, the design of the late Mr. W. Slater; the Star and Garter Hotel, Richmond,—Mr. C. J. Phipps, architect; the Manchester Conservative Club-house,—Messrs. Horton & Bridgford, architects; the Reredos in Exeter Cathedral, which has been the subject of so much litigation,—Sir G. G. Scott, B.A., architect; the Reredos, Worcester Cathedral, by the same architect; and the Memorial Pulpit, Peterborough Cathedral,—Professor Barry, R.A., architect. Out of England we have had to mention the new Clock Tower at

Delhi,—Mr. E. J. Martin, architect; the Public Works Offices, Bombay,—Col. St. Clair Wilkins, R.E., architect; as well as the design by Mr. Thomas Tilly, for the New Court House and City Hall, Chicago. We have also reproduced some choice examples of foreign architecture, such as the graceful Tower of the Protestant Church at Breda, finished late in the fifteenth century; the church of St. Thegonnee, Finisterre, the most perfect example of a Breton church; where the churchyard includes also a "Calvary," triumphal arch, ossuary, and Cemetery Chapel; the dream-like pile of the Abbey of Mont St. Michel, which looks like a creation by Gustave Doré; and the Choir of the Cathedral of Tournay, a noble work of the thirteenth century; and the rich and varied details of the exterior of the church of Wetzlar, in Germany, probably dating from the twelfth century, and now in a dangerous condition; while on the subject of ecclesiastical buildings we must not forget the Bells and Carillon-machine of Worcester Cathedral.

In regarding the efforts made to spread, in this country, the knowledge of foreign art, whether fine or industrial, we may recall the fact that our predictions have been fulfilled by the announcement that the International Exhibition of 1874 was the last of the proposed "perpetual" series. Thus a renewal, at proper intervals, of the invitation of Europe to send us specimens of her workmanship we look forward to with much more satisfaction now that the undue strain of constant effort is taken off. Meantime, various matters have been suggested, for which the unoccupied galleries at South Kensington might afford at least a temporary home. We hope that in discussing them it will not be forgotten that the light obtained within them is especially favourable to the display of sculpture. No public building exists in the metropolis which is so advantageous for this important object. Many of our finest pieces of sculpture are now presented to the public under circumstances as favourable to their effect as are the footlights of the stage, when glaring on the features of an actor who approaches too closely to the reversed illumination. If sculptors of all orders, from the artist in marble to the delicate craftsman who produces such exquisite reliefs for the master-pieces of Messrs. Elkington, from the carver of wood to the moulder of vigorous sketches in clay, could only be induced to come together, and form a sculptors' institute, here would at least be a favourable spot for their first exhibitions of their work.

Research into the art of the past has won a signal triumph in the discovery of the treasure at Hissarlik. It is possible that the impetus thus given to the labours of the archaeologist may prove even more important than the actual value of this discovery. In more than one direction we are turning back pages of ancient history that have long been considered to be altogether obliterated. We trust that we are only at the commencement of a brilliant epoch of discovery. In Palestine the year has not added to our knowledge so much of a purely architectural nature as did the work of 1873. But on the other hand the survey has been pressed forward swiftly, steadily, and exhaustively. Every vestige of building has been noted; every building of any importance has been accurately surveyed. The identification of the Old Testament sites has been pursued with very ample success; and enough of the work of Lieut. Conder has already reached this country to make it plain that the description given by certain critics of the Book of Joshua as a late, or fabricated, work, is about as sensible as would be the announcement of an opinion that Domesday book was got up by Oliver Cromwell. The identification of the walled and levelled areas at the three historic points on which the Tabernacle was successively reared, during the 480 years that preceded the erection of the Temple of Solomon; and the discovery of the walled block, on the lofty summit of Kum Sariabeh, which Lieutenant Conder identifies with the site of the memorial reared by the two and a half tribes on the return to their transjordanic possessions, in the year 1486 B.C., are striking instances of the success with which the sounding line of patient research can be thrown back into the depths of the historic past.

The memorable shock sustained by the north-western district of the metropolis from the explosion of a mixed cargo of petroleum and gunpowder on the Regent's Canal has awakened serious attention to the defective state of the law as to the storage and transport of large quantities of explosive substances through cities

and towns. The danger had, indeed, been pointed out clearly before; but the warnings had been neglected by the public, and thereby the Legislature of 1875 will, it is to be hoped, be led to see some proper regulations introduced on this subject. In its discussion it would be well to bear in mind that the observed effect of the damage caused by explosions in Continental towns is no measure of the ruin that would be wrought in our own. In many, if not most, parts of the Continent, and eminently in all such localities as have experienced the shock of earthquake, the strength of the houses is far in excess of that commonly thought sufficient by our builders. Meantime, applications have been made to the courts of law for redress, as against the Canal Company,—a fact that may possibly afford a safeguard to the public more speedy, if not more effective, than that which is demanded from Parliament.

The question of the supply and storage of water, and the provision against drought,—one that has often received earnest attention in our pages,—has been brought prominently forward by the Society of Arts, towards the close of the year. It is one to which we shall probably have occasion to revert in the year about to open.

After a delay which the voluminous and complete character of the information just supplied to the public goes far to justify, the reports of the Great Vienna Exhibition of 1873 have been issued in four bulky volumes. We have had nothing of the like importance since the reports of the last Exhibition at Paris. It is gratifying to observe the high testimony borne on all hands to the ability and energy of Mr. P. C. Owen, the secretary to the Commission. The report, which bears the signature of H.R.H. the Prince of Wales, followed by fourteen other well-known names, attributes to the "tact and indefatigable industry" displayed by Mr. Owen, "in no slight measure, the successful issue of the labours" of the Commission. "We have reason to know," it concludes, "that the high opinion which we have formed of Mr. Owen is shared by all those with whom his official position brought him in contact."

Finally, glancing at the literature of architecture, as brought before the world in the past year, we think that there is reason for some satisfaction. The unmeasured and ignorant attacks that have been made, in quarters to which we have felt it proper to direct attention, on the state and on the members of the architectural profession, have received, in many instances, a reply that has not been the less conclusive from its tacit and unruffled character. On the other hand, let us all remember the ancient wisdom that teaches us that it is lawful,—and *his* means something more than merely allowable,—to learn from a foe. In that careful and intelligent study, both of the example and of the principles of the great architects and artists of the past, which is yearly being rendered more facile for those of the present, lies a more rational and hopeful ground for expecting a steady and satisfactory progress than in the use of rhetorical antitheses, or, indeed, of plain-spoken abuse, as an element of reform; or in hysteric appeals to the "inspired workman" who has yet to be discovered. We have seen with how sustained and lengthened a stride the building of the year 1874 has added to the national wealth and picturesque beauty of England.

We heartily wish our readers, now more numerous than at any former time, a happy new year.

TEMPLE BAR AND THE NEW LAW COURTS.

THE further discussion of the ultimate fate of Temple Bar, and the prospective re-arrangement of the locality, at the recent meeting of the Court of Common Council, brings the question forward in a form of so much importance that it may be well to consider it in some of its artistic and other bearings. The resolution of the Council was certainly a wise one,—to do nothing until all the aspects of the matter could be viewed in relation to the different interests to be consulted, the concurrence and combined action of three public bodies, at least, with that of private owners, being required upon a definite and well-considered plan to carry out satisfactorily what may be made a fine public improvement, not less from a utilitarian point of view than from an architectural one; presenting, as it does, an opportunity for obtaining a *coup d'oeil*, which it is to be hoped may not be

lost or spoiled, as has so often been the case with our public works.

The question cannot be viewed apart from the New Law Courts, which, as was pointed out, will be set back 10 ft. from the present line of frontage, and it seems to be taken for granted that there will be some widening of the thoroughfare on the opposite side (the desirability of which cannot be doubted), and the consequent re-building of the elevations. These considerations alone virtually settle the question of the Bar in its present site and form, to say nothing of the incongruity of its architectural character with that of the New Law Courts, and we can scarcely bring ourselves to believe that the whimsical design referred to at the Court,—and which was previously before the public,—of hoisting the Bar over an archway spanning the thoroughfare, can have been received with favour in any serious sense. One fact seems to have been entirely overlooked, that the Law Courts buildings will run *eastward* of the present line of Temple Bar some 80 ft., so that it is difficult to see how any such design as the one referred to could be carried out without interfering with the Courts, not to allude to the wonderful architectural combination which would be created by the contrast of the Gothic style of the Courts and the Classic,—if such it must be called,—of the arch with the Bar at the top! The suggestion in connexion with this plan of making it a bridge of communication between the Courts and the Temple for the use of the public and the legal profession is not a new one, it being common to some of the designs sent in at the Law Courts Competition, and which, if properly carried out contains the germ of what may prove the best thing to be done.

There seems, then, to be no alternative to removing the Bar from the widened thoroughfare and leaving the latter entirely open (which would be preferable to any attempt at retaining the present structure in any shape, form, or combination), or such an arrangement in connexion with the New Law Courts as would be at once an improved substitute for the Bar should the City authorities ultimately determine to preserve their boundary,—provide for all the facilities of a bridge of communication in the best form, and be in itself an architectural combination of a fine character. Our readers will remember that at the time of the publication of Mr. Street's amended designs we were unable to offer them that unqualified approval which we could have desired, and that we then gave our reasons for thinking that they fell short of the dignity and importance which the character of the buildings demanded,—the Strand front especially,—as wanting cohesion in the general design, as well as here and there having features largely open to emendation, and this objection we must reiterate. We were, however, and are sincerely anxious for the artistic success of the buildings, and if, as has been predicted, the Law Courts are likely to be the last public buildings erected for some time to come of much importance in the Gothic style,—the tide having turned again in favour of some forms of Classic,—it is the more incumbent that no opportunity should be lost for rendering them as satisfactory as the national pride can desire. It is for this reason that we think the question of Temple Bar affords a favourable opportunity for the reconsideration of some points in connexion with the New Law Courts, as to which it is now well known that the architect is suffering from the hampering effect of a false economy, at the dictate of authority, and has been compelled to sacrifice features of importance. And here it may not be amiss, generally, to say that if the official history of our public buildings could be written, it would be found that when the outcry has been loudest against an architect, it may, as a rule, be taken for granted that it is more his misfortune than his fault, and that he is pretty well the helpless victim of official influences and interferences, which not only dishearten the architect, but too often burke the fairest features of his work. There is hardly a public building which would not afford some instance of this, and notably those of most modern erection. In regard to the Law Courts, the relinquishment of everything in the shape of a commanding tower,—one such having been proposed for the north-west angle of the buildings,—was a misfortune architecturally, and not less so, and with far less reason, was the giving up of the *fiche* or stone lantern to the central hall, such a feature being in every sense wanted, both externally and internally; and it is to be hoped that this will be so perceived that the decision to expunge

it may be reversed by Parliament. There is, however, a tower left to the architect, and it is this which forms the point of connexion with the Temple Bar question. In the discussions as to the Bar, and the comments of the press, it seems to have been overlooked that this tower will extend within the City boundary east of the position of the present Temple Bar, or as nearly as possible be in a line with it. What, then, we would suggest is that the architect, on the basis of a well-matured plan between the authorities and the parties interested in the widening of the thoroughfare and the rebuilding of opposite or contiguous elevations—should be allowed to re-design his tower as a more commanding and important feature for obtaining greater cohesion for his building as a whole, and thus, with the *façade* to the central hall above alluded to, redeeming it from the scattered aspect which such an assemblage of buildings must present without dominating portions of an imposing character. In connexion with this tower, and it might well be, as issuing from it the proposed substitute for the existing Temple Bar could be arranged in the shape of a handsome Gothic bridge spanning the Strand and carrying over it a gallery communication, or continuous corridor, it being essential that it should be a covered way, not open to the weather, as was the case in the plan above alluded to. Such a communication has all along been regarded as likely to prove a great boon to the legal profession, and frequenters of the Courts, and it could certainly be made both internally and externally a striking architectural feature in combination with congruous elevations and surroundings, which ought to be carefully attended to. We cannot but think that much would be gained to the architecture of the Courts if these suggestions are adopted, although some alteration in the centre of the *façade* would still require making, and the question of Temple Bar would thus be met in a manner both utilitarian and artistic in a considerable degree; besides giving both to the City proper, and London generally, an architectural combination of which it does not now possess an instance. Either some such plan as this must be adopted in a style accordant with that of the Law Courts, if any substitute for Temple Bar is to be provided, or the idea should be wholly abandoned, and the thoroughfare left entirely open; for it is monstrous to suppose that any such incongruity as the thrusting up of Temple Bar in the way suggested, or any similar antagonism of style and plan, could possibly be perpetrated, accustomed, as we so ruefully are, to every kind of *fasces* in connexion with our public works.

ON "THE HOPE OF ENGLISH ARCHITECTURE."

ROYAL INSTITUTE OF BRITISH ARCHITECTS.*

The *Quarterly Review* has informed the world that, in old churches and cathedrals, the design was obviously done by the workman; in fact, that there is no record of design at all.† This is a strange error. Under the word "Drawing," in the "Dictionary of the Architectural Publication Society," is a list of the earlier designs and drawings scattered about Europe. On the 19th of November, 1860, Mr. Burges read a Paper‡ upon the subject to the members of this Institute. In it he said, "that nothing whatever is known of the architectural drawings of the Greeks and Romans. The *lapis Capitolini*, containing a plan of Rome, are simply inscribed in marble, and formed anciently part of the pavement of the Temple of Romulus and Remus; and the light and beautiful architecture painted on the walls of Pompeii was never resolved into materials. Our series of drawings, then, opens with the Monastery of St. Gall, now preserved in the library of that establishment. The plan, which is drawn in thin red lines upon a large sheet of parchment,—with inscriptions all over it, showing the uses of the different parts of the building,—was sent (as one of the said inscriptions informs us) for the use of the Abbot Gospertus,§ by some anonymous friend, who is supposed to have been Eginhard, the son-in-law of Charlemagne, and who held the office of prefect of the royal buildings. The plan presents us with a

very complete monastery, with its great church and accompanying buildings. The red line not only seems to mark the external and party walls, but also to indicate the furniture,—such as benches, tables, stoves, &c., requisite to each building. Certain figured admeasurements enable us to form some idea of the sizes of the various parts. A view of the church and monastery of Canterbury, contained in the illuminated Psalter of Eadwin, is preserved at Trinity College, Cambridge. It is curious as showing the complete development of the practice of drawing elevations upon plans, as at St. Gall. In all probability such documents would not be very common; and, when the work was done, the erasing knife would be brought into use, and the parchment, which was very valuable in those days, would receive a new employment. That this was the case, we know, from the discovery, made by M.M. Varin and Didron, in 1838, of a design for the west end of a cathedral, besides several details, which they found under the writing of a manuscript containing a list of the deceased members of the cathedral chapter of Rheims." The last entry was dated 1270. The drawings, says Mr. Burges, had been first washed out, then scraped over, the lines obliterated with a knife, and, finally, the parchment was cut into leaves.

Most archaeologists have examined the celebrated sketches of Wilars de Honecourt, an architect of the thirteenth century, the *facsimile** of whose sketchbook was published in Paris under the superintendence of M.M. Lasne and Quicherat; and a translation of it, edited by Professor Willis, was published in London in the year 1859. Mr. Burges remarks a peculiarity of Wilars, which was, "that when he copied any executed work, he copied it not as he saw it, but with variations of his own, and as he would execute it himself." In his remarkable sketchbook, Wilars de Honecourt wrote under a particular drawing, "This shows the elevations of the chapels of the church of Rheims; like them will be those of Cambrai, if they be built." Now the sanctuary of Cambrai, the construction of which was directed by Wilars de Honecourt, was destroyed at the great revolution; but in 1824 the architect of the city, M. Aimé Boileux, was enabled to make a complete plan of the foundations, and this plan coincides exactly with that given in the MS. of Wilars de Honecourt. Against another sketch is written, "This is one of the windows of Rheims; when I drew this I was under orders to go to the land of Hungary." Wilars de Honecourt was the contemporary of Peter de Corbie, another master of the thirteenth century, who directed the construction of several churches in Picardy. They composed together a church upon an original plan, which is described by Wilars in the sketchbook as "a church with a double circumscinding aisle, which Wilars de Honecourt and Peter de Corbie contrived together." During the middle ages, in parts of Western Europe, a building called *de l'œuvre* was attached to large religious edifices, which was used by the architect and the master-workmen; but the title of architect was not given to an artist engaged in the direction of building work until the sixteenth century. He was called the *maître de l'œuvre*,† or master-of-the-work—a much more positive appellation than that of architect, which means only arch-workman; for by *œuvre* was meant everything movable and immovable in a building, from the foundations to the tapestry and furniture. The *œuvre* of Notre Dame, at Strasburg, has preserved the Mediaeval custom; and, there, may still be seen a part of the designs upon parchment, which served for the execution of the portal, tower, spire, north porch, throne, and organ case. Among the drawings are some which date from the last years of the thirteenth century; some are only designs which have not been executed, others are details prepared to be worked out full size upon the ground or against a wall, exactly as is now done by the master-workmen in France. There are plans of different floors of the tower and spire which date from the fourteenth century; and M. Viollet-le-Duc adds that these are drawn with a knowledge of line, a precision and judgment of projection, which give a high idea of the science of him who drew them.

* In the Institute Library, where it may not be inopportune to add, almost every important work upon Architecture published in Europe is carefully stored; and it is, perhaps, not generally known that any amateur with a note from a member can make use of it.
† Article "Architects," M. Viollet-le-Duc's Dictionary, page 118. In the French portion of Hamilton and Legros' Dictionary, the churchwarden's pew is called *œuvre*, a parish vestry-board is also called *œuvre*, but the more modern designation of the latter is *fabric*.

There is a curious document extant of the fourteenth century which affords precise information concerning an architect's functions, and in which there is mention of two Frenchmen being employed to direct the construction of Gerona Cathedral in the north of Spain; this is a translation:—

"The Cathedral Chapter of Gerona in 1312 decided to replace the old Romanesque church by a new one, larger and worthier. The works were not immediately begun, and two administrators of the work, Raymond de Viloric and Arnaud de Montredon, were appointed. In 1316 the works were in full activity, and the name of an architect, Master Henri de Narbonne, is inscribed upon the capitular register. He died, and his place was taken by one of his countrymen, named Jacques de Favarris, who engaged to come to Gerona from Narbonne six times a year, and the Chapter guaranteed him a salary of 250 seldos a quarter."

This positive evidence of the existence in the fourteenth century of "a class of men who were not workmen, but really and only superintendents of buildings," has been referred to by Mr. Street in his valuable book on "Gothic Architecture in Spain."‡ The *Quarterly Reviewer* has quoted both Mr. Street's words and part of the extract from the Gerona Register, but, as may be readily imagined, he attaches little importance to either. Mr. Street also refers to one Matheus, master-of-the-work at Santiago Cathedral, from 1168 to 1188, who, by a warrant issued by King Ferdinand II. in 1168, was granted an annual pension for the rest of his life; and this, as Mr. Street remarks, proves "somewhat as to the degree of importance" he attained in being thus recognised by the king. The title of "Fabricator" in Spanish inscriptions is sometimes, though rarely, given to the architect, who is usually described as "magister operis." At Rheims there is an inscription referring to the cathedral, and also to a neighbouring church, which runs,— "Ci git Robert de Coucy, maistre de Notre Dame, et de Saint Nicaise, qui trépassa l'an 1311." In the Baptistery at Pisa, in Italy, there is an inscription,— "Diotisalvi magister hujus operis." But in England, according to Mr. Wyatt Papworth,§ the term master-of-the-work appears to have been seldom employed; and when used, it referred rather to the officer called in Spain and the South of France, "operarius," than to the architect. And here I would say a word about the title, "operarius." In the extract from the register of Gerona, which I have just quoted, the two administrators of the work are called "operarii"; and twenty years afterwards, in 1340, the Chapter of Gerona appointed two of their own body,—one an archdeacon and the other a canon,—to be the "operarii" of the works. In the celebrated Museum of Toulouse there are preserved several stones bearing inscriptions,—one recording the name of the Canon Arnaud Rufus, who bore the title of "operarius" of the Chapter, and who died in 1251; and another of Bernard de Succo, priest, canon, and "operarius" of the Chapter of St. Sornin, who died in 1201. There is also in the same museum, No. 681, a bas-relief in white marble, consisting of six figures and the following inscription:—"Anno Domini MCLXXXII, XVI kalendas augusti Illustrissimo Philippo regi Francorum reverendissimo et valentissimo Bertrando episcopo tolosano obitu magister Amyericus canonicus, cancellarius et operarius ecclesie tolosane cujus anima requiescat in pace. Amen." There is also a seal (No. 1,034). It is of copper, and bears a head of the Virgin; St. Peter standing and holding a key; before him is a monk on his knees, his hands clasped, and his head crowned with a star of eight rays. The inscription is,— "† S. DOMINI OPERARI ET MOACHI EXIEN" (*Seal of Robert, ouvrier et moine d'Esses*). Now the *Quarterly Reviewer* complains that Mr. Street gets confused with hisomenclature; so I think it may fairly be inquired of the former as to the meaning he attaches to the Latin word *operarius*. Literally it means a workman, a slave bred to hard work. Are we to suppose, then, that in the thirteenth and fourteenth centuries archdeacons and canons contributed manual labour, as well as clerically

* By Mr. William H. White, Fellow. Read at the Ordinary General Meeting, held on Monday, the 14th instant. See p. 1044, ante.

† State of English Architecture, p. 302.

‡ Transactions: Royal Institute of British Architects, 1860—61.

§ This Abbot began to rebuild the church and monastery in 823.

* Extracted from the register entitled, "Curia del vicariato de Gerona, liber notularum, ab anno 1320 ad 1322," folio 48. (Archives, Gerona Cathedral.)

† "Gothic Architecture," ch. xli. G. E. Street, R.A. Murray, 1865.

‡ See a paper "On the Superintendents of English Buildings in the Middle Ages," by Mr. W. Papworth, Institute Transactions, 1860—60.

administration to the work? Yet upon the significance of terms, upon mere words, which probably had a different meaning in the Middle Ages, the Reviewer has built up an entire theory, and supported it with pages of assertion. If the records of the Mediæval artists disclose principally the names of master-workmen, it simply proves that such men existed; if those of the architects have not been preserved, neither have those of the poets to whom the thirteenth century owes the "Nibelungen Lied," the "Histoire de Charlemagne et Roland," and a host of French romances composed at the beginning of that century. Six hundred years hence Indian archaeologists, exploring the ruins of the English city of Bombay, will possibly find the names of engineer colonels cut upon old stones; and, comparing them with similar entries in ancient documents, they may ascribe to them the authorship of more than one building, the original designs for which were made by Sir Gilbert Scott, Mr. Roger Smith, and other qualified members of the Institute of British Architects.

M. Viollet-le-Duc says that the documents which throw any light upon the exact duties of an architect are not anterior to the fourteenth century; and at that time he was "un homme de l'art que l'on indemnise de son travail personnel." People who wished to build provided materials and hired workmen. Neither estimate or valuation of the work, nor the administration of the funds, appears to have concerned the architect. But at the end of the fourteenth century the architect had lost the elevated position he held during the previous 200 years. In the fifteenth century each corporate body worked in its own way, apart from any general direction. The decline of Gothic art had begun; although the hands of the artists had not lost their cunning, the intellect which had formerly directed them was gone. When the Chapter of Rheims* repaired the cathedral after the disastrous fire which destroyed the upper portion of it in the reign of Louis XI., a *procès-verbal* (dated 1492) was drawn up, in the presence of notaries, of the repairs necessary to be done; and in this agreement seem to have been made with four master-carpenters, five master-masons, two master-slaters, one smith, two master-founders, two joiners, and two master-organists, all living at Rheims. The advice of the different trades was taken separately, and the central authority appears to have been vested in certain canons, one of whom is called master-administrator; and others are designated as having charge of the repairs. No architect is mentioned; and M. Viollet-le-Duc says of what was then done,—“The monstrous results of that disorder are to be seen at the present day. The beautiful harmony of that admirable church was destroyed, and its existence endangered.” Thus when Philibert Delorme appeared upon the scene it was perfectly natural that he should express his contempt for the confusion, want of harmony, and defects of proportion which characterised the Gothic buildings of his early days.

Thus, it has been seen, that before the end of the twelfth century the masters-of-the-work were, so to speak, ecclesiastics; those who dotted Western Europe with buildings issued from Cluny and the houses dependent upon it; and that the fame of Cluny spread to the very heart of Italy. After the twelfth century the masters-of-the-work were laymen; and some were sent from France to Hungary and Spain. “I have been in many lands,” wrote Willars de Honecourt, “as this book shows.” In another case positive evidence has been produced of an administrative council; and of an architect from Narbonne, in France, employed at Gerona, in Spain, not to follow the daily execution of the work, or to overlook the workmen, but only to direct the design, details, &c. How, then, did all these men make themselves understood in the different countries in which they worked? It is difficult for an architect to explain his ideas to a subordinate, even in his native tongue; it is still more difficult in a foreign one. Was there really a common language, and was it Latin? Not improbably the masters-of-the-work wrote and conversed in Latin, but to the ordinary workmen of France and England, Spain and Hungary, there is only one language which they could have used, and that is the universal language of the pencil and the brush.

If the *Quarterly Reviewer* is sometimes right in his premises he is generally wrong in their

application. It is incontestable, as he says, that “for three centuries there had been a gradual moderate improvement in the architecture of Greek temples; but under the influence of Phidias this at once rose to perfection;”† but this result was attained from the fact that there had been three centuries of experience, not because Phidias used the chisel, and Ictinus or Callicrates left no record of their drawings. It is incontestable that “owing to the great supply of illustrated works, the means of knowledge far surpass the power of analysis in either the professional or the public mind.” But who has made the books that are worth anything to architects? Is it not the architects themselves? It is incontestable that the cathedral of Cologne is inferior to those of Rotten, Rheims, or Paris, but the finding of an ancient vellum drawing of it does not account for its demerit; it simply proves that while some of the noblest Mediæval buildings were still new, it was the custom to make drawings of them, and, by implication, for them. The art of drawing is older than the art of writing. Man conversed by signs until he learnt to express himself in words. The tombs of Egypt are covered with hieroglyphics, which are drawn, not written. The forms portrayed in Greek ornament prove that the architect then used the brush much in the same way as his modern representative uses the pencil. Painting upon glass is mentioned by historians from the third century of our era. Manuscripts were illuminated in the days of Charlemagne. Because there is no original plan or diagram extant of the Parthenon, therefore that building was made with hands and not heads! Surely such a supposition would be marvellous in its absurdity had not the Psalmist, while singing the praises of the great Architect of the universe, lamented—The fool has said in his heart, there is no God.

As I told the members of the Institute on a recent occasion, and no contradiction has yet been offered to my statement, the building disasters in Bengal proceed from the absence of any central authority responsible for the design of a building, and the difficulty of procuring lucid and scientific drawings. In my journey across a part of India, I noticed not an absence of architectural features, but an unskillful combination of materials, unscientific planning, and a misapplication of the principles of construction. Building disasters are not frequent in Madras and Bombay, because the principal works in those presidencies are carefully studied by architects, some of whom are Fellows of this Institute. No comparison is possible between the city of Bombay, with its continuous line of splendid buildings, and Calcutta, which still boasts of the tottering “palaces of Chowringhee.”

The Reviewer is eloquent upon “the propensity to scrape and daub,” which, within the last thirty years, has “spread like a disease among the clergy.” He says that, instead of appealing to architects, “they should have sought the village mason, carpenter, and smith.”‡ As if there were any village in England thirty years ago that did not contain traces of the combined efforts of clergyman, mason, carpenter, and smith! It may be useful at the present time to speculate upon the direct patronage of workmen by the committee now sitting for the completion of St. Paul's. Imagine a sub-committee of “operarii” to be formed of two docile members and two irreconcilables for the purpose of imparting to the foreman at the New Wellington Monument the probable intentions of Sir Christopher Wren. Imagine the probable state of that workman's mind when he learnt, that if Sir Christopher Wren, who died in the eighteenth century, had ever visited Italy, he would have adopted the style of the best Italian artists of the sixteenth! The success of direct patronage in such a case is doubtful, because in the presence of a divided committee the province of an architect is that of a mediator. He must possess tact as well as education; he must be patient; he never answers till a member cools; silent, and submit to misrepresentation in pamphlet and review. It may be questioned whether, under similar circumstances, a master-workman would acquit himself better than Mr. Burges. And I take leave to correct a false impression of this architect, which the public may have formed from reading the *Quarterly Review* and other minor publications. Mr. Burges is not a “sketching draughtsman,”—not clever, in a professional point of view, with his “pencil and bow-pen.”*

His innumerable drawings, made during long tours in different and remote parts of Europe, are not pictorial effects; but rough diagrams, drawn with pencil-stamps, to scale with a foot-rule, on the tops of ladders and in dark corners of vaulting and roof. They resemble rather the sketches of a Mediæval architect than those of a pupil of a school of art. True, like Willars de Honecourt, he has a vile habit of drawing the human figure, and this must be left to the generous forbearance of reviewers.

A practical illustration of the direct patronage of workmen by the public can be seen in the new building now used for the *Times* newspaper in Queen Victoria-street. It is the boast of those concerned in its erection that no educated architect has meddled with the design; and, I confess, the body of the work is unobjectionable,—successful, even,—but like a writer who, ignorant of Latin or French, sometimes interlards his composition with an irrelevant quotation from Horace, or a mis-spelt couplet from Molière, the amateur who sketches architects has adorned his building with an architectural feature. Those who have visited Athens know that, though the examples extant of Greek art are small, the Parthenon is almost colossal. The span of the pediment is a little more than 100 ft.; and its tympanum was filled, but not crowded, with sculpture, consisting of twenty human figures, 8 ft. in height, with an enormous eagle, horses, and chariots, with many symbolic and other attributes. That portion of the new *Times* office crowned by a pediment is more than 50 ft. in width, and consequently the span of its pediment is about half the span of that of the Parthenon. The pitch or inclination of the former is more than double that of the Parthenon, yet the surface of the tympanum in Queen Victoria-street is completely covered with one clock, one sythe, a branch of palm-leaves, a branch of oak-leaves, and the representation of a parchment roll, upon which are the words,—“Time past,” “The Times,” “Future.” But, it may be urged, the printing-offices are colossal, and the roof over them is consequently of enormous span; therefore the pediment, or vertical end of it, is necessarily determined by the section of the roof. Now in this case the real roof is hidden from the street by a small parapet, and the entire pediment rises above it,—a mere perpendicular continuation of the front wall,—a backless structure, senile in theory; practically a sham. I admit that there are many members of the profession, supposed by the public to be qualified architects, who have perpetrated solecisms as monstrous as this one, which represents the combined efforts of an erudite amateur and a master-workman. Unfortunately, many well-meaning people, besides *Quarterly Reviewers*, believe that the simple workman is, perforce, a simple-minded man,—that, untainted by the conventionalities of life, he is naturally unaffected. But refinement of body and mind, even when inherited, requires culture. People who lecture to the working classes should remember to tell their “simple” audience how the history of the world and of human nature records that perfect simplicity is the product only of the highest cultivation.

That the profession is of “the nature of an imposture” and that English architecture is “an artistic inferno and a national disgrace,”* is at least amenable to argument. Some of those guilds or corporations which, in France, were founded at the close of the twelfth century still exist in the City of London. There is still a Company of Barbers, one of Spectacle-makers, another of Tallow-chandlers, but the names of few living operatives are inscribed upon their books. The masons are still free and accepted, yet few working masons could gain admission into a modern lodge. But the guild of British Architects, though of modern origin, follows the custom of an earlier age. The founder of the Institute was a practising architect, and he is honoured by the older and kindred societies of Europe. The president is a genuine master-of-the-work; one of the secretaries is the hereditary possessor of a name associated with those of the men who have most contributed to the popular appreciation of Greek architecture; the other is an author of standard books upon art. The Fellows, with a few exceptions, are practising architects; and the cause of the comparative poverty of this corporation is due to the fact that none but honourable men and bona fide members of the profession are permitted to swell its ranks.

* “Histoire de Notre Dame de Beims,” Ch. Cxv. t. 1, p. 405, Daboies, Reims, 1861.

* “Hope of English Architecture,” p. 259.

† “State of English Architecture,” page 312.

‡ “Completion of St. Paul's,” page 369.

* “State of English Architecture,” page 304.

Nevertheless it cannot be concealed that the public, having had its attention directed towards some of the abuses of architectural practice, has sometimes visited upon the mass the errors of a few. The robust manners of Mr. Ayrton, and the muscular opposition to professional intervention which distinguished her Majesty's Office of Public Works during his career, were caught up by individuals, who have been ably represented by a *Quarterly Reviewer*. But since the fourteenth century there never has been a time when the English people more surely promised to imbibe the spirit of art than at present. The fact is palpable in the satirical attacks, made by amateur critics, from prime ministers downwards, upon the whole army of artists; in the affectation of archaeological excursions; in collections of bric-à-brac; and in the polite small-talk of drawing-rooms. Art, new to England, is now passing through the ordeal to which English science was subjected more than 200 years ago. The Royal Society was founded in 1660, and then, to quote Macaulay again, "it was almost necessary to the character of a fine gentleman to have something to say about air-pumps and telescopes . . . and even ladies broke into cries of delight at finding that a magnet really attracted a needle, and that a microscope made a fly really look as large as a sparrow." The truth is, Art is suffering from a superabundance of vigour. Dame Architecture is "in a plethora absolutely dying from too much health"; and this in spite of more than one *faux pas*. But the mistakes of the present must surely instil caution into the artists of the next generation. If, however, the principles of construction are not now uniformly respected, it is because they are not understood by the people; if the philosophy of architecture is only studied by a minority of the profession it is because it is ignored by the upper classes. Yet the ruling principle of every useful art was preached twenty-four centuries ago. "What," said Aristippus; "can a dung-basket be beautiful?" "Of course it can," said Socrates, "and a golden shield can be very ugly if the one be well fitted to its proper use and the other not." In the universal acceptance of the inseparable nature of beauty and utility has ever been, and must ever be, the true hope of all architecture.

ON THE ORNAMENTATION

OF THE ROMANESQUE, TRANSITIONAL, AND LANCET PERIODS IN THE NORTH OF FRANCE,

As exemplified in the Churches visited in the French Excursion.

THE ordinary general meeting of the Architectural Association on the 18th inst., was appropriated to the reading of a paper by Mr. Edmund Sharpe, M.A., who personally conducted the annual excursion of the members of the Association last August. In order to afford space for the large number of illustrative diagrams specially prepared from the sketches made by the members of the excursion, the lecture took place at Willis's Rooms, King-street, St. James's, instead of at Conduit-street. The meeting was very largely attended, the room being filled to overflowing.

Mr. Sharpe said that with respect to the drawings on the walls, they had been enlarged from the work done by the members during the excursion at his suggestion; and if it was agreeable to the Association, he would make the visit of a more permanent character by publishing the lecture as a work. As to the drawings, which adorned the walls, they were well adapted to be photo-lithographed, this art being of great importance to the architect. He was of opinion that the drawings were capable of being at once transmitted to stone, and he only waited for the sanction of those gentlemen who put their pens to paper, to have them photo-lithographed; he being happy to bear the whole cost of the process. By this means he trusted that he would produce a work, which would make this visit a more lasting record than the lecture in itself would be. Mr. Sharpe then went on to say that on Monday, the 17th of August last, a party of upwards of sixty gentlemen, of whom the majority were members of the Association, left a central rendezvous in the city of Paris, to set out, under his guidance, on a pilgrimage to the cathedrals and churches of the North of France. The experiment was looked upon by many as a somewhat venturesome one, and it was not without certain misgivings that he undertook the pilotage of so large a party of heretical

foreigners through a country in which, looking at the present state of public feeling in France, any slight act or speech of inadvertent licence might arouse the susceptibilities, either of the natives, or of the clergy, or of the police, and create for them difficulties, which might bring their excursion to a speedy close. It was on this account that, as a preliminary measure of necessary prudence, he applied to the French Minister of the Interior, to whom he explained the nature of their intentions, and the objects of their journey, requesting his formal authorisation of the passage of the party through the departments indicated. He not only very graciously accorded this authority, but he gave instructions to the Prefects, Sub-Prefects, Police, and the Government architects, to hold themselves at the disposal of the Association during the period of their stay in the several towns they proposed to visit, and to afford them all possible facilities. He also wrote to the three archbishops, the ten bishops, and the provincial clergy of the churches contained in the programme, for their permission to visit the churches, and to hold meetings, and to deliver discourses in them, at convenient hours. To all these applications he received, in every case, favourable answers, many of which were remarkable for the goodwill and courtesy they displayed. They had, however, not only to guard against the possibility of mishap, but also to provide for the actual human necessities of the party, in respect to board and lodging during their sojourn in Paris, and their peregrinations through the provinces, and also for their transport from church to church, where the railways were not available. This having been duly arranged for, he could say that on the whole he might safely declare that, whatever might have been the slight difficulties and drawbacks that were encountered, the entire excursion was thoroughly enjoyed by the whole party; and whatever might have been the lessons in architecture that they brought back with them from France, there was one that affected the every-day relations of social life, which the characteristically national politeness of their neighbors on the other side of the Channel could not fail to impress upon those who took part in occasional opportunities of Continental travel, such as these excursions presented. His lecture that night would be divided into two portions. In the first part he would, by the help of the diagram of the country they visited, follow their line of travel, and, in a brief and summary manner, describe to them the chief characteristics of the churches that they visited, indicating the different periods of architecture to which their chief works respectively belonged. He would then endeavour to trace out the progress of the art of carving in stone, during the three earliest periods of Medieval architecture, as presented to them in the works of the cathedrals and churches of the North of France during the eleventh, twelfth, and thirteenth centuries; and would conclude by offering a few general considerations which these typical examples of French work suggested to them, when they came to compare them with the contemporaneous works of their own country. In speaking of the three several stories into which the main wall of a church was usually divided vertically, he would call them (1) the ground-story; (2) the blind story; and (3) the clear-story. The first and last of these terms explained themselves; the middle one was that story which either screened off, or opened into the space that intervened between the vaulting of the side aisle and the wooden roof above it, and which was usually unlighted and dark. But in many of these French churches there were four stories, the additional story being a gallery over the ground-story, frequently almost as lofty as the ground-story itself, and lighted by an upper range of windows in the raised aisle-wall. Where this exceptional feature occurred, he proposed to retain for this lighted gallery the familiar term of triforium. The term "arcade" he confined to wall arcades in the side aisles and elsewhere. Then, in referring to longitudinal divisions of the main walls of a building, he would, instead of using the word arcade or bay, which had a double significance, speak of them as compartments. They found in France no architecture corresponding with the earliest English work,—the Saxon; but there was work which, although of an earlier type than the earliest Norman work, could be looked upon as nothing else than Romanesque. Under that general term, therefore, of Romanesque, he comprehended all the Medieval work that existed in the district, down to the first appearance of

the Pointed arch, which had certainly made its appearance in France, pretty generally in arches of construction by the year 1130, and, in exceptional cases, still earlier. They next came to that great and grand Transitional period, the tomb, as he had ventured to call it elsewhere, of the Romanesque, and the cradle of Gothic art. Of the prolific results of the inexhaustible fertility of invention, and rapidity of production displayed by the builders of this remarkable period, they had no greater proofs than those which were preserved to them in the cathedrals and churches of the North of France. The character of these works had a very strong family resemblance to typical works of the same period in other parts of Europe; and, together with a grace and beauty of its own, possessed in common with the former that breadth of design and boldness of construction which characterised the works of their period all over Christendom. He was disposed, then, to put down the duration of the true Transitional period in the North of France, as from 1130 to 1190. They now arrived at a point of time in the history of European art which was of the greatest possible interest to the architectural student. During the last ten years of the twelfth century, and the following first ten years of the thirteenth century, a style of building developed itself in England which produced remarkable results during the next thirty years of its existence in this country. This style of building was characterised chiefly by its elegant and luxuriant relieved foliage of conventional type, by a multiplicity of minute and deeply-grooved mouldings, by its high clustered shafts, and by its tall, narrow, pointed windows. Some persons persisted in calling this style of building Early English, although it had been placed beyond doubt that it was not the earliest characteristic English style, whilst others continued to call it First Pointed, although he had conclusively proved that it was not the First Pointed style practised in this country, and that the Pointed arch was, in fact, used in a systematic manner in English buildings for nearly half a century before the year 1190. He had preferred to designate this period, during which this style prevailed, by a term derived from its most characteristic and uniformly prevalent feature, namely, the tall narrow Lancet windows he had already referred to, and to call it the Lancet period. By whatever term, however, they might choose to designate this period, no one, he thought, would offer any objection to the limits that he had assigned to it—namely, from A.D. 1190 to 1245; or would hesitate to declare it, with him, to belong to that great phase of European art which they called by common consent, Gothic; and to be, as he held it was, the first completely developed style of that phase of Medieval art. For, nowhere in Europe, with a single exception, did they find those two chief principles—lightness and elegance,—which characterised Gothic work, so strongly pronounced, and so far advanced, as they were during the prevalence of the Lancet period in England. In Normandy, it was true,—and that was the exception to which he referred,—they found works which appeared to rival in these two respects the works of their own country; but these works were exceptional; they were not typical works of the country in which they were found, and were, in all probability, the production of men impressed with the influences they had seen at work on the opposite side of the Channel. If this be true, it was remarkable that, whereas in the eleventh century they received their architecture from Normandy, their builders should, within a century and a half, not only have completely emancipated themselves from the influences of foreign art, but have struck out for themselves. With the exception, then, of certain works in Normandy, he asserted that nowhere did they find, at the close of the twelfth and during the early part of the thirteenth century, any trace of that rapid progress in the direction which all European art subsequently took, as they did in England. The works of this period in the North of France differed so materially from that of the same date in England, and departed in all its leading features so little from the forms of the preceding Transitional period, that it appeared difficult, at first sight, to give it a distinct classification, or to fix upon features which might enable them to characterise it. There was one feature, however, which it possessed in common with their own contemporaneous work, which appeared to be sufficient for this purpose, it was the plain Lancet window, without tracery, which seemed to have been employed throughout the whole of

* Xenophon, by Sir A. Grant, page 113. Blackwood & Sons, 1871.

this short period; it was broader and shorter than their own, and it had been, in numerous cases, removed and replaced with large traceried windows. Until, then, some one supplied them with a better term, he would designate this period by the same term that he had adopted for their own contemporaneous period, and call it, for the present at all events, the Lancet period of French art. But although the French did not arrive as soon as they did at the true principles of Gothic art, it was astonishing, when once apprehended by them, how rapidly they gained upon the English, and how soon they passed the English in the race. Whilst English architects were still travelling on a line of their own, and lingering amongst the delights of the so-called Early English or Lancet work of Salisbury Cathedral, Rievaulx Abbey, and Ely Presbytery (the last of which was designed so late as 1235), their Continental neighbours were engaged in developing a new style which soon overran the whole of Christendom, which created prodigies of art in Europe, and in which Gothic architecture attained its climax. Many years before the Geometrical traceried windows of Westminster Abbey, Lincoln Minster, and Tintern Abbey had seen the light, the designs of Amiens Cathedral and St. Denis had been prepared, and he thought he would not be wrong in fixing the year 1230 as that of the commencement of the Geometrical period in France. He had no intention, however, of entering that vast region of Continental art which opened to them when they advanced beyond the middle of the thirteenth century, but would take the year he had just indicated as the limit of their inquiries that night, as it was, with a few exceptions, that of the illustrations which were upon the walls.

With regard to the excursion, the first day was devoted to the churches of Paris.—St. Germain des Prés, the chapel of the Hôtel Dieu, Notre Dame, La Sainte Chapelle, and the church of Montmartre. The nave of St. Germain des Prés was Romanesque, and chiefly interesting for the capitals of its piers, which were what the French called *histories*; that was, they carried carved work of figures of men and beasts, which was of that barbarous and primitive kind, that distinguished not only the earliest Romanesque work, but was more or less characteristic of Medieval sculpture, until they arrived at an advanced point in the Transitional period. Whatever interest, however, this carved work might have derived from its early and quaint character, was sadly disturbed by the manner in which it had been treated in modern times; for the church having been recently "decorated," the whole of their ignorantly-designed and clumsily-carved figures have been covered, or "picked out," as the modern decorators' phrase goes, with gilding, the rest of the capital being painted light vermilion. He left them to imagine the grotesqueness resulting from this kind of treatment, and the effect produced on the mind of the startled excursionist, when he was told that these gilt gingerbread figures were the work of the eleventh century. The whole church had been similarly decorated; but in the Transitional choir it failed to diminish the interest that the student must take in the grand columnar piers of the apse, with their richly-carved capitals covered with the characteristic foliage of the period. The Chapel of the Hôtel Dieu, formerly, he believed, called St. Julien des Pauvres, was a little gem of the Transitional period, with its parallel tripartite east end, and characteristic ornamentation. It was a church that was difficult to find, and still more difficult to enter, for it was never opened, except for the burial of paupers who died in the Hôtel Dieu. As to Notre Dame, it was impossible for him to do more in this hasty review, than to notice one or two points of interest in its history. The first building, of which there was anything left, belonged to the Transitional period, and was a grand design, which gave in fact its grandiose character to the entire structure, as they say it at present, although its external appearance had been so entirely changed by the rearrangement of the whole of its windows, by the addition of flying buttresses, with their pinnacles, and by the insertion of side chapels between the buttresses, not only along the side aisles, but round the choir and apse, as to give it, to those who first approached it, the appearance of a building of the thirteenth century. When, however, they entered the building and reached the crossing, they perceived at once, in the single compartment in each of its four sides, which adjoined the crossing, the true key to the whole design, each of those compartments, north, south, east,

and west of the crossing, retaining the original blind story and clearstory, and having been during all these alterations undisturbed, as being essential to the stability of the crossing, and the lantern that surmounted it. This grand old building, commenced towards the close of the Transitional period, the eastern end of it having been consecrated A.D. 1081, exhibited in its ornamentation, particularly in that of its pier capitals, that gradual advance of taste as they proceeded from east to west which was apparent in almost all works of great magnitude, especially in France, and revealed to them the fact that Notre Dame commenced in the Transitional period, and gradually carried on from east to west, was not brought up to its west end before the end of the first ten years of the twelfth century, and that its two western towers belonged exclusively to that period, which he called the French Lancet period. In an able article that appeared lately in the *Times*, the restoration of the whole of Notre Dame had been attributed to M. Viollet-le-Duc. This was a mistake, as that gentleman was only entrusted with the completion of the work after the death of M. Lassus, by whom the greater part of these works of restoration was designed and carried into execution. La Sainte Chapelle, independently of the fact that its architecture lay beyond the limit that he had prescribed to himself that evening, was too well known, and had been too often described to require any remarks from him. But he was disposed to suggest the consideration of the following questions to those who might happen to have seen it before it was restored, and since it received on its walls and on its windows the amount of beautiful coloured decoration that at present carried, had the value of the architectural effect of the building by its treatment in this respect been diminished or not? Did the coloured surface of the whole work too exclusively attract and fix their chief attention? Were they able, as well now as formerly, to recognise and appreciate the true form of the moulded and carved work of the building, and its natural effects of light and shade?

A NEW HALL FOR THE CURRIERS' COMPANY.

In the *Builder* of July 19, 1873, we gave a descriptive notice of a new hall then in course of erection in London Wall, for the Curriers' Company, and more recently we gave an illustration of the new building as completed. This structure, which involved a heavy outlay, and the "hall" of which is elaborately finished, has recently been sold by the company to Messrs. Rylands & Co., the extensive manufacturers, of Manchester and London, together with the whole of the company's adjoining property, with the exception of the site upon which another new hall is about to be erected. The existing new hall which has only so recently been completed, is to be demolished, and the entire site purchased by Messrs. Rylands & Co., will shortly be occupied by large warehouses.

The hall, which has been designed by Messrs. J. & J. Belcher, and who were also the architects of the structure about to be removed, is now in course of erection, and the memorial-stone was laid with ceremony by the Master of the Company last week. The principal facade of the new hall fronts London Wall. The style of architecture adopted is the Gothic, and the elevation will be entirely in Bath stone. The width of the frontage is 30 ft., and it will be a prominent feature in London Wall, being unusually lofty, terminating with an ornamental tower at the west angle, and a turret, of similar character, at the east angle. The west portion of the elevation projects considerably beyond the other part of the frontage, and the principal entrance is on the ground-floor of this part of the building, consisting of a recessed Gothic archway, the extreme width of which is nearly 12 ft. This is surmounted in the centre by an ornamental finial, with the shield of the company on either side, and two turrets on the extreme east and west sides of the archway. A special feature in the Gothic windows of the several stories, which are four in number, in addition to dormers, consists in the upper portions being filled in with stained glass, containing, amongst other devices, the arms and shields of several former masters, wardens, and benefactors of the company. The second story of the west side of the elevation contains a large projecting window, in three divisions, about 12 ft. in width, and

10 ft. high, at the foot of which there is a balcony, faced with six shields. The arms and shields of the company are also introduced, carved between the windows in each story.

The several apartments in the interior of the building are all commodious. The ground floor will be exclusively devoted to the business department of the company, and will consist of the offices and apartments of the secretary and officers, together with committee-rooms and waiting-rooms. The first floor, which is approached by a staircase, in carved oak, closely resembling the decoration and finish of the staircase of the existing hall, leads to the reception-room and grand hall. The hall is much larger than that of the building about to be removed, being 48 ft. in length, and 24 ft. in width, whereas the before-named apartment is only 33 ft. by 20 ft. The hall will be fitted throughout in carved oak, with a panelling of that material carried round the apartment. The hall will contain five large mullion windows, with ornamental heads, and in each window there will be seats or lounges. A mezzanine floor immediately above contains dressing-rooms, lavatories, and other conveniences, and a private staircase leads to a musicians' gallery at one end of the hall. The keeper's residence will be in one of the upper floors. It is arranged that the present hall shall not be disturbed until the new hall in course of erection is completed and ready for occupation.

The contractors for the building are Messrs. Braid & Jopling, of Westminster.

THE NEW HARBOUR AT DOVER.

THE Government have announced a Bill to come before Parliament next Session for powers to carry on extensive works at Dover Harbour. In the first place it is proposed to construct a "pier and breakwater, commencing at the seaward end of and by a junction with the Government pier, and extending eastwards for a distance of 550 ft., or thereabouts, and terminating in the bed of the sea." The great work, however, will consist of "a pier or breakwater commencing at a point on the sea-shore, 450 ft., or thereabouts, to the eastward of the landward end of the castle jetty, and extending southward for a distance of 1,900 ft., or thereabouts, and terminating in the bed of the sea; a pier or breakwater commencing at a point in the bed of the sea, 800 ft., or thereabouts, southwards from the termination of the last-mentioned pier or breakwater, and extending thence in a southerly direction, 1,200 ft., or thereabouts, and terminating in the bed of the sea." It is further contemplated to construct "a pier or jetty commencing at the top of the pitched slope between the Government Pier and the South Pier of the harbour, and extending seaward in a southerly direction for a distance of 1,200 ft., or thereabouts, and terminating in the bed of the sea." This last work is probably meant for the accommodation of the steamers conveying passengers and mails between Dover and Calais and Ostend. The new works are so designed that they utilise the Admiralty Pier as a necessary portion of them. The total cost of the three contracts into which the undertaking was divided was up to March 31st last, 679,368*l.*, which is exclusive of the fort for the War Department, which is being constructed at the end of the granite isthmus, at an estimated cost of 21,682*l.* The length of the pier is 2,100 ft., or 700 yards, and it has been built under the direction of Mr. Edward Druce, the resident engineer. The existing harbour contains about twenty-five acres, divided thus:—Twelve in the outer harbour, six in the Granville Dock, and seven in the Pent. The proposed new harbour will be about 300 acres.

Presentation to the Master of the Warrington School of Art.—On the 17th, a number of the pupils, past and present, of the above School of Art, met at the Museum for the purpose of presenting to Mr. J. C. Thompson, the master, a testimonial of their esteem and regard. The presentation consisted of a valuable silver tea and coffee service, and bore the following inscription:—"Presented to J. Christmas Thompson, Warrington School of Art, by some of his pupils (past and present) as a mark of their regard.—Christmas, 1874." The pattern engraved upon the service was designed by Mr. William Fell, formerly a pupil of the School of Art. Mr. Thompson has been master for nineteen years.

* To be continued.

THE ALEXANDRA DOCK WORKS AND BUILDINGS AT NEWPORT.

DURING the last three or four years new dock-works of great magnitude have been in progress at Newport, in Monmouthshire, for the purpose of giving additional shipping accommodation to the South Wales coal and mineral district, as well as for giving increased facilities to the general trade of the port of Newport. The works include a spacious new dock 2,600 ft. in length, and 500 ft. in width, containing a water area of 29 acres in extent, which is considerably larger than the average size of the docks at any port in the country. This new dock is now almost completed, and it is expected that it will be opened for shipping purposes very early in the coming year. It has an average depth of 30 ft., and has an entrance-lock 350 ft. in length, approached from the river Usk by a large entrance-basin. There is an unusually large area of land in connexion with the dock to the extent of 170 acres, which is intended to be devoted to quay and railway space, and for the building of warehouses, and other manufacturing establishments, and large portions of the ground are immediately intended to be so appropriated. The extensive range of quays are to be thoroughly lighted with gas, and provided with an ample supply of water for the shipping. It is confidently expected from the great size of the dock, the facilities in connexion with railway purposes, and the unusually large space of ground around its margin for commercial purposes, that it will give a great impetus to the shipping and maritime interests of Newport and this part of South Wales. The dock is already connected with the Great Western and Monmouthshire systems of railway by branch railways the property of the dock company, and in connexion with this branch there are extensive sidings and coal-roads of the most approved construction for the rapid shipment of coal and other minerals with cranes for the timber trade and general traffic. There are all worked by hydraulic machinery, constructed by Sir William Armstrong & Co., of Newcastle. Ship-building and repairing is also about to be largely introduced as an additional feature in the business of the port; and with the view of carrying out this object a large graving dock, 450 ft. in length, is in course of construction.

THE ENGRAVING ISSUED BY THE ART-UNION OF LONDON.

CO-OPERATION is a matter on which a good deal of controversy has lately taken place, even to the extent of occasioning a deputation to a Minister of State; but we question if any example of what the power of co-operation can effect could be cited more striking than the fact that every member of the Art-Union, this year, will obtain for his guineas (virtually, considering the amount repaid in the form of prizes, &c., for about eight shillings) an impression of the fine plate engraved by Mr. Lumb Stocks, from the noble wall-painting, in the Palace of Westminster, of the meeting of Wellington and Blücher, at La Belle Alliance, after the battle of Waterloo. Certainly no publisher, in the days when engravings in pure line were published, could have sold such a print as this at less than three guineas.

We cannot refrain here from uttering a lament for the almost entire abandonment of the art of producing works in line in favour of the more rapid and cheap method of chalk, or stipple, or mixed engraving, now adopted in this country. It is only necessary to place an impression produced in this style by the side of an engraving in pure line to appreciate the vast superiority of the latter in force, in brilliancy, and atmospheric effect. The cause of difference is to be found in the fact that in this method a clear, deep line is cut in the plate, which defines the boundary of black and white, besides taking up and transferring to the paper a much greater quantity of ink; and not only is the amount of ink much greater, but may be seen by looking at a sheet of paper passed through the press on a line-plate, without any ink, the paper itself, by the enormous pressure to which it is subjected, actually covered with a pattern in relief, of every mark of the graver, so that the ink is, as it were, lifted on a ridge of paper at every line. The impressions are, until the ink becomes dry and hard (which does not occur for some months), exceedingly tender and liable to

damage, and a very slight touch, such as drawing the corner of a sheet of tissue-paper over the surface, is enough to produce a black line. We would take this opportunity of giving a practical hint as to the remedy to be adopted on the occurrence of such an accident. The damage would appear to be irreparable; but, take a clean handkerchief, make it up lightly into a ball, and gently beat the mark on the paper in the direction of the lines of the graver, not across them, and it is easily removed.

The great wall-painting which is the original of this fine plate cost Mr. Maclise five years of incessant labour in its production; and Mr. Stocks was occupied for another five years in engraving it.

So much has already been said and written on the subject of the painting, that it is unnecessary to enter into details in order to point out the great interest which the momentous battle commemorated must possess for every Englishman. The lamented Prince Consort took a lively interest in the work, frequently visiting the Royal gallery, and conferring with Mr. Maclise while it was in progress. So great was Mr. Maclise's care that truth should characterise every detail of the picture, that he formed, at the cost of great labour and research, a series of sketches giving the minutest particulars of dress and weapons, horse-furniture, guns, and musical instruments, such as were in use, not only in the British, but in the French and Prussian armies at that time.

A question was raised when the work was in progress as to whether this meeting of the two generals in command did actually take place; and, at the request of the Queen, H.R.H. the Crown Princess of Prussia caused inquiry to be made, which resulted in a letter from Count von Nostitz, who was Prince Blücher's personal aide-de-camp at the time, settling the fact beyond all question. As a memento of this kind assistance, the Council of the Art-Union have presented an impression of the plate to the Crown Princess, as well as to H.M. the Emperor.

It may be interesting to state, as a matter of printing-detail, what few persons probably know, that so much care and labour are required in filling the lines of the graver with printing-ink, and afterwards clearing away the superfluous quantity with many cloths, and finally polishing all parts of the plate between the lines with the printer's hand, that it takes fifty minutes to produce each single impression of such a plate as this.

The prints are announced to be ready for delivery to the members on the 1st of February next; proofs may be had now.

A PLAGUE OF RATS, AND HINTS FOR THEIR DESTRUCTION.

FOR some time past the district of Belgravia has been infested with rats to a great extent.

St. George's Hospital, which was closed for three months, was undermined by the destructive vermin; they had burrowed under the brick drains and through them, and the soil ran out in all directions, emitting dangerous effluvia. The cost of repairs and laying down drain-pipes amounted to a very large sum.

The ravages made in cellars of shops, where stores are kept, as well as in the shops, have caused tradesmen to keep traps constantly set, and in many places as many as thirty rats a week are caught in a kitchen or cellar; and when the fecundity of the rodents is considered, it will be seen that in a few years' time, unless some active measures are taken, London may expect great trouble from this cause. It is a startling fact that one pair of rats, with their progeny, will produce in three years no less a number than 646,808. A doe rat will have from six to eight nests of young each year for four years together, and from twelve to twenty-three at a litter; and the young does will breed at three months old; and there are more females than males, at an average of about ten to six. If they ran about the streets like cats or dogs the public would be terrified, but as they hide and work in the dark, men seldom see or think of them.

As to keeping rats out of houses, architects and builders have hitherto been too lax in devising proper measures. Rats are as cunning as they are active, ferocious, and destructive. Their teeth are saws, chisels, and axes. They will gnaw through bricks with but little trouble, and as they always require two holes, one for entrance and the other for escape, brick drains

are their chosen haunts, skirting boards, backs of fire-places, under the flooring, or between the rafters are their places for breeding.

The London sewer-men may be taken as authorities on drains, and they state that brick drains are the rats' best friends, and that nothing but glazed pipes with heavy sink traps will stop the sewer rats getting into houses. They will not go up pipes for fear of being drowned, knowing they have no means of escape. They are seen in the sewers migrating in communities to some discovered quarter for food, and the sewer men believe that they have a language of their own. If builders were to case skirting boards with galvanised plating, particularly at each corner, it would stop the vermin considerably. Care should also be taken to fill with concrete and small stones or broken glass, the space under and about fire-places, as the doe rats choose that quarter for breeding on account of the warmth.

In some parts of the country rats are kept out of corn stacks by first digging all round it a trench a yard wide and a yard deep. At the bottom of the trench a layer of stone or very hard brick is placed well grouted; on this layer a wall is built to the surface, when the rats burrow to get under the stack they meet the wall, and as they burrow still lower they can get no further for the bottom layer. Clever as they are they have no notion of burrowing back, and corn stacks, granaries, or barns so protected, are generally pretty free from the plague.

The chief enemies to rats in large towns are cats, dogs, ferrets, poison, and traps. Many cats will run away from a rat, whilst others will destroy them wholesale. Dogs cannot get at them so readily as cats, and will not watch a rat-hole so patiently. Ferrets are dangerous to turn loose in a house, and can only be used by professional rat-catchers.

Poison is a dangerous remedy, and, moreover, as they die in their haunts, drains get stopped up, and the bodies also rot under the floors or other places too near to be healthy or pleasant. Besides, as soon as some poisons begin to operate the vermin get thirsty, and convey the poison to tanks or water-butts. If a building be so placed or constructed that poisoned rats will not do much mischief, the receipt hereafter given is the best method of destroying them.

Traps, of which there are many sorts, offer, perhaps, the best mode of destruction, but it requires almost an apprenticeship to manage them.

One mode, called the "butcher's trap" is to get a good sized cask and tie over it a strong piece of paper or parchment, like a drum-head. Place this cask in the place infested, and on the head of it a few bones, rice, or the bait hereafter referred to. Let this be done at least for a week, until the bait disappears. Next place two bricks, one on each other, inside of the cask at the bottom, and fill with water to the level of the top brick. Tie on the parchment as you would a jam pot, and with a sharp penknife cut in the centre a cross, about 3 in. in each way. A rat on passing over this cross-cut will fall through it, and on getting into the water will at once get upon the brick, and make such a squeal as will call all his friends to the top of the cask to slip through the hole themselves; and they will all make for the brick, and a terrific fight takes place to get the brick. In the morning nearly all will be found drowned or bitten to death.

The gin-trap, which catches them by the legs as they tread on the centre, should have a piece of paper laid over it and the guard set for a few days so that it will not go off. This can be placed outside their holes until they get accustomed to it, when it can be properly set. Care must be taken with this trap so that cats or dogs are not caught in it; and it should also be nailed down, or tied to something strong, or the caught rat will drag it away. Only last week a rat caught in this trap at the New Supply Association, Long-acre—a warehouse much infested,—drew trap and a 14 lb. weight tied to it several yards, and this, too, with three legs, as its fourth leg was nearly cut in two with the trap.

The other traps are chiefly wire ones, but they require cunning baits, of which the following are the best preparations:—

Take the nut of a bullock's liver, well boiled. Mix with the liver a handful of bread-crumbs as fine as possible. Add a pint of oatmeal, 4 ounces of powdered loaf sugar, 7 drops of the oil of carraways. Mix and bait the trap with it a few nights, so that the vermin can get in and out without the trap catching them. Doe

rats with young can seldom be induced to enter a trap.

To scent a trap, take 20 drops of oil of rhodium, 7 grains of musk, and half an ounce of the oil of aniseed. Steep in this a small piece of paper twisted up. Rub the trap with this, and leave the paper in the trap. Keep the phial well corked.

To poison them, rasp three figs of nux vomica in 4 ounces of bread-crumbs. Lay this about their runs. This will not poison a dog or cat, but kills the rats.

When rats get under flooring or behind skirting-boards, a good plan is to fumigate them, as is done on board of a ship. Take a handful of common salt, and lay this in every crevice, hole, and direction. On the salt pour a teaspoonful or two of oil of vitriol. This will not only start them off, but they will not return in a hurry.

Another plan is to stop up the holes with this mixture:—Take 1 pint of common tar, half an ounce of pearl-ashes, 1 ounce of oil of vitriol, and a good handful of common salt. Mix well in a glazed pan. Spread this mixture on brown paper both sides, and well stuff the holes with the paper. Rats will never approach the holes again if properly done and kept up.

In stables poison must never be used, as vermin feed in the mangers and corn-bins, and the traps must be baited with oats, as well as the other bait.

Upon an inquiry as to the probable cause of the increasing plague, it appears that the Royal Society for the Prevention of Cruelty to Animals have something to answer for, through prosecuting men keeping rat-pits, as thousands of rats were yearly caught for this purpose. Another reason given in the prosecution of rat-catchers for going down the sewers to catch them. Before this stoppage was made to the destruction of the pests there were several professional ratcatchers in London; at present these useful men are scarce articles, and one seldom sees her Majesty's ratcatcher with his emblazoned belt about the streets. The instructions above given will, however, if persevered in, enable sufferers to become their own ratcatchers.

It may be useful to observe that Paris was overrun with rats, until some inventive genius discovered rat-skins would make admirable leather for ladies' kid-gloves; and the way they were caught for the tanners was by placing a sack with a running-choke round the mouth at the bottom or side of sewers; in the sack was placed a feed of bones or entrails. The rope drew the mouth of the sack tight when it was pulled up, and in this way thousands were bagged. The same plan was carried out in the sewer under Cambridge House, Piccadilly, when Lord Palmerston resided there.

PROGRESS IN CHINA.

In respect of building and public works, it is gratifying to hear of progress being effected in China, be such progress ever so small. From reports relating to different Chinese ports, we learn that at Newchang some activity is being shown in this direction. A site has been purchased for the erection of a British Consulate, and the old Chinese Temple from which the British flag has flown since 1861 will be vacated on the completion of the new buildings. More private dwellings have also been added to the number of foreign houses in the settlement, all contributing to improve its architectural appearance. Safely, too, the foundations of a Romish church and of a large substantial building for Protestant missionary purposes were laid almost simultaneously. It is stated that the district will be further improved by an arrangement made with the Harbour Master's department for utilising the large quantities of ballast brought by the foreign shipping in the construction of roads and pathways where they are most required, as well as in strengthening the river frontages, to which purpose such ballast has hitherto been applied. Our Consul from Ningpo (Mr. Chaloner Alabaster) writes to the effect that he has to note a distinct advance in civilisation in that native city, viz., the establishment of street lamps in the main thoroughfares, on the model of those used at Shanghai, though kerosene oil is used in place of gas; and these newly-imported lamps give great satisfaction, it appears, for their improved power of illumination. It is also stated that steps are being taken in Ningpo to connect the different stations of the native fire department by a line of telegraph; while in the foreign settlement steps have

been taken to improve the drainage,—a rather pressing want; and it is not very satisfactory to learn that in this respect there has not been much progress achieved. Generally speaking, however, it would appear that China, in homely phrase, is looking up.

BUILDERS' HOARDINGS AND BILL STICKING.

A PROJECT is under the consideration of the Newington Vestry for taking away from builders the power of letting hoardings for advertising purposes, which it is alleged has become an intolerable public nuisance. At the meeting of the Vestry, recently, a recommendation was submitted from the paving committee to the effect that in all future licences granted to builders for the erection of hoardings, a proviso be inserted prohibiting bills or placards of an advertising nature being placed thereon. The discussion on the recommendation which followed showed that the general feeling of the Vestry was in its favour.

Mr. Silvester remarked that the advertisements upon the hoardings had become an inducement for builders and others to keep them up to the inconvenience of the parishioners. But it was those who came from a distance to make a profit out of the hoardings who did the mischief.

Mr. Barker considered that if the recommendation was carried, even builders themselves ought not to be allowed to put up their notice boards; but this proposal was objected to on the ground that the builders' own notice-boards was altogether different matter to plastering hoardings with placards of all descriptions. It was also suggested that the hoardings in future should not be higher than 8 ft. or 9 ft. It was stated in the course of the discussion, as a reason why many of the hoardings were allowed to remain so long, that in some cases the income derived from them was really larger than would be produced by the building of a house on the vacant space. An amendment against the recommendation of the committee was lost, and the subject was referred back to the committee, with an instruction to consider the propriety of limiting the height of hoardings to 8 ft.

OVERCROWDING IN THE SOLDIERS' COTTAGES ON WOOLWICH COMMON.

A GRAVE and serious instance of overcrowding, for which the War Department of the Government would seem to be responsible, was brought to light at the last meeting of the Plumstead Board of Works. Dr. Finch, the Charlton Medical Officer, reported a severe outbreak of diphtheria at the Soldiers' Cottages on Woolwich-common, and referred in his report to the overcrowding which prevailed in the cottages. Mr. Thorne, the surveyor, also reported at great length on the subject, stating that there were fifty-two of the huts, in which 104 families resided. The huts were one story in height, each hut containing two rooms, and each room was used both as a living and a sleeping room for a separate family. Mr. Lloyd, one of the members of the Board, remarked that it was a disgraceful state of things that a married soldier, his wife and children, should be huddled together in one room. This would be condemned in the worst parts of London; but the District Board had no power to eject or to destroy the huts, the same as with the civilian population. He added, that the huts ought long since to have been swept away, and that he did not wonder soldiers should desert when they were so treated. On the other hand, Mr. Jolly, another member, observed that, as a rule, soldiers were never better cared for than at the present time, and he had no doubt, on a proper recommendation being made to the Secretary of State for War, those wretched huts would be abolished, and more modern and healthier buildings be erected.

It is to be hoped that the War Department will take immediate action in the matter; but it is not creditable to the Government authorities that they should have permitted such overcrowding to exist amongst those who are in the service of the nation, and that an outbreak of a formidable epidemic has alone caused the exposure of the evil.

Hughenden Manor House, the residence of Mr. Disraeli, is to be enlarged by the addition of a new wing, from the designs of Mr. Arthur Vernon.

EASILY GAINED AND WELL SPENT.

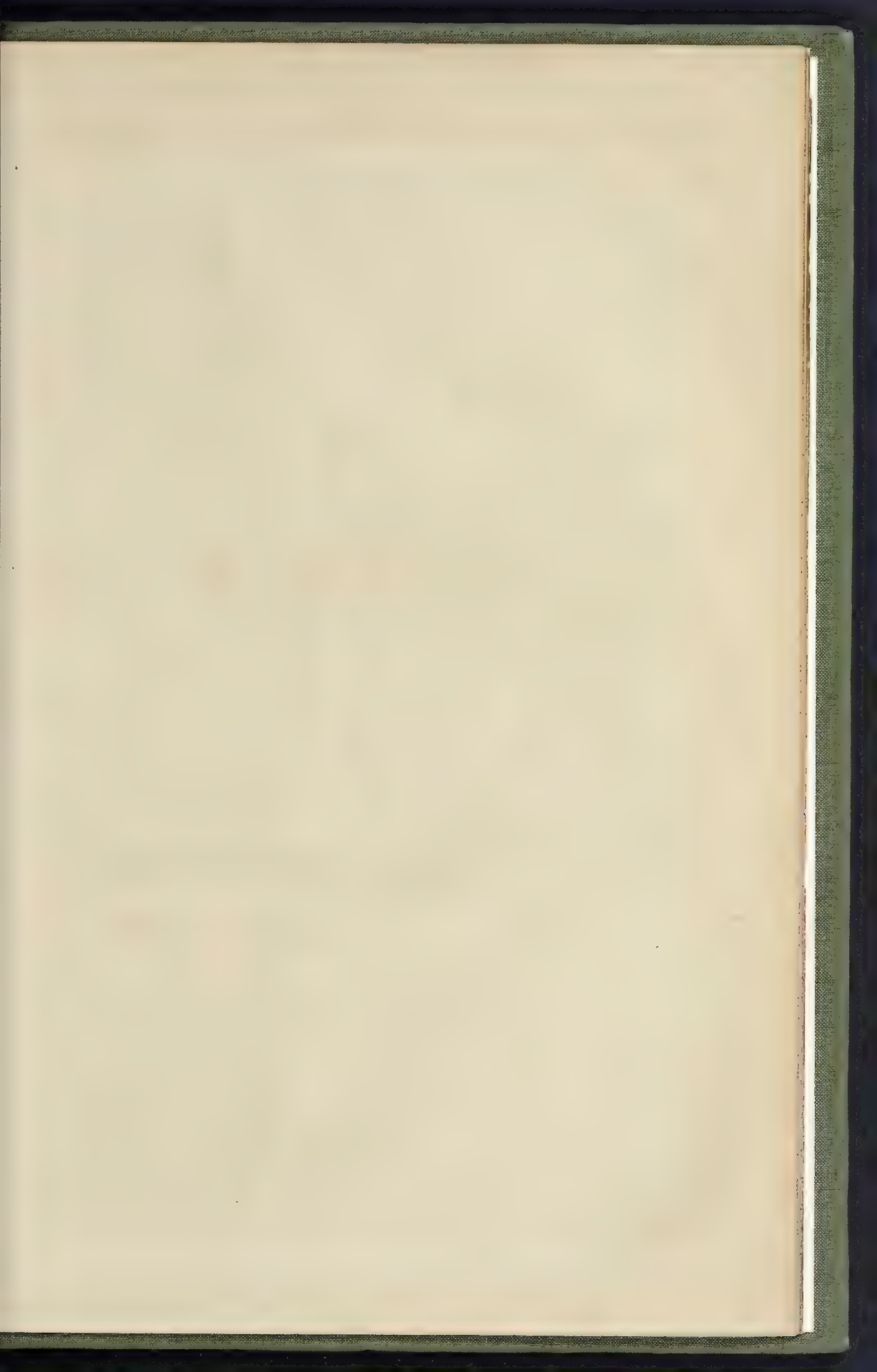
DURING the past year the pearl fishery of Ceylon was unusually productive, and unexpectedly added about 70,000 rupees to the colonial revenue. The Hon. Mr. Gregory, the governor, has asked the Legislative Council to permit him to regard this amount as an exceptional windfall, and to devote it to exceptional purposes, for the benefit of all classes. He proposes to apply 10,000 rupees of it in aid of the erection of a seamen's home, believing it "appropriate to devote a portion of extraordinary revenue from the sea in enabling 'those who go down to the sea in ships, and occupy their business in deep waters,' to escape from drunkenness and debauchery, and to have the refuge of a respectable home." Fifteen thousand rupees more he wishes to employ in erecting fountains in different towns which have not the benefit of municipal institutions. Other 20,000 rupees he assigns to deepening and improving Colombo lake; a further sum of 15,000 rupees to the improvement of the mountain sanatorium at Nuwara Eliya; and the balance of 10,000 rupees to complete unfinished improvements in Kandy, which the Government cannot ask the municipality to carry out. With respect to this last grant, he says, "These so-called improvements are, in fact, the restoration of works on which the Kandyan monarchs showed their refinement and good taste, but which the barbarous vulgarity of certain British rulers degraded and destroyed. Had the structures to which I refer been handed over to the municipality of Kandy in good order, they would have been bound to preserve them; but as the municipality had to take them in a mutilated condition, it is but fair to put them to rights. This vote will complete the improvements which have been going on in Kandy for the last three years, and will make the ancient capital a credit to the island." It would be well if every unexpected surplus were expended as judiciously as the 70,000 rupees which constitute this Cingalese windfall.

MADRAS HARBOUR.

FOR many years past the commercial community of Madras have been clamouring for the construction of efficient harbour works to supersede the rickety pier which at present constitutes the sole landing-stage for passengers and goods, and which is only approachable by small craft. The local belief is that, notwithstanding its natural disadvantages, Madras might be converted into a great port, and a multitude of schemes have been proposed to effect this much-to-be-desired object. Up to the present time that of Mr. Parkes has been most generally approved, and a hope has been entertained that, since the Colombo Harbour works have been sanctioned, the Home Government would authorise the Public Works Loan Commissioners to advance the necessary funds for the erection of this project also. In the meantime advantage has been taken of the delay by two new competitors to advance another scheme, which, at least, attracts attention by its extreme novelty. The authors of this most recent design are Mr. P. Pritchard Baly and Mr. Geo. Preston White, the latter of whom is known by several patented inventions, and has had some experience of India. Their idea is to run out a very long pier, throwing out successive pairs of arms, each pair being longer than the pair immediately preceding them. These arms are not at right angles to the pier, but incline considerably towards the shore. The outermost pair of arms are intended to be of great length, inclosing a wide expanse of water, which would be divided by the shorter arms into small and well-sheltered bays. Lithographed plans of this tree-like harbour, and of the two docks which it is proposed to construct at the shore end of it, have been distributed in Madras, but have not been received with much favour.

The Water Supply at the West End.

At the fortnightly meeting of the Vestry of Kensington, last week, Dr. Duffield reported numerous complaints of the bad quality of the water supplied by the Chelsea Waterworks Company during the last fortnight. The water had been very turbid, owing to the presence of chalk and fine mud. The cause of this was the flooded state of the river, which was reported to have risen 4 ft. in one night, and the insufficiency of the company's reservoirs, which compelled them to take in water daily. The report was adopted.





RYHYLL TOWN HALL.—MESSRS. WOOD & TURNER, ARCHITECTS.

RYHYLL TOWN HALL.

The first stone of this proposed new building has been laid. The present market and municipal buildings being inadequate to the requirements of this thriving watering-place, the commissioners decided last year, in addition to carrying out a new drainage scheme, to erect a new town-hall, &c., at as moderate a cost as practicable. For this purpose instructions for competition were forwarded to five architects, which resulted in the appointment of Messrs. Wood & Turner, of Barrow-in-Furness, to carry out the works from designs submitted.

All the present buildings, excepting those of the market, will be removed and replaced by others of a more commodious and substantial nature. Transept wings will be added to the end of the present market, increasing the area by one-half its present dimensions. It will have three separate entrances, viz., from Wellington-road, Water-street, and Queen-street, and will be thoroughly ventilated. The fish-market will be placed at the end of the block, in close proximity

to the general market, but entirely disconnected therefrom. Flanking the general market and fronting Water-street there will be a group of buildings one story high, comprising a soup-kitchen, fire-engine room, store-room, &c.; on the opposite side, fronting Queen-street, will stand the town clerk and surveyor's offices, Board-room, and a bazaar, all having access from Queen-street.

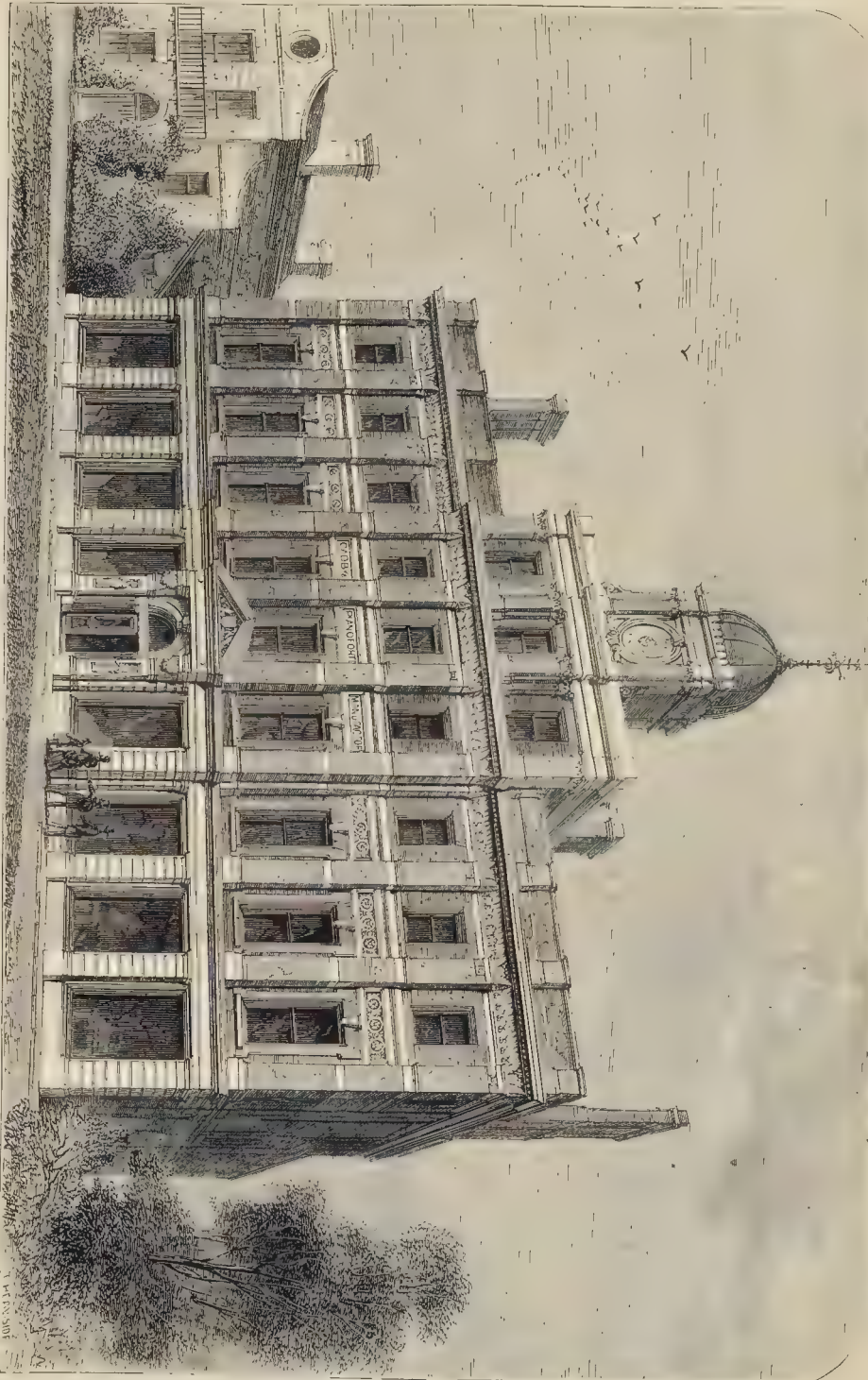
The clock-tower will stand in the centre of the block, fronting Wellington-road, and will be 16 ft. square above the base, and 120 ft. high; the centre of the clock will be 60 ft. from the ground, the chamber above it being arranged for a chime of bells. The clock and bells have been presented by Mr. H. Eyrton, M.P. for Denbigh. Space has been set apart for accommodating the North and South Wales Branch Bank with windows and entrance from Wellington-road. The Corn Exchange is entered from the main entrance leading to the market. The entrance to the Assembly-room is central with the main building on the Water-street side, with an office each side of it. A staircase, 8 ft. wide,

leads to the Assembly-room, which occupies the whole of the Wellington-road front, its inside dimensions being 79 ft. by 40 ft. 6 in. There is an end gallery, the full width of the room, beneath which are retiring-rooms on the assembly-room level. The stage being placed at the end opposite the entrance, is in close proximity to the Board-room, which will be provided with a revolving screen to divide it into two stage retiring-rooms as occasion may require, lavatories and other accommodation being provided for both rooms.

On each side of the tower a balcony is formed by setting back the front wall of the assembly-room 6 ft. 6 in. from the wall below. The assembly-room roof is formed with principal, backs and collars; the principals being additionally tied with wrought-iron rods. The room will be 30 ft. high, and lighted by two sun-burners, placed immediately beneath ventilating trunks springing from the main roof. The walls of the tower and main building will consist of Denbigh stone faced with Penmaenmawr sets, and dressings of Wrexham ash.

Mr. J. Rhydwyn Jones is the contractor.

MESSES. CADBY'S PIANOFORTE MANUFACTORY, WEST KENSINGTON.—MR. LEWIS H. ISAACS, ARCHITECT.



MESSRS. CHARLES CADBY & SONS'
PIANO-FORTE MANUFACTORY AND SHOW-
ROOMS, WEST KENSINGTON.

The requirements of the new street from Oxford-street to Shorefield having rendered it necessary to remove Messrs. Cadby & Sons' factory and warehouse in Ligoners-street, the firm determined upon migrating westwards as soon as the negotiations for the compensation to be paid them had been concluded with the Metropolitan Board of Works. A very eligible piece of land known as the Crofton Estate, containing 8½ acres, and situated in the Hammersmith-road, a little to the west of the Addison-road railway-bridge, was offered for sale in November, 1873, and was purchased by the firm. An area of 1½ acre, with a frontage of 109 ft. towards the Hammersmith-road, was set apart for the new factory and show-rooms, the remainder of the estate being intended for ordinary building plots. The new premises designed for Messrs. Cadby are now so far completed that the firm have entered into possession.

The buildings comprise four distinct blocks, the show-rooms, which form the subject of our present illustration, fronting the main road, but standing back 40 ft. so as to admit of a carriage-drive to the entrance porch. The same distance of 40 ft. again intervenes between the show-rooms and the factory, and between the factory and the mill; whilst the timber-stores, packing-case shop, stables and coach-house, are placed in the rear of the site on its eastern side. This arrangement of the buildings has been designed principally with the object of preventing the spread of fire, or rather the confining it to the one building in which it may happen to break out. The front building will be entirely devoted to show-rooms on the ground, first, and second floors, the rooms above being occupied by the housekeeper. The clerks' and private offices, and rooms for the use of the members of the firm, are situated in the rear of this building, which is 94 ft. long by 58 ft. wide.

The factory is 103 ft. long, 35 ft. wide, and five stories high, the staircases, lavatories, and latrines being contained in an annex thereto. In this building the finer portions of the pianos are manufactured and put together, and the instruments completed with the exception of the tuning. The mill is 122 ft. long, 35 ft. wide, and likewise five stories in height. In this building all the sawing, planing, and the heavier portions of the work are executed. The boiler and engine house, with the engineer's shop, being adjacent.

The timber-store contains all the veneers and other woods employed in the various processes of this manufacture, which require seasoning and keeping in stock for several years, to insure their being thoroughly fit for their intended uses. This building is 95 ft. long and 45 ft. wide, and contains two stories only.

The buildings in the rear are solidly constructed of picked stock bricks, the staircases being composed of stone, and the roofs slated. The floors in the mill which have to receive the weight or strain of machinery are laid with 3-in. deals.

The front building next the Hammersmith-road is faced with Fareham red bricks and Portland stone, terra-cotta being introduced in the panels over the first-floor windows. The keystones of these windows contain carved portraits of celebrated composers of the Italian, German, and English schools of music. The royal arms are cut in the tympanum of the porch, and there are *bass-reliefs* on the sides of the entrance doorway, the subjects selected being music and poetry. This sculpture and the carving generally have been entrusted to Mr. R. Almood.

The works have been executed by Mr. Thomas Elkington, builder, of Golden-lane, who was represented by Mr. Pratt. The original contract was 25,200*l.* It having been subsequently determined to add another story to the mill, the total cost was thereby increased to 26,024*l.* Some notion may be formed of the rapidity with which the works have been executed when we state that the contract bears date the 2nd of May last, so that practically eight months have sufficed to erect and complete this large establishment.

The works have been erected under the personal superintendence of Mr. Lewis H. Isaacs, architect, of Verulam-buildings, Gray's Inn.

House Property in London.—Mr. John R. Fowler, of Abchurch-lane, sold by public auction on Friday the freehold house No. 34, Clifford-street, Bond-street (a frontage of 18 ft. by 53 ft.), for the sum of 8,230*l.*

ON THE "KINDERGARTEN," OR
DEVELOPING SYSTEM OF DRAWING.

At the last meeting of the Edinburgh Architectural Association, the following paper was read by Mr. Leonard A. Wheatley on the above subject:—

The importance of drawing to the architectural profession is undeniable. This being the case, it is as well to consider what is the best method to follow in order to attain proficiency in this art. As a nation, we do not excel in drawing, and many of our best artists would have been the better for a greater knowledge of and a fuller training in it. The French, as a rule, are splendid draughtsmen, and the German artist excels in his drawing more than his colouring.

The system to which I wish to call your attention, is not to replace freehand drawing and copying from nature, but simply to train the hand in making lines and curves, and the eye in seeing correct distances and proportions, thus giving a taste for the graceful,—matters which are of vast importance to the architect, who, as a rule, has been too apt to despise drawing, notwithstanding some splendid masters of the pen and pencil in his ranks. The science of education, or "pedagogics," is only of recent date. Great credit is due to Jean Jacques Rousseau for, in some measure, introducing, or rather for calling attention to, a more reasonable system of education; but his genius was as erratic as his philosophy emotional, and would have had little or no effect even in his own country but for the labours of the philosophers of Germany. Kant and Hegel did not think it beneath their notice, but Herbart and Beneke were the principal writers to develop the science. Pestalozzi was, however, the author to whom education is chiefly indebted. He, like Arnold in our own country, strove to implant (and by his noble character succeeded in doing so) in the minds of his pupils a certain religiosity, or higher tone of morals, even in the most elementary teaching, knowing well the power of morality in elevating the mind, and the higher the mind the more capable is it of receiving true education. Pestalozzi was born at Zurich in 1746, became director of an educational establishment at Yverdon in 1804, and died at Brugg, in Aargau, in 1827. His writings, which were voluminous, have been extensively read, and passed through many editions, several of them having been translated into various languages. His scholars were very numerous, and through them an immense improvement was effected in elementary instruction throughout the whole of Europe, and his name was held in such estimation that the centenary of his birth was kept with great *clat* in 1846.

Among his pupils was Friedrich Fröbel, the founder of the "Kindergarten" system, and to one of the results of whose labours I wish to call your attention. Fröbel was born in 1782 at Oberweitzbach, in Schwarzburg-Rudolstadt. As it was intended that he should be a farmer, he studied the natural sciences at the University of Jena, after which he became the secretary on an estate in Mecklenburg; but he felt called to a higher destiny, and went to Frankfurt as a humble teacher in 1803, and from henceforth remained faithful to his vocation; he passed three years in tuition at Pestalozzi's Institute at Yverdon, and his mind was thereby decided in favour of Pestalozzian ideas. He now went to the Universities of Göttingen and Berlin for the purposes of study; but then came the time when Europe being overrun by the armies of Napoleon, he felt called upon, like Pichte and other noble minds to take up arms in the war of liberation, and joined the celebrated rifle brigade commanded by General Lützow, and immortalised by the poet Körner.

"From sire to son the tale shall go,
"Twas Lützow's wild Jäger that routed the foe."

On the restoration of peace, he founded in 1816, an educational institute at Griesheim, removed a year later to Keilhau, near Rudolstadt, an establishment which still flourishes. He left it to be carried on by other men in order to found fresh ones in Switzerland. It was not until his return to Germany in 1837, that his ideas were matured on what he felt his real mission to propagate, and what resulted in the "Kindergarten" with which his name will ever be connected. He wished to propose something to employ children before the legal age for school. He had already founded a Kindergarten at Blankenburg for the purpose, and now on his return to his native country, he was enabled, notwithstanding many hostile attacks, to carry out successfully,

and with general approbation, his system of teaching by means of games. He died in 1852 at Marienthal, where he was about to erect an establishment for the training of Kindergarten-keepers, or female teachers of his system. The idea is that children should be led to gain knowledge, and what is better, be made to think, even in their games. Children attend to their games, and if these are superintended, attention is readily given to those directing them; the toys are very simple, those first used are small pieces of wood like lucifer matches (Stäbchen), which are laid in various directions, and joined so as to form figures and outlines of familiar objects, the children being made acquainted with the meaning of straight lines, horizontal, perpendicular, and diagonal, then angles (right, acute, and obtuse). As a gift they have bricks, when they learn the meaning of square, cube, &c. Peas are used to join the little sticks, in order to make various pretty objects. Plaiting, sewing, and drawing, are all employed in turn, but the chief end of the system is to direct the children to think; they also learn to be *exact, attentive, and industrious*. All sorts of knowledge are acquired, not only by exhibition of natural objects, such as flowers, &c., in a garden, but pictures are extensively used in conveying instruction. Children are treated as reasonable beings, and are led, not driven, and may obey the poet's admonition:—

"Be not like dumb driven cattle:
Be a hero in the strife."

In teaching drawing, books and slates are used which have been ruled in small squares (chequers). The pupil commences by marking over the lines the length of one space in a perpendicular direction, then two, then three, then four spaces; afterwards alternately, 1, 2, 3, 4; 4, 3, 2, 1. When this is accomplished, the pupil is encouraged to invent designs from the strokes he has learnt to make. After which, he proceeds in the same manner with horizontal lines, and in his subsequent composition uses both perpendicular and horizontal lines. He is now in a position to be shown the junction of these two lines so as to form right angles, and make squares of different dimensions, disconnected, joined, and interlaced, the parallelograms of 2, 3, and 4 spaces, as well as other figures formed of similar lines. The square is then divided, the acute angle thus formed being explained; diagonal lines, called of the 1st, 2nd, and 3rd order, according to the slope, are now practised singly and then in union with those previously learnt. After copying these in the book, drawing from memory should be done on the ruled slate, one of the chief benefits being the use of the inventive faculty; the pupil's compositions should be drawn first on the slate, when any faults can be pointed out by the teacher, and when corrected copied into the book. I am enabled by the kindness of Mr. Fröbel, the nephew of the inventor, and who carries on the system in Edinburgh, to show some of the drawings he executed when a young man at the establishment at Keilhau, as well as some by his daughter at ages of eight, nine, and thirteen. He says the inventive faculty is stronger in boys, by whom some very beautiful designs have been made. After the pupil is proficient in the use of straight lines, having formed all manner of angles and many-sided figures, with every variety of angles, he is prepared for the circle, which is drawn first small and single, then in various combinations, and united by lines, then larger, afterward arcs of circles, the angles at the points of junction of the arcs being explained, thus preparing the pupil, by geometrical drawing and by the use of geometrical terms, to the higher study of geometry itself. You will now see why the system deserves the name of "developing." As all true art must be on this principle, it will not do for the architect to commence at once to form his buildings in geometric fashion, as has been done in this city, but as all good architecture has gradually been developed, we must use the inventive faculty in us by improving our present style, or rather want of style, and seeking to form harmonious and truthful combinations with the materials which are now placed in our reach, nor shirking the difficulty by hiding them up, not leaving them to engineers to carry out, but by improving our own taste and that of the public; and this is what I claim for this system, which, however, is not itself even developed to its full extent, but when the drawing has met with the success it deserves it will be followed by other subjects, such as colouring, &c., but it has not as yet met with sufficient

encouragement in this country. In Switzerland, one of the countries most forward in education, the Kindergarten is general, as also in Austria, where it has lately been ruled that no school shall be without a garden, gardening being used as a means of training. Work, such as requires the use of tools, is employed with great success in a similar manner; and if this were better carried out we might more often meet with that intelligent master workman so much spoken of, but so seldom met with. Something must be used as a means of training: in our country we generally use Latin and Greek, as at Oxford,—sometimes mathematics, as at Cambridge,—of late years some have proposed modern languages, and others science. The advantage of drawing, however, is that it can be commenced earlier, and after-training gradually acquired by it, knowledge of mathematics follows as a natural result; and the acquisition of languages, modern and ancient, is more easily gained by a mind already advanced in growth and maturity. In the architectural profession, a young man who has had the advantage of this training will be none the less able to use the rule, the T-square, and the compasses, but he will have acquired method, carefulness, and accuracy,—qualities by no means to be despised.

Afterwards, Mr. R. Thornton Shiels read a paper "On the Heating of Buildings."

KELMARSH CHURCH, NORTHAMPTON.

This church has been lately restored and partly rebuilt at the sole expense of Mr. Richard C. Naylor, of Kelmars Hall. The whole of the south windows of the nave, as well as the east window of the chancel, which previously were in what is usually called Churchwarden's Gothic, have been replaced by new windows in Ketton stone, of fourteenth-century character. The arches and piers dividing the nave from the north aisle have been also renewed. The piers are of polished red Aberdeen granite, with foliated capitals in Ketton stone. A new oak hammer-beam roof, with foliated corbels and shafts of polished red granite with stone foliated capitals, has been put to the nave, the hammer-beams being carved into angels holding shields containing emblems, &c. An oak carved and paneled roof has also been added to the chancel. The roofs are covered with Colley Weston stone slate. The whole of the reseating, which is open, with stalls at the west end, are new, and are, as well as the pulpit and reading-desk, of carved walnut, with some admixture of oak. The carving is all conventionalised from nature, and specially designed by the architect, and consists of adaptations from the maple, hawthorn, oak, hazel, vine, wheat, trefoil, cinquefoil, and many others, with an admixture of birds, insects, and animals, all carved with the greatest delicacy and artistic feeling.

The chancel has a reredos below the east window, carved in Caen stone, with polished red granite shafts. The panels are inlaid with antique marble, which were brought by Mr. Naylor from Rome, and the sacred emblems executed in glass mosaic, the centre panel having a raised cross carved in statuary marble, and inlaid with glass mosaic. The east wall on either side of the reredos is inlaid with marbles and alabaster, with jewelled and inlaid crosses in antique marble. The sides of the chancel have arcades below the sills of the windows, with red granite and serpentine shafts alternately, carrying out the same character of design as the east wall, having inlaid antique marbles in the arches, with carved spandrels containing the emblems of the Passion. The upper portions of the walls have borders of marble and mosaic work, forming panels between the windows filled in with figures—St. Denis, the patron saint of the church, and the four Evangelists. On the east wall, on each side of the east window, is a panel surrounded by an antique marble border, one containing the figure of St. Peter, and the other that of St. Paul. The whole of the figures, which have gold grounds, are executed in Powell's glass mosaic.

The floor of the chancel is laid in terra-cotta mosaic in different colors, manufactured by Mr. Blashfield, of Stamford, with margins of Hopton Wood stone. The altar-rail is of polished alabaster, with jewels and shafts of marble and serpentine. The altar-table is of ebony wood, inlaid with antique marble, jewels and shafts to the columns. The east end of the north aisle is separated from the chancel and western portion of aisle by oak carved screens, and here will be

placed the organ, which is now being made by Messrs. Berrington.

The whole of the work, with the exceptions mentioned, has been carried out by Mr. Robinson Cornish, builder, of North Walsham, Norfolk, under the superintendence of the architect, Mr. James K. Colling, of London. Mr. John Underwood, of Camden Town, executed the altar-rail and the principal portion of the inlaid marble work. The side windows of the chancel have been filled with stained glass by Mr. W. M. Pepper, of the Euston-road; and the east window with stained glass, at the cost of the rector, the Rev. R. Dalton, by Messrs. Lavers, Barraud, & Westlake, the subject being the Te Deum.

BELFAST ARCHITECTURAL ASSOCIATION.

A LECTURE on "The History of Painting to the End of the Eighteenth Century" was delivered in connexion with the above Association by Mr. T. M. Lindsay, head-master, School of Art, in the Ulster Minor Hall, the Mayor in the chair.

Mr. Lindsay, in the course of his remarks, said he thought it clearly desirable that the young architect should be familiar not only with the history of his own art, but also with that of sculpture and painting, and with the typical character at least of the great schools whose productions were originally regarded as closely allied with, as they were constantly applied to, the enrichment of the architectural design. Beginning with the origin of pictorial representation, Mr. Lindsay sketched the various phases which painting went through up to the end of the eighteenth century, alluding at some length to the great masters of the art, their chief works and peculiar style. In concluding he said,—In speaking of the great epochs of pictorial art, and of the men who imitated or sustained their greatness, and again in forming a disparaging estimate of the productions of other periods and of other artists whose unsatisfactory works force us to place this estimate so low, it must be understood that our judgment cannot apply to broad, well-marked characteristics. Even in periods when the ambitious works that decorated or disfigured churches, and that now stand as types of what is feeble, pretentious, or tamely conventional in our galleries, even at such epochs there have often been choice examples of good taste and fine workmanship in the more obscure walks of artistic life. When it has happened that the demand for pictorial works was vigorous it has happened, too, that this demand could be satisfied by a sort of manufacture of copies of known pictures: this especially applied to altar-pieces and church decorations; but, then, this was the golden opportunity for the man of genius; his services were certain to be in request, and with the opportunity he often found the means to shake himself free from conventional restraint, and leave works for the ages to admire. Occasionally the man stamps the epoch. Far more often the events and current thought of the time mould, or, at least, direct, the aspirations of genius, and then it is "the hour and the man." In my discursive view of the history of painting the use of various terms, as high art, elevation of sentiment, mere imitation, vulgarity, and degradation have been unavoidable. Equally so it is that each of you will apply these expressions according to your own modes of thought, education, and familiarity with the general subject. Hence such general distinctions must be accepted as indices rather than as dogmas or oracles. When either for gratification or edification we contemplate a picture, always supposing it to be from the easel of one who has qualified himself by years of devoted study, and who has had some image clear "in the mind's eye" which he has sought to deposit on his canvas, let us examine it with fairness, discrimination, and in sympathy with the artist, who, believe, has really put his heart into it. An hour thus spent before three or four good pictures will be more fruitful in true pleasure than weeks occupied, if it deserve the name, in dawdling through galleries by the mile, indolently pronouncing one picture "divine," and another atrocious, parroting the criticisms of a guide book, or more likely prompted by freshness and novelty to be eulogistic, and by fatigue or a gnawing appetite to condemn Michelangelo as not being able to draw a bit, and Titians as having a poor notion of colour. In the sciences—even in that Protean thing called politics—we seek to find a clear

reason for our opinions and convictions; but in art every man is his own oracle, and usually if you differ from him in this, he scoffs at your ignorance, or marvels at the limited perception with which you are unfortunately endowed. Now, assuredly there must be, there are, elements of truth in consonance with those of beauty in every fine picture, as in every real art work—in painting, sculpture, or poetry, and I conjure those still in their student career—I ask those who know it better than myself, to corroborate me in the appeal to seek those attributes of all true art, nor rest till they discover them, and I firmly believe that an art band so animated would be the barbingers of a new renaissance.

POLLUTION OF THE TWEED.

THE painful and discreditable story which has just been brought into broad daylight by the Government Commission on the Tweed Fishery Acts deserves notice at our hands. Some years ago we pointed out, after a long personal survey, some of the most salient and disagreeable features of the conjoined processes of pollution; and our observations and conclusions are now amply confirmed by the reluctant evidence which Messrs. Walpole and Young have so carefully elicited. The question of the salmon fisheries we will not now touch; but the collateral conclusions justify and support each other. The most beautiful and romantic river in Scotland is at this moment converted into a common sewer for the manufacturers on its banks, and on the banks of its tributaries.

"What beauties does Flora disclose,
How sweet are her smiles upon Tweed!"

as the poet sang about a century ago, is no longer applicable to the silver Tweed, except by way of a grim paradox, or rather as a disgusting parody.

We have no wish nor desire to anticipate the report of the Royal Commissioners, only as their mission had no direct reference to the public health (excepting, of course, in the direction of "food supply" or fish preservation), we may be pardoned if we make some use of certain passages of the evidence, which, by the way, has been freely reported and commented on in other quarters. The subject, indeed, is important enough to challenge observation in every particular, and at all hands; for which of us can afford to feel uninterested in it?

We presume it is hardly necessary to recall to the recollection of our readers that all the towns and "populous places" on the Tweed and its tributaries are now converted into a series of flourishing manufactories of that well-known cloth which is called from its local habitation "Scotch tweed." From Peebles to Galashiels, from Galashiels to Selkirk, and thence to Hawick; the whole district is thickly dotted over with manufacturers whose business seems to depend equally on getting a copious supply of water and in copiously polluting it. But it is really wonderful with what unanimity the whole of these manufacturers hold the opinion that their processes of weaving, fulling, dyeing, dressing, and so forth, produce in effect no pollution, or, at least, hardly any at all!

In the celebrated case as to the river Esk, the Lord President of the Court of Sessions laid down the dictum that an upper river proprietor is bound to send down the water to a lower proprietor, "undiminished in quantity and unimpaired in quality." We sincerely trust the Galashiels gentry may also be made to understand this principle of law long before the lapse of twenty years, as Mr. Commissioner Walpole far too mildly suggests to them.

We have to add: first, that the whole sewage of the neighbouring towns is poured into the Tweed; secondly, also the whole refuse of the manufactories; thirdly, that this wrong is done without let or hindrance. And we leave our readers to form their own conclusions.

The English Church at Spa.—English visitors to this favourite watering-place will be glad to learn that the completion of the English Protestant Church there is now decided upon. We learn from a private source that the Belgian Government has made a first advance of 60,000 francs, and that the architect has received official instructions from the municipal authorities, into whose hands the money has been paid, to recommence and continue the works with the least possible delay.

WARMING AND VENTILATION.*

THE Romans warmed their buildings with radiated heat, the air conveying the same passing through vertical tile flues about 6 in. by 1½ in., fixed in the walls. The outer half of the flue was movable, probably to facilitate the cleaning of it, as may be seen in the very partially extant remains of our English Pompeii, —the city of Uricinium.

In a climate like this, people as luxurious as the Romans would need ventilation as much as we do; but as there are no indications of any provisions for this in the lower parts of the buildings left to us, I am flattering myself with the idea that they may possibly have effected this in the upper portion thereof by some such plan as I am going to suggest to you.

I am assuming that the building we propose to ventilate is one where 1,500 to 2,000 people are wont to assemble, and for which I consider extraordinary means are required. Experience teaches us that in such buildings the most perfect kind of ventilation which we enjoy is found in the summer-time, and fortunately when it is most needed. This is when the windows on both sides are open, allowing large volumes of air to be wafted through the room from apertures, say 4 ft. by 3 ft., over our heads, and our enjoyment simply consists in getting the quantity of air we need. Now, as we require as much fresh air in winter as in summer, can we, in substituting ventilators one-twentieth of the area above named, reasonably expect the same results? Unless we look for a miracle, we can no more believe that the lungs of 2,000 people can be properly fed with air supplied through a dozen wire-covered gratings, say 12 in. by 6 in., than that a similar number of apertures lurking behind the plaster ornaments of the ceiling can carry off the gases emanating from such an assembly.

So eager is cold air to come into a warm room, that if the inlet is only large enough for it to be, as it were, squirted in, it is regarded as a draught, and the ventilating valve is immediately closed against all further admission, and the warmer air having thus no inducement to escape, comparative stagnation ensues.

I am now describing the condition of such a room in the winter time, when the heating apparatus and gasoliers are in use; but what must it be in mid-seasons, when there is no artificial heat to stir up the currents of air, and when it is too cold to allow of the windows being opened. If you want to know what superlative stagnation is, and what carbonic acid gas tastes like, half an hour spent in such a room will give you a tolerably good idea. Now nine-tenths of the audience on leaving this assembly would merely observe, "How hot the room was"; but it is a fact that the headaches they would bring away with them are due to the heat? If so, how is it that any one of them could spend double the time in a conservatory, where the temperature was much higher, without feeling the slightest inconvenience? A moment's reflection should tell them that the discomfort and nausea they experienced was simply owing to the filthy state of the atmosphere. I speak advisedly when I say filthy, for carbonic acid gas is not the only offensive product emitted by the lungs; and, without going into any analysis of the same, it is sufficient to say that in an assembly of 1,000 persons there would be above a million and a quarter respirations in the hour, and under the circumstances the whole of the air would become polluted; there is no alternative, therefore, but that it must be again inhaled by the audience, and that so indiscriminately, that they must take that which comes first; and however much the unhappy individual thus placed may yearn for a mouthful of fresh air, the only change of air he could obtain would be that which had been exhaled by those immediately round him, and which he takes in exchange for what he has just parted with himself.

I cannot believe that this state of things is generally known, or there would not be such apathy and indifference exhibited as to the sanitary condition of our public halls; and the question once more arises,—what is the best remedy that can be offered for the removal of this evil?

If I suggest the natural or open window ventilation before named, you will say, however practicable it may be in warm weather, it is totally inadmissible in winter time, when cold and fog abound, and that under such conditions

you could not remain five minutes in the room without catching your death of cold. In this I fully concur; but assume for a moment that circumstances necessitate your attendance at a public meeting before there is time to set the warming apparatus in action, and that owing to some cause or other the upper sashes of the windows are compelled to be open, the first thing a prudent man would do would be to put some extra clothing on his body, and cover his head with a seal-skin cap; then, after tying the ear-flaps well under his chin, he would envelope his throat, and possibly his mouth and nose, with a worsted comforter. Being thus attired, I ask you,—Would he be likely to take more harm than if he were driving through the cold wind, sitting by the side of his groom in an open gig? Would he not, on the contrary, be enabled to spend the time quite as agreeably, if not more so, than if he were encountering the night air in the manner I have just described? I am inclined to think he would. And why? In thus walling himself in, he would be simply preserving the heat of his body which would otherwise escape. In covering the inlet to his lungs with that woven ventilator, properly called a comforter, he would experience no discomfort from the air which he inhaled, probably because it would be tempered by the bodily heat accumulated in the worsted wrapper,—while the latter, being of a porous and non-conducting material, would freely allow of the ingress of respired air, and at the same time prevent any considerable escape of bodily heat. Inasmuch, however, as cold air is not in itself injurious to the lungs, I am not quite clear that this immunity from the ill effects of night air is not solely due to the extra provision made for the retention of our animal heat, and consequent protection from local draughts; but whether or no, I think the principle is one which may safely and advantageously be applied to the warming and ventilating of our halls of public assembly. Granting this to be the case, and taking the summer system of ventilation before named as our basis, the conditions to be observed for producing the like results at other seasons, are the following:—

1. Such provision must be made for generating and preserving artificial heat as will keep the room at a summer temperature.

2. The quantity of fresh air admitted into the room must be as great at one season of the year as another.*

3. When the air is cold, and its tendency to fall thus rapidly increased, the mode of admission must be such as will preclude the possibility of its descending upon the audience in local streams.

4. The porous or percolating screens which form the inlets and outlets must be of such a material as will allow of the free passage of air, and at the same time prevent an undue escape of the artificial heat of the room.

Assuming, then, that by the Perkin's pipe system we have an efficient method of generating artificial heat, the first step I should take to prevent the escape of the same would be to double-glaze our windows, or, in other words, put on our extra clothing.

Then as to ventilation: I would provide for the admission of fresh air by constructing the sash windows with a box head some 3 ft. or 4 ft. high; in these there would be an extension of the upper sashes, the framework of which, instead of being filled with glass, should be covered with a sheeting of woven or finely-perforated material of non-conducting nature, so that when the sashes were drawn down, they would fill up the space (or as much of it as may be required) ordinarily occupied by the glass. The slightest motion in the external air would create a windward and a leeward side to the building; and the fresh air would probably select the former side for entering through the perforated material before named. The portals being distributed over a large area would restrain the boisterous precipitancy with which the cold air rushes into a warm room; and instead of the air coming down upon our heads at the rate of ten miles per hour, ample time would be given for the requisite quantity to enter at something like two miles per hour—at which rate, be it understood, air ceases to be felt as a draught. Oozing then, as it would, through this permeable medium, and gradually commingling with the warmer air of the room, it would imperceptibly find its way to the audience below, without subjecting them to any inconvenience,—when owing to the further increased

temperature communicated to it by contact with their lungs, and with the radiated heat from the floor, it would again rise, and, after giving part of its caloric to the fresh volumes of cold air entering in and eager to take its place, would pass out of the building through the woven screen-work on its leeward side. This screen-work, as I have before stated, being of a non-conducting material, would prevent the loss of heat which would necessarily ensue were it composed of perforated zinc, or the metal wire-work generally used. It will be seen that the motive power to which this action is due lies simply in the maintenance of a given temperature within the room, and that in proportion as the external air is denser than that within, so will be the admission of fresh air, and the consequent expulsion of foul air. Indeed, the force on duty here may, in its operation, be likened unto that more familiar, and sometimes equally active one whose continual cry is "move on."

Now, with the knowledge we possess of physical laws, I am inclined to think that this system of ventilation in the winter time would, as to its mode of operation, and in respect of the quantity and agreeable quality of the air received, be the nearest approach we could effect to the natural summer one first named; and I may also observe, that, except in cold weather, when artificial heat is required in addition to that given out by the audience (the latter constituting the only moving power in the milder seasons), it cannot be called an artificial mode of ventilation; and, moreover, being, as you see, inseparably connected with the economy of heat, the fuel saved in generating the latter would more than compensate for the additional expense involved in the construction of our buildings,—at any rate, it would contrast favourably with the expensive and very artificial system which is adopted in some buildings, and especially in our houses of legislature,—where it can be readily proved that the air which the members breathe costs more per head than each of them expends upon the wine he drinks.

By reason of its simplicity and economy, and being, as it were, self-acting, it is equally applicable to the wards of public hospitals; and though I have in the Nottingham Infirmary adopted the method of warming and ventilation which I have prescribed for domestic buildings, I am persuaded that in the larger wards it would more effectually meet the exigencies of the case.

Before I take leave of the subject of ventilation, I may observe that there is scarcely anything which so much exemplifies the truth of what I said at the outset about the little progress we have made in this science, as there is in its application to sewerage; and more especially if we gauge the results by the cost at which they have been attained. After the thousands which have been expended in charcoal boxes, and extraction shafts of one kind or another, whether for neutralising or for getting rid of the gases generated in our sewers, we have come to the conclusion that there is nothing to be done but to make as many direct outlets in the middle of our streets as possible,—which is practically to revert to the happy-go-lucky way, or open-drain system, adopted in the middle ages, when the only neutralisation aimed at was simply a copious dilution of the gases with atmospheric air. I cannot conceive that such a solution of the problem is one which will meet with general approval: my own experience is, that when you have no other reply to make to a ratepayer on his complaining of the effluvia arising from one of these outlets, than that he is going to have two others in place of the one opposite to his own house, it is not found to be a very encouraging one. Assuming that such a remedy is not of an exhaustive character, I would suggest to your consideration some amplification of the system which I have adopted on the Nottingham Park Estate, viz., in making the street lamp-posts serve the purpose of extracting shafts. By slightly increasing the diameter of these posts, and substituting for the single vertical bat-wing burner four or five horizontal jets, issuing from a ring fixed at the summit of the outlet, with their flames converging to the centre, the gases conveyed from the sewer would, while passing through this flame, undergo such an amount of combustion as would, I think, render them innocuous. Our streets would be no worse for a little more light, and it would probably be found sufficient to turn the gases, which may have accumulated in the sewers during the day, into these outlets simultaneously with the lighting of the lamps at night. The cost would be nothing compared with the advantage gained, and not

* See p. 1060, ante.

* The fulfilment of this condition is of the utmost importance, and it is my belief that the secret of our non-success is mainly due to the ignoring of it.

much as compared with that of previous experiments.

The history of warming and ventilating is a most interesting one, and if time permitted, we might record the various methods to which man has resorted to protect himself from the inclemency of the weather: how, by way of forming, as it were, a portable climate, he began by coating his body with mud and paint,—then by clothing himself with the bark of trees, interwoven rushes, or the skins of animals,—and, subsequently, as he became more civilised, by garments of hair and wool; how, to secure a fixed climate, the Ancient Briton first built round him a walled hut, and then a cabin of clay with a hole in the roof, through which he breathed and let out the smoke from his fire; how, when he went over to Rome, or rather allowed the Romans to come here to enlighten him, he found by the radiated heat of a hypocaust, he could be warmed without being suffocated at the same time; how, as he again degenerated, he had recourse to a less artificial means, and our feudal lords selfishly appropriated to themselves the animal heat of their serfs, who sat shivering underneath the table folding their masters' legs within the clothing which enveloped their bosoms; and the peasants, as in Normandy, resorted to the cow hovels in winter time, borrowing warmth from the oxen while they carried on their lace-making;—how heated cannon balls and charcoal braziers developed into Romford Stoves, and Romford's Stoves into Milner's Stoves,—and fuel was economised by mixing it with clay and coal, and then burning it in revolving grates; how many of such devices, supposed to be inventions of the present day; prove to be repetitions of things gone by, would take long to describe; and interesting as the retrospect might be, it would only serve to show that the thing which is, is that which has been,—and that in warming and ventilation, as in other arts, there is nothing new under the sun. There is more superfluity than there is originality in the fragrant smear of oil and dirt, which forms the winter clothing of the dusky Australian savage of the present day, than there was in that of the aborigines of our own island,—and I have no doubt he views himself with as much complacency when thus attired as they did.

Whether it is that we are apt to magnify the importance of that which emanates from ourselves, and are disinclined to admit the possibility of its having occurred to others before us, I do not know; but it is surprising how many of the things, which we believe to be modern inventions, turn out to be nothing more than reproductions of a former age,—for instance, ask any of our medical men when the speculum, occasionally used in midwifery, was first introduced, and nine out of ten would probably say fifty or a hundred years ago. Look again at our advertisements, and who would suppose that any but Heal & Son invented metal bedsteads: nevertheless, recent discoveries at Pompeii show that the identical instrument first named was used by surgical practitioners seventeen centuries ago; while as to the latter, there are chapter and verse to prove that Og, King of Baahian, himself slept on a bedstead of iron. Who knows but that we may yet live to unearth a gas-pipe, or to discover in the Pyramids a photographic portrait of a Pharaoh?

Great as are our achievements in engineering, we should still be puzzled to know how, in the absence of steam power, men succeeded in raising single blocks of stone one upon another, weighing a thousand tons; nevertheless, if it had to be done, we should, I think, find men who were equal to the task: but with respect to the art in which we ourselves are engaged, what is there which presents so little originality as the architecture of the present day? People may well say, why do we not invent a new style? Why be content with simply reproducing that which has been done before? Perhaps the best answer we can give is to inquire of those who propound this question, whether originality is really an essential element of all good architecture; and if so, where do they find it? Can they point to any building, or to any single period in the world's history, in which a new style was suddenly introduced? On the contrary, I maintain that in every transition the change was gradual, and the outcome of it was simply a refinement, or a development in growth, of something which previously existed. If this be so, all true art must necessarily be progressive; and when it ceases to be so, we are either driven to resuscitate something which existed in past ages—as was done in the sixteenth century—or

we get into a state of Babel-like confusion, out of which the only escape is to try back, and on finding the old progressive groove, to begin again. This is very much like what we are doing at the present time, and should we find that we are on the right track, we may fairly hope that the buildings we shall henceforth produce, will, as works of art, be as much in advance of those we have left behind, as they certainly will be, in regard to their warming and ventilation.

THOS. C. HINE.

THE COMPETITION DESIGNS FOR DWELLINGS IN GOSWELL ROAD, LONDON.

THE directors of the Industrial Dwellings Company, assisted by the report of Messrs. Charles Barry and George Godwin, have awarded the first premium, 250*l.*, to the design marked "Salutaris"; and the second, 150*l.*, to that marked "Self-Contained."

The author of No. 1 was found to be Mr. Henry Macaulay, Kingston-on-Thames; of No. 2, Mr. Banister Fletcher, of the Poultry.

INCOMBUSTIBLE WOOD.

EXPERIMENTS AT BIRKENHEAD.

EXPERIMENTS were recently made at the Chain Testing Works, Birkenhead, with a plan, which has been patented, of rendering wood incombustible, and impervious to atmospheric influences. The patent is the property of Mr. C. Jarvis, of The Priory, Tunbridge, Surrey, who superintended the experiments. Mr. Jarvis's process is by immersing timber in a solution of tungstate of soda.

Samples of wood, which had been immersed in the solution, were subjected to several tests. One of them was to place a piece, $\frac{1}{2}$ in. thick in the flame of a gas jet, and keep it there for thirty-five minutes. When taken out it was found to be only slightly charred to the extent of one-sixth part of it, and to have no flame upon it. A piece of ordinary wood was placed in the flame, and was entirely consumed in less than ten minutes. About forty or fifty pieces of the prepared wood were soaked in petroleum, and then set fire to, when it was found that as soon as the petroleum had burned itself out, the flame died away, and the wood was scarcely injured at all. Another lot of similar wood, which had not been prepared by Mr. Jarvis's process, was destroyed in a very short time. Dr. Brown remarked that if the landing-stage had been built of wood prepared according to this patent the recent conflagration could never have occurred. Dr. Brown subjected a piece of prepared wood to the action of oxygen gas, which was found to have very little effect upon it, whereas a piece of common wood was completely destroyed in a short time. A still more crucial test than all was tried with a piece of ordinary brown paper, which had been soaked in the solution. Mr. Jarvis wrapped up in this paper about 1 lb. of gunpowder, which he then placed in a barrel full of shavings. On a light being applied the shavings blazed up and were rapidly consumed, but the paper resisted the action of the flames and the gunpowder remained intact. The result of the experiments was deemed satisfactory.

BEQUEST OF PICTURES DECLINED AT BIRMINGHAM.

At the meeting of the Birmingham Town Council last week, Mr. Collings read the report of the Free Libraries Committee, which stated that the late Rev. Thomas Warren, of Morton Hall, Worcestershire, by his will and the codicil thereto, bequeathed to the Mayor and Corporation of Birmingham a collection of paintings, seventy-two in number, to be deposited in the Midland Institute, and exhibited at all times to the inhabitants and visitors gratuitously, during such hours as the Institute should be open to the public. The bequest, however, was made upon the express condition that the whole of the paintings should be kept together in a room or place within the Midland Institute, to be specially set apart for the purpose, and be so arranged as to form one separate and entire collection, to be called the "Warren Collection." The will further provided that in case the paintings should not be so kept together, or be separated for one calendar month (except for the periods

during which the room was under repair), or should not be distinguished by the name of the "Warren Collection," the bequest should be forfeited and the pictures should revert to the testator's residuary estate. The testator also bequeathed to the Mayor and Corporation a large cabinet and sarcophagus in his library, together with the books contained therein, on similar terms and with similar provisions as to forfeiture to those contained in the bequest of the paintings, but subject in other respects to rules and regulations to be framed by the committee or other governing body of the Institute. The collection of pictures had been inspected by several members of the committee, and they having reported that it was not suitable for exhibition in the Art Gallery, the committee communicated with the residuary legatees with the view of obtaining his consent to such a modification of the conditions attached to the bequest as would permit of the acceptance of the pictures by the Council for the purpose of being exhibited at Aston Hall. That endeavour having failed, the committee recommended the Council to decline the bequest of pictures.

This recommendation was ultimately agreed to.

THE STOCKWELL-GREEN BUILDING AGITATION.

WITHIN the past week or ten days the question with respect to building upon Stockwell-green has assumed an entirely new phase, and it now appears that the demand made for the land, by the alleged freeholder,—originally 4,000*l.*, next 8,000*l.*, and now finally said to be 12,000*l.*—has led to Chancery proceedings, which may ultimately result in establishing the fact that Mr. Abbott, who sold the ground to Mr. Honey for building purposes, had, after all, no legal right to do so, and if so, that Mr. Honey's title is consequently bad. Should this eventually turn out to be the true state of affairs, the despoiling of the Green, which has been in progress during the last few weeks, may prove a serious matter for those responsible for it. It appears that the work of dismantling going forward at the early part of last week caused such an amount of irritation amongst the inhabitants as to have almost led to a breach of the peace. This was during the cutting down and removal of two of the finest trees on the Green, and the clearing away of a considerable portion of the turf.

On Saturday last the case came before the Master of the Rolls, on an application for an injunction in the suit of "Hammerton v. Honey," when the Master of the Rolls, upon an *ex parte* statement, granted an *interim* injunction restraining the defendant, the lord of the manor, from building upon or enclosing the Green. The effect of this judicial order is, that the Green must not further be disturbed until the case is legally argued on both sides, which will not take place before the middle of January, when the Chancery Court again sits in Hilary Term.

COMPENSATION P.

JOHNSON v. THE GUARDIANS OF ST. GEORGE'S UNION.—SHERIFF'S COURT.

THIS was a compensation claim, in respect to the Cornwall Arms, a beer-shop of some twenty years' standing, situated No. 327, Fulham-road, with stables in the rear, the land being required for the enlargement of the workhouse of St. George's Union.

Mr. Sergeant Parry and Mr. Bidder, Q.C., were for the claimant; Mr. Hawkins, Q.C., and Mr. A. L. Smith represented the Guardians of the Union.

The premises having been inspected by the jury, a number of witnesses were called on both sides. For the claimant, Mr. McClymont, of the firm of Corbett & McClymont, who have built some thousand houses in the neighbourhood, stated that his firm would willingly give 2,000*l.* for the property, and would expect to make a profit out of it.

It appeared rather amusing to us, in the cross-examination, that the counsel for the Union should try perseveringly to make Mr. McClymont, the jury, and himself, believe that he (Mr. McClymont) knew nothing whatever about the value of land or of building operations in general.

Mr. Henry Godwin (G. & H. Godwin) valued the property at 2,375*l.*, making a point of the scarcity of stable accommodation in the neighbourhood. Mr. Bashill valued it at 2,220*l.*; Mr.

l'Anson, 2,156l.; Mr. Finlaison, 2,200l. These amounts included compensation for a rental of 12l. per annum, given by Mr. Smith, the advertising agent, for the use of the blank wall. Mr. Smith gave evidence that he would gladly pay that rental as long as he had the opportunity. For the Union, Mr. Chadwick put the value at 1,210l., taking it, as we understood, as an unsecured ground-rent, ignoring the erection on the land; Mr. Castle, at 1,460l.; Mr. Lovejoy, 1,375l. The jury, after consulting about a quarter of an hour, assessed the compensation at 1,850l.

The oftener we see compensation cases for compulsory sale of property settled with the aid of counsel learned in their craft, the stronger becomes our conviction that the method is entirely wrong. In the face of Mr. McClymont's *bona fide* offer, and of an offer made, within our own knowledge, by a second would-be purchaser, the owner in this case was, to all intents and purposes, legally robbed of 150l. and more.

CABMEN'S SHELTER MOVEMENT AT LEEDS.

A commodious shelter for cabmen, with stove for cooking and other fittings, has been opened by a committee of gentlemen for the Leeds cabmen, near the Town-hall, by permission of the Corporation. The cabmen, who pay 1d. per day for the use of the shelter from ten a.m. to nine p.m., have spoken very favourably of its usefulness, particularly during wet or frosty weather. Mr. John H. Thorp, of Leeds, is the builder.

Cabmen's shelters have been opened at Edinburgh, Liverpool, Manchester, Birmingham, Leeds, Coventry, Southport, and Derby; and there appears to be no reason why all our cabstanders should not, in time, be provided with such necessary resting-places.

There are no such shelters in London owing to legal restrictions, but these must give way in suitable situations if proper steps be adopted by the friends of cabmen.

EXPLOSIONS.

Explosion of Molten Metal at Crewe.—An explosion occurred at the Crewe Steel works of the London and North Western Railway Company, on the 5th inst., by which four men were more or less seriously burnt. They were engaged in casting Bessemer steel, and were running the molten metal from the heavy iron ladle into moulds. Unfortunately, inside one of the moulds was a quantity of sand, which caused the hot fluid to explode with a roar like thunder. The fiery molten particles were scattered in all directions, severely burning almost everybody in the Bessemer pit. Four of the men within the radius of the exploded molten metal were severely injured, and were taken to the company's hospital.

Alarming Gas Eruption at New Swindon.—An explosion took place on the 11th inst., at the New Swindon Gasworks; the pipe connecting the purifier with the gasometer became choked with gas tar, and the manager, Mr. Jervis, and two or three men went to remove the obstruction. They removed the cap of the pipe, apparently oblivious of the fact that a gas jet was burning near. A volume of gas rushed out and became ignited, causing an explosion which knocked down the men, blew out the doors and windows, and set fire to the place. The works are situated near houses of the artisan class, and a panic ensued. The gas was shut off, and the Wiltshire and Berkshire Canal running near, an abundance of water was obtained, and the fire and gas extinguished, but not until the flames were within 2 ft. of the gasometer full of gas, which must have exploded had the fire reached it. The alarm in the town was also great.

Gas Explosion at Birmingham.—An explosion of gas occurred in Great Lister-street, Birmingham, on the 9th inst. For some time water had escaped from the main in the street and washed the earth away. The sinking of the earth caused a gaspipe to break, and a large quantity of gas accumulated. This gas by some means became ignited, and an explosion followed. The windows of the houses facing the street were broken, and the roadway was upheaved for some yards. Fortunately no one was seriously injured.

A Light Again.—A fortnight ago, an explosion of gas took place at Mr. Baldwin's, Victoria-street, Temple, Bristol. A short time

previously Mr. Baldwin smelt an escape of gas, and on going to a store-room at the top of the house, in company with his wife, and taking a light with them, an explosion took place, blowing the window out, the door off its hinges, and Mrs. Baldwin into the staircase. Fortunately, she was not slightly injured, and the general damage done was not much.

Explosion of Gas at Sunderland.—A somewhat serious explosion of gas occurred on the 12th instant at Bell's public-house, at the corner of Bridge-street and West Wear-street. The workmen of the Sunderland Gas Company were engaged laying new piping in connexion with the bar, and, in consequence of the communication with the main being disturbed for the purposes of their work, the gas had escaped and filled the cellar. Shortly before noon the men were working in it when a labourer unfortunately struck a match, the result being an explosion of an extensive nature. The person in charge of the bar over the cellar was injured, and some half-dozen persons who were on the premises at the time were thrown down. The building sustained considerable damage, one of the windows of the bar being blown out, while both the roof and the floor were raised several inches.

ACCIDENTS.

Bournemouth.—On Friday, the 11th inst., Mr. Horsey was blown with several rods of brickwork and some scaffolding from the top of a house in Tiverton-terrace, and severely injured, especially in the head.

Death of a Man from Sewer Gas at Widnes.—On Tuesday, 15th, an inquest was held touching the death of a man named Michael Duffy, from gas inhaled in a sewer at Widnes, on the previous Friday afternoon. The deceased was a labourer, thirty-nine years old, and on the previous Friday was engaged with another man, named James Seed, in making a connexion with the main sewer in Church-street, Widnes. Having made a hole in the sewer, and feeling a quantity of foul air coming from it they took every precaution they could. In the afternoon Seed was in the hole, which was about 8 ft. deep, fixing the pipes in the sewer, and deceased was at the top. Seed fell in the hole, and on deceased going to his assistance he was caught by the foul air, and fell down also. Assistance was at once procured, and deceased was got out. Mr. Hiles, surgeon, administered an emetic to both men. Seed soon came round, but deceased remained unconscious and was carried home (a distance of about two miles), where he died about three hours afterwards. The jury returned a verdict of "Accidental death," but strongly censured the Widnes Local Board for allowing Church-street to be for a considerable time in a disgraceful condition.

Angers.—The roof of the Market-hall of this town fell in on the 16th inst., through the excessive weight of snow that had collected upon it. Several persons were killed or injured.

Bad Air.—A labourer named Crompton, and George Cross, engine tender, have been suffocated at the Eccleshill Ironworks, Darwen, and several other men had narrow escapes. A workman lost a drill in the engine-house, and Crompton went below the foundations for it. He could not return, and in trying to save him Cross lost his own life. Two or three men had to be pulled out by ropes, quite exhausted. The poisonous gas is supposed to have come from slags.

FIRES.

It is remarkable that fires of a most extensive kind have lately been prevalent among cotton and other mills and manufactories, some of which we have chronicled, and property to an almost incalculable value has been sacrificed. In spite of all the precautions which most large establishments provide, some discrepancy takes place,—savings are left lying carelessly about where repairs are taking place, or the waste oily and turpentine tow and rags used in cleaning are discarded, and left to fester till the terrible match or pipe-light is thoughtlessly cast into the midst, to create a blaze as soon as the workpeople leave. Then, again, water is seldom at hand to quench the first outbreak, which is the very essence of prevention. At Reading, the water at night, when its service is most likely to be suddenly demanded, it is the practice to shut off from the mains, and damage to the amount of thousands of pounds is the result. We again record some disastrous losses, the causes of which, as usual, are reported as un-

accountable. In the meantime, independently of the pecuniary loss, numerous workpeople are thrown out of employment, and the battle of poverty and inclemency of the weather has to be fought with doubled patience and perseverance.

Cotton Mill Burned at Glasgow.—Early on Tuesday, the 15th inst., an alarming fire occurred in a cotton-spinning mill in Bridgeton, Glasgow, belonging to Messrs. John Houldsworth & Co. The premises covered a very large area, and the buildings of the mill proper, which are four stories in height, were situated near to the Corporation Gasworks. The fire raged for several hours. The mill, which had recently been fitted with new machinery, was almost completely destroyed. Great fear was for a time apprehended lest the fire should communicate with the gasworks, and the gas in a large gasometer close to the mill was conducted to another further removed from the conflagration. The damage to the building and plant is estimated at about 20,000l., and is covered by insurance. Upwards of 250 persons, mostly women, were employed at the works.

Great Fire at Blackburn.—The cotton-spinning mill of Messrs. Eccles, Shercock, Brothers, & Co., Union-street, Darwen, was burnt down on the 18th inst. The fire occurred shortly before twelve o'clock, and in half an hour the building was completely enveloped in flames. Great fears were entertained for the safety of the adjoining cottage property, and people removed their goods. The damage cannot be less than 20,000l.

Destructive Fire at Reading.—On the 19th inst., a fire was discovered in the fitting-room of the ironworks, Claversham-road, Reading, to the north of the railway station. The watchman having rung the bell to give the alarm, fixed the company's hose, but unfortunately no water could be obtained, the local authorities having for some time shut off the water at night from the mains. The consequence was that the whole roof of the building (100 ft. by 25 ft.) was in a blaze in a few minutes, and the adjoining shops, the smiths' and switch shops, took fire. It was upwards of an hour before water could be obtained from the waterworks, and in that time the flames had a complete hold of all the shops. In two hours the works were destroyed, the bare walls only standing. The damage amounts to several thousand pounds.

Extensive Fire at Oxford.—On the 16th inst., a fire was discovered in the premises adjoining the Randolph Hotel and Collins's Carriage Factory, which speedily communicated to other buildings. Owing to the high wind and scarcity of water, the flames raged with great fury for several hours. Collins's Coach Factory, including large workshops and numerous carriages, Banner's dyer's shop, Mr. Rodley's premises, Mr. Hewitt's grocery shop and warehouses, and Mr. Williams's baker's shop in Friar's-entry were all completely destroyed. The damage is estimated at 20,000l. to 30,000l.; cause of fire unknown. Heavy snow fell the whole time. Many valuable vehicles, the judge's carriage included, are destroyed, as also are the workmen's tools. The property is only partially insured.

Another Mill Burnt Down.—Messrs. Pickard, Prestly, & Co.'s cloth-mill at Highbury, Castleford, near Leeds, was almost entirely destroyed by fire on the 17th inst. Damage estimated at 5,000l.

DONCASTER NEW WATERWORKS.

The foundation-stone of the embankment of the reservoir at Hooton Brook, in connexion with the Doncaster new waterworks, was laid on the 16th inst., by the mayor of Doncaster (Mr. J. Clark), the mayor of Rotherham, and the other members of the two corporations being present.

The main reservoir is to be in Silverwood Valley, on the stream dividing the estates of Mr. Bosville and Mrs. Fullerton. The two smaller reservoirs will be as tributaries of Hooton Brook, above Ravenfield Fish Ponds. The following brooks and streams will be brought into the reservoirs—Hooton Park Brook, three tributaries of Hooton Brook and Silverwood Brook. The whole of the reservoir will cover an area 56 acres. The large reservoir will contain 270,000,000 gallons of water, and the two smaller ones over 22,000,000 gallons, so that there will be a total storage of 292,000,000 gallons of water. The average rainfall of the district is 27 in., and taking the lowest estimate, that in extraordinary dry seasons it would not be possible to collect more than 6½ in., they would be able to have a supply of 476,000,000 gallons. It is estimated

that when these reservoirs are filled, the town will be in a condition to be supplied with water for 250 days. It is expected that the work will only cost the ratenayers at a rate of 2l. 13s. per head. The three reservoirs will all be connected by a 4-ft. conduit. They are distant about eight miles and a half from Doncaster, and the water will be conducted to the town in large cast-iron pipes. The cost, according to the tender, will be 42,538l. 15s. 10d., independently of a separate tender for the erection of an engineer's office and other buildings, upon which over 800l. have been spent. Mr. B. S. Brundell, of Doncaster, is the engineer. The contractor is Mr. James Thane, of Maryport; Mr. Morton is the contractor's agent; and the builders for the engineer's residence are Messrs. T. & C. Anelay, of Doncaster. The reservoirs are to be finished by January, 1877.

THE CITY OF LONDON CEMETERY.

At the meeting of the Commissioners of Sewers last week, the Sanitary Committee recommended that the new works at the City of London Cemetery, at Ilford, be executed at an estimated cost of 2,664l., for taking in additional ground. The committee stated, that in setting out the ground it would be sufficient to enclose about 13 acres for the present, instead of 25 acres, as already sanctioned. It was remarked by Mr. Cox that 2,664l. appeared to be a very large sum for enclosing the 13 acres of land, and he thought this would be nearer the mark. In answer to 2001. objection, the engineer stated that the work was done in the simplest manner possible, but the drainage and the road-making had to be executed, as well as the mere enclosing. Mr. Bedford remarked that he hoped the enclosure of these 13 acres would not be in opposition to a recent decision of the Master of the Rolls. The recommendation of the committee was adopted.

THE "MONARCH" MORTISING MACHINE.

MESSRS. F. W. REYNOLDS & Co., of Southwark-street, have just introduced a new mortising machine, which they call the "Monarch," combining the most recent improvements with several advantages peculiar to itself. The raising and lowering of the brackets, in which the chisel-carrying spindle works, is effected by a new arrangement holding them quite firm while working in different depths of stuff; the spindle consequently is not liable to fall suddenly, as it does in some machines, damaging the chisel. Additional power is gained by the direct action of the lever handle, and the friction is reduced to a minimum. The machine is mounted on an extra strong stand, and will, we should think, soon come into general use among the trade. The same firm have, we understand, made several improvements in their imperial hand-power saw-bench, and they have a new patent combined circular and band saw sawing-machine nearly ready for delivery.

THE ARCHITECTS AND ENGINEERS.

The following letter was addressed to the secretary of the Institute of Architects with reference to the subject discussed at the last meeting:—

Dear Sir,—I am afraid I may be unable to accept the kind invitation of the Council to attend next Monday's meeting. I should, however, have but a very few words to say on the *Quarterly* article, which seems to me entirely unpractical, and, indeed, perilous.

I cannot but think that the hope of English architecture lies in common sense rather than in such sentimental antiquarianism,—in common sense and good taste regulated by the great principle that good architecture is decorated construction, and bad architecture is constructed decoration.

A civil engineer with a cultivated taste and the general education of a gentleman, seems to me far more nearly the ideal architect for our time than the building-foreman of the *Quarterly* reviewer.

If the Institute of Architects could be joined to the Institution of Civil Engineers, it would be, in my opinion, the beginning of a very good hope for both professions; and I heartily wish that some proposal to try and bring this about could be made at your meeting on Monday.

Do you think you could get the suggestion put forward?

JAMES KNOWLES.

PROMOTERS' LIABILITY TO RECOUP RATES.

SIR,—Your correspondent appears to be misled by the newspaper reports, necessarily condensed, of the case of *Lambeth v. The Metropolitan Board of Works*. The promoters are only liable for the amount which the parish would have been entitled to for rates had the property not been pulled down or put out of occupation, and only until the new work is completed, when it may be re-assessed at its then true value. In reference to the Embankment itself, I apprehend there will be little or no value for assessment to the rates; but new buildings on the surplus lands will be assessed from time to time to the tenants as they become occupied. The judgment given in this case does not affect private building enterprise, in which the act of pulling down does not revive the liability to pay rates for a house previously exempt because unoccupied, but only concerns the promoters of such public undertakings as require an Act of Parliament to enable the promoters to acquire lands by compulsory powers and by agreement. These powers are conferred by incorporating with the special Act the Lands Clauses Consolidation Act, section cxxiii. of which says:—

"And be it enacted that if the promoters of the undertaking become possessed by virtue of this or the special Act, or any Act incorporated therewith, of any lands charged with the land tax, or liable to be assessed to the poor's rate, they shall from time to time, until the works shall be completed, and assessed to such land tax or poor's rate, be liable to make good the deficiency in the several assessments for land tax and poor's rate, by reason of such lands having been taken or used for the purposes of the works, and such deficiency shall be computed according to the rental at which such lands with any buildings thereon were valued or rated at the time of the passing of the special Act; and on demand of such deficiency the promoters of the undertaking, or their treasurer, shall pay all such deficiencies to the collector of the said assessments respectively."

The general point of dispute is not as respecting the amount of this deficiency, but with regard to when the works are completed, as to which see "*Whitechurch v. East London Railway Company*," *Law Times* (House of Lords), vol. 30, N.S. 413.

ARTHUR HARSTON.

THE COST OF FENCING.

The following is a list of tenders sent in for fencing in a portion of the Manor Park Cemetery, London, at per rod:—

	5 ft. 6 in. high.	4 ft. high.
Rivett	£2 12 6	£1 19 6
France	2 9 0	2 6 6
Astell & Sons	1 18 6	1 9 6
Beadle, Brothers	1 17 6	1 10 6
Turner & Son	1 17 0	1 5 0
Hayward	1 15 0	1 7 6
May & Son (too late)	1 15 0	1 6 6
Stennin & Son	1 14 8	1 6 6
Wainwright & Co.	1 13 0	1 8 0
Stone (accepted)	1 6 11	1 0 10

IMPORTANT TO TIMBER MERCHANTS AND BUILDERS.

At the Lewes County Court, on the 15th inst., in the case of Edward Chatfield (timber and coal merchant, Lewes) v. John Chappell (London and Steyning), a claim was made for £l. 17s. 3d., the value of a number of oak scantiings, which had been supplied to the defendant along with a lot of others, and returned as being of inferior quality.

George Head, foreman in Mr. Chatfield's mill, deposed that he examined the whole of the wood, some 2,600 pieces, valued at something over 100l., before it was sent off, last June. The scantiings were fit for the purpose for which they were supplied,—for window sills. They were good average samples.

William Smith, foreman in the plaintiff's yard, said the wood was a good sample, sound and square. He had seen lots of sap put into mills.

Mr. Frank Davey, of Lewes, builder, had seen the scantiings which had been returned, and his opinion was that, although they had been exposed to the sun since they were returned, as they had been left lying at the Railway Goods Station, they were now worth what they were originally sold at, 3s. 3d. per foot.

Mr. Goodman said his defence was that the wood was utterly unsuitable for the purpose for which it was supplied. He called.

Mr. Thomas Lawrence, who said he was sole manager for Mr. Chappell, at the Steyning works. He remembered the oak scantiings coming in. They were sappy and shaly, and utterly useless.

By the Judge—When the order is given for timber of any particular length the trade is to take care that it shall be free from sap, knots, and not shaly.

Mr. Holmes, timber merchant, of Steyning, said the oak scantiings that had been returned were knotty, shaly, and sappy, and were not fit for new work.

His Honour said that he was sure that the matter had only been disputed as one of principle. He was rather surprised that the learned advocate for the defendant had not put the question, "Would the architect of the building have passed the wood?" He should have put that question had he been the advocate, and he had no doubt the architect would not have passed it. Therefore, he found for the defendant, with costs.

WHAT IS A HOUSE?

In the Court of Chancery last week, the case of *Harrie v. The South Devon Railway Company* was heard. This was an appeal by the company from a decree of Vice-Chancellor Malins. Mr. Harrie was the owner of the residue of a ninety-nine years' lease of two plots of ground, on part of which a continuous building was raised, which was occupied as two semi-detached villas. The remainder of each plot consisted of a garden in front and at the back, and offices connected with the house, while a brick wall separated the gardens. The dwellings were fitted up internally for the occupation of two families and always had been so occupied, and the plaintiff purchased the leasehold interest at two different times. The only internal partition, however, between the two dwellings consisted of a party wall, carried up to the ceiling of the upper story, and at the back by a stone-nogged partition about 4 in. thick, to the height of the first floor, and above that to the ceiling of the upper floor, one of lath and plaster. The building consisted of only two storeys, and above the ceiling of the upper floor the slope of the roof was open throughout, and it was possible to pass inside from one dwelling to the other. The railway company served the plaintiff with notice to treat for part of the garden of No. 1, whereupon the plaintiff served them with a counter notice to take the whole of the buildings and gardens of Nos. 1 and 2. Mr. Harrie filed the present bill asking for a declaration that the company were bound to take all the premises. Vice-Chancellor Malins granted the prayer of the plaintiff, being of opinion that the two tenements formed only one house, and the railway company were bound to take all the property included in the plaintiff's notice. Upon appeal by the defendants, the Lord Chancellor held that the buildings must be considered two distinct houses, and that the company were only bound to take No. 1, and that, therefore, the bill must be dismissed with costs. Lord Justice James concurred.

DAMPERS FOR MUSICAL BELLS.

In a work on Clock and Watch Making, written many years ago by Thomas Reid, is the following paragraph under "Clock Chimes, &c.":—

"The bells in this kind of music may be sounding at the time that a succeeding note is struck and sounding too, which may not be so pleasant to a very nice ear. This can be prevented by having a double set of hammers, one having every time a piece of cloth over on the back, one set of the hammers having the heads of buff leather, or having a brass head with a piece of cloth sewed over it. These, when they strike the bell, will damp the sound of the note which is last struck. The buff hammer should fall on the bell, to be damped at the same instant that the brass hammer strikes the succeeding note on its bell. This improvement, however, must greatly increase the expense on such a clock, as the effect of buff or cloth hammers is so striking that the additional price ought not to be grudged."

Whether any machine was ever constructed on Reid's system I know not. But I understand that certain respected mechanicians have lately invented a superior apparatus with dampers, for which they have obtained a patent.

Now, something of the kind has long been wanted for house clocks which play tunes on bells. But let it be most distinctly understood that tower bells require no dampers whatever; for, when their sounds have issued from the openings in the sides of the building they spread themselves in the air and ultimately reach the auditor with precision in subdued and pleasing tones. This I endeavoured to show in a contribution headed "Bells and Carillons, or Continental Chimes," which appeared in the *Builder* for the 11th of September, 1869. In the same article I suggested what led Dr. Burney to entertain and publish his erroneous notions on the subject of Carillons, which so many persons have copied from time to time. I would here remark that no competent person has ever himself examined the matter and published the result, so far as I know. We may thus account for the learned doctor's mistakes being handed down from one to another.

I have said that tower bells require no dampers whatever. Let me now add that the sounds of well-tuned bells (without dampers) as given out from a tower form "a music which nature adopts and makes her own, as the winds play with it." Such is aerial music wafted to and fro—crescendo and diminuendo—increasing and dying away with a delightful effect.

THOMAS WALESBY.

MONUMENTAL.

Statue of the Late Mr. Cubitt.—A colossal statue of the late Mr. Thomas Cubitt, the well-known builder, who was mainly instrumental in the development of the neighbourhood of Finsbury and Euston, is in the course of erection, and will surmount a white marble fountain in the centre of Euston-square. This square, one of the largest of the London proprietary squares, has, from a want of unanimity amongst the ticket-holders, been for a length of time an eyesore to the neighbourhood. Now, however, a vigorous effort is being made to render it worthy of the monument; the old shrubs are being up-

rooted, such of the trees as are suffering from decay have been cut down, and the entire area raised to a height of 9 ft. The grounds are being laid out in grass-plots and flower-beds, planted with flowering shrubs and evergreens, and intersected with ornamental walks; and instead of the small and broken railing a noble sweep of bronzed and gilded rails will be substituted. The estimated cost is over 2,000l.

Statue of the late Mr. Laird, M.P.—At a meeting held in Liverpool on Wednesday, the 16th, a committee was appointed to assist in the raising of a fund for the erection of a statue to the late Mr. John Laird, M.P. for Birkenhead.

A Statue of the late Earl of Clarendon, by Mr. John Bell, the sculptor of the group of "America" at the Albert Memorial, and of the statues of Falkland and Walpole in St. Stephen's Hall, has been erected in the hall of the Foreign Office upon a pedestal designed by Sir G. G. Scott.

Hans Christian Andersen.—A monument is to be erected to Hans Christian Andersen in the garden of the palace of Rosenau, near Copenhagen.

STOVE COMPETITION.

SOCIETY OF ARTS.

It will be remembered that a gentleman, who did not wish to have his name disclosed, volunteered to give the sum of 500l. with a view to encourage the development of improved means for the economic use of fuel in private dwellings. On referring the proposal to the Council of the Society of Arts, premiums to that amount were offered for various improved systems. In reply there were 204 articles sent in for competition, and after consideration 107 were retained for the purpose of being tested. This having been done the Committee reported, and the conclusion the Council have arrived at is,—"That while giving full credit to the invention and efforts of the competitors for the care and labour which they have bestowed upon their contrivances, the Council nevertheless are unable to award any prize." We greatly regret this decision; it seems to us a mistake of considerable magnitude.

DISMISSAL WITHOUT NOTICE.

A JUDGMENT of importance has been given by Sheriff Spens, of Hamilton, at the Glasgow Small Debt Court, in an action at the instance of William Graham, against John Miller & Co., calenderers, Cochrane-street, for the sum of 21. 10s. in lieu of the fortnight's notice which was alleged the pursuer was entitled to have received before his dismissal from defenders' employment. The pursuer stated that when he was engaged by defenders' foreman, he was told that he would continue to receive work in the place while the pressure of trade continued, but having been shifted to another department, he had been ten weeks in the defenders' service when he received notice of his instant dismissal, to which he demurred at the time, remarking that he thought the defenders had become bound to give him due warning. On behalf of the defenders, the foreman stated that the pursuer was recognised during the whole time he was in their employment simply as a jobber, whom the defenders were entitled to dismiss at any time. A witness for pursuer stated that there was a rule well known in the trade that when a jobber had been in a place six weeks he became entitled to the privileges of an ordinary workman, one of which was that a fortnight's warning must be given before dismissal. The Sheriff, after the case had been fully discussed, said he was inclined to think that the pursuer was entitled to decree, as it had been proved that, according to the custom of the trade, the relation of the parties changed before the expiry of the ten weeks, a judgment against which the defenders reserved right to appeal.

DOINGS AT NEW SHOREHAM CHURCH.

New Shoreham Church is a singularly interesting specimen of Transition-Norman architecture, and deserves the most reverent care. Very strong representations have reached us to the ignorant and damaging manner in which certain works there are being executed. Some time ago Mr. Arthur Loader showed the parties interested in the matter the error they were committing. He now writes,—

"This really beautiful specimen of Transition Norman architecture, whose details it has been my pleasure in

leisure moments to sketch and measure, has been before mutilated in places, and it is positively grievous to note the way in which not only this but other ancient buildings are treated, so that I have long since got to disbelieve in the operation being attempted at all, and I am sorry to say that the Institute of British Architects do not perform the functions of such a society in not watching with more sacred vigilance the doings towards the whole of our marvellously grand ancient buildings scattered over England."

If Mr. Loader in the present case had pointed to the Sussex Archaeological Society, instead of the Institute of Architects, he would have pointed to the right delinquent. This once active and useful society appears to have fallen asleep.

NEW SHOREHAM CHURCH AND THE "EMANCIPATED WORKMAN."

SIR,—Letters have appeared relating to New Shoreham Church, and the work done there under the name of "restoration" by a "local bricklayer." I, having visited the church, can entirely corroborate what has been said as to the scraping and the patching of the stonework with cement, the removal of the ancient fragments of the tracery of the wheel-window, and other mutilations. The sad end indeed presents a very grievous appearance, but I trust the mischief may end here. I have felt it my duty, having been in 1866 appointed with Mr. Slater to carry out my father's designs for the rebuilding of the nave and restoration of the choir, to at once write to the gentleman who, I was told, had decided on the "local bricklayer," and who, I may mention, was the enthusiastic secretary of the restoration committee.

I have also written to those who have the right of protecting and keeping up the fabric of the church and chancel, and I have reason to believe that careful attention is being paid to the facts of the case by them.

Having gone to Shoreham full of the recent discussion at the Institute on the question of "Working Men v. Architects,"—the work at Shoreham done by the local "inspired and emancipated workman,"—relieved from the bondage that professionalism inflicts upon him, but perhaps hardly "gloriously imbeled," I may feel the impossibility of agreeing in the idea of his "genius" being "the only real hope of English architecture!"

R. HERBERT CARTER.

Books Received.

Hints to Young Engineers. By J. W. WILSON, C.E. London: Spon.

A USEFUL brochure by Mr. J. W. Wilson, C.E., Principal of the Crystal Palace School of Practical Engineering, has been published by Messrs. Spon, of Charing-cross. The value of the practical advice, of which the little work contains much, is not impaired by the pleasant vein of dry humour that crops up at intervals. It is very readable, and thoroughly practical, such, in a word, as few readers, professional or other, can fail to enjoy and profit by.

VARIORUM.

The *Pictorial World Christmas Number* shows an advance. Besides numerous engravings, it contains stories by Hain Friewell, Mortimer Collins, Shirley Hibberd, Walter Thornbury, Thomas Archer, George Manville Fenn, Henry S. Leigh, &c., and consists of thirty-two pages, in a coloured cover.—Sprague's "Pocket Diary for Architects and Surveyors" is really a capital little book, the tables, calculations, and memoranda being especially useful.—Calvert's "Mechanics Almanac and Workshop Companion" includes much information for a few pence.—"Everybody's Year Book," containing something for everybody all the year round (Wyman & Sons), is now an established publication, and the issue for 1875 is certainly equal to any that has come before.

Miscellanea.

The Metropolitan Board of Works Budget for 1875.—At the meeting of the Board, on the 15th inst., Mr. Lloyd brought forward the estimate of the sums required to be raised for the year 1875, and the rateable annual value of property for the same year. He said the gross indebtedness of the Board amounted to 12,156,879l. 17s. 6d., which, after making various deductions, such as money borrowed from other bodies and Government stock, would leave the net year's debt at 9,514,659l. 14s. 11d. The result of the whole was simply that they would have to ask the metropolis for a rate, to make up the amount they had to pay in the succeeding year equal to 51d., instead of 44d., in the pound. The Board had not been able to please every one, yet the work they had done was great and important. He hoped the rate would never exceed 6d. in the pound, and that for 6d. they would be able to pay off their debt in half a century, by a fraction, and also help the metropolis in the same manner as they had done in the past.

Rejection of the Proposal for a Free Library for Bethnal-green.

The proposal to establish a free library for the parish of Bethnal-green, agreed upon at a meeting of the ratepayers held a fortnight ago, was discussed at great length by the Bethnal-green vestry on Thursday, the 17th. Mr. Voss, the vestry clerk, reported the resolution of the ratepayers asking the vestry to take the necessary steps for the carrying out of the project; upon which Mr. Collins moved,—“That this vestry is of opinion that the resolution passed by the meeting of ratepayers held at the Abbey-street School-room, on the 7th of December inst., for the purpose of determining whether the Free Libraries Act should be adopted in this parish, which resolution is now presented to the vestry, with the signature of the chairman of the meeting attached, is invalid, because the chairman refused to grant a poll when it was demanded by nine ratepayers; and that the vestry therefore declines to act upon the resolution.” The resolution was carried by twenty-seven votes recorded for it, and with eight against it. The effect of this resolution is consequently to negative the determination arrived at by the ratepayers' meeting.

Widening of Brompton-road.—At the usual meeting of the Kensington vestry, on Wednesday, the 16th inst., Mr. Harding, the clerk, read a memorial, signed by 177 residents of the neighbourhood of Old Brompton-road, calling the attention of the vestry to the narrowness of the road extending from the Gloucester-road to Haywood's-place. A letter was read from Mr. Hay, the owner of several houses adjoining the road, stating his willingness to give up certain portions of the gardens in front of his property, for the purposes of improvement, for the sum of 50l. Messrs. Corbett & McClymont, of the Redcliffe estate, expressed their desire to forward the carrying out of this improvement, and offered to give over that part of the building land forming a portion of the boundary for the purpose of widening the road. Mr. Cunningham Glynn moved the reference of the subject to the Metropolitan Board of Works. Mr. Shapcott, in seconding the motion expressed his regret that where the need of improvements had been so apparent for years, they should be delayed until the value of property had so greatly increased. The motion, after further discussion, was agreed to.

New Vestry Hall for St. Clement Danes. Last week, the memorial stone of the new Vestry Hall for the parish of St. Clement Danes, now in course of erection by Messrs. Thorne & Co., of Chelsea, from the designs of Messrs. Odogon & Butler, was laid. The new building is intended to replace the old Vestry Hall, removed to make room for the new Law Courts, and its estimated outside cost (7,000l.) will be paid out of the 10,000l. received as compensation from Government. It will be in the Italian style, of Portland stone, relieved with columns of polished Aberdeen granite, the main front comprising two stories and a basement looking on to Houghton-street. The Vestry-room, on the first floor, will measure 38 ft. 6 in. by 28 ft. 6 in. As Houghton-street forms part of the line of the proposed prolongation of Norfolk-street through Clare Market, and thence by Little Queen-street into Holborn, the building has been outwardly designed with a view to render it worthy of its future rather than its present surroundings. The general foreman for Messrs. Thorne is Mr. E. Old, and the clerk of works, Mr. Woodhall.

The London School Board.—At the weekly meeting of the School Board for London, on the 16th inst., Sir Charles Reed presiding, the quarterly reports and returns were, after some discussion, received. The Rev. John Rogers, who presented them, stated that the Board possessed 181 schools, with accommodation for 99,000 children, that the names of 93,000 children were on the roll, that the highest number in attendance on any one day during the quarter had been 81,492, and that the average attendance had been 66,187.

Election of Inspectors of Nuisances.—The Sanitary Committee of the Camberwell Vestry reported, on the 15th inst., that they had received twenty-five applications for the office of inspector of nuisances, and they submitted the following six for the election of two therefrom: Samuel Powell Fisher, James Comfort, Thomas Drinkwater, Thomas Lightfoot, Richard Frost, and Thomas Clarke. A ballot was taken, and the election fell upon the first two named.

Northern Architectural Association.—An ordinary meeting of the above Association was held on Wednesday evening, the 16th inst. in the Old Castle, Newcastle. The chair was occupied by the president of the society, Mr. M. Thompson. Mr. Frank Rich, Mr. W. L. Newcombe, and Mr. J. H. Robinson were nominated associates. The President read a paper on "The Present Position of the Society," for which he was awarded a vote of thanks. The following gentlemen were elected to fill the various offices of the Association for the ensuing year:—President, Mr. John Johnson; vice-president, Mr. T. Prouse; treasurer, Mr. W. H. Dunn; secretary, Mr. T. Oliver; solicitor, Mr. G. W. Hodge; committee: Mr. M. Thompson, Mr. Gibson Kyle, Mr. J. Hogg, Mr. W. Pasch, Mr. G. Connell, Mr. F. Charlton, Mr. J. W. Shotton, and Mr. T. Bea. The customary votes of thanks brought the meeting to a close.

A Horrocks Scholarship.—The sum required for the erection of a tablet in Westminster Abbey to the memory of the Liverpool astronomer, Horrocks, has been fully subscribed. The *Times* expresses "a hope that those who have carried the good work so far, and have thereby earned the thanks of all interested in science, will permit an extension of their modest—we think too modest—programme." The extension proposed is the foundation of a Horrocks Scholarship at Cambridge, his old university, or at Owen's College, in his native county. "Such a scholarship would insure his name being brought each year into remembrance until it became a household word, and it might be so managed as largely to promote the study of that science to which Horrocks's life was devoted."

The Exhibition at Manchester of Appliances for the Economy of Labour.—The preparations for the Exhibition at Manchester in March, under the auspices of the Society for Promoting Scientific Industry, of appliances for the economy of labour, are being pushed forward, and entries for a large number of exhibits have been received, many of the leading engineers in Lancashire and other places being well represented. Encouraged by the success which attended the previous exhibition of appliances for the economical consumption of coal, the Society have in the present case very largely extended the scope of their operations, and the exhibition building will be twice the dimensions of the one erected in Peel Park at the beginning of the present year. The site has not yet been definitely decided upon.

The Proposed College at Dundee.—A public meeting of the influential inhabitants of Dundee, called by the Town Council, was held in the Town-hall on Wednesday, December 16, for the purpose of considering the proposal to erect a college in Dundee. The following resolutions were unanimously adopted:—"That having respect to the importance of the advancement of literature and science along with the growth of the population and wealth of Dundee, it is desirable to establish a college for the promotion of the higher branches of education in the town and district. That a committee be appointed to devise a scheme for the establishment of a college in Dundee, to confer with the University of St. Andrews with a view to the incorporation of the proposed college, by affiliation or otherwise, with that university, and with power to take all necessary steps to carry out the objects contemplated."

Slough Sewage.—The Local Board of Health are now taking steps to complete the sewerage of this town, and to provide for the disposal of the sewage. The accomplishment of these objects would probably promote the building of residences along the lines of the new roads lately completed on Lord Harewood's estate. Last week, several of the members of the Board, accompanied by Mr. R. B. Grantham, the Engineer, examined the district and neighbourhood for the purpose of inspecting the sites which have from time to time been proposed as suitable for sewage farms.

Opening of a Fever Hospital at Darlington.—On Thursday, the 17th inst., the mayor of Darlington, Mr. H. Fell Pease, declared open a large fever hospital, which had been erected on the outskirts of that town, at a cost of 9,225*l*. The site is in Yarm-lane, and not above a few hundred yards from the Darlington Union Workhouse, which stands on the main road opposite, and is also a modern erection. The new hospital is built from the designs of Mr. G. G. Hoskins, of Darlington.

Traffic of Kensington-road.—The members of the council of the Albert Hall, accompanied by Major Donnelly, R.E., secretary, had an interview on the 14th inst. with the First Commissioner of Works to request him to take some measures to relieve the pressure of traffic in the Kensington-road, on the occasion of special entertainments at the Hall by utilising the roads within Hyde Park and Kensington-gardens.

Profits of the Patent Law.—At a meeting of the Society of Arts in London, last week, the Patent Laws were discussed. It was stated that the Government had reaped a clear profit of 900,000*l*. from patents since 1862, and it was contended that out of that sum an exhibition of patents ought to be provided, and substantial encouragement given to the patentees.

Albert Hall Concerts.—The daily concerts are to be abandoned at the end of the year, two in the week being given instead. We foresaw and foretold that the original arrangement could not be successfully carried out. The weather, moreover, has been greatly against the undertaking.

School Board Elections.—Builders at least have reason to praise the Scotch School Act, the School Boards of Abernethy and Kincardine, Duthil and Rothiemurchus, Fordyce, Fetteresso, Forglen, Kininmonth, Marnoch, Oryne, and Rothes all propose to erect new schoolhouses or teachers' houses, or large additions thereto.

Death of Another District Surveyor.—The death is announced of Mr. Richard Bell, architect, in his sixty-fifth year. Mr. Bell was the District Surveyor of St. George's, Hanover-square, and at one time had a considerable practice as an architect, especially in the City of London.

Death of a Russian Architect.—John Ivanovitch Gornostalev, professor of architecture at the Russian Academy of the Fine Arts, died on the 11th inst. He was a distinguished architect, and had designed many of the finest of the Russian public buildings.

Inquiry into the Belgian Iron Trade.—The South Staffordshire ironworkers have selected Mr. John Kane, of Darlington, to visit Belgium, and inquire into the iron and coal trades of that country, as they affect the same industries in England.

A Palace for the Empress of Russia.—The health of the Empress of Russia has so greatly improved at San Remo that she has purchased a piece of land there, and is going to commence building a palace at once. It is to be completed by next winter.

A Brick Merchant's Bequest.—By the will of the late Mr. Howard Haywood, a retired brick and tile manufacturer, the town of Burslem comes into possession of 30,000*l*. for charitable purposes.

A Church Struck by Lightning.—During the storm on Saturday, the 15th inst., at Jersey, the steeple of St. Mary's Church was struck by lightning, and a portion knocked down. Two beacons on the coast were destroyed.

TENDERS

For the hotel to be erected over the terminus of the London, Chatham, and Dover Railway, on the Holborn Viaduct. Mr. Lewis H. Isaacs, architect. Quantities supplied by—

Gammon & Sons.....	75,500 0 0
Holland & Hannen.....	74,560 0 0
Reed, Brotherts.....	74,389 0 0
Brown & Robinson.....	73,580 0 0
Chappell.....	73,458 0 0
Lucas, Brothers.....	73,120 0 0
Taylor & Sons.....	71,343 0 0
Webster (accepted).....	70,000 0 0

For finishing two houses at Cologne-road, Wandsworth. Mr. William Bradbear, architect:—

Kiddle.....	£822 0 0
Harris.....	760 0 0
Freddie & Morley.....	670 0 0
Steel (accepted).....	452 0 0

For erecting villa residence at Steele-road, Haverstock Hill, for Mr. A. E. Finch. Mr. R. Groom, architect:—

Bursial (accepted).....	£1,900 0 0
-------------------------	------------

For the erection of offices (from ground-floor level) corner of Road-lane and Eastcheap, for Messrs. Dickin & Co. Mr. T. Chambers, architect. Quantities supplied by Mr. G. P. Raggett:—

Conder.....	£15,610 6 0
Ashby & Horner.....	15,540 0 0
Holland & Hannen.....	14,812 0 0
Trotter & Son.....	14,657 0 0
Coleman.....	14,150 0 0
Macey.....	13,952 0 0
Brown & Robinson.....	13,780 0 0
Elkington (accepted).....	13,333 0 0

For alterations and additions to a warehouse, Jewin-crescent, Messrs. Herbert Ford & R. L. Hesloeth, jun., architects:—

Merritt & Ashby.....	£1,927 0 0
Sykes.....	1,854 10 0
Ashby & Sons.....	1,850 0 0
Simpton & Sons.....	1,800 0 0
Lark.....	1,774 0 0
Nightingale.....	1,668 0 0
Crabb.....	1,550 0 0

For London and County Bank, Hackney (Contract No. 2). Mr. Fred. Chancellor, architect. Quantities by Messrs. Curtis & Sons:—

High (accepted).....	£5,100 0 0
----------------------	------------

For alterations and repairs to the Star Tavern, 105, City-road, London. Messrs. Bird & Walters, architects. Quantities supplied:—

	Shop Fronts in Wood.	Shop Fronts in Portland Stone.
Gammon & Sons.....	£1,650	£1,675
Laurence.....	1,550	1,611
Thompson & Smith.....	1,411	1,611
Auley.....	1,387	1,444
Newman & Mann.....	1,568	1,508
Ebb & Sons.....	1,204	1,359
Mark.....	1,285	1,374
Brown.....	1,280	1,350
Williams & Son.....	1,247	1,317

TO CORRESPONDENTS.

F. H. J. Jan. (enclosed, having appeared elsewhere).—G. W. S. Australia (shall have attention).—H. F. (we cannot advise H. S. & A. (next week).—T. F. (next week).—Reading Bath (in type).—Etiquette (in type).—T. D. (thanks).—Mr. C.—W. G. S.—H. T. S.—T. R.—Old Subscriber.—D.—H. R.—Mr. G.—G. P.—R. W. R.—T. W. R.—H. W. S.—A. W.—P. R. W.—Y. W.—H. W.—R. H. C.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHAPPUIS' NEW PATENT
"LUMINARIUM."

BEST & MOST EFFECTIVE DAYLIGHT REFLECTOR.

PRICE LIST OF VARIOUS QUALITIES OF REFLECTORS.

Universal.....	3s. 0d. per sq. ft.	Argento Crystal.....	5s. 0d. per sq. ft.
Silver Flated.....	4 0	Luminaria.....	6 6
Silver-plated Copper..... 8s. 6d. per sq. ft.			

Special Reflectors constructed expressly for special cases; also for artificial light, gas, lamp, lime, electric.

P. E. CHAPPUIS,
PATENTEE AND MANUFACTURER.
No. 69, FLEET STREET, LONDON.



GETTY CENTER LIBRARY



3 3125 00620 2044

